

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:

[illegible]

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11313

EVENT NAME: Pajarito (TA-54) MY2017 Q4

SAMPLE ID: CAMO-17-139132

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	7/13/2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1338		MEDIA:	UA	
PRS ID:	NA		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-37 S2		FIELD PREP:	UF	
LOCATION TYPE:	NA		FIELD QC TYPE:	REG	
TOP DEPTH:	↓		SAMPLE USAGE:	INV	↓
BOTTOM DEPTH:	↓	↓	EXCAVATED:		YES / <u>NO</u> / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
↓	WSP-LL-H-3	1 LITER POLY	1	NONE	↓	↓

SAMPLE COMMENTS: Sampled 30 ft from running diesel generator

LOCATION COMMENTS: None

## FIELD PARAMETERS:

Sample Time	1338	HH:MM	Dissolved Oxygen	6.47	Flow (in gpm)	10.34
Oxidation-Reduction Potential	156.9		pH	8.26	Specific Conductance	134.7
Temperature	22.0		Turbidity	1.82		

COLLECTED BY (PRINT): D. Jaramillo &amp; T. Vander Vis

RELINQUISHED BY (Printed Name) Tanya Vander-Vis (Signature) Tanya Vander-Vis	Date/Time 7/13/17 2:35	RECEIVED BY (Printed Name) M. Matz (Signature) M. Matz	Date/Time 7/13/17 2:35
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 07/06/2017



## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11313

EVENT NAME: Pajarito (TA-54) MY2017 Q4

SAMPLE ID: CAMO-17-139134

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	7/13/2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1209		MEDIA:	UA	
PRS ID:	NA		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-55 S1		FIELD PREP:	UF	
LOCATION TYPE:	NA		FIELD QC TYPE:	REG	
TOP DEPTH:	↓		SAMPLE USAGE:	INV	↓
BOTTOM DEPTH:	↓	↓	EXCAVATED:		YES / (NO) / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
↓	WSP-LL-H-3	1 LITER POLY	1	NONE	↓	↓

SAMPLE COMMENTS: Sampled 30 ft from running diesel generator

LOCATION COMMENTS: None

## FIELD PARAMETERS:

Sample Time	1209	HH:MM	Dissolved Oxygen	6.47 6.31	Flow (in gpm)	10.34 2.94
Oxidation-Reduction Potential	156.9	185.6	pH	8.46 8.16	Specific Conductance	134.7 174.5
Temperature	22.9		Turbidity	1.82 0.21		

COLLECTED BY (PRINT): D. Jaramillo &amp; T. Vander Vis

RELINQUISHED BY (Printed Name) Tanya Vander Vis (Signature) Tanya Vander Vis	Date/Time 7/13/17 2:32	RECEIVED BY (Printed Name) M. Martin (Signature) M. Martin	Date/Time 7/13/17 2:35
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 07/06/2017

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11313

EVENT NAME: Pajarito (TA-54) MY2017 Q4

SAMPLE ID: CAMO-17-139139

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	7/13/2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1338		MEDIA:	UA	
PRS ID:	NA		SAMPLE TECH CODE:	7/13/17 GSP DC	
LOCATION ID:	R-37 S2		FIELD PREP:	UF	
LOCATION TYPE:	NA		FIELD QC TYPE:	FTB	
TOP DEPTH:			SAMPLE USAGE:	QC	
BOTTOM DEPTH:			EXCAVATED:		YES (NO) / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	1/2	7/12/17 HCL	Y	NA

SAMPLE COMMENTS: None

LOCATION COMMENTS: None

## FIELD PARAMETERS:

Sample Time 1338 HH:MM Dissolved Oxygen 6.47 Flow (in gpm) 10.34  
 Oxidation-Reduction Potential 156.9 pH 8.26 Specific Conductance 134.7  
 Temperature 22.0 Turbidity 1.82

KT 7/13/17

COLLECTED BY (PRINT): D. Jaramillo + T. Vander Vis

RELINQUISHED BY (Printed Name) Tanya Vander Vis (Signature) <i>Tanya Vander Vis</i>	Date/Time 7/13/17 2:38	RECEIVED BY (Printed Name) M. Montoya (Signature) <i>M. Montoya</i>	Date/Time 7/13/17 2:35
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 07/06/2017



## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11313

EVENT NAME: Pajarito (TA-54) MY2017 Q4

SAMPLE ID: CAMO-17-139141

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	7/13/2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1209		MEDIA:	UA	
PRS ID:	NA		SAMPLE TECH CODE:	DC	
LOCATION ID:	R-55 S1		FIELD PREP:	UF	
LOCATION TYPE:	NA		FIELD QC TYPE:	FTB	
TOP DEPTH:			SAMPLE USAGE:	QC	
BOTTOM DEPTH:			EXCAVATED:		YES <input checked="" type="radio"/> NO <input type="radio"/> NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8260B- VOA	40 ML SEPTUM AMBER GLASS	7	KT 7/13/17 HCL	Y	NA

SAMPLE COMMENTS:

None

LOCATION COMMENTS:

None

FIELD PARAMETERS:

Sample Time \_\_\_\_\_ HH:MM \_\_\_\_\_ Dissolved Oxygen \_\_\_\_\_ Flow (in gpm) \_\_\_\_\_  
 Oxidation-Reduction Potential \_\_\_\_\_ pH \_\_\_\_\_ Specific Conductance \_\_\_\_\_  
 Temperature \_\_\_\_\_ Turbidity \_\_\_\_\_

KT 7/13/17

COLLECTED BY (PRINT):

D. Jaramillo &amp; T. Vandervis

RELINQUISHED BY (Printed Name) Tanya Vandervis (Signature) <i>Tanya Vandervis</i>	Date/Time 7/13/17 2:35	RECEIVED BY (Printed Name) M. Montoya (Signature) <i>M. Montoya</i>	Date/Time 7/13/17 2:35
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 07/06/2017

## DATA VALIDATION REPORT

Chain Of Custody No. 2017-1964

### 1. Distribution Of Samples In EDD.

SDG	Analytical Method	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks
427987	EPA:170.0	2		2		
427987	SW-846:8260B	2		2		

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
427987	EPA:170.0	NA	NA	2		2															
427987	SW-846:8260B	1683867	1683867	2		2			2					4							

### 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	CAMO-17-139132	427987001	REG	1	0	0	0
EPA:170.0	VOC	CAMO-17-139134	427987003	REG	1	0	0	0
EPA:170.0	VOC	CAMO-17-139139	427987002	FTB	1	0	0	0
EPA:170.0	VOC	CAMO-17-139141	427987004	FTB	1	0	0	0
SW-846:8260B	VOC	CAMO-17-139132	427987001	REG	80	3	0	0
SW-846:8260B	VOC	CAMO-17-139134	427987003	REG	80	3	0	0
SW-846:8260B	VOC	CAMO-17-139139	427987002	FTB	80	3	0	0
SW-846:8260B	VOC	CAMO-17-139141	427987004	FTB	80	3	0	0
SW-846:8260B	VOC	LCS	1203834857	LCS	0	3	70	0
SW-846:8260B	VOC	LCS	1203834858	LCS	0	3	10	0
SW-846:8260B	VOC	LCS	1203835236	LCS	0	3	70	0
SW-846:8260B	VOC	LCS	1203835237	LCS	0	3	10	0
SW-846:8260B	VOC	MB	1203834856	MB	80	3	0	0
SW-846:8260B	VOC	MB	1203835235	MB	80	3	0	0

### 3. Are any analytes missing?

No.

## DATA VALIDATION REPORT

4. Were any holding times exceeded?

No.

5. Any contaminants in blanks?

						Blank Lab Result	Lab Qualifier	Blank Lab Units	Blank Lab Detection Limit
Blank FS ID	Blank Lab Sample	Blank Type	Analytical Method	Sample	Parameter Name				
CAMO-17-139139	427987002	TRIP BLANK	EPA:170.0	W	Temperature	2		Deg C	
CAMO-17-139141	427987004	TRIP BLANK	EPA:170.0	W	Temperature	2		Deg C	

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?

No.

9. Any Field Duplicate RPDs outside the desired limits?

No.



## DATA VALIDATION REPORT

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**

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.

14. Usable Result Count.

Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total Records
CAMO-17-139132	R-37 S2	REG	EPA:170.0	0	1
CAMO-17-139132	R-37 S2	REG	SW-846:8260B	0	80
CAMO-17-139134	R-55 S1	REG	EPA:170.0	0	1
CAMO-17-139134	R-55 S1	REG	SW-846:8260B	0	80
CAMO-17-139139	R-37 S2	FTB	EPA:170.0	0	1
CAMO-17-139139	R-37 S2	FTB	SW-846:8260B	0	80
CAMO-17-139141	R-55 S1	FTB	EPA:170.0	0	1
CAMO-17-139141	R-55 S1	FTB	SW-846:8260B	0	80

August 10, 2017

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

Ms. Nita Patel  
Los Alamos National Laboratory  
TA-00, SM1237, Rm104C  
Los Alamos, New Mexico 87545

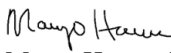
Re: LANL- WQH Water Samples  
Work Order: 427987  
SDG: 2017-1964

Dear Ms. Patel:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the following analytical results for the sample(s) we received on July 15, 2017, and analyzed for 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: 2017-1964  
Enclosures



**ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)**  
**LANL- WQH Water Samples**  
**Work Order #: 427987**  
**SDG: 2017-1964**



## Table of Contents

Case Narrative.....	1
Chain of Custody and Supporting Documentation.....	5
Data Review Qualifier Flag Definition Sheet.....	9
Volatile Analysis.....	12
Case Narrative.....	13
Sample Data Summary.....	18
Quality Control Summary.....	31
Quality Control Data.....	55

# Case Narrative

**Case Narrative for  
ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)  
LANL- WQH Water Samples  
Workorder #: 427987  
SDG # : 2017-1964**

**July 24, 2017**

**Laboratory Identification:**

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

**Summary**

**Sample receipt** The samples arrived at GEL Laboratories LLC, Charleston, South Carolina on July 15, 2017 for analysis. The samples were 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 temperatures were checked, documented, and within specifications. There are no additional comments concerning sample receipt.

