

The order of this data package is as follows:

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

Comments:

Revised data begins on page 206.



## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11258

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

SAMPLE ID: CAWA-17-133286

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	06-06-2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	10:43		MEDIA:	UA	
PRS ID:	NA		SAMPLE TECH CODE:	PP	
LOCATION ID:	CDV-16-611923		FIELD PREP:	UF	
LOCATION TYPE:	NA		FIELD QC TYPE:	REG	
TOP DEPTH:			SAMPLE USAGE:	INV	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	MSGP-Hg	1 LITER POLY	1	HNO3	Y	NA
	WSP-8330B-NMED HEXMOD	1 LITER AMBER GLASS	3	ICE		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

## SAMPLE COMMENTS:

None with 06/06/17 HE spot test negative.

## LOCATION COMMENTS:

None

## FIELD PARAMETERS:

Sample Time	10:43	HH:MM	Dissolved Oxygen	0.76	Flow (in gpm)	0.139
Oxidation-Reduction Potential	12.5		pH	6.58	Specific Conductance	249.4
Temperature	9.6		Turbidity	2.1		

COLLECTED BY (PRINT): D. Jaramillo, K. Tow

RELINQUISHED BY (Printed Name) (Signature)	Katrina Tow <i>[Signature]</i>	Date/Time 6/6/17 16501615	RECEIVED BY (Printed Name) (Signature)	S. Sherwood <i>[Signature]</i>	Date/Time 6/6/17 1615
RELINQUISHED BY (Printed Name) (Signature)		Date/Time	RECEIVED BY (Printed Name) (Signature)		Date/Time

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11258

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

SAMPLE ID: CAWA-17-133287

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	06-06-2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	15:13		MEDIA:	UA	
PRS ID:	NA		SAMPLE TECH CODE:	PP	
LOCATION ID:	CDV-16-611937		FIELD PREP:	UF	
LOCATION TYPE:	NA		FIELD QC TYPE:	REG	
TOP DEPTH:			SAMPLE USAGE:	INV	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	MSGP-Hg	1 LITER POLY	1	HNO3	Y	NA
	WSP-8330B-NMED HEXMOD	1 LITER AMBER GLASS	3	ICE		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

## SAMPLE COMMENTS:

HE spot test negative

## LOCATION COMMENTS:

None

## FIELD PARAMETERS:

Sample Time	15:13	HH:MM	Dissolved Oxygen	2.51	Flow (in gpm)	0.073
Oxidation-Reduction Potential	142.5		pH	6.13	Specific Conductance	174.8
Temperature	9.4		Turbidity	35.6		

COLLECTED BY (PRINT): K. Tow D. Jaramilla

RELINQUISHED BY (Printed Name) (Signature)	Katrina Tow <i>[Signature]</i>	Date/Time 6/6/17 1615	RECEIVED BY (Printed Name) (Signature)	S. Sherwood <i>[Signature]</i>	Date/Time 6/6/17 1615
RELINQUISHED BY (Printed Name) (Signature)		Date/Time	RECEIVED BY (Printed Name) (Signature)		Date/Time

Report Date: 05/30/2017



## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11258

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

SAMPLE ID: CAWA-17-133314

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	06-06-2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	10:43		MEDIA:	UA	
PRS ID:	NA		SAMPLE TECH CODE:	PP	
LOCATION ID:	CDV-16-611923		FIELD PREP:	F	
LOCATION TYPE:	NA		FIELD QC TYPE:	REG	
TOP DEPTH:			SAMPLE USAGE:	INV	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / NA

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

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

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

COLLECTED BY (PRINT): K. Tow, D. Jaramillo

RELINQUISHED BY (Printed Name) (Signature)	Katrina Tow <i>[Signature]</i>	Date/Time 6/6/17 1615	RECEIVED BY (Printed Name) (Signature)	Sherwood <i>[Signature]</i>	Date/Time 6/6/17 1615
RELINQUISHED BY (Printed Name) (Signature)		Date/Time	RECEIVED BY (Printed Name) (Signature)		Date/Time

