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:

General Engineering

Charleston SC

Chain of Custody/Analysis Request

COC/Lab Request #: 2017-1529

Client Contact:

Lab Agreement #:

Site Name: Los Alamos National Laboratory

Project Number: ADEP

Analysis Turnaround Time:

24 Hour - ☐ Other - ☐

7 Days - ☐

14 Days - ☐

21 Days - ☐

28 Days - ☒

Rad Screening Info:

Lab Reporting Limit Type: Sample Quantitation Limit

Field Sample ID	Sample Date	Sample Time	Sample Matrix	MSGP-Hg	WSP-8260B-VOA	WSP-8270C-SVOA	WSP-All Metals	WSP-CN(T)	WSP-GENINORG+PerChlorate	WSP-NH3+NO3/NO2+PO4	WSP-TKN+TOC
CAMO-17-132200	May 11 2017	15:44	W				1		1	1	
CAMO-17-132220	May 11 2017	15:44	W	1	2	2		1			1
CAMO-17-132300	May 11 2017	15:44	W		R1						
CAMO-17-132305	May 11 2017	15:44	W		2	2					
CAMO-17-132307	May 11 2017	15:44	W	1	2	2		1			1
CAMO-17-132308	May 11 2017	15:44	W				1		1	1	

Special Instructions:

Relinquished by:	Print Name: Peter Moss-Morris	Date/Time: 5/15/17 3:40	Received by:	Print Name:	Date/Time:
Relinquished by:	Print Name:	Date/Time:	Received by:	Print Name:	Date/Time:
Relinquished by:	Print Name:	Date/Time:	Received by:	Print Name:	Date/Time:

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11212 **EVENT NAME:** Mortandad/Sandia (Cr Inv/MDA C) MY2017 Q3

SAMPLE ID: CAMO-17-132200 **WORK ORDER:**

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYY):	5/11/2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1544		MEDIA:	UA	
PRS ID:	NA		SAMPLE TECH CODE:	GSP	
LOCATION ID:	MCOI-6		FIELD PREP:	F	
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
TOP DEPTH:	LSD		SAMPLE USAGE:	INV	
BOTTOM DEPTH:	TD		EXCAVATED:		YES / NO / (NA)

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	NA
	WSP-CR52/53	1 LITER POLY	1	ICE		
	WSP-GENINORG+PerChlorate	1 LITER POLY	1	ICE		
	WSP-NH3+NO3/NO2	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

LOCATION COMMENTS: T.W. 5/11/17

FIELD PARAMETERS:

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

COLLECTED BY (PRINT): T. Botham

RELINQUISHED BY (Printed Name) T. Botham (Signature)	Date/Time 5/11/2017 1650	RECEIVED BY (Printed Name) S. Sherwood (Signature) S. Sherwood	Date/Time 5/11/17 1650
RELINQUISHED BY (Printed Name) T. Walker (Signature) T. Walker	Date/Time 5/11/2017 1650	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11212 **EVENT NAME:** Mortandad/Sandia (Cr Inv/MDA C) MY2017 Q3

SAMPLE ID: CAMO-17-132220 **WORK ORDER:**

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYY):	5/11/2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1544		MEDIA:	UA	
PRS ID:	NA		SAMPLE TECH CODE:	GSP	
LOCATION ID:	MCOI-6		FIELD PREP:	UF	
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
TOP DEPTH:	LSD		SAMPLE USAGE:	INV	
BOTTOM DEPTH:	TD		EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	MSGP-Hg	1 LITER POLY	1	HNO3	Y	NA
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8270C-SVOA	1 LITER AMBER GLASS	2	ICE		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS: Sampled approx 50 ft from running diesel generator.

LOCATION COMMENTS: none.

FIELD PARAMETERS:

Sample Time	1544	HH:MM	Dissolved Oxygen	7.00	Flow (in gpm)	1.11
Oxidation-Reduction Potential	192.2		pH	7.03	Specific Conductance	559
Temperature	15.8		Turbidity	0.38		

COLLECTED BY (PRINT): T. Bonham

RELINQUISHED BY (Printed Name) (Signature) T. Bonham	Date/Time 5/11/2017 1650	RECEIVED BY (Printed Name) S. Sherwood (Signature) S. Sherwood	Date/Time 5/11/17 1650
RELINQUISHED BY (Printed Name) (Signature) T. Bonham	Date/Time 5/11/2017 1650	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11212

EVENT NAME: Mortandad/Sandia (Cr Inv/MDA C) MY2017 Q3

SAMPLE ID: CAMO-17-132300

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYY):	5/11/2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1544		MEDIA:	UA	
PRS ID:	NA		SAMPLE TECH CODE:	GSP	
LOCATION ID:	MCOI-6		FIELD PREP:	UF	
LOCATION TYPE:	MON		FIELD QC TYPE:	FTB	
TOP DEPTH:	LSD		SAMPLE USAGE:	QC	
BOTTOM DEPTH:	TD		EXCAVATED:	YES / NO / (NA)	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	TW 5/11/17 2 1	HCL	Y	NA

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

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

COLLECTED BY (PRINT): T. Bonham

RELINQUISHED BY (Printed Name) T. Bonham (Signature)	Date/Time 5/11/2017 1650	RECEIVED BY (Printed Name) S. Sherwood (Signature)	Date/Time 5/11/17 1650
RELINQUISHED BY (Printed Name) T. Walker (Signature)	Date/Time 5/11/2017 1650	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 04/25/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11212 **EVENT NAME:** Mortandad/Sandia (Cr Inv/MDA C) MY2017 Q3

SAMPLE ID: CAMO-17-132305 **WORK ORDER:**

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYY):	5/11/2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1544		MEDIA:	UA	
PRS ID:	NA		SAMPLE TECH CODE:	GSP	
LOCATION ID:	MCOI-6		FIELD PREP:	UF	
LOCATION TYPE:	MON		FIELD QC TYPE:	FB	
TOP DEPTH:	LSD		SAMPLE USAGE:	QC	
BOTTOM DEPTH:	TD		EXCAVATED:		YES / NO / (NA)

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
	WSP-8270C-SVOA	1 LITER AMBER GLASS	2	ICE		

SAMPLE COMMENTS:

LOCATION COMMENTS:

TW 5/11/2017

FIELD PARAMETERS:

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

COLLECTED BY (PRINT): T. Bonham

RELINQUISHED BY (Printed Name) (Signature) T. Bonham	Date/Time 5/11/2017 1650	RECEIVED BY (Printed Name) (Signature) S. Sherwood	Date/Time 5/11/17 1650
RELINQUISHED BY (Printed Name) (Signature) T. Ly/Key	Date/Time 5/11/2017 1650	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 04/25/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11212 **EVENT NAME:** Mortandad/Sandia (Cr Inv/MDA C) MY2017 Q3

SAMPLE ID: CAMO-17-132307 **WORK ORDER:**

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYY):	5/11/2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1544		MEDIA:	UA	
PRS ID:	NA		SAMPLE TECH CODE:	GSP	
LOCATION ID:	MCOI-6		FIELD PREP:	UF	
LOCATION TYPE:	MON		FIELD QC TYPE:	FD	
TOP DEPTH:	LSD		SAMPLE USAGE:	QC	
BOTTOM DEPTH:	TD		EXCAVATED:		YES / NO / (NA)

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	MSGP-Hg	1 LITER POLY	1	HNO3	Y	NA
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8270C-SVOA	1 LITER AMBER GLASS	2	ICE		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS: Sampled approx. 50 ft from running diesel generator.

LOCATION COMMENTS: NONE

FIELD PARAMETERS:

Sample Time	1544	HH:MM	Dissolved Oxygen	7.00	Flow (in gpm)	1.11
Oxidation-Reduction Potential	192.2		pH	7.03	Specific Conductance	559
Temperature	15.8		Turbidity	0.38		

COLLECTED BY (PRINT): T. Bonham

RELINQUISHED BY (Printed Name) T. Bonham (Signature)	Date/Time 5/11/17 1650	RECEIVED BY (Printed Name) S. Sherwood (Signature) Sherwood	Date/Time 5/11/17 1650
RELINQUISHED BY (Printed Name) T. Walker (Signature) T. Walker	Date/Time 5/11/2017 1650	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11212 **EVENT NAME:** Mortandad/Sandia (Cr Inv/MDA C) MY2017 Q3

SAMPLE ID: CAMO-17-132308 **WORK ORDER:**

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYY):	5/11/2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1544		MEDIA:	UA	
PRS ID:	NA		SAMPLE TECH CODE:	GSP	
LOCATION ID:	MCOI-6		FIELD PREP:	F	
LOCATION TYPE:	MON		FIELD QC TYPE:	FD	
TOP DEPTH:	LSD		SAMPLE USAGE:	QC	
BOTTOM DEPTH:	TD		EXCAVATED:		YES / NO / (NA)

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	NA
	WSP-CR52/53	1 LITER POLY	1	ICE		
	WSP-GENINORG+PerChlorate	1 LITER POLY	1	ICE		
	WSP-NH3+NO3/NO2	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

LOCATION COMMENTS:

TV 5/11/2017

FIELD PARAMETERS:

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

COLLECTED BY (PRINT): T. Bonham

RELINQUISHED BY (Printed Name) (Signature) T. Bonham	Date/Time 5/11/2017 1650	RECEIVED BY (Printed Name) S. Sherwood (Signature) S. Sherwood	Date/Time 5/11/17 1650
RELINQUISHED BY (Printed Name) T. Walke (Signature) T. Walke	Date/Time 5/11/2017 1650	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 04/25/2017

DATA VALIDATION REPORT

Chain Of Custody No. 2017-1529

1. Distribution Of Samples In EDD.

SDG	Analytical Method	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks
423194	EPA:120.1	1	1			
423194	EPA:150.1	1	1			
423194	EPA:160.1	1	1			
423194	EPA:170.0	2	2	1	1	
423194	EPA:245.2	2	2			
423194	EPA:300.0	1	1			
423194	EPA:310.1	1	1			
423194	EPA:335.4	1	1			
423194	EPA:350.1	1	1			
423194	EPA:351.2	1	1			
423194	EPA:353.2	1	1			
423194	EPA:365.4	1	1			
423194	SM:A2340B	1	1			
423194	SW-846:6010C	1	1			
423194	SW-846:6020	1	1			
423194	SW-846:6850	1	1			
423194	SW-846:8260B	1	1	1	1	
423194	SW-846:8270D	1	1		1	
423194	SW-846:9060	1	1			

SDG	Analytical Method	Analysis Lot ID	Prep Lot ID	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks	Method Blanks	Matrix Spikes	Matrix Spike Dups	Analytical Spikes	Post-Digestion Spikes	Lab Control Samples	Lab Control Sample Dups	Blank Spike	Blank Spike Dups	Lab Duplicates	Storage Blanks	Preparation Blanks	Reagent Blanks
423194	EPA:120.1	1668500	1668500	1	1									1				2			
423194	EPA:150.1	1666995	1666995	1	1									1				1			
423194	EPA:160.1	1665585	1665585	1	1				1					1				1			
423194	EPA:170.0	NA	NA	2	2	1	1														
423194	EPA:245.2	1667274	1667270	2	2				1	2				1				2			

DATA VALIDATION REPORT

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
423194	EPA:300.0	1668293	1668293	1	1				1					1				1			
423194	EPA:310.1	1666990	1666990	1	1					1				2				1			
423194	EPA:335.4	1665629	1665625	1	1				1	1				1				1			
423194	EPA:350.1	1666189	1666188	1	1				1	1				1				1			
423194	EPA:351.2	1666192	1666191	1	1				1	2				1				2			
423194	EPA:353.2	1665012	1665012	1	1				1					1				2			
423194	EPA:365.4	1666184	1666183	1	1				1	1				1				1			
423194	SM:A2340B	1673153	1673153	1	1																
423194	SW-846:6010C	1665469	1665466	1	1				1	1				1				1			
423194	SW-846:6020	1665485	1665484	1	1				1	1				1				1			
423194	SW-846:6850	1667383	1667380	1	1				1	1	1			1							
423194	SW-846:8260B	1667958	1667958	1	1	1	1		3					5							
423194	SW-846:8270D	1665599	1665598	1	1		1		1	1	1			1							
423194	SW-846:9060	1666622	1666622	1	1				1					1				2			

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:120.1	GENERAL CHEMISTRY	CAMO-17-132200	1203797706	DUP	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CAMO-17-132200	423194001	REG	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CAMO-17-132206	1203797705	DUP	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CAMO-17-132308	423194006	FD	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	LCS	1203797704	LCS	0	0	1	0
EPA:150.1	GENERAL CHEMISTRY	CAMO-17-132200	423194001	REG	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CAMO-17-132308	423194006	FD	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	LCS	1203794026	LCS	0	0	1	0
EPA:150.1	GENERAL CHEMISTRY	WST53-17-133059	1203794028	DUP	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	CAMO-17-132200	423194001	REG	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	CAMO-17-132308	423194006	FD	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	LCS	1203790692	LCS	0	0	1	0
EPA:160.1	GENERAL CHEMISTRY	MB	1203790691	MB	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	WST53-17-133059	1203790693	DUP	1	0	0	0

DATA VALIDATION REPORT

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
EPA:170.0	VOC	CAMO-17-132200	423194001	REG	1	0	0	0
EPA:170.0	VOC	CAMO-17-132220	423194002	REG	1	0	0	0
EPA:170.0	VOC	CAMO-17-132300	423194003	FTB	1	0	0	0
EPA:170.0	VOC	CAMO-17-132305	423194004	FB	1	0	0	0
EPA:170.0	VOC	CAMO-17-132307	423194005	FD	1	0	0	0
EPA:170.0	VOC	CAMO-17-132308	423194006	FD	1	0	0	0
EPA:245.2	INORGANIC	CAMO-17-132200	423194001	REG	1	0	0	0
EPA:245.2	INORGANIC	CAMO-17-132220	423194002	REG	1	0	0	0
EPA:245.2	INORGANIC	CAMO-17-132307	423194005	FD	1	0	0	0
EPA:245.2	INORGANIC	CAMO-17-132308	423194006	FD	1	0	0	0
EPA:245.2	INORGANIC	CASA-17-132339	1203794762	DUP	1	0	0	0
EPA:245.2	INORGANIC	CASA-17-132339	1203794764	MS	0	0	1	0
EPA:245.2	INORGANIC	LCS	1203794761	LCS	0	0	1	0
EPA:245.2	INORGANIC	MB	1203794760	MB	1	0	0	0
EPA:245.2	INORGANIC	WST53-17-133056	1203794763	DUP	1	0	0	0
EPA:245.2	INORGANIC	WST53-17-133056	1203794765	MS	0	0	1	0
EPA:300.0	GENERAL CHEMISTRY	CAMO-17-132200	1203797179	DUP	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAMO-17-132200	423194001	REG	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAMO-17-132308	423194006	FD	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	LCS	1203797178	LCS	0	0	4	0
EPA:300.0	GENERAL CHEMISTRY	MB	1203797177	MB	4	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAMO-17-132200	423194001	REG	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAMO-17-132308	423194006	FD	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	LCS	1203794017	LCS	0	0	1	0
EPA:310.1	GENERAL CHEMISTRY	LCS	1203798264	LCS	0	0	1	0
EPA:310.1	GENERAL CHEMISTRY	WST53-17-133059	1203794019	DUP	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	WST53-17-133059	1203794021	MS	0	0	1	0
EPA:335.4	GENERAL CHEMISTRY	CAMO-17-132220	1203790799	DUP	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	CAMO-17-132220	1203790803	MS	0	0	1	0
EPA:335.4	GENERAL CHEMISTRY	CAMO-17-132220	423194002	REG	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	CAMO-17-132307	423194005	FD	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	LCS	1203790798	LCS	0	0	1	0
EPA:335.4	GENERAL CHEMISTRY	MB	1203790797	MB	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAMO-17-132200	423194001	REG	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAMO-17-132308	423194006	FD	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	LCS	1203792074	LCS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	MB	1203792073	MB	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	WST53-17-133059	1203792075	DUP	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	WST53-17-133059	1203792076	MS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	CAMO-17-132220	1203792085	DUP	1	0	0	0

DATA VALIDATION REPORT

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
EPA:351.2	GENERAL CHEMISTRY	CAMO-17-132220	1203792086	MS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	CAMO-17-132220	423194002	REG	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAMO-17-132307	423194005	FD	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	LCS	1203792082	LCS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	MB	1203792081	MB	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	WST15-17-135039	1203792083	DUP	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	WST15-17-135039	1203792084	MS	0	0	1	0
EPA:353.2	GENERAL CHEMISTRY	CAMO-17-132200	423194001	REG	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAMO-17-132308	423194006	FD	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CASA-17-132339	1203790705	DUP	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	LCS	1203789301	LCS	0	0	1	0
EPA:353.2	GENERAL CHEMISTRY	MB	1203789300	MB	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	MSGP-17-131913	1203790704	DUP	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAMO-17-132200	423194001	REG	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAMO-17-132308	423194006	FD	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAMO-17-132462	1203792061	DUP	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAMO-17-132462	1203792062	MS	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	LCS	1203792058	LCS	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	MB	1203792057	MB	1	0	0	0
SM:A2340B	INORGANIC	CAMO-17-132200	423194001	REG	1	0	0	0
SM:A2340B	INORGANIC	CAMO-17-132308	423194006	FD	1	0	0	0
SW-846:6010C	INORGANIC	CAMO-17-132200	1203790411	DUP	17	0	0	0
SW-846:6010C	INORGANIC	CAMO-17-132200	1203790412	MS	0	0	17	0
SW-846:6010C	INORGANIC	CAMO-17-132200	423194001	REG	17	0	0	0
SW-846:6010C	INORGANIC	CAMO-17-132308	423194006	FD	17	0	0	0
SW-846:6010C	INORGANIC	LCS	1203790410	LCS	0	0	17	0
SW-846:6010C	INORGANIC	MB	1203790409	MB	17	0	0	0
SW-846:6020	INORGANIC	CAMO-17-132200	1203790455	DUP	11	0	0	0
SW-846:6020	INORGANIC	CAMO-17-132200	1203790456	MS	0	0	11	0
SW-846:6020	INORGANIC	CAMO-17-132200	423194001	REG	11	0	0	0
SW-846:6020	INORGANIC	CAMO-17-132308	423194006	FD	11	0	0	0
SW-846:6020	INORGANIC	LCS	1203790454	LCS	0	0	11	0
SW-846:6020	INORGANIC	MB	1203790453	MB	11	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	CAMO-17-132200	423194001	REG	1	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	CAMO-17-132308	423194006	FD	1	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	CASA-17-132339	1203795003	MS	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	CASA-17-132339	1203795004	MSD	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	LCS	1203795002	LCS	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	MB	1203795001	MB	1	0	0	0
SW-846:8260B	VOC	CAMO-17-132220	423194002	REG	80	3	0	0

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
SW-846:8260B	VOC	CAMO-17-132300	423194003	FTB	80	3	0	0
SW-846:8260B	VOC	CAMO-17-132305	423194004	FB	80	3	0	0
SW-846:8260B	VOC	CAMO-17-132307	423194005	FD	80	3	0	0
SW-846:8260B	VOC	LCS	1203796376	LCS	0	3	70	0
SW-846:8260B	VOC	LCS	1203796377	LCS	0	3	10	0
SW-846:8260B	VOC	LCS	1203797168	LCS	0	3	70	0
SW-846:8260B	VOC	LCS	1203798267	LCS	0	3	10	0
SW-846:8260B	VOC	LCS	1203798284	LCS	0	3	10	0
SW-846:8260B	VOC	MB	1203796375	MB	80	3	0	0
SW-846:8260B	VOC	MB	1203797167	MB	80	3	0	0
SW-846:8260B	VOC	MB	1203798283	MB	80	3	0	0
SW-846:8270D	SVOC	CAMO-17-132220	423194002	REG	80	6	0	0
SW-846:8270D	SVOC	CAMO-17-132305	423194004	FB	80	6	0	0
SW-846:8270D	SVOC	CAMO-17-132307	423194005	FD	80	6	0	0
SW-846:8270D	SVOC	CASA-17-132341	1203790721	MS	0	6	76	0
SW-846:8270D	SVOC	CASA-17-132341	1203790722	MSD	0	6	76	0
SW-846:8270D	SVOC	LCS	1203790720	LCS	0	6	76	0
SW-846:8270D	SVOC	MB	1203790719	MB	80	6	0	0
SW-846:9060	GENERAL CHEMISTRY	CAMO-17-132220	423194002	REG	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAMO-17-132228	1203793104	DUP	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAMO-17-132307	1203793105	DUP	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAMO-17-132307	423194005	FD	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	LCS	1203793103	LCS	0	0	1	0
SW-846:9060	GENERAL CHEMISTRY	MB	1203793102	MB	1	0	0	0

3. Are any analytes missing?

No.

4. Were any holding times exceeded?

No.

5. Any contaminants in blanks?

Blank FS ID	Blank Lab Sample	Blank Type	Analytical Method	Sample	Parameter Name	Blank Lab Result	Lab Qualifier	Blank Lab Units	Blank Lab Detection Limit
MB	1203792073	METHOD BLANK	EPA:350.1	W	Ammonia as Nitrogen	0.0307	J	mg/L	0.050
CAMO-17-132300	423194003	TRIP BLANK	EPA:170.0	W	Temperature	3		Deg C	
CAMO-17-132305	423194004	FIELD BLANK	EPA:170.0	W	Temperature	3		Deg C	

Field Sample ID	Blank Lab	Blank Type	Analytical Method	Parameter Name	Blank Lab Result	Blank Lab Units	Lab Result	Lab Qualifier	Lab Detection Limit	Detect Flag	Detect to Nondetect Factor	Detect to Estimated Factor	Use Factors
CAMO-17-132200	1203792073	METHOD BLANK	EPA:350.1	Ammonia as Nitrogen	0.0307	mg/L	0.111		0.050	Y	5	100	Y
CAMO-17-132308	1203792073	METHOD BLANK	EPA:350.1	Ammonia as Nitrogen	0.0307	mg/L	0.0873		0.050	Y	5	100	Y

6. Any surrogate recoveries outside the control limits?

No.

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

Field Sample ID	MS Lab Sample ID	MSD Lab Sample ID	Analytical Method	Parameter Name	Analysis Lot ID	Analysis Date	Sample Matrix	MS Spike Recovery	MSD Spike Recovery	MS Upper Limit	MS Lower Limit	MS Reject Limit	RPD	RPD Limit
CAMO-17-132220	1203790803		EPA:335.4	Cyanide (Total)	1665625	05-18-2017	W	113		110	90	10		
CAMO-17-132220	1203790803		EPA:335.4	Cyanide (Total)	1665625	05-18-2017	W	113		110	90	10		
WST53-17-133059	1203792076		EPA:350.1	Ammonia as Nitrogen	1666188	05-22-2017	W	74.8		110	90	10		
WST15-17-135039	1203792084		EPA:351.2	Total Kjeldahl Nitrogen	1666191	05-24-2017	W	153		110	90	10		

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

LCS Lab Sample	LCSD Lab	Analytical Method	Parameter Name	Lab Lot ID	Analysis	Sample Matrix	LCS Spike Recovery	LCSD Spike Recovery	Upper Limit	Lower Limit	Upper Rejection Limit	Lower Rejection Limit	RPD	RPD Limit
1203796376		SW-846:8260B	Hexanone[2-]	1667958	05-24-2017	W	141		140	56		10		
1203797168		SW-846:8260B	Butanone[2-]	1667958	05-24-2017	W	140		138	55		10		
1203797168		SW-846:8260B	Hexanone[2-]	1667958	05-24-2017	W	151		140	56		10		
1203797168		SW-846:8260B	Trichlorobenzene[1,2,4-]	1667958	05-24-2017	W	132		129	71		10		

9. Any Field Duplicate RPDs outside the desired limits?

No.

10. Any Lab Duplicate RPDs outside the desired limits?

No.

11. Any required reporting limits exceeded?

No.

12. Additional Validator's Comments.

13. Display Flagged Data.

Location ID	COC Number	Field Sample ID	Sample Purpose	Analysis Type Code	Analytical Suite	Analytical Method	Paramter Name	Lab Qualifier	Validation Qualifier	Validation Reason Codes	Detect Flag	Lab Result	Lab Units	Report Result	Report Units	Report MDA	Report Uncertainty	Lab Matrix	Sample Date	Percent	Analysis Lot ID	Validation Status Code	Use Flag
MCOI-6	2017-1529	CAMO-17-132200	REG	INIT	GENERAL CHEMISTRY	EPA:350.1	Ammonia as Nitrogen		U	I4	N	0.111	mg/L	0.111	mg/L			W	05/11/2017		1666189	VAL	Y

Location ID	COC Number	Field Sample ID	Sample Purpose	Analysis Type Code	Analytical Suite	Analytical Method	Paramter Name	Lab Qualifier	Validation Qualifier	Validation Reason Codes	Detect Flag	Lab Result	Lab Units	Report Result	Report Units	Report MDA	Report Uncertainty	Lab Matrix	Sample Date	Percent	Analysis Lot ID	Validation Status Code	Use Flag
MCOI-6	2017-1529	CAMO-17-132220	REG	INIT	GENERAL CHEMISTRY	EPA:335.4	Cyanide (Total)	J	J+	I6b	Y	3.03	ug/L	0.00303	mg/L			W	05/11/2017		1665629	VAL	Y
MCOI-6	2017-1529	CAMO-17-132308	FD	INIT	GENERAL CHEMISTRY	EPA:350.1	Ammonia as Nitrogen		U	I4	N	0.0873	mg/L	0.0873	mg/L			W	05/11/2017		1666189	VAL	Y

Reason Code	Description
I4	the sample result is =<5x the concentration of related analyte in the method blank.
I6b	The associated matrix spike recovery was above the Upper Acceptance Limit (UAL). Follow the external laboratory limits located within the associated data package.
J_LAB	The analytical laboratory qualified the detected result as estimated (J) because the result was less the PQL but greater than the MDL
NQ	The analytical laboratory did not qualifiy the analyte as not detected and/or any other standard qualifire. 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-17-132200	MCOI-6	REG	EPA:120.1	0	1
CAMO-17-132200	MCOI-6	REG	EPA:150.1	0	1
CAMO-17-132200	MCOI-6	REG	EPA:160.1	0	1
CAMO-17-132200	MCOI-6	REG	EPA:170.0	0	1
CAMO-17-132200	MCOI-6	REG	EPA:245.2	0	1
CAMO-17-132200	MCOI-6	REG	EPA:300.0	0	4
CAMO-17-132200	MCOI-6	REG	EPA:310.1	0	2
CAMO-17-132200	MCOI-6	REG	EPA:350.1	0	1
CAMO-17-132200	MCOI-6	REG	EPA:353.2	0	1
CAMO-17-132200	MCOI-6	REG	EPA:365.4	0	1
CAMO-17-132200	MCOI-6	REG	SM:A2340B	0	1
CAMO-17-132200	MCOI-6	REG	SW-846:6010C	0	17
CAMO-17-132200	MCOI-6	REG	SW-846:6020	0	11
CAMO-17-132200	MCOI-6	REG	SW-846:6850	0	1
CAMO-17-132220	MCOI-6	REG	EPA:170.0	0	1
CAMO-17-132220	MCOI-6	REG	EPA:245.2	0	1
CAMO-17-132220	MCOI-6	REG	EPA:335.4	0	1

DATA VALIDATION REPORT

Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total Records
CAMO-17-132220	MCOI-6	REG	EPA:351.2	0	1
CAMO-17-132220	MCOI-6	REG	SW-846:8260B	0	80
CAMO-17-132220	MCOI-6	REG	SW-846:8270D	0	80
CAMO-17-132220	MCOI-6	REG	SW-846:9060	0	1
CAMO-17-132300	MCOI-6	FTB	EPA:170.0	0	1
CAMO-17-132300	MCOI-6	FTB	SW-846:8260B	0	80
CAMO-17-132305	MCOI-6	FB	EPA:170.0	0	1
CAMO-17-132305	MCOI-6	FB	SW-846:8260B	0	80
CAMO-17-132305	MCOI-6	FB	SW-846:8270D	0	80
CAMO-17-132307	MCOI-6	FD	EPA:170.0	0	1
CAMO-17-132307	MCOI-6	FD	EPA:245.2	0	1
CAMO-17-132307	MCOI-6	FD	EPA:335.4	0	1
CAMO-17-132307	MCOI-6	FD	EPA:351.2	0	1
CAMO-17-132307	MCOI-6	FD	SW-846:8260B	0	80
CAMO-17-132307	MCOI-6	FD	SW-846:8270D	0	80
CAMO-17-132307	MCOI-6	FD	SW-846:9060	0	1
CAMO-17-132308	MCOI-6	FD	EPA:120.1	0	1
CAMO-17-132308	MCOI-6	FD	EPA:150.1	0	1
CAMO-17-132308	MCOI-6	FD	EPA:160.1	0	1
CAMO-17-132308	MCOI-6	FD	EPA:170.0	0	1
CAMO-17-132308	MCOI-6	FD	EPA:245.2	0	1
CAMO-17-132308	MCOI-6	FD	EPA:300.0	0	4
CAMO-17-132308	MCOI-6	FD	EPA:310.1	0	2
CAMO-17-132308	MCOI-6	FD	EPA:350.1	0	1
CAMO-17-132308	MCOI-6	FD	EPA:353.2	0	1
CAMO-17-132308	MCOI-6	FD	EPA:365.4	0	1
CAMO-17-132308	MCOI-6	FD	SM:A2340B	0	1
CAMO-17-132308	MCOI-6	FD	SW-846:6010C	0	17
CAMO-17-132308	MCOI-6	FD	SW-846:6020	0	11
CAMO-17-132308	MCOI-6	FD	SW-846:6850	0	1

GEL Laboratories LLC
a member of The GEL Group INC

PO Box 30712 Charleston, SC 29417
2040 Savage Road Charleston, SC 29407
P 843.556.8171
F 843.766.1178

gel.com

June 07, 2017

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

Re: LANL- WQH Water Samples
Work Order: 423194
SDG: 2017-1529

Dear Mr. Greene:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the following analytical results for the sample(s) we received on May 16, 2017, and analyzed for GC/MS Semivolatile, GC/MS Volatile, General Chemistry, Metals and Perchlorates by LCMSMS. 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: 2017-1529
Enclosures

ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)
LANL- WQH Water Samples
Work Order #: 423194
SDG: 2017-1529

Table of Contents

Case Narrative

Case Narrative for
ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)
LANL- WQH Water Samples
Workorder #: 423194
SDG # : 2017-1529

June 07, 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 May 16, 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:

Laboratory ID	Client ID
423194001	CAMO-17-132200
423194002	CAMO-17-132220
423194003	CAMO-17-132300
423194004	CAMO-17-132305
423194005	CAMO-17-132307
423194006	CAMO-17-132308

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 Semivolatile, GC/MS Volatile, General Chemistry, Metals and Perchlorates by LCMSMS.

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 07 June 2017

State	Certification
Alaska	UST−0110
Arkansas	88−0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH−0169
Delaware	SC00012
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330−15−00283, P330−15−00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C−SC−01
Kansas NELAP	E−10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	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

General Engineering
Charleston SC

Chain of Custody/Analysis Request 423194

COC/Lab Request #: 2017-1529
Page 1 of 1

Client Contact:

Lab Agreement #:

Project Number: ADEP

Analysis Turnaround Time:
24 Hour - ☐ Other - ☐
7 Days - ☐
14 Days - ☐
21 Days - ☐
28 Days - ☒

Site Name: Los Alamos National Laboratory

Rad Screening Info:

Lab Reporting Limit Type: Sample Quantitation Limit

Field Sample ID	Sample Date	Sample Time	Sample Matrix	MSGP-Hg	WSP-8260B-VOA	WSP-8270C-SVOA	WSP-All Metals	WSP-CN(T)	WSP-GENINORG+PerChlorate	WSP-NH3+NO3/NO2+PO4	WSP-TKN+TOC
CAMO-17-132200	May 11 2017	15:44	W				1		1	1	
CAMO-17-132220	May 11 2017	15:44	W	1	2	2		1			1
CAMO-17-132300	May 11 2017	15:44	W		2						
CAMO-17-132305	May 11 2017	15:44	W		2	2					
CAMO-17-132307	May 11 2017	15:44	W	1	2	2		1			1
CAMO-17-132308	May 11 2017	15:44	W				1		1	1	

Special Instructions:

Relinquished by:	Print Name: Jesse Mondragon	Date/Time: 5/15/17 3:00	Received by:	Print Name: LINDA PADILLA	Date/Time: 5/16/17 9:20
Relinquished by:	Print Name:	Date/Time:	Received by:	Print Name:	Date/Time:
Relinquished by:	Print Name:	Date/Time:	Received by:	Print Name:	Date/Time:

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: LANL	**SDG/AR/COC/Work Order:** 423194
Received By: ZKW	**Date Received:** 5/16/17
Carrier and Tracking Number	Circle Applicable: FedEx Express / FedEx Ground / UPS / Field Services / Courier / Other 5908 1782 0816 4° · 5908 1782 0849 3° 5908 1782 0746 20° · 5908 1782 0779 3° 5908 1782 0827 3° · 5908 1782 0780 2° 5908 1782 0790 4° · 5908 1782 0805 4° 5908 1782 0757 22° · 5908 1782 0838 3° 5908 1782 0768 5°

Suspected Hazard Information	Yes	No	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
Shipped as a DOT Hazardous?		✓	Hazard Class Shipped: UN#:
COC/Samples marked or classified as radioactive?		✓	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): 0 (CPM) mR/Hr Classified as: Rad 1 Rad 2 Rad 3
Is package, COC, and/or Samples marked HAZ?		✓	If yes, select Hazards below, and contact the GEL Safety Group. PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other:

	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Chain of custody documents included with shipment?	✓			
3	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	✓			Preservation Method: Wet Ice / (Ice Packs) / Dry ice / None / Other: *all temperatures are recorded in Celsius TEMP: See Above
4	Daily check performed and passed on IR temperature gun?	✓			**Temperature Device Serial #:** IR3-16 Secondary Temperature Device Serial # (If Applicable):
5	Sample containers intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6	Samples requiring chemical preservation at proper pH?	✓			Sample ID's and Containers Affected: If Preservation added, Lot#:
7	Do any samples require Volatile Analysis?	✓			If Yes, Are Encores or Soil Kits present? Yes___ No ✓ (If yes, take to VOA Freezer) Do VOA vials contain acid preservation? Yes ✓ No___ N/A___ (If unknown, select No) VOA vials free of headspace? Yes ✓ No___ N/A___ Sample ID's and containers affected:
8	Samples received within holding time?	✓			ID's and tests affected:
9	Sample ID's on COC match ID's on bottles?	✓			Sample ID's and containers affected:
10	Date & time on COC match date & time on bottles?			✓	Sample ID's affected: CASA-17-133063 containers have 12:18 COC 10:57
11	Number of containers received match number indicated on COC?			✓	Sample ID's affected: One Vial only for WST53-17-133061
12	Are sample containers identifiable as GEL provided?	✓			
13	COC form is properly signed in relinquished/received sections?	✓			

Comments (Use Continuation Form if needed):
Sample RELA-17-135614 is Consisting of a VOA VIAL with white crystals for 8260B analysis and the COC is indicating a water sample for Metals(w)

PM (or PMA) review: Initials ZKW Date 5/16/17 Page 1 of 1

GL-CHL-SR-001 Rev 5

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: 15MAY17
ACTWGT: 47.0 LB MAN
CAD: 0014176/CAFE2916

BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407
(843) 556-8171
REF: 21PD0ASRGW04BB6AS0

2 of 3

538C1/8734/329B

FedEx Express

J151315081301uv

1 of 3
TRK# 0201 5908 1782 0780
MASTER

TUE - 16 MAY 10:30A
PRIORITY OVERNIGHT

X7 RBWA

29407
SC-US CHS

Part# 150149V-434 REV2 06/15

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: 15MAY17
ACTWGT: 63.0 LB MAN
CAD: 0014176/CAFE2916

BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407
(843) 556-8171
REF: 21PD0ASRGW04BAGWE0

3

538C1/8734/329B

FedEx Express

J151315081301uv

1 of 2
RK# 201 5908 1782 0838
MASTER

TUE - 16 MAY 10:30A
PRIORITY OVERNIGHT

K7 RBWA

29407
SC-US CHS

Part# 150149V-434 REV2 06/15

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: 15MAY17
ACTWGT: 27.0 LB MAN
CAD: 0014176/CAFE2916

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CHARLESTON SC 29407
(843) 556-8171
REF: 21PD0ASRGW04BAGWE0

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2 of 2
MPS# 0263 5908 1782 0849
Mstr# 5908 1782 0838

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SC-US CHS

Part# 150149V-434 REV2 06/15

KEITH GREENE
LOS ALAMOS NATL LAB.
TA00 BLDG 1237 DPU 03

LOS ALAMOS, NM 87545
UNITED STATES US

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TO VALERIE DAVIS
GENERAL ENGINEE...NG LAB
2040 SAVAGE RD

CHARLESTON SC 29407
(843) 556-8171
REF: 21PD0AWE991158W100

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Mstr# 5908 1782 0746 0201

TUE - 16 MAY 10:30A
PRIORITY OVERNIGHT

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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: 15MAY17
ACTWGT: 50.0 LB MAN
CAD: 0014176/CAFE2916

BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407
(843) 556-8171
REF: 21PD0ASRAE20DF6X00

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TRK# 0201 5908 1782 0827

TUE - 16 MAY 10:30A
PRIORITY OVERNIGHT

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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: 15MAY17
ACTWGT: 51.0 LB MAN
CAD: 0014176/CAFE2916

BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407
(843) 556-8171
REF: 21PD0AWE991158W100

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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: 15MAY17
ACTWGT: 51.0 LB MAN
CAD: 0014176/CAFE2916
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TA00 BLDG 1237 DPU 03
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UNITED STATES US
SHIP DATE: 15MAY17
ACTWGT: 50.0 LB MAN
CAD: 0014176/CAFE2916
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2040 SAVAGE RD
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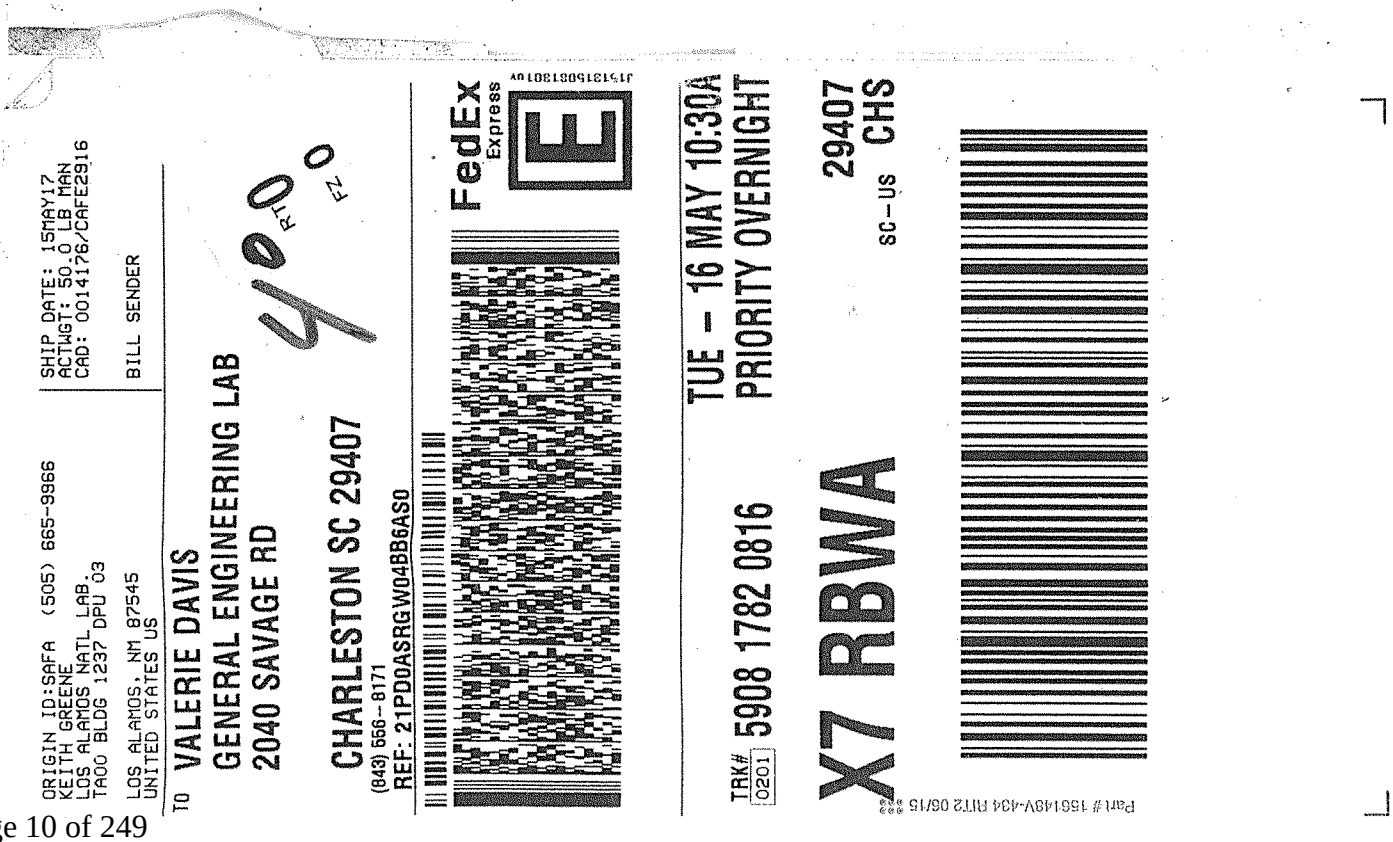
ORIGIN ID:SAFA (505) 665-9966
KEITH GREENE
LOS ALAMOS NATL LAB.
TA00 BLDG 1237 DPU 03
LOS ALAMOS, NM 87545
UNITED STATES US
SHIP DATE: 15MAY17
ACTWGT: 50.0 LB MAN
CAD: 0014176/CAFE2916
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29407
SC-US CHS
Part # 156148V-434 RIT2 06/15

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: 15MAY17
ACTWGT: 19.0 LB MAN
CAD: 0014176/CAFE2916

BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407
(843) 556-8171
REF: 21PD0AWE991158W100

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2 of 3
MPS# 0263 5908 1782 0757
Mstr# 5908 1782 0746
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TUE - 16 MAY 10:30A
PRIORITY OVERNIGHT

X7 RBWA

29407
SC-US CHS

Part # 156148V-434 RIT2 06/15

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: 15MAY17
ACTWGT: 40.0 LB MAN
CAD: 0014176/CAFE2916

BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407
(843) 556-8171
REF: 21PD0AWE991158W100

20°

538C1/8734/329B

FedEx Express

J151315081301av

1 of 3
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TUE - 16 MAY 10:30A
PRIORITY OVERNIGHT

X7 RBWA

29407
SC-US CHS

Part # 156148V-434 RIT2 06/15

Data Review Qualifier Flag Definition Sheet

Data Review Qualifier Definitions

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

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

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

Volatile Analysis

Case Narrative

GC/MS Volatile
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2017-1529
Work Order #: 423194

Method/Analysis Information

Procedure:	**Volatile Organic Compounds (VOC) by Gas Chromatograph/Mass Spectrometer**
Analytical Method:	SW-846:8260B
Analytical Batch Number:	1667958

Sample Analysis

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

Sample ID	Client ID
423194002	CAMO-17-132220
423194003	CAMO-17-132300
423194004	CAMO-17-132305
423194005	CAMO-17-132307
1203796375	Method Blank (MB)
1203796376	Laboratory Control Sample (LCS)
1203796377	Laboratory Control Sample (LCS)
1203796378	423224005(WST53-17-133059) Post Spike (PS)
1203796379	423224005(WST53-17-133059) Post Spike (PS)
1203796380	423224005(WST53-17-133059) Post Spike Duplicate (PSD)
1203796381	423224005(WST53-17-133059) Post Spike Duplicate (PSD)
1203797167	Method Blank (MB)
1203797168	Laboratory Control Sample (LCS)
1203798267	Laboratory Control Sample (LCS)
1203798283	Method Blank (MB)
1203798284	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# 25.