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

<b><u>Laboratory ID</u></b>	<b><u>Client ID</u></b>
427987001	CAMO-17-139132
427987002	CAMO-17-139139
427987003	CAMO-17-139134
427987004	CAMO-17-139141

**Case Narrative**

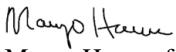
Sample analyses were conducted using methodology as outlined in GEL Laboratories, LLC (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

**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: 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 24 July 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**





**SAMPLE RECEIPT & REVIEW FORM**

Client: <b>LANL / ESHL</b>		SDG/AR/COC/Work Order: <b>407987</b>	
Received By: <b>STACY BOONE</b>		Date Received: <b>JULY 15, 2017</b>	
Carrier and Tracking Number		Circle Applicable: FedEx Express   FedEx Ground   UPS   Field Services   Courier   Other	
		<b>5908 1782 3470 - 5'c</b> <b>5908 1782 3458 - 4'c</b> <b>5908 1782 3447 - 5'c</b> <b>5908 1782 3469 - 2'c</b>	
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 type="checkbox"/> No <input checked="" type="checkbox"/>	Hazard Class Shipped: _____ UN#: _____	
COC/Samples marked or classified as radioactive?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0</u> CPM / mR/Hr Classified as: Rad 1   Rad 2   Rad 3	
Is package, COC, and/or Samples marked HAZ?	Yes <input type="checkbox"/> No <input checked="" 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   Ice Packs   Dry ice   None   Other: _____ *all temperatures are recorded in Celsius      TEMP: _____
4 Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <u>1R3-17</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 <input checked="" type="checkbox"/> No _____ N/A Sample ID's and containers affected: _____
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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected: _____
12 Are sample containers identifiable as GEL provided?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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):

PM (or PMA) review: Initials VSJ Date 7/17/17 Page 1 of 1

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: 14JUL17  
ACTWGT: 46.0 LB MAN  
CAD: 0014176/CAFE2916

BILL SENDER

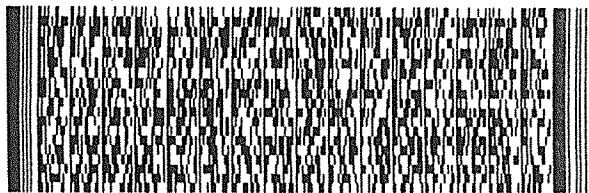
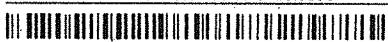
TO VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

40c

CHARLESTON SC 29407

(843) 656-8171

REF: 21PD0ASRD06BDCMCA



FedEx  
Express



115131503130110

2 of 3

MPS# 5908 1782 3458  
0263

Mstr# 5908 1782 3447

0201

SATURDAY 12:00P  
PRIORITY OVERNIGHT

XO RBWA

29407  
SC-US CHS



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: 14JUL17  
ACTWGT: 64.0 LB MAN  
CAD: 0014176/CAFE2916

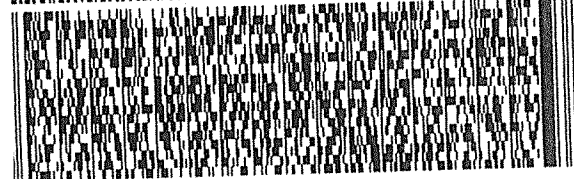
BILL SENDER

TO VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 656-8171

REF: 21PD0ASRD06BDCMCA



FedEx  
Express



115131503130110

1 of 3

TRK# 5908 1782 3447  
0201

## MASTER ##

XO RBWA

5c

29407  
SC-US CHS

SATURDAY 12:00P  
PRIORITY OVERNIGHT

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: 14JUL17  
ACTWGT: 37.0 LB MAN  
CAD: 0014176/CAFE2916

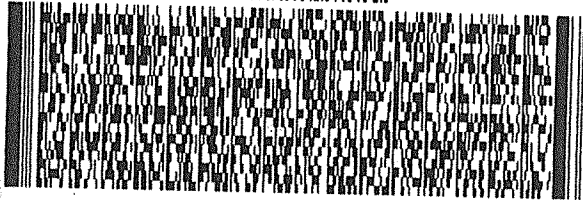
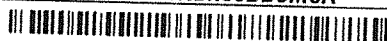
BILL SENDER

TO VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 656-8171

REF: 21PD0ASRD06BDCMCA



FedEx  
Express



115131503130110

3 of 3

MPS# 5908 1782 3469  
0263

Mstr# 5908 1782 3447

0201

SATURDAY 12:00P  
PRIORITY OVERNIGHT

XO RBWA

2c

29407  
SC-US CHS



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: 14JUL17  
ACTWGT: 53.0 LB MAN  
CAD: 0014176/CAFE2916

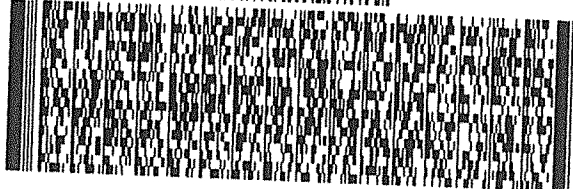
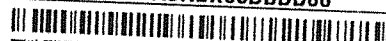
BILL SENDER

TO VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 656-8171

REF: 21PD0ASRD06BDBD00



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Express



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# **Data Review Qualifier Flag Definition Sheet**

## Data Review Qualifier Definitions

Qualifier	Explanation
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*	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 #: 2017-1964  
Work Order #: 427987**

**Method/Analysis Information**

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

Analytical Method: SW-846:8260B

Analytical Batch Number: 1683867

**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>
427987001	CAMO-17-139132
427987002	CAMO-17-139139
427987003	CAMO-17-139134
427987004	CAMO-17-139141
1203834856	Method Blank (MB)
1203834857	Laboratory Control Sample (LCS)
1203834858	Laboratory Control Sample (LCS)
1203834859	427760001(CAPA-17-139151) Post Spike (PS)
1203834860	427760001(CAPA-17-139151) Post Spike (PS)
1203834861	427760001(CAPA-17-139151) Post Spike Duplicate (PSD)
1203834862	427760001(CAPA-17-139151) Post Spike Duplicate (PSD)
1203835235	Method Blank (MB)
1203835236	Laboratory Control Sample (LCS)
1203835237	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**

The blanks analyzed with this SDG met the acceptance criteria.

##### **Surrogate Recoveries**

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

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

The LCS spike recoveries met the acceptance limits.

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

Sample 427760001 (CAPA-17-139151) 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 RPD between the matrix spike pair (See Below) were not all within the acceptance limits. However, the spike recoveries passed. The unacceptable RPD may be attributed to matrix interference and/or sample non-homogeneity.

Sample	Analyte	Value
1203834859PS and 1203834861PSD (CAPA-17-139151)	1,2,3-Trichlorobenzene	42* (0%-20%)
	1,2,4-Trichlorobenzene	30* (0%-20%)
	Hexachlorobutadiene	56* (0%-20%)
	Naphthalene	24* (0%-20%)

##### **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****Manual Integrations**

Some initial calibration standards, continuing calibration standards, and/or sample 1203834857 (LCS) may have required manual integrations due to software limitations.

**TIC Comment**

Tentatively identified compounds (TIC) may be requested for samples in this delivery group/work order. Please note that non-requested calibrated analytes detected in a client sample may be reported on the Form 1/Certificate of Analysis as TICs. TIC data, if requested, were included on the Sample Data Summary (Form 1) and included with the sample raw data.

**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>
VOA1.I	Hewlett Packard 5973 GC/MS w/ OI 4560/Archon Autosampler	HP6890/HP5973	RTX-624	Restek, 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: 2017-1964 GEL Work Order: 427987

#### 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
- 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: 27 JUL 2017

Title: Data Validator

# **Sample Data Summary**

**Volatile  
Certificate of Analysis  
Sample Summary**

SDG Number: 2017-1964

Lab Sample ID: 427987001

Date Collected: 07/13/2017 13:38

Date Received: 07/15/2017 09:00

Matrix: W

Client ID: CAMO-17-139132

Batch ID: 1683867

Run Date: 07/21/2017 02:22

Prep Date: 07/21/2017 02:22

Data File: 072017V1\1R439.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA1.I

Analyst: PXY1

Column: DB-624

Project: ESHL00114

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: 2017-1964

Lab Sample ID: 427987001

Date Collected: 07/13/2017 13:38

Date Received: 07/15/2017 09:00

Matrix: W

Client: ARSL004

Project: ESHL00114

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1683867

Inst: VOA1.I

Dilution: 1

Run Date: 07/21/2017 02:22

Analyst: PXY1

Purge Vol: 5 mL

Prep Date: 07/21/2017 02:22

Data File: 072017V1\1R439.D

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	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**

SDG Number: 2017-1964

Lab Sample ID: 427987001

Date Collected: 07/13/2017 13:38

Date Received: 07/15/2017 09:00

Matrix: W

Client: ARSL004

Method: SW-846:8260B

Project: ESHL00114

SOP Ref: GL-OA-E-038

Batch ID: 1683867

Inst: VOA1.I

Dilution: 1

Run Date: 07/21/2017 02:22

Analyst: PXY1

Purge Vol: 5 mL

Prep Date: 07/21/2017 02:22

Data File: 072017V1\1R439.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	54.0	50.0	ug/L 108	(71%-134%)
Bromofluorobenzene	55.6	50.0	ug/L 111	(70%-131%)
Toluene-d8	49.1	50.0	ug/L 98	(74%-124%)

**Tentatively Identified Compound Summary**

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown siloxane	14.549	6.73	ug/L	0	J

**Volatile  
Certificate of Analysis  
Sample Summary**

SDG Number: 2017-1964

Lab Sample ID: 427987002

Date Collected: 07/13/2017 13:38

Date Received: 07/15/2017 09:00

Matrix: W

Client: ARSL004

Project: ESHL00114

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1683867

Inst: VOA1.I

Dilution: 1

Run Date: 07/21/2017 02:51

Analyst: PXY1

Purge Vol: 5 mL

Prep Date: 07/21/2017 02:51

Data File: 072017V1\1R440.D

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: 2017-1964

Lab Sample ID: 427987002

Date Collected: 07/13/2017 13:38

Date Received: 07/15/2017 09:00

Matrix: W

Client: ARSL004

Project: ESHL00114

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1683867

Inst: VOA1.I

Dilution: 1

Run Date: 07/21/2017 02:51

Analyst: PXY1

Purge Vol: 5 mL

Prep Date: 07/21/2017 02:51

Data File: 072017V1\1R440.D

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	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**

SDG Number: 2017-1964

Lab Sample ID: 427987002

Date Collected: 07/13/2017 13:38

Date Received: 07/15/2017 09:00

Matrix: W

Client: ARSL004

Method: SW-846:8260B

Project: ESHL00114

SOP Ref: GL-OA-E-038

Batch ID: 1683867

Inst: VOA1.I

Dilution: 1

Run Date: 07/21/2017 02:51

Analyst: PXY1

Purge Vol: 5 mL

Prep Date: 07/21/2017 02:51

Data File: 072017V1\1R440.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	53.8	50.0	ug/L 108	(71%-134%)
Bromofluorobenzene	55.3	50.0	ug/L 111	(70%-131%)
Toluene-d8	48.6	50.0	ug/L 97	(74%-124%)

**Tentatively Identified Compound Summary**

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown siloxane	14.549	7.85	ug/L	0	J

**Volatile  
Certificate of Analysis  
Sample Summary**

SDG Number: 2017-1964

Lab Sample ID: 427987003

Date Collected: 07/13/2017 12:09

Date Received: 07/15/2017 09:00

Matrix: W

Client: ARSL004

Project: ESHL00114

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1683867

Inst: VOA1.I

Dilution: 1

Run Date: 07/21/2017 03:20

Analyst: PXY1

Purge Vol: 5 mL

Prep Date: 07/21/2017 03:20

Data File: 072017V1\1R441.D

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: 2017-1964

Lab Sample ID: 427987003

Date Collected: 07/13/2017 12:09

Date Received: 07/15/2017 09:00

Matrix: W

Client: ARSL004

Project: ESHL00114

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1683867

Inst: VOA1.I

Dilution: 1

Run Date: 07/21/2017 03:20

Analyst: PXY1

Purge Vol: 5 mL

Prep Date: 07/21/2017 03:20

Data File: 072017V1\1R441.D

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	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**

SDG Number: 2017-1964

Lab Sample ID: 427987003

Date Collected: 07/13/2017 12:09

Date Received: 07/15/2017 09:00

Matrix: W

Client: ARSL004

Method: SW-846:8260B

Project: ESHL00114

SOP Ref: GL-OA-E-038

Batch ID: 1683867

Inst: VOA1.I

Dilution: 1

Run Date: 07/21/2017 03:20

Analyst: PXY1

Purge Vol: 5 mL

Prep Date: 07/21/2017 03:20

Data File: 072017V1\1R441.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	55.5	50.0	ug/L 111	(71%-134%)
Bromofluorobenzene	56.4	50.0	ug/L 113	(70%-131%)
Toluene-d8	48.5	50.0	ug/L 97	(74%-124%)

**Tentatively Identified Compound Summary**

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown siloxane	14.549	6.13	ug/L	0	J