Report Date: 05/30/2017

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11258

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

SAMPLE ID: CAWA-17-133315

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	06-06-2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	15:13		MEDIA:	UA	
PRS ID:	NA		SAMPLE TECH CODE:	PP	
LOCATION ID:	CDV-16-611937		FIELD PREP:	F	
LOCATION TYPE:	NA		FIELD QC TYPE:	REG	
TOP DEPTH:			SAMPLE USAGE:	INV	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / <u>NA</u>

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

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

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

COLLECTED BY (PRINT):

K. Tow, D. J. *Sanam/10*

RELINQUISHED BY (Printed Name) (Signature)	Katrina Tow <i>[Signature]</i>	Date/Time 6/6/17 1615	RECEIVED BY (Printed Name) (Signature)	S. Sherwood <i>[Signature]</i>	Date/Time 6/6/17 1615
RELINQUISHED BY (Printed Name) (Signature)		Date/Time	RECEIVED BY (Printed Name) (Signature)		Date/Time

Report Date: 05/30/2017

## DATA VALIDATION REPORT

Chain Of Custody No. 2017-1664

### 1. Distribution Of Samples In EDD.

SDG	Analytical Method	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks
425079	EPA:120.1	2				
425079	EPA:150.1	2				
425079	EPA:160.1	2				
425079	EPA:170.0	4				
425079	EPA:245.2	4				
425079	EPA:300.0	2				
425079	EPA:310.1	2				
425079	EPA:335.4	2				
425079	EPA:350.1	2				
425079	EPA:351.2	2				
425079	EPA:353.2	2				
425079	EPA:365.4	2				
425079	SM:A2340B	2				
425079	SW-846:6010C	2				
425079	SW-846:6020	2				
425079	SW-846:6850	2				
425079	SW-846:8330B	2				
425079	SW-846:9060	2				

SDG	Analytical Method	Analysis Lot ID	Prep Lot ID	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks	Method Blanks	Matrix Spikes	Matrix Spike Dups	Analytical Spikes	Post-Digestion Spikes	Lab Control Samples	Lab Control Sample Dups	Blank Spike	Blank Spike Dups	Lab Duplicates	Storage Blanks	Preparation Blanks	Reagent Blanks
425079	EPA:120.1	1678861	1678861	2										1				1			
425079	EPA:150.1	1673523	1673523	2										1				1			
425079	EPA:160.1	1673663	1673663	2					1					1				1			
425079	EPA:170.0	NA	NA	4																	
425079	EPA:245.2	1673857	1673856	4					1	2				1				2			
425079	EPA:300.0	1672927	1672927	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
425079	EPA:300.0	1673741	1673741	1					1					1			1				
425079	EPA:310.1	1673522	1673522	2						1				1			1				
425079	EPA:335.4	1671991	1671990	2					1	1				1			1				
425079	EPA:350.1	1672879	1672878	1					1	1				1			1				
425079	EPA:350.1	1673875	1673874	1					1	1				1			1				
425079	EPA:351.2	1672889	1672888	1					1	1				1			1				
425079	EPA:351.2	1673872	1673870	1					1	1				1			1				
425079	EPA:353.2	1672172	1672172	1					1					1			1				
425079	EPA:353.2	1673506	1673506	1					1					1	1		1				
425079	EPA:365.4	1672893	1672892	1					1	1				1			1				
425079	EPA:365.4	1673877	1673876	1					1	1				1			1				
425079	SM:A2340B	1678964	1678964	2																	
425079	SW-846:6010C	1672788	1672787	2					1	1				1			1				
425079	SW-846:6020	1672758	1672757	2					1	1				1			1				
425079	SW-846:6850	1673882	1673881	2					1	1	1			1							
425079	SW-846:8330B	1672553	1672551	1					1	1	1			1							
425079	SW-846:8330B	1673460	1673459	1					1	1	1			1							
425079	SW-846:9060	1673634	1673634	2					1					1	1		2				

