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 #: 2017-1505

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-17-132199	May 9 2017	10:52	W				1		1	1	
CAMO-17-132219	May 9 2017	10:52	W	1	2	2		1			1
CAMO-17-132299	May 9 2017	10:52	W		2						
CAMO-17-132304	May 9 2017	10:52	W		2	2					

Special Instructions:

Relinquished by:	Print Name: Melissa Montoya	Date/Time: 5/10/17 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-17-132199 **WORK ORDER:**

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYY):	5/9/17	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1052		MEDIA:	UA	
PRS ID:	OK		SAMPLE TECH CODE:	RSP	
LOCATION ID:	MCOI-5		FIELD PREP:	F	
LOCATION TYPE:	Mon		FIELD QC TYPE:	REG	
TOP DEPTH:	OK		SAMPLE USAGE:	INV	
BOTTOM DEPTH:	↓		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-GENINORG+PerChlorate	1 LITER POLY	1	ICE	↓	↓
↓	WSP-NH3+NO3/NO2	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS: AS 5/9/17

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

COLLECTED BY (PRINT): T. Walker

RELINQUISHED BY (Printed Name) Tom Walker **(Signature)**	**Date/Time** 5/9/17 1230	**RECEIVED BY (Printed Name)** S Sherwood **(Signature)** S Sherwood	**Date/Time** 5/9/17 1230
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**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-17-132219

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYY):	5/9/17	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1052		MEDIA:	UA	
PRS ID:	OK		SAMPLE TECH CODE:	RSP	
LOCATION ID:	MCOI-5		FIELD PREP:	UF	
LOCATION TYPE:	Mon		FIELD QC TYPE:	REG	
TOP DEPTH:	OK		SAMPLE USAGE:	INV	
BOTTOM DEPTH:	↓		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: None

LOCATION COMMENTS: None

FIELD PARAMETERS:

Sample Time	1052	HH:MM	Dissolved Oxygen	6.74	Flow (in gpm)	0.31
Oxidation-Reduction Potential	237.2		pH	8.56	Specific Conductance	288.9
Temperature	13.3		Turbidity	2.70		

COLLECTED BY (PRINT): T. Walker

RELINQUISHED BY (Printed Name)	Tom Walker	Date/Time	5/9/17 1230	RECEIVED BY (Printed Name)	S Sherwood	Date/Time	5/9/17 1230
(Signature)				(Signature)			
RELINQUISHED BY (Printed Name) (Signature)		Date/Time		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-17-132299

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYY):	5/9/17	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1052		MEDIA:	UA	
PRS ID:	OK		SAMPLE TECH CODE:	DC	
LOCATION ID:	MCOI-5		FIELD PREP:	UF	
LOCATION TYPE:	Mon		FIELD QC TYPE:	FTB	
TOP DEPTH:	OK		SAMPLE USAGE:	QC	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / (NA)

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

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS: AS 5/9/17

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

COLLECTED BY (PRINT): T. Walker

RELINQUISHED BY (Printed Name) Tom Walker (Signature)	Date/Time 5/9/17 1230	RECEIVED BY (Printed Name) S. Sherwood (Signature)	Date/Time 5/9/17 12:30
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	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-17-132304 **WORK ORDER:**

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYY):	5/9/17	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1052		MEDIA:	UA	
PRS ID:	OK		SAMPLE TECH CODE:	DC	
LOCATION ID:	MCOI-5		FIELD PREP:	UF	
LOCATION TYPE:	Mon		FIELD QC TYPE:	FB	
TOP DEPTH:	OK		SAMPLE USAGE:	QC	
BOTTOM DEPTH:	↓		EXCAVATED:		YES / NO / (NA)

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

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS: AS 5/9/17

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

COLLECTED BY (PRINT): T. Walker

RELINQUISHED BY (Printed Name) Tom Walker (Signature)	Date/Time 5/9/17 1230	RECEIVED BY (Printed Name) S. Sherwood (Signature) Sherwood	Date/Time 5/9/17 12:30
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

DATA VALIDATION REPORT

Chain Of Custody No. 2017-1505

1. Distribution Of Samples In EDD.

SDG	Analytical Method	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks
422859	EPA:120.1	1				
422859	EPA:150.1	1				
422859	EPA:160.1	1				
422859	EPA:170.0	2		1	1	
422859	EPA:245.2	2				
422859	EPA:300.0	1				
422859	EPA:310.1	1				
422859	EPA:335.4	1				
422859	EPA:350.1	1				
422859	EPA:351.2	1				
422859	EPA:353.2	1				
422859	EPA:365.4	1				
422859	SM:A2340B	1				
422859	SW-846:6010C	1				
422859	SW-846:6020	1				
422859	SW-846:6850	1				
422859	SW-846:8260B	1		1	1	
422859	SW-846:8270D	1			1	
422859	SW-846:9060	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
422859	EPA:120.1	1668500	1668500	1										1				2			
422859	EPA:150.1	1666469	1666469	1										1				1			
422859	EPA:160.1	1664164	1664164	1					1					1				1			
422859	EPA:170.0	NA	NA	2		1	1														
422859	EPA:245.2	1664642	1664639	2					1	1				1				1			

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
422859	EPA:300.0	1664539	1664539	1					1					1				1			
422859	EPA:310.1	1666465	1666465	1						1				1				1			
422859	EPA:335.4	1663908	1663907	1					1	1				1				1			
422859	EPA:350.1	1664592	1664591	1					1	1				1				1			
422859	EPA:351.2	1665040	1665039	1					1	1				1				1			
422859	EPA:353.2	1665008	1665008	1					1					1				1			
422859	EPA:365.4	1663545	1663543	1					1	1				1				1			
422859	SM:A2340B	1669537	1669537	1																	
422859	SW-846:6010C	1664193	1664192	1					1	1				1				1			
422859	SW-846:6020	1664204	1664203	1					1	1				1				1			
422859	SW-846:6850	1666241	1666240	1					1	1	1			1							
422859	SW-846:8260B	1665467	1665467	1		1	1		1					2							
422859	SW-846:8270D	1664488	1664486	1			1		1	1	1			1							
422859	SW-846:9060	1665822	1665822	1					1					1				1			

2. Distribution Of Analytes In EDD.

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
EPA:120.1	GENERAL CHEMISTRY	CAMO-17-132199	422859001	REG	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CAMO-17-132200	1203797706	DUP	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CAMO-17-132206	1203797705	DUP	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	LCS	1203797704	LCS	0	0	1	0
EPA:150.1	GENERAL CHEMISTRY	CAMO-17-132199	422859001	REG	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CASA-17-132323	1203792737	DUP	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	LCS	1203792736	LCS	0	0	1	0
EPA:160.1	GENERAL CHEMISTRY	CAMO-17-132199	422859001	REG	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	LCS	1203787287	LCS	0	0	1	0
EPA:160.1	GENERAL CHEMISTRY	MB	1203787286	MB	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	WST15-17-135038	1203788251	DUP	1	0	0	0
EPA:170.0	VOC	CAMO-17-132199	422859001	REG	1	0	0	0
EPA:170.0	VOC	CAMO-17-132219	422859002	REG	1	0	0	0
EPA:170.0	VOC	CAMO-17-132299	422859003	FTB	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-17-132304	422859004	FB	1	0	0	0
EPA:245.2	INORGANIC	CAMO-17-132199	422859001	REG	1	0	0	0
EPA:245.2	INORGANIC	CAMO-17-132219	422859002	REG	1	0	0	0
EPA:245.2	INORGANIC	LCS	1203788415	LCS	0	0	1	0
EPA:245.2	INORGANIC	MB	1203788414	MB	1	0	0	0
EPA:245.2	INORGANIC	WST15-17-135038	1203788416	DUP	1	0	0	0
EPA:245.2	INORGANIC	WST15-17-135038	1203788418	MS	0	0	1	0
EPA:300.0	GENERAL CHEMISTRY	CAMO-17-132199	422859001	REG	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAMO-17-132213	1203788155	DUP	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	LCS	1203788154	LCS	0	0	4	0
EPA:300.0	GENERAL CHEMISTRY	MB	1203788153	MB	4	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAMO-17-132199	422859001	REG	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CASA-17-132323	1203792717	DUP	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CASA-17-132323	1203792720	MS	0	0	1	0
EPA:310.1	GENERAL CHEMISTRY	LCS	1203792713	LCS	0	0	1	0
EPA:335.4	GENERAL CHEMISTRY	CAMO-17-132219	422859002	REG	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	LCS	1203786607	LCS	0	0	1	0
EPA:335.4	GENERAL CHEMISTRY	MB	1203786606	MB	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	WST15-17-135038	1203787622	DUP	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	WST15-17-135038	1203787624	MS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	CAMO-17-132199	422859001	REG	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CASA-17-132323	1203788278	DUP	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CASA-17-132323	1203788279	MS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	LCS	1203788275	LCS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	MB	1203788274	MB	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAMO-17-132219	422859002	REG	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CASA-17-132332	1203789381	DUP	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CASA-17-132332	1203789383	MS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	LCS	1203789378	LCS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	MB	1203789377	MB	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAMO-17-132199	422859001	REG	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	LCS	1203789286	LCS	0	0	1	0
EPA:353.2	GENERAL CHEMISTRY	MB	1203789285	MB	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	WST15-17-135038	1203789288	DUP	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAMO-17-132199	422859001	REG	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CASA-17-132322	1203785851	DUP	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CASA-17-132322	1203785852	MS	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	LCS	1203785846	LCS	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	MB	1203785845	MB	1	0	0	0
SM:A2340B	INORGANIC	CAMO-17-132199	422859001	REG	1	0	0	0

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
SW-846:6010C	INORGANIC	CAMO-17-132199	422859001	REG	17	0	0	0
SW-846:6010C	INORGANIC	LCS	1203787363	LCS	0	0	17	0
SW-846:6010C	INORGANIC	MB	1203787362	MB	17	0	0	0
SW-846:6010C	INORGANIC	WST15-17-135038	1203787364	DUP	17	0	0	0
SW-846:6010C	INORGANIC	WST15-17-135038	1203787365	MS	0	0	17	0
SW-846:6020	INORGANIC	CAMO-17-132199	422859001	REG	11	0	0	0
SW-846:6020	INORGANIC	LCS	1203787389	LCS	0	0	11	0
SW-846:6020	INORGANIC	MB	1203787388	MB	11	0	0	0
SW-846:6020	INORGANIC	WST15-17-135038	1203787390	DUP	11	0	0	0
SW-846:6020	INORGANIC	WST15-17-135038	1203787391	MS	0	0	11	0
SW-846:6850	LCMS/MS PERCHLORATE	CAMO-17-132199	422859001	REG	1	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	CASA-17-132322	1203792176	MS	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	CASA-17-132322	1203792177	MSD	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	LCS	1203792175	LCS	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	MB	1203792174	MB	1	0	0	0
SW-846:8260B	VOC	CAMO-17-132219	422859002	REG	80	3	0	0
SW-846:8260B	VOC	CAMO-17-132299	422859003	FTB	80	3	0	0
SW-846:8260B	VOC	CAMO-17-132304	422859004	FB	80	3	0	0
SW-846:8260B	VOC	LCS	1203790474	LCS	0	3	70	0
SW-846:8260B	VOC	LCS	1203790475	LCS	0	3	10	0
SW-846:8260B	VOC	MB	1203790473	MB	80	3	0	0
SW-846:8270D	SVOC	CAMO-17-132219	422859002	REG	80	6	0	0
SW-846:8270D	SVOC	CAMO-17-132304	422859004	FB	80	6	0	0
SW-846:8270D	SVOC	LCS	1203788055	LCS	0	6	76	0
SW-846:8270D	SVOC	MB	1203788054	MB	80	6	0	0
SW-846:8270D	SVOC	WST15-17-135039	1203788056	MS	0	6	76	0
SW-846:8270D	SVOC	WST15-17-135039	1203788057	MSD	0	6	76	0
SW-846:9060	GENERAL CHEMISTRY	CAMO-17-132219	422859002	REG	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CASA-17-132331	1203791710	DUP	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	LCS	1203791231	LCS	0	0	1	0
SW-846:9060	GENERAL CHEMISTRY	MB	1203791230	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	1203787362	METHOD BLANK	SW-846:6010C	W	Sodium	-129	J	ug/L	300
MB	1203788274	METHOD BLANK	EPA:350.1	W	Ammonia as Nitrogen	0.0497	J	mg/L	0.050
CAMO-17-132299	422859003	TRIP BLANK	EPA:170.0	W	Temperature	2		Deg C	
CAMO-17-132304	422859004	FIELD BLANK	EPA:170.0	W	Temperature	2		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-17-132199	1203788274	METHOD BLANK	EPA:350.1	Ammonia as Nitrogen	0.0497	mg/L	0.153		0.050	Y	5	100	Y
CAMO-17-132199	1203787362	METHOD BLANK	SW-846:6010C	Sodium	-129	ug/L	17400		300	Y			

6. Any surrogate recoveries outside the control limits?

Field Sample ID	Lab Sample ID	Analytical Method	Parameter Name	Analysis Lot ID	Analysis Date	Spike Recovery	Upper Limit	Lower Limit	Rejection Limit
WST15-17-135039	1203788056	SW-846:8270D	Nitrobenzene-d5	1664488	05-12-2017	123	115	36	

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

DATA VALIDATION REPORT

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
WST15-17-135038	1203787624		EPA:335.4	Cyanide (Total)	1663907	05-12-2017	W	111		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
1203788055		SW-846:8270D	Nitrobenzene	1664486	05-12-2017	W	121		115	53				

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-5	2017-1505	CAMO-17-132199	REG	INIT	GENERAL CHEMISTRY	EPA:350.1	Ammonia as Nitrogen		U	I4	N	0.153	mg/L	0.153	mg/L			W	05/09/2017		1664592	VAL	Y

Reason Code	Description
I4	the sample result is =<5x the concentration of related analyte in the method blank.
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-17-132199	MCOI-5	REG	EPA:120.1	0	1
CAMO-17-132199	MCOI-5	REG	EPA:150.1	0	1
CAMO-17-132199	MCOI-5	REG	EPA:160.1	0	1
CAMO-17-132199	MCOI-5	REG	EPA:170.0	0	1
CAMO-17-132199	MCOI-5	REG	EPA:245.2	0	1
CAMO-17-132199	MCOI-5	REG	EPA:300.0	0	4
CAMO-17-132199	MCOI-5	REG	EPA:310.1	0	2
CAMO-17-132199	MCOI-5	REG	EPA:350.1	0	1
CAMO-17-132199	MCOI-5	REG	EPA:353.2	0	1
CAMO-17-132199	MCOI-5	REG	EPA:365.4	0	1
CAMO-17-132199	MCOI-5	REG	SM:A2340B	0	1
CAMO-17-132199	MCOI-5	REG	SW-846:6010C	0	17
CAMO-17-132199	MCOI-5	REG	SW-846:6020	0	11
CAMO-17-132199	MCOI-5	REG	SW-846:6850	0	1
CAMO-17-132219	MCOI-5	REG	EPA:170.0	0	1
CAMO-17-132219	MCOI-5	REG	EPA:245.2	0	1
CAMO-17-132219	MCOI-5	REG	EPA:335.4	0	1
CAMO-17-132219	MCOI-5	REG	EPA:351.2	0	1
CAMO-17-132219	MCOI-5	REG	SW-846:8260B	0	80
CAMO-17-132219	MCOI-5	REG	SW-846:8270D	0	80

DATA VALIDATION REPORT

Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total Records
CAMO-17-132219	MCOI-5	REG	SW-846:9060	0	1
CAMO-17-132299	MCOI-5	FTB	EPA:170.0	0	1
CAMO-17-132299	MCOI-5	FTB	SW-846:8260B	0	80
CAMO-17-132304	MCOI-5	FB	EPA:170.0	0	1
CAMO-17-132304	MCOI-5	FB	SW-846:8260B	0	80
CAMO-17-132304	MCOI-5	FB	SW-846:8270D	0	80

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

May 31, 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: 422859
SDG: 2017-1505

Dear Mr. Greene:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the following analytical results for the sample(s) we received on May 11, 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: 2017-1505
Enclosures

ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)
LANL- WQH Water Samples
Work Order #: 422859
SDG: 2017-1505

Table of Contents

Case Narrative.....1

Chain of Custody and Supporting Documentation.....5

Data Review Qualifier Flag Definition Sheet.....9

Volatile Analysis.....12

Case Narrative.....13

Sample Data Summary.....18

Quality Control Summary.....28

Quality Control Data.....46

Semi-Volatile Analysis.....68

Case Narrative.....69

Sample Data Summary.....75

Quality Control Summary.....82

Quality Control Data.....97

Miscellaneous.....110

Perchlorates by LCMSMS Analysis.....112

Case Narrative.....113

Sample Data Summary.....119

Quality Control Summary.....121

Quality Control Data.....124

Miscellaneous.....130

Metals Analysis.....132
Case Narrative.....133
Sample Data Summary.....139
Quality Control Summary.....144
General Chem Analysis.....158
Case Narrative.....159
Sample Data Summary.....190
Quality Control Summary.....194
Miscellaneous.....201

Case Narrative

Case Narrative for
ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)
LANL- WQH Water Samples
Workorder #: 422859
SDG # : 2017-1505

May 31, 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 11, 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
422859001	CAMO-17-132199
422859002	CAMO-17-132219
422859003	CAMO-17-132299
422859004	CAMO-17-132304

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 31 May 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 422859

COC/Lab Request #: 2017-1505
Page 1 of 1

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-17-132199	May 9 2017	10:52	W				1		1	1	
CAMO-17-132219	May 9 2017	10:52	W	1	2	2		1			1
CAMO-17-132299	May 9 2017	10:52	W		2						
CAMO-17-132304	May 9 2017	10:52	W		2	2					

Special Instructions:

Relinquished by:	Print Name: Melissa Montoya	Date/Time: 5/10/17 3:40	Received by:	Print Name: Zac Worsham	Date/Time: 5.11.17 10:20
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: ESHC	**SDG/AR/COC/Work Order:** 422859
Received By: ZKW	**Date Received:** 5/11/17
Carrier and Tracking Number	Circle Applicable: FedEx Express FedEx Ground UPS Field Services Courier Other 5908 1782 0584 5908 1782 0595 5908 1782 0600

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: 2c
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) One PCB Cont. for -135039 recd broken
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:
11	Number of containers received match number indicated on COC?			✓	Sample ID's affected: See Below
12	Are sample containers identifiable as GEL provided?			✓	
13	COC form is properly signed in relinquished/received sections?	✓			

Comments (Use Continuation Form if needed):

* We didn't receive a 2nd vial for -135041
* We only received the vials for -135622
* We didn't receive samples -132206 or -132226

PM (or PMA) review: Initials _____ Date 5/11/17 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: 10MAY17
ACTWGT: 49.0 LB MAN
CAD: 0014176/CAFE2916

BILL SENDER

TO **VALERIE DAVIS**
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407
(843) 556-8171
REF: 21PD0ASRGW04BB6AA0

2 of 2
MPS# 0263 **5908 1782 0595**
Mstr# 5908 1782 0584 0201

THU - 11 MAY 10:30A
PRIORITY OVERNIGHT

X7 RBWA

29407
SC-US CHS

FedEx Express

538C1/8734/3298

Part # 156148V-434 RIT2 05/15

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: 10MAY17
ACTWGT: 41.0 LB MAN
CAD: 0014176/CAFE2916

BILL SENDER

TO **VALERIE DAVIS**
GENERAL ENGINEERING LAB
2040 SAVAGE RD

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

TRK# 0201 **5908 1782 0600**

THU - 11 MAY 10:30A
PRIORITY OVERNIGHT

X7 RBWA

29407
SC-US CHS

FedEx Express

538C1/8734/3298

Part # 156148V-434 RIT2 05/15

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: 10MAY17
ACTWGT: 54.0 LB MAN
CAD: 0014176/CAFE2916

BILL SENDER

TO **VALERIE DAVIS**
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407
(843) 556-8171
REF: 21PD0ASRGW04BB6AA0

1 of 2
TRK# 0201 **5908 1782 0584**
MASTER

THU - 11 MAY 10:30A
PRIORITY OVERNIGHT

X7 RBWA

29407
SC-US CHS

FedEx Express

538C1/8734/3298

Part # 156148V-434 RIT2 05/15

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 #: 2017-1505
Work Order #: 422859

Method/Analysis Information

Procedure:	**Volatile Organic Compounds (VOC) by Gas Chromatograph/Mass Spectrometer**
Analytical Method:	SW-846:8260B
Analytical Batch Number:	1665467

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
422859002	CAMO-17-132219
422859003	CAMO-17-132299
422859004	CAMO-17-132304
1203790473	Method Blank (MB)
1203790474	Laboratory Control Sample (LCS)
1203790475	Laboratory Control Sample (LCS)
1203790476	422436002(CAMO-17-132236) Post Spike (PS)
1203790477	422436002(CAMO-17-132236) Post Spike (PS)
1203790478	422436002(CAMO-17-132236) Post Spike Duplicate (PSD)
1203790479	422436002(CAMO-17-132236) Post Spike Duplicate (PSD)

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
The blank analyzed with this SDG met the acceptance criteria.

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

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

QC Sample Designation
Sample 422436002 (CAMO-17-132236) was designated for spike analysis.

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

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

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

Technical Information

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

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

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

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

Miscellaneous Information

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

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

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

Additional Comments
Additional comments were not required for this SDG.