**Volatile  
Certificate of Analysis  
Sample Summary**

SDG Number: 2017-1964

Lab Sample ID: 427987004

Date Collected: 07/13/2017 12:09

Date Received: 07/15/2017 09:00

Matrix: W

Client: ARSL004

Project: ESHL00114

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1683867

Inst: VOA1.I

Dilution: 1

Run Date: 07/21/2017 03:49

Analyst: PXY1

Purge Vol: 5 mL

Prep Date: 07/21/2017 03:49

Data File: 072017V1\1R442.D

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: 2017-1964

Lab Sample ID: 427987004

Date Collected: 07/13/2017 12:09

Date Received: 07/15/2017 09:00

Matrix: W

Client: ARSL004

Project: ESHL00114

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1683867

Inst: VOA1.I

Dilution: 1

Run Date: 07/21/2017 03:49

Analyst: PXY1

Purge Vol: 5 mL

Prep Date: 07/21/2017 03:49

Data File: 072017V1\1R442.D

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	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: 2017-1964

Lab Sample ID: 427987004

Date Collected: 07/13/2017 12:09

Date Received: 07/15/2017 09:00

Matrix: W

Client: ARSL004

Method: SW-846:8260B

Project: ESHL00114

Inst: VOA1.I

Analyst: PXY1

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

Prep Date: 07/21/2017 03:49

Data File: 072017V1\1R442.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	55.6	50.0	ug/L 111	(71%-134%)
Bromofluorobenzene	55.2	50.0	ug/L 110	(70%-131%)
Toluene-d8	49.4	50.0	ug/L 99	(74%-124%)

**Tentatively Identified Compound Summary**

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

# **Quality Control Summary**

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

Page 1 of 1

**SDG Number: 2017-1964****Matrix Type: LIQUID**

Sample ID	Client ID	DCED4 %REC	TOL %REC	BFB %REC
1203834857	LCS for batch 1683867	108	97	102
1203834858	LCS for batch 1683867	105	99	103
1203834856	MB for batch 1683867	108	97	109
1203834859	CAPA-17-139151PS	100	97	103
1203834861	CAPA-17-139151PSD	100	98	103
1203834860	CAPA-17-139151PS	98	99	101
1203834862	CAPA-17-139151PSD	95	96	100
1203835236	LCS for batch 1683867	98	98	102
1203835237	LCS for batch 1683867	97	98	104
1203835235	MB for batch 1683867	101	96	106
427987001	CAMO-17-139132	108	98	111
427987002	CAMO-17-139139	108	97	111
427987003	CAMO-17-139134	111	97	113
427987004	CAMO-17-139141	111	99	110

**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 4

SDG Number: 2017-1964

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1683867

Matrix: WATER

Lab Sample ID 1203834857

Instrument: VOA1.I

Analysis Date: 07/20/2017 09:05

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1683867

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	99.4	99	71-127
75-05-8	LCS Acetonitrile	1250	0.0	1120	89	61-125
67-64-1	LCS Acetone	250	0.0	292	117	48-157
74-88-4	LCS Iodomethane	250	0.0	252	101	72-128
75-15-0	LCS Carbon disulfide	250	0.0	242	97	69-138
108-05-4	LCS Vinyl acetate	250	0.0	257	103	67-125
78-93-3	LCS 2-Butanone	250	0.0	259	104	55-138
108-10-1	LCS 4-Methyl-2-pentanone	250	0.0	226	91	66-124
591-78-6	LCS 2-Hexanone	250	0.0	271	108	56-140
75-71-8	LCS Dichlorodifluoromethane	50.0	0.0	48.6	97	40-160
74-87-3	LCS Chloromethane	50.0	0.0	44.4	89	58-135
75-01-4	LCS Vinyl chloride	50.0	0.0	47.4	95	65-137
74-83-9	LCS Bromomethane	50.0	0.0	57.3	115	63-137
75-00-3	LCS Chloroethane	50.0	0.0	47.9	96	69-129
75-69-4	LCS Trichlorofluoromethane	50.0	0.0	54.8	110	69-138
60-29-7	LCS Ethyl ether	50.0	0.0	47.6	95	72-125
75-35-4	LCS 1,1-Dichloroethylene	50.0	0.0	53.8	108	66-126
75-09-2	LCS Methylene chloride	50.0	0.0	46.8	94	68-119
1634-04-4	LCS tert-Butyl methyl ether	50.0	0.0	47.3	95	76-128
156-60-5	LCS trans-1,2-Dichloroethylene	50.0	0.0	53.3	107	71-124
75-34-3	LCS 1,1-Dichloroethane	50.0	0.0	51.9	104	73-123
156-59-2	LCS cis-1,2-Dichloroethylene	50.0	0.0	51.7	103	75-123



Volatile  
Quality Control Summary  
Spike Recovery Report

Page 2 of 4

SDG Number: 2017-1964

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1683867

Matrix: WATER

Lab Sample ID 1203834857

Instrument: VOA1.I

Analysis Date: 07/20/2017 09:05

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1683867

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	55.7	111	72-138
74-97-5	LCS Bromochloromethane	50.0	0.0	50.3	101	76-125
67-66-3	LCS Chloroform	50.0	0.0	52.8	106	76-123
71-55-6	LCS 1,1,1-Trichloroethane	50.0	0.0	54.9	110	74-136
563-58-6	LCS 1,1-Dichloropropene	50.0	0.0	49.9	100	72-129
56-23-5	LCS Carbon tetrachloride	50.0	0.0	57.4	115	72-140
107-06-2	LCS 1,2-Dichloroethane	50.0	0.0	55.2	110	74-122
71-43-2	LCS Benzene	50.0	0.0	48.7	97	72-121
79-01-6	LCS Trichloroethylene	50.0	0.0	52.5	105	74-125
78-87-5	LCS 1,2-Dichloropropane	50.0	0.0	49.0	98	73-121
74-95-3	LCS Dibromomethane	50.0	0.0	51.9	104	78-123
75-27-4	LCS Bromodichloromethane	50.0	0.0	54.8	110	77-131
10061-01-5	LCS cis-1,3-Dichloropropylene	50.0	0.0	50.0	100	78-131
108-88-3	LCS Toluene	50.0	0.0	45.8	92	71-121
10061-02-6	LCS trans-1,3-Dichloropropylene	50.0	0.0	51.5	103	78-131
79-00-5	LCS 1,1,2-Trichloroethane	50.0	0.0	47.9	96	74-118
142-28-9	LCS 1,3-Dichloropropane	50.0	0.0	47.8	96	74-118
127-18-4	LCS Tetrachloroethylene	50.0	0.0	51.5	103	69-129
124-48-1	LCS Dibromochloromethane	50.0	0.0	52.9	106	76-137
106-93-4	LCS 1,2-Dibromoethane	50.0	0.0	49.1	98	78-122
108-90-7	LCS Chlorobenzene	50.0	0.0	48.0	96	74-120
100-41-4	LCS Ethylbenzene	50.0	0.0	48.3	97	73-125

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 3 of 4

SDG Number: 2017-1964

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1683867

Matrix: WATER

Lab Sample ID 1203834857

Instrument: VOA1.I

Analysis Date: 07/20/2017 09:05

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1683867

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	49.8	100	74-126
100-42-5	LCS Styrene	50.0	0.0	49.5	99	72-130
75-25-2	LCS Bromoform	50.0	0.0	51.3	103	72-136
98-82-8	LCS Isopropylbenzene	50.0	0.0	46.9	94	70-130
79-34-5	LCS 1,1,2,2-Tetrachloroethane	50.0	0.0	44.9	90	70-126
96-18-4	LCS 1,2,3-Trichloropropane	50.0	0.0	48.4	97	74-122
108-86-1	LCS Bromobenzene	50.0	0.0	47.1	94	74-120
103-65-1	LCS n-Propylbenzene	50.0	0.0	45.6	91	67-128
108-67-8	LCS 1,3,5-Trimethylbenzene	50.0	0.0	48.1	96	70-129
95-49-8	LCS 2-Chlorotoluene	50.0	0.0	47.3	95	71-124
106-43-4	LCS 4-Chlorotoluene	50.0	0.0	46.8	94	69-125
98-06-6	LCS tert-Butylbenzene	50.0	0.0	49.3	99	72-130
95-63-6	LCS 1,2,4-Trimethylbenzene	50.0	0.0	47.9	96	70-126
135-98-8	LCS sec-Butylbenzene	50.0	0.0	47.7	95	70-131
99-87-6	LCS 4-Isopropyltoluene	50.0	0.0	49.0	98	71-131
541-73-1	LCS 1,3-Dichlorobenzene	50.0	0.0	47.0	94	72-121
106-46-7	LCS 1,4-Dichlorobenzene	50.0	0.0	47.6	95	71-120
104-51-8	LCS n-Butylbenzene	50.0	0.0	47.7	95	68-134
96-12-8	LCS 1,2-Dibromo-3-chloropropane	50.0	0.0	47.6	95	68-141
87-68-3	LCS Hexachlorobutadiene	50.0	0.0	51.5	103	72-136
91-20-3	LCS Naphthalene	50.0	0.0	50.6	101	72-132
87-61-6	LCS 1,2,3-Trichlorobenzene	50.0	0.0	52.6	105	70-130

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 4 of 4

SDG Number: 2017-1964

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1683867

Matrix: WATER

Lab Sample ID 1203834857

Instrument: VOA1.I

Analysis Date: 07/20/2017 09:05

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1683867

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	50.6	101	71-129
630-20-6	LCS 1,1,1,2-Tetrachloroethane	50.0	0.0	53.6	107	79-127
95-50-1	LCS 1,2-Dichlorobenzene	50.0	0.0	46.8	94	74-120
71-36-3	LCS n-Butyl alcohol	5000	0.0	5300	106	63-138

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 1 of 1

SDG Number: 2017-1964

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1683867

Matrix: WATER

Lab Sample ID 1203834858

Instrument: VOA1.I

Analysis Date: 07/20/2017 10:03

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1683867

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	256	103	60-140
76-13-1	LCS Trichlorotrifluoroethane	250	0.0	279	112	61-148
107-05-1	LCS Allyl chloride	250	0.0	248	99	59-125
107-13-1	LCS Acrylonitrile	250	0.0	222	89	65-122
107-12-0	LCS Propionitrile	250	0.0	215	86	64-124
126-98-7	LCS Methacrylonitrile	250	0.0	237	95	64-126
80-62-6	LCS Methyl methacrylate	250	0.0	230	92	69-127
97-63-2	LCS Ethyl methacrylate	250	0.0	231	93	66-130
78-83-1	LCS Isobutyl alcohol	2500	0.0	2270	91	65-135
126-99-8	LCS 2-Chloro-1,3-butadiene	50.0	0.0	49.1	98	66-147

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 1 of 8

SDG Number: 2017-1964

Sample Type: Post Spike

Client ID: CAPA-17-139151PS

Matrix: W

Lab Sample ID 1203834859

Instrument: VOA1.I

Analysis Date: 07/20/2017 18:43

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1683867

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	79.5	79	59-132
75-05-8	PS Acetonitrile	1250	0.00 U	1040	83	56-131
67-64-1	PS Acetone	250	0.00 U	129	52	25-155
74-88-4	PS Iodomethane	250	0.00 U	220	88	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	226	91	48-133
78-93-3	PS 2-Butanone	250	0.00 U	145	58	25-143
108-10-1	PS 4-Methyl-2-pentanone	250	0.00 U	201	80	61-127
591-78-6	PS 2-Hexanone	250	0.00 U	164	66	33-138
75-71-8	PS Dichlorodifluoromethane	50.0	0.00 U	35.6	71	33-164
74-87-3	PS Chloromethane	50.0	0.00 U	38.9	78	53-139
75-01-4	PS Vinyl chloride	50.0	0.00 U	40.3	81	58-140
74-83-9	PS Bromomethane	50.0	0.00 U	45.6	91	59-146
75-00-3	PS Chloroethane	50.0	0.00 U	42.2	84	65-129
75-69-4	PS Trichlorofluoromethane	50.0	0.00 U	40.9	82	65-141
60-29-7	PS Ethyl ether	50.0	0.00 U	46.1	92	69-127
75-35-4	PS 1,1-Dichloroethylene	50.0	0.00 U	41.5	83	59-130
75-09-2	PS Methylene chloride	50.0	0.00 U	43.0	86	62-123
1634-04-4	PS tert-Butyl methyl ether	50.0	0.00 U	41.8	84	69-132
156-60-5	PS trans-1,2-Dichloroethylene	50.0	0.00 U	44.1	88	65-127
75-34-3	PS 1,1-Dichloroethane	50.0	0.00 U	45.0	90	67-127
156-59-2	PS cis-1,2-Dichloroethylene	50.0	0.00 U	45.8	92	69-127