### 2. Distribution Of Analytes In EDD.

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
EPA:120.1	GENERAL CHEMISTRY	CAWA-17-133314	425079002	REG	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CAWA-17-133315	425079004	REG	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CAWA-17-133347	1203822828	DUP	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	LCS	1203822826	LCS	0	0	1	0
EPA:150.1	GENERAL CHEMISTRY	CAWA-17-133314	425079002	REG	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CAWA-17-133315	425079004	REG	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CAWA-17-133347	1203810238	DUP	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	LCS	1203811672	LCS	0	0	1	0
EPA:160.1	GENERAL CHEMISTRY	CAWA-17-133312	1203810556	DUP	1	0	0	0



## DATA VALIDATION REPORT

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
EPA:160.1	GENERAL CHEMISTRY	CAWA-17-133314	425079002	REG	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	CAWA-17-133315	425079004	REG	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	LCS	1203810549	LCS	0	0	1	0
EPA:160.1	GENERAL CHEMISTRY	MB	1203810548	MB	1	0	0	0
EPA:170.0	VOC	CAWA-17-133286	425079001	REG	1	0	0	0
EPA:170.0	VOC	CAWA-17-133287	425079003	REG	1	0	0	0
EPA:170.0	VOC	CAWA-17-133314	425079002	REG	1	0	0	0
EPA:170.0	VOC	CAWA-17-133315	425079004	REG	1	0	0	0
EPA:245.2	INORGANIC	CAPA-17-133353	1203811031	DUP	1	0	0	0
EPA:245.2	INORGANIC	CAPA-17-133353	1203811033	MS	0	0	1	0
EPA:245.2	INORGANIC	CAWA-17-133286	1203811032	DUP	1	0	0	0
EPA:245.2	INORGANIC	CAWA-17-133286	1203811034	MS	0	0	1	0
EPA:245.2	INORGANIC	CAWA-17-133286	425079001	REG	1	0	0	0
EPA:245.2	INORGANIC	CAWA-17-133287	425079003	REG	1	0	0	0
EPA:245.2	INORGANIC	CAWA-17-133314	425079002	REG	1	0	0	0
EPA:245.2	INORGANIC	CAWA-17-133315	425079004	REG	1	0	0	0
EPA:245.2	INORGANIC	LCS	1203811030	LCS	0	0	1	0
EPA:245.2	INORGANIC	MB	1203811029	MB	1	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAWA-17-133313	1203808702	DUP	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAWA-17-133314	1203810743	DUP	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAWA-17-133314	425079002	REG	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAWA-17-133315	425079004	REG	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	LCS	1203808701	LCS	0	0	4	0
EPA:300.0	GENERAL CHEMISTRY	LCS	1203810742	LCS	0	0	4	0
EPA:300.0	GENERAL CHEMISTRY	MB	1203808700	MB	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	MB	1203810741	MB	4	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAWA-17-133314	425079002	REG	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAWA-17-133315	425079004	REG	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAWA-17-133347	1203810232	DUP	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAWA-17-133347	1203810235	MS	0	0	1	0
EPA:310.1	GENERAL CHEMISTRY	LCS	1203810229	LCS	0	0	1	0
EPA:335.4	GENERAL CHEMISTRY	CAWA-17-133286	425079001	REG	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	CAWA-17-133287	425079003	REG	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	LCS	1203806300	LCS	0	0	1	0
EPA:335.4	GENERAL CHEMISTRY	MB	1203806299	MB	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	SWWS46-17-136913	1203806301	DUP	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	SWWS46-17-136913	1203806302	MS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	CAWA-17-133314	1203811099	DUP	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAWA-17-133314	1203811100	MS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	CAWA-17-133314	425079002	REG	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:350.1	GENERAL CHEMISTRY	CAWA-17-133315	1203808634	DUP	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAWA-17-133315	1203808636	MS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	CAWA-17-133315	425079004	REG	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	LCS	1203808633	LCS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	LCS	1203811098	LCS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	MB	1203808632	MB	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	MB	1203811097	MB	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAWA-17-133286	1203811091	DUP	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAWA-17-133286	1203811092	MS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	CAWA-17-133286	425079001	REG	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAWA-17-133287	1203808650	DUP	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAWA-17-133287	1203808651	MS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	CAWA-17-133287	425079003	REG	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	LCS	1203808649	LCS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	LCS	1203811090	LCS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	MB	1203808648	MB	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	MB	1203811089	MB	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAWA-17-133312	1203810167	DUP	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAWA-17-133314	425079002	REG	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAWA-17-133315	1203807680	DUP	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAWA-17-133315	425079004	REG	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	LCS	1203806724	LCS	0	0	1	0
EPA:353.2	GENERAL CHEMISTRY	LCS	1203810165	LCS	0	0	1	0
EPA:353.2	GENERAL CHEMISTRY	LCSD	1203810166	LCSD	0	0	1	0
EPA:353.2	GENERAL CHEMISTRY	MB	1203806723	MB	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	MB	1203810164	MB	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAWA-17-133314	1203811108	DUP	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAWA-17-133314	1203811109	MS	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	CAWA-17-133314	425079002	REG	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAWA-17-133315	1203808660	DUP	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAWA-17-133315	1203808661	MS	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	CAWA-17-133315	425079004	REG	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	LCS	1203808659	LCS	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	LCS	1203811105	LCS	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	MB	1203808658	MB	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	MB	1203811104	MB	1	0	0	0
SM:A2340B	INORGANIC	CAWA-17-133314	425079002	REG	1	0	0	0
SM:A2340B	INORGANIC	CAWA-17-133315	425079004	REG	1	0	0	0
SW-846:6010C	INORGANIC	CAWA-17-133314	1203808403	DUP	17	0	0	0
SW-846:6010C	INORGANIC	CAWA-17-133314	1203808404	MS	0	0	17	0