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

Electronic Package Comment

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

System Configuration

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

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: 2017-1505 GEL Work Order: 422859

The Qualifiers in this report are defined as follows:

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

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

Review/Validation

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

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

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

Date: 06 JUN 2017 **Title: Data Validator**

Sample Data Summary

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1505**	**Date Collected:**	**05/09/2017 10:52**	**Matrix:**	**W**
Lab Sample ID:	**422859002**	**Date Received:**	**05/11/2017 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00114**
Client ID:	**CAMO-17-132219**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1665467**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/16/2017 16:00**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/16/2017 16:00**				
Data File:	**051617V1\1I215.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:	**2017-1505**	**Date Collected:**	**05/09/2017 10:52**	**Matrix:**	**W**
Lab Sample ID:	**422859002**	**Date Received:**	**05/11/2017 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00114**
Client ID:	**CAMO-17-132219**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1665467**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/16/2017 16:00**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/16/2017 16:00**				
Data File:	**051617V1\1I215.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:	**2017-1505**	**Date Collected:**	**05/09/2017 10:52**	**Matrix:**	**W**
Lab Sample ID:	**422859002**	**Date Received:**	**05/11/2017 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00114**
Client ID:	**CAMO-17-132219**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1665467**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/16/2017 16:00**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/16/2017 16:00**				
Data File:	**051617V1\1I215.D**	**Column:**	**DB-624**		

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

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	55.0	50.0	ug/L	110	(71%-134%)
Bromofluorobenzene	52.2	50.0	ug/L	104	(70%-131%)
Toluene-d8	52.7	50.0	ug/L	105	(74%-124%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown siloxane	14.549	15.3	ug/L	0	J

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1505**	**Date Collected:**	**05/09/2017 10:52**	**Matrix:**	**W**
Lab Sample ID:	**422859003**	**Date Received:**	**05/11/2017 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00114**
Client ID:	**CAMO-17-132299**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1665467**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/16/2017 16:29**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/16/2017 16:29**				
Data File:	**051617V1\1I216.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:	**2017-1505**	**Date Collected:**	**05/09/2017 10:52**	**Matrix:**	**W**
Lab Sample ID:	**422859003**	**Date Received:**	**05/11/2017 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00114**
Client ID:	**CAMO-17-132299**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1665467**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/16/2017 16:29**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/16/2017 16:29**				
Data File:	**051617V1\1I216.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:	**2017-1505**	**Date Collected:**	**05/09/2017 10:52**	**Matrix:**	**W**
Lab Sample ID:	**422859003**	**Date Received:**	**05/11/2017 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00114**
Client ID:	**CAMO-17-132299**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1665467**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/16/2017 16:29**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/16/2017 16:29**				
Data File:	**051617V1\1I216.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	56.0	50.0	ug/L	112	(71%-134%)
Bromofluorobenzene	52.6	50.0	ug/L	105	(70%-131%)
Toluene-d8	52.8	50.0	ug/L	106	(74%-124%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown siloxane	14.549	26.6	ug/L	0	J

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1505**	**Date Collected:**	**05/09/2017 10:52**	**Matrix:**	**W**
Lab Sample ID:	**422859004**	**Date Received:**	**05/11/2017 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00114**
Client ID:	**CAMO-17-132304**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1665467**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/16/2017 16:58**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/16/2017 16:58**				
Data File:	**051617V1\1I217.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:	**2017-1505**	**Date Collected:**	**05/09/2017 10:52**	**Matrix:**	**W**
Lab Sample ID:	**422859004**	**Date Received:**	**05/11/2017 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00114**
Client ID:	**CAMO-17-132304**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1665467**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/16/2017 16:58**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/16/2017 16:58**				
Data File:	**051617V1\1I217.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:	**2017-1505**	**Date Collected:**	**05/09/2017 10:52**	**Matrix:**	**W**
Lab Sample ID:	**422859004**	**Date Received:**	**05/11/2017 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00114**
Client ID:	**CAMO-17-132304**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1665467**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/16/2017 16:58**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/16/2017 16:58**				
Data File:	**051617V1\1I217.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	57.6	50.0	ug/L	115	(71%-134%)
Bromofluorobenzene	51.6	50.0	ug/L	103	(70%-131%)
Toluene-d8	52.4	50.0	ug/L	105	(74%-124%)

Tentatively Identified Compound Summary

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

Quality Control Summary

Volatile

Surrogate Recovery Report

SDG Number: 2017-1505

Matrix Type: LIQUID

Sample ID	Client ID	DCED4 %REC	TOL %REC	BFB %REC
1203790474	LCS for batch 1665467	99	101	94
1203790475	LCS for batch 1665467	100	103	95
1203790473	MB for batch 1665467	102	104	99
422859002	CAMO-17-132219	110	105	104
422859003	CAMO-17-132299	112	106	105
422859004	CAMO-17-132304	115	105	103
1203790476	CAMO-17-132236PS	109	106	97
1203790478	CAMO-17-132236PSD	105	108	97
1203790477	CAMO-17-132236PS	102	107	97
1203790479	CAMO-17-132236PSD	105	107	98

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

Quality Control Summary
Spike Recovery Report

SDG Number: **2017-1505**
Sample Type: **Laboratory Control Sample**
Client ID: **LCS for batch 1665467**
Matrix: **WATER**
Lab Sample ID **1203790474**
Instrument: **VOA1.I**
Analysis Date: **05/16/2017 10:15**
Dilution: **1**
Analyst: **VXY1**
Purge Vol: **5 mL**
Batch ID: **1665467**

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	104	104	71-127
75-05-8	LCS	Acetonitrile	1250	0.0	972	78	61-125
67-64-1	LCS	Acetone	250	0.0	320	128	48-157
74-88-4	LCS	Iodomethane	250	0.0	223	89	72-128
75-15-0	LCS	Carbon disulfide	250	0.0	225	90	69-138
108-05-4	LCS	Vinyl acetate	250	0.0	208	83	67-125
78-93-3	LCS	2-Butanone	250	0.0	299	120	55-138
108-10-1	LCS	4-Methyl-2-pentanone	250	0.0	238	95	66-124
591-78-6	LCS	2-Hexanone	250	0.0	332	133	56-140
75-71-8	LCS	Dichlorodifluoromethane	50.0	0.0	48.2	96	40-160
74-87-3	LCS	Chloromethane	50.0	0.0	39.0	78	58-135
75-01-4	LCS	Vinyl chloride	50.0	0.0	43.2	86	65-137
74-83-9	LCS	Bromomethane	50.0	0.0	47.1	94	63-137
75-00-3	LCS	Chloroethane	50.0	0.0	44.3	89	69-129
75-69-4	LCS	Trichlorofluoromethane	50.0	0.0	48.1	96	69-138
60-29-7	LCS	Ethyl ether	50.0	0.0	42.8	86	72-125
75-35-4	LCS	1,1-Dichloroethylene	50.0	0.0	45.8	92	66-126
75-09-2	LCS	Methylene chloride	50.0	0.0	38.3	77	68-119
1634-04-4	LCS	tert-Butyl methyl ether	50.0	0.0	48.5	97	76-128
156-60-5	LCS	trans-1,2-Dichloroethylene	50.0	0.0	45.5	91	71-124
75-34-3	LCS	1,1-Dichloroethane	50.0	0.0	44.7	89	73-123
156-59-2	LCS	cis-1,2-Dichloroethylene	50.0	0.0	45.3	91	75-123

Quality Control Summary
Spike Recovery Report

SDG Number: **2017-1505**
Sample Type: **Laboratory Control Sample**
Client ID: **LCS for batch 1665467**
Matrix: **WATER**
Lab Sample ID **1203790474**
Instrument: **VOA1.I**
Analysis Date: **05/16/2017 10:15**
Dilution: **1**
Analyst: **VXY1**
Purge Vol: **5 mL**
Batch ID: **1665467**

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	51.7	103	72-138
74-97-5	LCS	Bromochloromethane	50.0	0.0	43.7	87	76-125
67-66-3	LCS	Chloroform	50.0	0.0	44.5	89	76-123
71-55-6	LCS	1,1,1-Trichloroethane	50.0	0.0	48.6	97	74-136
563-58-6	LCS	1,1-Dichloropropene	50.0	0.0	48.4	97	72-129
56-23-5	LCS	Carbon tetrachloride	50.0	0.0	49.5	99	72-140
107-06-2	LCS	1,2-Dichloroethane	50.0	0.0	42.0	84	74-122
71-43-2	LCS	Benzene	50.0	0.0	43.8	88	72-121
79-01-6	LCS	Trichloroethylene	50.0	0.0	47.0	94	74-125
78-87-5	LCS	1,2-Dichloropropane	50.0	0.0	43.2	86	73-121
74-95-3	LCS	Dibromomethane	50.0	0.0	42.9	86	78-123
75-27-4	LCS	Bromodichloromethane	50.0	0.0	45.4	91	77-131
10061-01-5	LCS	cis-1,3-Dichloropropylene	50.0	0.0	42.8	86	78-131
108-88-3	LCS	Toluene	50.0	0.0	49.0	98	71-121
10061-02-6	LCS	trans-1,3-Dichloropropylene	50.0	0.0	48.9	98	78-131
79-00-5	LCS	1,1,2-Trichloroethane	50.0	0.0	46.7	93	74-118
142-28-9	LCS	1,3-Dichloropropane	50.0	0.0	47.8	96	74-118
127-18-4	LCS	Tetrachloroethylene	50.0	0.0	54.4	109	69-129
124-48-1	LCS	Dibromochloromethane	50.0	0.0	52.2	104	76-137
106-93-4	LCS	1,2-Dibromoethane	50.0	0.0	49.3	99	78-122
108-90-7	LCS	Chlorobenzene	50.0	0.0	48.4	97	74-120
100-41-4	LCS	Ethylbenzene	50.0	0.0	51.8	104	73-125

Quality Control Summary
Spike Recovery Report

SDG Number: **2017-1505**
Sample Type: **Laboratory Control Sample**
Client ID: **LCS for batch 1665467**
Matrix: **WATER**
Lab Sample ID **1203790474**
Instrument: **VOA1.I**
Analysis Date: **05/16/2017 10:15**
Dilution: **1**
Analyst: **VXY1**
Purge Vol: **5 mL**
Batch ID: **1665467**

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	52.7	105	74-126
100-42-5	LCS	Styrene	50.0	0.0	51.9	104	72-130
75-25-2	LCS	Bromoform	50.0	0.0	53.9	108	72-136
98-82-8	LCS	Isopropylbenzene	50.0	0.0	56.5	113	70-130
79-34-5	LCS	1,1,2,2-Tetrachloroethane	50.0	0.0	46.2	92	70-126
96-18-4	LCS	1,2,3-Trichloropropane	50.0	0.0	50.3	101	74-122
108-86-1	LCS	Bromobenzene	50.0	0.0	50.9	102	74-120
103-65-1	LCS	n-Propylbenzene	50.0	0.0	51.9	104	67-128
108-67-8	LCS	1,3,5-Trimethylbenzene	50.0	0.0	53.8	108	70-129
95-49-8	LCS	2-Chlorotoluene	50.0	0.0	54.0	108	71-124
106-43-4	LCS	4-Chlorotoluene	50.0	0.0	51.1	102	69-125
98-06-6	LCS	tert-Butylbenzene	50.0	0.0	58.2	116	72-130
95-63-6	LCS	1,2,4-Trimethylbenzene	50.0	0.0	53.6	107	70-126
135-98-8	LCS	sec-Butylbenzene	50.0	0.0	56.5	113	70-131
99-87-6	LCS	4-Isopropyltoluene	50.0	0.0	56.7	113	71-131
541-73-1	LCS	1,3-Dichlorobenzene	50.0	0.0	50.2	100	72-121
106-46-7	LCS	1,4-Dichlorobenzene	50.0	0.0	49.6	99	71-120
104-51-8	LCS	n-Butylbenzene	50.0	0.0	57.6	115	68-134
96-12-8	LCS	1,2-Dibromo-3-chloropropane	50.0	0.0	46.0	92	68-141
87-68-3	LCS	Hexachlorobutadiene	50.0	0.0	59.6	119	72-136
91-20-3	LCS	Naphthalene	50.0	0.0	51.6	103	72-132
87-61-6	LCS	1,2,3-Trichlorobenzene	50.0	0.0	59.7	119	70-130

Quality Control Summary
Spike Recovery Report

SDG Number: **2017-1505**
Sample Type: **Laboratory Control Sample**
Client ID: **LCS for batch 1665467**
Matrix: **WATER**
Lab Sample ID **1203790474**
Instrument: **VOA1.I**
Analysis Date: **05/16/2017 10:15**
Dilution: **1**
Analyst: **VXY1**
Purge Vol: **5 mL**
Batch ID: **1665467**

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	61.1	122	71-129
630-20-6	LCS	1,1,1,2-Tetrachloroethane	50.0	0.0	52.2	104	79-127
95-50-1	LCS	1,2-Dichlorobenzene	50.0	0.0	50.8	102	74-120
71-36-3	LCS	n-Butyl alcohol	5000	0.0	5240	105	63-138

Quality Control Summary
Spike Recovery Report

SDG Number: **2017-1505**
Sample Type: **Laboratory Control Sample**
Client ID: **LCS for batch 1665467**
Matrix: **WATER**
Lab Sample ID **1203790475**
Instrument: **VOA1.I**
Analysis Date: **05/16/2017 11:13**
Dilution: **1**
Analyst: **VXY1**
Purge Vol: **5 mL**
Batch ID: **1665467**

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	242	97	60-140
76-13-1	LCS	Trichlorotrifluoroethane	250	0.0	212	85	61-148
107-05-1	LCS	Allyl chloride	250	0.0	208	83	59-125
107-13-1	LCS	Acrylonitrile	250	0.0	196	79	65-122
107-12-0	LCS	Propionitrile	250	0.0	198	79	64-124
126-98-7	LCS	Methacrylonitrile	250	0.0	201	80	64-126
80-62-6	LCS	Methyl methacrylate	250	0.0	211	84	69-127
97-63-2	LCS	Ethyl methacrylate	250	0.0	227	91	66-130
78-83-1	LCS	Isobutyl alcohol	2500	0.0	2080	83	65-135
126-99-8	LCS	2-Chloro-1,3-butadiene	50.0	0.0	43.5	87	66-147

Quality Control Summary
Spike Recovery Report

SDG Number: **2017-1505**
Sample Type: **Post Spike**
Client ID: **CAMO-17-132236PS**
Matrix: **W**
Lab Sample ID **1203790476**
Instrument: **VOA1.I**
Analysis Date: **05/16/2017 19:50**
Dilution: **1**
Analyst: **VXY1**
Purge Vol: **5 mL**
Batch ID: **1665467**

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	100	100	59-132
75-05-8	PS	Acetonitrile	1250	0.00	U	990	79	56-131
67-64-1	PS	Acetone	250	0.00	U	141	56	25-155
74-88-4	PS	Iodomethane	250	0.00	U	228	91	66-133
75-15-0	PS	Carbon disulfide	250	0.00	U	208	83	61-141
108-05-4	PS	Vinyl acetate	250	0.00	U	226	90	48-133
78-93-3	PS	2-Butanone	250	0.00	U	177	71	25-143
108-10-1	PS	4-Methyl-2-pentanone	250	0.00	U	244	98	61-127
591-78-6	PS	2-Hexanone	250	0.00	U	234	94	33-138
75-71-8	PS	Dichlorodifluoromethane	50.0	0.00	U	30.0	60	33-164
74-87-3	PS	Chloromethane	50.0	0.00	U	32.7	65	53-139
75-01-4	PS	Vinyl chloride	50.0	0.00	U	35.9	72	58-140
74-83-9	PS	Bromomethane	50.0	0.00	U	47.4	95	59-146
75-00-3	PS	Chloroethane	50.0	0.00	U	40.2	80	65-129
75-69-4	PS	Trichlorofluoromethane	50.0	0.00	U	44.6	89	65-141
60-29-7	PS	Ethyl ether	50.0	0.00	U	47.1	94	69-127
75-35-4	PS	1,1-Dichloroethylene	50.0	0.00	U	41.6	83	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	49.0	98	69-132
156-60-5	PS	trans-1,2-Dichloroethylene	50.0	0.00	U	44.1	88	65-127
75-34-3	PS	1,1-Dichloroethane	50.0	0.00	U	44.4	89	67-127
156-59-2	PS	cis-1,2-Dichloroethylene	50.0	0.00	U	46.4	93	69-127

Quality Control Summary
Spike Recovery Report

SDG Number: **2017-1505** **Sample Type:** **Post Spike**

Client ID: **CAMO-17-132236PS** **Matrix:** **W**

Lab Sample ID **1203790476**

Instrument: **VOA1.I** **Analysis Date:** **05/16/2017 19:50** **Dilution: 1**

Analyst: **VXY1**

Purge Vol: **5 mL** **Batch ID:** **1665467**

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	48.6	97	66-137
74-97-5	PS	Bromochloromethane	50.0	0.00	U	47.4	95	71-130
67-66-3	PS	Chloroform	50.0	0.00	U	46.5	93	71-129
71-55-6	PS	1,1,1-Trichloroethane	50.0	0.00	U	47.0	94	69-139
563-58-6	PS	1,1-Dichloropropene	50.0	0.00	U	44.5	89	67-130
56-23-5	PS	Carbon tetrachloride	50.0	0.00	U	47.7	95	66-143
107-06-2	PS	1,2-Dichloroethane	50.0	0.00	U	47.6	95	69-130
71-43-2	PS	Benzene	50.0	0.00	U	42.6	85	66-125
79-01-6	PS	Trichloroethylene	50.0	0.00	U	45.6	91	65-131
78-87-5	PS	1,2-Dichloropropane	50.0	0.00	U	44.0	88	67-127
74-95-3	PS	Dibromomethane	50.0	0.00	U	47.3	95	72-129
75-27-4	PS	Bromodichloromethane	50.0	0.00	U	49.4	99	70-138
10061-01-5	PS	cis-1,3-Dichloropropylene	50.0	0.00	U	43.9	88	70-134
108-88-3	PS	Toluene	50.0	0.00	U	47.4	95	60-126
10061-02-6	PS	trans-1,3-Dichloropropylene	50.0	0.00	U	51.4	103	69-135
79-00-5	PS	1,1,2-Trichloroethane	50.0	0.00	U	50.5	101	66-125
142-28-9	PS	1,3-Dichloropropane	50.0	0.00	U	50.9	102	67-124
127-18-4	PS	Tetrachloroethylene	50.0	0.00	U	49.5	99	60-130
124-48-1	PS	Dibromochloromethane	50.0	0.00	U	58.1	116	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	48.9	98	64-124
100-41-4	PS	Ethylbenzene	50.0	0.00	U	50.0	100	61-130

Quality Control Summary
Spike Recovery Report

SDG Number: **2017-1505**
Sample Type: **Post Spike**
Client ID: **CAMO-17-132236PS**
Matrix: **W**
Lab Sample ID **1203790476**
Instrument: **VOA1.I**
Analysis Date: **05/16/2017 19:50**
Dilution: **1**
Analyst: **VXY1**
Purge Vol: **5 mL**
Batch ID: **1665467**

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	52.4	105	62-131
100-42-5	PS	Styrene	50.0	0.00	U	52.8	106	59-135
75-25-2	PS	Bromoform	50.0	0.00	U	60.8	122	64-138
98-82-8	PS	Isopropylbenzene	50.0	0.00	U	54.0	108	55-133
79-34-5	PS	1,1,2,2-Tetrachloroethane	50.0	0.00	U	50.6	101	62-129
96-18-4	PS	1,2,3-Trichloropropane	50.0	0.00	U	56.3	113	70-124
108-86-1	PS	Bromobenzene	50.0	0.00	U	53.4	107	62-124
103-65-1	PS	n-Propylbenzene	50.0	0.00	U	49.8	100	50-133
108-67-8	PS	1,3,5-Trimethylbenzene	50.0	0.00	U	52.8	106	53-135
95-49-8	PS	2-Chlorotoluene	50.0	0.00	U	53.6	107	56-128
106-43-4	PS	4-Chlorotoluene	50.0	0.00	U	50.9	102	53-130
98-06-6	PS	tert-Butylbenzene	50.0	0.00	U	55.9	112	55-135
95-63-6	PS	1,2,4-Trimethylbenzene	50.0	0.00	U	53.7	107	53-132
135-98-8	PS	sec-Butylbenzene	50.0	0.00	U	54.2	108	50-138
99-87-6	PS	4-Isopropyltoluene	50.0	0.00	U	54.3	109	49-138
541-73-1	PS	1,3-Dichlorobenzene	50.0	0.00	U	51.3	103	56-126
106-46-7	PS	1,4-Dichlorobenzene	50.0	0.00	U	50.7	101	55-125
104-51-8	PS	n-Butylbenzene	50.0	0.00	U	53.6	107	43-142
96-12-8	PS	1,2-Dibromo-3-chloropropane	50.0	0.00	U	52.1	104	62-141
87-68-3	PS	Hexachlorobutadiene	50.0	0.00	U	56.0	112	40-147
91-20-3	PS	Naphthalene	50.0	0.00	U	53.5	107	62-134
87-61-6	PS	1,2,3-Trichlorobenzene	50.0	0.00	U	57.5	115	52-135

Quality Control Summary
Spike Recovery Report

SDG Number: **2017-1505**
Sample Type: **Post Spike**
Client ID: **CAMO-17-132236PS**
Matrix: **W**
Lab Sample ID **1203790476**
Instrument: **VOA1.I**
Analysis Date: **05/16/2017 19:50**
Dilution: **1**
Analyst: **VXY1**
Purge Vol: **5 mL**
Batch ID: **1665467**

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	58.2	116	50-133
630-20-6	PS	1,1,1,2-Tetrachloroethane	50.0	0.00	U	55.6	111	71-133
95-50-1	PS	1,2-Dichlorobenzene	50.0	0.00	U	52.7	105	60-125
71-36-3	PS	n-Butyl alcohol	5000	0.00	U	5290	106	60-140

Quality Control Summary
Spike Recovery Report

SDG Number: **2017-1505**
Sample Type: **Post Spike Duplicate**
Client ID: **CAMO-17-132236PSD**
Matrix: **W**
Lab Sample ID **1203790478**
Instrument: **VOA1.I**
Analysis Date: **05/16/2017 20:19**
Dilution: **1**
Analyst: **VXY1**
Purge Vol: **5 mL**
Batch ID: **1665467**

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	101	101	59-132	1	0-20
75-05-8	PSD	Acetonitrile	1250	0.00	U	944	76	56-131	5	0-20
67-64-1	PSD	Acetone	250	0.00	U	133	53	25-155	6	0-20
74-88-4	PSD	Iodomethane	250	0.00	U	225	90	66-133	1	0-20
75-15-0	PSD	Carbon disulfide	250	0.00	U	205	82	61-141	1	0-20
108-05-4	PSD	Vinyl acetate	250	0.00	U	218	87	48-133	4	0-20
78-93-3	PSD	2-Butanone	250	0.00	U	165	66	25-143	7	0-20
108-10-1	PSD	4-Methyl-2-pentanone	250	0.00	U	237	95	61-127	3	0-20
591-78-6	PSD	2-Hexanone	250	0.00	U	223	89	33-138	5	0-20
75-71-8	PSD	Dichlorodifluoromethane	50.0	0.00	U	29.2	58	33-164	3	0-20
74-87-3	PSD	Chloromethane	50.0	0.00	U	31.5	63	53-139	4	0-20
75-01-4	PSD	Vinyl chloride	50.0	0.00	U	34.9	70	58-140	3	0-20
74-83-9	PSD	Bromomethane	50.0	0.00	U	46.9	94	59-146	1	0-20
75-00-3	PSD	Chloroethane	50.0	0.00	U	40.3	81	65-129	0	0-20
75-69-4	PSD	Trichlorofluoromethane	50.0	0.00	U	43.8	88	65-141	2	0-20
60-29-7	PSD	Ethyl ether	50.0	0.00	U	46.0	92	69-127	2	0-20
75-35-4	PSD	1,1-Dichloroethylene	50.0	0.00	U	41.0	82	59-130	1	0-20
75-09-2	PSD	Methylene chloride	50.0	0.00	U	38.9	78	62-123	1	0-20
1634-04-4	PSD	tert-Butyl methyl ether	50.0	0.00	U	47.8	96	69-132	2	0-20
156-60-5	PSD	trans-1,2-Dichloroethylene	50.0	0.00	U	43.3	87	65-127	2	0-20
75-34-3	PSD	1,1-Dichloroethane	50.0	0.00	U	43.7	87	67-127	1	0-20
156-59-2	PSD	cis-1,2-Dichloroethylene	50.0	0.00	U	45.6	91	69-127	2	0-20

Quality Control Summary
Spike Recovery Report

SDG Number: **2017-1505**
Sample Type: **Post Spike Duplicate**
Client ID: **CAMO-17-132236PSD**
Matrix: **W**
Lab Sample ID **1203790478**
Instrument: **VOA1.I**
Analysis Date: **05/16/2017 20:19**
Dilution: **1**
Analyst: **VXY1**
Purge Vol: **5 mL**
Batch ID: **1665467**

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	47.6	95	66-137	2	0-20
74-97-5	PSD	Bromochloromethane	50.0	0.00	U	46.7	93	71-130	1	0-20
67-66-3	PSD	Chloroform	50.0	0.00	U	45.7	91	71-129	2	0-20
71-55-6	PSD	1,1,1-Trichloroethane	50.0	0.00	U	46.3	93	69-139	2	0-20
563-58-6	PSD	1,1-Dichloropropene	50.0	0.00	U	43.6	87	67-130	2	0-20
56-23-5	PSD	Carbon tetrachloride	50.0	0.00	U	46.7	93	66-143	2	0-20
107-06-2	PSD	1,2-Dichloroethane	50.0	0.00	U	46.3	93	69-130	3	0-20
71-43-2	PSD	Benzene	50.0	0.00	U	42.2	84	66-125	1	0-20
79-01-6	PSD	Trichloroethylene	50.0	0.00	U	45.1	90	65-131	1	0-20
78-87-5	PSD	1,2-Dichloropropane	50.0	0.00	U	43.6	87	67-127	1	0-20
74-95-3	PSD	Dibromomethane	50.0	0.00	U	46.3	93	72-129	2	0-20
75-27-4	PSD	Bromodichloromethane	50.0	0.00	U	48.7	97	70-138	2	0-20
10061-01-5	PSD	cis-1,3-Dichloropropylene	50.0	0.00	U	43.7	87	70-134	0	0-20
108-88-3	PSD	Toluene	50.0	0.00	U	48.1	96	60-126	1	0-20
10061-02-6	PSD	trans-1,3-Dichloropropylene	50.0	0.00	U	51.1	102	69-135	1	0-20
79-00-5	PSD	1,1,2-Trichloroethane	50.0	0.00	U	49.5	99	66-125	2	0-20
142-28-9	PSD	1,3-Dichloropropane	50.0	0.00	U	50.5	101	67-124	1	0-20
127-18-4	PSD	Tetrachloroethylene	50.0	0.00	U	50.2	100	60-130	1	0-20
124-48-1	PSD	Dibromochloromethane	50.0	0.00	U	57.4	115	68-143	1	0-20
106-93-4	PSD	1,2-Dibromoethane	50.0	0.00	U	53.6	107	71-127	2	0-20
108-90-7	PSD	Chlorobenzene	50.0	0.00	U	49.1	98	64-124	0	0-20
100-41-4	PSD	Ethylbenzene	50.0	0.00	U	50.4	101	61-130	1	0-20