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 2 of 8

SDG Number: 2017-1964

Sample Type: Post Spike

Client ID: CAPA-17-139151PS

Matrix: W

Lab Sample ID 1203834859

Instrument: VOA1.I

Analysis Date: 07/20/2017 18:43

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1683867

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	41.9	84	66-137
74-97-5	PS Bromochloromethane	50.0	0.00 U	46.2	92	71-130
67-66-3	PS Chloroform	50.0	0.00 U	45.5	91	71-129
71-55-6	PS 1,1,1-Trichloroethane	50.0	0.00 U	42.1	84	69-139
563-58-6	PS 1,1-Dichloropropene	50.0	0.00 U	39.5	79	67-130
56-23-5	PS Carbon tetrachloride	50.0	0.00 U	42.5	85	66-143
107-06-2	PS 1,2-Dichloroethane	50.0	0.00 U	47.2	94	69-130
71-43-2	PS Benzene	50.0	0.00 U	42.5	85	66-125
79-01-6	PS Trichloroethylene	50.0	0.00 U	42.8	86	65-131
78-87-5	PS 1,2-Dichloropropane	50.0	0.00 U	44.6	89	67-127
74-95-3	PS Dibromomethane	50.0	0.00 U	45.8	92	72-129
75-27-4	PS Bromodichloromethane	50.0	0.00 U	46.6	93	70-138
10061-01-5	PS cis-1,3-Dichloropropylene	50.0	0.00 U	44.0	88	70-134
108-88-3	PS Toluene	50.0	0.00 U	40.0	80	60-126
10061-02-6	PS trans-1,3-Dichloropropylene	50.0	0.00 U	45.7	91	69-135
79-00-5	PS 1,1,2-Trichloroethane	50.0	0.00 U	44.8	90	66-125
142-28-9	PS 1,3-Dichloropropane	50.0	0.00 U	43.9	88	67-124
127-18-4	PS Tetrachloroethylene	50.0	0.00 U	40.3	81	60-130
124-48-1	PS Dibromochloromethane	50.0	0.00 U	47.4	95	68-143
106-93-4	PS 1,2-Dibromoethane	50.0	0.00 U	45.6	91	71-127
108-90-7	PS Chlorobenzene	50.0	0.00 U	41.7	83	64-124
100-41-4	PS Ethylbenzene	50.0	0.00 U	39.6	79	61-130

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 3 of 8

SDG Number: 2017-1964

Sample Type: Post Spike

Client ID: CAPA-17-139151PS

Matrix: W

Lab Sample ID 1203834859

Instrument: VOA1.I

Analysis Date: 07/20/2017 18:43

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1683867

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	41.0	82	62-131
100-42-5	PS Styrene	50.0	0.00 U	41.8	84	59-135
75-25-2	PS Bromoform	50.0	0.00 U	47.4	95	64-138
98-82-8	PS Isopropylbenzene	50.0	0.00 U	38.3	77	55-133
79-34-5	PS 1,1,2,2-Tetrachloroethane	50.0	0.00 U	42.7	85	62-129
96-18-4	PS 1,2,3-Trichloropropane	50.0	0.00 U	44.9	90	70-124
108-86-1	PS Bromobenzene	50.0	0.00 U	41.8	84	62-124
103-65-1	PS n-Propylbenzene	50.0	0.00 U	36.4	73	50-133
108-67-8	PS 1,3,5-Trimethylbenzene	50.0	0.00 U	38.6	77	53-135
95-49-8	PS 2-Chlorotoluene	50.0	0.00 U	39.4	79	56-128
106-43-4	PS 4-Chlorotoluene	50.0	0.00 U	37.8	76	53-130
98-06-6	PS tert-Butylbenzene	50.0	0.00 U	38.9	78	55-135
95-63-6	PS 1,2,4-Trimethylbenzene	50.0	0.00 U	38.3	77	53-132
135-98-8	PS sec-Butylbenzene	50.0	0.00 U	36.5	73	50-138
99-87-6	PS 4-Isopropyltoluene	50.0	0.00 U	36.2	72	49-138
541-73-1	PS 1,3-Dichlorobenzene	50.0	0.00 U	38.4	77	56-126
106-46-7	PS 1,4-Dichlorobenzene	50.0	0.00 U	38.3	77	55-125
104-51-8	PS n-Butylbenzene	50.0	0.00 U	33.5	67	43-142
96-12-8	PS 1,2-Dibromo-3-chloropropane	50.0	0.00 U	39.9	80	62-141
87-68-3	PS Hexachlorobutadiene	50.0	0.00 U	23.8	48	40-147
91-20-3	PS Naphthalene	50.0	0.00 U	37.3	75	62-134
87-61-6	PS 1,2,3-Trichlorobenzene	50.0	0.00 U	30.9	62	52-135

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 4 of 8

SDG Number: 2017-1964

Sample Type: Post Spike

Client ID: CAPA-17-139151PS

Matrix: W

Lab Sample ID 1203834859

Instrument: VOA1.I

Analysis Date: 07/20/2017 18:43

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1683867

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	32.6	65	50-133
630-20-6	PS 1,1,1,2-Tetrachloroethane	50.0	0.00 U	45.7	91	71-133
95-50-1	PS 1,2-Dichlorobenzene	50.0	0.00 U	39.6	79	60-125
71-36-3	PS n-Butyl alcohol	5000	0.00 U	4580	92	60-140



Volatile  
Quality Control Summary  
Spike Recovery Report

Page 5 of 8

SDG Number: 2017-1964

Sample Type: Post Spike Duplicate

Client ID: CAPA-17-139151PSD

Matrix: W

Lab Sample ID 1203834861

Instrument: VOA1.I

Analysis Date: 07/20/2017 19:12

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1683867

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 86.8	87	59-132	9	0-20
75-05-8	PSD Acetonitrile	1250	0.00	U 1040	83	56-131	0	0-20
67-64-1	PSD Acetone	250	0.00	U 130	52	25-155	0	0-20
74-88-4	PSD Iodomethane	250	0.00	U 225	90	66-133	2	0-20
75-15-0	PSD Carbon disulfide	250	0.00	U 206	82	61-141	3	0-20
108-05-4	PSD Vinyl acetate	250	0.00	U 230	92	48-133	1	0-20
78-93-3	PSD 2-Butanone	250	0.00	U 148	59	25-143	1	0-20
108-10-1	PSD 4-Methyl-2-pentanone	250	0.00	U 205	82	61-127	2	0-20
591-78-6	PSD 2-Hexanone	250	0.00	U 166	66	33-138	1	0-20
75-71-8	PSD Dichlorodifluoromethane	50.0	0.00	U 34.7	69	33-164	2	0-20
74-87-3	PSD Chloromethane	50.0	0.00	U 38.8	78	53-139	0	0-20
75-01-4	PSD Vinyl chloride	50.0	0.00	U 39.5	79	58-140	2	0-20
74-83-9	PSD Bromomethane	50.0	0.00	U 46.3	93	59-146	2	0-20
75-00-3	PSD Chloroethane	50.0	0.00	U 43.1	86	65-129	2	0-20
75-69-4	PSD Trichlorofluoromethane	50.0	0.00	U 41.9	84	65-141	3	0-20
60-29-7	PSD Ethyl ether	50.0	0.00	U 47.2	94	69-127	2	0-20
75-35-4	PSD 1,1-Dichloroethylene	50.0	0.00	U 43.1	86	59-130	4	0-20
75-09-2	PSD Methylene chloride	50.0	0.00	U 44.6	89	62-123	4	0-20
1634-04-4	PSD tert-Butyl methyl ether	50.0	0.00	U 43.5	87	69-132	4	0-20
156-60-5	PSD trans-1,2-Dichloroethylene	50.0	0.00	U 45.6	91	65-127	3	0-20
75-34-3	PSD 1,1-Dichloroethane	50.0	0.00	U 46.0	92	67-127	2	0-20
156-59-2	PSD cis-1,2-Dichloroethylene	50.0	0.00	U 47.2	94	69-127	3	0-20

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 6 of 8

SDG Number: 2017-1964

Sample Type: Post Spike Duplicate

Client ID: CAPA-17-139151PSD

Matrix: W

Lab Sample ID 1203834861

Instrument: VOA1.I

Analysis Date: 07/20/2017 19:12

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1683867

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 42.7	85	66-137	2	0-20
74-97-5	PSD Bromochloromethane	50.0	0.00	U 47.5	95	71-130	3	0-20
67-66-3	PSD Chloroform	50.0	0.00	U 46.6	93	71-129	2	0-20
71-55-6	PSD 1,1,1-Trichloroethane	50.0	0.00	U 43.3	87	69-139	3	0-20
563-58-6	PSD 1,1-Dichloropropene	50.0	0.00	U 41.7	83	67-130	5	0-20
56-23-5	PSD Carbon tetrachloride	50.0	0.00	U 44.5	89	66-143	5	0-20
107-06-2	PSD 1,2-Dichloroethane	50.0	0.00	U 48.7	97	69-130	3	0-20
71-43-2	PSD Benzene	50.0	0.00	U 44.1	88	66-125	4	0-20
79-01-6	PSD Trichloroethylene	50.0	0.00	U 44.9	90	65-131	5	0-20
78-87-5	PSD 1,2-Dichloropropane	50.0	0.00	U 45.3	91	67-127	2	0-20
74-95-3	PSD Dibromomethane	50.0	0.00	U 47.8	96	72-129	4	0-20
75-27-4	PSD Bromodichloromethane	50.0	0.00	U 48.9	98	70-138	5	0-20
10061-01-5	PSD cis-1,3-Dichloropropylene	50.0	0.00	U 45.7	91	70-134	4	0-20
108-88-3	PSD Toluene	50.0	0.00	U 41.5	83	60-126	4	0-20
10061-02-6	PSD trans-1,3-Dichloropropylene	50.0	0.00	U 47.4	95	69-135	4	0-20
79-00-5	PSD 1,1,2-Trichloroethane	50.0	0.00	U 46.1	92	66-125	3	0-20
142-28-9	PSD 1,3-Dichloropropane	50.0	0.00	U 45.3	91	67-124	3	0-20
127-18-4	PSD Tetrachloroethylene	50.0	0.00	U 43.5	87	60-130	8	0-20
124-48-1	PSD Dibromochloromethane	50.0	0.00	U 49.8	100	68-143	5	0-20
106-93-4	PSD 1,2-Dibromoethane	50.0	0.00	U 47.1	94	71-127	3	0-20
108-90-7	PSD Chlorobenzene	50.0	0.00	U 44.8	90	64-124	7	0-20
100-41-4	PSD Ethylbenzene	50.0	0.00	U 42.6	85	61-130	7	0-20