## DATA VALIDATION REPORT

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
SW-846:6010C	INORGANIC	CAWA-17-133314	425079002	REG	17	0	0	0
SW-846:6010C	INORGANIC	CAWA-17-133315	425079004	REG	17	0	0	0
SW-846:6010C	INORGANIC	LCS	1203808402	LCS	0	0	17	0
SW-846:6010C	INORGANIC	MB	1203808401	MB	17	0	0	0
SW-846:6020	INORGANIC	CAWA-17-133314	1203808337	DUP	11	0	0	0
SW-846:6020	INORGANIC	CAWA-17-133314	1203808338	MS	0	0	11	0
SW-846:6020	INORGANIC	CAWA-17-133314	425079002	REG	11	0	0	0
SW-846:6020	INORGANIC	CAWA-17-133315	425079004	REG	11	0	0	0
SW-846:6020	INORGANIC	LCS	1203808336	LCS	0	0	11	0
SW-846:6020	INORGANIC	MB	1203808335	MB	11	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	CAWA-17-133314	425079002	REG	1	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	CAWA-17-133315	425079004	REG	1	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	CAWA-17-133329	1203811122	MS	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	CAWA-17-133329	1203811123	MSD	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	LCS	1203811121	LCS	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	MB	1203811120	MB	1	0	0	0
SW-846:8330B	LCMS/MS HIGH	CAWA-17-133286	425079001	REG	20	1	0	0
SW-846:8330B	LCMS/MS HIGH	CAWA-17-133287	425079003	REG	20	1	0	0
SW-846:8330B	LCMS/MS HIGH	CAWA-17-133301	1203807733	MS	0	1	20	0
SW-846:8330B	LCMS/MS HIGH	CAWA-17-133301	1203807734	MSD	0	1	20	0
SW-846:8330B	LCMS/MS HIGH	CAWA-17-133348	1203810016	MS	0	1	20	0
SW-846:8330B	LCMS/MS HIGH	CAWA-17-133348	1203810017	MSD	0	1	20	0
SW-846:8330B	LCMS/MS HIGH	LCS	1203807732	LCS	0	1	20	0
SW-846:8330B	LCMS/MS HIGH	LCS	1203810015	LCS	0	1	20	0
SW-846:8330B	LCMS/MS HIGH	MB	1203807731	MB	20	1	0	0
SW-846:8330B	LCMS/MS HIGH	MB	1203810014	MB	20	1	0	0
SW-846:9060	GENERAL CHEMISTRY	CAWA-17-133284	1203812104	DUP	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAWA-17-133286	425079001	REG	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAWA-17-133287	425079003	REG	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAWA-17-133305	1203812105	DUP	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	LCS	1203812103	LCS	0	0	1	0
SW-846:9060	GENERAL CHEMISTRY	LCSD	1203812277	LCSD	0	0	1	0
SW-846:9060	GENERAL CHEMISTRY	MB	1203812102	MB	1	0	0	0