Quality Control Summary
Spike Recovery Report

SDG Number: **2017-1505**
Sample Type: **Post Spike Duplicate**
Client ID: **CAMO-17-132236PSD**
Matrix: **W**
Lab Sample ID **1203790478**
Instrument: **VOA1.I**
Analysis Date: **05/16/2017 20:19**
Dilution: **1**
Analyst: **VXY1**
Purge Vol: **5 mL**
Batch ID: **1665467**

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	52.1	104	62-131	0	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	58.8	118	64-138	3	0-20
98-82-8	PSD	Isopropylbenzene	50.0	0.00	U	53.5	107	55-133	1	0-20
79-34-5	PSD	1,1,2,2-Tetrachloroethane	50.0	0.00	U	49.4	99	62-129	2	0-20
96-18-4	PSD	1,2,3-Trichloropropane	50.0	0.00	U	53.2	106	70-124	6	0-20
108-86-1	PSD	Bromobenzene	50.0	0.00	U	52.8	106	62-124	1	0-20
103-65-1	PSD	n-Propylbenzene	50.0	0.00	U	49.5	99	50-133	1	0-20
108-67-8	PSD	1,3,5-Trimethylbenzene	50.0	0.00	U	52.8	106	53-135	0	0-20
95-49-8	PSD	2-Chlorotoluene	50.0	0.00	U	53.8	108	56-128	0	0-20
106-43-4	PSD	4-Chlorotoluene	50.0	0.00	U	51.0	102	53-130	0	0-20
98-06-6	PSD	tert-Butylbenzene	50.0	0.00	U	55.0	110	55-135	2	0-20
95-63-6	PSD	1,2,4-Trimethylbenzene	50.0	0.00	U	52.5	105	53-132	2	0-20
135-98-8	PSD	sec-Butylbenzene	50.0	0.00	U	52.5	105	50-138	3	0-20
99-87-6	PSD	4-Isopropyltoluene	50.0	0.00	U	52.6	105	49-138	3	0-20
541-73-1	PSD	1,3-Dichlorobenzene	50.0	0.00	U	50.4	101	56-126	2	0-20
106-46-7	PSD	1,4-Dichlorobenzene	50.0	0.00	U	50.1	100	55-125	1	0-20
104-51-8	PSD	n-Butylbenzene	50.0	0.00	U	52.5	105	43-142	2	0-20
96-12-8	PSD	1,2-Dibromo-3-chloropropane	50.0	0.00	U	49.2	98	62-141	6	0-20
87-68-3	PSD	Hexachlorobutadiene	50.0	0.00	U	50.2	100	40-147	11	0-20
91-20-3	PSD	Naphthalene	50.0	0.00	U	51.7	103	62-134	3	0-20
87-61-6	PSD	1,2,3-Trichlorobenzene	50.0	0.00	U	56.9	114	52-135	1	0-20

Quality Control Summary
Spike Recovery Report

SDG Number: **2017-1505**
Sample Type: **Post Spike Duplicate**
Client ID: **CAMO-17-132236PSD**
Matrix: **W**
Lab Sample ID **1203790478**
Instrument: **VOA1.I**
Analysis Date: **05/16/2017 20:19**
Dilution: **1**
Analyst: **VXY1**
Purge Vol: **5 mL**
Batch ID: **1665467**

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	56.5	113	50-133	3	0-20
630-20-6	PSD	1,1,1,2-Tetrachloroethane	50.0	0.00	U	55.6	111	71-133	0	0-20
95-50-1	PSD	1,2-Dichlorobenzene	50.0	0.00	U	52.8	106	60-125	0	0-20
71-36-3	PSD	n-Butyl alcohol	5000	0.00	U	4900	98	60-140	8	0-20

Quality Control Summary
Spike Recovery Report

SDG Number: **2017-1505**
Sample Type: **Post Spike**
Client ID: **CAMO-17-132236PS**
Matrix: **W**
Lab Sample ID **1203790477**
Instrument: **VOA1.I**
Analysis Date: **05/16/2017 20:48**
Dilution: **1**
Analyst: **VXY1**
Purge Vol: **5 mL**
Batch ID: **1665467**

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	233	93	49-141
76-13-1	PS	Trichlorotrifluoroethane	250	0.00	U	203	81	57-149
107-05-1	PS	Allyl chloride	250	0.00	U	213	85	54-128
107-13-1	PS	Acrylonitrile	250	0.00	U	204	82	59-129
107-12-0	PS	Propionitrile	250	0.00	U	212	85	58-131
126-98-7	PS	Methacrylonitrile	250	0.00	U	212	85	59-134
80-62-6	PS	Methyl methacrylate	250	0.00	U	225	90	62-135
97-63-2	PS	Ethyl methacrylate	250	0.00	U	242	97	60-136
78-83-1	PS	Isobutyl alcohol	2500	0.00	U	2220	89	60-143
126-99-8	PS	2-Chloro-1,3-butadiene	50.0	0.00	U	42.2	84	63-146

Quality Control Summary
Spike Recovery Report

SDG Number: **2017-1505**
Sample Type: **Post Spike Duplicate**
Client ID: **CAMO-17-132236PSD**
Matrix: **W**
Lab Sample ID **1203790479**
Instrument: **VOA1.I**
Analysis Date: **05/16/2017 21:17**
Dilution: **1**
Analyst: **VXY1**
Purge Vol: **5 mL**
Batch ID: **1665467**

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	232	93	49-141	1	0-20
76-13-1	PSD	Trichlorotrifluoroethane	250	0.00	U	198	79	57-149	3	0-20
107-05-1	PSD	Allyl chloride	250	0.00	U	208	83	54-128	3	0-20
107-13-1	PSD	Acrylonitrile	250	0.00	U	198	79	59-129	3	0-20
107-12-0	PSD	Propionitrile	250	0.00	U	202	81	58-131	5	0-20
126-98-7	PSD	Methacrylonitrile	250	0.00	U	209	84	59-134	1	0-20
80-62-6	PSD	Methyl methacrylate	250	0.00	U	220	88	62-135	2	0-20
97-63-2	PSD	Ethyl methacrylate	250	0.00	U	242	97	60-136	0	0-20
78-83-1	PSD	Isobutyl alcohol	2500	0.00	U	2100	84	60-143	6	0-20
126-99-8	PSD	2-Chloro-1,3-butadiene	50.0	0.00	U	42.1	84	63-146	0	0-20

Method Blank Summary

SDG Number:	**2017-1505**	**Client:**	**ARSL004**	**Matrix:**	**WATER**
Client ID:	**MB for batch 1665467**	**Instrument ID:**	**VOA1.I**	**Data File:**	**051617V1\1I206BA.D**
Lab Sample ID:	**1203790473**	**Prep Date:**	**05/16/2017 11:41**	**Analyzed:**	**05/16/17 11:41**
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 1665467	1203790474	051617V1\1I203LA.D	05/16/17	1015
02	LCS for batch 1665467	1203790475	051617V1\1I205LA.D	05/16/17	1113
03	CAMO-17-132219	422859002	051617V1\1I215.D	05/16/17	1600
04	CAMO-17-132299	422859003	051617V1\1I216.D	05/16/17	1629
05	CAMO-17-132304	422859004	051617V1\1I217.D	05/16/17	1658
06	CAMO-17-132236PS	1203790476	051617V1\1I223.D	05/16/17	1950
07	CAMO-17-132236PSD	1203790478	051617V1\1I224.D	05/16/17	2019
08	CAMO-17-132236PS	1203790477	051617V1\1I225.D	05/16/17	2048
09	CAMO-17-132236PSD	1203790479	051617V1\1I226.D	05/16/17	2117

Quality Control Data

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1505**			**Matrix:**	**WATER**
Lab Sample ID:	**1203790473**				
Client Sample:	**QC for batch 1665467**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1665467**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1665467**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/16/2017 11:41**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/16/2017 11:41**				
Data File:	**051617V1\1I206BA.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:	**2017-1505**			**Matrix:**	**WATER**
Lab Sample ID:	**1203790473**				
Client Sample:	**QC for batch 1665467**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1665467**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1665467**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/16/2017 11:41**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/16/2017 11:41**				
Data File:	**051617V1\1I206BA.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:	**2017-1505**			**Matrix:**	**WATER**
Lab Sample ID:	**1203790473**				
Client Sample:	**QC for batch 1665467**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1665467**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1665467**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/16/2017 11:41**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/16/2017 11:41**				
Data File:	**051617V1\1I206BA.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	50.9	50.0	ug/L	102	(71%-134%)
Bromofluorobenzene	49.5	50.0	ug/L	99	(70%-131%)
Toluene-d8	51.9	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:	**2017-1505**			**Matrix:**	**WATER**
Lab Sample ID:	**1203790474**				
Client Sample:	**QC for batch 1665467**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1665467**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1665467**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/16/2017 10:15**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/16/2017 10:15**				
Data File:	**051617V1\1I203LA.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		52.2	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		48.6	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		46.2	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		46.7	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		44.7	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		45.8	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		48.4	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		59.7	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		50.3	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		61.1	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		53.6	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		46.0	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		49.3	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		50.8	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		42.0	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		43.2	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		53.8	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		50.2	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		47.8	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		49.6	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		51.7	ug/L	0.300	1.00
78-93-3	2-Butanone		299	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		54.0	ug/L	0.300	1.00
591-78-6	2-Hexanone		332	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		51.1	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		56.7	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		238	ug/L	1.50	5.00
67-64-1	Acetone		320	ug/L	1.50	10.0
75-05-8	Acetonitrile		972	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		43.8	ug/L	0.300	1.00
108-86-1	Bromobenzene		50.9	ug/L	0.300	1.00
74-97-5	Bromochloromethane		43.7	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		45.4	ug/L	0.300	1.00
75-25-2	Bromoform		53.9	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1505**			**Matrix:**	**WATER**
Lab Sample ID:	**1203790474**				
Client Sample:	**QC for batch 1665467**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1665467**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1665467**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/16/2017 10:15**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/16/2017 10:15**				
Data File:	**051617V1\1I203LA.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		47.1	ug/L	0.300	1.00
75-15-0	Carbon disulfide		225	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		49.5	ug/L	0.300	1.00
108-90-7	Chlorobenzene		48.4	ug/L	0.300	1.00
75-00-3	Chloroethane		44.3	ug/L	0.300	1.00
67-66-3	Chloroform		44.5	ug/L	0.300	1.00
74-87-3	Chloromethane		39.0	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		52.2	ug/L	0.300	1.00
74-95-3	Dibromomethane		42.9	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		48.2	ug/L	0.300	1.00
60-29-7	Ethyl ether		42.8	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		51.8	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		59.6	ug/L	0.300	1.00
74-88-4	Iodomethane		223	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		56.5	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		38.3	ug/L	1.00	10.0
91-20-3	Naphthalene		51.6	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		54.4	ug/L	0.300	1.00
108-88-3	Toluene		49.0	ug/L	0.300	1.00
79-01-6	Trichloroethylene		47.0	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		48.1	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		208	ug/L	1.50	5.00
75-01-4	Vinyl chloride		43.2	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		45.3	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		42.8	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		104	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		5240	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		57.6	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		51.9	ug/L	0.300	1.00
95-47-6	o-Xylene		52.7	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		56.5	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1505**			**Matrix:**	**WATER**
Lab Sample ID:	**1203790474**				
Client Sample:	**QC for batch 1665467**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1665467**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1665467**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/16/2017 10:15**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/16/2017 10:15**				
Data File:	**051617V1\1I203LA.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		48.5	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		58.2	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		45.5	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		48.9	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	49.3	50.0	ug/L	99	(71%-134%)
Bromofluorobenzene	47.1	50.0	ug/L	94	(70%-131%)
Toluene-d8	50.4	50.0	ug/L	101	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1505**			**Matrix:**	**WATER**
Lab Sample ID:	**1203790475**				
Client Sample:	**QC for batch 1665467**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1665467**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1665467**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/16/2017 11:13**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/16/2017 11:13**				
Data File:	**051617V1\1I205LA.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		43.5	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		242	ug/L	1.50	5.00
107-13-1	Acrylonitrile		196	ug/L	1.50	5.00
107-05-1	Allyl chloride		208	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:	**2017-1505**			**Matrix:**	**WATER**
Lab Sample ID:	**1203790475**				
Client Sample:	**QC for batch 1665467**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1665467**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1665467**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/16/2017 11:13**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/16/2017 11:13**				
Data File:	**051617V1\1I205LA.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		227	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		2080	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		201	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		211	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		198	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		212	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:	**2017-1505**			**Matrix:**	**WATER**
Lab Sample ID:	**1203790475**				
Client Sample:	**QC for batch 1665467**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1665467**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1665467**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/16/2017 11:13**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/16/2017 11:13**				
Data File:	**051617V1\1I205LA.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	49.9	50.0	ug/L	100	(71%-134%)
Bromofluorobenzene	47.7	50.0	ug/L	95	(70%-131%)
Toluene-d8	51.6	50.0	ug/L	103	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1505**	**Date Collected:**	**05/03/2017 12:24**	**Matrix:**	**W**
Lab Sample ID:	**1203790476**	**Date Received:**	**05/05/2017 09:25**		
Client Sample:	**QC for batch 1665467**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAMO-17-132236PS**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1665467**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/16/2017 19:50**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/16/2017 19:50**				
Data File:	**051617V1\1I223.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		55.6	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		47.0	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		50.6	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		50.5	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		44.4	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		41.6	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		44.5	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		57.5	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		56.3	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		58.2	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		53.7	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		52.1	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		52.7	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		47.6	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		44.0	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		52.8	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		51.3	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		50.7	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		48.6	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		53.6	ug/L	0.300	1.00
591-78-6	2-Hexanone		234	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		50.9	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		54.3	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		244	ug/L	1.50	5.00
67-64-1	Acetone		141	ug/L	1.50	10.0
75-05-8	Acetonitrile		990	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		42.6	ug/L	0.300	1.00
108-86-1	Bromobenzene		53.4	ug/L	0.300	1.00
74-97-5	Bromochloromethane		47.4	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		49.4	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:	**2017-1505**	**Date Collected:**	**05/03/2017 12:24**	**Matrix:**	**W**
Lab Sample ID:	**1203790476**	**Date Received:**	**05/05/2017 09:25**		
Client Sample:	**QC for batch 1665467**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAMO-17-132236PS**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1665467**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/16/2017 19:50**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/16/2017 19:50**				
Data File:	**051617V1\1I223.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		47.4	ug/L	0.300	1.00
75-15-0	Carbon disulfide		208	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		47.7	ug/L	0.300	1.00
108-90-7	Chlorobenzene		48.9	ug/L	0.300	1.00
75-00-3	Chloroethane		40.2	ug/L	0.300	1.00
67-66-3	Chloroform		46.5	ug/L	0.300	1.00
74-87-3	Chloromethane		32.7	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		58.1	ug/L	0.300	1.00
74-95-3	Dibromomethane		47.3	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		30.0	ug/L	0.300	1.00
60-29-7	Ethyl ether		47.1	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		50.0	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		56.0	ug/L	0.300	1.00
74-88-4	Iodomethane		228	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		54.0	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		39.3	ug/L	1.00	10.0
91-20-3	Naphthalene		53.5	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		52.8	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		49.5	ug/L	0.300	1.00
108-88-3	Toluene		47.4	ug/L	0.300	1.00
79-01-6	Trichloroethylene		45.6	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		44.6	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		226	ug/L	1.50	5.00
75-01-4	Vinyl chloride		35.9	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		43.9	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		100	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		5290	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		53.6	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		49.8	ug/L	0.300	1.00
95-47-6	o-Xylene		52.4	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		54.2	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1505**	**Date Collected:**	**05/03/2017 12:24**	**Matrix:**	**W**
Lab Sample ID:	**1203790476**	**Date Received:**	**05/05/2017 09:25**		
Client Sample:	**QC for batch 1665467**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAMO-17-132236PS**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1665467**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/16/2017 19:50**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/16/2017 19:50**				
Data File:	**051617V1\1I223.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		49.0	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		55.9	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		44.1	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		51.4	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	54.3	50.0	ug/L	109	(71%-134%)
Bromofluorobenzene	48.5	50.0	ug/L	97	(70%-131%)
Toluene-d8	52.8	50.0	ug/L	106	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1505**	**Date Collected:**	**05/03/2017 12:24**	**Matrix:**	**W**
Lab Sample ID:	**1203790477**	**Date Received:**	**05/05/2017 09:25**		
Client Sample:	**QC for batch 1665467**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAMO-17-132236PS**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1665467**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/16/2017 20:48**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/16/2017 20:48**				
Data File:	**051617V1\1I225.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		42.2	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein		233	ug/L	1.50	5.00
107-13-1	Acrylonitrile		204	ug/L	1.50	5.00
107-05-1	Allyl chloride		213	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:	**2017-1505**	**Date Collected:**	**05/03/2017 12:24**	**Matrix:**	**W**
Lab Sample ID:	**1203790477**	**Date Received:**	**05/05/2017 09:25**		
Client Sample:	**QC for batch 1665467**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAMO-17-132236PS**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1665467**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/16/2017 20:48**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/16/2017 20:48**				
Data File:	**051617V1\1I225.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		242	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		2220	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		212	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		225	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	1.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.300	1.00
107-12-0	Propionitrile		212	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		203	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:	**2017-1505**	**Date Collected:**	**05/03/2017 12:24**	**Matrix:**	**W**
Lab Sample ID:	**1203790477**	**Date Received:**	**05/05/2017 09:25**		
Client Sample:	**QC for batch 1665467**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAMO-17-132236PS**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1665467**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/16/2017 20:48**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/16/2017 20:48**				
Data File:	**051617V1\1I225.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	50.9	50.0	ug/L	102	(71%-134%)
Bromofluorobenzene	48.6	50.0	ug/L	97	(70%-131%)
Toluene-d8	53.5	50.0	ug/L	107	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1505**	**Date Collected:**	**05/03/2017 12:24**	**Matrix:**	**W**
Lab Sample ID:	**1203790478**	**Date Received:**	**05/05/2017 09:25**		
Client Sample:	**QC for batch 1665467**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAMO-17-132236PSD**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1665467**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/16/2017 20:19**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/16/2017 20:19**				
Data File:	**051617V1\1I224.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		55.6	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		46.3	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		49.4	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		49.5	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		43.7	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		43.6	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		56.9	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		53.2	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		56.5	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		52.5	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		49.2	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		53.6	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		52.8	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		46.3	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		43.6	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		52.8	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		50.4	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		50.5	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		50.1	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		47.6	ug/L	0.300	1.00
78-93-3	2-Butanone		165	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		53.8	ug/L	0.300	1.00
591-78-6	2-Hexanone		223	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		51.0	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		52.6	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		237	ug/L	1.50	5.00
67-64-1	Acetone		133	ug/L	1.50	10.0
75-05-8	Acetonitrile		944	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		42.2	ug/L	0.300	1.00
108-86-1	Bromobenzene		52.8	ug/L	0.300	1.00
74-97-5	Bromochloromethane		46.7	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		48.7	ug/L	0.300	1.00
75-25-2	Bromoform		58.8	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1505**	**Date Collected:**	**05/03/2017 12:24**	**Matrix:**	**W**
Lab Sample ID:	**1203790478**	**Date Received:**	**05/05/2017 09:25**		
Client Sample:	**QC for batch 1665467**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAMO-17-132236PSD**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1665467**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/16/2017 20:19**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/16/2017 20:19**				
Data File:	**051617V1\1I224.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		46.9	ug/L	0.300	1.00
75-15-0	Carbon disulfide		205	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		46.7	ug/L	0.300	1.00
108-90-7	Chlorobenzene		49.1	ug/L	0.300	1.00
75-00-3	Chloroethane		40.3	ug/L	0.300	1.00
67-66-3	Chloroform		45.7	ug/L	0.300	1.00
74-87-3	Chloromethane		31.5	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		57.4	ug/L	0.300	1.00
74-95-3	Dibromomethane		46.3	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		29.2	ug/L	0.300	1.00
60-29-7	Ethyl ether		46.0	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		50.4	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		50.2	ug/L	0.300	1.00
74-88-4	Iodomethane		225	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		53.5	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		38.9	ug/L	1.00	10.0
91-20-3	Naphthalene		51.7	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		50.2	ug/L	0.300	1.00
108-88-3	Toluene		48.1	ug/L	0.300	1.00
79-01-6	Trichloroethylene		45.1	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		43.8	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		218	ug/L	1.50	5.00
75-01-4	Vinyl chloride		34.9	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		45.6	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		101	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		4900	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		52.5	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		49.5	ug/L	0.300	1.00
95-47-6	o-Xylene		52.1	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		52.5	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1505**	**Date Collected:**	**05/03/2017 12:24**	**Matrix:**	**W**
Lab Sample ID:	**1203790478**	**Date Received:**	**05/05/2017 09:25**		
Client Sample:	**QC for batch 1665467**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAMO-17-132236PSD**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1665467**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/16/2017 20:19**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/16/2017 20:19**				
Data File:	**051617V1\1I224.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		55.0	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		43.3	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		51.1	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	52.6	50.0	ug/L	105	(71%-134%)
Bromofluorobenzene	48.6	50.0	ug/L	97	(70%-131%)
Toluene-d8	53.9	50.0	ug/L	108	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1505**	**Date Collected:**	**05/03/2017 12:24**	**Matrix:**	**W**
Lab Sample ID:	**1203790479**	**Date Received:**	**05/05/2017 09:25**		
Client Sample:	**QC for batch 1665467**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAMO-17-132236PSD**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1665467**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/16/2017 21:17**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/16/2017 21:17**				
Data File:	**051617V1\1I226.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		42.1	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		232	ug/L	1.50	5.00
107-13-1	Acrylonitrile		198	ug/L	1.50	5.00
107-05-1	Allyl chloride		208	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:	**2017-1505**	**Date Collected:**	**05/03/2017 12:24**	**Matrix:**	**W**
Lab Sample ID:	**1203790479**	**Date Received:**	**05/05/2017 09:25**		
Client Sample:	**QC for batch 1665467**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAMO-17-132236PSD**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1665467**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/16/2017 21:17**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/16/2017 21:17**				
Data File:	**051617V1\1I226.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		242	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		2100	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		209	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		220	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		202	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		198	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:	**2017-1505**	**Date Collected:**	**05/03/2017 12:24**	**Matrix:**	**W**
Lab Sample ID:	**1203790479**	**Date Received:**	**05/05/2017 09:25**		
Client Sample:	**QC for batch 1665467**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAMO-17-132236PSD**	**Method:**	**SW-846:8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1665467**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**05/16/2017 21:17**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**05/16/2017 21:17**				
Data File:	**051617V1\1I226.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	52.4	50.0	ug/L	105	(71%-134%)
Bromofluorobenzene	49.1	50.0	ug/L	98	(70%-131%)
Toluene-d8	53.5	50.0	ug/L	107	(74%-124%)

Semi-Volatile Analysis

Case Narrative

GC/MS Semivolatile
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2017-1505
Work Order #: 422859

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:	1664488
Prep Batch Number:	1664486

Sample Analysis

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

Sample ID	Client ID
422859002	CAMO-17-132219
422859004	CAMO-17-132304
1203788054	Method Blank (MB)
1203788055	Laboratory Control Sample (LCS)
1203788056	422869004(WST15-17-135039) Matrix Spike (MS)
1203788057	422869004(WST15-17-135039) 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 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
Sample (See Below) displayed failing surrogate recoveries. Because the recoveries were biased high and target analytes were not detected in the associated samples above the reporting limit, the data were reported.