Calibration Information

A complete list of the initial calibration data files with the correct dates and times of analysis are shown in the

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

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

Continuing Calibration Verification Requirements
All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information

Blank (MB) Statement
Target analytes were detected in the blank 1203797167 (MB) below the reporting limit.

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

Laboratory Control Sample (LCS) Recovery
The LCS/and or LCSD (See Below) recoveries were not all within the acceptance limits. The unacceptable recoveries were less than 5% of the requested analyte list. This satisfies the client criteria. The results are reported.

Sample	Analyte	Value
1203796376 (LCS)	2-Hexanone	141* (56%-140%)
1203797168 (LCS)	1,2,4-Trichlorobenzene	132* (71%-129%)
	2-Butanone	140* (55%-138%)
	2-Hexanone	151* (56%-140%)

QC Sample Designation
Sample 423224005 (WST53-17-133059) was designated for spike analysis.

Matrix Spike/Matrix Spike Duplicate Recovery Statement
The matrix spike (MS) and matrix spike duplicate (MSD) recoveries were within the required acceptance limits.

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

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

Technical Information

Holding Time Specifications
All samples in this SDG met the specified holding time. GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection or sample receipt. Those holding times expressed in hours are calculated in the ALPHALIMS system. Those holding times expressed as days expire at midnight on the day of expiration.

Sample Preservation and Integrity

All samples met the sample preservation and integrity requirements.

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

Sample Re-extraction/Re-analysis
Samples 1203796379 (WST53-17-133059PS) and 1203796381 (WST53-17-133059PSD) were re-analyzed and reported because the initial analysis fell outside of the initial tune window.

Miscellaneous Information

Data Exception (DER) Documentation
A data exception report (DER) 1636137 was generated for samples 1203796376 (LCS) and 1203797168 (LCS) in this SDG/batch.

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

TIC Comment
Tentatively identified compounds (TIC) 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:

Instrument ID	Instrument	System Configuration	Column ID	Column Description	P & T Trap
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: 2017-1529 GEL Work Order: 423194

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
B The target analyte was detected in the associated blank.
J Value is estimated
U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

DL Indicates that sample is diluted.
RA Indicates that sample is re-analyzed without re-extraction.
RE Indicates that sample is re-extracted.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: Erin Haubert **Name: Erin Haubert**

Date: 12 JUN 2017 **Title: Data Validator**

Sample Data Summary

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**	**Date Collected:**	**05/11/2017 15:44**	**Matrix:**	**W**
Lab Sample ID:	**423194002**	**Date Received:**	**05/16/2017 09:20**		
		Client:	**ARSL004**	**Project:**	**ESHL00114**
Client ID:	**CAMO-17-132220**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/24/2017 18:23**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/24/2017 18:23**				
Data File:	**052417V1\1J314.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:	**2017-1529**	**Date Collected:**	**05/11/2017 15:44**	**Matrix:**	**W**
Lab Sample ID:	**423194002**	**Date Received:**	**05/16/2017 09:20**		
		Client:	**ARSL004**	**Project:**	**ESHL00114**
Client ID:	**CAMO-17-132220**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/24/2017 18:23**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/24/2017 18:23**				
Data File:	**052417V1\1J314.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:	**2017-1529**	**Date Collected:**	**05/11/2017 15:44**	**Matrix:**	**W**
Lab Sample ID:	**423194002**	**Date Received:**	**05/16/2017 09:20**		
		Client:	**ARSL004**	**Project:**	**ESHL00114**
Client ID:	**CAMO-17-132220**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/24/2017 18:23**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/24/2017 18:23**				
Data File:	**052417V1\1J314.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	46.2	50.0	ug/L	92	(71%-134%)
Bromofluorobenzene	56.0	50.0	ug/L	112	(70%-131%)
Toluene-d8	50.0	50.0	ug/L	100	(74%-124%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown siloxane	14.549	22.1	ug/L	0	J

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**	**Date Collected:**	**05/11/2017 15:44**	**Matrix:**	**W**
Lab Sample ID:	**423194003**	**Date Received:**	**05/16/2017 09:20**		
		Client:	**ARSL004**	**Project:**	**ESHL00114**
Client ID:	**CAMO-17-132300**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/24/2017 18:52**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/24/2017 18:52**				
Data File:	**052417V1\1J315.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:	**2017-1529**	**Date Collected:**	**05/11/2017 15:44**	**Matrix:**	**W**
Lab Sample ID:	**423194003**	**Date Received:**	**05/16/2017 09:20**		
		Client:	**ARSL004**	**Project:**	**ESHL00114**
Client ID:	**CAMO-17-132300**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/24/2017 18:52**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/24/2017 18:52**				
Data File:	**052417V1\1J315.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:	**2017-1529**	**Date Collected:**	**05/11/2017 15:44**	**Matrix:**	**W**
Lab Sample ID:	**423194003**	**Date Received:**	**05/16/2017 09:20**		
		Client:	**ARSL004**	**Project:**	**ESHL00114**
Client ID:	**CAMO-17-132300**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/24/2017 18:52**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/24/2017 18:52**				
Data File:	**052417V1\1J315.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	48.9	50.0	ug/L	98	(71%-134%)
Bromofluorobenzene	57.5	50.0	ug/L	115	(70%-131%)
Toluene-d8	50.4	50.0	ug/L	101	(74%-124%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown siloxane	14.558	10.8	ug/L	0	J

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**	**Date Collected:**	**05/11/2017 15:44**	**Matrix:**	**W**
Lab Sample ID:	**423194004**	**Date Received:**	**05/16/2017 09:20**		
		Client:	**ARSL004**	**Project:**	**ESHL00114**
Client ID:	**CAMO-17-132305**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/24/2017 19:21**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/24/2017 19:21**				
Data File:	**052417V1\1J316.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:	**2017-1529**	**Date Collected:**	**05/11/2017 15:44**	**Matrix:**	**W**
Lab Sample ID:	**423194004**	**Date Received:**	**05/16/2017 09:20**		
		Client:	**ARSL004**	**Project:**	**ESHL00114**
Client ID:	**CAMO-17-132305**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/24/2017 19:21**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/24/2017 19:21**				
Data File:	**052417V1\1J316.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:	**2017-1529**	**Date Collected:**	**05/11/2017 15:44**	**Matrix:**	**W**
Lab Sample ID:	**423194004**	**Date Received:**	**05/16/2017 09:20**		
		Client:	**ARSL004**	**Project:**	**ESHL00114**
Client ID:	**CAMO-17-132305**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/24/2017 19:21**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/24/2017 19:21**				
Data File:	**052417V1\1J316.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	47.7	50.0	ug/L	95	(71%-134%)
Bromofluorobenzene	57.5	50.0	ug/L	115	(70%-131%)
Toluene-d8	48.9	50.0	ug/L	98	(74%-124%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown siloxane	14.558	12.9	ug/L	0	J

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**	**Date Collected:**	**05/11/2017 15:44**	**Matrix:**	**W**
Lab Sample ID:	**423194005**	**Date Received:**	**05/16/2017 09:20**		
		Client:	**ARSL004**	**Project:**	**ESHL00114**
Client ID:	**CAMO-17-132307**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/24/2017 19:50**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/24/2017 19:50**				
Data File:	**052417V1\1J317.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:	**2017-1529**	**Date Collected:**	**05/11/2017 15:44**	**Matrix:**	**W**
Lab Sample ID:	**423194005**	**Date Received:**	**05/16/2017 09:20**		
		Client:	**ARSL004**	**Project:**	**ESHL00114**
Client ID:	**CAMO-17-132307**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/24/2017 19:50**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/24/2017 19:50**				
Data File:	**052417V1\1J317.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:	**2017-1529**	**Date Collected:**	**05/11/2017 15:44**	**Matrix:**	**W**
Lab Sample ID:	**423194005**	**Date Received:**	**05/16/2017 09:20**		
		Client:	**ARSL004**	**Project:**	**ESHL00114**
Client ID:	**CAMO-17-132307**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/24/2017 19:50**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/24/2017 19:50**				
Data File:	**052417V1\1J317.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	49.0	50.0	ug/L	98	(71%-134%)
Bromofluorobenzene	57.6	50.0	ug/L	115	(70%-131%)
Toluene-d8	51.4	50.0	ug/L	103	(74%-124%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown siloxane	14.558	10.4	ug/L	0	J

Quality Control Summary

Surrogate Recovery Report

SDG Number: 2017-1529

Matrix Type: LIQUID

Sample ID	Client ID	DCED4 %REC	TOL %REC	BFB %REC
1203796376	LCS for batch 1667958	90	100	105
1203796377	LCS for batch 1667958	92	103	106
1203796375	MB for batch 1667958	95	104	112
1203796378	WST53-17-133059PS	92	101	105
1203796380	WST53-17-133059PSD	92	101	103
1203797168	LCS for batch 1667958	94	103	106
1203798267	LCS for batch 1667958	91	103	107
1203797167	MB for batch 1667958	94	103	110
423194002	CAMO-17-132220	92	100	112
423194003	CAMO-17-132300	98	101	115
423194004	CAMO-17-132305	95	98	115
423194005	CAMO-17-132307	98	103	115
1203798284	LCS for batch 1667958	91	101	108
1203798283	MB for batch 1667958	93	99	113
1203796379	WST53-17-133059PS	90	101	109
1203796381	WST53-17-133059PSD	87	99	108

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

SDG Number: 2017-1529
Sample Type: Laboratory Control Sample
Client ID: LCS for batch 1667958
Matrix: WATER
Lab Sample ID 1203796376
Instrument: VOA1.I
Analysis Date: 05/24/2017 00:17
Dilution: 1
Analyst: PXY1
Purge Vol: 5 mL
Batch ID: 1667958

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	109	109	71-127
75-05-8	LCS	Acetonitrile	1250	0.0	1120	90	61-125
67-64-1	LCS	Acetone	250	0.0	335	134	48-157
74-88-4	LCS	Iodomethane	250	0.0	212	85	72-128
75-15-0	LCS	Carbon disulfide	250	0.0	209	84	69-138
108-05-4	LCS	Vinyl acetate	250	0.0	242	97	67-125
78-93-3	LCS	2-Butanone	250	0.0	326	130	55-138
108-10-1	LCS	4-Methyl-2-pentanone	250	0.0	260	104	66-124
591-78-6	LCS	2-Hexanone	250	0.0	353	141 *	56-140
75-71-8	LCS	Dichlorodifluoromethane	50.0	0.0	59.0	118	40-160
74-87-3	LCS	Chloromethane	50.0	0.0	49.7	99	58-135
75-01-4	LCS	Vinyl chloride	50.0	0.0	51.8	104	65-137
74-83-9	LCS	Bromomethane	50.0	0.0	51.2	102	63-137
75-00-3	LCS	Chloroethane	50.0	0.0	49.6	99	69-129
75-69-4	LCS	Trichlorofluoromethane	50.0	0.0	50.1	100	69-138
60-29-7	LCS	Ethyl ether	50.0	0.0	49.3	99	72-125
75-35-4	LCS	1,1-Dichloroethylene	50.0	0.0	46.0	92	66-126
75-09-2	LCS	Methylene chloride	50.0	0.0	40.2	80	68-119
1634-04-4	LCS	tert-Butyl methyl ether	50.0	0.0	52.9	106	76-128
156-60-5	LCS	trans-1,2-Dichloroethylene	50.0	0.0	47.1	94	71-124
75-34-3	LCS	1,1-Dichloroethane	50.0	0.0	47.2	94	73-123
156-59-2	LCS	cis-1,2-Dichloroethylene	50.0	0.0	47.9	96	75-123

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-1529
Sample Type: Laboratory Control Sample
Client ID: LCS for batch 1667958
Matrix: WATER
Lab Sample ID 1203796376
Instrument: VOA1.I
Analysis Date: 05/24/2017 00:17
Dilution: 1
Analyst: PXY1
Purge Vol: 5 mL
Batch ID: 1667958

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	52.7	105	72-138
74-97-5	LCS	Bromochloromethane	50.0	0.0	46.6	93	76-125
67-66-3	LCS	Chloroform	50.0	0.0	45.6	91	76-123
71-55-6	LCS	1,1,1-Trichloroethane	50.0	0.0	49.1	98	74-136
563-58-6	LCS	1,1-Dichloropropene	50.0	0.0	48.0	96	72-129
56-23-5	LCS	Carbon tetrachloride	50.0	0.0	48.3	97	72-140
107-06-2	LCS	1,2-Dichloroethane	50.0	0.0	44.0	88	74-122
71-43-2	LCS	Benzene	50.0	0.0	45.9	92	72-121
79-01-6	LCS	Trichloroethylene	50.0	0.0	48.7	97	74-125
78-87-5	LCS	1,2-Dichloropropane	50.0	0.0	45.6	91	73-121
74-95-3	LCS	Dibromomethane	50.0	0.0	45.7	91	78-123
75-27-4	LCS	Bromodichloromethane	50.0	0.0	46.2	92	77-131
10061-01-5	LCS	cis-1,3-Dichloropropylene	50.0	0.0	44.7	89	78-131
108-88-3	LCS	Toluene	50.0	0.0	50.7	101	71-121
10061-02-6	LCS	trans-1,3-Dichloropropylene	50.0	0.0	50.8	102	78-131
79-00-5	LCS	1,1,2-Trichloroethane	50.0	0.0	51.5	103	74-118
142-28-9	LCS	1,3-Dichloropropane	50.0	0.0	50.9	102	74-118
127-18-4	LCS	Tetrachloroethylene	50.0	0.0	55.3	111	69-129
124-48-1	LCS	Dibromochloromethane	50.0	0.0	54.4	109	76-137
106-93-4	LCS	1,2-Dibromoethane	50.0	0.0	55.4	111	78-122
108-90-7	LCS	Chlorobenzene	50.0	0.0	51.4	103	74-120
100-41-4	LCS	Ethylbenzene	50.0	0.0	53.0	106	73-125

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-1529
Sample Type: Laboratory Control Sample
Client ID: LCS for batch 1667958
Matrix: WATER
Lab Sample ID 1203796376
Instrument: VOA1.I
Analysis Date: 05/24/2017 00:17
Dilution: 1
Analyst: PXY1
Purge Vol: 5 mL
Batch ID: 1667958

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	55.2	110	74-126
100-42-5	LCS	Styrene	50.0	0.0	54.0	108	72-130
75-25-2	LCS	Bromoform	50.0	0.0	58.3	117	72-136
98-82-8	LCS	Isopropylbenzene	50.0	0.0	59.0	118	70-130
79-34-5	LCS	1,1,2,2-Tetrachloroethane	50.0	0.0	54.8	110	70-126
96-18-4	LCS	1,2,3-Trichloropropane	50.0	0.0	57.0	114	74-122
108-86-1	LCS	Bromobenzene	50.0	0.0	55.0	110	74-120
103-65-1	LCS	n-Propylbenzene	50.0	0.0	55.6	111	67-128
108-67-8	LCS	1,3,5-Trimethylbenzene	50.0	0.0	56.7	113	70-129
95-49-8	LCS	2-Chlorotoluene	50.0	0.0	56.9	114	71-124
106-43-4	LCS	4-Chlorotoluene	50.0	0.0	54.5	109	69-125
98-06-6	LCS	tert-Butylbenzene	50.0	0.0	62.6	125	72-130
95-63-6	LCS	1,2,4-Trimethylbenzene	50.0	0.0	57.3	115	70-126
135-98-8	LCS	sec-Butylbenzene	50.0	0.0	59.7	119	70-131
99-87-6	LCS	4-Isopropyltoluene	50.0	0.0	61.1	122	71-131
541-73-1	LCS	1,3-Dichlorobenzene	50.0	0.0	53.9	108	72-121
106-46-7	LCS	1,4-Dichlorobenzene	50.0	0.0	53.2	106	71-120
104-51-8	LCS	n-Butylbenzene	50.0	0.0	59.8	120	68-134
96-12-8	LCS	1,2-Dibromo-3-chloropropane	50.0	0.0	53.7	107	68-141
87-68-3	LCS	Hexachlorobutadiene	50.0	0.0	61.3	123	72-136
91-20-3	LCS	Naphthalene	50.0	0.0	57.2	114	72-132
87-61-6	LCS	1,2,3-Trichlorobenzene	50.0	0.0	63.2	126	70-130

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-1529
Sample Type: Laboratory Control Sample
Client ID: LCS for batch 1667958
Matrix: WATER
Lab Sample ID 1203796376
Instrument: VOA1.I
Analysis Date: 05/24/2017 00:17
Dilution: 1
Analyst: PXY1
Purge Vol: 5 mL
Batch ID: 1667958

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	64.4	129	71-129
630-20-6	LCS	1,1,1,2-Tetrachloroethane	50.0	0.0	55.0	110	79-127
95-50-1	LCS	1,2-Dichlorobenzene	50.0	0.0	54.9	110	74-120
71-36-3	LCS	n-Butyl alcohol	5000	0.0	5780	116	63-138

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-1529
Sample Type: Laboratory Control Sample
Client ID: LCS for batch 1667958
Matrix: WATER
Lab Sample ID 1203796377
Instrument: VOA1.I
Analysis Date: 05/24/2017 01:15
Dilution: 1
Analyst: PXY1
Purge Vol: 5 mL
Batch ID: 1667958

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	224	90	60-140
76-13-1	LCS	Trichlorotrifluoroethane	250	0.0	233	93	61-148
107-05-1	LCS	Allyl chloride	250	0.0	234	94	59-125
107-13-1	LCS	Acrylonitrile	250	0.0	230	92	65-122
107-12-0	LCS	Propionitrile	250	0.0	236	94	64-124
126-98-7	LCS	Methacrylonitrile	250	0.0	225	90	64-126
80-62-6	LCS	Methyl methacrylate	250	0.0	236	94	69-127
97-63-2	LCS	Ethyl methacrylate	250	0.0	248	99	66-130
78-83-1	LCS	Isobutyl alcohol	2500	0.0	2280	91	65-135
126-99-8	LCS	2-Chloro-1,3-butadiene	50.0	0.0	42.5	85	66-147

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-1529 **Sample Type:** Post Spike
Client ID: WST53-17-133059PS **Matrix:** W
Lab Sample ID 1203796378
Instrument: VOA1.I **Analysis Date:** 05/24/2017 09:58 **Dilution:** 1
Analyst: PXY1
Purge Vol: 5 mL **Batch ID:** 1667958

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	98.5	98	59-132
75-05-8	PS	Acetonitrile	1250	0.00	U	1060	85	56-131
67-64-1	PS	Acetone	250	0.00	U	142	57	25-155
74-88-4	PS	Iodomethane	250	0.00	U	206	83	66-133
75-15-0	PS	Carbon disulfide	250	0.00	U	188	75	61-141
108-05-4	PS	Vinyl acetate	250	0.00	U	221	88	48-133
78-93-3	PS	2-Butanone	250	0.00	U	182	73	25-143
108-10-1	PS	4-Methyl-2-pentanone	250	0.00	U	247	99	61-127
591-78-6	PS	2-Hexanone	250	0.00	U	241	96	33-138
75-71-8	PS	Dichlorodifluoromethane	50.0	0.00	U	51.9	104	33-164
74-87-3	PS	Chloromethane	50.0	0.00	U	50.0	100	53-139
75-01-4	PS	Vinyl chloride	50.0	0.00	U	48.7	97	58-140
74-83-9	PS	Bromomethane	50.0	0.00	U	53.1	106	59-146
75-00-3	PS	Chloroethane	50.0	0.00	U	47.1	94	65-129
75-69-4	PS	Trichlorofluoromethane	50.0	0.00	U	46.9	94	65-141
60-29-7	PS	Ethyl ether	50.0	0.00	U	51.9	104	69-127
75-35-4	PS	1,1-Dichloroethylene	50.0	0.00	U	39.6	79	59-130
75-09-2	PS	Methylene chloride	50.0	0.00	U	39.3	79	62-123
1634-04-4	PS	tert-Butyl methyl ether	50.0	0.00	U	47.8	96	69-132
156-60-5	PS	trans-1,2-Dichloroethylene	50.0	0.00	U	42.5	85	65-127
75-34-3	PS	1,1-Dichloroethane	50.0	0.00	U	44.1	88	67-127
156-59-2	PS	cis-1,2-Dichloroethylene	50.0	0.00	U	46.4	93	69-127

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-1529 **Sample Type:** Post Spike
Client ID: WST53-17-133059PS **Matrix:** W
Lab Sample ID 1203796378
Instrument: VOA1.I **Analysis Date:** 05/24/2017 09:58 **Dilution:** 1
Analyst: PXY1
Purge Vol: 5 mL **Batch ID:** 1667958

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	43.5	87	66-137
74-97-5	PS	Bromochloromethane	50.0	0.00	U	47.5	95	71-130
67-66-3	PS	Chloroform	50.0	0.00	U	45.1	90	71-129
71-55-6	PS	1,1,1-Trichloroethane	50.0	0.00	U	43.6	87	69-139
563-58-6	PS	1,1-Dichloropropene	50.0	0.00	U	42.0	84	67-130
56-23-5	PS	Carbon tetrachloride	50.0	0.00	U	43.3	87	66-143
107-06-2	PS	1,2-Dichloroethane	50.0	0.00	U	46.2	92	69-130
71-43-2	PS	Benzene	50.0	0.00	U	42.8	86	66-125
79-01-6	PS	Trichloroethylene	50.0	0.00	U	45.1	90	65-131
78-87-5	PS	1,2-Dichloropropane	50.0	0.00	U	45.1	90	67-127
74-95-3	PS	Dibromomethane	50.0	0.00	U	47.2	94	72-129
75-27-4	PS	Bromodichloromethane	50.0	0.00	U	47.5	95	70-138
10061-01-5	PS	cis-1,3-Dichloropropylene	50.0	0.00	U	42.9	86	70-134
108-88-3	PS	Toluene	50.0	0.00	U	47.2	94	60-126
10061-02-6	PS	trans-1,3-Dichloropropylene	50.0	0.00	U	49.2	98	69-135
79-00-5	PS	1,1,2-Trichloroethane	50.0	0.00	U	51.8	104	66-125
142-28-9	PS	1,3-Dichloropropane	50.0	0.00	U	51.5	103	67-124
127-18-4	PS	Tetrachloroethylene	50.0	0.00	U	48.2	96	60-130
124-48-1	PS	Dibromochloromethane	50.0	0.00	U	56.5	113	68-143
106-93-4	PS	1,2-Dibromoethane	50.0	0.00	U	54.7	109	71-127
108-90-7	PS	Chlorobenzene	50.0	0.00	U	49.4	99	64-124
100-41-4	PS	Ethylbenzene	50.0	0.00	U	48.6	97	61-130

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-1529 **Sample Type:** Post Spike
Client ID: WST53-17-133059PS **Matrix:** W
Lab Sample ID 1203796378
Instrument: VOA1.I **Analysis Date:** 05/24/2017 09:58 **Dilution:** 1
Analyst: PXY1
Purge Vol: 5 mL **Batch ID:** 1667958

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	51.6	103	62-131
100-42-5	PS	Styrene	50.0	0.00	U	51.9	104	59-135
75-25-2	PS	Bromoform	50.0	0.00	U	59.9	120	64-138
98-82-8	PS	Isopropylbenzene	50.0	0.00	U	52.4	105	55-133
79-34-5	PS	1,1,2,2-Tetrachloroethane	50.0	0.00	U	52.7	105	62-129
96-18-4	PS	1,2,3-Trichloropropane	50.0	0.00	U	57.5	115	70-124
108-86-1	PS	Bromobenzene	50.0	0.00	U	53.8	108	62-124
103-65-1	PS	n-Propylbenzene	50.0	0.00	U	49.4	99	50-133
108-67-8	PS	1,3,5-Trimethylbenzene	50.0	0.00	U	52.3	105	53-135
95-49-8	PS	2-Chlorotoluene	50.0	0.00	U	53.3	107	56-128
106-43-4	PS	4-Chlorotoluene	50.0	0.00	U	49.8	100	53-130
98-06-6	PS	tert-Butylbenzene	50.0	0.00	U	55.7	111	55-135
95-63-6	PS	1,2,4-Trimethylbenzene	50.0	0.00	U	51.8	104	53-132
135-98-8	PS	sec-Butylbenzene	50.0	0.00	U	52.9	106	50-138
99-87-6	PS	4-Isopropyltoluene	50.0	0.00	U	53.7	107	49-138
541-73-1	PS	1,3-Dichlorobenzene	50.0	0.00	U	50.3	101	56-126
106-46-7	PS	1,4-Dichlorobenzene	50.0	0.00	U	49.0	98	55-125
104-51-8	PS	n-Butylbenzene	50.0	0.00	U	50.8	102	43-142
96-12-8	PS	1,2-Dibromo-3-chloropropane	50.0	0.00	U	53.7	107	62-141
87-68-3	PS	Hexachlorobutadiene	50.0	0.00	U	54.9	110	40-147
91-20-3	PS	Naphthalene	50.0	0.00	U	56.0	112	62-134
87-61-6	PS	1,2,3-Trichlorobenzene	50.0	0.00	U	58.7	117	52-135

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-1529 **Sample Type:** Post Spike

Client ID: WST53-17-133059PS **Matrix:** W

Lab Sample ID 1203796378

Instrument: VOA1.I **Analysis Date:** 05/24/2017 09:58 **Dilution:** 1

Analyst: PXY1

Purge Vol: 5 mL **Batch ID:** 1667958

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	56.1	112	50-133
630-20-6	PS	1,1,1,2-Tetrachloroethane	50.0	0.00	U	55.1	110	71-133
95-50-1	PS	1,2-Dichlorobenzene	50.0	0.00	U	52.5	105	60-125
71-36-3	PS	n-Butyl alcohol	5000	0.00	U	5660	113	60-140

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-1529 **Sample Type:** Post Spike Duplicate
Client ID: WST53-17-133059PSD **Matrix:** W
Lab Sample ID 1203796380
Instrument: VOA1.I **Analysis Date:** 05/24/2017 10:27 **Dilution:** 1
Analyst: PXY1
Purge Vol: 5 mL **Batch ID:** 1667958

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	99.2	99	59-132	1	0-20
75-05-8	PSD	Acetonitrile	1250	0.00	U	1060	85	56-131	0	0-20
67-64-1	PSD	Acetone	250	0.00	U	142	57	25-155	0	0-20
74-88-4	PSD	Iodomethane	250	0.00	U	212	85	66-133	3	0-20
75-15-0	PSD	Carbon disulfide	250	0.00	U	191	76	61-141	2	0-20
108-05-4	PSD	Vinyl acetate	250	0.00	U	220	88	48-133	0	0-20
78-93-3	PSD	2-Butanone	250	0.00	U	177	71	25-143	3	0-20
108-10-1	PSD	4-Methyl-2-pentanone	250	0.00	U	244	98	61-127	1	0-20
591-78-6	PSD	2-Hexanone	250	0.00	U	236	94	33-138	2	0-20
75-71-8	PSD	Dichlorodifluoromethane	50.0	0.00	U	54.6	109	33-164	5	0-20
74-87-3	PSD	Chloromethane	50.0	0.00	U	51.4	103	53-139	3	0-20
75-01-4	PSD	Vinyl chloride	50.0	0.00	U	51.4	103	58-140	5	0-20
74-83-9	PSD	Bromomethane	50.0	0.00	U	53.6	107	59-146	1	0-20
75-00-3	PSD	Chloroethane	50.0	0.00	U	47.6	95	65-129	1	0-20
75-69-4	PSD	Trichlorofluoromethane	50.0	0.00	U	48.7	97	65-141	4	0-20
60-29-7	PSD	Ethyl ether	50.0	0.00	U	52.0	104	69-127	0	0-20
75-35-4	PSD	1,1-Dichloroethylene	50.0	0.00	U	41.0	82	59-130	3	0-20
75-09-2	PSD	Methylene chloride	50.0	0.00	U	39.5	79	62-123	0	0-20
1634-04-4	PSD	tert-Butyl methyl ether	50.0	0.00	U	48.6	97	69-132	2	0-20
156-60-5	PSD	trans-1,2-Dichloroethylene	50.0	0.00	U	43.7	87	65-127	3	0-20
75-34-3	PSD	1,1-Dichloroethane	50.0	0.00	U	45.3	91	67-127	3	0-20
156-59-2	PSD	cis-1,2-Dichloroethylene	50.0	0.00	U	47.6	95	69-127	3	0-20

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-1529 **Sample Type:** Post Spike Duplicate
Client ID: WST53-17-133059PSD **Matrix:** W
Lab Sample ID 1203796380
Instrument: VOA1.I **Analysis Date:** 05/24/2017 10:27 **Dilution:** 1
Analyst: PXY1
Purge Vol: 5 mL **Batch ID:** 1667958

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	44.4	89	66-137	2	0-20
74-97-5	PSD	Bromochloromethane	50.0	0.00	U	48.3	97	71-130	2	0-20
67-66-3	PSD	Chloroform	50.0	0.00	U	45.8	92	71-129	2	0-20
71-55-6	PSD	1,1,1-Trichloroethane	50.0	0.00	U	44.7	89	69-139	2	0-20
563-58-6	PSD	1,1-Dichloropropene	50.0	0.00	U	42.9	86	67-130	2	0-20
56-23-5	PSD	Carbon tetrachloride	50.0	0.00	U	44.1	88	66-143	2	0-20
107-06-2	PSD	1,2-Dichloroethane	50.0	0.00	U	46.2	92	69-130	0	0-20
71-43-2	PSD	Benzene	50.0	0.00	U	43.5	87	66-125	2	0-20
79-01-6	PSD	Trichloroethylene	50.0	0.00	U	45.5	91	65-131	1	0-20
78-87-5	PSD	1,2-Dichloropropane	50.0	0.00	U	45.6	91	67-127	1	0-20
74-95-3	PSD	Dibromomethane	50.0	0.00	U	47.2	94	72-129	0	0-20
75-27-4	PSD	Bromodichloromethane	50.0	0.00	U	48.0	96	70-138	1	0-20
10061-01-5	PSD	cis-1,3-Dichloropropylene	50.0	0.00	U	43.7	87	70-134	2	0-20
108-88-3	PSD	Toluene	50.0	0.00	U	47.2	94	60-126	0	0-20
10061-02-6	PSD	trans-1,3-Dichloropropylene	50.0	0.00	U	49.2	98	69-135	0	0-20
79-00-5	PSD	1,1,2-Trichloroethane	50.0	0.00	U	51.5	103	66-125	1	0-20
142-28-9	PSD	1,3-Dichloropropane	50.0	0.00	U	51.2	102	67-124	1	0-20
127-18-4	PSD	Tetrachloroethylene	50.0	0.00	U	49.0	98	60-130	2	0-20
124-48-1	PSD	Dibromochloromethane	50.0	0.00	U	56.2	112	68-143	1	0-20
106-93-4	PSD	1,2-Dibromoethane	50.0	0.00	U	54.5	109	71-127	0	0-20
108-90-7	PSD	Chlorobenzene	50.0	0.00	U	49.8	100	64-124	1	0-20
100-41-4	PSD	Ethylbenzene	50.0	0.00	U	48.9	98	61-130	1	0-20

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-1529 **Sample Type:** Post Spike Duplicate
Client ID: WST53-17-133059PSD **Matrix:** W
Lab Sample ID 1203796380
Instrument: VOA1.I **Analysis Date:** 05/24/2017 10:27 **Dilution:** 1
Analyst: PXY1
Purge Vol: 5 mL **Batch ID:** 1667958

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	52.3	105	62-131	1	0-20
100-42-5	PSD	Styrene	50.0	0.00	U	52.5	105	59-135	1	0-20
75-25-2	PSD	Bromoform	50.0	0.00	U	58.2	116	64-138	3	0-20
98-82-8	PSD	Isopropylbenzene	50.0	0.00	U	52.2	104	55-133	0	0-20
79-34-5	PSD	1,1,2,2-Tetrachloroethane	50.0	0.00	U	51.5	103	62-129	2	0-20
96-18-4	PSD	1,2,3-Trichloropropane	50.0	0.00	U	55.1	110	70-124	4	0-20
108-86-1	PSD	Bromobenzene	50.0	0.00	U	52.9	106	62-124	2	0-20
103-65-1	PSD	n-Propylbenzene	50.0	0.00	U	48.9	98	50-133	1	0-20
108-67-8	PSD	1,3,5-Trimethylbenzene	50.0	0.00	U	51.4	103	53-135	2	0-20
95-49-8	PSD	2-Chlorotoluene	50.0	0.00	U	52.0	104	56-128	2	0-20
106-43-4	PSD	4-Chlorotoluene	50.0	0.00	U	49.8	100	53-130	0	0-20
98-06-6	PSD	tert-Butylbenzene	50.0	0.00	U	54.4	109	55-135	2	0-20
95-63-6	PSD	1,2,4-Trimethylbenzene	50.0	0.00	U	51.9	104	53-132	0	0-20
135-98-8	PSD	sec-Butylbenzene	50.0	0.00	U	51.4	103	50-138	3	0-20
99-87-6	PSD	4-Isopropyltoluene	50.0	0.00	U	53.2	106	49-138	1	0-20
541-73-1	PSD	1,3-Dichlorobenzene	50.0	0.00	U	50.1	100	56-126	0	0-20
106-46-7	PSD	1,4-Dichlorobenzene	50.0	0.00	U	50.2	100	55-125	2	0-20
104-51-8	PSD	n-Butylbenzene	50.0	0.00	U	51.2	102	43-142	1	0-20
96-12-8	PSD	1,2-Dibromo-3-chloropropane	50.0	0.00	U	51.8	104	62-141	4	0-20
87-68-3	PSD	Hexachlorobutadiene	50.0	0.00	U	54.2	108	40-147	1	0-20
91-20-3	PSD	Naphthalene	50.0	0.00	U	56.5	113	62-134	1	0-20
87-61-6	PSD	1,2,3-Trichlorobenzene	50.0	0.00	U	60.4	121	52-135	3	0-20

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-1529 **Sample Type:** Post Spike Duplicate
Client ID: WST53-17-133059PSD **Matrix:** W
Lab Sample ID 1203796380
Instrument: VOA1.I **Analysis Date:** 05/24/2017 10:27 **Dilution:** 1
Analyst: PXY1
Purge Vol: 5 mL **Batch ID:** 1667958