3. Are any analytes missing?

No.

4. Were any holding times exceeded?

## DATA VALIDATION REPORT

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	1203808335	METHOD BLANK	SW-846:6020	W	Molybdenum	0.231	J	ug/L	0.500
MB	1203808632	METHOD BLANK	EPA:350.1	W	Ammonia as Nitrogen	0.0252	J	mg/L	0.050
MB	1203811104	METHOD BLANK	EPA:365.4	W	Total Phosphate as Phosphorus	0.0324	J	mg/L	0.050

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
CAWA-17-133315	1203808632	METHOD BLANK	EPA:350.1	Ammonia as Nitrogen	0.0252	mg/L	0.182		0.050	Y	5	100	Y
CAWA-17-133314	1203811104	METHOD BLANK	EPA:365.4	Total Phosphate as Phosphorus	0.0324	mg/L	0.0742		0.050	Y	5	100	Y
CAWA-17-133314	1203808335	METHOD BLANK	SW-846:6020	Molybdenum	0.231	ug/L	0.67		0.500	Y	5	100	Y
CAWA-17-133315	1203808335	METHOD BLANK	SW-846:6020	Molybdenum	0.231	ug/L	1.26		0.500	Y	5	100	Y

6. Any surrogate recoveries outside the control limits?

No.

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
CAWA-17-133314	1203808404		SW-846:6010C	Barium	1672787	06-26-2017	W	141		125	75			
CAWA-17-133314	1203808404		SW-846:6010C	Barium	1672787	06-26-2017	W	141		125	75			

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
1203807732		SW-846:8330B	2,6-Diamino-4-nitrotoluene	1672551	06-16-2017	W	137		127	53				
1203807732		SW-846:8330B	TATB	1672551	06-16-2017	W	148		135	47				
1203810015		SW-846:8330B	TATB	1673459	06-27-2017	W	151		135	47				

9. Any Field Duplicate RPDs outside the desired limits?

No.

10. Any Lab Duplicate RPDs outside the desired limits?

Field Sample ID	Lab Sample ID	LD Lab Sample ID	Analytical Method	Parameter Name	Sample Matrix	Lab Result	LD Lab Result	Lab Units	Detect Flag	LD Detect Flag	RPD	RPD Limit
CAWA-17-133314	425079002	1203811108	EPA:365.4	Total Phosphate as	W	0.0742	0.0979	mg/L	Y	Y	27.5	27

11. Any required reporting limits exceeded?

No.