Sample	Analyte	Value
1203788056 (WST15-17-135039MS)	Nitrobenzene-d5	123* (36%-115%)

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

Laboratory Control Sample (LCS) Recovery
The LCS and/or LCSD (See Below) did not meet spike recovery acceptance criteria. Since the target analytes were not detected in the associated samples above the reporting limits, the positive bias had no adverse impact on the data.

Sample	Analyte	Value
1203788055 (LCS)	Nitrobenzene	121* (53%-115%)

QC Sample Designation
Sample 422869004 (WST15-17-135039) was selected for analysis as the matrix spike and matrix spike duplicate.

Spike Recovery Statement
The MS or MSD (See Below) recovered spiked analytes outside of the established acceptance limits. As similar recoveries were displayed in the MS and MSD, the failures were attributed to sample matrix interference and the data were reported.

Sample	Analyte	Value
1203788056 (WST15-17-135039MS)	Several	See applicable report
1203788057 (WST15-17-135039MSD)	Several	See applicable report

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

Sample	Analyte	Value
1203788056 (WST15-17-135039MS)	Several	See applicable report
1203788057 (WST15-17-135039MSD)	Several	See applicable report

MS/MSD Relative Percent Difference (RPD) Statement
The relative percent differences (RPD) for the MS and MSD, (See Below), were not within the acceptance limits. The failures were attributed to matrix interference. The data were reported.

Sample	Analyte	Value
1203788056MS and 1203788057MSD (WST15-17-135039)	Benzidine	200* (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) 1631583 was generated for samples 1203788055 (LCS), 1203788056 (WST15-17-135039MS) and 1203788057 (WST15-17-135039MSD) in this SDG/batch.

Manual Integrations
Samples 1203788056 (WST15-17-135039MS) and 1203788057 (WST15-17-135039MSD) 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 422859002 (CAMO-17-132219) and 422859004 (CAMO-17-132304) 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
MSD1.I	Agilent 6890N/5973 GC/MS w/ 7683 Autosampler	HP6890/HP5973	DB-5MS	25m x 0.2mm, 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: 2017-1505 GEL Work Order: 422859

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: 05 JUN 2017 **Title: Data Validator**

Sample Data Summary

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1505**	**Date Collected:**	**05/09/2017 10:52**	**Matrix:**	**W**
Lab Sample ID:	**422859002**	**Date Received:**	**05/11/2017 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00114**
Client ID:	**CAMO-17-132219**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1664488**	**Inst:**	**MSD1.I**	**Dilution:**	**1**
Run Date:	**05/12/2017 16:56**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**05/12/2017 05:22**	**Aliquot:**	**950 mL**	**Final Volume:**	**1 mL**
Data File:	**S051217.B\s1e1211.D**	**Column:**	**25x.20x.33**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene	U	10.5	ug/L	3.16	10.5
120-82-1	1,2,4-Trichlorobenzene	U	10.5	ug/L	3.16	10.5
95-50-1	1,2-Dichlorobenzene	U	10.5	ug/L	3.16	10.5
122-66-7	Azobenzene	U	10.5	ug/L	3.16	10.5
	1,2-Diphenylhydrazine					
541-73-1	1,3-Dichlorobenzene	U	10.5	ug/L	3.16	10.5
106-46-7	1,4-Dichlorobenzene	U	10.5	ug/L	3.16	10.5
123-91-1	1,4-Dioxane		13.3	ug/L	3.16	10.5
90-12-0	1-Methylnaphthalene	U	1.05	ug/L	0.316	1.05
58-90-2	2,3,4,6-Tetrachlorophenol	U	10.5	ug/L	3.16	10.5
95-95-4	2,4,5-Trichlorophenol	U	10.5	ug/L	3.16	10.5
88-06-2	2,4,6-Trichlorophenol	U	10.5	ug/L	3.16	10.5
120-83-2	2,4-Dichlorophenol	U	10.5	ug/L	3.16	10.5
105-67-9	2,4-Dimethylphenol	U	10.5	ug/L	3.16	10.5
51-28-5	2,4-Dinitrophenol	U	21.1	ug/L	5.26	21.1
121-14-2	2,4-Dinitrotoluene	U	10.5	ug/L	3.16	10.5
606-20-2	2,6-Dinitrotoluene	U	10.5	ug/L	3.16	10.5
91-58-7	2-Chloronaphthalene	U	1.05	ug/L	0.432	1.05
95-57-8	2-Chlorophenol	U	10.5	ug/L	3.16	10.5
534-52-1	2-Methyl-4,6-dinitrophenol	U	10.5	ug/L	3.16	10.5
91-57-6	2-Methylnaphthalene	U	1.05	ug/L	0.316	1.05
88-75-5	2-Nitrophenol	U	10.5	ug/L	3.16	10.5
91-94-1	3,3'-Dichlorobenzidine	U	10.5	ug/L	3.16	10.5
101-55-3	4-Bromophenylphenylether	U	10.5	ug/L	3.16	10.5
59-50-7	Parachlorometa cresol	U	10.5	ug/L	3.16	10.5
	4-Chloro-3-methylphenol					
106-47-8	4-Chloroaniline	U	10.5	ug/L	3.47	10.5
7005-72-3	4-Chlorophenylphenylether	U	10.5	ug/L	3.16	10.5
100-02-7	4-Nitrophenol	U	10.5	ug/L	3.16	10.5
83-32-9	Acenaphthene	U	1.05	ug/L	0.316	1.05
208-96-8	Acenaphthylene	U	1.05	ug/L	0.316	1.05
62-53-3	Aniline	U	10.5	ug/L	4.42	10.5
120-12-7	Anthracene	U	1.05	ug/L	0.316	1.05
1912-24-9	Atrazine	U	10.5	ug/L	3.16	10.5
92-87-5	Benzidine	U	10.5	ug/L	4.11	10.5
56-55-3	Benzo(a)anthracene	U	1.05	ug/L	0.316	1.05
50-32-8	Benzo(a)pyrene	U	1.05	ug/L	0.316	1.05
205-99-2	Benzo(b)fluoranthene	U	1.05	ug/L	0.316	1.05
191-24-2	Benzo(ghi)perylene	U	1.05	ug/L	0.316	1.05

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1505**	**Date Collected:**	**05/09/2017 10:52**	**Matrix:**	**W**
Lab Sample ID:	**422859002**	**Date Received:**	**05/11/2017 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00114**
Client ID:	**CAMO-17-132219**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1664488**	**Inst:**	**MSD1.I**	**Dilution:**	**1**
Run Date:	**05/12/2017 16:56**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**05/12/2017 05:22**	**Aliquot:**	**950 mL**	**Final Volume:**	**1 mL**
Data File:	**S051217.B\s1e1211.D**	**Column:**	**25x.20x.33**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene	U	1.05	ug/L	0.316	1.05
65-85-0	Benzoic acid	U	21.1	ug/L	6.32	21.1
100-51-6	Benzyl alcohol	U	10.5	ug/L	3.16	10.5
85-68-7	Butylbenzylphthalate	U	10.5	ug/L	3.16	10.5
218-01-9	Chrysene	U	1.05	ug/L	0.316	1.05
84-74-2	Di-n-butylphthalate	U	10.5	ug/L	3.16	10.5
117-84-0	Di-n-octylphthalate	U	10.5	ug/L	3.16	10.5
53-70-3	Dibenzo(a,h)anthracene	U	1.05	ug/L	0.316	1.05
132-64-9	Dibenzofuran	U	10.5	ug/L	3.16	10.5
84-66-2	Diethylphthalate	U	10.5	ug/L	3.16	10.5
131-11-3	Dimethylphthalate	U	10.5	ug/L	3.16	10.5
88-85-7	Dinoseb	U	10.5	ug/L	3.16	10.5
122-39-4	Diphenylamine	U	10.5	ug/L	3.16	10.5
206-44-0	Fluoranthene	U	1.05	ug/L	0.316	1.05
86-73-7	Fluorene	U	1.05	ug/L	0.316	1.05
118-74-1	Hexachlorobenzene	U	10.5	ug/L	3.16	10.5
87-68-3	Hexachlorobutadiene	U	10.5	ug/L	3.16	10.5
77-47-4	Hexachlorocyclopentadiene	U	10.5	ug/L	3.16	10.5
67-72-1	Hexachloroethane	U	10.5	ug/L	3.16	10.5
193-39-5	Indeno(1,2,3-cd)pyrene	U	1.05	ug/L	0.316	1.05
78-59-1	Isophorone	U	10.5	ug/L	3.68	10.5
62-75-9	N-Methyl-N-nitrosomethylamine	U	10.5	ug/L	3.16	10.5
924-16-3	N-Nitrosodi-n-butylamine	U	10.5	ug/L	3.16	10.5
55-18-5	N-Nitrosodiethylamine	U	10.5	ug/L	3.16	10.5
621-64-7	N-Nitrosodi--n-propylamine *N-Nitrosodipropylamine*	U	10.5	ug/L	3.16	10.5
930-55-2	N-Nitrosopyrrolidine	U	10.5	ug/L	3.16	10.5
91-20-3	Naphthalene	U	1.05	ug/L	0.316	1.05
98-95-3	Nitrobenzene	U	10.5	ug/L	3.16	10.5
608-93-5	Pentachlorobenzene	U	10.5	ug/L	3.16	10.5
87-86-5	Pentachlorophenol	U	10.5	ug/L	3.16	10.5
85-01-8	Phenanthrene	U	1.05	ug/L	0.316	1.05
108-95-2	Phenol	U	10.5	ug/L	3.16	10.5
129-00-0	Pyrene	U	1.05	ug/L	0.316	1.05
110-86-1	Pyridine	U	10.5	ug/L	3.16	10.5
108-60-1	bis(2-Chloro-1-methylethyl)ether	U	10.5	ug/L	3.16	10.5
111-91-1	bis(2-Chloroethoxy)methane	U	10.5	ug/L	3.16	10.5
111-44-4	bis(2-Chloroethyl) ether	U	10.5	ug/L	3.16	10.5
117-81-7	bis(2-Ethylhexyl)phthalate	U	10.5	ug/L	3.16	10.5

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1505**	**Date Collected:**	**05/09/2017 10:52**	**Matrix:**	**W**
Lab Sample ID:	**422859002**	**Date Received:**	**05/11/2017 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00114**
Client ID:	**CAMO-17-132219**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1664488**	**Inst:**	**MSD1.I**	**Dilution:**	**1**
Run Date:	**05/12/2017 16:56**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**05/12/2017 05:22**	**Aliquot:**	**950 mL**	**Final Volume:**	**1 mL**
Data File:	**S051217.B\s1e1211.D**	**Column:**	**25x.20x.33**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols	U	10.5	ug/L	3.89	10.5
99-09-2	3-Nitroaniline *m-Nitroaniline*	U	10.5	ug/L	3.16	10.5
95-48-7	o-Cresol	U	10.5	ug/L	3.16	10.5
88-74-4	2-Nitroaniline *o-Nitroaniline*	U	10.5	ug/L	3.16	10.5
100-01-6	4-Nitroaniline *p-Nitroaniline*	U	10.5	ug/L	3.16	10.5

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	98.9	105	ug/L	94	(32%-124%)
2-Fluorobiphenyl	44.3	52.6	ug/L	84	(32%-112%)
2-Fluorophenol	40.7	105	ug/L	39	(15%-88%)
Nitrobenzene-d5	46.9	52.6	ug/L	89	(36%-115%)
Phenol-d5	31.2	105	ug/L	30	(15%-91%)
p-Terphenyl-d14	47.9	52.6	ug/L	91	(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:	**2017-1505**	**Date Collected:**	**05/09/2017 10:52**	**Matrix:**	**W**
Lab Sample ID:	**422859004**	**Date Received:**	**05/11/2017 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00114**
Client ID:	**CAMO-17-132304**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1664488**	**Inst:**	**MSD1.I**	**Dilution:**	**1**
Run Date:	**05/12/2017 17:26**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**05/12/2017 05:22**	**Aliquot:**	**970 mL**	**Final Volume:**	**1 mL**
Data File:	**S051217.B\s1e1212.D**	**Column:**	**25x.20x.33**		

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	U	10.3	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:	**2017-1505**	**Date Collected:**	**05/09/2017 10:52**	**Matrix:**	**W**
Lab Sample ID:	**422859004**	**Date Received:**	**05/11/2017 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00114**
Client ID:	**CAMO-17-132304**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1664488**	**Inst:**	**MSD1.I**	**Dilution:**	**1**
Run Date:	**05/12/2017 17:26**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**05/12/2017 05:22**	**Aliquot:**	**970 mL**	**Final Volume:**	**1 mL**
Data File:	**S051217.B\s1e1212.D**	**Column:**	**25x.20x.33**		

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:	**2017-1505**	**Date Collected:**	**05/09/2017 10:52**	**Matrix:**	**W**
Lab Sample ID:	**422859004**	**Date Received:**	**05/11/2017 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00114**
Client ID:	**CAMO-17-132304**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1664488**	**Inst:**	**MSD1.I**	**Dilution:**	**1**
Run Date:	**05/12/2017 17:26**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**05/12/2017 05:22**	**Aliquot:**	**970 mL**	**Final Volume:**	**1 mL**
Data File:	**S051217.B\s1e1212.D**	**Column:**	**25x.20x.33**		

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	85.1	103	ug/L	83	(32%-124%)
2-Fluorobiphenyl	41.2	51.5	ug/L	80	(32%-112%)
2-Fluorophenol	38.8	103	ug/L	38	(15%-88%)
Nitrobenzene-d5	45.2	51.5	ug/L	88	(36%-115%)
Phenol-d5	30.6	103	ug/L	30	(15%-91%)
p-Terphenyl-d14	41.5	51.5	ug/L	80	(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

Surrogate Recovery Report

SDG Number: 2017-1505

Matrix Type: LIQUID

Sample ID	Client ID	2FP %REC	PHL %REC	NBZ %REC	FBP %REC	TBP %REC	TPH %REC
1203788054	MB for batch 1664486	46	35	100	75	87	75
1203788055	LCS for batch 1664486	49	34	111	81	100	90
422859002	CAMO-17-132219	39	30	89	84	94	91
422859004	CAMO-17-132304	38	30	88	80	83	80
1203788056	WST15-17-135039MS	46	34	123 *	98	113	95
1203788057	WST15-17-135039MSD	39	30	105	85	94	78

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

Semi-Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-1505
Sample Type: Laboratory Control Sample
Client ID: LCS for batch 1664486
Matrix: WATER
Lab Sample ID 1203788055
Instrument: MSD1.I
Analysis Date: 05/12/2017 14:24
Dilution: 1
Analyst: JMB3
Prep Batch ID: 1664486
Inj. Vol: 1 uL
Batch ID: 1664488

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	31.0	62	30-88
110-86-1	LCS	Pyridine	50.0	0.0	35.3	71	27-89
62-53-3	LCS	Aniline	50.0	0.0	47.8	96	49-112
108-95-2	LCS	Phenol	50.0	0.0	18.0	36	16-82
111-44-4	LCS	bis(2-Chloroethyl) ether	50.0	0.0	48.6	97	51-111
95-57-8	LCS	2-Chlorophenol	50.0	0.0	41.6	83	49-105
541-73-1	LCS	1,3-Dichlorobenzene	50.0	0.0	32.1	64	37-95
106-46-7	LCS	1,4-Dichlorobenzene	50.0	0.0	30.9	62	38-96
95-50-1	LCS	1,2-Dichlorobenzene	50.0	0.0	33.5	67	39-97
108-60-1	LCS	bis(2-Chloro-1-methylethyl)et	50.0	0.0	51.3	103	44-123
100-51-6	LCS	Benzyl alcohol	50.0	0.0	42.6	85	44-102
95-48-7	LCS	o-Cresol	50.0	0.0	42.1	84	41-101
65794-96-9	LCS	m,p-Cresols	50.0	0.0	40.7	81	43-102
621-64-7	LCS	N-Nitrosodi--n-propylamine *N-Nitrosodipropylamine*	50.0	0.0	52.3	105	54-115
67-72-1	LCS	Hexachloroethane	50.0	0.0	42.8	86	36-96
98-95-3	LCS	Nitrobenzene	50.0	0.0	60.5	121 *	53-115
78-59-1	LCS	Isophorone	50.0	0.0	56.6	113	56-117
88-75-5	LCS	2-Nitrophenol	50.0	0.0	47.8	96	51-113
105-67-9	LCS	2,4-Dimethylphenol	50.0	0.0	43.1	86	51-104
111-91-1	LCS	bis(2-Chloroethoxy)methane	50.0	0.0	56.6	113	55-114
120-83-2	LCS	2,4-Dichlorophenol	50.0	0.0	48.6	97	53-109
65-85-0	LCS	Benzoic acid	100	0.0	33.1	33	21-74

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-1505
Client ID: LCS for batch 1664486
Lab Sample ID 1203788055
Instrument: MSD1.I
Analyst: JMB3
Inj. Vol: 1 uL

Sample Type: Laboratory Control Sample
Matrix: WATER
Analysis Date: 05/12/2017 14:24
Prep Batch ID: 1664486
Batch ID: 1664488
Dilution: 1

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	58.5	117	65-136
87-68-3	LCS	Hexachlorobutadiene	50.0	0.0	37.9	76	35-98
59-50-7	LCS	Parachlorometa cresol *4-Chloro-3-methylphenol*	50.0	0.0	57.2	114	55-115
91-57-6	LCS	2-Methylnaphthalene	50.0	0.0	39.9	80	42-103
91-20-3	LCS	Naphthalene	50.0	0.0	41.8	84	44-102
90-12-0	LCS	1-Methylnaphthalene	50.0	0.0	39.1	78	45-108
77-47-4	LCS	Hexachlorocyclopentadiene	50.0	0.0	25.3	51	34-89
88-06-2	LCS	2,4,6-Trichlorophenol	50.0	0.0	43.3	87	55-120
95-95-4	LCS	2,4,5-Trichlorophenol	50.0	0.0	43.6	87	55-116
91-58-7	LCS	2-Chloronaphthalene	50.0	0.0	32.4	65	44-107
88-74-4	LCS	2-Nitroaniline *o-Nitroaniline*	50.0	0.0	58.3	117	53-121
99-09-2	LCS	3-Nitroaniline *m-Nitroaniline*	50.0	0.0	57.3	115	61-139
131-11-3	LCS	Dimethylphthalate	50.0	0.0	49.0	98	60-122
606-20-2	LCS	2,6-Dinitrotoluene	50.0	0.0	48.7	97	59-122
121-14-2	LCS	2,4-Dinitrotoluene	50.0	0.0	48.9	98	57-124
208-96-8	LCS	Acenaphthylene	50.0	0.0	41.3	83	50-113
83-32-9	LCS	Acenaphthene	50.0	0.0	39.3	79	49-112
51-28-5	LCS	2,4-Dinitrophenol	50.0	0.0	44.7	89	34-122
132-64-9	LCS	Dibenzofuran	50.0	0.0	38.1	76	50-111
58-90-2	LCS	2,3,4,6-Tetrachlorophenol	50.0	0.0	49.5	99	54-122
84-66-2	LCS	Diethylphthalate	50.0	0.0	49.1	98	57-122
100-02-7	LCS	4-Nitrophenol	50.0	0.0	11.0	22	15-137

Semi-Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-1505
Sample Type: Laboratory Control Sample
Client ID: LCS for batch 1664486
Matrix: WATER
Lab Sample ID 1203788055
Instrument: MSD1.I
Analysis Date: 05/12/2017 14:24
Dilution: 1
Analyst: JMB3
Prep Batch ID: 1664486
Inj. Vol: 1 uL
Batch ID: 1664488

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	41.4	83	52-114
7005-72-3	LCS	4-Chlorophenylphenylether	50.0	0.0	38.5	77	52-121
100-01-6	LCS	4-Nitroaniline *p-Nitroaniline*	50.0	0.0	51.0	102	44-137
534-52-1	LCS	2-Methyl-4,6-dinitrophenol	50.0	0.0	48.0	96	45-124
122-39-4	LCS	Diphenylamine	50.0	0.0	40.4	81	55-113
122-66-7	LCS	Azobenzene *1,2-Diphenylhydrazine*	50.0	0.0	56.9	114	53-115
101-55-3	LCS	4-Bromophenylphenylether	50.0	0.0	38.5	77	54-116
118-74-1	LCS	Hexachlorobenzene	50.0	0.0	41.9	84	54-115
87-86-5	LCS	Pentachlorophenol	50.0	0.0	53.3	107	41-116
85-01-8	LCS	Phenanthrene	50.0	0.0	44.5	89	55-110
120-12-7	LCS	Anthracene	50.0	0.0	45.3	91	56-112
84-74-2	LCS	Di-n-butylphthalate	50.0	0.0	50.7	101	57-123
206-44-0	LCS	Fluoranthene	50.0	0.0	50.0	100	54-118
129-00-0	LCS	Pyrene	50.0	0.0	41.9	84	49-121
85-68-7	LCS	Butylbenzylphthalate	50.0	0.0	48.5	97	52-125
117-81-7	LCS	bis(2-Ethylhexyl)phthalate	50.0	0.0	45.2	90	52-125
56-55-3	LCS	Benzo(a)anthracene	50.0	0.0	52.0	104	57-112
218-01-9	LCS	Chrysene	50.0	0.0	52.9	106	58-117
117-84-0	LCS	Di-n-octylphthalate	50.0	0.0	47.0	94	50-129
205-99-2	LCS	Benzo(b)fluoranthene	50.0	0.0	46.7	93	41-118
207-08-9	LCS	Benzo(k)fluoranthene	50.0	0.0	47.6	95	42-121
50-32-8	LCS	Benzo(a)pyrene	50.0	0.0	48.0	96	40-118

Quality Control Summary
Spike Recovery Report

SDG Number: **2017-1505**
Sample Type: **Laboratory Control Sample**
Client ID: **LCS for batch 1664486**
Matrix: **WATER**
Lab Sample ID **1203788055**
Instrument: **MSD1.I**
Analysis Date: **05/12/2017 14:24**
Dilution: **1**
Analyst: **JMB3**
Prep Batch ID: **1664486**
Inj. Vol: **1 uL**
Batch ID: **1664488**

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	58.3	117	34-125
53-70-3	LCS	Dibenzo(a,h)anthracene	50.0	0.0	58.4	117	38-129
191-24-2	LCS	Benzo(ghi)perylene	50.0	0.0	61.4	123	33-131
123-91-1	LCS	1,4-Dioxane	50.0	0.0	25.2	50	38-78
930-55-2	LCS	N-Nitrosopyrrolidine	50.0	0.0	45.2	90	54-113
95-94-3	LCS	1,2,4,5-Tetrachlorobenzene	50.0	0.0	29.7	59	44-102
1912-24-9	LCS	Atrazine	50.0	0.0	45.9	92	60-131
92-87-5	LCS	Benzidine	100	0.0	89.6	90	20-144
91-94-1	LCS	3,3'-Dichlorobenzidine	50.0	0.0	46.0	92	43-127
120-82-1	LCS	1,2,4-Trichlorobenzene	50.0	0.0	36.8	74	39-99

Quality Control Summary
Spike Recovery Report

SDG Number: **2017-1505**
Sample Type: **Matrix Spike**
Client ID: **WST15-17-135039MS**
Matrix: **W**
Lab Sample ID **1203788056**
Instrument: **MSD1.I**
Analysis Date: **05/12/2017 17:56**
Dilution: **1**
Analyst: **JMB3**
Prep Batch ID: **1664486**
Inj. Vol: **1 uL**
Batch ID: **1664488**