Volatile  
Quality Control Summary  
Spike Recovery Report

SDG Number: 2017-1964

Sample Type: Post Spike Duplicate

Client ID: CAPA-17-139151PSD

Matrix: W

Lab Sample ID 1203834861

Instrument: VOA1.I

Analysis Date: 07/20/2017 19:12

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1683867

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	44.3	89	62-131	8	0-20
100-42-5	PSD Styrene	50.0	0.00 U	45.2	90	59-135	8	0-20
75-25-2	PSD Bromoform	50.0	0.00 U	49.3	99	64-138	4	0-20
98-82-8	PSD Isopropylbenzene	50.0	0.00 U	42.1	84	55-133	9	0-20
79-34-5	PSD 1,1,2,2-Tetrachloroethane	50.0	0.00 U	44.1	88	62-129	3	0-20
96-18-4	PSD 1,2,3-Trichloropropane	50.0	0.00 U	47.3	95	70-124	5	0-20
108-86-1	PSD Bromobenzene	50.0	0.00 U	45.3	91	62-124	8	0-20
103-65-1	PSD n-Propylbenzene	50.0	0.00 U	41.0	82	50-133	12	0-20
108-67-8	PSD 1,3,5-Trimethylbenzene	50.0	0.00 U	43.3	87	53-135	12	0-20
95-49-8	PSD 2-Chlorotoluene	50.0	0.00 U	44.4	89	56-128	12	0-20
106-43-4	PSD 4-Chlorotoluene	50.0	0.00 U	43.1	86	53-130	13	0-20
98-06-6	PSD tert-Butylbenzene	50.0	0.00 U	44.3	89	55-135	13	0-20
95-63-6	PSD 1,2,4-Trimethylbenzene	50.0	0.00 U	43.5	87	53-132	13	0-20
135-98-8	PSD sec-Butylbenzene	50.0	0.00 U	42.2	84	50-138	14	0-20
99-87-6	PSD 4-Isopropyltoluene	50.0	0.00 U	43.1	86	49-138	17	0-20
541-73-1	PSD 1,3-Dichlorobenzene	50.0	0.00 U	43.0	86	56-126	11	0-20
106-46-7	PSD 1,4-Dichlorobenzene	50.0	0.00 U	44.1	88	55-125	14	0-20
104-51-8	PSD n-Butylbenzene	50.0	0.00 U	41.1	82	43-142	20	0-20
96-12-8	PSD 1,2-Dibromo-3-chloropropane	50.0	0.00 U	43.6	87	62-141	9	0-20
87-68-3	PSD Hexachlorobutadiene	50.0	0.00 U	42.4	85	40-147	56 *	0-20
91-20-3	PSD Naphthalene	50.0	0.00 U	47.6	95	62-134	24 *	0-20
87-61-6	PSD 1,2,3-Trichlorobenzene	50.0	0.00 U	47.1	94	52-135	42 *	0-20

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 8 of 8

SDG Number: 2017-1964

Sample Type: Post Spike Duplicate

Client ID: CAPA-17-139151PSD

Matrix: W

Lab Sample ID 1203834861

Instrument: VOA1.I

Analysis Date: 07/20/2017 19:12

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1683867

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	44.1	88	50-133	30 *	0-20
630-20-6	PSD 1,1,1,2-Tetrachloroethane	50.0	0.00 U	48.8	98	71-133	7	0-20
95-50-1	PSD 1,2-Dichlorobenzene	50.0	0.00 U	44.0	88	60-125	11	0-20
71-36-3	PSD n-Butyl alcohol	5000	0.00 U	4520	90	60-140	1	0-20

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 1 of 2

SDG Number: 2017-1964

Sample Type: Post Spike

Client ID: CAPA-17-139151PS

Matrix: W

Lab Sample ID 1203834860

Instrument: VOA1.I

Analysis Date: 07/20/2017 19:41

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1683867

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	258	103	49-141
76-13-1	PS Trichlorotrifluoroethane	250	0.00 U	237	95	57-149
107-05-1	PS Allyl chloride	250	0.00 U	236	95	54-128
107-13-1	PS Acrylonitrile	250	0.00 U	234	93	59-129
107-12-0	PS Propionitrile	250	0.00 U	234	93	58-131
126-98-7	PS Methacrylonitrile	250	0.00 U	241	96	59-134
80-62-6	PS Methyl methacrylate	250	0.00 U	237	95	62-135
97-63-2	PS Ethyl methacrylate	250	0.00 U	234	94	60-136
78-83-1	PS Isobutyl alcohol	2500	0.00 U	2380	95	60-143
126-99-8	PS 2-Chloro-1,3-butadiene	50.0	0.00 U	42.1	84	63-146

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 2 of 2

SDG Number: 2017-1964

Sample Type: Post Spike Duplicate

Client ID: CAPA-17-139151PSD

Matrix: W

Lab Sample ID 1203834862

Instrument: VOA1.I

Analysis Date: 07/20/2017 20:10

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1683867

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	243	97	49-141	6	0-20
76-13-1	PSD Trichlorotrifluoroethane	250	0.00 U	230	92	57-149	3	0-20
107-05-1	PSD Allyl chloride	250	0.00 U	233	93	54-128	1	0-20
107-13-1	PSD Acrylonitrile	250	0.00 U	219	88	59-129	6	0-20
107-12-0	PSD Propionitrile	250	0.00 U	214	86	58-131	9	0-20
126-98-7	PSD Methacrylonitrile	250	0.00 U	227	91	59-134	6	0-20
80-62-6	PSD Methyl methacrylate	250	0.00 U	225	90	62-135	5	0-20
97-63-2	PSD Ethyl methacrylate	250	0.00 U	223	89	60-136	5	0-20
78-83-1	PSD Isobutyl alcohol	2500	0.00 U	2160	86	60-143	10	0-20
126-99-8	PSD 2-Chloro-1,3-butadiene	50.0	0.00 U	41.8	84	63-146	1	0-20

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 1 of 4

SDG Number: 2017-1964

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1683867

Matrix: WATER

Lab Sample ID 1203835236

Instrument: VOA1.I

Analysis Date: 07/20/2017 21:32

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1683867

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	80.1	80	71-127
75-05-8	LCS Acetonitrile	1250	0.0	978	78	61-125
67-64-1	LCS Acetone	250	0.0	175	70	48-157
74-88-4	LCS Iodomethane	250	0.0	207	83	72-128
75-15-0	LCS Carbon disulfide	250	0.0	193	77	69-138
108-05-4	LCS Vinyl acetate	250	0.0	268	107	67-125
78-93-3	LCS 2-Butanone	250	0.0	168	67	55-138
108-10-1	LCS 4-Methyl-2-pentanone	250	0.0	184	73	66-124
591-78-6	LCS 2-Hexanone	250	0.0	167	67	56-140
75-71-8	LCS Dichlorodifluoromethane	50.0	0.0	34.2	68	40-160
74-87-3	LCS Chloromethane	50.0	0.0	39.7	79	58-135
75-01-4	LCS Vinyl chloride	50.0	0.0	42.0	84	65-137
74-83-9	LCS Bromomethane	50.0	0.0	50.8	102	63-137
75-00-3	LCS Chloroethane	50.0	0.0	46.5	93	69-129
75-69-4	LCS Trichlorofluoromethane	50.0	0.0	45.1	90	69-138
60-29-7	LCS Ethyl ether	50.0	0.0	50.7	101	72-125
75-35-4	LCS 1,1-Dichloroethylene	50.0	0.0	40.1	80	66-126
75-09-2	LCS Methylene chloride	50.0	0.0	40.9	82	68-119
1634-04-4	LCS tert-Butyl methyl ether	50.0	0.0	39.5	79	76-128
156-60-5	LCS trans-1,2-Dichloroethylene	50.0	0.0	42.0	84	71-124
75-34-3	LCS 1,1-Dichloroethane	50.0	0.0	42.7	85	73-123
156-59-2	LCS cis-1,2-Dichloroethylene	50.0	0.0	43.8	88	75-123

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 2 of 4

SDG Number: 2017-1964

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1683867

Matrix: WATER

Lab Sample ID 1203835236

Instrument: VOA1.I

Analysis Date: 07/20/2017 21:32

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1683867

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	39.2	78	72-138
74-97-5	LCS Bromochloromethane	50.0	0.0	44.2	88	76-125
67-66-3	LCS Chloroform	50.0	0.0	42.5	85	76-123
71-55-6	LCS 1,1,1-Trichloroethane	50.0	0.0	40.3	81	74-136
563-58-6	LCS 1,1-Dichloropropene	50.0	0.0	38.4	77	72-129
56-23-5	LCS Carbon tetrachloride	50.0	0.0	40.7	81	72-140
107-06-2	LCS 1,2-Dichloroethane	50.0	0.0	43.4	87	74-122
71-43-2	LCS Benzene	50.0	0.0	40.7	81	72-121
79-01-6	LCS Trichloroethylene	50.0	0.0	41.2	82	74-125
78-87-5	LCS 1,2-Dichloropropane	50.0	0.0	41.5	83	73-121
74-95-3	LCS Dibromomethane	50.0	0.0	42.6	85	78-123
75-27-4	LCS Bromodichloromethane	50.0	0.0	43.8	88	77-131
10061-01-5	LCS cis-1,3-Dichloropropylene	50.0	0.0	41.5	83	78-131
108-88-3	LCS Toluene	50.0	0.0	38.7	77	71-121
10061-02-6	LCS trans-1,3-Dichloropropylene	50.0	0.0	42.9	86	78-131
79-00-5	LCS 1,1,2-Trichloroethane	50.0	0.0	42.2	84	74-118
142-28-9	LCS 1,3-Dichloropropane	50.0	0.0	40.7	81	74-118
127-18-4	LCS Tetrachloroethylene	50.0	0.0	39.4	79	69-129
124-48-1	LCS Dibromochloromethane	50.0	0.0	44.2	88	76-137
106-93-4	LCS 1,2-Dibromoethane	50.0	0.0	42.5	85	78-122
108-90-7	LCS Chlorobenzene	50.0	0.0	40.9	82	74-120
100-41-4	LCS Ethylbenzene	50.0	0.0	39.4	79	73-125



Volatile  
Quality Control Summary  
Spike Recovery Report

Page 3 of 4

SDG Number: 2017-1964

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1683867

Matrix: WATER

Lab Sample ID 1203835236

Instrument: VOA1.I

Analysis Date: 07/20/2017 21:32

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1683867

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	40.6	81	74-126
100-42-5	LCS Styrene	50.0	0.0	40.6	81	72-130
75-25-2	LCS Bromoform	50.0	0.0	43.6	87	72-136
98-82-8	LCS Isopropylbenzene	50.0	0.0	38.3	77	70-130
79-34-5	LCS 1,1,2,2-Tetrachloroethane	50.0	0.0	39.3	79	70-126
96-18-4	LCS 1,2,3-Trichloropropane	50.0	0.0	41.0	82	74-122
108-86-1	LCS Bromobenzene	50.0	0.0	41.4	83	74-120
103-65-1	LCS n-Propylbenzene	50.0	0.0	37.3	75	67-128
108-67-8	LCS 1,3,5-Trimethylbenzene	50.0	0.0	39.5	79	70-129
95-49-8	LCS 2-Chlorotoluene	50.0	0.0	39.7	79	71-124
106-43-4	LCS 4-Chlorotoluene	50.0	0.0	39.2	78	69-125
98-06-6	LCS tert-Butylbenzene	50.0	0.0	40.1	80	72-130
95-63-6	LCS 1,2,4-Trimethylbenzene	50.0	0.0	39.4	79	70-126
135-98-8	LCS sec-Butylbenzene	50.0	0.0	38.7	77	70-131
99-87-6	LCS 4-Isopropyltoluene	50.0	0.0	39.3	79	71-131
541-73-1	LCS 1,3-Dichlorobenzene	50.0	0.0	39.4	79	72-121
106-46-7	LCS 1,4-Dichlorobenzene	50.0	0.0	40.3	81	71-120
104-51-8	LCS n-Butylbenzene	50.0	0.0	37.9	76	68-134
96-12-8	LCS 1,2-Dibromo-3-chloropropane	50.0	0.0	40.2	80	68-141
87-68-3	LCS Hexachlorobutadiene	50.0	0.0	41.3	83	72-136
91-20-3	LCS Naphthalene	50.0	0.0	44.1	88	72-132
87-61-6	LCS 1,2,3-Trichlorobenzene	50.0	0.0	43.9	88	70-130