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	59.1	118	50-133	5	0-20
630-20-6	PSD	1,1,1,2-Tetrachloroethane	50.0	0.00	U	55.0	110	71-133	0	0-20
95-50-1	PSD	1,2-Dichlorobenzene	50.0	0.00	U	52.6	105	60-125	0	0-20
71-36-3	PSD	n-Butyl alcohol	5000	0.00	U	5640	113	60-140	0	0-20

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-1529
Sample Type: Post Spike
Client ID: WST53-17-133059PS
Matrix: W
Lab Sample ID 1203796379
Instrument: VOA1.I
Analysis Date: 05/25/2017 22:28
Dilution: 1
Analyst: PXY1
Purge Vol: 5 mL
Batch ID: 1667958

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	253	101	49-141
76-13-1	PS	Trichlorotrifluoroethane	250	0.00	U	262	105	57-149
107-05-1	PS	Allyl chloride	250	0.00	U	246	98	54-128
107-13-1	PS	Acrylonitrile	250	0.00	U	223	89	59-129
107-12-0	PS	Propionitrile	250	0.00	U	228	91	58-131
126-98-7	PS	Methacrylonitrile	250	0.00	U	231	92	59-134
80-62-6	PS	Methyl methacrylate	250	0.00	U	244	98	62-135
97-63-2	PS	Ethyl methacrylate	250	0.00	U	259	104	60-136
78-83-1	PS	Isobutyl alcohol	2500	0.00	U	2280	91	60-143
126-99-8	PS	2-Chloro-1,3-butadiene	50.0	0.00	U	45.1	90	63-146

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-1529
Sample Type: Post Spike Duplicate
Client ID: WST53-17-133059PSD
Matrix: W
Lab Sample ID 1203796381
Instrument: VOA1.I
Analysis Date: 05/25/2017 22:57
Dilution: 1
Analyst: PXY1
Purge Vol: 5 mL
Batch ID: 1667958

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	252	101	49-141	1	0-20
76-13-1	PSD	Trichlorotrifluoroethane	250	0.00	U	253	101	57-149	3	0-20
107-05-1	PSD	Allyl chloride	250	0.00	U	245	98	54-128	0	0-20
107-13-1	PSD	Acrylonitrile	250	0.00	U	222	89	59-129	1	0-20
107-12-0	PSD	Propionitrile	250	0.00	U	228	91	58-131	0	0-20
126-98-7	PSD	Methacrylonitrile	250	0.00	U	226	90	59-134	2	0-20
80-62-6	PSD	Methyl methacrylate	250	0.00	U	242	97	62-135	1	0-20
97-63-2	PSD	Ethyl methacrylate	250	0.00	U	258	103	60-136	0	0-20
78-83-1	PSD	Isobutyl alcohol	2500	0.00	U	2280	91	60-143	0	0-20
126-99-8	PSD	2-Chloro-1,3-butadiene	50.0	0.00	U	44.4	89	63-146	1	0-20

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-1529
Sample Type: Laboratory Control Sample
Client ID: LCS for batch 1667958
Matrix: WATER
Lab Sample ID 1203797168
Instrument: VOA1.I
Analysis Date: 05/24/2017 13:05
Dilution: 1
Analyst: PXY1
Purge Vol: 5 mL
Batch ID: 1667958

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	112	112	71-127
75-05-8	LCS	Acetonitrile	1250	0.0	1180	94	61-125
67-64-1	LCS	Acetone	250	0.0	372	149	48-157
74-88-4	LCS	Iodomethane	250	0.0	247	99	72-128
75-15-0	LCS	Carbon disulfide	250	0.0	253	101	69-138
108-05-4	LCS	Vinyl acetate	250	0.0	256	102	67-125
78-93-3	LCS	2-Butanone	250	0.0	350	140 *	55-138
108-10-1	LCS	4-Methyl-2-pentanone	250	0.0	273	109	66-124
591-78-6	LCS	2-Hexanone	250	0.0	377	151 *	56-140
75-71-8	LCS	Dichlorodifluoromethane	50.0	0.0	61.5	123	40-160
74-87-3	LCS	Chloromethane	50.0	0.0	54.5	109	58-135
75-01-4	LCS	Vinyl chloride	50.0	0.0	57.5	115	65-137
74-83-9	LCS	Bromomethane	50.0	0.0	55.4	111	63-137
75-00-3	LCS	Chloroethane	50.0	0.0	54.1	108	69-129
75-69-4	LCS	Trichlorofluoromethane	50.0	0.0	55.4	111	69-138
60-29-7	LCS	Ethyl ether	50.0	0.0	53.4	107	72-125
75-35-4	LCS	1,1-Dichloroethylene	50.0	0.0	53.1	106	66-126
75-09-2	LCS	Methylene chloride	50.0	0.0	44.6	89	68-119
1634-04-4	LCS	tert-Butyl methyl ether	50.0	0.0	55.6	111	76-128
156-60-5	LCS	trans-1,2-Dichloroethylene	50.0	0.0	52.2	104	71-124
75-34-3	LCS	1,1-Dichloroethane	50.0	0.0	51.4	103	73-123
156-59-2	LCS	cis-1,2-Dichloroethylene	50.0	0.0	51.0	102	75-123

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-1529
Sample Type: Laboratory Control Sample
Client ID: LCS for batch 1667958
Matrix: WATER
Lab Sample ID 1203797168
Instrument: VOA1.I
Analysis Date: 05/24/2017 13:05
Dilution: 1
Analyst: PXY1
Purge Vol: 5 mL
Batch ID: 1667958

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	56.1	112	72-138
74-97-5	LCS	Bromochloromethane	50.0	0.0	51.2	102	76-125
67-66-3	LCS	Chloroform	50.0	0.0	48.5	97	76-123
71-55-6	LCS	1,1,1-Trichloroethane	50.0	0.0	53.3	107	74-136
563-58-6	LCS	1,1-Dichloropropene	50.0	0.0	51.4	103	72-129
56-23-5	LCS	Carbon tetrachloride	50.0	0.0	53.3	107	72-140
107-06-2	LCS	1,2-Dichloroethane	50.0	0.0	47.1	94	74-122
71-43-2	LCS	Benzene	50.0	0.0	49.1	98	72-121
79-01-6	LCS	Trichloroethylene	50.0	0.0	52.9	106	74-125
78-87-5	LCS	1,2-Dichloropropane	50.0	0.0	48.8	98	73-121
74-95-3	LCS	Dibromomethane	50.0	0.0	48.8	98	78-123
75-27-4	LCS	Bromodichloromethane	50.0	0.0	50.1	100	77-131
10061-01-5	LCS	cis-1,3-Dichloropropylene	50.0	0.0	47.6	95	78-131
108-88-3	LCS	Toluene	50.0	0.0	53.4	107	71-121
10061-02-6	LCS	trans-1,3-Dichloropropylene	50.0	0.0	53.1	106	78-131
79-00-5	LCS	1,1,2-Trichloroethane	50.0	0.0	53.7	107	74-118
142-28-9	LCS	1,3-Dichloropropane	50.0	0.0	53.6	107	74-118
127-18-4	LCS	Tetrachloroethylene	50.0	0.0	58.4	117	69-129
124-48-1	LCS	Dibromochloromethane	50.0	0.0	58.0	116	76-137
106-93-4	LCS	1,2-Dibromoethane	50.0	0.0	58.0	116	78-122
108-90-7	LCS	Chlorobenzene	50.0	0.0	54.0	108	74-120
100-41-4	LCS	Ethylbenzene	50.0	0.0	55.7	111	73-125

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-1529
Sample Type: Laboratory Control Sample
Client ID: LCS for batch 1667958
Matrix: WATER
Lab Sample ID 1203797168
Instrument: VOA1.I
Analysis Date: 05/24/2017 13:05
Dilution: 1
Analyst: PXY1
Purge Vol: 5 mL
Batch ID: 1667958

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	58.0	116	74-126
100-42-5	LCS	Styrene	50.0	0.0	57.2	114	72-130
75-25-2	LCS	Bromoform	50.0	0.0	60.8	122	72-136
98-82-8	LCS	Isopropylbenzene	50.0	0.0	59.5	119	70-130
79-34-5	LCS	1,1,2,2-Tetrachloroethane	50.0	0.0	54.9	110	70-126
96-18-4	LCS	1,2,3-Trichloropropane	50.0	0.0	58.3	117	74-122
108-86-1	LCS	Bromobenzene	50.0	0.0	56.6	113	74-120
103-65-1	LCS	n-Propylbenzene	50.0	0.0	56.5	113	67-128
108-67-8	LCS	1,3,5-Trimethylbenzene	50.0	0.0	58.1	116	70-129
95-49-8	LCS	2-Chlorotoluene	50.0	0.0	58.1	116	71-124
106-43-4	LCS	4-Chlorotoluene	50.0	0.0	55.5	111	69-125
98-06-6	LCS	tert-Butylbenzene	50.0	0.0	63.0	126	72-130
95-63-6	LCS	1,2,4-Trimethylbenzene	50.0	0.0	57.5	115	70-126
135-98-8	LCS	sec-Butylbenzene	50.0	0.0	60.6	121	70-131
99-87-6	LCS	4-Isopropyltoluene	50.0	0.0	61.5	123	71-131
541-73-1	LCS	1,3-Dichlorobenzene	50.0	0.0	55.2	110	72-121
106-46-7	LCS	1,4-Dichlorobenzene	50.0	0.0	54.6	109	71-120
104-51-8	LCS	n-Butylbenzene	50.0	0.0	59.7	119	68-134
96-12-8	LCS	1,2-Dibromo-3-chloropropane	50.0	0.0	53.8	108	68-141
87-68-3	LCS	Hexachlorobutadiene	50.0	0.0	61.2	122	72-136
91-20-3	LCS	Naphthalene	50.0	0.0	59.3	119	72-132
87-61-6	LCS	1,2,3-Trichlorobenzene	50.0	0.0	64.4	129	70-130

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-1529
Sample Type: Laboratory Control Sample
Client ID: LCS for batch 1667958
Matrix: WATER
Lab Sample ID 1203797168
Instrument: VOA1.I
Analysis Date: 05/24/2017 13:05
Dilution: 1
Analyst: PXY1
Purge Vol: 5 mL
Batch ID: 1667958

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	66.1	132 *	71-129
630-20-6	LCS	1,1,1,2-Tetrachloroethane	50.0	0.0	58.1	116	79-127
95-50-1	LCS	1,2-Dichlorobenzene	50.0	0.0	55.5	111	74-120
71-36-3	LCS	n-Butyl alcohol	5000	0.0	6230	125	63-138

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-1529
Sample Type: Laboratory Control Sample
Client ID: LCS for batch 1667958
Matrix: WATER
Lab Sample ID 1203798267
Instrument: VOA1.I
Analysis Date: 05/24/2017 15:00
Dilution: 1
Analyst: PXY1
Purge Vol: 5 mL
Batch ID: 1667958

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	263	105	60-140
76-13-1	LCS	Trichlorotrifluoroethane	250	0.0	254	102	61-148
107-05-1	LCS	Allyl chloride	250	0.0	253	101	59-125
107-13-1	LCS	Acrylonitrile	250	0.0	249	100	65-122
107-12-0	LCS	Propionitrile	250	0.0	254	102	64-124
126-98-7	LCS	Methacrylonitrile	250	0.0	245	98	64-126
80-62-6	LCS	Methyl methacrylate	250	0.0	259	104	69-127
97-63-2	LCS	Ethyl methacrylate	250	0.0	267	107	66-130
78-83-1	LCS	Isobutyl alcohol	2500	0.0	2510	100	65-135
126-99-8	LCS	2-Chloro-1,3-butadiene	50.0	0.0	45.9	92	66-147

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-1529
Sample Type: Laboratory Control Sample
Client ID: LCS for batch 1667958
Matrix: WATER
Lab Sample ID 1203798284
Instrument: VOA1.I
Analysis Date: 05/25/2017 13:20
Dilution: 1
Analyst: PXY1
Purge Vol: 5 mL
Batch ID: 1667958

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	260	104	60-140
76-13-1	LCS	Trichlorotrifluoroethane	250	0.0	262	105	61-148
107-05-1	LCS	Allyl chloride	250	0.0	254	101	59-125
107-13-1	LCS	Acrylonitrile	250	0.0	225	90	65-122
107-12-0	LCS	Propionitrile	250	0.0	232	93	64-124
126-98-7	LCS	Methacrylonitrile	250	0.0	230	92	64-126
80-62-6	LCS	Methyl methacrylate	250	0.0	244	97	69-127
97-63-2	LCS	Ethyl methacrylate	250	0.0	257	103	66-130
78-83-1	LCS	Isobutyl alcohol	2500	0.0	2290	92	65-135
126-99-8	LCS	2-Chloro-1,3-butadiene	50.0	0.0	45.9	92	66-147

Method Blank Summary

SDG Number:	**2017-1529**	**Client:**	**ARSL004**	**Matrix:**	**WATER**
Client ID:	**MB for batch 1667958**	**Instrument ID:**	**VOA1.I**	**Data File:**	**052317V1\1J230BA.D**
Lab Sample ID:	**1203796375**	**Prep Date:**	**05/24/2017 01:44**	**Analyzed:**	**05/24/17 01:44**
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 1667958	1203796376	052317V1\1J227LA.D	05/24/17	0017
02	LCS for batch 1667958	1203796377	052317V1\1J229LA.D	05/24/17	0115
03	WST53-17-133059PS	1203796378	052317V1\1J247.D	05/24/17	0958
04	WST53-17-133059PSD	1203796380	052317V1\1J248.D	05/24/17	1027

Method Blank Summary

SDG Number:	**2017-1529**	**Client:**	**ARSL004**	**Matrix:**	**WATER**
Client ID:	**MB for batch 1667958**	**Instrument ID:**	**VOA1.I**	**Data File:**	**052417V1\1J308BA.D**
Lab Sample ID:	**1203797167**	**Prep Date:**	**05/24/2017 15:29**	**Analyzed:**	**05/24/17 15:29**
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
06	LCS for batch 1667958	1203797168	052417V1\1J303LA.D	05/24/17	1305
07	LCS for batch 1667958	1203798267	052417V1\1J307LA.D	05/24/17	1500
08	CAMO-17-132220	423194002	052417V1\1J314.D	05/24/17	1823
09	CAMO-17-132300	423194003	052417V1\1J315.D	05/24/17	1852
10	CAMO-17-132305	423194004	052417V1\1J316.D	05/24/17	1921
11	CAMO-17-132307	423194005	052417V1\1J317.D	05/24/17	1950

Method Blank Summary

SDG Number:	**2017-1529**	**Client:**	**ARSL004**	**Matrix:**	**WATER**
Client ID:	**MB for batch 1667958**	**Instrument ID:**	**VOA1.I**	**Data File:**	**052517V1\1J406BA.D**
Lab Sample ID:	**1203798283**	**Prep Date:**	**05/25/2017 13:49**	**Analyzed:**	**05/25/17 13:49**
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
13	LCS for batch 1667958	1203798284	052517V1\1J405LA.D	05/25/17	1320
14	WST53-17-133059PS	1203796379	052517V1\1J424.D	05/25/17	2228
15	WST53-17-133059PSD	1203796381	052517V1\1J425.D	05/25/17	2257

Quality Control Data

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**			**Matrix:**	**WATER**
Lab Sample ID:	**1203796375**				
Client Sample:	**QC for batch 1667958**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1667958**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/24/2017 01:44**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/24/2017 01:44**				
Data File:	**052317V1\1J230BA.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:	**2017-1529**			**Matrix:**	**WATER**
Lab Sample ID:	**1203796375**				
Client Sample:	**QC for batch 1667958**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1667958**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/24/2017 01:44**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/24/2017 01:44**				
Data File:	**052317V1\1J230BA.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:	**2017-1529**			**Matrix:**	**WATER**
Lab Sample ID:	**1203796375**				
Client Sample:	**QC for batch 1667958**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1667958**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/24/2017 01:44**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/24/2017 01:44**				
Data File:	**052317V1\1J230BA.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	47.7	50.0	ug/L	95	(71%-134%)
Bromofluorobenzene	55.9	50.0	ug/L	112	(70%-131%)
Toluene-d8	52.0	50.0	ug/L	104	(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:	**2017-1529**			**Matrix:**	**WATER**
Lab Sample ID:	**1203796376**				
Client Sample:	**QC for batch 1667958**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1667958**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/24/2017 00:17**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/24/2017 00:17**				
Data File:	**052317V1\1J227LA.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		55.0	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		49.1	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		54.8	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		51.5	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		47.2	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		46.0	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		48.0	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		63.2	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		57.0	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		64.4	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		57.3	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		53.7	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		55.4	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		54.9	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		44.0	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		45.6	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		56.7	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		53.9	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		50.9	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		53.2	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		52.7	ug/L	0.300	1.00
78-93-3	2-Butanone		326	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		56.9	ug/L	0.300	1.00
591-78-6	2-Hexanone		353	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		54.5	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		61.1	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		260	ug/L	1.50	5.00
67-64-1	Acetone		335	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		45.9	ug/L	0.300	1.00
108-86-1	Bromobenzene		55.0	ug/L	0.300	1.00
74-97-5	Bromochloromethane		46.6	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		46.2	ug/L	0.300	1.00
75-25-2	Bromoform		58.3	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**			**Matrix:**	**WATER**
Lab Sample ID:	**1203796376**				
Client Sample:	**QC for batch 1667958**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1667958**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/24/2017 00:17**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/24/2017 00:17**				
Data File:	**052317V1\1J227LA.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		51.2	ug/L	0.300	1.00
75-15-0	Carbon disulfide		209	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		48.3	ug/L	0.300	1.00
108-90-7	Chlorobenzene		51.4	ug/L	0.300	1.00
75-00-3	Chloroethane		49.6	ug/L	0.300	1.00
67-66-3	Chloroform		45.6	ug/L	0.300	1.00
74-87-3	Chloromethane		49.7	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		54.4	ug/L	0.300	1.00
74-95-3	Dibromomethane		45.7	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		59.0	ug/L	0.300	1.00
60-29-7	Ethyl ether		49.3	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		53.0	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		61.3	ug/L	0.300	1.00
74-88-4	Iodomethane		212	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		59.0	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride		40.2	ug/L	1.00	10.0
91-20-3	Naphthalene		57.2	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		54.0	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		55.3	ug/L	0.300	1.00
108-88-3	Toluene		50.7	ug/L	0.300	1.00
79-01-6	Trichloroethylene		48.7	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		50.1	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		242	ug/L	1.50	5.00
75-01-4	Vinyl chloride		51.8	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		47.9	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		44.7	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		109	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		5780	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		59.8	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		55.6	ug/L	0.300	1.00
95-47-6	o-Xylene		55.2	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		59.7	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**			**Matrix:**	**WATER**
Lab Sample ID:	**1203796376**				
Client Sample:	**QC for batch 1667958**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1667958**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/24/2017 00:17**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/24/2017 00:17**				
Data File:	**052317V1\1J227LA.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		52.9	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		62.6	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		47.1	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		50.8	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	44.9	50.0	ug/L	90	(71%-134%)
Bromofluorobenzene	52.7	50.0	ug/L	105	(70%-131%)
Toluene-d8	50.1	50.0	ug/L	100	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**			**Matrix:**	**WATER**
Lab Sample ID:	**1203796377**				
Client Sample:	**QC for batch 1667958**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1667958**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/24/2017 01:15**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/24/2017 01:15**				
Data File:	**052317V1\1J229LA.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		42.5	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		224	ug/L	1.50	5.00
107-13-1	Acrylonitrile		230	ug/L	1.50	5.00
107-05-1	Allyl chloride		234	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:	**2017-1529**			**Matrix:**	**WATER**
Lab Sample ID:	**1203796377**				
Client Sample:	**QC for batch 1667958**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1667958**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/24/2017 01:15**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/24/2017 01:15**				
Data File:	**052317V1\1J229LA.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		248	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		2280	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		225	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		236	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		236	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		233	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:	**2017-1529**			**Matrix:**	**WATER**
Lab Sample ID:	**1203796377**				
Client Sample:	**QC for batch 1667958**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1667958**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/24/2017 01:15**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/24/2017 01:15**				
Data File:	**052317V1\1J229LA.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	46.1	50.0	ug/L	92	(71%-134%)
Bromofluorobenzene	52.9	50.0	ug/L	106	(70%-131%)
Toluene-d8	51.4	50.0	ug/L	103	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**	**Date Collected:**	**05/11/2017 09:30**	**Matrix:**	**W**
Lab Sample ID:	**1203796378**	**Date Received:**	**05/16/2017 09:20**		
Client Sample:	**QC for batch 1667958**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**WST53-17-133059PS**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/24/2017 09:58**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/24/2017 09:58**				
Data File:	**052317V1\1J247.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		55.1	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		43.6	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		52.7	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		51.8	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		44.1	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		39.6	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		42.0	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		58.7	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		57.5	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		56.1	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		51.8	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		53.7	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		54.7	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		52.5	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		46.2	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		45.1	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		52.3	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		50.3	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		51.5	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		49.0	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		43.5	ug/L	0.300	1.00
78-93-3	2-Butanone		182	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		53.3	ug/L	0.300	1.00
591-78-6	2-Hexanone		241	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		49.8	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		53.7	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		247	ug/L	1.50	5.00
67-64-1	Acetone		142	ug/L	1.50	10.0
75-05-8	Acetonitrile		1060	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		42.8	ug/L	0.300	1.00
108-86-1	Bromobenzene		53.8	ug/L	0.300	1.00
74-97-5	Bromochloromethane		47.5	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		47.5	ug/L	0.300	1.00
75-25-2	Bromoform		59.9	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**	**Date Collected:**	**05/11/2017 09:30**	**Matrix:**	**W**
Lab Sample ID:	**1203796378**	**Date Received:**	**05/16/2017 09:20**		
Client Sample:	**QC for batch 1667958**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**WST53-17-133059PS**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/24/2017 09:58**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/24/2017 09:58**				
Data File:	**052317V1\1J247.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		53.1	ug/L	0.300	1.00
75-15-0	Carbon disulfide		188	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		43.3	ug/L	0.300	1.00
108-90-7	Chlorobenzene		49.4	ug/L	0.300	1.00
75-00-3	Chloroethane		47.1	ug/L	0.300	1.00
67-66-3	Chloroform		45.1	ug/L	0.300	1.00
74-87-3	Chloromethane		50.0	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		56.5	ug/L	0.300	1.00
74-95-3	Dibromomethane		47.2	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		51.9	ug/L	0.300	1.00
60-29-7	Ethyl ether		51.9	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		48.6	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		54.9	ug/L	0.300	1.00
74-88-4	Iodomethane		206	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		52.4	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride		39.3	ug/L	1.00	10.0
91-20-3	Naphthalene		56.0	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		51.9	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		48.2	ug/L	0.300	1.00
108-88-3	Toluene		47.2	ug/L	0.300	1.00
79-01-6	Trichloroethylene		45.1	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		46.9	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		221	ug/L	1.50	5.00
75-01-4	Vinyl chloride		48.7	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		46.4	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		42.9	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		98.5	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		5660	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		50.8	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		49.4	ug/L	0.300	1.00
95-47-6	o-Xylene		51.6	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		52.9	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**	**Date Collected:**	**05/11/2017 09:30**	**Matrix:**	**W**
Lab Sample ID:	**1203796378**	**Date Received:**	**05/16/2017 09:20**		
Client Sample:	**QC for batch 1667958**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**WST53-17-133059PS**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/24/2017 09:58**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/24/2017 09:58**				
Data File:	**052317V1\1J247.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		47.8	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		55.7	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		42.5	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		49.2	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	45.9	50.0	ug/L	92	(71%-134%)
Bromofluorobenzene	52.3	50.0	ug/L	105	(70%-131%)
Toluene-d8	50.3	50.0	ug/L	101	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**	**Date Collected:**	**05/11/2017 09:30**	**Matrix:**	**W**
Lab Sample ID:	**1203796379**	**Date Received:**	**05/16/2017 09:20**		
Client Sample:	**QC for batch 1667958**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**WST53-17-133059PS**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/25/2017 22:28**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/25/2017 22:28**				
Data File:	**052517V1\1J424.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		45.1	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		253	ug/L	1.50	5.00
107-13-1	Acrylonitrile		223	ug/L	1.50	5.00
107-05-1	Allyl chloride		246	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**	**Date Collected:**	**05/11/2017 09:30**	**Matrix:**	**W**
Lab Sample ID:	**1203796379**	**Date Received:**	**05/16/2017 09:20**		
Client Sample:	**QC for batch 1667958**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**WST53-17-133059PS**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/25/2017 22:28**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/25/2017 22:28**				
Data File:	**052517V1\1J424.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		259	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		2280	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		231	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		244	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		228	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		262	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:	**2017-1529**	**Date Collected:**	**05/11/2017 09:30**	**Matrix:**	**W**
Lab Sample ID:	**1203796379**	**Date Received:**	**05/16/2017 09:20**		
Client Sample:	**QC for batch 1667958**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**WST53-17-133059PS**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/25/2017 22:28**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/25/2017 22:28**				
Data File:	**052517V1\1J424.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	45.1	50.0	ug/L	90	(71%-134%)
Bromofluorobenzene	54.4	50.0	ug/L	109	(70%-131%)
Toluene-d8	50.3	50.0	ug/L	101	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**	**Date Collected:**	**05/11/2017 09:30**	**Matrix:**	**W**
Lab Sample ID:	**1203796380**	**Date Received:**	**05/16/2017 09:20**		
Client Sample:	**QC for batch 1667958**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**WST53-17-133059PSD**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/24/2017 10:27**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/24/2017 10:27**				
Data File:	**052317V1\1J248.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		55.0	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		44.7	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		51.5	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		51.5	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		45.3	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		41.0	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		42.9	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		60.4	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		55.1	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		59.1	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		51.9	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		51.8	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		54.5	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		52.6	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		46.2	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		45.6	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		51.4	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		50.1	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		51.2	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		50.2	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		44.4	ug/L	0.300	1.00
78-93-3	2-Butanone		177	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		52.0	ug/L	0.300	1.00
591-78-6	2-Hexanone		236	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		49.8	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		53.2	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		244	ug/L	1.50	5.00
67-64-1	Acetone		142	ug/L	1.50	10.0
75-05-8	Acetonitrile		1060	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		43.5	ug/L	0.300	1.00
108-86-1	Bromobenzene		52.9	ug/L	0.300	1.00
74-97-5	Bromochloromethane		48.3	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		48.0	ug/L	0.300	1.00
75-25-2	Bromoform		58.2	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**	**Date Collected:**	**05/11/2017 09:30**	**Matrix:**	**W**
Lab Sample ID:	**1203796380**	**Date Received:**	**05/16/2017 09:20**		
Client Sample:	**QC for batch 1667958**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**WST53-17-133059PSD**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/24/2017 10:27**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/24/2017 10:27**				
Data File:	**052317V1\1J248.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		53.6	ug/L	0.300	1.00
75-15-0	Carbon disulfide		191	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		44.1	ug/L	0.300	1.00
108-90-7	Chlorobenzene		49.8	ug/L	0.300	1.00
75-00-3	Chloroethane		47.6	ug/L	0.300	1.00
67-66-3	Chloroform		45.8	ug/L	0.300	1.00
74-87-3	Chloromethane		51.4	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		56.2	ug/L	0.300	1.00
74-95-3	Dibromomethane		47.2	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		54.6	ug/L	0.300	1.00
60-29-7	Ethyl ether		52.0	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		48.9	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		54.2	ug/L	0.300	1.00
74-88-4	Iodomethane		212	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		52.2	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		39.5	ug/L	1.00	10.0
91-20-3	Naphthalene		56.5	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		52.5	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		49.0	ug/L	0.300	1.00
108-88-3	Toluene		47.2	ug/L	0.300	1.00
79-01-6	Trichloroethylene		45.5	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		48.7	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		220	ug/L	1.50	5.00
75-01-4	Vinyl chloride		51.4	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		47.6	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		43.7	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		99.2	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		5640	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		51.2	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		48.9	ug/L	0.300	1.00
95-47-6	o-Xylene		52.3	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		51.4	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**	**Date Collected:**	**05/11/2017 09:30**	**Matrix:**	**W**
Lab Sample ID:	**1203796380**	**Date Received:**	**05/16/2017 09:20**		
Client Sample:	**QC for batch 1667958**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**WST53-17-133059PSD**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/24/2017 10:27**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/24/2017 10:27**				
Data File:	**052317V1\1J248.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		48.6	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		54.4	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		43.7	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		49.2	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	46.1	50.0	ug/L	92	(71%-134%)
Bromofluorobenzene	51.6	50.0	ug/L	103	(70%-131%)
Toluene-d8	50.3	50.0	ug/L	101	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**	**Date Collected:**	**05/11/2017 09:30**	**Matrix:**	**W**
Lab Sample ID:	**1203796381**	**Date Received:**	**05/16/2017 09:20**		
Client Sample:	**QC for batch 1667958**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**WST53-17-133059PSD**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/25/2017 22:57**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/25/2017 22:57**				
Data File:	**052517V1\1J425.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		44.4	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein		252	ug/L	1.50	5.00
107-13-1	Acrylonitrile		222	ug/L	1.50	5.00
107-05-1	Allyl chloride		245	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:	**2017-1529**	**Date Collected:**	**05/11/2017 09:30**	**Matrix:**	**W**
Lab Sample ID:	**1203796381**	**Date Received:**	**05/16/2017 09:20**		
Client Sample:	**QC for batch 1667958**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**WST53-17-133059PSD**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/25/2017 22:57**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/25/2017 22:57**				
Data File:	**052517V1\1J425.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		258	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		2280	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		226	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		242	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		228	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		253	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:	**2017-1529**	**Date Collected:**	**05/11/2017 09:30**	**Matrix:**	**W**
Lab Sample ID:	**1203796381**	**Date Received:**	**05/16/2017 09:20**		
Client Sample:	**QC for batch 1667958**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**WST53-17-133059PSD**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/25/2017 22:57**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/25/2017 22:57**				
Data File:	**052517V1\1J425.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	43.4	50.0	ug/L	87	(71%-134%)
Bromofluorobenzene	53.9	50.0	ug/L	108	(70%-131%)
Toluene-d8	49.4	50.0	ug/L	99	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**			**Matrix:**	**WATER**
Lab Sample ID:	**1203797167**				
Client Sample:	**QC for batch 1667958**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1667958**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/24/2017 15:29**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/24/2017 15:29**				
Data File:	**052417V1\1J308BA.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	J	0.490	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	J	0.420	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	J	0.360	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:	**2017-1529**			**Matrix:**	**WATER**
Lab Sample ID:	**1203797167**				
Client Sample:	**QC for batch 1667958**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1667958**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/24/2017 15:29**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/24/2017 15:29**				
Data File:	**052417V1\1J308BA.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	J	0.450	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:	**2017-1529**			**Matrix:**	**WATER**
Lab Sample ID:	**1203797167**				
Client Sample:	**QC for batch 1667958**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1667958**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/24/2017 15:29**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/24/2017 15:29**				
Data File:	**052417V1\1J308BA.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	47.2	50.0	ug/L	94	(71%-134%)
Bromofluorobenzene	55.1	50.0	ug/L	110	(70%-131%)
Toluene-d8	51.4	50.0	ug/L	103	(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:	**2017-1529**			**Matrix:**	**WATER**
Lab Sample ID:	**1203797168**				
Client Sample:	**QC for batch 1667958**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1667958**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/24/2017 13:05**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/24/2017 13:05**				
Data File:	**052417V1\1J303LA.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		58.1	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		53.3	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		54.9	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		53.7	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		51.4	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		53.1	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		51.4	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	B	64.4	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		58.3	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	B	66.1	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		57.5	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		53.8	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		58.0	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		55.5	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		47.1	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		48.8	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		58.1	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		55.2	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		53.6	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	B	54.6	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		56.1	ug/L	0.300	1.00
78-93-3	2-Butanone		350	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		58.1	ug/L	0.300	1.00
591-78-6	2-Hexanone		377	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		55.5	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		61.5	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		273	ug/L	1.50	5.00
67-64-1	Acetone		372	ug/L	1.50	10.0
75-05-8	Acetonitrile		1180	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		49.1	ug/L	0.300	1.00
108-86-1	Bromobenzene		56.6	ug/L	0.300	1.00
74-97-5	Bromochloromethane		51.2	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		50.1	ug/L	0.300	1.00
75-25-2	Bromoform		60.8	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**			**Matrix:**	**WATER**
Lab Sample ID:	**1203797168**				
Client Sample:	**QC for batch 1667958**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1667958**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/24/2017 13:05**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/24/2017 13:05**				
Data File:	**052417V1\1J303LA.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		55.4	ug/L	0.300	1.00
75-15-0	Carbon disulfide		253	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		53.3	ug/L	0.300	1.00
108-90-7	Chlorobenzene		54.0	ug/L	0.300	1.00
75-00-3	Chloroethane		54.1	ug/L	0.300	1.00
67-66-3	Chloroform		48.5	ug/L	0.300	1.00
74-87-3	Chloromethane		54.5	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		58.0	ug/L	0.300	1.00
74-95-3	Dibromomethane		48.8	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		61.5	ug/L	0.300	1.00
60-29-7	Ethyl ether		53.4	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		55.7	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	B	61.2	ug/L	0.300	1.00
74-88-4	Iodomethane		247	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		59.5	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		59.3	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		57.2	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		58.4	ug/L	0.300	1.00
108-88-3	Toluene		53.4	ug/L	0.300	1.00
79-01-6	Trichloroethylene		52.9	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		55.4	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		256	ug/L	1.50	5.00
75-01-4	Vinyl chloride		57.5	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		51.0	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		47.6	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		112	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		6230	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		59.7	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		56.5	ug/L	0.300	1.00
95-47-6	o-Xylene		58.0	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		60.6	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**			**Matrix:**	**WATER**
Lab Sample ID:	**1203797168**				
Client Sample:	**QC for batch 1667958**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1667958**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/24/2017 13:05**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/24/2017 13:05**				
Data File:	**052417V1\1J303LA.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		55.6	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		63.0	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		52.2	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		53.1	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	46.8	50.0	ug/L	94	(71%-134%)
Bromofluorobenzene	53.2	50.0	ug/L	106	(70%-131%)
Toluene-d8	51.5	50.0	ug/L	103	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**			**Matrix:**	**WATER**
Lab Sample ID:	**1203798267**				
Client Sample:	**QC for batch 1667958**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1667958**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/24/2017 15:00**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/24/2017 15:00**				
Data File:	**052417V1\1J307LA.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		45.9	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein		263	ug/L	1.50	5.00
107-13-1	Acrylonitrile		249	ug/L	1.50	5.00
107-05-1	Allyl chloride		253	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:	**2017-1529**			**Matrix:**	**WATER**
Lab Sample ID:	**1203798267**				
Client Sample:	**QC for batch 1667958**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1667958**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/24/2017 15:00**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/24/2017 15:00**				
Data File:	**052417V1\1J307LA.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		267	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		2510	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		245	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		259	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		254	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		254	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:	**2017-1529**			**Matrix:**	**WATER**
Lab Sample ID:	**1203798267**				
Client Sample:	**QC for batch 1667958**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1667958**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/24/2017 15:00**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/24/2017 15:00**				
Data File:	**052417V1\1J307LA.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	45.4	50.0	ug/L	91	(71%-134%)
Bromofluorobenzene	53.5	50.0	ug/L	107	(70%-131%)
Toluene-d8	51.7	50.0	ug/L	103	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**			**Matrix:**	**WATER**
Lab Sample ID:	**1203798283**				
Client Sample:	**QC for batch 1667958**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1667958**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/25/2017 13:49**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/25/2017 13:49**				
Data File:	**052517V1\1J406BA.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:	**2017-1529**			**Matrix:**	**WATER**
Lab Sample ID:	**1203798283**				
Client Sample:	**QC for batch 1667958**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1667958**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/25/2017 13:49**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/25/2017 13:49**				
Data File:	**052517V1\1J406BA.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:	**2017-1529**			**Matrix:**	**WATER**
Lab Sample ID:	**1203798283**				
Client Sample:	**QC for batch 1667958**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1667958**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/25/2017 13:49**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/25/2017 13:49**				
Data File:	**052517V1\1J406BA.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	46.3	50.0	ug/L	93	(71%-134%)
Bromofluorobenzene	56.3	50.0	ug/L	113	(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		

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**			**Matrix:**	**WATER**
Lab Sample ID:	**1203798284**				
Client Sample:	**QC for batch 1667958**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1667958**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/25/2017 13:20**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/25/2017 13:20**				
Data File:	**052517V1\1J405LA.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		45.9	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein		260	ug/L	1.50	5.00
107-13-1	Acrylonitrile		225	ug/L	1.50	5.00
107-05-1	Allyl chloride		254	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:	**2017-1529**			**Matrix:**	**WATER**
Lab Sample ID:	**1203798284**				
Client Sample:	**QC for batch 1667958**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1667958**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/25/2017 13:20**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/25/2017 13:20**				
Data File:	**052517V1\1J405LA.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		257	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol		2290	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		244	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		232	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		262	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:	**2017-1529**			**Matrix:**	**WATER**
Lab Sample ID:	**1203798284**				
Client Sample:	**QC for batch 1667958**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1667958**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1667958**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/25/2017 13:20**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/25/2017 13:20**				
Data File:	**052517V1\1J405LA.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	45.3	50.0	ug/L	91	(71%-134%)
Bromofluorobenzene	54.2	50.0	ug/L	108	(70%-131%)
Toluene-d8	50.7	50.0	ug/L	101	(74%-124%)

Miscellaneous

DATA EXCEPTION REPORT

Mo.Day Yr.	**Division:**	**Quality Criteria:**	**Type:**
01-JUN-17	Industrial	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
VOA GC/MS	SW846 8260B DOE-AL	Liquid	ESHL, LANL
Batch ID:	**Sample Numbers:**		
1667958	See Below		

Potentially affected work order(s)(SDG): 423194(2017-1529),423220(2017-1522),423224(2017-1524),423587(2017-1554)

Application Issues:

Failed Recovery for LCS/LCSD

Specification and Requirements Exception Description:	**DER Disposition:**
1. Failed Recovery for LCS/LCSD: QC 1203796376LCS,1203797168LCS	1. The LCS/and or LCSD (See Below) recoveries were not all within the acceptance limits. The unacceptable recoveries were less than 5% of the requested analyte list. This satisfies the client criteria. The results are reported. 1203796376 (LCS) 2-Hexanone [141* (56%-140%)]. 1203797168 (LCS) 1,2,4-Trichlorobenzene [132* (71%-129%)], 2-Butanone [140* (55%-138%)] and 2-Hexanone [151* (56%-140%)].

Originator's Name:

Vanny Yib 01-JUN-17

Data Validator/Group Leader:

Erin Haubert 05-JUN-17

Semi-Volatile Analysis

Case Narrative

GC/MS Semivolatile
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2017-1529
Work Order #: 423194

Method/Analysis Information

Procedure:	**Analysis of Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry**
Analytical Method:	SW846 3510C/8270D
Prep Method:	SW846 3510C
Analytical Batch Number:	1665599
Prep Batch Number:	1665598

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 3510C/8270D:

Sample ID	Client ID
423194002	CAMO-17-132220
423194004	CAMO-17-132305
423194005	CAMO-17-132307
1203790719	Method Blank (MB)
1203790720	Laboratory Control Sample (LCS)
1203790721	423220002(CASA-17-132341) Matrix Spike (MS)
1203790722	423220002(CASA-17-132341) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on an "as received" basis.