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	100	0.00	U	61.2	61	25-106
110-86-1	MS	Pyridine	100	0.00	U	68.5	69	24-93
62-53-3	MS	Aniline	100	0.00	U	89.5	90	37-113
108-95-2	MS	Phenol	100	0.00	U	36.0	36	23-82
111-44-4	MS	bis(2-Chloroethyl) ether	100	0.00	U	111	111	39-114
95-57-8	MS	2-Chlorophenol	100	0.00	U	82.4	82	37-108
541-73-1	MS	1,3-Dichlorobenzene	100	0.00	U	81.0	81	27-97
106-46-7	MS	1,4-Dichlorobenzene	100	0.00	U	79.4	79	28-97
95-50-1	MS	1,2-Dichlorobenzene	100	0.00	U	85.9	86	28-99
108-60-1	MS	bis(2-Chloro-1-methylethyl)et	100	0.00	U	128	128 *	32-127
100-51-6	MS	Benzyl alcohol	100	0.00	U	87.9	88	37-116
95-48-7	MS	o-Cresol	100	0.00	U	82.2	82	34-109
65794-96-9	MS	m,p-Cresols	100	0.00	U	79.1	79	36-120
621-64-7	MS	N-Nitrosodi--n-propylamine *N-Nitrosodipropylamine*	100	0.00	U	122	122 *	42-118
67-72-1	MS	Hexachloroethane	100	0.00	U	114	114 *	29-94
98-95-3	MS	Nitrobenzene	100	0.00	U	138	138 *	38-123
78-59-1	MS	Isophorone	100	0.00	U	126	126 *	43-120
88-75-5	MS	2-Nitrophenol	100	0.00	U	106	106	39-115
105-67-9	MS	2,4-Dimethylphenol	100	0.00	U	85.9	86	39-107
111-91-1	MS	bis(2-Chloroethoxy)methane	100	0.00	U	127	127 *	42-118
120-83-2	MS	2,4-Dichlorophenol	100	0.00	U	99.0	99	40-111
65-85-0	MS	Benzoic acid	200	0.00	U	105	53	17-95

Semi-Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-1505
Sample Type: Matrix Spike
Client ID: WST15-17-135039MS
Matrix: W
Lab Sample ID 1203788056
Instrument: MSD1.I
Analysis Date: 05/12/2017 17:56
Dilution: 1
Analyst: JMB3
Prep Batch ID: 1664486
Inj. Vol: 1 uL
Batch ID: 1664488

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
106-47-8	MS	4-Chloroaniline	100	0.00	U	117	117	44-138
87-68-3	MS	Hexachlorobutadiene	100	0.00	U	92.5	93	26-98
59-50-7	MS	Parachlorometa cresol *4-Chloro-3-methylphenol*	100	0.00	U	123	123 *	41-122
91-57-6	MS	2-Methylnaphthalene	100	0.00	U	100	100	29-109
91-20-3	MS	Naphthalene	100	0.00	U	103	103	31-108
90-12-0	MS	1-Methylnaphthalene	100	0.00	U	101	101	33-112
77-47-4	MS	Hexachlorocyclopentadiene	100	0.00	U	81.8	82 *	26-79
88-06-2	MS	2,4,6-Trichlorophenol	100	0.00	U	97.8	98	39-124
95-95-4	MS	2,4,5-Trichlorophenol	100	0.00	U	99.1	99	42-120
91-58-7	MS	2-Chloronaphthalene	100	0.00	U	82.9	83	29-113
88-74-4	MS	2-Nitroaniline *o-Nitroaniline*	100	0.00	U	133	133 *	41-121
99-09-2	MS	3-Nitroaniline *m-Nitroaniline*	100	0.00	U	113	113	42-144
131-11-3	MS	Dimethylphthalate	100	0.00	U	110	110	45-128
606-20-2	MS	2,6-Dinitrotoluene	100	0.00	U	115	115	46-124
121-14-2	MS	2,4-Dinitrotoluene	100	0.00	U	112	112	45-125
208-96-8	MS	Acenaphthylene	100	0.00	U	104	104	35-120
83-32-9	MS	Acenaphthene	100	0.00	U	111	111	35-117
51-28-5	MS	2,4-Dinitrophenol	100	0.00	U	103	103	27-122
132-64-9	MS	Dibenzofuran	100	0.00	U	96.6	97	38-113
58-90-2	MS	2,3,4,6-Tetrachlorophenol	100	0.00	U	110	110	40-128
84-66-2	MS	Diethylphthalate	100	0.00	U	110	110	43-127
100-02-7	MS	4-Nitrophenol	100	0.00	U	43.5	44	17-85

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-1505
Client ID: WST15-17-135039MS
Lab Sample ID 1203788056
Instrument: MSD1.I
Analvst: JMB3
Inj. Vol: 1 uL

Sample Type: Matrix Spike
Matrix: W
Analvsis Date: 05/12/2017 17:56
Prep Batch ID: 1664486
Batch ID: 1664488
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	100	0.00	U	106	106	39-117
7005-72-3	MS	4-Chlorophenylphenylether	100	0.00	U	104	104	39-121
100-01-6	MS	4-Nitroaniline *p-Nitroaniline*	100	0.00	U	118	118	30-133
534-52-1	MS	2-Methyl-4,6-dinitrophenol	100	0.00	U	109	109	32-126
122-39-4	MS	Diphenylamine	100	0.00	U	81.6	82	37-118
122-66-7	MS	Azobenzene *1,2-Diphenylhydrazine*	100	0.00	U	133	133 *	38-120
101-55-3	MS	4-Bromophenylphenylether	100	0.00	U	96.6	97	39-121
118-74-1	MS	Hexachlorobenzene	100	0.00	U	103	103	40-118
87-86-5	MS	Pentachlorophenol	100	0.00	U	126	126 *	35-121
85-01-8	MS	Phenanthrene	100	0.00	U	109	109	40-115
120-12-7	MS	Anthracene	100	0.00	U	105	105	38-120
84-74-2	MS	Di-n-butylphthalate	100	0.00	U	106	106	41-128
206-44-0	MS	Fluoranthene	100	0.00	U	109	109	41-119
129-00-0	MS	Pyrene	100	0.00	U	98.7	99	35-128
85-68-7	MS	Butylbenzylphthalate	100	0.00	U	105	105	40-129
117-81-7	MS	bis(2-Ethylhexyl)phthalate	100	2.44	U	102	100	38-131
56-55-3	MS	Benzo(a)anthracene	100	0.00	U	115	115	39-120
218-01-9	MS	Chrysene	100	0.00	U	120	120	41-124
117-84-0	MS	Di-n-octylphthalate	100	0.00	U	99.4	99	37-134
205-99-2	MS	Benzo(b)fluoranthene	100	0.00	U	104	104	31-122
207-08-9	MS	Benzo(k)fluoranthene	100	0.00	U	104	104	33-123
50-32-8	MS	Benzo(a)pyrene	100	0.00	U	111	111	32-118

Semi-Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-1505
Client ID: WST15-17-135039MS
Lab Sample ID 1203788056
Instrument: MSD1.I
Analyst: JMB3
Inj. Vol: 1 uL

Sample Type: Matrix Spike
Matrix: W
Analysis Date: 05/12/2017 17:56
Prep Batch ID: 1664486
Batch ID: 1664488
Dilution: 1

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	100	0.00	U	125	125 *	27-121
53-70-3	MS	Dibenzo(a,h)anthracene	100	0.00	U	127	127 *	30-125
191-24-2	MS	Benzo(ghi)perylene	100	0.00	U	133	133 *	24-126
123-91-1	MS	1,4-Dioxane	100	0.00	U	48.0	48	24-110
930-55-2	MS	N-Nitrosopyrrolidine	100	0.00	U	100	100	47-119
95-94-3	MS	1,2,4,5-Tetrachlorobenzene	100	0.00	U	76.7	77	32-101
1912-24-9	MS	Atrazine	100	0.00	U	103	103	42-129
92-87-5	MS	Benzidine	200	0.00	U	14.9	7 *	15-130
91-94-1	MS	3,3'-Dichlorobenzidine	100	0.00	U	74.5	74	34-124
120-82-1	MS	1,2,4-Trichlorobenzene	100	0.00	U	91.3	91	26-102

Semi-Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-1505
Client ID: WST15-17-135039MSD
Lab Sample ID 1203788057
Instrument: MSD1.I
Analvst: JMB3
Inj. Vol: 1 uL

Sample Type: Matrix Spike Duplicate
Matrix: W
Analvsis Date: 05/12/2017 18:26
Prep Batch ID: 1664486
Batch ID: 1664488
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	100	0.00	U	48.1	48	25-106	24	0-30
110-86-1	MSD	Pyridine	100	0.00	U	53.1	53	24-93	25	0-30
62-53-3	MSD	Aniline	100	0.00	U	74.0	74	37-113	19	0-30
108-95-2	MSD	Phenol	100	0.00	U	30.4	30	23-82	17	0-30
111-44-4	MSD	bis(2-Chloroethyl) ether	100	0.00	U	97.2	97	39-114	13	0-30
95-57-8	MSD	2-Chlorophenol	100	0.00	U	69.9	70	37-108	16	0-30
541-73-1	MSD	1,3-Dichlorobenzene	100	0.00	U	71.2	71	27-97	13	0-30
106-46-7	MSD	1,4-Dichlorobenzene	100	0.00	U	67.5	68	28-97	16	0-30
95-50-1	MSD	1,2-Dichlorobenzene	100	0.00	U	74.6	75	28-99	14	0-30
108-60-1	MSD	bis(2-Chloro-1-methylethyl)et	100	0.00	U	109	109	32-127	17	0-30
100-51-6	MSD	Benzyl alcohol	100	0.00	U	73.3	73	37-116	18	0-30
95-48-7	MSD	o-Cresol	100	0.00	U	69.3	69	34-109	17	0-30
65794-96-9	MSD	m,p-Cresols	100	0.00	U	69.1	69	36-120	13	0-30
621-64-7	MSD	N-Nitrosodi--n-propylamine *N-Nitrosodipropylamine*	100	0.00	U	104	104	42-118	16	0-30
67-72-1	MSD	Hexachloroethane	100	0.00	U	96.0	96 *	29-94	17	0-30
98-95-3	MSD	Nitrobenzene	100	0.00	U	118	118	38-123	15	0-30
78-59-1	MSD	Isophorone	100	0.00	U	110	110	43-120	13	0-30
88-75-5	MSD	2-Nitrophenol	100	0.00	U	96.3	96	39-115	10	0-30
105-67-9	MSD	2,4-Dimethylphenol	100	0.00	U	77.2	77	39-107	11	0-30
111-91-1	MSD	bis(2-Chloroethoxy)methane	100	0.00	U	108	108	42-118	17	0-30
120-83-2	MSD	2,4-Dichlorophenol	100	0.00	U	90.1	90	40-111	9	0-30
65-85-0	MSD	Benzoic acid	200	0.00	U	88.3	44	17-95	17	0-30

Semi-Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-1505
Client ID: WST15-17-135039MSD
Lab Sample ID 1203788057
Instrument: MSD1.I
Analvst: JMB3
Inj. Vol: 1 uL

Sample Type: Matrix Spike Duplicate
Matrix: W
Analvsis Date: 05/12/2017 18:26
Prep Batch ID: 1664486
Batch ID: 1664488
Dilution: 1

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	100	0.00	U	99.0	99	44-138	17	0-30
87-68-3	MSD	Hexachlorobutadiene	100	0.00	U	79.6	80	26-98	15	0-30
59-50-7	MSD	Parachlorometa cresol *4-Chloro-3-methylphenol*	100	0.00	U	107	107	41-122	14	0-30
91-57-6	MSD	2-Methylnaphthalene	100	0.00	U	89.5	90	29-109	11	0-30
91-20-3	MSD	Naphthalene	100	0.00	U	91.6	92	31-108	12	0-30
90-12-0	MSD	1-Methylnaphthalene	100	0.00	U	88.2	88	33-112	13	0-30
77-47-4	MSD	Hexachlorocyclopentadiene	100	0.00	U	72.2	72	26-79	13	0-30
88-06-2	MSD	2,4,6-Trichlorophenol	100	0.00	U	82.6	83	39-124	17	0-30
95-95-4	MSD	2,4,5-Trichlorophenol	100	0.00	U	86.7	87	42-120	13	0-30
91-58-7	MSD	2-Chloronaphthalene	100	0.00	U	71.9	72	29-113	14	0-30
88-74-4	MSD	2-Nitroaniline *o-Nitroaniline*	100	0.00	U	114	114	41-121	15	0-30
99-09-2	MSD	3-Nitroaniline *m-Nitroaniline*	100	0.00	U	97.9	98	42-144	15	0-30
131-11-3	MSD	Dimethylphthalate	100	0.00	U	92.8	93	45-128	17	0-30
606-20-2	MSD	2,6-Dinitrotoluene	100	0.00	U	98.9	99	46-124	15	0-30
121-14-2	MSD	2,4-Dinitrotoluene	100	0.00	U	93.8	94	45-125	17	0-30
208-96-8	MSD	Acenaphthylene	100	0.00	U	91.6	92	35-120	12	0-30
83-32-9	MSD	Acenaphthene	100	0.00	U	96.5	97	35-117	14	0-30
51-28-5	MSD	2,4-Dinitrophenol	100	0.00	U	86.5	87	27-122	18	0-30
132-64-9	MSD	Dibenzofuran	100	0.00	U	84.2	84	38-113	14	0-30
58-90-2	MSD	2,3,4,6-Tetrachlorophenol	100	0.00	U	93.7	94	40-128	16	0-30
84-66-2	MSD	Diethylphthalate	100	0.00	U	92.9	93	43-127	17	0-30
100-02-7	MSD	4-Nitrophenol	100	0.00	U	35.0	35	17-85	22	0-30

Semi-Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-1505
Sample Type: Matrix Spike Duplicate
Client ID: WST15-17-135039MSD
Matrix: W
Lab Sample ID 1203788057
Instrument: MSD1.I
Analysis Date: 05/12/2017 18:26
Dilution: 1
Analyst: JMB3
Prep Batch ID: 1664486
Inj. Vol: 1 uL
Batch ID: 1664488

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	100	0.00	U	91.3	91	39-117	15	0-30
7005-72-3	MSD	4-Chlorophenylphenylether	100	0.00	U	88.1	88	39-121	17	0-30
100-01-6	MSD	4-Nitroaniline *p-Nitroaniline*	100	0.00	U	97.7	98	30-133	19	0-30
534-52-1	MSD	2-Methyl-4,6-dinitrophenol	100	0.00	U	92.9	93	32-126	16	0-30
122-39-4	MSD	Diphenylamine	100	0.00	U	70.3	70	37-118	15	0-30
122-66-7	MSD	Azobenzene *1,2-Diphenylhydrazine*	100	0.00	U	118	118	38-120	12	0-30
101-55-3	MSD	4-Bromophenylphenylether	100	0.00	U	84.2	84	39-121	14	0-30
118-74-1	MSD	Hexachlorobenzene	100	0.00	U	90.9	91	40-118	12	0-30
87-86-5	MSD	Pentachlorophenol	100	0.00	U	108	108	35-121	16	0-30
85-01-8	MSD	Phenanthrene	100	0.00	U	94.2	94	40-115	14	0-30
120-12-7	MSD	Anthracene	100	0.00	U	91.5	92	38-120	14	0-30
84-74-2	MSD	Di-n-butylphthalate	100	0.00	U	92.8	93	41-128	13	0-30
206-44-0	MSD	Fluoranthene	100	0.00	U	95.7	96	41-119	13	0-30
129-00-0	MSD	Pyrene	100	0.00	U	83.7	84	35-128	16	0-30
85-68-7	MSD	Butylbenzylphthalate	100	0.00	U	90.3	90	40-129	15	0-30
117-81-7	MSD	bis(2-Ethylhexyl)phthalate	100	2.44	U	85.3	83	38-131	18	0-30
56-55-3	MSD	Benzo(a)anthracene	100	0.00	U	99.9	100	39-120	14	0-30
218-01-9	MSD	Chrysene	100	0.00	U	104	104	41-124	14	0-30
117-84-0	MSD	Di-n-octylphthalate	100	0.00	U	83.3	83	37-134	18	0-30
205-99-2	MSD	Benzo(b)fluoranthene	100	0.00	U	84.9	85	31-122	20	0-30
207-08-9	MSD	Benzo(k)fluoranthene	100	0.00	U	86.5	87	33-123	18	0-30
50-32-8	MSD	Benzo(a)pyrene	100	0.00	U	91.8	92	32-118	19	0-30

Semi-Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-1505
Sample Type: Matrix Spike Duplicate
Client ID: WST15-17-135039MSD
Matrix: W
Lab Sample ID 1203788057
Instrument: MSD1.I
Analysis Date: 05/12/2017 18:26
Dilution: 1
Analyst: JMB3
Prep Batch ID: 1664486
Inj. Vol: 1 uL
Batch ID: 1664488

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	100	0.00	U	104	104	27-121	18	0-30
53-70-3	MSD	Dibenzo(a,h)anthracene	100	0.00	U	101	101	30-125	23	0-30
191-24-2	MSD	Benzo(ghi)perylene	100	0.00	U	110	110	24-126	19	0-30
123-91-1	MSD	1,4-Dioxane	100	0.00	U	40.8	41	24-110	16	0-30
930-55-2	MSD	N-Nitrosopyrrolidine	100	0.00	U	81.2	81	47-119	21	0-30
95-94-3	MSD	1,2,4,5-Tetrachlorobenzene	100	0.00	U	67.9	68	32-101	12	0-30
1912-24-9	MSD	Atrazine	100	0.00	U	86.3	86	42-129	18	0-30
92-87-5	MSD	Benzidine	200	0.00	U	6.10	3 *	15-130	84 *	0-30
91-94-1	MSD	3,3'-Dichlorobenzidine	100	0.00	U	59.5	60	34-124	22	0-30
120-82-1	MSD	1,2,4-Trichlorobenzene	100	0.00	U	82.9	83	26-102	10	0-30

Method Blank Summary

SDG Number:	**2017-1505**	**Client:**	**ARSL004**	**Matrix:**	**WATER**
Client ID:	**MB for batch 1664486**	**Instrument ID:**	**MSD1.I**	**Data File:**	**S051217.B\s1e1205.D**
Lab Sample ID:	**1203788054**	**Prep Date:**	**05/12/2017 05:22**	**Analyzed:**	**05/12/17 13:53**
Column:	**25x.20x.33**				

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 1664486	1203788055	S051217.B\s1e1206.D	05/12/17	1424
02	CAMO-17-132219	422859002	S051217.B\s1e1211.D	05/12/17	1656
03	CAMO-17-132304	422859004	S051217.B\s1e1212.D	05/12/17	1726
04	WST15-17-135039MS	1203788056	S051217.B\s1e1213.D	05/12/17	1756
05	WST15-17-135039MSD	1203788057	S051217.B\s1e1214.D	05/12/17	1826

Quality Control Data

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1505**			**Matrix:**	**WATER**
Lab Sample ID:	**1203788054**				
Client Sample:	**QC for batch 1664486**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1664486**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1664488**	**Inst:**	**MSD1.I**	**Dilution:**	**1**
Run Date:	**05/12/2017 13:53**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**05/12/2017 05:22**	**Aliquot:**	**1000 mL**	**Final Volume:**	**1 mL**
Data File:	**S051217.B\s1e1205.D**	**Column:**	**25x.20x.33**		

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:	**2017-1505**			**Matrix:**	**WATER**
Lab Sample ID:	**1203788054**				
Client Sample:	**QC for batch 1664486**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1664486**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1664488**	**Inst:**	**MSD1.I**	**Dilution:**	**1**
Run Date:	**05/12/2017 13:53**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**05/12/2017 05:22**	**Aliquot:**	**1000 mL**	**Final Volume:**	**1 mL**
Data File:	**S051217.B\s1e1205.D**	**Column:**	**25x.20x.33**		

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:	**2017-1505**			**Matrix:**	**WATER**
Lab Sample ID:	**1203788054**				
Client Sample:	**QC for batch 1664486**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1664486**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1664488**	**Inst:**	**MSD1.I**	**Dilution:**	**1**
Run Date:	**05/12/2017 13:53**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**05/12/2017 05:22**	**Aliquot:**	**1000 mL**	**Final Volume:**	**1 mL**
Data File:	**S051217.B\s1e1205.D**	**Column:**	**25x.20x.33**		

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	86.7	100	ug/L	87	(32%-124%)
2-Fluorobiphenyl	37.5	50.0	ug/L	75	(32%-112%)
2-Fluorophenol	46.2	100	ug/L	46	(15%-88%)
Nitrobenzene-d5	49.9	50.0	ug/L	100	(36%-115%)
Phenol-d5	34.6	100	ug/L	35	(15%-91%)
p-Terphenyl-d14	37.5	50.0	ug/L	75	(36%-121%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
000057-11-4	Octadecanoic acid	13.309	21.6	ug/L	99	NJ

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1505**			**Matrix:**	**WATER**
Lab Sample ID:	**1203788055**				
Client Sample:	**QC for batch 1664486**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1664486**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1664488**	**Inst:**	**MSD1.I**	**Dilution:**	**1**
Run Date:	**05/12/2017 14:24**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**05/12/2017 05:22**	**Aliquot:**	**1000 mL**	**Final Volume:**	**1 mL**
Data File:	**S051217.B\s1e1206.D**	**Column:**	**25x.20x.33**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene		29.7	ug/L	3.00	10.0
120-82-1	1,2,4-Trichlorobenzene		36.8	ug/L	3.00	10.0
95-50-1	1,2-Dichlorobenzene		33.5	ug/L	3.00	10.0
122-66-7	Azobenzene		56.9	ug/L	3.00	10.0
	1,2-Diphenylhydrazine					
541-73-1	1,3-Dichlorobenzene		32.1	ug/L	3.00	10.0
106-46-7	1,4-Dichlorobenzene		30.9	ug/L	3.00	10.0
123-91-1	1,4-Dioxane		25.2	ug/L	3.00	10.0
90-12-0	1-Methylnaphthalene		39.1	ug/L	0.300	1.00
58-90-2	2,3,4,6-Tetrachlorophenol		49.5	ug/L	3.00	10.0
95-95-4	2,4,5-Trichlorophenol		43.6	ug/L	3.00	10.0
88-06-2	2,4,6-Trichlorophenol		43.3	ug/L	3.00	10.0
120-83-2	2,4-Dichlorophenol		48.6	ug/L	3.00	10.0
105-67-9	2,4-Dimethylphenol		43.1	ug/L	3.00	10.0
51-28-5	2,4-Dinitrophenol		44.7	ug/L	5.00	20.0
121-14-2	2,4-Dinitrotoluene		48.9	ug/L	3.00	10.0
606-20-2	2,6-Dinitrotoluene		48.7	ug/L	3.00	10.0
91-58-7	2-Chloronaphthalene		32.4	ug/L	0.410	1.00
95-57-8	2-Chlorophenol		41.6	ug/L	3.00	10.0
534-52-1	2-Methyl-4,6-dinitrophenol		48.0	ug/L	3.00	10.0
91-57-6	2-Methylnaphthalene		39.9	ug/L	0.300	1.00
88-75-5	2-Nitrophenol		47.8	ug/L	3.00	10.0
91-94-1	3,3'-Dichlorobenzidine		46.0	ug/L	3.00	10.0
101-55-3	4-Bromophenylphenylether		38.5	ug/L	3.00	10.0
59-50-7	Parachlorometa cresol		57.2	ug/L	3.00	10.0
	4-Chloro-3-methylphenol					
106-47-8	4-Chloroaniline		58.5	ug/L	3.30	10.0
7005-72-3	4-Chlorophenylphenylether		38.5	ug/L	3.00	10.0
100-02-7	4-Nitrophenol		11.0	ug/L	3.00	10.0
83-32-9	Acenaphthene		39.3	ug/L	0.300	1.00
208-96-8	Acenaphthylene		41.3	ug/L	0.300	1.00
62-53-3	Aniline		47.8	ug/L	4.20	10.0
120-12-7	Anthracene		45.3	ug/L	0.300	1.00
1912-24-9	Atrazine		45.9	ug/L	3.00	10.0
92-87-5	Benzidine		89.6	ug/L	3.90	10.0
56-55-3	Benzo(a)anthracene		52.0	ug/L	0.300	1.00
50-32-8	Benzo(a)pyrene		48.0	ug/L	0.300	1.00
205-99-2	Benzo(b)fluoranthene		46.7	ug/L	0.300	1.00
191-24-2	Benzo(ghi)perylene		61.4	ug/L	0.300	1.00