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 4 of 4

SDG Number: 2017-1964

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1683867

Matrix: WATER

Lab Sample ID 1203835236

Instrument: VOA1.I

Analysis Date: 07/20/2017 21:32

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1683867

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	41.2	82	71-129
630-20-6	LCS 1,1,1,2-Tetrachloroethane	50.0	0.0	44.3	89	79-127
95-50-1	LCS 1,2-Dichlorobenzene	50.0	0.0	40.5	81	74-120
71-36-3	LCS n-Butyl alcohol	5000	0.0	4290	86	63-138

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 1 of 1

SDG Number: 2017-1964

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1683867

Matrix: WATER

Lab Sample ID 1203835237

Instrument: VOA1.I

Analysis Date: 07/20/2017 22:30

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1683867

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	227	91	60-140
76-13-1	LCS Trichlorotrifluoroethane	250	0.0	245	98	61-148
107-05-1	LCS Allyl chloride	250	0.0	242	97	59-125
107-13-1	LCS Acrylonitrile	250	0.0	220	88	65-122
107-12-0	LCS Propionitrile	250	0.0	217	87	64-124
126-98-7	LCS Methacrylonitrile	250	0.0	230	92	64-126
80-62-6	LCS Methyl methacrylate	250	0.0	228	91	69-127
97-63-2	LCS Ethyl methacrylate	250	0.0	226	90	66-130
78-83-1	LCS Isobutyl alcohol	2500	0.0	2190	88	65-135
126-99-8	LCS 2-Chloro-1,3-butadiene	50.0	0.0	44.5	89	66-147

## Method Blank Summary

Page 1 of 1

SDG Number:	2017-1964	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1683867	Instrument ID:	VOA1.I	Data File:	072017V1\1R406A.D
Lab Sample ID:	1203834856	Prep Date:	07/20/2017 10:32	Analyzed:	07/20/17 10:32
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 1683867	1203834857	072017V1\1R403A.D	07/20/17	0905
02 LCS for batch 1683867	1203834858	072017V1\1R405A.D	07/20/17	1003
03 CAPA-17-139151PS	1203834859	072017V1\1R423.D	07/20/17	1843
04 CAPA-17-139151PSD	1203834861	072017V1\1R424.D	07/20/17	1912
05 CAPA-17-139151PS	1203834860	072017V1\1R425.D	07/20/17	1941
06 CAPA-17-139151PSD	1203834862	072017V1\1R426.D	07/20/17	2010

## Method Blank Summary

Page 1 of 1

SDG Number:	2017-1964	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1683867	Instrument ID:	VOA1.I	Data File:	072017V1\1R432A.D
Lab Sample ID:	1203835235	Prep Date:	07/20/2017 22:59	Analyzed:	07/20/17 22:59
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
08 LCS for batch 1683867	1203835236	072017V1\1R429A.D	07/20/17	2132
09 LCS for batch 1683867	1203835237	072017V1\1R431A.D	07/20/17	2230
10 CAMO-17-139132	427987001	072017V1\1R439.D	07/21/17	0222
11 CAMO-17-139139	427987002	072017V1\1R440.D	07/21/17	0251
12 CAMO-17-139134	427987003	072017V1\1R441.D	07/21/17	0320
13 CAMO-17-139141	427987004	072017V1\1R442.D	07/21/17	0349

# Quality Control Data

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

<b>SDG Number:</b> 2017-1964	<b>Matrix:</b> WATER
<b>Lab Sample ID:</b> 1203834856	
<b>Client Sample:</b> QC for batch 1683867	<b>Client:</b> ARSL004
<b>Client ID:</b> MB for batch 1683867	<b>Method:</b> SW-846:8260B
<b>Batch ID:</b> 1683867	<b>Project:</b> QC
<b>Run Date:</b> 07/20/2017 10:32	<b>SOP Ref:</b> GL-OA-E-038
<b>Prep Date:</b> 07/20/2017 10:32	<b>Dilution:</b> 1
<b>Data File:</b> 072017V1\1R406A.D	<b>Purge Vol:</b> 5 mL
	<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	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**

<b>SDG Number:</b> 2017-1964		<b>Matrix:</b>	WATER
<b>Lab Sample ID:</b> 1203834856			
<b>Client Sample:</b> QC for batch 1683867	<b>Client:</b> ARSL004	<b>Project:</b>	QC
<b>Client ID:</b> MB for batch 1683867	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b>	GL-OA-E-038
<b>Batch ID:</b> 1683867	<b>Inst:</b> VOA1.I	<b>Dilution:</b>	1
<b>Run Date:</b> 07/20/2017 10:32	<b>Analyst:</b> PXY1	<b>Purge Vol:</b>	5 mL
<b>Prep Date:</b> 07/20/2017 10:32			
<b>Data File:</b> 072017V1\1R406A.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	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**

<b>SDG Number:</b> 2017-1964	<b>Matrix:</b> WATER	
<b>Lab Sample ID:</b> 1203834856		
<b>Client Sample:</b> QC for batch 1683867	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> MB for batch 1683867	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1683867	<b>Inst:</b> VOA1.I	<b>Dilution:</b> 1
<b>Run Date:</b> 07/20/2017 10:32	<b>Analyst:</b> PXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 07/20/2017 10:32		
<b>Data File:</b> 072017V1\1R406A.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	54.2	50.0	ug/L 108	(71%-134%)
Bromofluorobenzene	54.5	50.0	ug/L 109	(70%-131%)
Toluene-d8	48.4	50.0	ug/L 97	(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: 2017-1964

Lab Sample ID: 1203834857

Client Sample: QC for batch 1683867

Client ID: LCS for batch 1683867

Batch ID: 1683867

Run Date: 07/20/2017 09:05

Prep Date: 07/20/2017 09:05

Data File: 072017V1\1R403A.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA1.I

Analyst: PXY1

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		53.6	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		54.9	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		44.9	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		47.9	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		51.9	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		53.8	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		49.9	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		52.6	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		48.4	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		50.6	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		47.9	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		47.6	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		49.1	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		46.8	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		55.2	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		49.0	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		48.1	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		47.0	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		47.8	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		47.6	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		55.7	ug/L	0.300	1.00
78-93-3	2-Butanone		259	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		47.3	ug/L	0.300	1.00
591-78-6	2-Hexanone		271	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		46.8	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		49.0	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		226	ug/L	1.50	5.00
67-64-1	Acetone		292	ug/L	1.50	10.0
75-05-8	Acetonitrile		1120	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		48.7	ug/L	0.300	1.00
108-86-1	Bromobenzene		47.1	ug/L	0.300	1.00
74-97-5	Bromochloromethane		50.3	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		54.8	ug/L	0.300	1.00
75-25-2	Bromoform		51.3	ug/L	0.300	1.00

**Volatile  
Certificate of Analysis  
Sample Summary**

SDG Number: 2017-1964

Lab Sample ID: 1203834857

Client Sample: QC for batch 1683867

Client ID: LCS for batch 1683867

Batch ID: 1683867

Run Date: 07/20/2017 09:05

Prep Date: 07/20/2017 09:05

Data File: 072017V1\1R403A.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA1.I

Analyst: PXY1

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		57.3	ug/L	0.300	1.00
75-15-0	Carbon disulfide		242	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		57.4	ug/L	0.300	1.00
108-90-7	Chlorobenzene		48.0	ug/L	0.300	1.00
75-00-3	Chloroethane		47.9	ug/L	0.300	1.00
67-66-3	Chloroform		52.8	ug/L	0.300	1.00
74-87-3	Chloromethane		44.4	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		52.9	ug/L	0.300	1.00
74-95-3	Dibromomethane		51.9	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		48.6	ug/L	0.300	1.00
60-29-7	Ethyl ether		47.6	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		48.3	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		51.5	ug/L	0.300	1.00
74-88-4	Iodomethane		252	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		46.9	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		46.8	ug/L	1.00	10.0
91-20-3	Naphthalene		50.6	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		49.5	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		51.5	ug/L	0.300	1.00
108-88-3	Toluene		45.8	ug/L	0.300	1.00
79-01-6	Trichloroethylene		52.5	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		54.8	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		257	ug/L	1.50	5.00
75-01-4	Vinyl chloride		47.4	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		51.7	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		50.0	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		99.4	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		5300	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		47.7	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		45.6	ug/L	0.300	1.00
95-47-6	o-Xylene		49.8	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		47.7	ug/L	0.300	1.00

**Volatile  
Certificate of Analysis  
Sample Summary**

Page 3 of 3

<b>SDG Number:</b>	<b>2017-1964</b>	<b>Matrix:</b>	<b>WATER</b>
<b>Lab Sample ID:</b>	<b>1203834857</b>		
<b>Client Sample:</b>	<b>QC for batch 1683867</b>	<b>Client:</b>	<b>ARSL004</b>
<b>Client ID:</b>	<b>LCS for batch 1683867</b>	<b>Method:</b>	<b>SW-846:8260B</b>
<b>Batch ID:</b>	<b>1683867</b>	<b>Inst:</b>	<b>VOA1.I</b>
<b>Run Date:</b>	<b>07/20/2017 09:05</b>	<b>Analyst:</b>	<b>PXY1</b>
<b>Prep Date:</b>	<b>07/20/2017 09:05</b>	<b>Purge Vol:</b>	<b>5 mL</b>
<b>Data File:</b>	<b>072017V1\1R403A.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		47.3	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		49.3	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		53.3	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		51.5	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	53.8	50.0	108	(71%-134%)
Bromofluorobenzene	50.9	50.0	102	(70%-131%)
Toluene-d8	48.6	50.0	97	(74%-124%)

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

SDG Number: 2017-1964

Matrix: WATER

Lab Sample ID: 1203834858

Client Sample: QC for batch 1683867

Client: ARSL004

Project: QC

Client ID: LCS for batch 1683867

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1683867

Inst: VOA1.I

Dilution: 1

Run Date: 07/20/2017 10:03

Analyst: PXY1

Purge Vol: 5 mL

Prep Date: 07/20/2017 10:03

Data File: 072017V1\1R405A.D

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		49.1	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		256	ug/L	1.50	5.00
107-13-1	Acrylonitrile		222	ug/L	1.50	5.00
107-05-1	Allyl chloride		248	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> 2017-1964		<b>Matrix:</b>	WATER
<b>Lab Sample ID:</b> 1203834858			
<b>Client Sample:</b> QC for batch 1683867	<b>Client:</b> ARSL004	<b>Project:</b>	QC
<b>Client ID:</b> LCS for batch 1683867	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b>	GL-OA-E-038
<b>Batch ID:</b> 1683867	<b>Inst:</b> VOA1.I	<b>Dilution:</b>	1
<b>Run Date:</b> 07/20/2017 10:03	<b>Analyst:</b> PXY1	<b>Purge Vol:</b>	5 mL
<b>Prep Date:</b> 07/20/2017 10:03			
<b>Data File:</b> 072017V1\1R405A.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		231	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		2270	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		237	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		230	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		215	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		279	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>	<b>2017-1964</b>	<b>Matrix:</b>	<b>WATER</b>
<b>Lab Sample ID:</b>	<b>1203834858</b>		
<b>Client Sample:</b>	<b>QC for batch 1683867</b>	<b>Client:</b>	<b>ARSL004</b>
<b>Client ID:</b>	<b>LCS for batch 1683867</b>	<b>Method:</b>	<b>SW-846:8260B</b>
<b>Batch ID:</b>	<b>1683867</b>	<b>Inst:</b>	<b>VOA1.I</b>
<b>Run Date:</b>	<b>07/20/2017 10:03</b>	<b>Analyst:</b>	<b>PXY1</b>
<b>Prep Date:</b>	<b>07/20/2017 10:03</b>		
<b>Data File:</b>	<b>072017V1\1R405A.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	52.7	50.0	ug/L 105	(71%-134%)
Bromofluorobenzene	51.5	50.0	ug/L 103	(70%-131%)
Toluene-d8	49.7	50.0	ug/L 99	(74%-124%)