Preparation/Analytical Method Verification

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-009 REV# 39.

Raw data reports are processed and reviewed by the analyst using the data analysis software package. False positives have been removed from the quantitation reports per standard operating procedures (SOP).

Calibration Information

A complete list of the initial calibration data files are shown in the Calibration History report located in the Standard Data section of the data package. The various calibration mixes may not be calibrated using all of the calibration levels. In addition, not all of the mixes are calibrated using the same levels.

Diphenylamine has now superseded N-Nitroso-diphenylamine on Quantitation Reports, Initial Calibration Reports, Calibration Check Standard Reports, etc. Previous versions of EPA Methodologies referenced N-Nitroso-diphenylamine. However, as stated in EPA Methodology, "N-Nitroso-diphenylamine decomposes in the gas chromatographic inlet and cannot be separated from Diphenylamine." Studies of these two compounds at GEL, both independent of each other and together, showed that they not only co-elute, but also have similar mass spectra. N-Nitroso-diphenylamine and Diphenylamine will be reported as Diphenylamine on all reports and forms.

Initial Calibration
All initial calibration requirements have been met for this sample delivery group (SDG) in this batch. A second source initial calibration verification (ICV) was included in the standard section directly behind the initial calibration.

CCV Requirements
All Calibration Verification Standards (CCV) did not meet the acceptance criteria as outlined in Method 8270D for samples 423194002 (CAMO-17-132220), 423194004 (CAMO-17-132305) and 423194005 (CAMO-17-132307) and the associated QC. However, the method allows for a designated number of outliers dependent on the requested analyte list. This SDG satisfied the 8270D outlier acceptance criteria. If required, a CRDL was analyzed after the CCVs to demonstrate that there is adequate sensitivity to detect the failed compounds at the applicable lower quantitation limit.

Quality Control (QC) Information

Method Blank (MB) Statement
The MB analyzed with this SDG in this batch met the acceptance criteria.

Surrogate Recoveries
All the surrogate recoveries were within the established acceptance criteria for this SDG in this batch.

Laboratory Control Sample Duplicate (LCSD)
An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery
The LCS spike recoveries met the acceptance limits.

QC Sample Designation
Sample 423220002 (CASA-17-132341) was selected for analysis as the matrix spike and matrix spike duplicate.

Spike Recovery Statement
The MS and MSD recoveries were within the established acceptance limits.

MS/MSD Relative Percent Difference (RPD) Statement
The relative percent difference (RPD) between the MS and MSD (See Below) did not meet acceptance limits. As the individual MS and MSD recoveries were within the acceptance limits, the failures had no adverse impact on the reported sample data.

Sample	Analyte	Value
1203790721MS and 1203790722MSD (CASA-17-132341)	Benzidine	45* (0%-30%)

Internal Standard (ISTD) Acceptance
The internal standard responses used to quantitate the requested target analytes were within the required acceptance criteria for the SDG associated samples in this batch.

Technical Information:

Holding Time Specifications
All samples in this SDG in this batch met the specified holding time. GEL assigns holding times based on the associated methodology that 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.

Preparation/Analytical Method Verification
All procedures were performed as stated in the SOP. All reported compound mass spectra met the detection specifications in the method.

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

Sample Re-extraction/Re-analysis
Re-extractions or re-analyses were not required in this SDG in this analytical batch unless confirmations or dilutions were required.

Miscellaneous Information:

Data Exception (DER) Documentation
A data exception report (DER) 1633107 was generated for sample 1203790722 (CASA-17-132341MSD) in this SDG/batch.

Manual Integrations
Sample 1203790720 (LCS) required manual integration in order to properly identify one or more peaks and/or to correctly position the baseline as set in the calibration standard injections.

TIC Comment
Tentatively identified compounds (TIC) were requested for samples 423194002 (CAMO-17-132220), 423194004 (CAMO-17-132305) and 423194005 (CAMO-17-132307) in this SDG in this batch.

Additional Comments
Additional comments were not required for the SDG associated samples in this batch.

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

Instrument ID	Instrument	System Configuration	Column ID	Column Description

MSDA.I	Agilent 7890B/5977A GC/MSD with 7693A Autoinjector	Agilent7890B/5977	DB-5MS	25m x 0.2mm x 0.33um (5% Polysilarylene-95% Polydimethylsiloxane)

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: 2017-1529 GEL Work Order: 423194

The Qualifiers in this report are defined as follows:

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

DL Indicates that sample is diluted.
RA Indicates that sample is re-analyzed without re-extraction.
RE Indicates that sample is re-extracted.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: Barbara Bailey **Name: Barbara Bailey**

Date: 07 JUN 2017 **Title: Data Validator**

Sample Data Summary

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**	**Date Collected:**	**05/11/2017 15:44**	**Matrix:**	**W**
Lab Sample ID:	**423194002**	**Date Received:**	**05/16/2017 09:20**		
		Client:	**ARSL004**	**Project:**	**ESHL00114**
Client ID:	**CAMO-17-132220**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1665599**	**Inst:**	**MSDA.I**	**Dilution:**	**1**
Run Date:	**05/17/2017 17:36**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**05/17/2017 04:35**	**Aliquot:**	**980 mL**	**Final Volume:**	**1 mL**
Data File:	**051717.s\sAe1721.D**	**Column:**	**DB-5.625**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene	U	10.2	ug/L	3.06	10.2
120-82-1	1,2,4-Trichlorobenzene	U	10.2	ug/L	3.06	10.2
95-50-1	1,2-Dichlorobenzene	U	10.2	ug/L	3.06	10.2
122-66-7	Azobenzene	U	10.2	ug/L	3.06	10.2
	1,2-Diphenylhydrazine					
541-73-1	1,3-Dichlorobenzene	U	10.2	ug/L	3.06	10.2
106-46-7	1,4-Dichlorobenzene	U	10.2	ug/L	3.06	10.2
123-91-1	1,4-Dioxane		10.8	ug/L	3.06	10.2
90-12-0	1-Methylnaphthalene	U	1.02	ug/L	0.306	1.02
58-90-2	2,3,4,6-Tetrachlorophenol	U	10.2	ug/L	3.06	10.2
95-95-4	2,4,5-Trichlorophenol	U	10.2	ug/L	3.06	10.2
88-06-2	2,4,6-Trichlorophenol	U	10.2	ug/L	3.06	10.2
120-83-2	2,4-Dichlorophenol	U	10.2	ug/L	3.06	10.2
105-67-9	2,4-Dimethylphenol	U	10.2	ug/L	3.06	10.2
51-28-5	2,4-Dinitrophenol	U	20.4	ug/L	5.10	20.4
121-14-2	2,4-Dinitrotoluene	U	10.2	ug/L	3.06	10.2
606-20-2	2,6-Dinitrotoluene	U	10.2	ug/L	3.06	10.2
91-58-7	2-Chloronaphthalene	U	1.02	ug/L	0.418	1.02
95-57-8	2-Chlorophenol	U	10.2	ug/L	3.06	10.2
534-52-1	2-Methyl-4,6-dinitrophenol	U	10.2	ug/L	3.06	10.2
91-57-6	2-Methylnaphthalene	U	1.02	ug/L	0.306	1.02
88-75-5	2-Nitrophenol	U	10.2	ug/L	3.06	10.2
91-94-1	3,3'-Dichlorobenzidine	U	10.2	ug/L	3.06	10.2
101-55-3	4-Bromophenylphenylether	U	10.2	ug/L	3.06	10.2
59-50-7	Parachlorometa cresol	U	10.2	ug/L	3.06	10.2
	4-Chloro-3-methylphenol					
106-47-8	4-Chloroaniline	U	10.2	ug/L	3.37	10.2
7005-72-3	4-Chlorophenylphenylether	U	10.2	ug/L	3.06	10.2
100-02-7	4-Nitrophenol	U	10.2	ug/L	3.06	10.2
83-32-9	Acenaphthene	U	1.02	ug/L	0.306	1.02
208-96-8	Acenaphthylene	U	1.02	ug/L	0.306	1.02
62-53-3	Aniline	U	10.2	ug/L	4.29	10.2
120-12-7	Anthracene	U	1.02	ug/L	0.306	1.02
1912-24-9	Atrazine	U	10.2	ug/L	3.06	10.2
92-87-5	Benzidine	U	10.2	ug/L	3.98	10.2
56-55-3	Benzo(a)anthracene	U	1.02	ug/L	0.306	1.02
50-32-8	Benzo(a)pyrene	U	1.02	ug/L	0.306	1.02
205-99-2	Benzo(b)fluoranthene	U	1.02	ug/L	0.306	1.02
191-24-2	Benzo(ghi)perylene	U	1.02	ug/L	0.306	1.02

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**	**Date Collected:**	**05/11/2017 15:44**	**Matrix:**	**W**
Lab Sample ID:	**423194002**	**Date Received:**	**05/16/2017 09:20**		
		Client:	**ARSL004**	**Project:**	**ESHL00114**
Client ID:	**CAMO-17-132220**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1665599**	**Inst:**	**MSDA.I**	**Dilution:**	**1**
Run Date:	**05/17/2017 17:36**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**05/17/2017 04:35**	**Aliquot:**	**980 mL**	**Final Volume:**	**1 mL**
Data File:	**051717.s\sAe1721.D**	**Column:**	**DB-5.625**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene	U	1.02	ug/L	0.306	1.02
65-85-0	Benzoic acid	U	20.4	ug/L	6.12	20.4
100-51-6	Benzyl alcohol	U	10.2	ug/L	3.06	10.2
85-68-7	Butylbenzylphthalate	U	10.2	ug/L	3.06	10.2
218-01-9	Chrysene	U	1.02	ug/L	0.306	1.02
84-74-2	Di-n-butylphthalate	U	10.2	ug/L	3.06	10.2
117-84-0	Di-n-octylphthalate	U	10.2	ug/L	3.06	10.2
53-70-3	Dibenzo(a,h)anthracene	U	1.02	ug/L	0.306	1.02
132-64-9	Dibenzofuran	U	10.2	ug/L	3.06	10.2
84-66-2	Diethylphthalate	U	10.2	ug/L	3.06	10.2
131-11-3	Dimethylphthalate	U	10.2	ug/L	3.06	10.2
88-85-7	Dinoseb	U	10.2	ug/L	3.06	10.2
122-39-4	Diphenylamine	U	10.2	ug/L	3.06	10.2
206-44-0	Fluoranthene	U	1.02	ug/L	0.306	1.02
86-73-7	Fluorene	U	1.02	ug/L	0.306	1.02
118-74-1	Hexachlorobenzene	U	10.2	ug/L	3.06	10.2
87-68-3	Hexachlorobutadiene	U	10.2	ug/L	3.06	10.2
77-47-4	Hexachlorocyclopentadiene	U	10.2	ug/L	3.06	10.2
67-72-1	Hexachloroethane	U	10.2	ug/L	3.06	10.2
193-39-5	Indeno(1,2,3-cd)pyrene	U	1.02	ug/L	0.306	1.02
78-59-1	Isophorone	U	10.2	ug/L	3.57	10.2
62-75-9	N-Methyl-N-nitrosomethylamine	U	10.2	ug/L	3.06	10.2
924-16-3	N-Nitrosodi-n-butylamine	U	10.2	ug/L	3.06	10.2
55-18-5	N-Nitrosodiethylamine	U	10.2	ug/L	3.06	10.2
621-64-7	N-Nitrosodi--n-propylamine *N-Nitrosodipropylamine*	U	10.2	ug/L	3.06	10.2
930-55-2	N-Nitrosopyrrolidine	U	10.2	ug/L	3.06	10.2
91-20-3	Naphthalene	U	1.02	ug/L	0.306	1.02
98-95-3	Nitrobenzene	U	10.2	ug/L	3.06	10.2
608-93-5	Pentachlorobenzene	U	10.2	ug/L	3.06	10.2
87-86-5	Pentachlorophenol	U	10.2	ug/L	3.06	10.2
85-01-8	Phenanthrene	U	1.02	ug/L	0.306	1.02
108-95-2	Phenol	U	10.2	ug/L	3.06	10.2
129-00-0	Pyrene	U	1.02	ug/L	0.306	1.02
110-86-1	Pyridine	U	10.2	ug/L	3.06	10.2
108-60-1	bis(2-Chloro-1-methylethyl)ether	U	10.2	ug/L	3.06	10.2
111-91-1	bis(2-Chloroethoxy)methane	U	10.2	ug/L	3.06	10.2
111-44-4	bis(2-Chloroethyl) ether	U	10.2	ug/L	3.06	10.2
117-81-7	bis(2-Ethylhexyl)phthalate	U	10.2	ug/L	3.06	10.2

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**	**Date Collected:**	**05/11/2017 15:44**	**Matrix:**	**W**
Lab Sample ID:	**423194002**	**Date Received:**	**05/16/2017 09:20**		
		Client:	**ARSL004**	**Project:**	**ESHL00114**
Client ID:	**CAMO-17-132220**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1665599**	**Inst:**	**MSDA.I**	**Dilution:**	**1**
Run Date:	**05/17/2017 17:36**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**05/17/2017 04:35**	**Aliquot:**	**980 mL**	**Final Volume:**	**1 mL**
Data File:	**051717.s\sAe1721.D**	**Column:**	**DB-5.625**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols	U	10.2	ug/L	3.78	10.2
99-09-2	3-Nitroaniline *m-Nitroaniline*	U	10.2	ug/L	3.06	10.2
95-48-7	o-Cresol	U	10.2	ug/L	3.06	10.2
88-74-4	2-Nitroaniline *o-Nitroaniline*	U	10.2	ug/L	3.06	10.2
100-01-6	4-Nitroaniline *p-Nitroaniline*	U	10.2	ug/L	3.06	10.2

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	88.7	102	ug/L	87	(32%-124%)
2-Fluorobiphenyl	39.5	51.0	ug/L	78	(32%-112%)
2-Fluorophenol	39.9	102	ug/L	39	(15%-88%)
Nitrobenzene-d5	37.0	51.0	ug/L	73	(36%-115%)
Phenol-d5	25.5	102	ug/L	25	(15%-91%)
p-Terphenyl-d14	33.9	51.0	ug/L	66	(36%-121%)

Tentatively Identified Compound Summary

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

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**	**Date Collected:**	**05/11/2017 15:44**	**Matrix:**	**W**
Lab Sample ID:	**423194004**	**Date Received:**	**05/16/2017 09:20**		
		Client:	**ARSL004**	**Project:**	**ESHL00114**
Client ID:	**CAMO-17-132305**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1665599**	**Inst:**	**MSDA.I**	**Dilution:**	**1**
Run Date:	**05/17/2017 18:03**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**05/17/2017 04:35**	**Aliquot:**	**980 mL**	**Final Volume:**	**1 mL**
Data File:	**051717.s\sAe1722.D**	**Column:**	**DB-5.625**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene	U	10.2	ug/L	3.06	10.2
120-82-1	1,2,4-Trichlorobenzene	U	10.2	ug/L	3.06	10.2
95-50-1	1,2-Dichlorobenzene	U	10.2	ug/L	3.06	10.2
122-66-7	Azobenzene	U	10.2	ug/L	3.06	10.2
	1,2-Diphenylhydrazine					
541-73-1	1,3-Dichlorobenzene	U	10.2	ug/L	3.06	10.2
106-46-7	1,4-Dichlorobenzene	U	10.2	ug/L	3.06	10.2
123-91-1	1,4-Dioxane	U	10.2	ug/L	3.06	10.2
90-12-0	1-Methylnaphthalene	U	1.02	ug/L	0.306	1.02
58-90-2	2,3,4,6-Tetrachlorophenol	U	10.2	ug/L	3.06	10.2
95-95-4	2,4,5-Trichlorophenol	U	10.2	ug/L	3.06	10.2
88-06-2	2,4,6-Trichlorophenol	U	10.2	ug/L	3.06	10.2
120-83-2	2,4-Dichlorophenol	U	10.2	ug/L	3.06	10.2
105-67-9	2,4-Dimethylphenol	U	10.2	ug/L	3.06	10.2
51-28-5	2,4-Dinitrophenol	U	20.4	ug/L	5.10	20.4
121-14-2	2,4-Dinitrotoluene	U	10.2	ug/L	3.06	10.2
606-20-2	2,6-Dinitrotoluene	U	10.2	ug/L	3.06	10.2
91-58-7	2-Chloronaphthalene	U	1.02	ug/L	0.418	1.02
95-57-8	2-Chlorophenol	U	10.2	ug/L	3.06	10.2
534-52-1	2-Methyl-4,6-dinitrophenol	U	10.2	ug/L	3.06	10.2
91-57-6	2-Methylnaphthalene	U	1.02	ug/L	0.306	1.02
88-75-5	2-Nitrophenol	U	10.2	ug/L	3.06	10.2
91-94-1	3,3'-Dichlorobenzidine	U	10.2	ug/L	3.06	10.2
101-55-3	4-Bromophenylphenylether	U	10.2	ug/L	3.06	10.2
59-50-7	Parachlorometa cresol	U	10.2	ug/L	3.06	10.2
	4-Chloro-3-methylphenol					
106-47-8	4-Chloroaniline	U	10.2	ug/L	3.37	10.2
7005-72-3	4-Chlorophenylphenylether	U	10.2	ug/L	3.06	10.2
100-02-7	4-Nitrophenol	U	10.2	ug/L	3.06	10.2
83-32-9	Acenaphthene	U	1.02	ug/L	0.306	1.02
208-96-8	Acenaphthylene	U	1.02	ug/L	0.306	1.02
62-53-3	Aniline	U	10.2	ug/L	4.29	10.2
120-12-7	Anthracene	U	1.02	ug/L	0.306	1.02
1912-24-9	Atrazine	U	10.2	ug/L	3.06	10.2
92-87-5	Benzidine	U	10.2	ug/L	3.98	10.2
56-55-3	Benzo(a)anthracene	U	1.02	ug/L	0.306	1.02
50-32-8	Benzo(a)pyrene	U	1.02	ug/L	0.306	1.02
205-99-2	Benzo(b)fluoranthene	U	1.02	ug/L	0.306	1.02
191-24-2	Benzo(ghi)perylene	U	1.02	ug/L	0.306	1.02

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**	**Date Collected:**	**05/11/2017 15:44**	**Matrix:**	**W**
Lab Sample ID:	**423194004**	**Date Received:**	**05/16/2017 09:20**		
		Client:	**ARSL004**	**Project:**	**ESHL00114**
Client ID:	**CAMO-17-132305**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1665599**	**Inst:**	**MSDA.I**	**Dilution:**	**1**
Run Date:	**05/17/2017 18:03**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**05/17/2017 04:35**	**Aliquot:**	**980 mL**	**Final Volume:**	**1 mL**
Data File:	**051717.s\sAe1722.D**	**Column:**	**DB-5.625**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene	U	1.02	ug/L	0.306	1.02
65-85-0	Benzoic acid	U	20.4	ug/L	6.12	20.4
100-51-6	Benzyl alcohol	U	10.2	ug/L	3.06	10.2
85-68-7	Butylbenzylphthalate	U	10.2	ug/L	3.06	10.2
218-01-9	Chrysene	U	1.02	ug/L	0.306	1.02
84-74-2	Di-n-butylphthalate	U	10.2	ug/L	3.06	10.2
117-84-0	Di-n-octylphthalate	U	10.2	ug/L	3.06	10.2
53-70-3	Dibenzo(a,h)anthracene	U	1.02	ug/L	0.306	1.02
132-64-9	Dibenzofuran	U	10.2	ug/L	3.06	10.2
84-66-2	Diethylphthalate	U	10.2	ug/L	3.06	10.2
131-11-3	Dimethylphthalate	U	10.2	ug/L	3.06	10.2
88-85-7	Dinoseb	U	10.2	ug/L	3.06	10.2
122-39-4	Diphenylamine	U	10.2	ug/L	3.06	10.2
206-44-0	Fluoranthene	U	1.02	ug/L	0.306	1.02
86-73-7	Fluorene	U	1.02	ug/L	0.306	1.02
118-74-1	Hexachlorobenzene	U	10.2	ug/L	3.06	10.2
87-68-3	Hexachlorobutadiene	U	10.2	ug/L	3.06	10.2
77-47-4	Hexachlorocyclopentadiene	U	10.2	ug/L	3.06	10.2
67-72-1	Hexachloroethane	U	10.2	ug/L	3.06	10.2
193-39-5	Indeno(1,2,3-cd)pyrene	U	1.02	ug/L	0.306	1.02
78-59-1	Isophorone	U	10.2	ug/L	3.57	10.2
62-75-9	N-Methyl-N-nitrosomethylamine	U	10.2	ug/L	3.06	10.2
924-16-3	N-Nitrosodi-n-butylamine	U	10.2	ug/L	3.06	10.2
55-18-5	N-Nitrosodiethylamine	U	10.2	ug/L	3.06	10.2
621-64-7	N-Nitrosodi--n-propylamine *N-Nitrosodipropylamine*	U	10.2	ug/L	3.06	10.2
930-55-2	N-Nitrosopyrrolidine	U	10.2	ug/L	3.06	10.2
91-20-3	Naphthalene	U	1.02	ug/L	0.306	1.02
98-95-3	Nitrobenzene	U	10.2	ug/L	3.06	10.2
608-93-5	Pentachlorobenzene	U	10.2	ug/L	3.06	10.2
87-86-5	Pentachlorophenol	U	10.2	ug/L	3.06	10.2
85-01-8	Phenanthrene	U	1.02	ug/L	0.306	1.02
108-95-2	Phenol	U	10.2	ug/L	3.06	10.2
129-00-0	Pyrene	U	1.02	ug/L	0.306	1.02
110-86-1	Pyridine	U	10.2	ug/L	3.06	10.2
108-60-1	bis(2-Chloro-1-methylethyl)ether	U	10.2	ug/L	3.06	10.2
111-91-1	bis(2-Chloroethoxy)methane	U	10.2	ug/L	3.06	10.2
111-44-4	bis(2-Chloroethyl) ether	U	10.2	ug/L	3.06	10.2
117-81-7	bis(2-Ethylhexyl)phthalate	U	10.2	ug/L	3.06	10.2

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**	**Date Collected:**	**05/11/2017 15:44**	**Matrix:**	**W**
Lab Sample ID:	**423194004**	**Date Received:**	**05/16/2017 09:20**		
		Client:	**ARSL004**	**Project:**	**ESHL00114**
Client ID:	**CAMO-17-132305**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1665599**	**Inst:**	**MSDA.I**	**Dilution:**	**1**
Run Date:	**05/17/2017 18:03**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**05/17/2017 04:35**	**Aliquot:**	**980 mL**	**Final Volume:**	**1 mL**
Data File:	**051717.s\sAe1722.D**	**Column:**	**DB-5.625**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols	U	10.2	ug/L	3.78	10.2
99-09-2	3-Nitroaniline *m-Nitroaniline*	U	10.2	ug/L	3.06	10.2
95-48-7	o-Cresol	U	10.2	ug/L	3.06	10.2
88-74-4	2-Nitroaniline *o-Nitroaniline*	U	10.2	ug/L	3.06	10.2
100-01-6	4-Nitroaniline *p-Nitroaniline*	U	10.2	ug/L	3.06	10.2

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	86.4	102	ug/L	85	(32%-124%)
2-Fluorobiphenyl	42.9	51.0	ug/L	84	(32%-112%)
2-Fluorophenol	41.5	102	ug/L	41	(15%-88%)
Nitrobenzene-d5	39.7	51.0	ug/L	78	(36%-115%)
Phenol-d5	26.3	102	ug/L	26	(15%-91%)
p-Terphenyl-d14	39.5	51.0	ug/L	77	(36%-121%)

Tentatively Identified Compound Summary

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

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**	**Date Collected:**	**05/11/2017 15:44**	**Matrix:**	**W**
Lab Sample ID:	**423194005**	**Date Received:**	**05/16/2017 09:20**		
		Client:	**ARSL004**	**Project:**	**ESHL00114**
Client ID:	**CAMO-17-132307**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1665599**	**Inst:**	**MSDA.I**	**Dilution:**	**1**
Run Date:	**05/17/2017 18:30**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**05/17/2017 04:35**	**Aliquot:**	**970 mL**	**Final Volume:**	**1 mL**
Data File:	**051717.s\sAe1723.D**	**Column:**	**DB-5.625**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene	U	10.3	ug/L	3.09	10.3
120-82-1	1,2,4-Trichlorobenzene	U	10.3	ug/L	3.09	10.3
95-50-1	1,2-Dichlorobenzene	U	10.3	ug/L	3.09	10.3
122-66-7	Azobenzene	U	10.3	ug/L	3.09	10.3
	1,2-Diphenylhydrazine					
541-73-1	1,3-Dichlorobenzene	U	10.3	ug/L	3.09	10.3
106-46-7	1,4-Dichlorobenzene	U	10.3	ug/L	3.09	10.3
123-91-1	1,4-Dioxane	J	10.2	ug/L	3.09	10.3
90-12-0	1-Methylnaphthalene	U	1.03	ug/L	0.309	1.03
58-90-2	2,3,4,6-Tetrachlorophenol	U	10.3	ug/L	3.09	10.3
95-95-4	2,4,5-Trichlorophenol	U	10.3	ug/L	3.09	10.3
88-06-2	2,4,6-Trichlorophenol	U	10.3	ug/L	3.09	10.3
120-83-2	2,4-Dichlorophenol	U	10.3	ug/L	3.09	10.3
105-67-9	2,4-Dimethylphenol	U	10.3	ug/L	3.09	10.3
51-28-5	2,4-Dinitrophenol	U	20.6	ug/L	5.15	20.6
121-14-2	2,4-Dinitrotoluene	U	10.3	ug/L	3.09	10.3
606-20-2	2,6-Dinitrotoluene	U	10.3	ug/L	3.09	10.3
91-58-7	2-Chloronaphthalene	U	1.03	ug/L	0.423	1.03
95-57-8	2-Chlorophenol	U	10.3	ug/L	3.09	10.3
534-52-1	2-Methyl-4,6-dinitrophenol	U	10.3	ug/L	3.09	10.3
91-57-6	2-Methylnaphthalene	U	1.03	ug/L	0.309	1.03
88-75-5	2-Nitrophenol	U	10.3	ug/L	3.09	10.3
91-94-1	3,3'-Dichlorobenzidine	U	10.3	ug/L	3.09	10.3
101-55-3	4-Bromophenylphenylether	U	10.3	ug/L	3.09	10.3
59-50-7	Parachlorometa cresol	U	10.3	ug/L	3.09	10.3
	4-Chloro-3-methylphenol					
106-47-8	4-Chloroaniline	U	10.3	ug/L	3.40	10.3
7005-72-3	4-Chlorophenylphenylether	U	10.3	ug/L	3.09	10.3
100-02-7	4-Nitrophenol	U	10.3	ug/L	3.09	10.3
83-32-9	Acenaphthene	U	1.03	ug/L	0.309	1.03
208-96-8	Acenaphthylene	U	1.03	ug/L	0.309	1.03
62-53-3	Aniline	U	10.3	ug/L	4.33	10.3
120-12-7	Anthracene	U	1.03	ug/L	0.309	1.03
1912-24-9	Atrazine	U	10.3	ug/L	3.09	10.3
92-87-5	Benzidine	U	10.3	ug/L	4.02	10.3
56-55-3	Benzo(a)anthracene	U	1.03	ug/L	0.309	1.03
50-32-8	Benzo(a)pyrene	U	1.03	ug/L	0.309	1.03
205-99-2	Benzo(b)fluoranthene	U	1.03	ug/L	0.309	1.03
191-24-2	Benzo(ghi)perylene	U	1.03	ug/L	0.309	1.03

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**	**Date Collected:**	**05/11/2017 15:44**	**Matrix:**	**W**
Lab Sample ID:	**423194005**	**Date Received:**	**05/16/2017 09:20**		
		Client:	**ARSL004**	**Project:**	**ESHL00114**
Client ID:	**CAMO-17-132307**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1665599**	**Inst:**	**MSDA.I**	**Dilution:**	**1**
Run Date:	**05/17/2017 18:30**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**05/17/2017 04:35**	**Aliquot:**	**970 mL**	**Final Volume:**	**1 mL**
Data File:	**051717.s\sAe1723.D**	**Column:**	**DB-5.625**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene	U	1.03	ug/L	0.309	1.03
65-85-0	Benzoic acid	U	20.6	ug/L	6.19	20.6
100-51-6	Benzyl alcohol	U	10.3	ug/L	3.09	10.3
85-68-7	Butylbenzylphthalate	U	10.3	ug/L	3.09	10.3
218-01-9	Chrysene	U	1.03	ug/L	0.309	1.03
84-74-2	Di-n-butylphthalate	U	10.3	ug/L	3.09	10.3
117-84-0	Di-n-octylphthalate	U	10.3	ug/L	3.09	10.3
53-70-3	Dibenzo(a,h)anthracene	U	1.03	ug/L	0.309	1.03
132-64-9	Dibenzofuran	U	10.3	ug/L	3.09	10.3
84-66-2	Diethylphthalate	U	10.3	ug/L	3.09	10.3
131-11-3	Dimethylphthalate	U	10.3	ug/L	3.09	10.3
88-85-7	Dinoseb	U	10.3	ug/L	3.09	10.3
122-39-4	Diphenylamine	U	10.3	ug/L	3.09	10.3
206-44-0	Fluoranthene	U	1.03	ug/L	0.309	1.03
86-73-7	Fluorene	U	1.03	ug/L	0.309	1.03
118-74-1	Hexachlorobenzene	U	10.3	ug/L	3.09	10.3
87-68-3	Hexachlorobutadiene	U	10.3	ug/L	3.09	10.3
77-47-4	Hexachlorocyclopentadiene	U	10.3	ug/L	3.09	10.3
67-72-1	Hexachloroethane	U	10.3	ug/L	3.09	10.3
193-39-5	Indeno(1,2,3-cd)pyrene	U	1.03	ug/L	0.309	1.03
78-59-1	Isophorone	U	10.3	ug/L	3.61	10.3
62-75-9	N-Methyl-N-nitrosomethylamine	U	10.3	ug/L	3.09	10.3
924-16-3	N-Nitrosodi-n-butylamine	U	10.3	ug/L	3.09	10.3
55-18-5	N-Nitrosodiethylamine	U	10.3	ug/L	3.09	10.3
621-64-7	N-Nitrosodi--n-propylamine *N-Nitrosodipropylamine*	U	10.3	ug/L	3.09	10.3
930-55-2	N-Nitrosopyrrolidine	U	10.3	ug/L	3.09	10.3
91-20-3	Naphthalene	U	1.03	ug/L	0.309	1.03
98-95-3	Nitrobenzene	U	10.3	ug/L	3.09	10.3
608-93-5	Pentachlorobenzene	U	10.3	ug/L	3.09	10.3
87-86-5	Pentachlorophenol	U	10.3	ug/L	3.09	10.3
85-01-8	Phenanthrene	U	1.03	ug/L	0.309	1.03
108-95-2	Phenol	U	10.3	ug/L	3.09	10.3
129-00-0	Pyrene	U	1.03	ug/L	0.309	1.03
110-86-1	Pyridine	U	10.3	ug/L	3.09	10.3
108-60-1	bis(2-Chloro-1-methylethyl)ether	U	10.3	ug/L	3.09	10.3
111-91-1	bis(2-Chloroethoxy)methane	U	10.3	ug/L	3.09	10.3
111-44-4	bis(2-Chloroethyl) ether	U	10.3	ug/L	3.09	10.3
117-81-7	bis(2-Ethylhexyl)phthalate	U	10.3	ug/L	3.09	10.3

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**	**Date Collected:**	**05/11/2017 15:44**	**Matrix:**	**W**
Lab Sample ID:	**423194005**	**Date Received:**	**05/16/2017 09:20**		
		Client:	**ARSL004**	**Project:**	**ESHL00114**
Client ID:	**CAMO-17-132307**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1665599**	**Inst:**	**MSDA.I**	**Dilution:**	**1**
Run Date:	**05/17/2017 18:30**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**05/17/2017 04:35**	**Aliquot:**	**970 mL**	**Final Volume:**	**1 mL**
Data File:	**051717.s\sAe1723.D**	**Column:**	**DB-5.625**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols	U	10.3	ug/L	3.81	10.3
99-09-2	3-Nitroaniline *m-Nitroaniline*	U	10.3	ug/L	3.09	10.3
95-48-7	o-Cresol	U	10.3	ug/L	3.09	10.3
88-74-4	2-Nitroaniline *o-Nitroaniline*	U	10.3	ug/L	3.09	10.3
100-01-6	4-Nitroaniline *p-Nitroaniline*	U	10.3	ug/L	3.09	10.3

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	80.5	103	ug/L	78	(32%-124%)
2-Fluorobiphenyl	37.5	51.5	ug/L	73	(32%-112%)
2-Fluorophenol	36.8	103	ug/L	36	(15%-88%)
Nitrobenzene-d5	34.7	51.5	ug/L	67	(36%-115%)
Phenol-d5	24.1	103	ug/L	23	(15%-91%)
p-Terphenyl-d14	36.6	51.5	ug/L	71	(36%-121%)

Tentatively Identified Compound Summary

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

Quality Control Summary

Semi-Volatile

Surrogate Recovery Report

SDG Number: 2017-1529

Matrix Type: LIQUID

Sample ID	Client ID	2FP %REC	PHL %REC	NBZ %REC	FBP %REC	TBP %REC	TPH %REC
1203790719	MB for batch 1665598	40	26	67	70	77	76
1203790720	LCS for batch 1665598	47	31	82	88	100	81
1203790721	CASA-17-132341MS	53	40	76	83	93	76
1203790722	CASA-17-132341MSD	48	37	69	76	81	66
423194002	CAMO-17-132220	39	25	73	78	87	66
423194004	CAMO-17-132305	41	26	78	84	85	77
423194005	CAMO-17-132307	36	23	67	73	78	71

Surrogate		Acceptance Limits
2FP	= 2-Fluorophenol	(15%-88%)
PHL	= Phenol-d5	(15%-91%)
NBZ	= Nitrobenzene-d5	(36%-115%)
FBP	= 2-Fluorobiphenyl	(32%-112%)
TBP	= 2,4,6-Tribromophenol	(32%-124%)
TPH	= p-Terphenyl-d14	(36%-121%)

* Recovery outside Acceptance Limits
# Column to be used to flag recovery values
D Sample Diluted

Quality Control Summary
Spike Recovery Report

SDG Number: **2017-1529**
Sample Type: **Laboratory Control Sample**
Client ID: **LCS for batch 1665598**
Matrix: **WATER**
Lab Sample ID **1203790720**
Instrument: **MSDA.I**
Analysis Date: **05/17/2017 12:41**
Dilution: **1**
Analyst: **JMB3**
Prep Batch ID: **1665598**
Inj. Vol: **1 uL**
Batch ID: **1665599**

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
62-75-9	LCS	N-Methyl-N-nitrosomethylam	50.0	0.0	25.0	50	30-88
110-86-1	LCS	Pyridine	50.0	0.0	22.5	45	27-89
62-53-3	LCS	Aniline	50.0	0.0	45.7	91	49-112
108-95-2	LCS	Phenol	50.0	0.0	16.8	34	16-82
111-44-4	LCS	bis(2-Chloroethyl) ether	50.0	0.0	40.7	81	51-111
95-57-8	LCS	2-Chlorophenol	50.0	0.0	40.2	80	49-105
541-73-1	LCS	1,3-Dichlorobenzene	50.0	0.0	36.1	72	37-95
106-46-7	LCS	1,4-Dichlorobenzene	50.0	0.0	36.8	74	38-96
95-50-1	LCS	1,2-Dichlorobenzene	50.0	0.0	37.7	75	39-97
108-60-1	LCS	bis(2-Chloro-1-methylethyl)et	50.0	0.0	39.8	80	44-123
100-51-6	LCS	Benzyl alcohol	50.0	0.0	35.3	71	44-102
95-48-7	LCS	o-Cresol	50.0	0.0	36.1	72	41-101
65794-96-9	LCS	m,p-Cresols	50.0	0.0	34.8	70	43-102
621-64-7	LCS	N-Nitrosodi--n-propylamine *N-Nitrosodipropylamine*	50.0	0.0	39.5	79	54-115
67-72-1	LCS	Hexachloroethane	50.0	0.0	34.3	69	36-96
98-95-3	LCS	Nitrobenzene	50.0	0.0	41.8	84	53-115
78-59-1	LCS	Isophorone	50.0	0.0	41.6	83	56-117
88-75-5	LCS	2-Nitrophenol	50.0	0.0	47.7	95	51-113
105-67-9	LCS	2,4-Dimethylphenol	50.0	0.0	39.5	79	51-104
111-91-1	LCS	bis(2-Chloroethoxy)methane	50.0	0.0	43.2	86	55-114
120-83-2	LCS	2,4-Dichlorophenol	50.0	0.0	45.8	92	53-109
65-85-0	LCS	Benzoic acid	100	0.0	24.2	24	21-74

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-1529
Sample Type: Laboratory Control Sample
Client ID: LCS for batch 1665598
Matrix: WATER
Lab Sample ID 1203790720
Instrument: MSDA.I
Analysis Date: 05/17/2017 12:41
Dilution: 1
Analyst: JMB3
Prep Batch ID: 1665598
Inj. Vol: 1 uL
Batch ID: 1665599

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
106-47-8	LCS	4-Chloroaniline	50.0	0.0	60.9	122	65-136
87-68-3	LCS	Hexachlorobutadiene	50.0	0.0	39.0	78	35-98
59-50-7	LCS	Parachlorometa cresol *4-Chloro-3-methylphenol*	50.0	0.0	45.1	90	55-115
91-57-6	LCS	2-Methylnaphthalene	50.0	0.0	42.6	85	42-103
91-20-3	LCS	Naphthalene	50.0	0.0	43.2	86	44-102
90-12-0	LCS	1-Methylnaphthalene	50.0	0.0	43.5	87	45-108
77-47-4	LCS	Hexachlorocyclopentadiene	50.0	0.0	26.4	53	34-89
88-06-2	LCS	2,4,6-Trichlorophenol	50.0	0.0	48.1	96	55-120
95-95-4	LCS	2,4,5-Trichlorophenol	50.0	0.0	46.4	93	55-116
91-58-7	LCS	2-Chloronaphthalene	50.0	0.0	41.6	83	44-107
88-74-4	LCS	2-Nitroaniline *o-Nitroaniline*	50.0	0.0	46.7	93	53-121
99-09-2	LCS	3-Nitroaniline *m-Nitroaniline*	50.0	0.0	64.0	128	61-139
131-11-3	LCS	Dimethylphthalate	50.0	0.0	48.0	96	60-122
606-20-2	LCS	2,6-Dinitrotoluene	50.0	0.0	49.0	98	59-122
121-14-2	LCS	2,4-Dinitrotoluene	50.0	0.0	54.3	109	57-124
208-96-8	LCS	Acenaphthylene	50.0	0.0	49.6	99	50-113
83-32-9	LCS	Acenaphthene	50.0	0.0	46.2	92	49-112
51-28-5	LCS	2,4-Dinitrophenol	50.0	0.0	50.0	100	34-122
132-64-9	LCS	Dibenzofuran	50.0	0.0	47.6	95	50-111
58-90-2	LCS	2,3,4,6-Tetrachlorophenol	50.0	0.0	47.8	96	54-122
84-66-2	LCS	Diethylphthalate	50.0	0.0	48.3	97	57-122
100-02-7	LCS	4-Nitrophenol	50.0	0.0	13.8	28	15-137