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1505**			**Matrix:**	**WATER**
Lab Sample ID:	**1203788055**				
Client Sample:	**QC for batch 1664486**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1664486**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1664488**	**Inst:**	**MSD1.I**	**Dilution:**	**1**
Run Date:	**05/12/2017 14:24**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**05/12/2017 05:22**	**Aliquot:**	**1000 mL**	**Final Volume:**	**1 mL**
Data File:	**S051217.B\s1e1206.D**	**Column:**	**25x.20x.33**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene		47.6	ug/L	0.300	1.00
65-85-0	Benzoic acid		33.1	ug/L	6.00	20.0
100-51-6	Benzyl alcohol		42.6	ug/L	3.00	10.0
85-68-7	Butylbenzylphthalate		48.5	ug/L	3.00	10.0
218-01-9	Chrysene		52.9	ug/L	0.300	1.00
84-74-2	Di-n-butylphthalate		50.7	ug/L	3.00	10.0
117-84-0	Di-n-octylphthalate		47.0	ug/L	3.00	10.0
53-70-3	Dibenzo(a,h)anthracene		58.4	ug/L	0.300	1.00
132-64-9	Dibenzofuran		38.1	ug/L	3.00	10.0
84-66-2	Diethylphthalate		49.1	ug/L	3.00	10.0
131-11-3	Dimethylphthalate		49.0	ug/L	3.00	10.0
88-85-7	Dinoseb	U	10.0	ug/L	3.00	10.0
122-39-4	Diphenylamine		40.4	ug/L	3.00	10.0
206-44-0	Fluoranthene		50.0	ug/L	0.300	1.00
86-73-7	Fluorene		41.4	ug/L	0.300	1.00
118-74-1	Hexachlorobenzene		41.9	ug/L	3.00	10.0
87-68-3	Hexachlorobutadiene		37.9	ug/L	3.00	10.0
77-47-4	Hexachlorocyclopentadiene		25.3	ug/L	3.00	10.0
67-72-1	Hexachloroethane		42.8	ug/L	3.00	10.0
193-39-5	Indeno(1,2,3-cd)pyrene		58.3	ug/L	0.300	1.00
78-59-1	Isophorone		56.6	ug/L	3.50	10.0
62-75-9	N-Methyl-N-nitrosomethylamine		31.0	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*		52.3	ug/L	3.00	10.0
930-55-2	N-Nitrosopyrrolidine		45.2	ug/L	3.00	10.0
91-20-3	Naphthalene		41.8	ug/L	0.300	1.00
98-95-3	Nitrobenzene		60.5	ug/L	3.00	10.0
608-93-5	Pentachlorobenzene	U	10.0	ug/L	3.00	10.0
87-86-5	Pentachlorophenol		53.3	ug/L	3.00	10.0
85-01-8	Phenanthrene		44.5	ug/L	0.300	1.00
108-95-2	Phenol		18.0	ug/L	3.00	10.0
129-00-0	Pyrene		41.9	ug/L	0.300	1.00
110-86-1	Pyridine		35.3	ug/L	3.00	10.0
108-60-1	bis(2-Chloro-1-methylethyl)ether		51.3	ug/L	3.00	10.0
111-91-1	bis(2-Chloroethoxy)methane		56.6	ug/L	3.00	10.0
111-44-4	bis(2-Chloroethyl) ether		48.6	ug/L	3.00	10.0
117-81-7	bis(2-Ethylhexyl)phthalate		45.2	ug/L	3.00	10.0

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1505**			**Matrix:**	**WATER**
Lab Sample ID:	**1203788055**				
Client Sample:	**QC for batch 1664486**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1664486**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1664488**	**Inst:**	**MSD1.I**	**Dilution:**	**1**
Run Date:	**05/12/2017 14:24**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**05/12/2017 05:22**	**Aliquot:**	**1000 mL**	**Final Volume:**	**1 mL**
Data File:	**S051217.B\s1e1206.D**	**Column:**	**25x.20x.33**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols		40.7	ug/L	3.70	10.0
99-09-2	3-Nitroaniline *m-Nitroaniline*		57.3	ug/L	3.00	10.0
95-48-7	o-Cresol		42.1	ug/L	3.00	10.0
88-74-4	2-Nitroaniline *o-Nitroaniline*		58.3	ug/L	3.00	10.0
100-01-6	4-Nitroaniline *p-Nitroaniline*		51.0	ug/L	3.00	10.0

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	99.9	100	ug/L	100	(32%-124%)
2-Fluorobiphenyl	40.7	50.0	ug/L	81	(32%-112%)
2-Fluorophenol	49.2	100	ug/L	49	(15%-88%)
Nitrobenzene-d5	55.4	50.0	ug/L	111	(36%-115%)
Phenol-d5	34.4	100	ug/L	34	(15%-91%)
p-Terphenyl-d14	44.9	50.0	ug/L	90	(36%-121%)

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1505**	**Date Collected:**	**05/09/2017 11:00**	**Matrix:**	**W**
Lab Sample ID:	**1203788056**	**Date Received:**	**05/11/2017 09:00**		
Client Sample:	**QC for batch 1664486**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**WST15-17-135039MS**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1664488**	**Inst:**	**MSD1.I**	**Dilution:**	**1**
Run Date:	**05/12/2017 17:56**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**05/12/2017 05:22**	**Aliquot:**	**500 mL**	**Final Volume:**	**1 mL**
Data File:	**S051217.B\s1e1213.D**	**Column:**	**25x.20x.33**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene		76.7	ug/L	6.00	20.0
120-82-1	1,2,4-Trichlorobenzene		91.3	ug/L	6.00	20.0
95-50-1	1,2-Dichlorobenzene		85.9	ug/L	6.00	20.0
122-66-7	Azobenzene		133	ug/L	6.00	20.0
	1,2-Diphenylhydrazine					
541-73-1	1,3-Dichlorobenzene		81.0	ug/L	6.00	20.0
106-46-7	1,4-Dichlorobenzene		79.4	ug/L	6.00	20.0
123-91-1	1,4-Dioxane		48.0	ug/L	6.00	20.0
90-12-0	1-Methylnaphthalene		101	ug/L	0.600	2.00
58-90-2	2,3,4,6-Tetrachlorophenol		110	ug/L	6.00	20.0
95-95-4	2,4,5-Trichlorophenol		99.1	ug/L	6.00	20.0
88-06-2	2,4,6-Trichlorophenol		97.8	ug/L	6.00	20.0
120-83-2	2,4-Dichlorophenol		99.0	ug/L	6.00	20.0
105-67-9	2,4-Dimethylphenol		85.9	ug/L	6.00	20.0
51-28-5	2,4-Dinitrophenol		103	ug/L	10.0	40.0
121-14-2	2,4-Dinitrotoluene		112	ug/L	6.00	20.0
606-20-2	2,6-Dinitrotoluene		115	ug/L	6.00	20.0
91-58-7	2-Chloronaphthalene		82.9	ug/L	0.820	2.00
95-57-8	2-Chlorophenol		82.4	ug/L	6.00	20.0
534-52-1	2-Methyl-4,6-dinitrophenol		109	ug/L	6.00	20.0
91-57-6	2-Methylnaphthalene		100	ug/L	0.600	2.00
88-75-5	2-Nitrophenol		106	ug/L	6.00	20.0
91-94-1	3,3'-Dichlorobenzidine		74.5	ug/L	6.00	20.0
101-55-3	4-Bromophenylphenylether		96.6	ug/L	6.00	20.0
59-50-7	Parachlorometa cresol		123	ug/L	6.00	20.0
	4-Chloro-3-methylphenol					
106-47-8	4-Chloroaniline		117	ug/L	6.60	20.0
7005-72-3	4-Chlorophenylphenylether		104	ug/L	6.00	20.0
100-02-7	4-Nitrophenol		43.5	ug/L	6.00	20.0
83-32-9	Acenaphthene		111	ug/L	0.600	2.00
208-96-8	Acenaphthylene		104	ug/L	0.600	2.00
62-53-3	Aniline		89.5	ug/L	8.40	20.0
120-12-7	Anthracene		105	ug/L	0.600	2.00
1912-24-9	Atrazine		103	ug/L	6.00	20.0
92-87-5	Benzidine	J	14.9	ug/L	7.80	20.0
56-55-3	Benzo(a)anthracene		115	ug/L	0.600	2.00
50-32-8	Benzo(a)pyrene		111	ug/L	0.600	2.00
205-99-2	Benzo(b)fluoranthene		104	ug/L	0.600	2.00
191-24-2	Benzo(ghi)perylene		133	ug/L	0.600	2.00

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1505**	**Date Collected:**	**05/09/2017 11:00**	**Matrix:**	**W**
Lab Sample ID:	**1203788056**	**Date Received:**	**05/11/2017 09:00**		
Client Sample:	**QC for batch 1664486**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**WST15-17-135039MS**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1664488**	**Inst:**	**MSD1.I**	**Dilution:**	**1**
Run Date:	**05/12/2017 17:56**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**05/12/2017 05:22**	**Aliquot:**	**500 mL**	**Final Volume:**	**1 mL**
Data File:	**S051217.B\s1e1213.D**	**Column:**	**25x.20x.33**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene		104	ug/L	0.600	2.00
65-85-0	Benzoic acid		105	ug/L	12.0	40.0
100-51-6	Benzyl alcohol		87.9	ug/L	6.00	20.0
85-68-7	Butylbenzylphthalate		105	ug/L	6.00	20.0
218-01-9	Chrysene		120	ug/L	0.600	2.00
84-74-2	Di-n-butylphthalate		106	ug/L	6.00	20.0
117-84-0	Di-n-octylphthalate		99.4	ug/L	6.00	20.0
53-70-3	Dibenzo(a,h)anthracene		127	ug/L	0.600	2.00
132-64-9	Dibenzofuran		96.6	ug/L	6.00	20.0
84-66-2	Diethylphthalate		110	ug/L	6.00	20.0
131-11-3	Dimethylphthalate		110	ug/L	6.00	20.0
88-85-7	Dinoseb	U	20.0	ug/L	6.00	20.0
122-39-4	Diphenylamine		81.6	ug/L	6.00	20.0
206-44-0	Fluoranthene		109	ug/L	0.600	2.00
86-73-7	Fluorene		106	ug/L	0.600	2.00
118-74-1	Hexachlorobenzene		103	ug/L	6.00	20.0
87-68-3	Hexachlorobutadiene		92.5	ug/L	6.00	20.0
77-47-4	Hexachlorocyclopentadiene		81.8	ug/L	6.00	20.0
67-72-1	Hexachloroethane		114	ug/L	6.00	20.0
193-39-5	Indeno(1,2,3-cd)pyrene		125	ug/L	0.600	2.00
78-59-1	Isophorone		126	ug/L	7.00	20.0
62-75-9	N-Methyl-N-nitrosomethylamine		61.2	ug/L	6.00	20.0
924-16-3	N-Nitrosodi-n-butylamine	U	20.0	ug/L	6.00	20.0
55-18-5	N-Nitrosodiethylamine	U	20.0	ug/L	6.00	20.0
621-64-7	N-Nitrosodi--n-propylamine *N-Nitrosodipropylamine*		122	ug/L	6.00	20.0
930-55-2	N-Nitrosopyrrolidine		100	ug/L	6.00	20.0
91-20-3	Naphthalene		103	ug/L	0.600	2.00
98-95-3	Nitrobenzene		138	ug/L	6.00	20.0
608-93-5	Pentachlorobenzene	U	20.0	ug/L	6.00	20.0
87-86-5	Pentachlorophenol		126	ug/L	6.00	20.0
85-01-8	Phenanthrene		109	ug/L	0.600	2.00
108-95-2	Phenol		36.0	ug/L	6.00	20.0
129-00-0	Pyrene		98.7	ug/L	0.600	2.00
110-86-1	Pyridine		68.5	ug/L	6.00	20.0
108-60-1	bis(2-Chloro-1-methylethyl)ether		128	ug/L	6.00	20.0
111-91-1	bis(2-Chloroethoxy)methane		127	ug/L	6.00	20.0
111-44-4	bis(2-Chloroethyl) ether		111	ug/L	6.00	20.0
117-81-7	bis(2-Ethylhexyl)phthalate		102	ug/L	6.00	20.0

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1505**	**Date Collected:**	**05/09/2017 11:00**	**Matrix:**	**W**
Lab Sample ID:	**1203788056**	**Date Received:**	**05/11/2017 09:00**		
Client Sample:	**QC for batch 1664486**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**WST15-17-135039MS**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1664488**	**Inst:**	**MSD1.I**	**Dilution:**	**1**
Run Date:	**05/12/2017 17:56**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**05/12/2017 05:22**	**Aliquot:**	**500 mL**	**Final Volume:**	**1 mL**
Data File:	**S051217.B\s1e1213.D**	**Column:**	**25x.20x.33**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols		79.1	ug/L	7.40	20.0
99-09-2	3-Nitroaniline *m-Nitroaniline*		113	ug/L	6.00	20.0
95-48-7	o-Cresol		82.2	ug/L	6.00	20.0
88-74-4	2-Nitroaniline *o-Nitroaniline*		133	ug/L	6.00	20.0
100-01-6	4-Nitroaniline *p-Nitroaniline*		118	ug/L	6.00	20.0

Surrogate/Tracer recovery	Result	Nominal		Recovery%		Acceptable Limits
2,4,6-Tribromophenol	226	200	ug/L	113		(32%-124%)
2-Fluorobiphenyl	98.4	100	ug/L	98		(32%-112%)
2-Fluorophenol	91.1	200	ug/L	46		(15%-88%)
Nitrobenzene-d5	123	100	ug/L	123	*	(36%-115%)
Phenol-d5	68.4	200	ug/L	34		(15%-91%)
p-Terphenyl-d14	95.1	100	ug/L	95		(36%-121%)

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1505**	**Date Collected:**	**05/09/2017 11:00**	**Matrix:**	**W**
Lab Sample ID:	**1203788057**	**Date Received:**	**05/11/2017 09:00**		
Client Sample:	**QC for batch 1664486**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**WST15-17-135039MSD**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1664488**	**Inst:**	**MSD1.I**	**Dilution:**	**1**
Run Date:	**05/12/2017 18:26**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**05/12/2017 05:22**	**Aliquot:**	**500 mL**	**Final Volume:**	**1 mL**
Data File:	**S051217.B\s1e1214.D**	**Column:**	**25x.20x.33**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene		67.9	ug/L	6.00	20.0
120-82-1	1,2,4-Trichlorobenzene		82.9	ug/L	6.00	20.0
95-50-1	1,2-Dichlorobenzene		74.6	ug/L	6.00	20.0
122-66-7	Azobenzene		118	ug/L	6.00	20.0
	1,2-Diphenylhydrazine					
541-73-1	1,3-Dichlorobenzene		71.2	ug/L	6.00	20.0
106-46-7	1,4-Dichlorobenzene		67.5	ug/L	6.00	20.0
123-91-1	1,4-Dioxane		40.8	ug/L	6.00	20.0
90-12-0	1-Methylnaphthalene		88.2	ug/L	0.600	2.00
58-90-2	2,3,4,6-Tetrachlorophenol		93.7	ug/L	6.00	20.0
95-95-4	2,4,5-Trichlorophenol		86.7	ug/L	6.00	20.0
88-06-2	2,4,6-Trichlorophenol		82.6	ug/L	6.00	20.0
120-83-2	2,4-Dichlorophenol		90.1	ug/L	6.00	20.0
105-67-9	2,4-Dimethylphenol		77.2	ug/L	6.00	20.0
51-28-5	2,4-Dinitrophenol		86.5	ug/L	10.0	40.0
121-14-2	2,4-Dinitrotoluene		93.8	ug/L	6.00	20.0
606-20-2	2,6-Dinitrotoluene		98.9	ug/L	6.00	20.0
91-58-7	2-Chloronaphthalene		71.9	ug/L	0.820	2.00
95-57-8	2-Chlorophenol		69.9	ug/L	6.00	20.0
534-52-1	2-Methyl-4,6-dinitrophenol		92.9	ug/L	6.00	20.0
91-57-6	2-Methylnaphthalene		89.5	ug/L	0.600	2.00
88-75-5	2-Nitrophenol		96.3	ug/L	6.00	20.0
91-94-1	3,3'-Dichlorobenzidine		59.5	ug/L	6.00	20.0
101-55-3	4-Bromophenylphenylether		84.2	ug/L	6.00	20.0
59-50-7	Parachlorometa cresol		107	ug/L	6.00	20.0
	4-Chloro-3-methylphenol					
106-47-8	4-Chloroaniline		99.0	ug/L	6.60	20.0
7005-72-3	4-Chlorophenylphenylether		88.1	ug/L	6.00	20.0
100-02-7	4-Nitrophenol		35.0	ug/L	6.00	20.0
83-32-9	Acenaphthene		96.5	ug/L	0.600	2.00
208-96-8	Acenaphthylene		91.6	ug/L	0.600	2.00
62-53-3	Aniline		74.0	ug/L	8.40	20.0
120-12-7	Anthracene		91.5	ug/L	0.600	2.00
1912-24-9	Atrazine		86.3	ug/L	6.00	20.0
92-87-5	Benzidine	U	20.0	ug/L	7.80	20.0
56-55-3	Benzo(a)anthracene		99.9	ug/L	0.600	2.00
50-32-8	Benzo(a)pyrene		91.8	ug/L	0.600	2.00
205-99-2	Benzo(b)fluoranthene		84.9	ug/L	0.600	2.00
191-24-2	Benzo(ghi)perylene		110	ug/L	0.600	2.00

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1505**	**Date Collected:**	**05/09/2017 11:00**	**Matrix:**	**W**
Lab Sample ID:	**1203788057**	**Date Received:**	**05/11/2017 09:00**		
Client Sample:	**QC for batch 1664486**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**WST15-17-135039MSD**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1664488**	**Inst:**	**MSD1.I**	**Dilution:**	**1**
Run Date:	**05/12/2017 18:26**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**05/12/2017 05:22**	**Aliquot:**	**500 mL**	**Final Volume:**	**1 mL**
Data File:	**S051217.B\s1e1214.D**	**Column:**	**25x.20x.33**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene		86.5	ug/L	0.600	2.00
65-85-0	Benzoic acid		88.3	ug/L	12.0	40.0
100-51-6	Benzyl alcohol		73.3	ug/L	6.00	20.0
85-68-7	Butylbenzylphthalate		90.3	ug/L	6.00	20.0
218-01-9	Chrysene		104	ug/L	0.600	2.00
84-74-2	Di-n-butylphthalate		92.8	ug/L	6.00	20.0
117-84-0	Di-n-octylphthalate		83.3	ug/L	6.00	20.0
53-70-3	Dibenzo(a,h)anthracene		101	ug/L	0.600	2.00
132-64-9	Dibenzofuran		84.2	ug/L	6.00	20.0
84-66-2	Diethylphthalate		92.9	ug/L	6.00	20.0
131-11-3	Dimethylphthalate		92.8	ug/L	6.00	20.0
88-85-7	Dinoseb	U	20.0	ug/L	6.00	20.0
122-39-4	Diphenylamine		70.3	ug/L	6.00	20.0
206-44-0	Fluoranthene		95.7	ug/L	0.600	2.00
86-73-7	Fluorene		91.3	ug/L	0.600	2.00
118-74-1	Hexachlorobenzene		90.9	ug/L	6.00	20.0
87-68-3	Hexachlorobutadiene		79.6	ug/L	6.00	20.0
77-47-4	Hexachlorocyclopentadiene		72.2	ug/L	6.00	20.0
67-72-1	Hexachloroethane		96.0	ug/L	6.00	20.0
193-39-5	Indeno(1,2,3-cd)pyrene		104	ug/L	0.600	2.00
78-59-1	Isophorone		110	ug/L	7.00	20.0
62-75-9	N-Methyl-N-nitrosomethylamine		48.1	ug/L	6.00	20.0
924-16-3	N-Nitrosodi-n-butylamine	U	20.0	ug/L	6.00	20.0
55-18-5	N-Nitrosodiethylamine	U	20.0	ug/L	6.00	20.0
621-64-7	N-Nitrosodi--n-propylamine *N-Nitrosodipropylamine*		104	ug/L	6.00	20.0
930-55-2	N-Nitrosopyrrolidine		81.2	ug/L	6.00	20.0
91-20-3	Naphthalene		91.6	ug/L	0.600	2.00
98-95-3	Nitrobenzene		118	ug/L	6.00	20.0
608-93-5	Pentachlorobenzene	U	20.0	ug/L	6.00	20.0
87-86-5	Pentachlorophenol		108	ug/L	6.00	20.0
85-01-8	Phenanthrene		94.2	ug/L	0.600	2.00
108-95-2	Phenol		30.4	ug/L	6.00	20.0
129-00-0	Pyrene		83.7	ug/L	0.600	2.00
110-86-1	Pyridine		53.1	ug/L	6.00	20.0
108-60-1	bis(2-Chloro-1-methylethyl)ether		109	ug/L	6.00	20.0
111-91-1	bis(2-Chloroethoxy)methane		108	ug/L	6.00	20.0
111-44-4	bis(2-Chloroethyl) ether		97.2	ug/L	6.00	20.0
117-81-7	bis(2-Ethylhexyl)phthalate		85.3	ug/L	6.00	20.0

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2017-1505**	**Date Collected:**	**05/09/2017 11:00**	**Matrix:**	**W**
Lab Sample ID:	**1203788057**	**Date Received:**	**05/11/2017 09:00**		
Client Sample:	**QC for batch 1664486**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**WST15-17-135039MSD**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1664488**	**Inst:**	**MSD1.I**	**Dilution:**	**1**
Run Date:	**05/12/2017 18:26**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**05/12/2017 05:22**	**Aliquot:**	**500 mL**	**Final Volume:**	**1 mL**
Data File:	**S051217.B\s1e1214.D**	**Column:**	**25x.20x.33**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols		69.1	ug/L	7.40	20.0
99-09-2	3-Nitroaniline *m-Nitroaniline*		97.9	ug/L	6.00	20.0
95-48-7	o-Cresol		69.3	ug/L	6.00	20.0
88-74-4	2-Nitroaniline *o-Nitroaniline*		114	ug/L	6.00	20.0
100-01-6	4-Nitroaniline *p-Nitroaniline*		97.7	ug/L	6.00	20.0

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	188	200	ug/L	94	(32%-124%)
2-Fluorobiphenyl	85.1	100	ug/L	85	(32%-112%)
2-Fluorophenol	77.2	200	ug/L	39	(15%-88%)
Nitrobenzene-d5	105	100	ug/L	105	(36%-115%)
Phenol-d5	59.5	200	ug/L	30	(15%-91%)
p-Terphenyl-d14	78.5	100	ug/L	78	(36%-121%)

Miscellaneous

DATA EXCEPTION REPORT

Mo.Day Yr.	**Division:**	**Quality Criteria:**	**Type:**
15-MAY-17	Industrial	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
SEMIVOA GC/MS	SW846 3510C/8270D	Liquid	ESHL, IHVY, OLAB, WSRB
Batch ID:	**Sample Numbers:**		
1664488	See Below		

Potentially affected work order(s)(SDG): 422753(Y705130),422828,422859(2017-1505),422869(2017-1504),422899

Application Issues:

Failed Recovery for MS/MSD, or PS/PSD

Failed RPD for MS/MSD, or PS/PSD

Failed Recovery for LCS/LCSD

Failed Yield for Surrogates

Specification and Requirements Exception Description:	**DER Disposition:**
1. Failed RPD for MS/MSD: QC 1203788057MSD,1203788059MSD 2. Failed Recovery for LCS/LCSD: QC 1203788055LCS 3. Failed Recovery for MS/MSD: QC 1203788056MS, 1203788057MSD, 1203788058MS, 1203788059MSD 4. Failed Yield for Surrogates: 422753 001 QC 1203788056MS, 1203788059MSD	1. The relative percent differences (RPD) for the MS and MSD, (See Below), were not within the acceptance limits. The failures were attributed to matrix interference. The data were reported. 1203788056MS and 1203788057MSD (WST15-17-135039) Benzidine [200* (0%-30%)]. 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. 1203788058MS and 1203788059MSD (1083C-0000016) Benzidine [35* (0%-30%)]. 2. The LCS and/or LCSD (See Below) did not meet spike recovery acceptance criteria. Since the target analytes were not detected in the associated samples above the reporting limits, the positive bias had no adverse impact on the data. 1203788055 (LCS) Nitrobenzene [121* (53%-115%)]. 3. The MS or MSD (See Below) recovered spiked analytes outside of the established acceptance limits. As similar recoveries were displayed in the MS and MSD, the failures were attributed to sample matrix interference and the data were reported. 1203788056 (WST15-17-135039MS) Several [See applicable report]. 1203788057 (WST15-17-135039MSD) Several [See applicable report]. The MS or MSD (See Below) recovered spiked analytes outside of the established acceptance limits. Because the recoveries were biased high and the target analytes were not detected in the associated samples above the reporting limit, the data were reported. 1203788056 (WST15-17-135039MS) Several [See applicable report]. 1203788057 (WST15-17-135039MSD) Several [See applicable report]. 1203788058 (1083C-0000016MS) Several [See applicable report]. 1203788059 (1083C-0000016MSD) Several [See applicable report]. 4. Sample (See Below) did not meet surrogate recovery acceptance criteria. The surrogate failure was confirmed by re-extraction and analysis. The original extraction results have been reported. 422753001 (Y705130-01) 2-Fluorophenol [9* (15%-88%)] and Phenol-d5 [8* (15%-91%)]. Samples (See Below) displayed failing surrogate recoveries. Because the recoveries were biased high and target analytes were not detected in the associated samples above the reporting limit, the data were reported. 1203788056 (WST15-17-135039MS) Nitrobenzene-d5 [123* (36%-115%)]. 1203788059 (1083C-0000016MSD) Nitrobenzene-d5 [117* (36%-115%)].