## DATA VALIDATION REPORT

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
CDV-16-611923	2017-1664	CAWA-17-133314	REG	INIT	INORGANIC	SW-846:6010C	Barium		J+	I6b	Y	6810	ug/L	6810	ug/L			W	06/06/2017	1672788	VAL	Y	
CDV-16-611923	2017-1664	CAWA-17-133314	REG	INIT	INORGANIC	SW-846:6020	Molybdenum		U	I4	N	0.67	ug/L	0.67	ug/L			W	06/06/2017	1672758	VAL	Y	
CDV-16-611923	2017-1664	CAWA-17-133314	REG	INIT	GENERAL CHEMISTRY	EPA:365.4	Total Phosphate as Phosphorus		U	I4	N	0.0742	mg/L	0.0742	mg/L			W	06/06/2017	1673877	VAL	Y	
CDV-16-611937	2017-1664	CAWA-17-133315	REG	INIT	GENERAL CHEMISTRY	EPA:350.1	Ammonia as Nitrogen		J	I4a	Y	0.182	mg/L	0.182	mg/L			W	06/06/2017	1672879	VAL	Y	
CDV-16-611937	2017-1664	CAWA-17-133315	REG	INIT	INORGANIC	SW-846:6020	Molybdenum		J	I4a	Y	1.26	ug/L	1.26	ug/L			W	06/06/2017	1672758	VAL	Y	

### Reason Code

### Description

I4

the sample result is =<5x the concentration of related analyte in the method blank.

I4a

The affected analytes are considered estimated and biased high because this analyte was identified in the method blank but was >5x

I6b

The associated matrix spike recovery was above the Upper Acceptance Limit (UAL). Follow the external laboratory limits located within the associated data package.

J\_LAB

The analytical laboratory qualified the detected result as estimated (J) because the result was less the PQL but greater than the MDL

NQ

The analytical laboratory did not qualify 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
CAWA-17-133286	CDV-16-611923	REG	EPA:170.0	0	1
CAWA-17-133286	CDV-16-611923	REG	EPA:245.2	0	1
CAWA-17-133286	CDV-16-611923	REG	EPA:335.4	0	1
CAWA-17-133286	CDV-16-611923	REG	EPA:351.2	0	1
CAWA-17-133286	CDV-16-611923	REG	SW-846:8330B	0	20
CAWA-17-133286	CDV-16-611923	REG	SW-846:9060	0	1
CAWA-17-133287	CDV-16-611937	REG	EPA:170.0	0	1
CAWA-17-133287	CDV-16-611937	REG	EPA:245.2	0	1

## DATA VALIDATION REPORT

Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total Records
CAWA-17-133287	CDV-16-611937	REG	EPA:335.4	0	1
CAWA-17-133287	CDV-16-611937	REG	EPA:351.2	0	1
CAWA-17-133287	CDV-16-611937	REG	SW-846:8330B	0	20
CAWA-17-133287	CDV-16-611937	REG	SW-846:9060	0	1
CAWA-17-133314	CDV-16-611923	REG	EPA:120.1	0	1
CAWA-17-133314	CDV-16-611923	REG	EPA:150.1	0	1
CAWA-17-133314	CDV-16-611923	REG	EPA:160.1	0	1
CAWA-17-133314	CDV-16-611923	REG	EPA:170.0	0	1
CAWA-17-133314	CDV-16-611923	REG	EPA:245.2	0	1
CAWA-17-133314	CDV-16-611923	REG	EPA:300.0	0	4
CAWA-17-133314	CDV-16-611923	REG	EPA:310.1	0	2
CAWA-17-133314	CDV-16-611923	REG	EPA:350.1	0	1
CAWA-17-133314	CDV-16-611923	REG	EPA:353.2	0	1
CAWA-17-133314	CDV-16-611923	REG	EPA:365.4	0	1
CAWA-17-133314	CDV-16-611923	REG	SM:A2340B	0	1
CAWA-17-133314	CDV-16-611923	REG	SW-846:6010C	0	17
CAWA-17-133314	CDV-16-611923	REG	SW-846:6020	0	11
CAWA-17-133314	CDV-16-611923	REG	SW-846:6850	0	1
CAWA-17-133315	CDV-16-611937	REG	EPA:120.1	0	1
CAWA-17-133315	CDV-16-611937	REG	EPA:150.1	0	1
CAWA-17-133315	CDV-16-611937	REG	EPA:160.1	0	1
CAWA-17-133315	CDV-16-611937	REG	EPA:170.0	0	1
CAWA-17-133315	CDV-16-611937	REG	EPA:245.2	0	1
CAWA-17-133315	CDV-16-611937	REG	EPA:300.0	0	4
CAWA-17-133315	CDV-16-611937	REG	EPA:310.1	0	2
CAWA-17-133315	CDV-16-611937	REG	EPA:350.1	0	1
CAWA-17-133315	CDV-16-611937	REG	EPA:353.2	0	1
CAWA-17-133315	CDV-16-611937	REG	EPA:365.4	0	1
CAWA-17-133315	CDV-16-611937	REG	SM:A2340B	0	1
CAWA-17-133315	CDV-16-611937	REG	SW-846:6010C	0	17
CAWA-17-133315	CDV-16-611937	REG	SW-846:6020	0	11
CAWA-17-133315	CDV-16-611937	REG	SW-846:6850	0	1