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-1529
Client ID: LCS for batch 1665598
Lab Sample ID 1203790720
Instrument: MSDA.I
Analyst: JMB3
Inj. Vol: 1 uL

Sample Type: Laboratory Control Sample
Matrix: WATER
Analysis Date: 05/17/2017 12:41
Prep Batch ID: 1665598
Batch ID: 1665599
Dilution: 1

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
86-73-7	LCS	Fluorene	50.0	0.0	45.7	91	52-114
7005-72-3	LCS	4-Chlorophenylphenylether	50.0	0.0	44.0	88	52-121
100-01-6	LCS	4-Nitroaniline *p-Nitroaniline*	50.0	0.0	67.1	134	44-137
534-52-1	LCS	2-Methyl-4,6-dinitrophenol	50.0	0.0	54.5	109	45-124
122-39-4	LCS	Diphenylamine	50.0	0.0	42.4	85	55-113
122-66-7	LCS	Azobenzene *1,2-Diphenylhydrazine*	50.0	0.0	43.2	86	53-115
101-55-3	LCS	4-Bromophenylphenylether	50.0	0.0	43.9	88	54-116
118-74-1	LCS	Hexachlorobenzene	50.0	0.0	44.0	88	54-115
87-86-5	LCS	Pentachlorophenol	50.0	0.0	51.2	102	41-116
85-01-8	LCS	Phenanthrene	50.0	0.0	46.1	92	55-110
120-12-7	LCS	Anthracene	50.0	0.0	47.1	94	56-112
84-74-2	LCS	Di-n-butylphthalate	50.0	0.0	47.3	95	57-123
206-44-0	LCS	Fluoranthene	50.0	0.0	52.4	105	54-118
129-00-0	LCS	Pyrene	50.0	0.0	42.3	85	49-121
85-68-7	LCS	Butylbenzylphthalate	50.0	0.0	43.9	88	52-125
117-81-7	LCS	bis(2-Ethylhexyl)phthalate	50.0	0.0	42.3	85	52-125
56-55-3	LCS	Benzo(a)anthracene	50.0	0.0	51.1	102	57-112
218-01-9	LCS	Chrysene	50.0	0.0	53.1	106	58-117
117-84-0	LCS	Di-n-octylphthalate	50.0	0.0	44.5	89	50-129
205-99-2	LCS	Benzo(b)fluoranthene	50.0	0.0	49.5	99	41-118
207-08-9	LCS	Benzo(k)fluoranthene	50.0	0.0	51.7	103	42-121
50-32-8	LCS	Benzo(a)pyrene	50.0	0.0	53.2	106	40-118

Semi-Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-1529
Sample Type: Laboratory Control Sample
Client ID: LCS for batch 1665598
Matrix: WATER
Lab Sample ID 1203790720
Instrument: MSDA.I
Analysis Date: 05/17/2017 12:41
Dilution: 1
Analyst: JMB3
Prep Batch ID: 1665598
Inj. Vol: 1 uL
Batch ID: 1665599

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
193-39-5	LCS	Indeno(1,2,3-cd)pyrene	50.0	0.0	56.3	113	34-125
53-70-3	LCS	Dibenzo(a,h)anthracene	50.0	0.0	58.0	116	38-129
191-24-2	LCS	Benzo(ghi)perylene	50.0	0.0	53.5	107	33-131
123-91-1	LCS	1,4-Dioxane	50.0	0.0	28.4	57	38-78
930-55-2	LCS	N-Nitrosopyrrolidine	50.0	0.0	38.9	78	54-113
95-94-3	LCS	1,2,4,5-Tetrachlorobenzene	50.0	0.0	40.2	80	44-102
1912-24-9	LCS	Atrazine	50.0	0.0	53.6	107	60-131
92-87-5	LCS	Benzidine	100	0.0	51.6	52	20-144
91-94-1	LCS	3,3'-Dichlorobenzidine	50.0	0.0	62.9	126	43-127
120-82-1	LCS	1,2,4-Trichlorobenzene	50.0	0.0	39.3	79	39-99

Quality Control Summary
Spike Recovery Report

SDG Number: **2017-1529**
Sample Type: **Matrix Spike**
Client ID: **CASA-17-132341MS**
Matrix: **W**
Lab Sample ID **1203790721**
Instrument: **MSDA.I**
Analysis Date: **05/17/2017 14:56**
Dilution: **1**
Analyst: **JMB3**
Prep Batch ID: **1665598**
Inj. Vol: **1 uL**
Batch ID: **1665599**

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
62-75-9	MS	N-Methyl-N-nitrosomethylam	111	0.00	U	59.9	54	25-106
110-86-1	MS	Pyridine	111	0.00	U	39.9	36	24-93
62-53-3	MS	Aniline	111	0.00	U	78.6	71	37-113
108-95-2	MS	Phenol	111	0.00	U	47.6	43	23-82
111-44-4	MS	bis(2-Chloroethyl) ether	111	0.00	U	80.9	73	39-114
95-57-8	MS	2-Chlorophenol	111	0.00	U	81.1	73	37-108
541-73-1	MS	1,3-Dichlorobenzene	111	0.00	U	78.6	71	27-97
106-46-7	MS	1,4-Dichlorobenzene	111	0.00	U	80.6	73	28-97
95-50-1	MS	1,2-Dichlorobenzene	111	0.00	U	81.4	73	28-99
108-60-1	MS	bis(2-Chloro-1-methylethyl)et	111	0.00	U	80.1	72	32-127
100-51-6	MS	Benzyl alcohol	111	0.00	U	73.2	66	37-116
95-48-7	MS	o-Cresol	111	0.00	U	74.8	67	34-109
65794-96-9	MS	m,p-Cresols	111	0.00	U	76.6	69	36-120
621-64-7	MS	N-Nitrosodi--n-propylamine *N-Nitrosodipropylamine*	111	0.00	U	80.1	72	42-118
67-72-1	MS	Hexachloroethane	111	0.00	U	76.5	69	29-94
98-95-3	MS	Nitrobenzene	111	0.00	U	82.7	74	38-123
78-59-1	MS	Isophorone	111	0.00	U	82.0	74	43-120
88-75-5	MS	2-Nitrophenol	111	0.00	U	95.5	86	39-115
105-67-9	MS	2,4-Dimethylphenol	111	0.00	U	76.5	69	39-107
111-91-1	MS	bis(2-Chloroethoxy)methane	111	0.00	U	85.1	77	42-118
120-83-2	MS	2,4-Dichlorophenol	111	0.00	U	91.3	82	40-111
65-85-0	MS	Benzoic acid	222	0.00	U	89.0	40	17-95

Semi-Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-1529
Client ID: CASA-17-132341MS
Lab Sample ID 1203790721
Instrument: MSDA.I
Analvst: JMB3
Inj. Vol: 1 uL

Sample Type: Matrix Spike
Matrix: W
Analvsis Date: 05/17/2017 14:56
Prep Batch ID: 1665598
Batch ID: 1665599
Dilution: 1

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
106-47-8	MS	4-Chloroaniline	111	0.00	U	117	105	44-138
87-68-3	MS	Hexachlorobutadiene	111	0.00	U	83.8	75	26-98
59-50-7	MS	Parachlorometa cresol *4-Chloro-3-methylphenol*	111	0.00	U	90.0	81	41-122
91-57-6	MS	2-Methylnaphthalene	111	0.00	U	88.9	80	29-109
91-20-3	MS	Naphthalene	111	0.00	U	88.7	80	31-108
90-12-0	MS	1-Methylnaphthalene	111	0.00	U	89.9	81	33-112
77-47-4	MS	Hexachlorocyclopentadiene	111	0.00	U	66.6	60	26-79
88-06-2	MS	2,4,6-Trichlorophenol	111	0.00	U	97.9	88	39-124
95-95-4	MS	2,4,5-Trichlorophenol	111	0.00	U	92.2	83	42-120
91-58-7	MS	2-Chloronaphthalene	111	0.00	U	87.2	78	29-113
88-74-4	MS	2-Nitroaniline *o-Nitroaniline*	111	0.00	U	93.5	84	41-121
99-09-2	MS	3-Nitroaniline *m-Nitroaniline*	111	0.00	U	124	111	42-144
131-11-3	MS	Dimethylphthalate	111	0.00	U	96.7	87	45-128
606-20-2	MS	2,6-Dinitrotoluene	111	0.00	U	98.3	88	46-124
121-14-2	MS	2,4-Dinitrotoluene	111	0.00	U	109	98	45-125
208-96-8	MS	Acenaphthylene	111	0.00	U	102	92	35-120
83-32-9	MS	Acenaphthene	111	0.00	U	96.5	87	35-117
51-28-5	MS	2,4-Dinitrophenol	111	0.00	U	94.8	85	27-122
132-64-9	MS	Dibenzofuran	111	0.00	U	99.9	90	38-113
58-90-2	MS	2,3,4,6-Tetrachlorophenol	111	0.00	U	96.1	87	40-128
84-66-2	MS	Diethylphthalate	111	0.00	U	98.2	88	43-127
100-02-7	MS	4-Nitrophenol	111	0.00	U	31.2	28	17-85

Semi-Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-1529
Client ID: CASA-17-132341MS
Lab Sample ID 1203790721
Instrument: MSDA.I
Analyst: JMB3
Inj. Vol: 1 uL

Sample Type: Matrix Spike
Matrix: W
Analysis Date: 05/17/2017 14:56
Prep Batch ID: 1665598
Batch ID: 1665599
Dilution: 1

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
86-73-7	MS	Fluorene	111	0.00	U	95.1	86	39-117
7005-72-3	MS	4-Chlorophenylphenylether	111	0.00	U	94.7	85	39-121
100-01-6	MS	4-Nitroaniline *p-Nitroaniline*	111	0.00	U	123	110	30-133
534-52-1	MS	2-Methyl-4,6-dinitrophenol	111	0.00	U	109	98	32-126
122-39-4	MS	Diphenylamine	111	0.00	U	87.5	79	37-118
122-66-7	MS	Azobenzene *1,2-Diphenylhydrazine*	111	0.00	U	88.6	80	38-120
101-55-3	MS	4-Bromophenylphenylether	111	0.00	U	91.8	83	39-121
118-74-1	MS	Hexachlorobenzene	111	0.00	U	91.8	83	40-118
87-86-5	MS	Pentachlorophenol	111	0.00	U	99.3	89	35-121
85-01-8	MS	Phenanthrene	111	0.00	U	94.5	85	40-115
120-12-7	MS	Anthracene	111	0.00	U	96.4	87	38-120
84-74-2	MS	Di-n-butylphthalate	111	0.00	U	96.1	86	41-128
206-44-0	MS	Fluoranthene	111	0.00	U	107	97	41-119
129-00-0	MS	Pyrene	111	0.00	U	85.3	77	35-128
85-68-7	MS	Butylbenzylphthalate	111	0.00	U	89.2	80	40-129
117-81-7	MS	bis(2-Ethylhexyl)phthalate	111	0.00	U	88.5	80	38-131
56-55-3	MS	Benzo(a)anthracene	111	0.00	U	102	92	39-120
218-01-9	MS	Chrysene	111	0.00	U	106	96	41-124
117-84-0	MS	Di-n-octylphthalate	111	0.00	U	90.3	81	37-134
205-99-2	MS	Benzo(b)fluoranthene	111	0.00	U	98.4	89	31-122
207-08-9	MS	Benzo(k)fluoranthene	111	0.00	U	104	93	33-123
50-32-8	MS	Benzo(a)pyrene	111	0.00	U	108	97	32-118

Quality Control Summary
Spike Recovery Report

SDG Number: **2017-1529**
Sample Type: **Matrix Spike**
Client ID: **CASA-17-132341MS**
Matrix: **W**
Lab Sample ID **1203790721**
Instrument: **MSDA.I**
Analysis Date: **05/17/2017 14:56**
Dilution: **1**
Analyst: **JMB3**
Prep Batch ID: **1665598**
Inj. Vol: **1 uL**
Batch ID: **1665599**

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
193-39-5	MS	Indeno(1,2,3-cd)pyrene	111	0.00	U	109	98	27-121
53-70-3	MS	Dibenzo(a,h)anthracene	111	0.00	U	111	100	30-125
191-24-2	MS	Benzo(ghi)perylene	111	0.00	U	104	94	24-126
123-91-1	MS	1,4-Dioxane	111	0.00	U	67.0	60	24-110
930-55-2	MS	N-Nitrosopyrrolidine	111	0.00	U	79.6	72	47-119
95-94-3	MS	1,2,4,5-Tetrachlorobenzene	111	0.00	U	87.9	79	32-101
1912-24-9	MS	Atrazine	111	0.00	U	109	98	42-129
92-87-5	MS	Benzidine	222	0.00	U	73.2	33	15-130
91-94-1	MS	3,3'-Dichlorobenzidine	111	0.00	U	119	107	34-124
120-82-1	MS	1,2,4-Trichlorobenzene	111	0.00	U	84.3	76	26-102

Semi-Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-1529
Client ID: CASA-17-132341MSD
Lab Sample ID 1203790722
Instrument: MSDA.I
Analyst: JMB3
Inj. Vol: 1 uL

Sample Type: Matrix Spike Duplicate
Matrix: W
Analysis Date: 05/17/2017 15:23
Prep Batch ID: 1665598
Batch ID: 1665599
Dilution: 1

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
62-75-9	MSD	N-Methyl-N-nitrosomethylam	111	0.00	U	52.6	47	25-106	13	0-30
110-86-1	MSD	Pyridine	111	0.00	U	51.4	46	24-93	25	0-30
62-53-3	MSD	Aniline	111	0.00	U	84.5	76	37-113	7	0-30
108-95-2	MSD	Phenol	111	0.00	U	41.8	38	23-82	13	0-30
111-44-4	MSD	bis(2-Chloroethyl) ether	111	0.00	U	72.1	65	39-114	12	0-30
95-57-8	MSD	2-Chlorophenol	111	0.00	U	71.0	64	37-108	13	0-30
541-73-1	MSD	1,3-Dichlorobenzene	111	0.00	U	72.8	66	27-97	8	0-30
106-46-7	MSD	1,4-Dichlorobenzene	111	0.00	U	73.7	66	28-97	9	0-30
95-50-1	MSD	1,2-Dichlorobenzene	111	0.00	U	75.0	68	28-99	8	0-30
108-60-1	MSD	bis(2-Chloro-1-methylethyl)et	111	0.00	U	71.2	64	32-127	12	0-30
100-51-6	MSD	Benzyl alcohol	111	0.00	U	65.2	59	37-116	12	0-30
95-48-7	MSD	o-Cresol	111	0.00	U	66.2	60	34-109	12	0-30
65794-96-9	MSD	m,p-Cresols	111	0.00	U	68.5	62	36-120	11	0-30
621-64-7	MSD	N-Nitrosodi--n-propylamine *N-Nitrosodipropylamine*	111	0.00	U	68.4	62	42-118	16	0-30
67-72-1	MSD	Hexachloroethane	111	0.00	U	71.0	64	29-94	7	0-30
98-95-3	MSD	Nitrobenzene	111	0.00	U	74.9	67	38-123	10	0-30
78-59-1	MSD	Isophorone	111	0.00	U	71.1	64	43-120	14	0-30
88-75-5	MSD	2-Nitrophenol	111	0.00	U	84.0	76	39-115	13	0-30
105-67-9	MSD	2,4-Dimethylphenol	111	0.00	U	66.9	60	39-107	13	0-30
111-91-1	MSD	bis(2-Chloroethoxy)methane	111	0.00	U	75.1	68	42-118	13	0-30
120-83-2	MSD	2,4-Dichlorophenol	111	0.00	U	79.9	72	40-111	13	0-30
65-85-0	MSD	Benzoic acid	222	0.00	U	67.6	30	17-95	27	0-30

Semi-Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-1529
Sample Type: Matrix Spike Duplicate
Client ID: CASA-17-132341MSD
Matrix: W
Lab Sample ID 1203790722
Instrument: MSDA.I
Analysis Date: 05/17/2017 15:23
Dilution: 1
Analyst: JMB3
Prep Batch ID: 1665598
Inj. Vol: 1 uL
Batch ID: 1665599

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
106-47-8	MSD	4-Chloroaniline	111	0.00	U	114	103	44-138	2	0-30
87-68-3	MSD	Hexachlorobutadiene	111	0.00	U	79.7	72	26-98	5	0-30
59-50-7	MSD	Parachlorometa cresol *4-Chloro-3-methylphenol*	111	0.00	U	76.3	69	41-122	16	0-30
91-57-6	MSD	2-Methylnaphthalene	111	0.00	U	79.9	72	29-109	11	0-30
91-20-3	MSD	Naphthalene	111	0.00	U	81.1	73	31-108	9	0-30
90-12-0	MSD	1-Methylnaphthalene	111	0.00	U	81.0	73	33-112	10	0-30
77-47-4	MSD	Hexachlorocyclopentadiene	111	0.00	U	60.2	54	26-79	10	0-30
88-06-2	MSD	2,4,6-Trichlorophenol	111	0.00	U	85.5	77	39-124	14	0-30
95-95-4	MSD	2,4,5-Trichlorophenol	111	0.00	U	77.4	70	42-120	17	0-30
91-58-7	MSD	2-Chloronaphthalene	111	0.00	U	77.8	70	29-113	11	0-30
88-74-4	MSD	2-Nitroaniline *o-Nitroaniline*	111	0.00	U	78.8	71	41-121	17	0-30
99-09-2	MSD	3-Nitroaniline *m-Nitroaniline*	111	0.00	U	109	98	42-144	13	0-30
131-11-3	MSD	Dimethylphthalate	111	0.00	U	81.6	73	45-128	17	0-30
606-20-2	MSD	2,6-Dinitrotoluene	111	0.00	U	81.6	73	46-124	19	0-30
121-14-2	MSD	2,4-Dinitrotoluene	111	0.00	U	91.8	83	45-125	17	0-30
208-96-8	MSD	Acenaphthylene	111	0.00	U	89.2	80	35-120	13	0-30
83-32-9	MSD	Acenaphthene	111	0.00	U	84.4	76	35-117	13	0-30
51-28-5	MSD	2,4-Dinitrophenol	111	0.00	U	75.4	68	27-122	23	0-30
132-64-9	MSD	Dibenzofuran	111	0.00	U	87.0	78	38-113	14	0-30
58-90-2	MSD	2,3,4,6-Tetrachlorophenol	111	0.00	U	83.5	75	40-128	14	0-30
84-66-2	MSD	Diethylphthalate	111	0.00	U	83.5	75	43-127	16	0-30
100-02-7	MSD	4-Nitrophenol	111	0.00	U	25.3	23	17-85	21	0-30

Semi-Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-1529 **Sample Type:** Matrix Spike Duplicate

Client ID: CASA-17-132341MSD **Matrix:** W

Lab Sample ID 1203790722

Instrument: MSDA.I **Analysis Date:** 05/17/2017 15:23 **Dilution:** 1

Analyst: JMB3 **Prep Batch ID:** 1665598

Inj. Vol: 1 uL **Batch ID:** 1665599

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
86-73-7	MSD	Fluorene	111	0.00	U	83.9	76	39-117	12	0-30
7005-72-3	MSD	4-Chlorophenylphenylether	111	0.00	U	84.5	76	39-121	11	0-30
100-01-6	MSD	4-Nitroaniline *p-Nitroaniline*	111	0.00	U	113	102	30-133	8	0-30
534-52-1	MSD	2-Methyl-4,6-dinitrophenol	111	0.00	U	89.6	81	32-126	19	0-30
122-39-4	MSD	Diphenylamine	111	0.00	U	77.7	70	37-118	12	0-30
122-66-7	MSD	Azobenzene *1,2-Diphenylhydrazine*	111	0.00	U	76.4	69	38-120	15	0-30
101-55-3	MSD	4-Bromophenylphenylether	111	0.00	U	80.8	73	39-121	13	0-30
118-74-1	MSD	Hexachlorobenzene	111	0.00	U	79.4	71	40-118	14	0-30
87-86-5	MSD	Pentachlorophenol	111	0.00	U	86.1	77	35-121	14	0-30
85-01-8	MSD	Phenanthrene	111	0.00	U	82.5	74	40-115	14	0-30
120-12-7	MSD	Anthracene	111	0.00	U	83.9	76	38-120	14	0-30
84-74-2	MSD	Di-n-butylphthalate	111	0.00	U	82.8	75	41-128	15	0-30
206-44-0	MSD	Fluoranthene	111	0.00	U	92.0	83	41-119	15	0-30
129-00-0	MSD	Pyrene	111	0.00	U	71.8	65	35-128	17	0-30
85-68-7	MSD	Butylbenzylphthalate	111	0.00	U	74.1	67	40-129	19	0-30
117-81-7	MSD	bis(2-Ethylhexyl)phthalate	111	0.00	U	74.3	67	38-131	17	0-30
56-55-3	MSD	Benzo(a)anthracene	111	0.00	U	84.2	76	39-120	19	0-30
218-01-9	MSD	Chrysene	111	0.00	U	89.4	81	41-124	17	0-30
117-84-0	MSD	Di-n-octylphthalate	111	0.00	U	73.9	67	37-134	20	0-30
205-99-2	MSD	Benzo(b)fluoranthene	111	0.00	U	81.8	74	31-122	18	0-30
207-08-9	MSD	Benzo(k)fluoranthene	111	0.00	U	87.6	79	33-123	17	0-30
50-32-8	MSD	Benzo(a)pyrene	111	0.00	U	89.6	81	32-118	18	0-30

Semi-Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-1529
Client ID: CASA-17-132341MSD
Lab Sample ID 1203790722
Instrument: MSDA.I
Analyst: JMB3
Inj. Vol: 1 uL

Sample Type: Matrix Spike Duplicate
Matrix: W
Analysis Date: 05/17/2017 15:23
Prep Batch ID: 1665598
Batch ID: 1665599
Dilution: 1

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
193-39-5	MSD Indeno(1,2,3-cd)pyrene	111	0.00	U	91.2	82	27-121	17	0-30
53-70-3	MSD Dibenzo(a,h)anthracene	111	0.00	U	93.0	84	30-125	18	0-30
191-24-2	MSD Benzo(ghi)perylene	111	0.00	U	88.6	80	24-126	16	0-30
123-91-1	MSD 1,4-Dioxane	111	0.00	U	59.5	54	24-110	12	0-30
930-55-2	MSD N-Nitrosopyrrolidine	111	0.00	U	68.3	62	47-119	15	0-30
95-94-3	MSD 1,2,4,5-Tetrachlorobenzene	111	0.00	U	78.7	71	32-101	11	0-30
1912-24-9	MSD Atrazine	111	0.00	U	95.6	86	42-129	13	0-30
92-87-5	MSD Benzidine	222	0.00	U	116	52	15-130	45 *	0-30
91-94-1	MSD 3,3'-Dichlorobenzidine	111	0.00	U	105	95	34-124	12	0-30
120-82-1	MSD 1,2,4-Trichlorobenzene	111	0.00	U	77.5	70	26-102	8	0-30

Method Blank Summary

SDG Number:	**2017-1529**	**Client:**	**ARSL004**	**Matrix:**	**WATER**
Client ID:	**MB for batch 1665598**	**Instrument ID:**	**MSDA.I**	**Data File:**	**051717.s\sAe1709.D**
Lab Sample ID:	**1203790719**	**Prep Date:**	**05/17/2017 04:35**	**Analyzed:**	**05/17/17 12:14**
Column:	**DB-5.625**				

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 1665598	1203790720	051717.s\sAe1710.D	05/17/17	1241
02	CASA-17-132341MS	1203790721	051717.s\sAe1715.D	05/17/17	1456
03	CASA-17-132341MSD	1203790722	051717.s\sAe1716.D	05/17/17	1523
04	CAMO-17-132220	423194002	051717.s\sAe1721.D	05/17/17	1736
05	CAMO-17-132305	423194004	051717.s\sAe1722.D	05/17/17	1803
06	CAMO-17-132307	423194005	051717.s\sAe1723.D	05/17/17	1830

Quality Control Data

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**			**Matrix:**	**WATER**
Lab Sample ID:	**1203790719**				
Client Sample:	**QC for batch 1665598**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1665598**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1665599**	**Inst:**	**MSDA.I**	**Dilution:**	**1**
Run Date:	**05/17/2017 12:14**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**05/17/2017 04:35**	**Aliquot:**	**1000 mL**	**Final Volume:**	**1 mL**
Data File:	**051717.s\sAe1709.D**	**Column:**	**DB-5.625**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene	U	10.0	ug/L	3.00	10.0
120-82-1	1,2,4-Trichlorobenzene	U	10.0	ug/L	3.00	10.0
95-50-1	1,2-Dichlorobenzene	U	10.0	ug/L	3.00	10.0
122-66-7	Azobenzene	U	10.0	ug/L	3.00	10.0
	1,2-Diphenylhydrazine					
541-73-1	1,3-Dichlorobenzene	U	10.0	ug/L	3.00	10.0
106-46-7	1,4-Dichlorobenzene	U	10.0	ug/L	3.00	10.0
123-91-1	1,4-Dioxane	U	10.0	ug/L	3.00	10.0
90-12-0	1-Methylnaphthalene	U	1.00	ug/L	0.300	1.00
58-90-2	2,3,4,6-Tetrachlorophenol	U	10.0	ug/L	3.00	10.0
95-95-4	2,4,5-Trichlorophenol	U	10.0	ug/L	3.00	10.0
88-06-2	2,4,6-Trichlorophenol	U	10.0	ug/L	3.00	10.0
120-83-2	2,4-Dichlorophenol	U	10.0	ug/L	3.00	10.0
105-67-9	2,4-Dimethylphenol	U	10.0	ug/L	3.00	10.0
51-28-5	2,4-Dinitrophenol	U	20.0	ug/L	5.00	20.0
121-14-2	2,4-Dinitrotoluene	U	10.0	ug/L	3.00	10.0
606-20-2	2,6-Dinitrotoluene	U	10.0	ug/L	3.00	10.0
91-58-7	2-Chloronaphthalene	U	1.00	ug/L	0.410	1.00
95-57-8	2-Chlorophenol	U	10.0	ug/L	3.00	10.0
534-52-1	2-Methyl-4,6-dinitrophenol	U	10.0	ug/L	3.00	10.0
91-57-6	2-Methylnaphthalene	U	1.00	ug/L	0.300	1.00
88-75-5	2-Nitrophenol	U	10.0	ug/L	3.00	10.0
91-94-1	3,3'-Dichlorobenzidine	U	10.0	ug/L	3.00	10.0
101-55-3	4-Bromophenylphenylether	U	10.0	ug/L	3.00	10.0
59-50-7	Parachlorometa cresol	U	10.0	ug/L	3.00	10.0
	4-Chloro-3-methylphenol					
106-47-8	4-Chloroaniline	U	10.0	ug/L	3.30	10.0
7005-72-3	4-Chlorophenylphenylether	U	10.0	ug/L	3.00	10.0
100-02-7	4-Nitrophenol	U	10.0	ug/L	3.00	10.0
83-32-9	Acenaphthene	U	1.00	ug/L	0.300	1.00
208-96-8	Acenaphthylene	U	1.00	ug/L	0.300	1.00
62-53-3	Aniline	U	10.0	ug/L	4.20	10.0
120-12-7	Anthracene	U	1.00	ug/L	0.300	1.00
1912-24-9	Atrazine	U	10.0	ug/L	3.00	10.0
92-87-5	Benzidine	U	10.0	ug/L	3.90	10.0
56-55-3	Benzo(a)anthracene	U	1.00	ug/L	0.300	1.00
50-32-8	Benzo(a)pyrene	U	1.00	ug/L	0.300	1.00
205-99-2	Benzo(b)fluoranthene	U	1.00	ug/L	0.300	1.00
191-24-2	Benzo(ghi)perylene	U	1.00	ug/L	0.300	1.00

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**			**Matrix:**	**WATER**
Lab Sample ID:	**1203790719**				
Client Sample:	**QC for batch 1665598**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1665598**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1665599**	**Inst:**	**MSDA.I**	**Dilution:**	**1**
Run Date:	**05/17/2017 12:14**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**05/17/2017 04:35**	**Aliquot:**	**1000 mL**	**Final Volume:**	**1 mL**
Data File:	**051717.s\sAe1709.D**	**Column:**	**DB-5.625**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene	U	1.00	ug/L	0.300	1.00
65-85-0	Benzoic acid	U	20.0	ug/L	6.00	20.0
100-51-6	Benzyl alcohol	U	10.0	ug/L	3.00	10.0
85-68-7	Butylbenzylphthalate	U	10.0	ug/L	3.00	10.0
218-01-9	Chrysene	U	1.00	ug/L	0.300	1.00
84-74-2	Di-n-butylphthalate	U	10.0	ug/L	3.00	10.0
117-84-0	Di-n-octylphthalate	U	10.0	ug/L	3.00	10.0
53-70-3	Dibenzo(a,h)anthracene	U	1.00	ug/L	0.300	1.00
132-64-9	Dibenzofuran	U	10.0	ug/L	3.00	10.0
84-66-2	Diethylphthalate	U	10.0	ug/L	3.00	10.0
131-11-3	Dimethylphthalate	U	10.0	ug/L	3.00	10.0
88-85-7	Dinoseb	U	10.0	ug/L	3.00	10.0
122-39-4	Diphenylamine	U	10.0	ug/L	3.00	10.0
206-44-0	Fluoranthene	U	1.00	ug/L	0.300	1.00
86-73-7	Fluorene	U	1.00	ug/L	0.300	1.00
118-74-1	Hexachlorobenzene	U	10.0	ug/L	3.00	10.0
87-68-3	Hexachlorobutadiene	U	10.0	ug/L	3.00	10.0
77-47-4	Hexachlorocyclopentadiene	U	10.0	ug/L	3.00	10.0
67-72-1	Hexachloroethane	U	10.0	ug/L	3.00	10.0
193-39-5	Indeno(1,2,3-cd)pyrene	U	1.00	ug/L	0.300	1.00
78-59-1	Isophorone	U	10.0	ug/L	3.50	10.0
62-75-9	N-Methyl-N-nitrosomethylamine	U	10.0	ug/L	3.00	10.0
924-16-3	N-Nitrosodi-n-butylamine	U	10.0	ug/L	3.00	10.0
55-18-5	N-Nitrosodiethylamine	U	10.0	ug/L	3.00	10.0
621-64-7	N-Nitrosodi--n-propylamine *N-Nitrosodipropylamine*	U	10.0	ug/L	3.00	10.0
930-55-2	N-Nitrosopyrrolidine	U	10.0	ug/L	3.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.300	1.00
98-95-3	Nitrobenzene	U	10.0	ug/L	3.00	10.0
608-93-5	Pentachlorobenzene	U	10.0	ug/L	3.00	10.0
87-86-5	Pentachlorophenol	U	10.0	ug/L	3.00	10.0
85-01-8	Phenanthrene	U	1.00	ug/L	0.300	1.00
108-95-2	Phenol	U	10.0	ug/L	3.00	10.0
129-00-0	Pyrene	U	1.00	ug/L	0.300	1.00
110-86-1	Pyridine	U	10.0	ug/L	3.00	10.0
108-60-1	bis(2-Chloro-1-methylethyl)ether	U	10.0	ug/L	3.00	10.0
111-91-1	bis(2-Chloroethoxy)methane	U	10.0	ug/L	3.00	10.0
111-44-4	bis(2-Chloroethyl) ether	U	10.0	ug/L	3.00	10.0
117-81-7	bis(2-Ethylhexyl)phthalate	U	10.0	ug/L	3.00	10.0

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**			**Matrix:**	**WATER**
Lab Sample ID:	**1203790719**				
Client Sample:	**QC for batch 1665598**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1665598**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1665599**	**Inst:**	**MSDA.I**	**Dilution:**	**1**
Run Date:	**05/17/2017 12:14**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**05/17/2017 04:35**	**Aliquot:**	**1000 mL**	**Final Volume:**	**1 mL**
Data File:	**051717.s\sAe1709.D**	**Column:**	**DB-5.625**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols	U	10.0	ug/L	3.70	10.0
99-09-2	3-Nitroaniline *m-Nitroaniline*	U	10.0	ug/L	3.00	10.0
95-48-7	o-Cresol	U	10.0	ug/L	3.00	10.0
88-74-4	2-Nitroaniline *o-Nitroaniline*	U	10.0	ug/L	3.00	10.0
100-01-6	4-Nitroaniline *p-Nitroaniline*	U	10.0	ug/L	3.00	10.0

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	77.1	100	ug/L	77	(32%-124%)
2-Fluorobiphenyl	35.2	50.0	ug/L	70	(32%-112%)
2-Fluorophenol	40.3	100	ug/L	40	(15%-88%)
Nitrobenzene-d5	33.3	50.0	ug/L	67	(36%-115%)
Phenol-d5	25.9	100	ug/L	26	(15%-91%)
p-Terphenyl-d14	38.1	50.0	ug/L	76	(36%-121%)

Tentatively Identified Compound Summary

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

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**			**Matrix:**	**WATER**
Lab Sample ID:	**1203790720**				
Client Sample:	**QC for batch 1665598**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1665598**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1665599**	**Inst:**	**MSDA.I**	**Dilution:**	**1**
Run Date:	**05/17/2017 12:41**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**05/17/2017 04:35**	**Aliquot:**	**1000 mL**	**Final Volume:**	**1 mL**
Data File:	**051717.s\sAe1710.D**	**Column:**	**DB-5.625**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene		40.2	ug/L	3.00	10.0
120-82-1	1,2,4-Trichlorobenzene		39.3	ug/L	3.00	10.0
95-50-1	1,2-Dichlorobenzene		37.7	ug/L	3.00	10.0
122-66-7	Azobenzene		43.2	ug/L	3.00	10.0
	1,2-Diphenylhydrazine					
541-73-1	1,3-Dichlorobenzene		36.1	ug/L	3.00	10.0
106-46-7	1,4-Dichlorobenzene		36.8	ug/L	3.00	10.0
123-91-1	1,4-Dioxane		28.4	ug/L	3.00	10.0
90-12-0	1-Methylnaphthalene		43.5	ug/L	0.300	1.00
58-90-2	2,3,4,6-Tetrachlorophenol		47.8	ug/L	3.00	10.0
95-95-4	2,4,5-Trichlorophenol		46.4	ug/L	3.00	10.0
88-06-2	2,4,6-Trichlorophenol		48.1	ug/L	3.00	10.0
120-83-2	2,4-Dichlorophenol		45.8	ug/L	3.00	10.0
105-67-9	2,4-Dimethylphenol		39.5	ug/L	3.00	10.0
51-28-5	2,4-Dinitrophenol		50.0	ug/L	5.00	20.0
121-14-2	2,4-Dinitrotoluene		54.3	ug/L	3.00	10.0
606-20-2	2,6-Dinitrotoluene		49.0	ug/L	3.00	10.0
91-58-7	2-Chloronaphthalene		41.6	ug/L	0.410	1.00
95-57-8	2-Chlorophenol		40.2	ug/L	3.00	10.0
534-52-1	2-Methyl-4,6-dinitrophenol		54.5	ug/L	3.00	10.0
91-57-6	2-Methylnaphthalene		42.6	ug/L	0.300	1.00
88-75-5	2-Nitrophenol		47.7	ug/L	3.00	10.0
91-94-1	3,3'-Dichlorobenzidine		62.9	ug/L	3.00	10.0
101-55-3	4-Bromophenylphenylether		43.9	ug/L	3.00	10.0
59-50-7	Parachlorometa cresol		45.1	ug/L	3.00	10.0
	4-Chloro-3-methylphenol					
106-47-8	4-Chloroaniline		60.9	ug/L	3.30	10.0
7005-72-3	4-Chlorophenylphenylether		44.0	ug/L	3.00	10.0
100-02-7	4-Nitrophenol		13.8	ug/L	3.00	10.0
83-32-9	Acenaphthene		46.2	ug/L	0.300	1.00
208-96-8	Acenaphthylene		49.6	ug/L	0.300	1.00
62-53-3	Aniline		45.7	ug/L	4.20	10.0
120-12-7	Anthracene		47.1	ug/L	0.300	1.00
1912-24-9	Atrazine		53.6	ug/L	3.00	10.0
92-87-5	Benzidine		51.6	ug/L	3.90	10.0
56-55-3	Benzo(a)anthracene		51.1	ug/L	0.300	1.00
50-32-8	Benzo(a)pyrene		53.2	ug/L	0.300	1.00
205-99-2	Benzo(b)fluoranthene		49.5	ug/L	0.300	1.00
191-24-2	Benzo(ghi)perylene		53.5	ug/L	0.300	1.00

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**			**Matrix:**	**WATER**
Lab Sample ID:	**1203790720**				
Client Sample:	**QC for batch 1665598**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1665598**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1665599**	**Inst:**	**MSDA.I**	**Dilution:**	**1**
Run Date:	**05/17/2017 12:41**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**05/17/2017 04:35**	**Aliquot:**	**1000 mL**	**Final Volume:**	**1 mL**
Data File:	**051717.s\sAe1710.D**	**Column:**	**DB-5.625**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene		51.7	ug/L	0.300	1.00
65-85-0	Benzoic acid		24.2	ug/L	6.00	20.0
100-51-6	Benzyl alcohol		35.3	ug/L	3.00	10.0
85-68-7	Butylbenzylphthalate		43.9	ug/L	3.00	10.0
218-01-9	Chrysene		53.1	ug/L	0.300	1.00
84-74-2	Di-n-butylphthalate		47.3	ug/L	3.00	10.0
117-84-0	Di-n-octylphthalate		44.5	ug/L	3.00	10.0
53-70-3	Dibenzo(a,h)anthracene		58.0	ug/L	0.300	1.00
132-64-9	Dibenzofuran		47.6	ug/L	3.00	10.0
84-66-2	Diethylphthalate		48.3	ug/L	3.00	10.0
131-11-3	Dimethylphthalate		48.0	ug/L	3.00	10.0
88-85-7	Dinoseb	U	10.0	ug/L	3.00	10.0
122-39-4	Diphenylamine		42.4	ug/L	3.00	10.0
206-44-0	Fluoranthene		52.4	ug/L	0.300	1.00
86-73-7	Fluorene		45.7	ug/L	0.300	1.00
118-74-1	Hexachlorobenzene		44.0	ug/L	3.00	10.0
87-68-3	Hexachlorobutadiene		39.0	ug/L	3.00	10.0
77-47-4	Hexachlorocyclopentadiene		26.4	ug/L	3.00	10.0
67-72-1	Hexachloroethane		34.3	ug/L	3.00	10.0
193-39-5	Indeno(1,2,3-cd)pyrene		56.3	ug/L	0.300	1.00
78-59-1	Isophorone		41.6	ug/L	3.50	10.0
62-75-9	N-Methyl-N-nitrosomethylamine		25.0	ug/L	3.00	10.0
924-16-3	N-Nitrosodi-n-butylamine	U	10.0	ug/L	3.00	10.0
55-18-5	N-Nitrosodiethylamine	U	10.0	ug/L	3.00	10.0
621-64-7	N-Nitrosodi--n-propylamine *N-Nitrosodipropylamine*		39.5	ug/L	3.00	10.0
930-55-2	N-Nitrosopyrrolidine		38.9	ug/L	3.00	10.0
91-20-3	Naphthalene		43.2	ug/L	0.300	1.00
98-95-3	Nitrobenzene		41.8	ug/L	3.00	10.0
608-93-5	Pentachlorobenzene	U	10.0	ug/L	3.00	10.0
87-86-5	Pentachlorophenol		51.2	ug/L	3.00	10.0
85-01-8	Phenanthrene		46.1	ug/L	0.300	1.00
108-95-2	Phenol		16.8	ug/L	3.00	10.0
129-00-0	Pyrene		42.3	ug/L	0.300	1.00
110-86-1	Pyridine		22.5	ug/L	3.00	10.0
108-60-1	bis(2-Chloro-1-methylethyl)ether		39.8	ug/L	3.00	10.0
111-91-1	bis(2-Chloroethoxy)methane		43.2	ug/L	3.00	10.0
111-44-4	bis(2-Chloroethyl) ether		40.7	ug/L	3.00	10.0
117-81-7	bis(2-Ethylhexyl)phthalate		42.3	ug/L	3.00	10.0