Originator's Name:

Josh Brooks 15-MAY-17

Data Validator/Group Leader:

Barbara Bailey 15-MAY-17

Perchlorates by LCMSMS Analysis

Case Narrative

Perchlorates by LCMSMS
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2017-1505
Work Order #: 422859

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:	1666241
Prep Batch Number:	1666240

Sample Analysis

Sample ID	Client ID
422859001	422859001 (CAMO-17-132199)
1203792178	Interference Check Sample (ICS)
1203792174	Method Blank (MB)
1203792175	Laboratory Control Sample (LCS)
1203792176	422637001(CASA-17-132322) Matrix Spike (MS)
1203792177	422637001(CASA-17-132322) 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 422637001 (CASA-17-132322) was chosen for matrix spike and matrix spike duplicate analysis.

Matrix Spike (MS) Recovery Statement
In sample 1203792176 (MS) a low recovery of 65% was observed for Perchlorate-101. In sample 1203792177 (MSD) a low recovery of 71% and 50% were observed for Perchlorate and Perchlorate-101, respectively. The acceptance range is from 75-125%. The outliers observed for the matrix spikes may be due to the background concentration in the parent sample, 422637001 (CASA-17-132322). Recoveries in 1203792175 (LCS) and 1203792178 (ICS) were acceptable. 1203792176 (CASA-17-132322MS) and 1203792177 (CASA-17-132322MSD).

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
Sample 422859001 (CAMO-17-132199) was diluted to bring the over range concentration 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) 1635606 was generated for samples 1203792176 (CASA-17-132322MS) and 1203792177 (CASA-17-132322MSD) 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: 2017-1505 GEL Work Order: 422859

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: Charles W. Wilson Jr. **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: 1666240

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.
CAMO-17-132199

Date Received: 11-MAY-17

GEL Job No (SDG): 2017-1505

GEL Sample ID: 422859001

Date Filtered: 18-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	10	40	188	ug/L		200	23-MAY-17 17:08	per0523013a
	Perchlorate Isotope Ratio			2.93			200	23-MAY-17 17:08	per0523013a
14797-73-0	Perchlorate-101	10	40	185	ug/L		200	23-MAY-17 17:08	per0523013a
	Perchlorate-O(18)			86.1	ug/L		200	23-MAY-17 17:08	per0523013a

^ 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 =

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

Quality Control Summary

Perchlorate Laboratory Control Sample

Lab Name: General Engineering Laboratories

Lab Code: GEL

GEL Job No. (SDG): 2017-1505

Extract Batch Code: 1666240

Date Filtered: 18-MAY-17

Matrix: WATER

Sample ID: 1203792175

Analyte^	True	Found	Units	%Rec	Q	Control Limits
Perchlorate	0.200	.201	ug/L	101		85 - 115
Perchlorate Isotope Ratio		2.89				-
Perchlorate-101	0.200	.197	ug/L	99		85 - 115
Perchlorate-O(18)		.473	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): 2017-1505

Extract Batch Code: 1666240

Date Extracted: 18-MAY-17

GEL MS/PS ID: 1203792176

Client ID: CASA-17-132322

GEL MSD/PSD ID: 1203792177

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	1.57	ug/L	1.72	79	1.71	71 *	1	30	75 - 125
Perchlorate Isotope Ratio	0	2.91		2.95		2.98		1		-
Perchlorate-101	0.200	1.52	ug/L	1.65	65 *	1.62	50 *	2	30	75 - 125
Perchlorate-O(18)	0	0.505	ug/L	0.501		.527		5		-

^ 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: 1666240

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.
MB

Date Received: 18-MAY-17

GEL Job No (SDG): 2017-1505

GEL Sample ID: 1203792174

Date Filtered: 18-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	19-MAY-17 16:40	per0519013a
	Perchlorate Isotope Ratio						1	19-MAY-17 16:40	per0519013a
14797-73-0	Perchlorate-101	.05	.2	0.200	ug/L	U	1	19-MAY-17 16:40	per0519013a
	Perchlorate-O(18)			0.478	ug/L		1	19-MAY-17 16:40	per0519013a

^ 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: EPA 6850 Modified

Matrix: WATER

Extraction Batch ID: 1666240

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.
LCS

Date Received: 18-MAY-17

GEL Job No (SDG): 2017-1505

GEL Sample ID: 1203792175

Date Filtered: 18-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	19-MAY-17 16:49	per0519014a
	Perchlorate Isotope Ratio			2.89			1	19-MAY-17 16:49	per0519014a
14797-73-0	Perchlorate-101	.05	.2	0.197	ug/L	J	1	19-MAY-17 16:49	per0519014a
	Perchlorate-O(18)			0.473	ug/L		1	19-MAY-17 16:49	per0519014a

^ 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: 1666240

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): 2017-1505

GEL Sample ID: 1203792178

Date Filtered: 18-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	0.202	ug/L		1	19-MAY-17 16:58	per0519015a
	Perchlorate Isotope Ratio			3.12			1	19-MAY-17 16:58	per0519015a
14797-73-0	Perchlorate-101	.05	.2	0.183	ug/L	J	1	19-MAY-17 16:58	per0519015a
	Perchlorate-O(18)			0.521	ug/L		1	19-MAY-17 16:58	per0519015a

^ 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: 1666240

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.
CASA-17-132322MS

Date Received: 09-MAY-17

GEL Job No (SDG): 2017-1505

GEL Sample ID: 1203792176

Date Filtered: 18-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	1.72	ug/L		1	19-MAY-17 17:16	per0519017a
	Perchlorate Isotope Ratio			2.95			1	19-MAY-17 17:16	per0519017a
14797-73-0	Perchlorate-101	.05	.2	1.65	ug/L		1	19-MAY-17 17:16	per0519017a
	Perchlorate-O(18)			0.501	ug/L		1	19-MAY-17 17:16	per0519017a

^ 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: 1666240

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.
CASA-17-132322MSD

Date Received: 09-MAY-17

GEL Job No (SDG): 2017-1505

GEL Sample ID: 1203792177

Date Filtered: 18-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	1.71	ug/L		1	19-MAY-17 17:25	per0519018a
	Perchlorate Isotope Ratio			2.98			1	19-MAY-17 17:25	per0519018a
14797-73-0	Perchlorate-101	.05	.2	1.62	ug/L		1	19-MAY-17 17:25	per0519018a
	Perchlorate-O(18)			0.527	ug/L		1	19-MAY-17 17:25	per0519018a

^ 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 $\frac{1}{\%\text{Solids}}$

Miscellaneous

DATA EXCEPTION REPORT

Mo.Day Yr.	**Division:**	**Quality Criteria:**	**Type:**
25-MAY-17	Federal	Others	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
LC-MS/MS	SW846-6850 Modified	Liquid	ARSL004
Batch ID:	**Sample Numbers:**		
1666241	See Below		

Potentially affected work order(s)(SDG): 422637(2017-1489),422638(2017-1490),422730(2017-1496),422853(2017-1506),422859(2017-1505),422869(2017-1504),423072(2017-1517),423077(2017-1516),423224(2017-1524)

Application Issues:

Failed Recovery for MS/MSD, or PS/PSD

Specification and Requirements Exception Description:	**DER Disposition:**
1. In sample 1203792176 (MS) a low recovery of 65% was observed for Perchlorate-101. In sample 1203792177 (MSD) a low recovery of 71% and 50% were observed for Perchlorate and Perchlorate-101, respectively. The acceptance range is from 75-125%.	1. The outliers observed for the matrix spikes may be due to the background concentration in the parent sample, 422637001 (CASA-17-132322). Recoveries in 1203792175 (LCS) and 1203792178 (ICS) 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 #: 2017-1505
Work Order #: 422859

Sample ID	Client ID
422859001	CAMO-17-132199
422859002	CAMO-17-132219
1203787362	Method Blank (MB)**ICP**
1203787363	Laboratory Control Sample (LCS)
1203787366	422869001(WST15-17-135038L) Serial Dilution (SD)
1203787364	422869001(WST15-17-135038D) Sample Duplicate (DUP)
1203787365	422869001(WST15-17-135038S) Matrix Spike (MS)
1203787388	Method Blank (MB)**ICP-MS**
1203787389	Laboratory Control Sample (LCS)
1203787392	422869001(WST15-17-135038L) Serial Dilution (SD)
1203787390	422869001(WST15-17-135038D) Sample Duplicate (DUP)
1203787391	422869001(WST15-17-135038S) Matrix Spike (MS)
1203788414	Method Blank (MB)**CVAA**
1203788415	Laboratory Control Sample (LCS)
1203788420	422869001(WST15-17-135038L) Serial Dilution (SD)
1203788416	422869001(WST15-17-135038D) Sample Duplicate (DUP)
1203788418	422869001(WST15-17-135038S) Matrix Spike (MS)

Sample Analysis

Samples 422859001 and 002 in this SDG were analyzed for metals and mercury on an "as received" basis.

Method/Analysis Information

Analytical Batch:	1664193, 1664204, 1664642 and 1669537
Prep Batch :	1664192, 1664203 and 1664639
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 - ICPMS was performed on a Perkin Elmer ELAN 9000 inductively coupled plasma mass spectrometer (ICP-MS). The instrument is equipped with a cross-flow nebulizer, quadrupole mass spectrometer, and dual mode electron multiplier detector. Internal standards of scandium, germanium, indium, tantalum, and/or lutetium were utilized to cover the mass spectrum.

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 CRDL/PQL standard recoveries met the referenced advisory control limits.

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: 422869001 (WST15-17-135038)-ICP, ICP-MS and 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: 2017-1505 GEL Work Order: 422859

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: 06 JUN 2017 **Title: Data Validator**

Sample Data Summary

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017−1505 **CONTRACT:** ESHL00114 **METHOD TYPE:** EPA

SAMPLE ID: 422859001 **BASIS:** As Received **DATE COLLECTED** 09−MAY−17

CLIENT ID: CAMO−17−132199 **LEVEL:** Low **DATE RECEIVED** 11−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	05/15/17 13:57	051517W1−9	1664642

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017−1505 **CONTRACT:** ESHL00114 **METHOD TYPE:** SW846

SAMPLE ID: 422859001 **BASIS:** As Received **DATE COLLECTED** 09−MAY−17

CLIENT ID: CAMO−17−132199 **LEVEL:** Low **DATE RECEIVED** 11−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	05/24/17 11:39	052417A−1	1664193
7440−36−0	Antimony	3	ug/L	U	1	3	3	1	MS	BAJ	05/21/17 08:36	170520−8	1664204
7440−38−2	Arsenic	5	ug/L	U	2	5	5	1	MS	BAJ	05/21/17 15:35	170521−4	1664204
7440−39−3	Barium	23.7	ug/L		1	5	5	1	P	HSC	05/24/17 11:39	052417A−1	1664193
7440−41−7	Beryllium	5	ug/L	U	1	5	5	1	P	HSC	05/24/17 11:39	052417A−1	1664193
7440−42−8	Boron	21.9	ug/L	J	15	50	50	1	P	HSC	05/24/17 11:39	052417A−1	1664193
7440−43−9	Cadmium	1	ug/L	U	0.3	1	1	1	MS	BAJ	05/20/17 14:37	170520−5	1664204
7440−70−2	Calcium	30400	ug/L		50	200	200	1	P	HSC	05/24/17 11:39	052417A−1	1664193
7440−47−3	Chromium	5.53	ug/L	J	3	10	10	1	MS	BAJ	05/20/17 14:37	170520−5	1664204
7440−48−4	Cobalt	5	ug/L	U	1	5	5	1	P	HSC	05/24/17 11:39	052417A−1	1664193
7440−50−8	Copper	10	ug/L	U	3	10	10	1	P	HSC	05/24/17 11:39	052417A−1	1664193
7439−89−6	Iron	100	ug/L	U	30	100	100	1	P	HSC	05/24/17 11:39	052417A−1	1664193
7439−92−1	Lead	2	ug/L	U	0.5	2	2	1	MS	BAJ	05/20/17 14:37	170520−5	1664204
7439−95−4	Magnesium	5580	ug/L		110	300	300	1	P	HSC	05/24/17 11:39	052417A−1	1664193
7439−96−5	Manganese	10	ug/L	U	2	10	10	1	P	HSC	05/24/17 11:39	052417A−1	1664193
7439−98−7	Molybdenum	0.725	ug/L		0.2	0.5	0.5	1	MS	BAJ	05/20/17 14:37	170520−5	1664204
7440−02−0	Nickel	2	ug/L	U	0.6	2	2	1	MS	BAJ	05/20/17 14:37	170520−5	1664204
7440−09−7	Potassium	605	ug/L		50	150	150	1	P	HSC	05/24/17 11:39	052417A−1	1664193
7782−49−2	Selenium	5	ug/L	U	2	5	5	1	MS	BAJ	05/20/17 14:37	170520−5	1664204
7631−86−9	Silica	62800	ug/L		53	213	213	1	P	HSC	05/24/17 11:39	052417A−1	1664193
7440−22−4	Silver	1	ug/L	U	0.3	1	1	1	MS	BAJ	05/20/17 14:37	170520−5	1664204
7440−23−5	Sodium	17400	ug/L		100	300	300	1	P	HSC	05/24/17 11:39	052417A−1	1664193
7440−24−6	Strontium	145	ug/L		1	5	5	1	P	HSC	05/24/17 11:39	052417A−1	1664193
7440−28−0	Thallium	2	ug/L	U	0.6	2	2	1	MS	BAJ	05/20/17 14:37	170520−5	1664204
7440−31−5	Tin	10	ug/L	U	2.5	10	10	1	P	HSC	05/24/17 11:39	052417A−1	1664193
7440−61−1	Uranium	0.161	ug/L	J	0.067	0.2	0.2	1	MS	BAJ	05/21/17 14:17	170521−3	1664204
7440−62−2	Vanadium	1.54	ug/L	J	1	5	5	1	P	HSC	05/24/17 11:39	052417A−1	1664193
7440−66−6	Zinc	10	ug/L	U	3.3	10	10	1	P	HSC	05/25/17 09:51	052517A−2	1664193

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017−1505 **CONTRACT:** ESHL00114 **METHOD TYPE:**

SAMPLE ID: 422859001 **BASIS:** As Received **DATE COLLECTED** 09−MAY−17

CLIENT ID: CAMO−17−132199 **LEVEL:** Low **DATE RECEIVED** 11−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	98.8	mg/L		0.453	1.24	1.24	1		TXT1	05/30/17 17:03		1669537

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1664193	1664192	SW846 3005A	50	mL	50	mL	05/11/17	CXW4
1664204	1664203	SW846 3005A	50	mL	50	mL	05/11/17	CXW4
1664642	1664639	EPA 245.1/245.2 Prep	20	mL	20	mL	05/12/17	JXH5

***Analytical Methods:**

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

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017−1505 **CONTRACT:** ESHL00114 **METHOD TYPE:** EPA

SAMPLE ID: 422859002 **BASIS:** As Received **DATE COLLECTED** 09−MAY−17

CLIENT ID: CAMO−17−132219 **LEVEL:** Low **DATE RECEIVED** 11−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	05/15/17 13:58	051517W1−9	1664642

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1664642	1664639	EPA 245.1/245.2 Prep	20	mL	20	mL	05/12/17	JXH5

***Analytical Methods:**

AV **EPA 245.2 1974**

Quality Control Summary

METALS
−3b−
PREPARATION BLANK SUMMARY

SDG NO. 2017−1505
Contract: ESHL00114
Matrix: W

Sample ID	Analyte	Result	Units	Acceptance Window	Conc Qual	M*	MDL	RDL
1203787362								
	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	−129	ug/L	+/−300	J	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
1203787388								
	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
1203788414								
	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. 2017−1505 **Client ID** WST15−17−135038S

Contract: ESHL00114 **Level:** Low

Matrix: WATER **% Solids:**

Sample ID: 422869001 **Spike ID:** 1203787365

Analyte	Units	Acceptance Limit	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M*
Aluminum	ug/L	75−125	4820		68	U	5000	96.4		P
Barium	ug/L	75−125	532		40.2		500	98.3		P
Beryllium	ug/L	75−125	498		1	U	500	99.5		P
Boron	ug/L	75−125	543		30.1	J	500	103		P
Calcium	ug/L	75−125	22200		17300		5000	99.4		P
Cobalt	ug/L	75−125	499		1	U	500	99.8		P
Copper	ug/L	75−125	544		20.3		500	105		P
Iron	ug/L	75−125	5650		324		5000	107		P
Magnesium	ug/L	75−125	8380		3410		5000	99.3		P
Manganese	ug/L	75−125	494		2	U	500	98.5		P
Potassium	ug/L	75−125	8320		3410		5000	98.3		P
Silica	ug/L		92400		82200		10700	95.6	N/A	P
Sodium	ug/L	75−125	24900		18800		5000	121		P
Strontium	ug/L	75−125	606		80.8		500	105		P
Tin	ug/L	75−125	488		2.5	U	500	97.6		P
Vanadium	ug/L	75−125	515		6.65		500	102		P
Zinc	ug/L	75−125	461		20.1		500	88.2		P

***Analytical Methods:**

P **SW846 3005A/6010C**

METALS
−5a−

Matrix Spike Summary

SDG NO. 2017−1505 **Client ID** WST15−17−135038S

Contract: ESHL00114 **Level:** Low

Matrix: WATER **% Solids:**

Sample ID: 422869001 **Spike ID:** 1203787391

Analyte	Units	Acceptance Limit	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M*
Antimony	ug/L	75−125	52.1		1	U	50	103		MS
Arsenic	ug/L	75−125	50.3		2	U	50	100		MS
Cadmium	ug/L	75−125	52.4		0.3	U	50	105		MS
Chromium	ug/L	75−125	56.5		5.66	J	50	102		MS
Lead	ug/L	75−125	46.5		0.746	J	50	91.6		MS
Molybdenum	ug/L	75−125	54.5		2.77		50	104		MS
Nickel	ug/L	75−125	57.1		6.69		50	101		MS
Selenium	ug/L	75−125	52.1		2	U	50	104		MS
Silver	ug/L	75−125	52.3		0.474	J	50	104		MS
Thallium	ug/L	75−125	44.7		0.6	U	50	89.4		MS
Uranium	ug/L	75−125	57		0.657		50	113		MS

***Analytical Methods:**

MS SW846 3005A/6020A

METALS
−5a−

Matrix Spike Summary

SDG NO. 2017−1505 **Client ID** WST15−17−135038S

Contract: ESHL00114 **Level:** Low

Matrix: WATER **% Solids:**

Sample ID: 422869001 **Spike ID:** 1203788418

Analyte	Units	Acceptance Limit	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M*
Mercury	ug/L	75−125	2.14		0.067	U	2	106		AV

***Analytical Methods:**

AV **EPA 245.1/245.2**

Metals
−6−
Duplicate Sample Summary

SDG No.: 2017−1505 **Lab Code:** GEL

Contract: ESHL00114 **Client ID:** WST15−17−135038D

Matrix: WATER **Level:** Low

Sample ID: 422869001 **Duplicate ID:** 1203787364 **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%	40.2		40.5		.872		P
Beryllium	ug/L		1	U	1	U			P
Boron	ug/L	+/−50	30.1	J	30.1	J	.173		P
Calcium	ug/L	+/−20%	17300		17500		1.3		P
Cobalt	ug/L		1	U	1	U			P
Copper	ug/L	+/−10	20.3		20.9		2.9		P
Iron	ug/L	+/−100	324		332		2.45		P
Magnesium	ug/L	+/−20%	3410		3520		3.29		P
Manganese	ug/L		2	U	2	U			P
Potassium	ug/L	+/−20%	3410		3480		2		P
Silica	ug/L	+/−20%	82200		83400		1.42		P
Sodium	ug/L	+/−20%	18800		19000		.915		P
Strontium	ug/L	+/−20%	80.8		81.5		.864		P
Tin	ug/L		2.5	U	2.5	U			P
Vanadium	ug/L	+/−5	6.65		7.04		5.81		P
Zinc	ug/L	+/−10	20.1		18.4		8.91		P

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

Metals
−6−
Duplicate Sample Summary

SDG No.: 2017−1505 **Lab Code:** GEL

Contract: ESHL00114 **Client ID:** WST15−17−135038D

Matrix: WATER **Level:** Low

Sample ID: 422869001 **Duplicate ID:** 1203787390 **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	+/−10	5.66	J	5.44	J	3.96		MS
Lead	ug/L	+/−2	0.746	J	0.741	J	.672		MS
Molybdenum	ug/L	+/−20%	2.77		2.65		4.65		MS
Nickel	ug/L	+/−2	6.69		6.48		3.2		MS
Selenium	ug/L		2	U	2	U			MS
Silver	ug/L	+/−1	0.474	J	0.437	J	8.12		MS
Thallium	ug/L		0.6	U	0.6	U			MS
Uranium	ug/L	+/−.2	0.657		0.65		1.07		MS

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

Metals
−6−
Duplicate Sample Summary

SDG No.: 2017−1505 **Lab Code:** GEL

Contract: ESHL00114 **Client ID:** WST15−17−135038D

Matrix: WATER **Level:** Low

Sample ID: 422869001 **Duplicate ID:** 1203788416 **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. 2017−1505