**Volatile  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b>	<b>2017-1964</b>	<b>Date Collected:</b>	<b>07/11/2017 11:40</b>	<b>Matrix:</b>	<b>W</b>
<b>Lab Sample ID:</b>	<b>1203834859</b>	<b>Date Received:</b>	<b>07/13/2017 09:10</b>		
<b>Client Sample:</b>	<b>QC for batch 1683867</b>	<b>Client:</b>	<b>ARSL004</b>	<b>Project:</b>	<b>QC</b>
<b>Client ID:</b>	<b>CAPA-17-139151PS</b>	<b>Method:</b>	<b>SW-846:8260B</b>	<b>SOP Ref:</b>	<b>GL-OA-E-038</b>
<b>Batch ID:</b>	<b>1683867</b>	<b>Inst:</b>	<b>VOA1.I</b>	<b>Dilution:</b>	<b>1</b>
<b>Run Date:</b>	<b>07/20/2017 18:43</b>	<b>Analyst:</b>	<b>PXY1</b>	<b>Purge Vol:</b>	<b>5 mL</b>
<b>Prep Date:</b>	<b>07/20/2017 18:43</b>				
<b>Data File:</b>	<b>072017V1\1R423.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		45.7	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		42.1	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		42.7	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		44.8	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		45.0	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		41.5	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		39.5	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		30.9	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		44.9	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		32.6	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		38.3	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		39.9	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		45.6	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		39.6	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		47.2	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		44.6	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		38.6	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		38.4	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		43.9	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		38.3	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		41.9	ug/L	0.300	1.00
78-93-3	2-Butanone		145	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		39.4	ug/L	0.300	1.00
591-78-6	2-Hexanone		164	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		37.8	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		36.2	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		201	ug/L	1.50	5.00
67-64-1	Acetone		129	ug/L	1.50	10.0
75-05-8	Acetonitrile		1040	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		42.5	ug/L	0.300	1.00
108-86-1	Bromobenzene		41.8	ug/L	0.300	1.00
74-97-5	Bromochloromethane		46.2	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		46.6	ug/L	0.300	1.00
75-25-2	Bromoform		47.4	ug/L	0.300	1.00



**Volatile  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b>	<b>2017-1964</b>	<b>Date Collected:</b>	<b>07/11/2017 11:40</b>	<b>Matrix:</b>	<b>W</b>
<b>Lab Sample ID:</b>	<b>1203834859</b>	<b>Date Received:</b>	<b>07/13/2017 09:10</b>		
<b>Client Sample:</b>	<b>QC for batch 1683867</b>	<b>Client:</b>	<b>ARSL004</b>	<b>Project:</b>	<b>QC</b>
<b>Client ID:</b>	<b>CAPA-17-139151PS</b>	<b>Method:</b>	<b>SW-846:8260B</b>	<b>SOP Ref:</b>	<b>GL-OA-E-038</b>
<b>Batch ID:</b>	<b>1683867</b>	<b>Inst:</b>	<b>VOA1.I</b>	<b>Dilution:</b>	<b>1</b>
<b>Run Date:</b>	<b>07/20/2017 18:43</b>	<b>Analyst:</b>	<b>PXY1</b>	<b>Purge Vol:</b>	<b>5 mL</b>
<b>Prep Date:</b>	<b>07/20/2017 18:43</b>				
<b>Data File:</b>	<b>072017V1\1R423.D</b>	<b>Column:</b>	<b>DB-624</b>		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		45.6	ug/L	0.300	1.00
75-15-0	Carbon disulfide		201	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		42.5	ug/L	0.300	1.00
108-90-7	Chlorobenzene		41.7	ug/L	0.300	1.00
75-00-3	Chloroethane		42.2	ug/L	0.300	1.00
67-66-3	Chloroform		45.5	ug/L	0.300	1.00
74-87-3	Chloromethane		38.9	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		47.4	ug/L	0.300	1.00
74-95-3	Dibromomethane		45.8	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		35.6	ug/L	0.300	1.00
60-29-7	Ethyl ether		46.1	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		39.6	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		23.8	ug/L	0.300	1.00
74-88-4	Iodomethane		220	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		38.3	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		43.0	ug/L	1.00	10.0
91-20-3	Naphthalene		37.3	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		41.8	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		40.3	ug/L	0.300	1.00
108-88-3	Toluene		40.0	ug/L	0.300	1.00
79-01-6	Trichloroethylene		42.8	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		40.9	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		226	ug/L	1.50	5.00
75-01-4	Vinyl chloride		40.3	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		45.8	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		44.0	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		79.5	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		4580	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		33.5	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		36.4	ug/L	0.300	1.00
95-47-6	o-Xylene		41.0	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		36.5	ug/L	0.300	1.00

**Volatile  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> 2017-1964	<b>Date Collected:</b> 07/11/2017 11:40	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 1203834859	<b>Date Received:</b> 07/13/2017 09:10	
<b>Client Sample:</b> QC for batch 1683867	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> CAPA-17-139151PS	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1683867	<b>Inst:</b> VOA1.I	<b>Dilution:</b> 1
<b>Run Date:</b> 07/20/2017 18:43	<b>Analyst:</b> PXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 07/20/2017 18:43		
<b>Data File:</b> 072017V1\1R423.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		41.8	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		38.9	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		44.1	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		45.7	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	50.0	50.0	100	(71%-134%)
Bromofluorobenzene	51.3	50.0	103	(70%-131%)
Toluene-d8	48.4	50.0	97	(74%-124%)

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

<b>SDG Number:</b> 2017-1964	<b>Date Collected:</b> 07/11/2017 11:40	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 1203834860	<b>Date Received:</b> 07/13/2017 09:10	
<b>Client Sample:</b> QC for batch 1683867	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> CAPA-17-139151PS	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1683867	<b>Inst:</b> VOA1.I	<b>Dilution:</b> 1
<b>Run Date:</b> 07/20/2017 19:41	<b>Analyst:</b> PXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 07/20/2017 19:41		
<b>Data File:</b> 072017V1\1R425.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		42.1	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		258	ug/L	1.50	5.00
107-13-1	Acrylonitrile		234	ug/L	1.50	5.00
107-05-1	Allyl chloride		236	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> 2017-1964	<b>Date Collected:</b> 07/11/2017 11:40	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 1203834860	<b>Date Received:</b> 07/13/2017 09:10	
<b>Client Sample:</b> QC for batch 1683867	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> CAPA-17-139151PS	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1683867	<b>Inst:</b> VOA1.I	<b>Dilution:</b> 1
<b>Run Date:</b> 07/20/2017 19:41	<b>Analyst:</b> PXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 07/20/2017 19:41		
<b>Data File:</b> 072017V1\1R425.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		234	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		2380	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		241	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		237	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		237	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>	<b>2017-1964</b>	<b>Date Collected:</b>	<b>07/11/2017 11:40</b>	<b>Matrix:</b>	<b>W</b>
<b>Lab Sample ID:</b>	<b>1203834860</b>	<b>Date Received:</b>	<b>07/13/2017 09:10</b>		
<b>Client Sample:</b>	<b>QC for batch 1683867</b>	<b>Client:</b>	<b>ARSL004</b>	<b>Project:</b>	<b>QC</b>
<b>Client ID:</b>	<b>CAPA-17-139151PS</b>	<b>Method:</b>	<b>SW-846:8260B</b>	<b>SOP Ref:</b>	<b>GL-OA-E-038</b>
<b>Batch ID:</b>	<b>1683867</b>	<b>Inst:</b>	<b>VOA1.I</b>	<b>Dilution:</b>	<b>1</b>
<b>Run Date:</b>	<b>07/20/2017 19:41</b>	<b>Analyst:</b>	<b>PXY1</b>	<b>Purge Vol:</b>	<b>5 mL</b>
<b>Prep Date:</b>	<b>07/20/2017 19:41</b>				
<b>Data File:</b>	<b>072017V1\1R425.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	49.0	50.0	98	(71%-134%)
Bromofluorobenzene	50.3	50.0	101	(70%-131%)
Toluene-d8	49.3	50.0	99	(74%-124%)

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

<b>SDG Number:</b> 2017-1964	<b>Date Collected:</b> 07/11/2017 11:40	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 1203834861	<b>Date Received:</b> 07/13/2017 09:10	
<b>Client Sample:</b> QC for batch 1683867	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> CAPA-17-139151PSD	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1683867	<b>Inst:</b> VOA1.I	<b>Dilution:</b> 1
<b>Run Date:</b> 07/20/2017 19:12	<b>Analyst:</b> PXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 07/20/2017 19:12		
<b>Data File:</b> 072017V1\1R424.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		48.8	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		43.3	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		44.1	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		46.1	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		46.0	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		43.1	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		41.7	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		47.1	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		47.3	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		44.1	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		43.5	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		43.6	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		47.1	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		44.0	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		48.7	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		45.3	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		43.3	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		43.0	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		45.3	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		44.1	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		42.7	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		44.4	ug/L	0.300	1.00
591-78-6	2-Hexanone		166	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		43.1	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		43.1	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		205	ug/L	1.50	5.00
67-64-1	Acetone		130	ug/L	1.50	10.0
75-05-8	Acetonitrile		1040	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		44.1	ug/L	0.300	1.00
108-86-1	Bromobenzene		45.3	ug/L	0.300	1.00
74-97-5	Bromochloromethane		47.5	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		48.9	ug/L	0.300	1.00
75-25-2	Bromoform		49.3	ug/L	0.300	1.00

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

<b>SDG Number:</b> 2017-1964	<b>Date Collected:</b> 07/11/2017 11:40	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 1203834861	<b>Date Received:</b> 07/13/2017 09:10	
<b>Client Sample:</b> QC for batch 1683867	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> CAPA-17-139151PSD	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1683867	<b>Inst:</b> VOA1.I	<b>Dilution:</b> 1
<b>Run Date:</b> 07/20/2017 19:12	<b>Analyst:</b> PXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 07/20/2017 19:12		
<b>Data File:</b> 072017V1\1R424.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		46.3	ug/L	0.300	1.00
75-15-0	Carbon disulfide		206	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		44.5	ug/L	0.300	1.00
108-90-7	Chlorobenzene		44.8	ug/L	0.300	1.00
75-00-3	Chloroethane		43.1	ug/L	0.300	1.00
67-66-3	Chloroform		46.6	ug/L	0.300	1.00
74-87-3	Chloromethane		38.8	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		49.8	ug/L	0.300	1.00
74-95-3	Dibromomethane		47.8	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		34.7	ug/L	0.300	1.00
60-29-7	Ethyl ether		47.2	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		42.6	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		42.4	ug/L	0.300	1.00
74-88-4	Iodomethane		225	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		42.1	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		44.6	ug/L	1.00	10.0
91-20-3	Naphthalene		47.6	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		45.2	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		43.5	ug/L	0.300	1.00
108-88-3	Toluene		41.5	ug/L	0.300	1.00
79-01-6	Trichloroethylene		44.9	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		41.9	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		230	ug/L	1.50	5.00
75-01-4	Vinyl chloride		39.5	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		47.2	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		45.7	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		86.8	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		4520	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		41.1	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		41.0	ug/L	0.300	1.00
95-47-6	o-Xylene		44.3	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		42.2	ug/L	0.300	1.00