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**			**Matrix:**	**WATER**
Lab Sample ID:	**1203790720**				
Client Sample:	**QC for batch 1665598**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1665598**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1665599**	**Inst:**	**MSDA.I**	**Dilution:**	**1**
Run Date:	**05/17/2017 12:41**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**05/17/2017 04:35**	**Aliquot:**	**1000 mL**	**Final Volume:**	**1 mL**
Data File:	**051717.s\sAe1710.D**	**Column:**	**DB-5.625**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols		34.8	ug/L	3.70	10.0
99-09-2	3-Nitroaniline *m-Nitroaniline*		64.0	ug/L	3.00	10.0
95-48-7	o-Cresol		36.1	ug/L	3.00	10.0
88-74-4	2-Nitroaniline *o-Nitroaniline*		46.7	ug/L	3.00	10.0
100-01-6	4-Nitroaniline *p-Nitroaniline*		67.1	ug/L	3.00	10.0

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	99.7	100	ug/L	100	(32%-124%)
2-Fluorobiphenyl	43.8	50.0	ug/L	88	(32%-112%)
2-Fluorophenol	47.5	100	ug/L	47	(15%-88%)
Nitrobenzene-d5	41.1	50.0	ug/L	82	(36%-115%)
Phenol-d5	30.8	100	ug/L	31	(15%-91%)
p-Terphenyl-d14	40.7	50.0	ug/L	81	(36%-121%)

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**	**Date Collected:**	**05/12/2017 10:57**	**Matrix:**	**W**
Lab Sample ID:	**1203790721**	**Date Received:**	**05/16/2017 09:20**		
Client Sample:	**QC for batch 1665598**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CASA-17-132341MS**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1665599**	**Inst:**	**MSDA.I**	**Dilution:**	**1**
Run Date:	**05/17/2017 14:56**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**05/17/2017 04:35**	**Aliquot:**	**450 mL**	**Final Volume:**	**1 mL**
Data File:	**051717.s\sAe1715.D**	**Column:**	**DB-5.625**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene		87.9	ug/L	6.67	22.2
120-82-1	1,2,4-Trichlorobenzene		84.3	ug/L	6.67	22.2
95-50-1	1,2-Dichlorobenzene		81.4	ug/L	6.67	22.2
122-66-7	Azobenzene		88.6	ug/L	6.67	22.2
	1,2-Diphenylhydrazine					
541-73-1	1,3-Dichlorobenzene		78.6	ug/L	6.67	22.2
106-46-7	1,4-Dichlorobenzene		80.6	ug/L	6.67	22.2
123-91-1	1,4-Dioxane		67.0	ug/L	6.67	22.2
90-12-0	1-Methylnaphthalene		89.9	ug/L	0.667	2.22
58-90-2	2,3,4,6-Tetrachlorophenol		96.1	ug/L	6.67	22.2
95-95-4	2,4,5-Trichlorophenol		92.2	ug/L	6.67	22.2
88-06-2	2,4,6-Trichlorophenol		97.9	ug/L	6.67	22.2
120-83-2	2,4-Dichlorophenol		91.3	ug/L	6.67	22.2
105-67-9	2,4-Dimethylphenol		76.5	ug/L	6.67	22.2
51-28-5	2,4-Dinitrophenol		94.8	ug/L	11.1	44.4
121-14-2	2,4-Dinitrotoluene		109	ug/L	6.67	22.2
606-20-2	2,6-Dinitrotoluene		98.3	ug/L	6.67	22.2
91-58-7	2-Chloronaphthalene		87.2	ug/L	0.911	2.22
95-57-8	2-Chlorophenol		81.1	ug/L	6.67	22.2
534-52-1	2-Methyl-4,6-dinitrophenol		109	ug/L	6.67	22.2
91-57-6	2-Methylnaphthalene		88.9	ug/L	0.667	2.22
88-75-5	2-Nitrophenol		95.5	ug/L	6.67	22.2
91-94-1	3,3'-Dichlorobenzidine		119	ug/L	6.67	22.2
101-55-3	4-Bromophenylphenylether		91.8	ug/L	6.67	22.2
59-50-7	Parachlorometa cresol		90.0	ug/L	6.67	22.2
	4-Chloro-3-methylphenol					
106-47-8	4-Chloroaniline		117	ug/L	7.33	22.2
7005-72-3	4-Chlorophenylphenylether		94.7	ug/L	6.67	22.2
100-02-7	4-Nitrophenol		31.2	ug/L	6.67	22.2
83-32-9	Acenaphthene		96.5	ug/L	0.667	2.22
208-96-8	Acenaphthylene		102	ug/L	0.667	2.22
62-53-3	Aniline		78.6	ug/L	9.33	22.2
120-12-7	Anthracene		96.4	ug/L	0.667	2.22
1912-24-9	Atrazine		109	ug/L	6.67	22.2
92-87-5	Benzidine		73.2	ug/L	8.67	22.2
56-55-3	Benzo(a)anthracene		102	ug/L	0.667	2.22
50-32-8	Benzo(a)pyrene		108	ug/L	0.667	2.22
205-99-2	Benzo(b)fluoranthene		98.4	ug/L	0.667	2.22
191-24-2	Benzo(ghi)perylene		104	ug/L	0.667	2.22

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**	**Date Collected:**	**05/12/2017 10:57**	**Matrix:**	**W**
Lab Sample ID:	**1203790721**	**Date Received:**	**05/16/2017 09:20**		
Client Sample:	**QC for batch 1665598**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CASA-17-132341MS**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1665599**	**Inst:**	**MSDA.I**	**Dilution:**	**1**
Run Date:	**05/17/2017 14:56**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**05/17/2017 04:35**	**Aliquot:**	**450 mL**	**Final Volume:**	**1 mL**
Data File:	**051717.s\sAe1715.D**	**Column:**	**DB-5.625**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene		104	ug/L	0.667	2.22
65-85-0	Benzoic acid		89.0	ug/L	13.3	44.4
100-51-6	Benzyl alcohol		73.2	ug/L	6.67	22.2
85-68-7	Butylbenzylphthalate		89.2	ug/L	6.67	22.2
218-01-9	Chrysene		106	ug/L	0.667	2.22
84-74-2	Di-n-butylphthalate		96.1	ug/L	6.67	22.2
117-84-0	Di-n-octylphthalate		90.3	ug/L	6.67	22.2
53-70-3	Dibenzo(a,h)anthracene		111	ug/L	0.667	2.22
132-64-9	Dibenzofuran		99.9	ug/L	6.67	22.2
84-66-2	Diethylphthalate		98.2	ug/L	6.67	22.2
131-11-3	Dimethylphthalate		96.7	ug/L	6.67	22.2
88-85-7	Dinoseb	U	22.2	ug/L	6.67	22.2
122-39-4	Diphenylamine		87.5	ug/L	6.67	22.2
206-44-0	Fluoranthene		107	ug/L	0.667	2.22
86-73-7	Fluorene		95.1	ug/L	0.667	2.22
118-74-1	Hexachlorobenzene		91.8	ug/L	6.67	22.2
87-68-3	Hexachlorobutadiene		83.8	ug/L	6.67	22.2
77-47-4	Hexachlorocyclopentadiene		66.6	ug/L	6.67	22.2
67-72-1	Hexachloroethane		76.5	ug/L	6.67	22.2
193-39-5	Indeno(1,2,3-cd)pyrene		109	ug/L	0.667	2.22
78-59-1	Isophorone		82.0	ug/L	7.78	22.2
62-75-9	N-Methyl-N-nitrosomethylamine		59.9	ug/L	6.67	22.2
924-16-3	N-Nitrosodi-n-butylamine	U	22.2	ug/L	6.67	22.2
55-18-5	N-Nitrosodiethylamine	U	22.2	ug/L	6.67	22.2
621-64-7	N-Nitrosodi--n-propylamine *N-Nitrosodipropylamine*		80.1	ug/L	6.67	22.2
930-55-2	N-Nitrosopyrrolidine		79.6	ug/L	6.67	22.2
91-20-3	Naphthalene		88.7	ug/L	0.667	2.22
98-95-3	Nitrobenzene		82.7	ug/L	6.67	22.2
608-93-5	Pentachlorobenzene	U	22.2	ug/L	6.67	22.2
87-86-5	Pentachlorophenol		99.3	ug/L	6.67	22.2
85-01-8	Phenanthrene		94.5	ug/L	0.667	2.22
108-95-2	Phenol		47.6	ug/L	6.67	22.2
129-00-0	Pyrene		85.3	ug/L	0.667	2.22
110-86-1	Pyridine		39.9	ug/L	6.67	22.2
108-60-1	bis(2-Chloro-1-methylethyl)ether		80.1	ug/L	6.67	22.2
111-91-1	bis(2-Chloroethoxy)methane		85.1	ug/L	6.67	22.2
111-44-4	bis(2-Chloroethyl) ether		80.9	ug/L	6.67	22.2
117-81-7	bis(2-Ethylhexyl)phthalate		88.5	ug/L	6.67	22.2

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**	**Date Collected:**	**05/12/2017 10:57**	**Matrix:**	**W**
Lab Sample ID:	**1203790721**	**Date Received:**	**05/16/2017 09:20**		
Client Sample:	**QC for batch 1665598**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CASA-17-132341MS**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1665599**	**Inst:**	**MSDA.I**	**Dilution:**	**1**
Run Date:	**05/17/2017 14:56**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**05/17/2017 04:35**	**Aliquot:**	**450 mL**	**Final Volume:**	**1 mL**
Data File:	**051717.s\sAe1715.D**	**Column:**	**DB-5.625**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols		76.6	ug/L	8.22	22.2
99-09-2	3-Nitroaniline *m-Nitroaniline*		124	ug/L	6.67	22.2
95-48-7	o-Cresol		74.8	ug/L	6.67	22.2
88-74-4	2-Nitroaniline *o-Nitroaniline*		93.5	ug/L	6.67	22.2
100-01-6	4-Nitroaniline *p-Nitroaniline*		123	ug/L	6.67	22.2

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	207	222	ug/L	93	(32%-124%)
2-Fluorobiphenyl	92.7	111	ug/L	83	(32%-112%)
2-Fluorophenol	118	222	ug/L	53	(15%-88%)
Nitrobenzene-d5	83.9	111	ug/L	76	(36%-115%)
Phenol-d5	89.7	222	ug/L	40	(15%-91%)
p-Terphenyl-d14	84.6	111	ug/L	76	(36%-121%)

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**	**Date Collected:**	**05/12/2017 10:57**	**Matrix:**	**W**
Lab Sample ID:	**1203790722**	**Date Received:**	**05/16/2017 09:20**		
Client Sample:	**QC for batch 1665598**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CASA-17-132341MSD**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1665599**	**Inst:**	**MSDA.I**	**Dilution:**	**1**
Run Date:	**05/17/2017 15:23**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**05/17/2017 04:35**	**Aliquot:**	**450 mL**	**Final Volume:**	**1 mL**
Data File:	**051717.s\sAe1716.D**	**Column:**	**DB-5.625**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene		78.7	ug/L	6.67	22.2
120-82-1	1,2,4-Trichlorobenzene		77.5	ug/L	6.67	22.2
95-50-1	1,2-Dichlorobenzene		75.0	ug/L	6.67	22.2
122-66-7	Azobenzene		76.4	ug/L	6.67	22.2
	1,2-Diphenylhydrazine					
541-73-1	1,3-Dichlorobenzene		72.8	ug/L	6.67	22.2
106-46-7	1,4-Dichlorobenzene		73.7	ug/L	6.67	22.2
123-91-1	1,4-Dioxane		59.5	ug/L	6.67	22.2
90-12-0	1-Methylnaphthalene		81.0	ug/L	0.667	2.22
58-90-2	2,3,4,6-Tetrachlorophenol		83.5	ug/L	6.67	22.2
95-95-4	2,4,5-Trichlorophenol		77.4	ug/L	6.67	22.2
88-06-2	2,4,6-Trichlorophenol		85.5	ug/L	6.67	22.2
120-83-2	2,4-Dichlorophenol		79.9	ug/L	6.67	22.2
105-67-9	2,4-Dimethylphenol		66.9	ug/L	6.67	22.2
51-28-5	2,4-Dinitrophenol		75.4	ug/L	11.1	44.4
121-14-2	2,4-Dinitrotoluene		91.8	ug/L	6.67	22.2
606-20-2	2,6-Dinitrotoluene		81.6	ug/L	6.67	22.2
91-58-7	2-Chloronaphthalene		77.8	ug/L	0.911	2.22
95-57-8	2-Chlorophenol		71.0	ug/L	6.67	22.2
534-52-1	2-Methyl-4,6-dinitrophenol		89.6	ug/L	6.67	22.2
91-57-6	2-Methylnaphthalene		79.9	ug/L	0.667	2.22
88-75-5	2-Nitrophenol		84.0	ug/L	6.67	22.2
91-94-1	3,3'-Dichlorobenzidine		105	ug/L	6.67	22.2
101-55-3	4-Bromophenylphenylether		80.8	ug/L	6.67	22.2
59-50-7	Parachlorometa cresol		76.3	ug/L	6.67	22.2
	4-Chloro-3-methylphenol					
106-47-8	4-Chloroaniline		114	ug/L	7.33	22.2
7005-72-3	4-Chlorophenylphenylether		84.5	ug/L	6.67	22.2
100-02-7	4-Nitrophenol		25.3	ug/L	6.67	22.2
83-32-9	Acenaphthene		84.4	ug/L	0.667	2.22
208-96-8	Acenaphthylene		89.2	ug/L	0.667	2.22
62-53-3	Aniline		84.5	ug/L	9.33	22.2
120-12-7	Anthracene		83.9	ug/L	0.667	2.22
1912-24-9	Atrazine		95.6	ug/L	6.67	22.2
92-87-5	Benzidine		116	ug/L	8.67	22.2
56-55-3	Benzo(a)anthracene		84.2	ug/L	0.667	2.22
50-32-8	Benzo(a)pyrene		89.6	ug/L	0.667	2.22
205-99-2	Benzo(b)fluoranthene		81.8	ug/L	0.667	2.22
191-24-2	Benzo(ghi)perylene		88.6	ug/L	0.667	2.22

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**	**Date Collected:**	**05/12/2017 10:57**	**Matrix:**	**W**
Lab Sample ID:	**1203790722**	**Date Received:**	**05/16/2017 09:20**		
Client Sample:	**QC for batch 1665598**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CASA-17-132341MSD**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1665599**	**Inst:**	**MSDA.I**	**Dilution:**	**1**
Run Date:	**05/17/2017 15:23**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**05/17/2017 04:35**	**Aliquot:**	**450 mL**	**Final Volume:**	**1 mL**
Data File:	**051717.s\sAe1716.D**	**Column:**	**DB-5.625**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene		87.6	ug/L	0.667	2.22
65-85-0	Benzoic acid		67.6	ug/L	13.3	44.4
100-51-6	Benzyl alcohol		65.2	ug/L	6.67	22.2
85-68-7	Butylbenzylphthalate		74.1	ug/L	6.67	22.2
218-01-9	Chrysene		89.4	ug/L	0.667	2.22
84-74-2	Di-n-butylphthalate		82.8	ug/L	6.67	22.2
117-84-0	Di-n-octylphthalate		73.9	ug/L	6.67	22.2
53-70-3	Dibenzo(a,h)anthracene		93.0	ug/L	0.667	2.22
132-64-9	Dibenzofuran		87.0	ug/L	6.67	22.2
84-66-2	Diethylphthalate		83.5	ug/L	6.67	22.2
131-11-3	Dimethylphthalate		81.6	ug/L	6.67	22.2
88-85-7	Dinoseb	U	22.2	ug/L	6.67	22.2
122-39-4	Diphenylamine		77.7	ug/L	6.67	22.2
206-44-0	Fluoranthene		92.0	ug/L	0.667	2.22
86-73-7	Fluorene		83.9	ug/L	0.667	2.22
118-74-1	Hexachlorobenzene		79.4	ug/L	6.67	22.2
87-68-3	Hexachlorobutadiene		79.7	ug/L	6.67	22.2
77-47-4	Hexachlorocyclopentadiene		60.2	ug/L	6.67	22.2
67-72-1	Hexachloroethane		71.0	ug/L	6.67	22.2
193-39-5	Indeno(1,2,3-cd)pyrene		91.2	ug/L	0.667	2.22
78-59-1	Isophorone		71.1	ug/L	7.78	22.2
62-75-9	N-Methyl-N-nitrosomethylamine		52.6	ug/L	6.67	22.2
924-16-3	N-Nitrosodi-n-butylamine	U	22.2	ug/L	6.67	22.2
55-18-5	N-Nitrosodiethylamine	U	22.2	ug/L	6.67	22.2
621-64-7	N-Nitrosodi--n-propylamine *N-Nitrosodipropylamine*		68.4	ug/L	6.67	22.2
930-55-2	N-Nitrosopyrrolidine		68.3	ug/L	6.67	22.2
91-20-3	Naphthalene		81.1	ug/L	0.667	2.22
98-95-3	Nitrobenzene		74.9	ug/L	6.67	22.2
608-93-5	Pentachlorobenzene	U	22.2	ug/L	6.67	22.2
87-86-5	Pentachlorophenol		86.1	ug/L	6.67	22.2
85-01-8	Phenanthrene		82.5	ug/L	0.667	2.22
108-95-2	Phenol		41.8	ug/L	6.67	22.2
129-00-0	Pyrene		71.8	ug/L	0.667	2.22
110-86-1	Pyridine		51.4	ug/L	6.67	22.2
108-60-1	bis(2-Chloro-1-methylethyl)ether		71.2	ug/L	6.67	22.2
111-91-1	bis(2-Chloroethoxy)methane		75.1	ug/L	6.67	22.2
111-44-4	bis(2-Chloroethyl) ether		72.1	ug/L	6.67	22.2
117-81-7	bis(2-Ethylhexyl)phthalate		74.3	ug/L	6.67	22.2

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1529**	**Date Collected:**	**05/12/2017 10:57**	**Matrix:**	**W**
Lab Sample ID:	**1203790722**	**Date Received:**	**05/16/2017 09:20**		
Client Sample:	**QC for batch 1665598**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CASA-17-132341MSD**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1665599**	**Inst:**	**MSDA.I**	**Dilution:**	**1**
Run Date:	**05/17/2017 15:23**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**05/17/2017 04:35**	**Aliquot:**	**450 mL**	**Final Volume:**	**1 mL**
Data File:	**051717.s\sAe1716.D**	**Column:**	**DB-5.625**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols		68.5	ug/L	8.22	22.2
99-09-2	3-Nitroaniline *m-Nitroaniline*		109	ug/L	6.67	22.2
95-48-7	o-Cresol		66.2	ug/L	6.67	22.2
88-74-4	2-Nitroaniline *o-Nitroaniline*		78.8	ug/L	6.67	22.2
100-01-6	4-Nitroaniline *p-Nitroaniline*		113	ug/L	6.67	22.2

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	181	222	ug/L	81	(32%-124%)
2-Fluorobiphenyl	84.3	111	ug/L	76	(32%-112%)
2-Fluorophenol	107	222	ug/L	48	(15%-88%)
Nitrobenzene-d5	76.1	111	ug/L	69	(36%-115%)
Phenol-d5	82.1	222	ug/L	37	(15%-91%)
p-Terphenyl-d14	73.5	111	ug/L	66	(36%-121%)

Miscellaneous

DATA EXCEPTION REPORT

Mo.Day Yr.	**Division:**	**Quality Criteria:**	**Type:**
18-MAY-17	Industrial	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
SEMIVOA GC/MS	SW846 3510C/8270D	Liquid	ESHL, SCPO
Batch ID:	**Sample Numbers:**		
1665599	See Below		

Potentially affected work order(s)(SDG): 423194(2017-1529),423220(2017-1522),423224(2017-1524)

Application Issues:

Failed RPD for MS/MSD, or PS/PSD

Specification and Requirements Exception Description:	**DER Disposition:**
1. Failed RPD for MS/MSD: QC 1203790722MSD	1. The relative percent difference (RPD) between the MS and MSD (See Below) did not meet acceptance limits. As the individual MS and MSD recoveries were within the acceptance limits, the failures had no adverse impact on the reported sample data. 1203790721MS and 1203790722MSD (CASA-17-132341) Benzidine [45* (0%-30%)].

Originator's Name:

Josh Brooks 18-MAY-17

Data Validator/Group Leader:

Barbara Bailey 18-MAY-17

Perchlorates by LCMSMS Analysis

Case Narrative

Perchlorates by LCMSMS
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2017-1529
Work Order #: 423194

Method/Analysis Information

Procedure:	**Definitive Low Level Perchlorate Analysis Utilizing Liquid Chromatography/Mass Spectrometry/Mass Spectrometry (LC/MS/MS) by EPA Method 6850 Modified (6850M)**
Analytical Method:	SW-846:6850
Prep Method:	SW-846:6850
Analytical Batch Number:	1667383
Prep Batch Number:	1667380

Sample Analysis

Sample ID	Client ID
423194001	423194001 (CAMO-17-132200)
423194006	423194006 (CAMO-17-132308)
1203795005	Interference Check Sample (ICS)
1203795001	Method Blank (MB)
1203795002	Laboratory Control Sample (LCS)
1203795003	423220001(CASA-17-132339) Matrix Spike (MS)
1203795004	423220001(CASA-17-132339) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on an "as received" basis.

Preparation/Analytical Method Verification

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-067 REV# 14.

Calibration Information

Initial Calibration
All initial calibration requirements have been met for this SDG. Due to software constraints, all Initial Calibration Blanks must be designated as IPB001.

ICV Requirements
All associated initial calibration verification standard(s) (ICV) met the acceptance criteria.

CCB Requirements
All continuing calibration blanks (CCB) bracketing the analyses associated with this batch were within acceptance criteria.

CCV Requirements
All continuing calibration checks (CCV) requirements were met by all bracketing CCV standards.

Low Level Standard (CRI) Requirements
All low level calibration verification (CRI) requirements were met by all bracketing CRI standards.

Quality Control (QC) Information

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

Interference Check Sample (ICS)
The ICS spike recoveries met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery
The LCS spike recoveries met the acceptance limits.

QC Sample Designation
Client sample 423220001 (CASA-17-132339) was chosen for matrix spike and matrix spike duplicate analysis.

Matrix Spike (MS) Recovery Statement
In sample 1203795004 (MSD) a low recovery of 65% was observed for Perchlorate. The acceptance range is from 75-125%. The outlier observed in the MSD may be due to background concentration in the parent sample, 423220001 (CASA-17-132339). Recoveries observed in 1203795002 (LCS) and 1203795005 (ICS) were acceptable. 1203795004 (CASA-17-132339MSD).

MS/MSD Relative Percent Difference (RPD) Statement
The RPDs between the MS and MSD met the acceptance limits.

Internal Standard Area Acceptance
The internal standard areas were within the required acceptance criteria for all samples and QC.

Retention Time
During the analysis of Perchlorate by LC/MS/MS, retention time shifts are commonly observed. These retention time shifts, which are caused by fouling of the column by the sample matrices, are problematic when the retention time is used as one of the criterion for confirmation. To overcome this problem, a known amount of O(18) labeled Perchlorate was added to each sample as a retention time standard. The presence of Perchlorate was confirmed by the relative retention time (RRT) of the Perchlorate peak and the O(18) standard. A RRT window of 0.98 to 1.02, as required by DOD QSM 5.0, has been used. In addition to the isotopic ratio, the presence of Perchlorate in the samples associated with this data package have been confirmed using the relative retention criteria stated above, not the absolute retention time.

Technical Information

Holding Time Specifications
All samples in this SDG in this analytical batch met the specified holding time. GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection of sample receipt. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration.

Preparation/Analytical Method Verification
All procedures were performed as stated in the SOP.

Sample Dilutions
Samples 423194001 (CAMO-17-132200) and 423194006 (CAMO-17-132308) were diluted to bring the over range concentrations within the calibration range.

Sample Re-extraction/Re-analysis
Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information

Data Exception (DER) Documentation
A data exception report (DER) 1635563 was generated for samples 1203795004 (CASA-17-132339MSD) and 1203795004 (CASA-17-132339MSD) in this SDG/batch.

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

Method Comments
The samples in this SDG were not originally analyzed using EPA Method 314.0.

Additional Comments
The Perchlorate Isotope Ratio on the Form I may differ slightly from the ratio on the corresponding raw data due to rounding rules and/or significant figures or due to software limitations when there are manual integrations, dilutions or other factors. The ratio value of the Form I is the correct value. The retention time marker, Perchlorate-O (18), is added to all samples, instrument blanks, and standards prior to injection. It is used to verify the retention time of Perchlorate and Perchlorate-101 and to insure an accurate injection occurred. Due to various anions affecting the recovery of Perchlorate-O (18) and not Perchlorate and Perchlorate-101, the calibration curves of Perchlorate and Perchlorate-101 are internally corrected for using Perchlorate-O (18).

Perchlorate Isotope Ratio
The Perchlorate isotope ratio met acceptance criteria for all samples and QC samples. Please see the isotope ratio criteria in the Miscellaneous Section.

System Configuration

The laboratory utilizes a Waters LC 2795 liquid chromatography instrument for Perchlorate analysis. It is coupled with a Micromass Quattro Ultima Mass Spectrometer/Mass Spectrometer. It is designated as LCMSMS #2.It is fitted with an electrospray probe that is operated in the negative electrospray ionization mode for Perchlorate analysis. The laboratory may also utilize an Agilent 1100 liquid chromatography instrument for Perchlorate analysis. It is coupled with an Applied Biosystems 4000 Mass Spectrometer/Mass Spectrometer, designated as LCMSMS #3 or LCMSMS #4. It is also fitted with an electrospray probe that is operated in the negative electrospray ionization mode for Perchlorate analysis.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In

an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

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

Chromatographic Columns

The LC-MS/MS Perchlorate analysis was performed on a Quatro Ultima LC/MS/MS.

Chromatographic separation of Perchlorate is accomplished through analysis on the following anion column:

Dionex: IonPac AG-16 2 x 50 mm.

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: 2017-1529 GEL Work Order: 423194

The Qualifiers in this report are defined as follows:

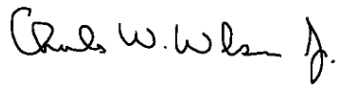
* A quality control analyte recovery is outside of specified acceptance criteria
** Analyte is a surrogate compound
J Value is estimated
U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

DL Indicates that sample is diluted.
RA Indicates that sample is re-analyzed without re-extraction.
RE Indicates that sample is re-extracted.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature:  **Name: Charles Wilson**

Date: 31 MAY 2017 **Title: Analyst II**

Sample Data Summary

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Lab Code: GEL

Instrument: LCMSMS

Method: SW846 6850 Modified

Matrix: WATER

Extraction Batch ID: 1667380

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.
CAMO-17-132200

Date Received: 16-MAY-17

GEL Job No (SDG): 2017-1529

GEL Sample ID: 423194001

Date Filtered: 22-MAY-17

Injection Volume (uL): 20

%Solids:

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	5	20	82.9	ug/L		100	24-MAY-17 17:32	per0524014a
	Perchlorate Isotope Ratio			2.87			100	24-MAY-17 17:32	per0524014a
14797-73-0	Perchlorate-101	5	20	84.2	ug/L		100	24-MAY-17 17:32	per0524014a
	Perchlorate-O(18)			36.9	ug/L		100	24-MAY-17 17:32	per0524014a

^ When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

*Concentration = Instrument Value X $\frac{\text{Concentrated Extract Volume}}{\text{Aliquot}}$ X $\frac{1}{\%\text{Solids}}$

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Lab Code: GEL

Instrument: LCMSMS

Method: SW846 6850 Modified

Matrix: WATER

Extraction Batch ID: 1667380

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.
CAMO-17-132308

Date Received: 16-MAY-17

GEL Job No (SDG): 2017-1529

GEL Sample ID: 423194006

Date Filtered: 22-MAY-17

Injection Volume (uL): 20

%Solids:

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	5	20	72.7	ug/L		100	24-MAY-17 17:41	per0524015a
	Perchlorate Isotope Ratio			3.05			100	24-MAY-17 17:41	per0524015a
14797-73-0	Perchlorate-101	5	20	69.6	ug/L		100	24-MAY-17 17:41	per0524015a
	Perchlorate-O(18)			41.5	ug/L		100	24-MAY-17 17:41	per0524015a

^ When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

*Concentration = Instrument Value X $\frac{\text{Concentrated Extract Volume}}{\text{Aliquot}}$ X $\frac{1}{\%\text{Solids}}$

Quality Control Summary

Perchlorate Laboratory Control Sample

Lab Name: General Engineering Laboratories

Lab Code: GEL

GEL Job No. (SDG): 2017-1529

Extract Batch Code: 1667380

Date Filtered: 22-MAY-17

Matrix: WATER

Sample ID: 1203795002

Analyte^	True	Found	Units	%Rec	Q	Control Limits
Perchlorate	0.200	.198	ug/L	99		85 - 115
Perchlorate Isotope Ratio		2.94				-
Perchlorate-101	0.200	.194	ug/L	97		85 - 115
Perchlorate-O(18)		.387	ug/L			-

^ When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

Perchlorate Spike/Spike Duplicate Summary

Lab Name: General Engineering Laboratories

Lab Code: GEL

GEL Job No (SDG): 2017-1529

Extract Batch Code: 1667380

Date Extracted: 22-MAY-17

GEL MS/PS ID: 1203795003

Client ID: CASA-17-132339

GEL MSD/PSD ID: 1203795004

QC Type: MS

Compound^	Spike Added	Sample Conc	Units	MS Conc	MS Rec #	MSD Conc	MSD Rec #	RPD #	RPD Limit	Recovery Limit
Perchlorate	0.200	0.778	ug/L	0.952	87	.908	65 *	5	30	75 - 125
Perchlorate Isotope Ratio	0	2.94		2.98		2.82		5		-
Perchlorate-101	0.200	0.761	ug/L	0.921	80	.928	83	1	30	75 - 125
Perchlorate-O(18)	0	0.455	ug/L	0.384		.356		8		-

^ When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

Quality Control Data

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Lab Code: GEL

Instrument: LCMSMS

Method: EPA 6850 Modified

Matrix: WATER

Extraction Batch ID: 1667380

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.
MB

Date Received: 22-MAY-17

GEL Job No (SDG): 2017-1529

GEL Sample ID: 1203795001

Date Filtered: 22-MAY-17

Injection Volume (uL): 20

%Solids:

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.200	ug/L	U	1	23-MAY-17 17:26	per0523015a
	Perchlorate Isotope Ratio						1	23-MAY-17 17:26	per0523015a
14797-73-0	Perchlorate-101	.05	.2	0.200	ug/L	U	1	23-MAY-17 17:26	per0523015a
	Perchlorate-O(18)			0.383	ug/L		1	23-MAY-17 17:26	per0523015a

^ When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

*Concentration = Instrument Value X $\frac{\text{Concentrated Extract Volume}}{\text{Aliquot}}$ X $\frac{1}{\%\text{Solids}}$

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Lab Code: GEL

Instrument: LCMSMS

Method: EPA 6850 Modified

Matrix: WATER

Extraction Batch ID: 1667380

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.
LCS

Date Received: 22-MAY-17

GEL Job No (SDG): 2017-1529

GEL Sample ID: 1203795002

Date Filtered: 22-MAY-17

Injection Volume (uL): 20

%Solids:

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.198	ug/L	J	1	23-MAY-17 17:35	per0523016a
	Perchlorate Isotope Ratio			2.94			1	23-MAY-17 17:35	per0523016a
14797-73-0	Perchlorate-101	.05	.2	0.194	ug/L	J	1	23-MAY-17 17:35	per0523016a
	Perchlorate-O(18)			0.387	ug/L		1	23-MAY-17 17:35	per0523016a

^ When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

*Concentration =

$$\text{Instrument Value} \times \frac{\text{Concentrated Extract Volume}}{\text{Aliquot}} \times \frac{1}{\%\text{Solids}}$$

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Lab Code: GEL

Instrument: LCMSMS

Method: SW846 6850 Modified

Matrix: WATER

Extraction Batch ID: 1667380

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.
ICS

Date Received:

GEL Job No (SDG): 2017-1529

GEL Sample ID: 1203795005

Date Filtered: 22-MAY-17

Injection Volume (uL): 20

%Solids:

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.201	ug/L		1	23-MAY-17 17:44	per0523017a
	Perchlorate Isotope Ratio			2.82			1	23-MAY-17 17:44	per0523017a
14797-73-0	Perchlorate-101	.05	.2	0.206	ug/L		1	23-MAY-17 17:44	per0523017a
	Perchlorate-O(18)			0.407	ug/L		1	23-MAY-17 17:44	per0523017a

^ When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

*Concentration =

$$\text{Instrument Value} \times \frac{\text{Concentrated Extract Volume}}{\text{Aliquot}} \times \frac{1}{\%\text{Solids}}$$

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Lab Code: GEL

Instrument: LCMSMS

Method: SW846 6850 Modified

Matrix: WATER

Extraction Batch ID: 1667380

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.
CASA-17-132339MS

Date Received: 16-MAY-17

GEL Job No (SDG): 2017-1529

GEL Sample ID: 1203795003

Date Filtered: 22-MAY-17

Injection Volume (uL): 20

%Solids:

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.952	ug/L		1	23-MAY-17 19:13	per0523027a
	Perchlorate Isotope Ratio			2.98			1	23-MAY-17 19:13	per0523027a
14797-73-0	Perchlorate-101	.05	.2	0.921	ug/L		1	23-MAY-17 19:13	per0523027a
	Perchlorate-O(18)			0.384	ug/L		1	23-MAY-17 19:13	per0523027a

^ When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

*Concentration =

$$\text{Instrument Value} \times \frac{\text{Concentrated Extract Volume}}{\text{Aliquot}} \times \frac{1}{\%\text{Solids}}$$

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Lab Code: GEL

Instrument: LCMSMS

Method: SW846 6850 Modified

Matrix: WATER

Extraction Batch ID: 1667380

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.
CASA-17-132339MSD

Date Received: 16-MAY-17

GEL Job No (SDG): 2017-1529

GEL Sample ID: 1203795004

Date Filtered: 22-MAY-17

Injection Volume (uL): 20

%Solids:

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.908	ug/L		1	23-MAY-17 19:22	per0523028a
	Perchlorate Isotope Ratio			2.82			1	23-MAY-17 19:22	per0523028a
14797-73-0	Perchlorate-101	.05	.2	0.928	ug/L		1	23-MAY-17 19:22	per0523028a
	Perchlorate-O(18)			0.356	ug/L		1	23-MAY-17 19:22	per0523028a

^ When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

*Concentration =

$$\text{Instrument Value} \times \frac{\text{Concentrated Extract Volume}}{\text{Aliquot}} \times \frac{1}{\%\text{Solids}}$$

Miscellaneous

DATA EXCEPTION REPORT

Mo.Day Yr.	**Division:**	**Quality Criteria:**	**Type:**
25-MAY-17	Industrial	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
LC-MS/MS	SW846 6850 Modified	Liquid	ESHL
Batch ID:	**Sample Numbers:**		
1667383	See Below		

Potentially affected work order(s)(SDG): 423194(2017-1529),423213(2017-1526),423215(2017-1525),423220(2017-1522),423318(2017-1532)

Application Issues:

Failed Recovery for MS/MSD, or PS/PSD

Specification and Requirements Exception Description:	**DER Disposition:**
1. In sample 1203795004 (MSD) a low recovery of 65% was observed for Perchlorate. The acceptance range is from 75-125%.	1. The outlier observed in the MSD may be due to background concentration in the parent sample, 423220001 (CASA-17-132339). Recoveries observed in 1203795002 (LCS) and 1203795005 (LCS) were acceptable. Will report data and note in case narrative.

Originator's Name:

Grace Cappelmann 25-MAY-17

Data Validator/Group Leader:

Charles Wilson 31-MAY-17

Metals Analysis

Case Narrative

Metals
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2017-1529
Work Order #: 423194

Sample ID	Client ID
423194001	CAMO-17-132200
423194002	CAMO-17-132220
423194005	CAMO-17-132307
423194006	CAMO-17-132308
1203790409	Method Blank (MB)**ICP**
1203790410	Laboratory Control Sample (LCS)
1203790413	423194001(CAMO-17-132200L) Serial Dilution (SD)
1203790411	423194001(CAMO-17-132200D) Sample Duplicate (DUP)
1203790412	423194001(CAMO-17-132200S) Matrix Spike (MS)
1203790453	Method Blank (MB)**ICP-MS**
1203790454	Laboratory Control Sample (LCS)
1203790457	423194001(CAMO-17-132200L) Serial Dilution (SD)
1203790455	423194001(CAMO-17-132200D) Sample Duplicate (DUP)
1203790456	423194001(CAMO-17-132200S) Matrix Spike (MS)
1203794760	Method Blank (MB)**CVAA**
1203794761	Laboratory Control Sample (LCS)
1203794766	423220001(CASA-17-132339L) Serial Dilution (SD)
1203794762	423220001(CASA-17-132339D) Sample Duplicate (DUP)
1203794764	423220001(CASA-17-132339S) Matrix Spike (MS)

Sample Analysis

Samples 423194001,002,005 and 006 in this SDG were analyzed for metals and mercury on an "as received" basis.

Method/Analysis Information

Analytical Batch:	1665469, 1665485, 1667274 and 1673153
Prep Batch :	1665466, 1665484 and 1667270
Standard Operating Procedures:	GL-MA-E-013 REV# 28, GL-MA-E-006 REV# 13, GL-MA-E-014 REV# 29, GL-MA-E-010 REV# 34 and GL-GC-E-107 REV# 10
Analytical Method:	SW846 3005A/6010C, SW846 3005A/6020A, EPA 245.2 1974 and SM:A2340B
Prep Method :	SW846 3005A and EPA 245.1/245.2 Prep

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

System Configuration

The Hardness as CaCO3 is calculated from Calcium and Magnesium results.