## DATA VALIDATION REPORT

Chain Of Custody No. 2017-1664 - Rev

### 1. Distribution Of Samples In EDD.

SDG	Analytical Method	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks
425079	SW-846:8330B	2				

SDG	Analytical Method	Analysis Lot ID	Prep Lot ID	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks	Method Blanks	Matrix Spikes	Matrix Spike Dups	Analytical Spikes	Post-Digestion Spikes	Lab Control Samples	Lab Control Sample Dups	Blank Spike	Blank Spike Dups	Lab Duplicates	Storage Blanks	Preparation Blanks	Reagent Blanks
425079	SW-846:8330B	1672553	1672551	1					1												
425079	SW-846:8330B	1673460	1673459	1					1												

### 2. Distribution Of Analytes In EDD.

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
SW-846:8330B	LCMS/MS HIGH	CAWA-17-133286	425079001	REG	3	0	0	0
SW-846:8330B	LCMS/MS HIGH	CAWA-17-133287	425079003	REG	3	0	0	0
SW-846:8330B	LCMS/MS HIGH	MB	1203807731	MB	3	0	0	0
SW-846:8330B	LCMS/MS HIGH	MB	1203810014	MB	3	0	0	0

### 3. Are any analytes missing?

No.

### 4. Were any holding times exceeded?

No.

### 5. Any contaminants in blanks?

No.



## DATA VALIDATION REPORT

6. Any surrogate recoveries outside the control limits?

No.

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

No.

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

No.

9. Any Field Duplicate RPDs outside the desired limits?

No.

10. Any Lab Duplicate RPDs outside the desired limits?

No.

11. Any required reporting limits exceeded?

No.

12. Additional Validator's Comments.

13. Display Flagged Data.

None.

<b><u>Reason Code</u></b>	<b><u>Description</u></b>
J_LAB	The analytical laboratory qualified the detected result as estimated (J) because the result was less the PQL but greater than the MDL
U_LAB	The analytical laboratory qualified the analyte as not detected.

## DATA VALIDATION REPORT

14. Usable Result Count.

Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total Records
CAWA-17-133286	CDV-16-611923	REG	SW-846:8330B	0	3
CAWA-17-133287	CDV-16-611937	REG	SW-846:8330B	0	3

June 30, 2017

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

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

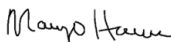
Re: LANL- WQH Water Samples  
Work Order: 425079  
SDG: 2017-1664

Dear Mr. Greene:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the following analytical results for the sample(s) we received on June 08, 2017, and analyzed for Explosives by LCMSMS, 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: 2017-1664  
Enclosures



**ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)**  
**LANL- WQH Water Samples**  
**Work Order #: 425079**  
**SDG: 2017-1664**



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# Case Narrative

**Case Narrative for  
ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)  
LANL- WQH Water Samples  
Workorder #: 425079  
SDG # : 2017-1664**

**June 30, 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 June 08, 2017 for analysis. The samples were delivered with proper chain of custody documentation and signatures. The samples were screened according to GEL Standard Operating Procedure. All sample containers arrived without any visible signs of tampering or breakage. Containers were checked for pH, where appropriate, and matched the preservative as documented on the accompanying chain of custody. Shipping container temperature was within specification (0 - 6C). Shipping container temperatures were checked, documented, and within specifications. There are no additional comments concerning sample receipt.