Contract: ESHL00114

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

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Acceptance Limit	M*
1203787363								
	Aluminum	ug/L	5000	4960		99.2	80−120	P
	Barium	ug/L	500	501		100	80−120	P
	Beryllium	ug/L	500	496		99.2	80−120	P
	Boron	ug/L	500	506		101	80−120	P
	Calcium	ug/L	5000	4960		99.3	80−120	P
	Cobalt	ug/L	500	509		102	80−120	P
	Copper	ug/L	500	515		103	80−120	P
	Iron	ug/L	5000	5270		105	80−120	P
	Magnesium	ug/L	5000	5020		100	80−120	P
	Manganese	ug/L	500	503		101	80−120	P
	Potassium	ug/L	5000	5090		102	80−120	P
	Silica	ug/L	10700	10200		95.2	80−120	P
	Sodium	ug/L	5000	5600		112	80−120	P
	Strontium	ug/L	500	523		105	80−120	P
	Tin	ug/L	500	488		97.7	80−120	P
	Vanadium	ug/L	500	508		102	80−120	P
	Zinc	ug/L	500	448		89.6	80−120	P

***Analytical Methods:**

P **SW846 3005A/6010C**

METALS
−7−
Laboratory Control Sample Summary

SDG NO. 2017−1505

Contract: ESHL00114

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

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Acceptance Limit	M*
1203787389								
	Antimony	ug/L	50	53.6		107	80−120	MS
	Arsenic	ug/L	50	52.5		105	80−120	MS
	Cadmium	ug/L	50	52.7		105	80−120	MS
	Chromium	ug/L	50	50.8		102	80−120	MS
	Lead	ug/L	50	48.7		97.3	80−120	MS
	Molybdenum	ug/L	50	50.8		102	80−120	MS
	Nickel	ug/L	50	50.7		101	80−120	MS
	Selenium	ug/L	50	53.6		107	80−120	MS
	Silver	ug/L	50	52		104	80−120	MS
	Thallium	ug/L	50	47.2		94.4	80−120	MS
	Uranium	ug/L	50	54.4		109	80−120	MS

***Analytical Methods:**

MS **SW846 3005A/6020A**

METALS
−7−
Laboratory Control Sample Summary

SDG NO. 2017−1505

Contract: ESHL00114

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

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Acceptance Limit	M*
1203788415								
	Mercury	ug/L	2	2.17		108	85−115	AV

***Analytical Methods:**

AV **EPA 245.1/245.2**

METALS
−9−
Serial Dilution Sample Summary

SDG NO. 2017−1505 **Client ID** WST15−17−135038L

Contract: ESHL00114

Matrix: LIQUID **Level:** Low

Sample ID: 422869001 **Serial Dilution ID:** 1203787366

Analyte	Initial Value ug/L	C	Serial Value ug/L	C	% Difference	Qual	Acceptance Limit	M*
Aluminum	68	U	340	U				P
Barium	40.2		37.7		6.229			P
Beryllium	1	U	5	U				P
Boron	30.1	J	75	U	9.322			P
Calcium	17300		16800		2.897		10	P
Cobalt	1	U	5	U				P
Copper	20.3		16.6	J	18.145			P
Iron	324		330	J	1.854			P
Magnesium	3410		3310		2.867			P
Manganese	2	U	10	U				P
Potassium	3410		3310		2.871		10	P
Silica	82200		79200		3.647		10	P
Sodium	18800		18500		1.708		10	P
Strontium	80.8		77.6		3.947		10	P
Tin	2.5	U	12.5	U				P
Vanadium	6.65		5.09	J	23.391			P
Zinc	20.1		48.1	J	139.213			P

***Analytical Methods:**

P **SW846 3005A/6010C**

METALS
−9−
Serial Dilution Sample Summary

SDG NO. 2017−1505 **Client ID** WST15−17−135038L

Contract: ESHL00114

Matrix: LIQUID **Level:** Low

Sample ID: 422869001 **Serial Dilution ID:** 1203787392

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	5.66	J	15	U	5.191			MS
Lead	.746	J	2.5	U	69.169			MS
Molybdenum	2.77		2.51		9.697			MS
Nickel	6.69		6.79	J	1.495			MS
Selenium	2	U	10	U				MS
Silver	.474	J	1.5	U	3.376			MS
Thallium	.6	U	3	U				MS
Uranium	.657		.76	J	15.677			MS

***Analytical Methods:**

MS **SW846 3005A/6020A**

METALS
−9−
Serial Dilution Sample Summary

SDG NO. 2017−1505 **Client ID** WST15−17−135038L

Contract: ESHL00114

Matrix: LIQUID **Level:** Low

Sample ID: 422869001 **Serial Dilution ID:** 1203788420

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 #: 2017-1505
Work Order #: 422859

Method/Analysis Information

Product:	**Carbon and Total Organic**		
Analytical Batch:	1665822	**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
422859002	CAMO-17-132219
1203791230	Method Blank (MB)
1203791231	Laboratory Control Sample (LCS)
1203791710	422637002(CASA-17-132331) Sample Duplicate (DUP)
1203791711	422637002(CASA-17-132331) 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
Sample 422637002 (CASA-17-132331) 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:	**Cyanide and Total**		
Analytical Batch:	1663908	**Method:**	WSP-CN(T)
Prep Batch :	1663907	**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
422859002	CAMO-17-132219
1203786606	Method Blank (MB)
1203786607	Laboratory Control Sample (LCS)
1203787622	422869001(WST15-17-135038) Sample Duplicate (DUP)
1203787624	422869001(WST15-17-135038) 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 422869001 (WST15-17-135038) 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	1203787624 (WST15-17-135038MS)	111* (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) 1631215 was generated for sample 1203787624 (WST15-17-135038MS) 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:	1664539	**Method:**	WSP-ANIONS

Sample Analysis

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

Sample ID	Client ID
422859001	CAMO-17-132199
1203788153	Method Blank (MB)
1203788154	Laboratory Control Sample (LCS)
1203788155	422570003(CAMO-17-132213) Sample Duplicate (DUP)
1203788157	422570003(CAMO-17-132213) 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-1600 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 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) Designation
Sample 422570003 (CAMO-17-132213) 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 sample 422859001 (CAMO-17-132199) was 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	422859001
Chloride	2X
Sulfate	2X

Sample Re-analysis
Samples1203788153 (MB), 1203788154 (LCS), 1203788155 (CAMO-17-132213DUP), 1203788157 (CAMO-17-132213PS) and 422859001 (CAMO-17-132199) were re-analyzed due to CCV failure. The reanalysis data with passing instrument QC was reported.

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 1203788155 (CAMO-17-132213DUP), 1203788157 (CAMO-17-132213PS) and 422859001 (CAMO-17-132199) 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:	1664592	**Method:**	NH3
Prep Batch :	1664591	**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
422859001	CAMO-17-132199
1203788274	Method Blank (MB)
1203788275	Laboratory Control Sample (LCS)
1203788278	422730001(CASA-17-132323) Sample Duplicate (DUP)
1203788279	422730001(CASA-17-132323) 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.

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
Sample 422730001 (CASA-17-132323) 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
Samples1203788274 (MB) and 1203788275 (LCS) were re-analyzed due to instrument failure. The results from the reanalysis are reported.

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 Kjeldahl Nitrogen**		
Analytical Batch:	1665040	**Method:**	TKN
Prep Batch :	1665039	**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
422859002	CAMO-17-132219
1203789377	Method Blank (MB)
1203789378	Laboratory Control Sample (LCS)
1203789381	422730002(CASA-17-132332) Sample Duplicate (DUP)
1203789383	422730002(CASA-17-132332) 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
Sample 422730002 (CASA-17-132332) 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 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
Sample1203789378 (LCS) was re-analyzed due to instrument failure. The results from the reanalysis are reported. Samples1203789377 (MB) and 1203789378 (LCS) were re-analyzed due to CCV failure. The reanalysis data with passing instrument QC was reported.

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:	**Nitrate Nitrite by Cadmium Reduction**		
Analytical Batch:	1665008	**Method:**	NO3NO2

Sample Analysis

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

Sample ID	Client ID
422859001	CAMO-17-132199
1203789285	Method Blank (MB)
1203789286	Laboratory Control Sample (LCS)
1203789288	422869001(WST15-17-135038) Sample Duplicate (DUP)
1203789291	422869001(WST15-17-135038) 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
Sample 422869001 (WST15-17-135038) 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 Preservation/Integrity
All the samples from this sample group met the preservation and integrity requirements of the method.

Sample Dilutions
The following sample 422859001 (CAMO-17-132199) was 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	**422859**
	001
Nitrogen, Nitrate/Nitrite	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:	1663545	**Method:**	PO4
Prep Batch :	1663543	**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
422859001	CAMO-17-132199
1203785845	Method Blank (MB)
1203785846	Laboratory Control Sample (LCS)
1203785851	422637001(CASA-17-132322) Sample Duplicate (DUP)
1203785852	422637001(CASA-17-132322) 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 422637001 (CASA-17-132322) 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:	1664164	**Method:**	TDS

Sample Analysis

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

Sample ID	Client ID
422859001	CAMO-17-132199
1203787286	Method Blank (MB)
1203787287	Laboratory Control Sample (LCS)
1203788251	422869001(WST15-17-135038) 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 422869001 (WST15-17-135038) 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
422859001	CAMO-17-132199
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: 1666469 **Method:** PH

Sample Analysis

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

Sample ID	Client ID
422859001	CAMO-17-132199
1203792736	Laboratory Control Sample (LCS)
1203792737	422730001(CASA-17-132323) 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 422730001 (CASA-17-132323) 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
1203792737 (CASA-17-132323DUP)	pH	Received 10-MAY-17, out of holding 08-MAY-17
422859001 (CAMO-17-132199)	pH	Received 11-MAY-17, out of holding 09-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) 1633517 was generated for samples 422859001 (CAMO-17-132199) and 1203792737 (CASA-17-132323DUP) 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:	1666465	**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
422859001	CAMO-17-132199
1203792713	Laboratory Control Sample (LCS)
1203792717	422730001(CASA-17-132323) Sample Duplicate (DUP)
1203792720	422730001(CASA-17-132323) 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 422730001 (CASA-17-132323) 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:
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.

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: 2017-1505 GEL Work Order: 422859

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: 31 MAY 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: May 31, 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: 2017-1505

Client Sample ID: CAMO-17-132199
Sample ID: 422859001
Matrix: W
Collect Date: 09-MAY-17 10:52
Receive Date: 11-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"												
Fluoride		0.160	0.033	0.100	mg/L		1	MXL2	05/12/17	0138	1664539	1
Bromide		0.202	0.067	0.200	mg/L		1	MXL2	05/13/17	0405	1664539	2
Chloride		12.7	0.134	0.400	mg/L		2	MXL2	05/13/17	0629	1664539	3
Sulfate		25.5	0.266	0.800	mg/L		2					
Nutrient Analysis												
NH3 "As Received"												
Nitrogen, Ammonia		0.153	0.017	0.050	mg/L	1.00	1	KLP1	05/15/17	1336	1664592	4
NO3NO2 "As Received"												
Nitrogen, Nitrate/Nitrite		11.4	0.425	1.25	mg/L		25	AXH3	05/17/17	0618	1665008	5
PO4 "As Received"												
Phosphorus, Total as P		0.0549	0.020	0.050	mg/L	1.00	1	KLP1	05/16/17	1418	1663545	6
Solids Analysis												
TDS "As Received"												
Total Dissolved Solids		233	3.40	14.3	mg/L			KLP1	05/15/17	1547	1664164	7
Titration and Ion Analysis												
EPA 310.1 Total Alkalinity "As Received"												
Alkalinity, Total as CaCO3		54.6	1.45	4.00	mg/L			RXB5	05/18/17	1925	1666465	8
Carbonate alkalinity (CaCO3)	U	ND	1.45	4.00	mg/L							
EPA120.1 Specific Conductivity "As Received"												
Conductivity		265	1.00	1.00	umhos/cm		1	VH1	05/30/17	1523	1668500	9
PH "As Received"												
pH at Temp 17.2C	H	8.40	0.010	0.100	SU		1	RXB5	05/18/17	1924	1666469	10

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.1 Prep	EPA 350.1 Ammonia Nitrogen Prep	AXH3	05/15/17	1134	1664591
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	KLP1	05/15/17	1700	1663543

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

Certificate of Analysis

Report Date: May 31, 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: 2017-1505

Client Sample ID: CAMO-17-132199
Sample ID: 422859001

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:300.0	
4	EPA:350.1	
5	EPA:353.2	
6	EPA 365.4 1974	
7	EPA:160.1	
8	EPA:310.1	
9	EPA:120.1	
10	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: May 31, 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: 2017-1505

Client Sample ID: CAMO-17-132219
Sample ID: 422859002
Matrix: W
Collect Date: 09-MAY-17 10:52
Receive Date: 11-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	0.453	0.330	1.00	mg/L		1	TSM	05/20/17	0818	1665822	1
Flow Injection Analysis												
WSP-CN(T) "As Received"												
Cyanide, Total	J	4.25	1.67	5.00	ug/L	1.00	1	AXH3	05/12/17	0916	1663908	2
Nutrient Analysis												
TKN "As Received"												
Nitrogen, Total Kjeldahl	U	ND	0.033	0.100	mg/L	1.00	1	KLP1	05/24/17	1031	1665040	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 335.4	EPA 335.4 Total Cyanide	AXH3	05/12/17	0850	1663907
EPA 351.2 Prep	EPA 351.2 Total Kjeldahl Nitrogen Prep	KLP1	05/23/17	1700	1665039

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

Quality Control Summary

QC Summary

Report Date: May 31, 2017

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

Contact: **Mr. Keith Greene**

Workorder: **422859**

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Carbon Analysis											
Batch 1665822											
QC1203791710 422637002 DUP											
Total Organic Carbon Average		J	0.332	U	ND	mg/L	200 ^			TSM	05/20/17 02:26
QC1203791231 LCS											
Total Organic Carbon Average	10.0				9.84	mg/L		98.4	(80%-120%)		05/20/17 01:27
QC1203791230 MB											
Total Organic Carbon Average				U	ND	mg/L					05/20/17 01:16
QC1203791711 422637002 PS											
Total Organic Carbon Average	10.0	J	0.332		9.82	mg/L		94.9	(75%-125%)		05/20/17 03:13
Flow Injection Analysis											
Batch 1663908											
QC1203787622 422869001 DUP											
Cyanide, Total		U	ND	U	ND	ug/L	N/A			AXH3	05/12/17 09:18
QC1203786607 LCS											
Cyanide, Total	50.0				51.6	ug/L		103	(90%-110%)		05/12/17 09:10
QC1203786606 MB											
Cyanide, Total				U	ND	ug/L					05/12/17 09:09
QC1203787624 422869001 MS											
Cyanide, Total	100	U	ND		112	ug/L		111*	(90%-110%)		05/12/17 09:19
Ion Chromatography											
Batch 1664539											
QC1203788155 422570003 DUP											
Bromide		U	ND	U	ND	mg/L	N/A			MXL2	05/12/17 23:16

QC Summary

Workorder: **422859**

Parmname	NOM		Sample	Qual	QC	Units	RPD%		REC%	Range	Anlst	Date Time
Ion Chromatography												
Batch 1664539												
Chloride			1.85		1.85	mg/L	0.211			(0%-20%)	MXL2	05/11/17 20:49
Fluoride			0.129		0.125	mg/L	3.15	^		(+/-0.100)		
Sulfate			2.06		2.01	mg/L	2.43			(0%-20%)		
QC1203788154 LCS												
Bromide	1.25				1.26	mg/L			101	(80%-120%)		05/12/17 22:18
Chloride	5.00				5.10	mg/L			102	(80%-120%)		05/11/17 19:51
Fluoride	2.50				2.68	mg/L			107	(80%-120%)		
Sulfate	10.0				10.5	mg/L			105	(80%-120%)		
QC1203788153 MB												
Bromide				U	ND	mg/L						05/12/17 21:49
Chloride				U	ND	mg/L						05/11/17 19:22
Fluoride				U	ND	mg/L						
Sulfate				U	ND	mg/L						
QC1203788157 422570003 PS												
Bromide	1.25	U	ND		1.26	mg/L			97.7	(75%-125%)		05/12/17 23:45
Chloride	5.00		1.85		7.20	mg/L			107	(75%-125%)		05/11/17 21:18
Fluoride	2.50		0.129		2.74	mg/L			104	(75%-125%)		
Sulfate	10.0		2.06		12.8	mg/L			107	(75%-125%)		

QC Summary

Workorder: **422859**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Nutrient Analysis										
Batch 1663545										
QC1203785851 422637001 DUP										
Phosphorus, Total as P		J 0.0276	J	0.0257	mg/L	7.13 ^		(+/-0.050)	KLP1	05/16/17 13:53
QC1203785846 LCS										
Phosphorus, Total as P	1.00			0.914	mg/L		91.4	(80%-124%)		05/16/17 13:51
QC1203785845 MB										
Phosphorus, Total as P			U	ND	mg/L					05/16/17 13:50
QC1203785852 422637001 MS										
Phosphorus, Total as P	1.00	J 0.0276		1.02	mg/L		99.2	(63%-139%)		05/16/17 13:53
Batch 1664592										
QC1203788278 422730001 DUP										
Nitrogen, Ammonia		J 0.0457	U	ND	mg/L	200 ^			KLP1	05/15/17 13:21
QC1203788275 LCS										
Nitrogen, Ammonia	1.00			0.932	mg/L		93.2	(90%-110%)		05/15/17 13:20
QC1203788274 MB										
Nitrogen, Ammonia			J	0.0497	mg/L					05/15/17 13:19
QC1203788279 422730001 MS										
Nitrogen, Ammonia	1.00	J 0.0457		0.971	mg/L		92.5	(90%-110%)		05/15/17 13:22
Batch 1665008										
QC1203789288 422869001 DUP										
Nitrogen, Nitrate/Nitrite		U ND	U	ND	mg/L	N/A			AXH3	05/17/17 06:20
QC1203789286 LCS										
Nitrogen, Nitrate/Nitrite	1.00			1.01	mg/L		101	(90%-110%)		05/17/17 06:12
QC1203789285 MB										
Nitrogen, Nitrate/Nitrite			U	ND	mg/L					05/17/17 06:11

QC Summary

Workorder: **422859**

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Nutrient Analysis											
Batch 1665008											
QC1203789291 422869001 PS											
Nitrogen, Nitrate/Nitrite	1.00	U	ND		0.949	mg/L		94.9	(90%-110%)	AXH3	05/17/17 06:22
Batch 1665040											
QC1203789381 422730002 DUP											
Nitrogen, Total Kjeldahl			0.130	J	0.050	mg/L	88.9 ^		(+/-0.100)	KLP1	05/24/17 10:22
QC1203789378 LCS											
Nitrogen, Total Kjeldahl	1.00				1.05	mg/L		105	(90%-110%)		05/24/17 10:18
QC1203789377 MB											
Nitrogen, Total Kjeldahl				U	ND	mg/L					05/24/17 10:06
QC1203789383 422730002 MS											
Nitrogen, Total Kjeldahl	1.00		0.130		1.20	mg/L		107	(90%-110%)		05/24/17 10:22
Solids Analysis											
Batch 1664164											
QC1203788251 422869001 DUP											
Total Dissolved Solids			189		190	mg/L	0.755		(0%-5%)	KLP1	05/15/17 15:47
QC1203787287 LCS											
Total Dissolved Solids	300				300	mg/L		100	(95%-105%)		05/15/17 15:47
QC1203787286 MB											
Total Dissolved Solids				U	ND	mg/L					05/15/17 15:47
Titration and Ion Analysis											
Batch 1666465											
QC1203792717 422730001 DUP											
Alkalinity, Total as CaCO3			42.4		41.8	mg/L	1.43		(0%-20%)	RXB5	05/18/17 18:51
Carbonate alkalinity (CaCO3)		U	ND	U	ND	mg/L	N/A				

QC Summary

Workorder: **422859**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Titration and Ion Analysis										
Batch 1666465										
QC1203792713 LCS										
Alkalinity, Total as CaCO3	100			106	mg/L		106	(90%-110%)	RXB5	05/18/17 18:33
QC1203792720 422730001 MS										
Alkalinity, Total as CaCO3	100	42.4		149	mg/L		106	(80%-120%)		05/18/17 18:54
Batch 1666469										
QC1203792737 422730001 DUP										
pH	H	7.98	H	7.98	SU	0		(0%-5%)	RXB5	05/18/17 18:52
QC1203792736 LCS										
pH	7.00			6.99	SU		99.9	(99%-101%)		05/18/17 18:33
Batch 1668500										
QC1203797705 422853001 DUP										
Conductivity		131		133	umhos/cm	1.52		(0%-10%)	VH1	05/30/17 15:23
QC1203797706 423194001 DUP										
Conductivity		511		512	umhos/cm	0.196		(0%-10%)		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

QC Summary

Workorder: **422859**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time

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. 12-MAY-17	**Division:** Industrial	**Quality Criteria:** Specifications	**Type:** Process
Instrument Type: LACHAT Flow Injection Analyzer	**Test / Method:** EPA 335.4, EPA 335.4 SC, SW846 9012B	**Matrix Type:** Liquid	**Client Code:** ESHL
Batch ID: 1663908	**Sample Numbers:** See Below		

Potentially affected work order(s)(SDG): 422859(2017-1505),422869(2017-1504)

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 1203787624MS	1. The matrix spike recovered outside of the established acceptance limits due to matrix interference and/or non-homogeneity. Cyanide, Total 1203787624 (WST15-17-135038MS) [111* (90.0%-110.0%)].

Originator's Name:

Aubrey Kingsbury 12-MAY-17

Data Validator/Group Leader:

Kristen Mizzell 12-MAY-17

DATA EXCEPTION REPORT

Mo.Day Yr.	**Division:**	**Quality Criteria:**	**Type:**
18-MAY-17	Industrial	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
ELECTRODE	EPA 150.1, SM 4500-H B, SW846 9040C	Liquid	CARE, ESHL, FLET, NFSR
Batch ID:	**Sample Numbers:**		
1666469	See Below		

Potentially affected work order(s)(SDG): 422623,422722,422730(2017-1496),422778(CAH-17-041a),422853(2017-1506),422859(2017-1505),422869(2017-1504),423409(EUI-10506)

Application Issues:

Sample received out of holding

Specification and Requirements Exception Description:	**DER Disposition:**
1. Sample received out of holding: 422623 001 422722 001 422730 001,003,005 422778 001 422853 001 422859 001 422869 001,005 423409 001 QC 1203792737DUP,1203792989DUP	1. Samples (See Below) were received by the laboratory outside of the method specified holding time. The data is qualified. 1203792737 (CASA-17-132323DUP) [Received 10-MAY-17, out of holding 08-MAY-17]. 1203792989 (Bi-Annual SewerDUP) [Received 10-MAY-17, out of holding 09-MAY-17]. 422623001 (Inflow 12) [Received 08-MAY-17, out of holding 08-MAY-17]. 422722001 (Outflow 11) [Received 09-MAY-17, out of holding 09-MAY-17]. 422730001 (CASA-17-132323) [Received 10-MAY-17, out of holding 08-MAY-17]. 422730003 (CASA-17-132324) [Received 10-MAY-17, out of holding 08-MAY-17]. 422730005 (CAMO-17-132524) [Received 10-MAY-17, out of holding 08-MAY-17]. 422778001 (Bi-Annual Sewer) [Received 10-MAY-17, out of holding 09-MAY-17]. 422853001 (CAMO-17-132206) [Received 11-MAY-17, out of holding 09-MAY-17]. 422859001 (CAMO-17-132199) [Received 11-MAY-17, out of holding 09-MAY-17]. 422869001 (WST15-17-135038) [Received 11-MAY-17, out of holding 09-MAY-17]. 422869005 (WST15-17-135039) [Received 11-MAY-17, out of holding 09-MAY-17]. 423409001 (1001-02-0001 L126115) [Received 17-MAY-17, out of holding 15-MAY-17].

Originator's Name:
Rachael Bell 18-MAY-17

Data Validator/Group Leader:
Elzbieta Szulc 19-MAY-17