The Metals analysis-ICP was performed on a P E 5300 Optima radial/axial-viewing inductively coupled plasma atomic emission spectrometer. The instrument is equipped with an ESI SC-FAST introduction, cyclonic spray chamber, and yttrium or scandium internal standard.

The Metals analysis-Mercury was performed on a Perkin-Elmer Flow Injection Mercury System (FIMS-100) automated mercury analyzer. The instrument consists of a cold vapor atomic absorption spectrometer set to detect mercury at a wavelength of 253.7 nm.

The Metals analysis - ICPMS was performed on a PerkinElmer NexION 350X ICPMS. The instrument is equipped with a ESI PFA-ST nebulizer, quadrupole mass spectrometer, dual mode electron multiplier detector, and Kinetic Energy Discrimination (KED) technology. Internal standards of scandium, germanium, indium, tantalum, and/or lutetium were utilized to cover the mass spectrum.

Calibration Information

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

CRDL/PQL Requirements
The PQL standard recoveries for SW846 6010C or 6010D met the control limits with the exception of sodium. Client sample concentrations were less than the MDL or greater than two times the PQL; therefore the data were not adversely affected. 423194001 (CAMO-17-132200) and 423194006 (CAMO-17-132308)-ICP.

ICSA/ICSAB Statement
All interference check samples (ICSA and ICSAB) associated with this SDG met the established acceptance criteria. However, the ICSA contained analyte concentrations which are verified trace impurities indigenous to the purchased standard.

Continuing Calibration Blanks (CCB) Requirements
All continuing calibration blanks (CCB) bracketing this batch met the established acceptance criteria.

Continuing Calibration Verification (CCV) Requirements
All continuing calibration verifications (CCV) bracketing this SDG met the acceptance criteria.

Quality Control (QC) Information

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

Laboratory Control Sample Duplicate (LCSD)
An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery
The LCS spike recoveries met the acceptance limits.

Quality Control (QC) Sample Statement
The following samples were selected as the quality control (QC) samples for this SDG: 423194001 (CAMO-17-132200)-ICP and ICP-MS and 423220001 (CASA-17-132339)-CVAA.

Matrix Spike (MS/MSD) Recovery Statement
The percent recoveries (%R) obtained from the MS/MSD analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The matrix spike met the recommended quality

control acceptance criteria for percent recoveries for all applicable analytes.

Duplicate Relative Percent Difference (RPD) Statement
The RPD obtained from the designated sample duplicate (DUP) is evaluated based on acceptance criteria of 20% when the sample is >5X the contract required reporting limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control of +/-RL is used to evaluate the DUP results. The relative percent differences (RPD) between the sample and its duplicate (DUP) were within acceptable limits for all applicable analytes.

Serial Dilution % Difference Statement
All applicable analytes in the serial dilution (SDILT) demonstrated acceptable correlation to its associated sample and met the established acceptance percent difference criteria.

Technical Information

Holding Time Specifications
GEL assigns holding times based on the associated methodology. Holding time is measured by comparison of the date and time of sample collection to the date and time of sample preparation and analysis. 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. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification
All procedures were performed as stated in the SOP.

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

Preparation Information
The samples in this SDG were not diluted and were prepared according to the cited SOP.

Miscellaneous Information

Electronic Packaging Comment
This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:
Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator’s signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Data Exception (DER) Documentation
A data exception report was not required for this SDG.

Additional Comments
Total Hardness by Calculation is determined using the results of Total Calcium (Ca) and Total Magnesium (Mg) determined by ICP or ICP-MS.

Hardness = 2.497 (Ca) + 4.118 (Mg)

Please refer to the Total Ca and Total Mg data to validate results appearing on the Hardness Summary sheet. Both results are in the Inorganic/metals section of the package. There is no Batch QC for calculated results, and thus no QC Summary for the Hardness by Calculation Batch. The MDLs and PQLs are calculated using the higher of the two calculated values of Ca or Mg.

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: 2017-1529 GEL Work Order: 423194

The Qualifiers in this report are defined as follows:

* A quality control analyte recovery is outside of specified acceptance criteria
J Value is estimated
U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

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: Nik-Cole A. Elmore **Name: Nik-Cole Elmore**

Date: 12 JUN 2017 **Title: Data Validator**

Sample Data Summary

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017−1529 **CONTRACT:** ESHL00114 **METHOD TYPE:** EPA

SAMPLE ID: 423194001 **BASIS:** As Received **DATE COLLECTED** 11−MAY−17

CLIENT ID: CAMO−17−132200 **LEVEL:** Low **DATE RECEIVED** 16−MAY−17

MATRIX: W **%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7439−97−6	Mercury	0.20	ug/L	U	0.067	0.2	0.2	1	AV	MTM1	05/23/17 10:51	052317W1−6	1667274

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017−1529 **CONTRACT:** ESHL00114 **METHOD TYPE:** SW846

SAMPLE ID: 423194001 **BASIS:** As Received **DATE COLLECTED** 11−MAY−17

CLIENT ID: CAMO−17−132200 **LEVEL:** Low **DATE RECEIVED** 16−MAY−17

MATRIX: W **%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429−90−5	Aluminum	200	ug/L	U	68	200	200	1	P	HSC	06/07/17 17:34	060717A−1	1665469
7440−36−0	Antimony	3	ug/L	U	1	3	3	1	MS	BAJ	05/27/17 08:35	170526−5	1665485
7440−38−2	Arsenic	5	ug/L	U	2	5	5	1	MS	BAJ	05/26/17 21:33	170526−3	1665485
7440−39−3	Barium	37.4	ug/L		1	5	5	1	P	HSC	06/07/17 17:34	060717A−1	1665469
7440−41−7	Beryllium	5	ug/L	U	1	5	5	1	P	HSC	06/07/17 17:34	060717A−1	1665469
7440−42−8	Boron	51	ug/L		15	50	50	1	P	HSC	06/07/17 17:34	060717A−1	1665469
7440−43−9	Cadmium	1	ug/L	U	0.3	1	1	1	MS	BAJ	05/26/17 21:33	170526−3	1665485
7440−70−2	Calcium	60300	ug/L		50	200	200	1	P	HSC	06/10/17 11:22	061017A−2	1665469
7440−47−3	Chromium	75.1	ug/L		3	10	10	1	MS	BAJ	05/26/17 21:33	170526−3	1665485
7440−48−4	Cobalt	5	ug/L	U	1	5	5	1	P	HSC	06/07/17 17:34	060717A−1	1665469
7440−50−8	Copper	4.5	ug/L	J	3	10	10	1	P	HSC	06/07/17 17:34	060717A−1	1665469
7439−89−6	Iron	100	ug/L	U	30	100	100	1	P	HSC	06/07/17 17:34	060717A−1	1665469
7439−92−1	Lead	2	ug/L	U	0.5	2	2	1	MS	BAJ	05/26/17 21:33	170526−3	1665485
7439−95−4	Magnesium	11600	ug/L		110	300	300	1	P	HSC	06/07/17 17:34	060717A−1	1665469
7439−96−5	Manganese	10	ug/L	U	2	10	10	1	P	HSC	06/07/17 17:34	060717A−1	1665469
7439−98−7	Molybdenum	1.98	ug/L		0.2	0.5	0.5	1	MS	BAJ	05/26/17 21:33	170526−3	1665485
7440−02−0	Nickel	21.5	ug/L		0.6	2	2	1	MS	BAJ	05/26/17 21:33	170526−3	1665485
7440−09−7	Potassium	802	ug/L		50	150	150	1	P	HSC	06/07/17 17:34	060717A−1	1665469
7782−49−2	Selenium	5	ug/L	U	2	5	5	1	MS	BAJ	05/26/17 21:33	170526−3	1665485
7631−86−9	Silica	63400	ug/L		53	213	213	1	P	HSC	06/07/17 17:34	060717A−1	1665469
7440−22−4	Silver	1	ug/L	U	0.3	1	1	1	MS	BAJ	05/26/17 21:33	170526−3	1665485
7440−23−5	Sodium	26700	ug/L		100	300	300	1	P	HSC	06/10/17 11:22	061017A−2	1665469
7440−24−6	Strontium	265	ug/L		1	5	5	1	P	HSC	06/07/17 17:34	060717A−1	1665469
7440−28−0	Thallium	2	ug/L	U	0.6	2	2	1	MS	BAJ	05/26/17 21:33	170526−3	1665485
7440−31−5	Tin	3.09	ug/L	J	2.5	10	10	1	P	HSC	06/07/17 17:34	060717A−1	1665469
7440−61−1	Uranium	0.810	ug/L		0.067	0.2	0.2	1	MS	BAJ	05/27/17 08:35	170526−5	1665485
7440−62−2	Vanadium	5	ug/L	U	1	5	5	1	P	HSC	06/07/17 17:34	060717A−1	1665469
7440−66−6	Zinc	18.4	ug/L		3.3	10	10	1	P	HSC	06/10/17 11:22	061017A−2	1665469

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017−1529 **CONTRACT:** ESHL00114 **METHOD TYPE:**

SAMPLE ID: 423194001 **BASIS:** As Received **DATE COLLECTED** 11−MAY−17

CLIENT ID: CAMO−17−132200 **LEVEL:** Low **DATE RECEIVED** 16−MAY−17

MATRIX: W **%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
	Hardness as CaCO3	198	mg/L		0.453	1.24	1.24	1		JJ2	06/12/17 09:09		1673153

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1665469	1665466	SW846 3005A	50	mL	50	mL	05/16/17	CXW4
1665485	1665484	SW846 3005A	50	mL	50	mL	05/16/17	CXW4
1667274	1667270	EPA 245.1/245.2 Prep	20	mL	20	mL	05/22/17	AXS5

***Analytical Methods:**

P **SW846 3005A/6010C**
MS **SW846 3005A/6020A**
AV **EPA 245.2 1974**

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017−1529 **CONTRACT:** ESHL00114 **METHOD TYPE:** EPA

SAMPLE ID: 423194002 **BASIS:** As Received **DATE COLLECTED** 11−MAY−17

CLIENT ID: CAMO−17−132220 **LEVEL:** Low **DATE RECEIVED** 16−MAY−17

MATRIX: W **%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7439−97−6	Mercury	0.20	ug/L	U	0.067	0.2	0.2	1	AV	MTM1	05/23/17 10:53	052317W1−6	1667274

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1667274	1667270	EPA 245.1/245.2 Prep	20	mL	20	mL	05/22/17	AXS5

***Analytical Methods:**

AV **EPA 245.2 1974**

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017−1529 **CONTRACT:** ESHL00114 **METHOD TYPE:** EPA

SAMPLE ID: 423194005 **BASIS:** As Received **DATE COLLECTED** 11−MAY−17

CLIENT ID: CAMO−17−132307 **LEVEL:** Low **DATE RECEIVED** 16−MAY−17

MATRIX: W **%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7439−97−6	Mercury	0.20	ug/L	U	0.067	0.2	0.2	1	AV	MTM1	05/23/17 10:54	052317W1−6	1667274

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1667274	1667270	EPA 245.1/245.2 Prep	20	mL	20	mL	05/22/17	AXS5

***Analytical Methods:**

AV **EPA 245.2 1974**

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017−1529 **CONTRACT:** ESHL00114 **METHOD TYPE:** EPA

SAMPLE ID: 423194006 **BASIS:** As Received **DATE COLLECTED** 11−MAY−17

CLIENT ID: CAMO−17−132308 **LEVEL:** Low **DATE RECEIVED** 16−MAY−17

MATRIX: W **%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7439−97−6	Mercury	0.20	ug/L	U	0.067	0.2	0.2	1	AV	MTM1	05/23/17 10:56	052317W1−6	1667274

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017−1529 **CONTRACT:** ESHL00114 **METHOD TYPE:** SW846

SAMPLE ID: 423194006 **BASIS:** As Received **DATE COLLECTED** 11−MAY−17

CLIENT ID: CAMO−17−132308 **LEVEL:** Low **DATE RECEIVED** 16−MAY−17

MATRIX: W **%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429−90−5	Aluminum	200	ug/L	U	68	200	200	1	P	HSC	06/07/17 17:31	060717A−1	1665469
7440−36−0	Antimony	3	ug/L	U	1	3	3	1	MS	BAJ	05/27/17 08:41	170526−5	1665485
7440−38−2	Arsenic	5	ug/L	U	2	5	5	1	MS	BAJ	05/26/17 21:49	170526−3	1665485
7440−39−3	Barium	37.6	ug/L		1	5	5	1	P	HSC	06/07/17 17:31	060717A−1	1665469
7440−41−7	Beryllium	5	ug/L	U	1	5	5	1	P	HSC	06/07/17 17:31	060717A−1	1665469
7440−42−8	Boron	52.7	ug/L		15	50	50	1	P	HSC	06/07/17 17:31	060717A−1	1665469
7440−43−9	Cadmium	1	ug/L	U	0.3	1	1	1	MS	BAJ	05/26/17 21:49	170526−3	1665485
7440−70−2	Calcium	61300	ug/L		50	200	200	1	P	HSC	06/10/17 11:19	061017A−2	1665469
7440−47−3	Chromium	71	ug/L		3	10	10	1	MS	BAJ	05/26/17 21:49	170526−3	1665485
7440−48−4	Cobalt	5	ug/L	U	1	5	5	1	P	HSC	06/07/17 17:31	060717A−1	1665469
7440−50−8	Copper	4.63	ug/L	J	3	10	10	1	P	HSC	06/07/17 17:31	060717A−1	1665469
7439−89−6	Iron	100	ug/L	U	30	100	100	1	P	HSC	06/07/17 17:31	060717A−1	1665469
7439−92−1	Lead	2	ug/L	U	0.5	2	2	1	MS	BAJ	05/26/17 21:49	170526−3	1665485
7439−95−4	Magnesium	11600	ug/L		110	300	300	1	P	HSC	06/07/17 17:31	060717A−1	1665469
7439−96−5	Manganese	10	ug/L	U	2	10	10	1	P	HSC	06/07/17 17:31	060717A−1	1665469
7439−98−7	Molybdenum	1.95	ug/L		0.2	0.5	0.5	1	MS	BAJ	05/26/17 21:49	170526−3	1665485
7440−02−0	Nickel	21.4	ug/L		0.6	2	2	1	MS	BAJ	05/26/17 21:49	170526−3	1665485
7440−09−7	Potassium	815	ug/L		50	150	150	1	P	HSC	06/07/17 17:31	060717A−1	1665469
7782−49−2	Selenium	5	ug/L	U	2	5	5	1	MS	BAJ	05/26/17 21:49	170526−3	1665485
7631−86−9	Silica	63700	ug/L		53	213	213	1	P	HSC	06/07/17 17:31	060717A−1	1665469
7440−22−4	Silver	1	ug/L	U	0.3	1	1	1	MS	BAJ	05/26/17 21:49	170526−3	1665485
7440−23−5	Sodium	26900	ug/L		100	300	300	1	P	HSC	06/10/17 11:19	061017A−2	1665469
7440−24−6	Strontium	264	ug/L		1	5	5	1	P	HSC	06/07/17 17:31	060717A−1	1665469
7440−28−0	Thallium	2	ug/L	U	0.6	2	2	1	MS	BAJ	05/26/17 21:49	170526−3	1665485
7440−31−5	Tin	3.87	ug/L	J	2.5	10	10	1	P	HSC	06/07/17 17:31	060717A−1	1665469
7440−61−1	Uranium	0.807	ug/L		0.067	0.2	0.2	1	MS	BAJ	05/27/17 08:41	170526−5	1665485
7440−62−2	Vanadium	1.42	ug/L	J	1	5	5	1	P	HSC	06/07/17 17:31	060717A−1	1665469
7440−66−6	Zinc	17.9	ug/L		3.3	10	10	1	P	HSC	06/10/17 11:19	061017A−2	1665469

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017−1529 **CONTRACT:** ESHL00114 **METHOD TYPE:**

SAMPLE ID: 423194006 **BASIS:** As Received **DATE COLLECTED** 11−MAY−17

CLIENT ID: CAMO−17−132308 **LEVEL:** Low **DATE RECEIVED** 16−MAY−17

MATRIX: W **%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
	Hardness as CaCO3	201	mg/L		0.453	1.24	1.24	1		JJ2	06/12/17 09:09		1673153

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1665469	1665466	SW846 3005A	50	mL	50	mL	05/16/17	CXW4
1665485	1665484	SW846 3005A	50	mL	50	mL	05/16/17	CXW4
1667274	1667270	EPA 245.1/245.2 Prep	20	mL	20	mL	05/22/17	AXS5

***Analytical Methods:**

P **SW846 3005A/6010C**
MS **SW846 3005A/6020A**
AV **EPA 245.2 1974**

Quality Control Summary

METALS
−3b−
PREPARATION BLANK SUMMARY

SDG NO. 2017−1529
Contract: ESHL00114
Matrix: W

Sample ID	Analyte	Result	Units	Acceptance Window	Conc Qual	M*	MDL	RDL
1203790409								
	Aluminum	68	ug/L	+/−200	U	P	68	200
	Barium	1	ug/L	+/−5	U	P	1	5
	Beryllium	1	ug/L	+/−5	U	P	1	5
	Boron	15	ug/L	+/−50	U	P	15	50
	Calcium	50	ug/L	+/−200	U	P	50	200
	Cobalt	1	ug/L	+/−5	U	P	1	5
	Copper	3	ug/L	+/−10	U	P	3	10
	Iron	30	ug/L	+/−100	U	P	30	100
	Magnesium	110	ug/L	+/−300	U	P	110	300
	Manganese	2	ug/L	+/−10	U	P	2	10
	Potassium	50	ug/L	+/−150	U	P	50	150
	Silica	53	ug/L	+/−213	U	P	53	213
	Sodium	100	ug/L	+/−300	U	P	100	300
	Strontium	1	ug/L	+/−5	U	P	1	5
	Tin	2.5	ug/L	+/−10	U	P	2.5	10
	Vanadium	1	ug/L	+/−5	U	P	1	5
	Zinc	3.3	ug/L	+/−10	U	P	3.3	10
1203790453								
	Antimony	1	ug/L	+/−3	U	MS	1	3
	Arsenic	2	ug/L	+/−5	U	MS	2	5
	Cadmium	0.3	ug/L	+/−1	U	MS	0.3	1
	Chromium	3	ug/L	+/−10	U	MS	3	10
	Lead	0.5	ug/L	+/−2	U	MS	0.5	2
	Molybdenum	0.2	ug/L	+/−0.5	U	MS	0.2	0.5
	Nickel	0.6	ug/L	+/−2	U	MS	0.6	2
	Selenium	2	ug/L	+/−5	U	MS	2	5
	Silver	0.3	ug/L	+/−1	U	MS	0.3	1
	Thallium	0.6	ug/L	+/−2	U	MS	0.6	2
	Uranium	0.067	ug/L	+/−0.2	U	MS	0.067	0.2
1203794760								
	Mercury	0.067	ug/L	+/−0.2	U	AV	0.067	0.2

***Analytical Methods:**

P	**SW846 3005A/6010C**
MS	**SW846 3005A/6020A**
AV	**EPA 245.1/245.2**

METALS
−5a−

Matrix Spike Summary

SDG NO. 2017−1529 **Client ID** CAMO−17−132200S

Contract: ESHL00114 **Level:** Low

Matrix: WATER **% Solids:**

Sample ID: 423194001 **Spike ID:** 1203790412

Analyte	Units	Acceptance Limit	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M*
Aluminum	ug/L	75−125	4840		68	U	5000	96.4		P
Barium	ug/L	75−125	521		37.4		500	96.8		P
Beryllium	ug/L	75−125	488		1	U	500	97.5		P
Boron	ug/L	75−125	561		51		500	102		P
Calcium	ug/L		65300		60300		5000	98.6	N/A	P
Cobalt	ug/L	75−125	467		1	U	500	93.4		P
Copper	ug/L	75−125	501		4.5	J	500	99.3		P
Iron	ug/L	75−125	4790		30	U	5000	95.7		P
Magnesium	ug/L	75−125	16300		11600		5000	93.6		P
Manganese	ug/L	75−125	477		2	U	500	95.1		P
Potassium	ug/L	75−125	5700		802		5000	98		P
Silica	ug/L		74800		63400		10700	106	N/A	P
Sodium	ug/L		32000		26700		5000	108	N/A	P
Strontium	ug/L	75−125	735		265		500	94.1		P
Tin	ug/L	75−125	493		3.09	J	500	98		P
Vanadium	ug/L	75−125	497		1	U	500	99.1		P
Zinc	ug/L	75−125	476		18.4		500	91.5		P

***Analytical Methods:**

P **SW846 3005A/6010C**

METALS
−5a−

Matrix Spike Summary

SDG NO. 2017−1529 **Client ID** CAMO−17−132200S

Contract: ESHL00114 **Level:** Low

Matrix: WATER **% Solids:**

Sample ID: 423194001 **Spike ID:** 1203790456

Analyte	Units	Acceptance Limit	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M*
Antimony	ug/L	75−125	50.8		1	U	50	101		MS
Arsenic	ug/L	75−125	53.5		2	U	50	104		MS
Cadmium	ug/L	75−125	51.5		0.3	U	50	103		MS
Chromium	ug/L	75−125	120		75.1		50	90.2		MS
Lead	ug/L	75−125	48.9		0.5	U	50	97.8		MS
Molybdenum	ug/L	75−125	54.6		1.98		50	105		MS
Nickel	ug/L	75−125	70.2		21.5		50	97.3		MS
Selenium	ug/L	75−125	52.3		2	U	50	104		MS
Silver	ug/L	75−125	51.7		0.3	U	50	103		MS
Thallium	ug/L	75−125	46.8		0.6	U	50	93.2		MS
Uranium	ug/L	75−125	47.8		0.81		50	94		MS

***Analytical Methods:**

MS SW846 3005A/6020A

METALS
−5a−

Matrix Spike Summary

SDG NO. 2017−1529 **Client ID** CASA−17−132339S

Contract: ESHL00114 **Level:** Low

Matrix: WATER **% Solids:**

Sample ID: 423220001 **Spike ID:** 1203794764

Analyte	Units	Acceptance Limit	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M*
Mercury	ug/L	75−125	1.94		0.067	U	2	95.5		AV

***Analytical Methods:**

AV **EPA 245.1/245.2**

Metals
−6−
Duplicate Sample Summary

SDG No.: 2017−1529 **Lab Code:** GEL

Contract: ESHL00114 **Client ID:** CAMO−17−132200D

Matrix: WATER **Level:** Low

Sample ID: 423194001 **Duplicate ID:** 1203790411 **Percent Solids for Dup:** N/A

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M*
Aluminum	ug/L		68	U	68	U			P
Barium	ug/L	+/−20%	37.4		37.9		1.33		P
Beryllium	ug/L		1	U	1	U			P
Boron	ug/L	+/−50	51		52.2		2.43		P
Calcium	ug/L	+/−20%	60300		61300		1.58		P
Cobalt	ug/L		1	U	1	U			P
Copper	ug/L	+/−10	4.5	J	4.58	J	1.77		P
Iron	ug/L		30	U	30	U			P
Magnesium	ug/L	+/−20%	11600		11700		1.25		P
Manganese	ug/L		2	U	2	U			P
Potassium	ug/L	+/−20%	802		817		1.87		P
Silica	ug/L	+/−20%	63400		64400		1.53		P
Sodium	ug/L	+/−20%	26700		27700		3.93		P
Strontium	ug/L	+/−20%	265		265		.11		P
Tin	ug/L	+/−10	3.09	J	3.43	J	10.4		P
Vanadium	ug/L		1	U	1.1	J	200		P
Zinc	ug/L	+/−10	18.4		17.8		3.74		P

***Analytical Methods:**
P SW846 3005A/6010C

Metals
−6−
Duplicate Sample Summary

SDG No.: 2017−1529 **Lab Code:** GEL

Contract: ESHL00114 **Client ID:** CAMO−17−132200D

Matrix: WATER **Level:** Low

Sample ID: 423194001 **Duplicate ID:** 1203790455 **Percent Solids for Dup:** N/A

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M*
Antimony	ug/L		1	U	1	U			MS
Arsenic	ug/L		2	U	2	U			MS
Cadmium	ug/L		0.3	U	0.3	U			MS
Chromium	ug/L	+/−20%	75.1		74.6		.723		MS
Lead	ug/L		0.5	U	0.5	U			MS
Molybdenum	ug/L	+/−.5	1.98		1.9		3.91		MS
Nickel	ug/L	+/−20%	21.5		22.1		2.47		MS
Selenium	ug/L		2	U	2	U			MS
Silver	ug/L		0.3	U	0.3	U			MS
Thallium	ug/L		0.6	U	0.6	U			MS
Uranium	ug/L	+/−.2	0.81		0.829		2.32		MS

***Analytical Methods:**
MS SW846 3005A/6020A

Metals
−6−
Duplicate Sample Summary

SDG No.: 2017−1529 **Lab Code:** GEL

Contract: ESHL00114 **Client ID:** CASA−17−132339D

Matrix: WATER **Level:** Low

Sample ID: 423220001 **Duplicate ID:** 1203794762 **Percent Solids for Dup:** N/A

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M*
Mercury	ug/L		0.067	U	0.067	U			AV

***Analytical Methods:**
AV EPA 245.1/245.2

METALS
−7−
Laboratory Control Sample Summary

SDG NO. 2017−1529

Contract: ESHL00114

Aqueous LCS Source: OS2I **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Acceptance Limit	M*
1203790410								
	Aluminum	ug/L	5000	5010		100	80−120	P
	Barium	ug/L	500	496		99.2	80−120	P
	Beryllium	ug/L	500	490		98.1	80−120	P
	Boron	ug/L	500	502		100	80−120	P
	Calcium	ug/L	5000	4970		99.4	80−120	P
	Cobalt	ug/L	500	493		98.5	80−120	P
	Copper	ug/L	500	499		99.8	80−120	P
	Iron	ug/L	5000	4980		99.5	80−120	P
	Magnesium	ug/L	5000	4880		97.5	80−120	P
	Manganese	ug/L	500	496		99.1	80−120	P
	Potassium	ug/L	5000	5110		102	80−120	P
	Silica	ug/L	10700	10300		96.2	80−120	P
	Sodium	ug/L	5000	5230		105	80−120	P
	Strontium	ug/L	500	487		97.5	80−120	P
	Tin	ug/L	500	496		99.1	80−120	P
	Vanadium	ug/L	500	496		99.1	80−120	P
	Zinc	ug/L	500	465		93.1	80−120	P

***Analytical Methods:**

P **SW846 3005A/6010C**

METALS
−7−
Laboratory Control Sample Summary

SDG NO. 2017−1529

Contract: ESHL00114

Aqueous LCS Source: O2Si **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Acceptance Limit	M*
1203790454								
	Antimony	ug/L	50	47.1		94.3	80−120	MS
	Arsenic	ug/L	50	52.1		104	80−120	MS
	Cadmium	ug/L	50	53.4		107	80−120	MS
	Chromium	ug/L	50	51.4		103	80−120	MS
	Lead	ug/L	50	51.8		104	80−120	MS
	Molybdenum	ug/L	50	51.3		103	80−120	MS
	Nickel	ug/L	50	52.5		105	80−120	MS
	Selenium	ug/L	50	53.3		107	80−120	MS
	Silver	ug/L	50	53.3		107	80−120	MS
	Thallium	ug/L	50	49.1		98.2	80−120	MS
	Uranium	ug/L	50	43.7		87.4	80−120	MS

***Analytical Methods:**

MS **SW846 3005A/6020A**

METALS
−7−
Laboratory Control Sample Summary

SDG NO. 2017−1529

Contract: ESHL00114

Aqueous LCS Source: GEL **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Acceptance Limit	M*
1203794761								
	Mercury	ug/L	2	1.96		97.8	85−115	AV

***Analytical Methods:**

AV **EPA 245.1/245.2**

METALS
−9−
Serial Dilution Sample Summary

SDG NO. 2017−1529 **Client ID** CAMO−17−132200L

Contract: ESHL00114

Matrix: LIQUID **Level:** Low

Sample ID: 423194001 **Serial Dilution ID:** 1203790413

Analyte	Initial Value ug/L	C	Serial Value ug/L	C	% Difference	Qual	Acceptance Limit	M*
Aluminum	68	U	340	U				P
Barium	37.4		38.8		3.7			P
Beryllium	1	U	5	U				P
Boron	51		75	U	9.444			P
Calcium	60300		60400		.075		10	P
Cobalt	1	U	5	U				P
Copper	4.5	J	15	U	23.284			P
Iron	30	U	150	U				P
Magnesium	11600		11600		.627		10	P
Manganese	2	U	10	U				P
Potassium	802		581	J	27.549			P
Silica	63400		62700		1.17		10	P
Sodium	26700		26200		1.868		10	P
Strontium	265		264		.374		10	P
Tin	3.09	J	12.5	U	44.579			P
Vanadium	1	U	5	U				P
Zinc	18.4		16.5	U	38.02			P

***Analytical Methods:**

P **SW846 3005A/6010C**

METALS
−9−
Serial Dilution Sample Summary

SDG NO. 2017−1529 **Client ID** CAMO−17−132200L

Contract: ESHL00114

Matrix: LIQUID **Level:** Low

Sample ID: 423194001 **Serial Dilution ID:** 1203790457

Analyte	Initial Value ug/L	C	Serial Value ug/L	C	% Difference	Qual	Acceptance Limit	M*
Antimony	1	U	5	U				MS
Arsenic	2	U	10	U				MS
Cadmium	.3	U	1.5	U				MS
Chromium	75.1		68.4		8.925			MS
Lead	.5	U	2.5	U				MS
Molybdenum	1.98		1.95	J	1.768			MS
Nickel	21.5		21.1		2.001			MS
Selenium	2	U	10	U				MS
Silver	.3	U	1.5	U				MS
Thallium	.6	U	3	U				MS
Uranium	.81		.815	J	.617			MS

***Analytical Methods:**

MS **SW846 3005A/6020A**

METALS
−9−
Serial Dilution Sample Summary

SDG NO. 2017−1529 **Client ID** CASA−17−132339L

Contract: ESHL00114

Matrix: LIQUID **Level:** Low

Sample ID: 423220001 **Serial Dilution ID:** 1203794766

Analyte	Initial Value ug/L	C	Serial Value ug/L	C	% Difference	Qual	Acceptance Limit	M*
Mercury	.067	U	.335	U				AV

***Analytical Methods:**

AV **EPA 245.1/245.2**

General Chem Analysis

Case Narrative

General Chemistry
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2017-1529
Work Order #: 423194

Method/Analysis Information

Product:	**Carbon and Total Organic**		
Analytical Batch:	1666622	**Method:**	SW 9060 Total Organic Carbon

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW-846:9060:

Sample ID	Client ID
423194002	CAMO-17-132220
423194005	CAMO-17-132307
1203793102	Method Blank (MB)
1203793103	Laboratory Control Sample (LCS)
1203793104	423072004(CAMO-17-132228) Sample Duplicate (DUP)
1203793105	423194005(CAMO-17-132307) Sample Duplicate (DUP)
1203793106	423072004(CAMO-17-132228) Post Spike (PS)
1203793107	423194005(CAMO-17-132307) Post Spike (PS)

The samples in this SDG were analyzed on an "as received" basis.

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-GC-E-093 REV# 15.

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

Calibration Information

The Carbon analysis was performed on a O-I Analytical 1030W Carbon Analyzer.

Initial Calibration
All initial calibration requirements have been met for this SDG.

Continuing Calibration Blanks
All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

Calibration Verification Information (CCV)
All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.

Quality Control (QC) Information

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

Laboratory Control Sample Duplicate (LCSD)
An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery
The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation
Samples 423072004 (CAMO-17-132228) and 423194005 (CAMO-17-132307) were selected for QC analysis.

Matrix Spike (MS)/Post Spike (PS) Recovery Statement
The MS/PS recoveries for this sample set were within the required acceptance limits where applicable.

Duplicate Relative Percent Difference (RPD) Statement
The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times
All samples in this SDG met the specified holding time.

Sample Preservation/Integrity
All the samples from this sample group met the preservation and integrity requirements of the method.

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

Sample Re-analysis
The samples in this SDG did not require re-analysis.

Miscellaneous Information

Data Exception (DER) Documentation
Data exception reports (DERs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Additional Comments
Additional comments were not required for this SDG.

Electronic Packaging Comment

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

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. 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.

Method/Analysis Information

Product:	**Cyanide and Total**		
Analytical Batch:	1665629	**Method:**	WSP-CN(T)
Prep Batch :	1665625	**Method:**	EPA 335.4

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA 335.4 1993:

Sample ID	Client ID
423194002	CAMO-17-132220
423194005	CAMO-17-132307
1203790797	Method Blank (MB)
1203790798	Laboratory Control Sample (LCS)
1203790799	423194002(CAMO-17-132220) Sample Duplicate (DUP)
1203790803	423194002(CAMO-17-132220) Matrix Spike (MS)

The samples in this SDG were analyzed on an "as received" basis.

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-GC-E-095 REV# 19.

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

Calibration Information

The Flow Injection analysis was performed on a Lachat QuickChem FIA+ 8000 Series.

Initial Calibration
All initial calibration requirements have been met for this SDG.

Continuing Calibration Blanks
All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

Calibration Verification Information (CCV)
All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.

Y Intercept Rule
The absolute value of the intercept is less than 3 times the MDL.

Quality Control (QC) Information

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

Laboratory Control Sample Duplicate (LCSD)
An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery
The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation
Sample 423194002 (CAMO-17-132220) was selected for QC analysis.

Matrix Spike (MS)/Post Spike (PS) Recovery Statement
The percent recoveries (%R) obtained from the spike analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The matrix spike recovered outside of the established acceptance limits due to matrix interference and/or non-homogeneity.

Analyte	Sample	Value
Cyanide, Total	1203790803 (CAMO-17-132220MS)	113* (90.0%-110.0%)

Duplicate Relative Percent Difference (RPD) Statement
The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times
All samples in this SDG met the specified holding time.

Sample Preservation/Integrity
All the samples from this sample group met the preservation and integrity requirements of the method.

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

Sample Re-analysis
The samples in this SDG did not require re-analysis.

Miscellaneous Information

Data Exception (DER) Documentation
A data exception report (DER) 1633246 was generated for sample 1203790803 (CAMO-17-132220MS) in this

SDG/batch.

Additional Comments
Additional comments were not required for this SDG.

Electronic Packaging Comment
This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:
Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. 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.

Method/Analysis Information

Product:	**Ion Chromatography**		
Analytical Batch:	1668293	**Method:**	WSP-ANIONS

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA:300.0:

Sample ID	Client ID
423194001	CAMO-17-132200
423194006	CAMO-17-132308
1203797177	Method Blank (MB)
1203797178	Laboratory Control Sample (LCS)
1203797179	423194001(CAMO-17-132200) Sample Duplicate (DUP)
1203797180	423194001(CAMO-17-132200) Post Spike (PS)

The samples in this SDG were analyzed on an "as received" basis.

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-GC-E-086 REV# 25.

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

Calibration Information

The Ion Chromatography analysis was performed on a Dionex ICS-5000 Ion Chromatograph.

Initial Calibration
All initial calibration requirements have been met for this SDG.

Continuing Calibration Blanks
All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

Calibration Verification Information (CCV)
All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.

Y Intercept Rule
The absolute value of the intercept is less than 3 times the MDL.

Quality Control (QC) Information

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

Laboratory Control Sample Duplicate (LCSD)
An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery
The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation
Sample 423194001 (CAMO-17-132200) was selected for QC analysis.

Matrix Spike (MS)/Post Spike (PS) Recovery Statement
The MS/PS recoveries for this sample set were within the required acceptance limits where applicable.

Duplicate Relative Percent Difference (RPD) Statement
The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times
All samples in this SDG met the specified holding time.

Sample Dilutions
The following samples 1203797179 (CAMO-17-132200DUP), 1203797180 (CAMO-17-132200PS), 423194001 (CAMO-17-132200) and 423194006 (CAMO-17-132308) were diluted because target analyte concentrations exceeded the calibration range. Dilutions may be required for many reasons, including to minimize matrix interferences or to bring over range target analyte concentrations into the linear calibration range.

Analyte	423194	
	001	006
Chloride	10X	10X
Sulfate	10X	10X

Sample Re-analysis
The samples in this SDG did not require re-analysis.

Miscellaneous Information

Data Exception (DER) Documentation
Data exception reports (DERs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Manual Integrations
Samples 1203797179 (CAMO-17-132200DUP), 1203797180 (CAMO-17-132200PS), 423194001 (CAMO-17-132200) and 423194006 (CAMO-17-132308) were manually integrated to correctly position the baseline as set in the calibration standards.

Additional Comments
Additional comments were not required for this SDG.

Electronic Packaging Comment
This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:
Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. 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.

Method/Analysis Information

Product:	**Ammonia Nitrogen**		
Analytical Batch:	1666189	**Method:**	NH3
Prep Batch :	1666188	**Method:**	EPA 350.1 Prep

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA:350.1:

Sample ID	Client ID
423194001	CAMO-17-132200
423194006	CAMO-17-132308
1203792073	Method Blank (MB)
1203792074	Laboratory Control Sample (LCS)
1203792075	423224002(WST53-17-133059) Sample Duplicate (DUP)
1203792076	423224002(WST53-17-133059) Matrix Spike (MS)

The samples in this SDG were analyzed on an "as received" basis.

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-GC-E-106 REV# 9.

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

Calibration Information

The Nutrient analysis was performed on a Lachat QuickChem FIA+ 8000 Series.

Initial Calibration
All initial calibration requirements have been met for this SDG.

Continuing Calibration Blanks
All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

Calibration Verification Information (CCV)
All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.

Y Intercept Rule
The absolute value of the intercept is less than 3 times the MDL.

Quality Control (QC) Information

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

Laboratory Control Sample Duplicate (LCSD)
An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery
The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation
Sample 423224002 (WST53-17-133059) was selected for QC analysis.

Matrix Spike (MS)/Post Spike (PS) Recovery Statement
The percent recoveries (%R) obtained from the spike analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The matrix spike recovered outside of the established acceptance limits due to matrix interference and/or non-homogeneity.

Analyte	Sample	Value
Nitrogen, Ammonia	1203792076 (WST53-17-133059MS)	74.8* (90%-110%)

Duplicate Relative Percent Difference (RPD) Statement
The Relative Percent Difference (RPD) between the sample and duplicate falls outside of the established acceptance limits because of the heterogeneous matrix of the sample:

Analyte	Sample	Value
Nitrogen, Ammonia	1203792075 (WST53-17-133059DUP)	35.1* (0%-20%)

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times
All samples in this SDG met the specified holding time.

Sample Preservation/Integrity
All the samples from this sample group met the preservation and integrity requirements of the method.

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

Sample Re-analysis
Samples1203792073 (MB), 1203792074 (LCS), 1203792075 (WST53-17-133059DUP) and 1203792076 (WST53-17-133059MS) were re-analyzed due to CCV failure. The reanalysis data with passing instrument QC was reported.

Miscellaneous Information

Data Exception (DER) Documentation
A data exception report (DER) 1634279 was generated for samples 1203792075 (WST53-17-133059DUP) and 1203792076 (WST53-17-133059MS) in this SDG/batch.