**Volatile  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b>	<b>2017-1964</b>	<b>Date Collected:</b>	<b>07/11/2017 11:40</b>	<b>Matrix:</b>	<b>W</b>
<b>Lab Sample ID:</b>	<b>1203834861</b>	<b>Date Received:</b>	<b>07/13/2017 09:10</b>		
<b>Client Sample:</b>	<b>QC for batch 1683867</b>	<b>Client:</b>	<b>ARSL004</b>	<b>Project:</b>	<b>QC</b>
<b>Client ID:</b>	<b>CAPA-17-139151PSD</b>	<b>Method:</b>	<b>SW-846:8260B</b>	<b>SOP Ref:</b>	<b>GL-OA-E-038</b>
<b>Batch ID:</b>	<b>1683867</b>	<b>Inst:</b>	<b>VOA1.I</b>	<b>Dilution:</b>	<b>1</b>
<b>Run Date:</b>	<b>07/20/2017 19:12</b>	<b>Analyst:</b>	<b>PXY1</b>	<b>Purge Vol:</b>	<b>5 mL</b>
<b>Prep Date:</b>	<b>07/20/2017 19:12</b>				
<b>Data File:</b>	<b>072017V1\1R424.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		43.5	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		44.3	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		45.6	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		47.4	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	50.2	50.0	ug/L 100	(71%-134%)
Bromofluorobenzene	51.5	50.0	ug/L 103	(70%-131%)
Toluene-d8	48.9	50.0	ug/L 98	(74%-124%)



**Volatile  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b>	<b>2017-1964</b>	<b>Date Collected:</b>	<b>07/11/2017 11:40</b>	<b>Matrix:</b>	<b>W</b>
<b>Lab Sample ID:</b>	<b>1203834862</b>	<b>Date Received:</b>	<b>07/13/2017 09:10</b>		
<b>Client Sample:</b>	<b>QC for batch 1683867</b>	<b>Client:</b>	<b>ARSL004</b>	<b>Project:</b>	<b>QC</b>
<b>Client ID:</b>	<b>CAPA-17-139151PSD</b>	<b>Method:</b>	<b>SW-846:8260B</b>	<b>SOP Ref:</b>	<b>GL-OA-E-038</b>
<b>Batch ID:</b>	<b>1683867</b>	<b>Inst:</b>	<b>VOA1.I</b>	<b>Dilution:</b>	<b>1</b>
<b>Run Date:</b>	<b>07/20/2017 20:10</b>	<b>Analyst:</b>	<b>PXY1</b>	<b>Purge Vol:</b>	<b>5 mL</b>
<b>Prep Date:</b>	<b>07/20/2017 20:10</b>				
<b>Data File:</b>	<b>072017V1\1R426.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		41.8	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		243	ug/L	1.50	5.00
107-13-1	Acrylonitrile		219	ug/L	1.50	5.00
107-05-1	Allyl chloride		233	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>2017-1964</b>	<b>Date Collected:</b>	<b>07/11/2017 11:40</b>	<b>Matrix:</b>	<b>W</b>
<b>Lab Sample ID:</b>	<b>1203834862</b>	<b>Date Received:</b>	<b>07/13/2017 09:10</b>		
<b>Client Sample:</b>	<b>QC for batch 1683867</b>	<b>Client:</b>	<b>ARSL004</b>	<b>Project:</b>	<b>QC</b>
<b>Client ID:</b>	<b>CAPA-17-139151PSD</b>	<b>Method:</b>	<b>SW-846:8260B</b>	<b>SOP Ref:</b>	<b>GL-OA-E-038</b>
<b>Batch ID:</b>	<b>1683867</b>	<b>Inst:</b>	<b>VOA1.I</b>	<b>Dilution:</b>	<b>1</b>
<b>Run Date:</b>	<b>07/20/2017 20:10</b>	<b>Analyst:</b>	<b>PXY1</b>	<b>Purge Vol:</b>	<b>5 mL</b>
<b>Prep Date:</b>	<b>07/20/2017 20:10</b>				
<b>Data File:</b>	<b>072017V1\1R426.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		223	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		2160	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		227	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		225	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		214	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		230	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> 2017-1964	<b>Date Collected:</b> 07/11/2017 11:40	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 1203834862	<b>Date Received:</b> 07/13/2017 09:10	
<b>Client Sample:</b> QC for batch 1683867	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> CAPA-17-139151PSD	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1683867	<b>Inst:</b> VOA1.I	<b>Dilution:</b> 1
<b>Run Date:</b> 07/20/2017 20:10	<b>Analyst:</b> PXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 07/20/2017 20:10		
<b>Data File:</b> 072017V1\1R426.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	47.6	50.0	95	(71%-134%)
Bromofluorobenzene	50.2	50.0	100	(70%-131%)
Toluene-d8	47.8	50.0	96	(74%-124%)

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

SDG Number: 2017-1964

Matrix: WATER

Lab Sample ID: 1203835235

Client Sample: QC for batch 1683867

Client: ARSL004

Project: QC

Client ID: MB for batch 1683867

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1683867

Inst: VOA1.I

Dilution: 1

Run Date: 07/20/2017 22:59

Analyst: PXY1

Purge Vol: 5 mL

Prep Date: 07/20/2017 22:59

Data File: 072017V1\1R432A.D

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: 2017-1964

Matrix: WATER

Lab Sample ID: 1203835235

Client Sample: QC for batch 1683867

Client: ARSL004

Project: QC

Client ID: MB for batch 1683867

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1683867

Inst: VOA1.I

Dilution: 1

Run Date: 07/20/2017 22:59

Analyst: PXY1

Purge Vol: 5 mL

Prep Date: 07/20/2017 22:59

Data File: 072017V1\1R432A.D

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	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**

<b>SDG Number:</b> 2017-1964	<b>Matrix:</b> WATER	
<b>Lab Sample ID:</b> 1203835235		
<b>Client Sample:</b> QC for batch 1683867	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> MB for batch 1683867	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1683867	<b>Inst:</b> VOA1.I	<b>Dilution:</b> 1
<b>Run Date:</b> 07/20/2017 22:59	<b>Analyst:</b> PXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 07/20/2017 22:59		
<b>Data File:</b> 072017V1\1R432A.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	50.4	50.0	ug/L 101	(71%-134%)
Bromofluorobenzene	53.2	50.0	ug/L 106	(70%-131%)
Toluene-d8	48.2	50.0	ug/L 96	(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: 2017-1964

Lab Sample ID: 1203835236

Client Sample: QC for batch 1683867

Client ID: LCS for batch 1683867

Batch ID: 1683867

Run Date: 07/20/2017 21:32

Prep Date: 07/20/2017 21:32

Data File: 072017V1\1R429A.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA1.I

Analyst: PXY1

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		44.3	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		40.3	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		39.3	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		42.2	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		42.7	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		40.1	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		38.4	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		43.9	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		41.0	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		41.2	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		39.4	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		40.2	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		42.5	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		40.5	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		43.4	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		39.5	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		39.4	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		40.7	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		40.3	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		168	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		39.7	ug/L	0.300	1.00
591-78-6	2-Hexanone		167	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		39.2	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		39.3	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		184	ug/L	1.50	5.00
67-64-1	Acetone		175	ug/L	1.50	10.0
75-05-8	Acetonitrile		978	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		40.7	ug/L	0.300	1.00
108-86-1	Bromobenzene		41.4	ug/L	0.300	1.00
74-97-5	Bromochloromethane		44.2	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		43.8	ug/L	0.300	1.00
75-25-2	Bromoform		43.6	ug/L	0.300	1.00

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

SDG Number: 2017-1964

Matrix: WATER

Lab Sample ID: 1203835236

Client Sample: QC for batch 1683867

Client: ARSL004

Project: QC

Client ID: LCS for batch 1683867

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1683867

Inst: VOA1.I

Dilution: 1

Run Date: 07/20/2017 21:32

Analyst: PXY1

Purge Vol: 5 mL

Prep Date: 07/20/2017 21:32

Data File: 072017V1\1R429A.D

Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		50.8	ug/L	0.300	1.00
75-15-0	Carbon disulfide		193	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		40.7	ug/L	0.300	1.00
108-90-7	Chlorobenzene		40.9	ug/L	0.300	1.00
75-00-3	Chloroethane		46.5	ug/L	0.300	1.00
67-66-3	Chloroform		42.5	ug/L	0.300	1.00
74-87-3	Chloromethane		39.7	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		44.2	ug/L	0.300	1.00
74-95-3	Dibromomethane		42.6	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		34.2	ug/L	0.300	1.00
60-29-7	Ethyl ether		50.7	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		39.4	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		41.3	ug/L	0.300	1.00
74-88-4	Iodomethane		207	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		38.3	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		40.9	ug/L	1.00	10.0
91-20-3	Naphthalene		44.1	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		40.6	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		39.4	ug/L	0.300	1.00
108-88-3	Toluene		38.7	ug/L	0.300	1.00
79-01-6	Trichloroethylene		41.2	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		45.1	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		268	ug/L	1.50	5.00
75-01-4	Vinyl chloride		42.0	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		43.8	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		41.5	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		80.1	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		4290	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		37.9	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		37.3	ug/L	0.300	1.00
95-47-6	o-Xylene		40.6	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		38.7	ug/L	0.300	1.00



**Volatile  
Certificate of Analysis  
Sample Summary**

Page 3 of 3

<b>SDG Number:</b>	<b>2017-1964</b>	<b>Matrix:</b>	<b>WATER</b>
<b>Lab Sample ID:</b>	<b>1203835236</b>		
<b>Client Sample:</b>	<b>QC for batch 1683867</b>	<b>Client:</b>	<b>ARSL004</b>
<b>Client ID:</b>	<b>LCS for batch 1683867</b>	<b>Method:</b>	<b>SW-846:8260B</b>
<b>Batch ID:</b>	<b>1683867</b>	<b>Inst:</b>	<b>VOA1.I</b>
<b>Run Date:</b>	<b>07/20/2017 21:32</b>	<b>Analyst:</b>	<b>PXY1</b>
<b>Prep Date:</b>	<b>07/20/2017 21:32</b>		
<b>Data File:</b>	<b>072017V1\1R429A.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		39.5	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		40.1	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		42.0	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		42.9	ug/L	0.300	1.00
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4		48.9	50.0	ug/L	98	(71%-134%)
Bromofluorobenzene		50.9	50.0	ug/L	102	(70%-131%)
Toluene-d8		48.8	50.0	ug/L	98	(74%-124%)

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

SDG Number: 2017-1964

Matrix: WATER

Lab Sample ID: 1203835237

Client Sample: QC for batch 1683867

Client: ARSL004

Project: QC

Client ID: LCS for batch 1683867

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1683867

Inst: VOA1.I

Dilution: 1

Run Date: 07/20/2017 22:30

Analyst: PXY1

Purge Vol: 5 mL

Prep Date: 07/20/2017 22:30

Data File: 072017V1\1R431A.D

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		44.5	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		227	ug/L	1.50	5.00
107-13-1	Acrylonitrile		220	ug/L	1.50	5.00
107-05-1	Allyl chloride		242	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: 2017-1964

Matrix: WATER

Lab Sample ID: 1203835237

Client Sample: QC for batch 1683867

Client: ARSL004

Project: QC

Client ID: LCS for batch 1683867

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1683867

Inst: VOA1.I

Dilution: 1

Run Date: 07/20/2017 22:30

Analyst: PXY1

Purge Vol: 5 mL

Prep Date: 07/20/2017 22:30

Data File: 072017V1\1R431A.D

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		226	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		2190	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		230	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		228	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		217	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		245	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>	2017-1964	<b>Matrix:</b>	WATER
<b>Lab Sample ID:</b>	1203835237		
<b>Client Sample:</b>	QC for batch 1683867	<b>Client:</b>	ARSL004
<b>Client ID:</b>	LCS for batch 1683867	<b>Method:</b>	SW-846:8260B
<b>Batch ID:</b>	1683867	<b>Inst:</b>	VOA1.I
<b>Run Date:</b>	07/20/2017 22:30	<b>Analyst:</b>	PXY1
<b>Prep Date:</b>	07/20/2017 22:30		
<b>Data File:</b>	072017V1\1R431A.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	51.8	50.0	104	(70%-131%)
Toluene-d8	49.1	50.0	98	(74%-124%)