Additional Comments
Additional comments were not required for this SDG.

Electronic Packaging Comment
This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:
Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. 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.

Method/Analysis Information

Product:	**Total Kjeldahl Nitrogen**		
Analytical Batch:	1666192	**Method:**	TKN
Prep Batch :	1666191	**Method:**	EPA 351.2 Prep

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA:351.2:

Sample ID	Client ID
423194002	CAMO-17-132220
423194005	CAMO-17-132307
1203792081	Method Blank (MB)
1203792082	Laboratory Control Sample (LCS)
1203792083	422869005(WST15-17-135039) Sample Duplicate (DUP)
1203792085	423194002(CAMO-17-132220) Sample Duplicate (DUP)
1203792084	422869005(WST15-17-135039) Matrix Spike (MS)
1203792086	423194002(CAMO-17-132220) Matrix Spike (MS)

The samples in this SDG were analyzed on an "as received" basis.

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-GC-E-104 REV# 14.

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

Calibration Information

The Nutrient analysis was performed on a Lachat QuickChem FIA+ 8000 Series.

Initial Calibration
All initial calibration requirements have been met for this SDG.

Calibration Verification Information
All associated calibration verification standard(s) (ICV or CCV) met the acceptance criteria.

Continuing Calibration Blanks
All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

Calibration Verification Information (CCV)
All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.

Y Intercept Rule
The absolute value of the intercept is less than 3 times the MDL.

Quality Control (QC) Information

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

Laboratory Control Sample Duplicate (LCSD)
An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery
The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation
Samples 422869005 (WST15-17-135039) and 423194002 (CAMO-17-132220) were selected for QC analysis.

Matrix Spike (MS)/Post Spike (PS) Recovery Statement
The percent recoveries (%R) obtained from the spike analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The matrix spike recovered outside of the established acceptance limits due to matrix interference and/or non-homogeneity.

Analyte	Sample	Value
Nitrogen, Total Kjeldahl	1203792084 (WST15-17-135039MS)	153* (90%-110%)

Duplicate Relative Percent Difference (RPD) Statement
The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times
All samples in this SDG met the specified holding time.

Sample Preservation/Integrity
All the samples from this sample group met the preservation and integrity requirements of the method.

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

Sample Re-analysis
Sample1203792082 (LCS) was re-analyzed due to instrument failure. The results from the reanalysis are reported.

Samples1203792082 (LCS), 1203792083 (WST15-17-135039DUP), 1203792084 (WST15-17-135039MS), 1203792085 (CAMO-17-132220DUP), 1203792086 (CAMO-17-132220MS), 423194002 (CAMO-17-132220) and 423194005 (CAMO-17-132307) were re-analyzed due to CCV failure. The reanalysis data with passing instrument QC was reported.

Miscellaneous Information

Data Exception (DER) Documentation
A data exception report (DER) 1635178 was generated for sample 1203792084 (WST15-17-135039MS) in this SDG/batch.

Additional Comments
Additional comments were not required for this SDG.

Electronic Packaging Comment
This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:
Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. 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.

Method/Analysis Information

Product:	**Nitrate Nitrite by Cadmium Reduction**		
Analytical Batch:	1665012	**Method:**	NO3NO2

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA:353.2:

Sample ID	Client ID
423194001	CAMO-17-132200
423194006	CAMO-17-132308
1203789300	Method Blank (MB)
1203789301	Laboratory Control Sample (LCS)
1203790704	423218003(NonSDG) Sample Duplicate (DUP)
1203790705	423220001(CASA-17-132339) Sample Duplicate (DUP)
1203790706	423218003(NonSDG) Post Spike (PS)
1203790707	423220001(CASA-17-132339) Post Spike (PS)

The samples in this SDG were analyzed on an "as received" basis.

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-GC-E-128 REV# 8.

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

Calibration Information

The Nutrient analysis was performed on a Lachat QuickChem FIA+ 8500 Series.

Initial Calibration
All initial calibration requirements have been met for this SDG.

Calibration Verification Information
All associated calibration verification standard(s) (ICV or CCV) met the acceptance criteria.

Continuing Calibration Blanks
All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

Calibration Verification Information (CCV)

All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.

Y Intercept Rule
The absolute value of the intercept is less than 3 times the MDL.

Quality Control (QC) Information

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

Laboratory Control Sample Duplicate (LCSD)
An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery
The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation
Samples 423218003 (NonSDG) and 423220001 (CASA-17-132339) were selected for QC analysis.

Matrix Spike (MS)/Post Spike (PS) Recovery Statement
The MS/PS recoveries for this sample set were within the required acceptance limits where applicable.

Duplicate Relative Percent Difference (RPD) Statement
The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times
All samples in this SDG met the specified holding time.

Sample Preservation/Integrity
All the samples from this sample group met the preservation and integrity requirements of the method.

Sample Dilutions
The following samples 423194001 (CAMO-17-132200) and 423194006 (CAMO-17-132308) were diluted because target analyte concentrations exceeded the calibration range. Dilutions may be required for many reasons, including to minimize matrix interferences or to bring over range target analyte concentrations into the linear calibration range.

Analyte	423194	
	001	006
Nitrogen, Nitrate/Nitrite	25X	25X

Sample Re-analysis
The samples in this SDG did not require re-analysis.

Miscellaneous Information

Data Exception (DER) Documentation
Data exception reports (DERs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Additional Comments
Additional comments were not required for this SDG.

Electronic Packaging Comment
This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:
Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. 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.

Method/Analysis Information

Product:	**Total Phosphorus**		
Analytical Batch:	1666184	**Method:**	PO4
Prep Batch :	1666183	**Method:**	EPA 365.4 Prep

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA 365.4 1974:

Sample ID	Client ID
423194001	CAMO-17-132200
423194006	CAMO-17-132308
1203792057	Method Blank (MB)
1203792058	Laboratory Control Sample (LCS)
1203792061	423213001(CAMO-17-132462) Sample Duplicate (DUP)
1203792062	423213001(CAMO-17-132462) Matrix Spike (MS)

The samples in this SDG were analyzed on an "as received" basis.

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-GC-E-103 REV# 10.

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

Calibration Information

The Nutrient analysis was performed on a Lachat QuickChem FIA+ 8000 Series.

Initial Calibration
All initial calibration requirements have been met for this SDG.

Continuing Calibration Blanks
All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

Calibration Verification Information (CCV)
All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.

Y Intercept Rule
The absolute value of the intercept is less than 3 times the MDL.

Quality Control (QC) Information

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

Laboratory Control Sample Duplicate (LCSD)
An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery
The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation
Sample 423213001 (CAMO-17-132462) was selected for QC analysis.

Matrix Spike (MS)/Post Spike (PS) Recovery Statement
The MS/PS recovery for this sample set was within the required acceptance limits where applicable.

Duplicate Relative Percent Difference (RPD) Statement
The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times
All samples in this SDG met the specified holding time.

Sample Preservation/Integrity
All the samples from this sample group met the preservation and integrity requirements of the method.

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

Sample Re-analysis
The samples in this SDG did not require re-analysis.

Miscellaneous Information

Data Exception (DER) Documentation
Data exception reports (DERs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Additional Comments
Additional comments were not required for this SDG.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:
Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. 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.

Method/Analysis Information

Product:	**Solids and Total Dissolved**		
Analytical Batch:	1665585	**Method:**	TDS

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA:160.1:

Sample ID	Client ID
423194001	CAMO-17-132200
423194006	CAMO-17-132308
1203790691	Method Blank (MB)
1203790692	Laboratory Control Sample (LCS)
1203790693	423224002(WST53-17-133059) Sample Duplicate (DUP)

The samples in this SDG were analyzed on an "as received" basis.

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-GC-E-001 REV# 15.

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

Calibration Information

The Solids analysis was performed on a Sartorius Balance BAL216. Solids lab

Initial Calibration
All initial calibration requirements have been met for this SDG.

Quality Control (QC) Information

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

Laboratory Control Sample Duplicate (LCSD)
An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery
The LCS spike recovery met the acceptance limits.

Consecutive Weight Checks
All consecutive weight checks were met.

Quality Control (QC) Designation
Sample 423224002 (WST53-17-133059) was selected for QC analysis.

Duplicate Relative Percent Difference (RPD) Statement
The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times
All samples in this SDG met the specified holding time.

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

Sample Re-analysis
The samples in this SDG did not require re-analysis.

Miscellaneous Information

Data Exception (DER) Documentation
Data exception reports (DERs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Additional Comments
Additional comments were not required for this SDG.

Electronic Packaging Comment
This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:
Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. 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.

Method/Analysis Information

Product:	**Specific Conductivity**		
Analytical Batch:	1668500	**Method:**	EPA120.1 Specific Conductivity

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA:120.1:

Sample ID	Client ID
423194001	CAMO-17-132200
423194006	CAMO-17-132308
1203797704	Laboratory Control Sample (LCS)
1203797705	422853001(CAMO-17-132206) Sample Duplicate (DUP)
1203797706	423194001(CAMO-17-132200) Sample Duplicate (DUP)

The samples in this SDG were analyzed on an "as received" basis.

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-GC-E-009 REV# 14.

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

Calibration Information

The Titration and Ion analysis was performed on a Orion 160 Conductivity Meter.

Initial Calibration
All initial calibration requirements have been met for this SDG.

Initial Standardization
The titrant was properly standardized

Quality Control (QC) Information

Laboratory Control Sample Duplicate (LCSD)
An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery
The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation
Samples 422853001 (CAMO-17-132206) and 423194001 (CAMO-17-132200) were selected for QC analysis.

Duplicate Relative Percent Difference (RPD) Statement
The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times
All samples in this SDG met the specified holding time.

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

Sample Re-analysis
The samples in this SDG did not require re-analysis.

Miscellaneous Information

Data Exception (DER) Documentation
Data exception reports (DERs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Additional Comments
Additional comments were not required for this SDG.

Electronic Packaging Comment
This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:
Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. 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.

Method/Analysis Information

Product: **pH**

Analytical Batch: 1666995 **Method:** PH

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA 150.1 1982:

Sample ID	Client ID
423194001	CAMO-17-132200
423194006	CAMO-17-132308
1203794026	Laboratory Control Sample (LCS)
1203794028	423224002(WST53-17-133059) Sample Duplicate (DUP)

The samples in this SDG were analyzed on an "as received" basis.

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-GC-E-008 REV# 22.

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

Calibration Information

The Titration and Ion analysis was performed on a Thermo Orion Star A111. Immediates

Initial Calibration
All initial calibration requirements have been met for this SDG.

Initial Standardization
The titrant was properly standardized

Quality Control (QC) Information

Laboratory Control Sample Duplicate (LCSD)
An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery
The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

Sample 423224002 (WST53-17-133059) was selected for QC analysis.

Duplicate Relative Percent Difference (RPD) Statement
The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times
Samples (See Below) were received by the laboratory outside of the method specified holding time. The data is qualified.

Sample	Analyte	Value
1203794028 (WST53-17-133059DUP)	pH	Received 16-MAY-17, out of holding 11-MAY-17
423194001 (CAMO-17-132200)	pH	Received 16-MAY-17, out of holding 11-MAY-17
423194006 (CAMO-17-132308)	pH	Received 16-MAY-17, out of holding 11-MAY-17

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

Sample Re-analysis
The samples in this SDG did not require re-analysis.

Miscellaneous Information

Data Exception (DER) Documentation
A data exception report (DER) 1636062 was generated for samples 423194001 (CAMO-17-132200), 423194006 (CAMO-17-132308) and 1203794028 (WST53-17-133059DUP) in this SDG/batch.

Additional Comments
Additional comments were not required for this SDG.

Electronic Packaging Comment
This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:
Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. 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.

Method/Analysis Information

Product:	**Alkalinity**		
Analytical Batch:	1666990	**Method:**	EPA 310.1 Total Alkalinity

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA:310.1:

Sample ID	Client ID
423194001	CAMO-17-132200
423194006	CAMO-17-132308
1203794017	Laboratory Control Sample (LCS)
1203794019	423224002(WST53-17-133059) Sample Duplicate (DUP)
1203794021	423224002(WST53-17-133059) Matrix Spike (MS)

The samples in this SDG were analyzed on an "as received" basis.

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-GC-E-033 REV# 13.

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

Calibration Information

The Titration and Ion analysis was performed on a Electronic bottle-top buret.

Initial Calibration
All initial calibration requirements have been met for this SDG.

Initial Standardization
The titrant was properly standardized

Quality Control (QC) Information

Laboratory Control Sample Duplicate (LCSD)
An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery
The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation
Sample 423224002 (WST53-17-133059) was selected for QC analysis.

Matrix Spike (MS)/Post Spike (PS) Recovery Statement
The MS/PS recovery for this sample set was within the required acceptance limits where applicable.

Duplicate Relative Percent Difference (RPD) Statement
The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times
All samples in this SDG met the specified holding time.

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

Sample Re-analysis
The samples in this SDG did not require re-analysis.

Miscellaneous Information

Data Exception (DER) Documentation
Data exception reports (DERs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Additional Comments
Additional comments were not required for this SDG.

Electronic Packaging Comment
This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:
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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: 2017-1529 GEL Work Order: 423194

The Qualifiers in this report are defined as follows:

* A quality control analyte recovery is outside of specified acceptance criteria
H Analytical holding time was exceeded
J Value is estimated
U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

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: Kristen Mizzell **Name: Kristen Mizzell**

Date: 05 JUN 2017 **Title: Analyst I**

Sample Data Summary

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

Certificate of Analysis

Report Date: June 5, 2017

Company : Los Alamos National Laboratory
Address : TA-03, SM271, Drop Pt. 02U, Rm111

Los Alamos, New Mexico 87545
Contact: Mr. Keith Greene
Project: LANL- WQH Water Samples

Client SDG: 2017-1529

Client Sample ID: CAMO-17-132200
Sample ID: 423194001
Matrix: W
Collect Date: 11-MAY-17 15:44
Receive Date: 16-MAY-17
Collector: Client

Project: ESHL00114
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
WSP-ANIONS "As Received"												
Bromide		0.570	0.067	0.200	mg/L		1	MXL2	05/25/17	2220	1668293	1
Fluoride		0.569	0.033	0.100	mg/L		1					
Chloride		60.1	0.670	2.00	mg/L		10	MXL2	05/26/17	0505	1668293	2
Sulfate		60.0	1.33	4.00	mg/L		10					
Nutrient Analysis												
NH3 "As Received"												
Nitrogen, Ammonia		0.111	0.017	0.050	mg/L	1.00	1	KLP1	05/22/17	1218	1666189	3
NO3NO2 "As Received"												
Nitrogen, Nitrate/Nitrite		9.53	0.425	1.25	mg/L		25	AXH3	05/17/17	1012	1665012	4
PO4 "As Received"												
Phosphorus, Total as P	J	0.0273	0.020	0.050	mg/L	1.00	1	KLP1	05/23/17	1414	1666184	5
Solids Analysis												
TDS "As Received"												
Total Dissolved Solids		386	3.40	14.3	mg/L			KLP1	05/18/17	1311	1665585	6
Titration and Ion Analysis												
EPA 310.1 Total Alkalinity "As Received"												
Alkalinity, Total as CaCO3		22.8	1.45	4.00	mg/L			RXB5	05/25/17	1756	1666990	7
Carbonate alkalinity (CaCO3)	U	ND	1.45	4.00	mg/L							
EPA120.1 Specific Conductivity "As Received"												
Conductivity		511	1.00	1.00	umhos/cm		1	VH1	05/30/17	1525	1668500	8
PH "As Received"												
pH at Temp 16.6C	H	7.50	0.010	0.100	SU		1	RXB5	05/25/17	1753	1666995	9

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.1 Prep	EPA 350.1 Ammonia Nitrogen Prep	AXH3	05/22/17	1105	1666188
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	KLP1	05/23/17	1200	1666183

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

Certificate of Analysis

Report Date: June 5, 2017

Company : Los Alamos National Laboratory
Address : TA-03, SM271, Drop Pt. 02U, Rm111

Los Alamos, New Mexico 87545
Contact: Mr. Keith Greene
Project: LANL- WQH Water Samples

Client SDG: 2017-1529

Client Sample ID: CAMO-17-132200
Sample ID: 423194001

Project: ESHL00114
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA:300.0	
2	EPA:300.0	
3	EPA:350.1	
4	EPA:353.2	
5	EPA 365.4 1974	
6	EPA:160.1	
7	EPA:310.1	
8	EPA:120.1	
9	EPA 150.1 1982	

Notes:

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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

Certificate of Analysis

Report Date: June 5, 2017

Company : Los Alamos National Laboratory
Address : TA-03, SM271, Drop Pt. 02U, Rm111

Los Alamos, New Mexico 87545
Contact: Mr. Keith Greene
Project: LANL- WQH Water Samples

Client SDG: 2017-1529

Client Sample ID: CAMO-17-132220
Sample ID: 423194002
Matrix: W
Collect Date: 11-MAY-17 15:44
Receive Date: 16-MAY-17
Collector: Client

Project: ESHL00114
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
SW 9060 Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	0.984	0.330	1.00	mg/L		1	TSM	05/21/17	0835	1666622	1
Flow Injection Analysis												
WSP-CN(T) "As Received"												
Cyanide, Total	J	3.03	1.67	5.00	ug/L	1.00	1	AXH3	05/18/17	0911	1665629	2
Nutrient Analysis												
TKN "As Received"												
Nitrogen, Total Kjeldahl		0.214	0.033	0.100	mg/L	1.00	1	KLP1	05/24/17	1106	1666192	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 335.4	EPA 335.4 Total Cyanide	AXH3	05/18/17	0732	1665625
EPA 351.2 Prep	EPA 351.2 Total Kjeldahl Nitrogen Prep	KLP1	05/23/17	1700	1666191

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW-846:9060	
2	EPA 335.4 1993	
3	EPA:351.2	

Notes:

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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

Certificate of Analysis

Report Date: June 5, 2017

Company : Los Alamos National Laboratory
Address : TA-03, SM271, Drop Pt. 02U, Rm111

Los Alamos, New Mexico 87545
Contact: Mr. Keith Greene
Project: LANL- WQH Water Samples

Client SDG: 2017-1529

Client Sample ID: CAMO-17-132307
Sample ID: 423194005
Matrix: W
Collect Date: 11-MAY-17 15:44
Receive Date: 16-MAY-17
Collector: Client

Project: ESHL00114
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
SW 9060 Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	0.962	0.330	1.00	mg/L		1	TSM	05/21/17	0946	1666622	1
Flow Injection Analysis												
WSP-CN(T) "As Received"												
Cyanide, Total	J	3.17	1.67	5.00	ug/L	1.00	1	AXH3	05/18/17	0914	1665629	2
Nutrient Analysis												
TKN "As Received"												
Nitrogen, Total Kjeldahl		0.177	0.033	0.100	mg/L	1.00	1	KLP1	05/24/17	1108	1666192	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 335.4	EPA 335.4 Total Cyanide	AXH3	05/18/17	0732	1665625
EPA 351.2 Prep	EPA 351.2 Total Kjeldahl Nitrogen Prep	KLP1	05/23/17	1700	1666191

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW-846:9060	
2	EPA 335.4 1993	
3	EPA:351.2	

Notes:

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: June 5, 2017

Company : Los Alamos National Laboratory
Address : TA-03, SM271, Drop Pt. 02U, Rm111

Los Alamos, New Mexico 87545
Contact: Mr. Keith Greene
Project: LANL- WQH Water Samples

Client SDG: 2017-1529

Client Sample ID: CAMO-17-132308
Sample ID: 423194006
Matrix: W
Collect Date: 11-MAY-17 15:44
Receive Date: 16-MAY-17
Collector: Client

Project: ESHL00114
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
WSP-ANIONS "As Received"												
Bromide		0.584	0.067	0.200	mg/L		1	MXL2	05/25/17	2347	1668293	1
Fluoride		0.566	0.033	0.100	mg/L		1					
Chloride		59.4	0.670	2.00	mg/L		10	MXL2	05/26/17	0632	1668293	2
Sulfate		59.2	1.33	4.00	mg/L		10					
Nutrient Analysis												
NH3 "As Received"												
Nitrogen, Ammonia		0.0873	0.017	0.050	mg/L	1.00	1	KLP1	05/22/17	1219	1666189	3
NO3NO2 "As Received"												
Nitrogen, Nitrate/Nitrite		9.58	0.425	1.25	mg/L		25	AXH3	05/17/17	1013	1665012	4
PO4 "As Received"												
Phosphorus, Total as P	J	0.0395	0.020	0.050	mg/L	1.00	1	KLP1	05/23/17	1415	1666184	5
Solids Analysis												
TDS "As Received"												
Total Dissolved Solids		413	3.40	14.3	mg/L			KLP1	05/18/17	1311	1665585	6
Titration and Ion Analysis												
EPA 310.1 Total Alkalinity "As Received"												
Alkalinity, Total as CaCO3		20.4	1.45	4.00	mg/L			RXB5	05/25/17	1800	1666990	7
Carbonate alkalinity (CaCO3)	U	ND	1.45	4.00	mg/L							
EPA120.1 Specific Conductivity "As Received"												
Conductivity		521	1.00	1.00	umhos/cm		1	VH1	05/30/17	1526	1668500	8
PH "As Received"												
pH at Temp 16.6C	H	7.47	0.010	0.100	SU		1	RXB5	05/25/17	1758	1666995	9

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.1 Prep	EPA 350.1 Ammonia Nitrogen Prep	AXH3	05/22/17	1105	1666188
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	KLP1	05/23/17	1200	1666183

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Certificate of Analysis

Report Date: June 5, 2017

Company : Los Alamos National Laboratory
Address : TA-03, SM271, Drop Pt. 02U, Rm111

Los Alamos, New Mexico 87545
Contact: Mr. Keith Greene
Project: LANL- WQH Water Samples

Client SDG: 2017-1529

Client Sample ID: CAMO-17-132308
Sample ID: 423194006

Project: ESHL00114
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA:300.0	
2	EPA:300.0	
3	EPA:350.1	
4	EPA:353.2	
5	EPA 365.4 1974	
6	EPA:160.1	
7	EPA:310.1	
8	EPA:120.1	
9	EPA 150.1 1982	

Notes:

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

Quality Control Summary

QC Summary

Report Date: June 5, 2017

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

Contact: **Mr. Keith Greene**

Workorder: **423194**

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Carbon Analysis											
Batch 1666622											
QC1203793104 423072004 DUP											
Total Organic Carbon Average		J	0.792	J	0.784	mg/L	1.02 ^		(+/-1.00)	TSM	05/21/17 07:01
QC1203793105 423194005 DUP											
Total Organic Carbon Average		J	0.962	J	0.942	mg/L	2.1 ^		(+/-1.00)		05/21/17 10:33
QC1203793103 LCS											
Total Organic Carbon Average	10.0				9.91	mg/L		99.1	(80%-120%)		05/21/17 05:15
QC1203793102 MB											
Total Organic Carbon Average				U	ND	mg/L					05/21/17 05:04
QC1203793106 423072004 PS											
Total Organic Carbon Average	10.0	J	0.792		11.4	mg/L		106	(75%-125%)		05/21/17 07:48
QC1203793107 423194005 PS											
Total Organic Carbon Average	10.0	J	0.962		11.7	mg/L		107	(75%-125%)		05/21/17 11:20
Flow Injection Analysis											
Batch 1665629											
QC1203790799 423194002 DUP											
Cyanide, Total		J	3.03	J	2.70	ug/L	11.5 ^		(+/-5.00)	AXH3	05/18/17 09:12
QC1203790798 LCS											
Cyanide, Total	50.0				53.0	ug/L		106	(90%-110%)		05/18/17 09:07
QC1203790797 MB											
Cyanide, Total				U	ND	ug/L					05/18/17 09:05
QC1203790803 423194002 MS											
Cyanide, Total	100	J	3.03		116	ug/L		113*	(90%-110%)		05/18/17 09:13

QC Summary

Workorder: **423194**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Ion Chromatography										
Batch 1668293										
QC1203797179 423194001 DUP										
Bromide		0.570		0.590	mg/L	3.34 ^		(+/-0.200)	MXL2	05/25/17 22:49
Chloride		60.1		60.2	mg/L	0.0283		(0%-20%)		05/26/17 05:34
Fluoride		0.569		0.567	mg/L	0.388		(0%-20%)		05/25/17 22:49
Sulfate		60.0		60.1	mg/L	0.0749		(0%-20%)		05/26/17 05:34
QC1203797178 LCS										
Bromide	1.25			1.36	mg/L		109	(80%-120%)		05/25/17 21:51
Chloride	5.00			5.20	mg/L		104	(80%-120%)		
Fluoride	2.50			2.67	mg/L		107	(80%-120%)		
Sulfate	10.0			10.5	mg/L		105	(80%-120%)		
QC1203797177 MB										
Bromide			U	ND	mg/L					05/25/17 21:22
Chloride			U	ND	mg/L					
Fluoride			U	ND	mg/L					
Sulfate			U	ND	mg/L					
QC1203797180 423194001 PS										
Bromide	1.25	0.570		1.93	mg/L		109	(75%-125%)		05/25/17 23:18
Chloride	5.00	6.01		11.9	mg/L		117	(75%-125%)		05/26/17 06:03

QC Summary

Workorder: **423194**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Ion Chromatography										
Batch 1668293										
Fluoride	2.50	0.569		3.20	mg/L		105	(75%-125%)	MXL2	05/25/17 23:18
Sulfate	10.0	6.00		16.8	mg/L		108	(75%-125%)		05/26/17 06:03
Nutrient Analysis										
Batch 1665012										
QC1203790704 423218003 DUP										
Nitrogen, Nitrate/Nitrite		0.733		0.736	mg/L	0.408		(0%-20%)	AXH3	05/17/17 10:23
QC1203790705 423220001 DUP										
Nitrogen, Nitrate/Nitrite		1.19		1.19	mg/L	0		(0%-20%)		05/17/17 10:27
QC1203789301 LCS										
Nitrogen, Nitrate/Nitrite	1.00			0.986	mg/L		98.6	(90%-110%)		05/17/17 09:51
QC1203789300 MB										
Nitrogen, Nitrate/Nitrite			U	ND	mg/L					05/17/17 09:50
QC1203790706 423218003 PS										
Nitrogen, Nitrate/Nitrite	1.00	0.733		1.68	mg/L		94.7	(90%-110%)		05/17/17 10:25
QC1203790707 423220001 PS										
Nitrogen, Nitrate/Nitrite	1.00	1.19		2.14	mg/L		95	(90%-110%)		05/17/17 10:28
Batch 1666184										
QC1203792061 423213001 DUP										
Phosphorus, Total as P		0.212		0.196	mg/L	7.84 ^		(+/-0.050)	KLP1	05/23/17 14:17
QC1203792058 LCS										
Phosphorus, Total as P	1.00			1.03	mg/L		103	(80%-124%)		05/23/17 14:12
QC1203792057 MB										
Phosphorus, Total as P			U	ND	mg/L					05/23/17 14:11

QC Summary

Workorder: **423194**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Nutrient Analysis										
Batch 1666184										
QC1203792062 423213001 MS										
Phosphorus, Total as P	1.00	0.212		1.27	mg/L		106	(63%-139%)	KLP1	05/23/17 14:17
Batch 1666189										
QC1203792075 423224002 DUP										
Nitrogen, Ammonia		0.912		0.640	mg/L	35.1*		(0%-20%)	KLP1	05/22/17 12:51
QC1203792074 LCS										
Nitrogen, Ammonia	1.00			1.02	mg/L		102	(90%-110%)		05/22/17 12:15
QC1203792073 MB										
Nitrogen, Ammonia			J	0.0307	mg/L					05/22/17 12:14
QC1203792076 423224002 MS										
Nitrogen, Ammonia	1.00	0.912		1.66	mg/L		74.8*	(90%-110%)		05/22/17 12:51
Batch 1666192										
QC1203792083 422869005 DUP										
Nitrogen, Total Kjeldahl		0.589		0.605	mg/L	2.68		(0%-20%)	KLP1	05/24/17 11:04
QC1203792085 423194002 DUP										
Nitrogen, Total Kjeldahl		0.214		0.180	mg/L	17.3 ^		(+/-0.100)		05/24/17 11:07
QC1203792082 LCS										
Nitrogen, Total Kjeldahl	1.00			1.08	mg/L		108	(90%-110%)		05/24/17 11:03
QC1203792081 MB										
Nitrogen, Total Kjeldahl			U	ND	mg/L					05/24/17 10:38
QC1203792084 422869005 MS										
Nitrogen, Total Kjeldahl	1.00	0.589		2.12	mg/L		153*	(90%-110%)		05/24/17 11:05
QC1203792086 423194002 MS										
Nitrogen, Total Kjeldahl	1.00	0.214		1.15	mg/L		93.6	(90%-110%)		05/24/17 11:08

QC Summary

Workorder: **423194**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Solids Analysis										
Batch 1665585										
QC1203790693 423224002 DUP										
Total Dissolved Solids		1920		1930	mg/L	0.742		(0%-5%)	KLP1	05/18/17 13:11
QC1203790692 LCS										
Total Dissolved Solids	300			304	mg/L		101	(95%-105%)		05/18/17 13:11
QC1203790691 MB										
Total Dissolved Solids			U	ND	mg/L					05/18/17 13:11
Titration and Ion Analysis										
Batch 1666990										
QC1203794019 423224002 DUP										
Alkalinity, Total as CaCO3		1030		1030	mg/L	0.291		(0%-20%)	RXB5	05/25/17 18:43
Carbonate alkalinity (CaCO3)		144		140	mg/L	2.82		(0%-20%)		
QC1203794017 LCS										
Alkalinity, Total as CaCO3	100			105	mg/L		105	(90%-110%)		05/25/17 16:19
QC1203794021 423224002 MS										
Alkalinity, Total as CaCO3	100	1030		1120	mg/L		N/A	(80%-120%)		05/25/17 18:58
Batch 1666995										
QC1203794028 423224002 DUP										
pH	H	9.00	H	8.93	SU	0.781		(0%-5%)	RXB5	05/25/17 18:49
QC1203794026 LCS										
pH	7.00			7.00	SU		100	(99%-101%)		05/25/17 17:38
Batch 1668500										
QC1203797705 422853001 DUP										
Conductivity		131		133	umhos/cm	1.52		(0%-10%)	VH1	05/30/17 15:23

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QC Summary

Workorder: **423194**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Titration and Ion Analysis											
Batch 1668500											
QC1203797706 423194001 DUP											
Conductivity		511		512	umhos/cm	0.196		(0%-10%)	VH1	05/30/17	15:26
QC1203797704 LCS											
Conductivity	1410			1400	umhos/cm		99.2	(95%-105%)		05/30/17	15:09

Notes:

<	Result is less than value reported
>	Result is greater than value reported
B	The target analyte was detected in the associated blank.
E	General Chemistry--Concentration of the target analyte exceeds the instrument calibration range
H	Analytical holding time was exceeded
J	Value is estimated
N/A	RPD or %Recovery limits do not apply.
N1	See case narrative
ND	Analyte concentration is not detected above the detection limit
NJ	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Q	One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
R	Per section 9.3.4.1 of Method 1664 Revision B, due to matrix spike recovery issues, this result may not be reported or used for regulatory compliance purposes.
R	Sample results are rejected
U	Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Z	Paint Filter Test--Particulates passed through the filter, however no free liquids were observed.
^	RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
d	5-day BOD--The 2:1 depletion requirement was not met for this sample
e	5-day BOD--Test replicates show more than 30% difference between high and low values. The data is qualified per the method and can be used for reporting purposes
h	Preparation or preservation holding time was exceeded

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Miscellaneous

DATA EXCEPTION REPORT

Mo.Day Yr.	**Division:**	**Quality Criteria:**	**Type:**
18-MAY-17	Industrial	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
LACHAT Flow Injection Analyzer	EPA 335.4, EPA 335.4 SC, SW846 9012B	Liquid	BRKL, CPRC, ESHL, PALP,
Batch ID:	**Sample Numbers:**		
1665629	See Below		

Potentially affected work order(s)(SDG): 423185,423194(2017-1529),423207,423208,423210,423213(2017-1526),423220(2017-1522)

Application Issues:

Failed Recovery for MS/MSD, or PS/PSD

Specification and Requirements Exception Description:	**DER Disposition:**
1. Failed Recovery for MS/MSD, or PS/PSD: QC 1203790803MS,1203790804MS, 1203790805MS, 1203790806MS, 1203791627MS	1. The matrix spike recovered outside of the established acceptance limits due to matrix interference and/or non-homogeneity. Cyanide, Total 1203790803 (CAMO-17-132220MS) [113* (90.0%-110.0%)], 1203790804 (38768-002MS) [116* (90.0%-110.0%)], 1203790805 (17-WS-05-150MS) [116* (90.0%-110.0%)] and 1203790806 (EMWSW5808MS) [112* (90.0%-110.0%)]. The spike recovery falls outside of the GEL acceptance limits but within the client specified limits. Cyanide, Total 1203791627 (B39BK6MS) [114* (90.0%-110.0%)].

Originator's Name:

Aubrey Kingsbury 18-MAY-17

Data Validator/Group Leader:

Kristen Mizzell 18-MAY-17

DATA EXCEPTION REPORT

Mo.Day Yr.	**Division:**	**Quality Criteria:**	**Type:**
22-MAY-17	Industrial	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
LACHAT Flow Injection Analyzer	EPA 350.1	Liquid	ESHL, WASP
Batch ID:	**Sample Numbers:**		
1666189	See Below		

Potentially affected work order(s)(SDG): 423185,423194(2017-1529),423213(2017-1526),423215(2017-1525),423220(2017-1522),423224(2017-1524),423313,423330(2017-1533),423339(2017-1534),423575(2017-1552)

Application Issues:

Failed Recovery for MS/MSD, or PS/PSD

Failed RPD for DUP

Specification and Requirements Exception Description:	**DER Disposition:**
1. Failed RPD for DUP: QC 1203792075DUP,1203792079DUP 2. Failed Recovery for MS/MSD, or PS/PSD: QC 1203792076MS, 1203792078MS	1. The Relative Percent Difference (RPD) between the sample and duplicate falls outside of the established acceptance limits because of the heterogeneous matrix of the sample: Nitrogen, Ammonia 1203792075 (WST53-17-133059DUP) [35.1* (0%-20%)] and 1203792079 (17-WS-05-151DUP) [abs(.139 - .076)* (+/-.05 mg/L)]. 2. The matrix spike recovered outside of the established acceptance limits due to matrix interference and/or non-homogeneity. Nitrogen, Ammonia 1203792076 (WST53-17-133059MS) [74.8* (90%-110%)] and 1203792078 (17-WS-05-150MS) [75.7* (90%-110%)].

Originator's Name:

Kristen Mizzell 22-MAY-17

Data Validator/Group Leader:

Aubrey Kingsbury 22-MAY-17

DATA EXCEPTION REPORT

Mo.Day Yr.	**Division:**	**Quality Criteria:**	**Type:**
24-MAY-17	Industrial	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
LACHAT Flow Injection Analyzer	EPA 351.2, EPA 351.2 SC	Liquid	ESHL
Batch ID:	**Sample Numbers:**		
1666192	See Below		

Potentially affected work order(s)(SDG): 422869(2017-1504),423194(2017-1529),423213(2017-1526),423215(2017-1525),423220(2017-1522),423224(2017-1524),423330(2017-1533),423339(2017-1534)

Application Issues:

Failed Recovery for MS/MSD, or PS/PSD

Specification and Requirements Exception Description:	**DER Disposition:**
1. Failed Recovery for MS/MSD, or PS/PSD: QC 1203792084MS	1. The matrix spike recovered outside of the established acceptance limits due to matrix interference and/or non-homogeneity. Nitrogen, Total Kjeldahl 1203792084 (WST15-17-135039MS) [153* (90%-110%)].

Originator's Name:

Kristen Mizzell 24-MAY-17

Data Validator/Group Leader:

Aubrey Kingsbury 24-MAY-17

DATA EXCEPTION REPORT

Mo.Day Yr.	**Division:**	**Quality Criteria:**	**Type:**
26-MAY-17	Industrial	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
ELECTRODE	EPA 150.1, SW846 9040C	Liquid	BVPS, ESHL
Batch ID:	**Sample Numbers:**		
1666995	See Below		

Potentially affected work order(s)(SDG): 422310(2017-1471),423194(2017-1529),423213(2017-1526),423220(2017-1522),423224(2017-1524),423289

Application Issues:

Sample received out of holding

Specification and Requirements Exception Description:	**DER Disposition:**
1. Sample received out of holding: 422310 001,003 423194 001,006 423213 001 423220 001,006,007,009 423224 001,002 423289 001,002,003,004,005,006,007 QC 1203794028DUP,1203797889DUP	1. Samples (See Below) were received by the laboratory outside of the method specified holding time. The data is qualified. 1203794028 (WST53-17-133059DUP) [Received 16-MAY-17, out of holding 11-MAY-17]. 1203797889 (FRACK TANK #J 500mlDUP) [Received 16-MAY-17, out of holding 12-MAY-17]. 422310001 (CASA-17-132320) [Received 04-MAY-17, out of holding 02-MAY-17]. 422310003 (CASA-17-132321) [Received 04-MAY-17, out of holding 02-MAY-17]. 423194001 (CAMO-17-132200) [Received 16-MAY-17, out of holding 11-MAY-17]. 423194006 (CAMO-17-132308) [Received 16-MAY-17, out of holding 11-MAY-17]. 423213001 (CAMO-17-132462) [Received 16-MAY-17, out of holding 11-MAY-17]. 423220001 (CASA-17-132339) [Received 16-MAY-17, out of holding 12-MAY-17]. 423220006 (CASA-17-132346) [Received 16-MAY-17, out of holding 12-MAY-17]. 423220007 (CASA-17-133063) [Received 16-MAY-17, out of holding 12-MAY-17]. 423220009 (CAMO-17-132463) [Received 16-MAY-17, out of holding 12-MAY-17]. 423224001 (WST53-17-133056) [Received 16-MAY-17, out of holding 11-MAY-17]. 423224002 (WST53-17-133059) [Received 16-MAY-17, out of holding 11-MAY-17]. 423289001 (FRACK TANK #A 500ml) [Received 16-MAY-17, out of holding 12-MAY-17]. 423289002 (FRACK TANK #B 500ml) [Received 16-MAY-17, out of holding 12-MAY-17]. 423289003 (FRACK TANK #C 500ml) [Received 16-MAY-17, out of holding 12-MAY-17]. 423289004 (FRACK TANK #D 500ml IN 1 LITER CONTAINER) [Received 16-MAY-17, out of holding 12-MAY-17]. 423289005 (FRACK TANK #E 500ml) [Received 16-MAY-17, out of holding 12-MAY-17]. 423289006 (FRACK TANK #F 500ml) [Received 16-MAY-17, out of holding 12-MAY-17]. 423289007 (FRACK TANK #J 500ml) [Received 16-MAY-17, out of holding 12-MAY-17].

Originator's Name:

Rachael Bell 26-MAY-17

Data Validator/Group Leader:

Elzbieta Szulc 26-MAY-17

Originator's Name:
Rachael Bell 26-MAY-17

Data Validator/Group Leader:
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