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

<b><u>Laboratory ID</u></b>	<b><u>Client ID</u></b>
425079001	CAWA-17-133286
425079002	CAWA-17-133314
425079003	CAWA-17-133287
425079004	CAWA-17-133315

**Case Narrative**

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

**Data Package**

The enclosed data package contains the following sections: Case Narrative, Chain of Custody, Cooler Receipt Checklist, Data Package Qualifier Definitions and data from the following fractions: Explosives by LCMSMS, 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*  
Margo Herron for  
Valerie Davis  
Project Manager

**List of current GEL Certifications as of 30 June 2017**

<b>State</b>	<b>Certification</b>
Alaska	UST-0110
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC00012
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA170010
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122017-1
New Hampshire NELAP	205415
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	9904
Pennsylvania NELAP	68-00485
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-17-12
Utah NELAP	SC000122017-22
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

# **Chain of Custody and Supporting Documentation**







Laboratories LLC

## SAMPLE RECEIPT &amp; REVIEW FORM

Client: <b>ESHCL</b>		SDG/AR/COC/Work Order: <b>425079</b>		
Received By: <b>ZKW</b>		Date Received: <b>6/8/17</b>		
Carrier and Tracking Number		Circle Applicable: <input checked="" type="radio"/> FedEx Express <input type="radio"/> FedEx Ground <input type="radio"/> UPS <input type="radio"/> Field Services <input type="radio"/> Courier <input type="radio"/> Other		
		<b>5906 1782 1812</b> <b>5906 1782 1801</b>		
Suspected Hazard Information	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.		
Shipped as a DOT Hazardous?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Hazard Class Shipped: _____ UN#: _____		
COC/Samples marked or classified as radioactive?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <b>0</b> <b>CPM</b> mR/Hr Classified as: Rad 1 Rad 2 Rad 3		
Is package, COC, and/or Samples marked HAZ?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	If yes, select Hazards below, and contact the GEL Safety Group. PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other: _____		
Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Preservation Method: Wet Ice <input checked="" type="checkbox"/> Ice Packs Dry ice None Other: _____ *all temperatures are recorded in Celsius <b>TEMP: 22</b>
4 Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <b>IR3-16</b> Secondary Temperature Device Serial # (If Applicable): _____
5 Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6 Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's and Containers Affected: _____ If Preservation added, Lot#: _____
7 Do any samples require Volatile Analysis?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	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) <input checked="" type="checkbox"/> VOA vials free of headspace? Yes ___ No ___ N/A ___ Sample ID's and containers affected: _____
8 Samples received within holding time?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected: _____
9 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected: _____
10 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected: _____
11 Number of containers received match number indicated on COC?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected: _____ <b>*See Below for what we did not receive</b>
12 Are sample containers identifiable as GEL provided?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Comments (Use Continuation Form if needed): <b>* TOC cont. for -133284, NH<sub>3</sub> cont. for -133312, Hg; TOC cont. for -133285, NH<sub>3</sub> cont. for -133313, Hg, TOC, ; 1 Exp. Cont. for -133286, All cont. for -133314, All 3 Exp. Cont. for -133287, and Metals Cont. for -133315</b>				

PM (or PMA) review: Initials **MEJA** Date **6/9/17** Page **1** of **1**

GL-CHL-SR-001 Rev 5



Laboratories LLC

## SAMPLE RECEIPT &amp; REVIEW FORM

Client: <u>ESHC</u>		SDG/AR/COC/Work Order: <u>425079</u>	
Received By: <u>ZKW</u>		Date Received: <u>6/12/17</u>	
Carrier and Tracking Number		Circle Applicable: <input checked="" type="radio"/> FedEx Express <input type="radio"/> FedEx Ground <input type="radio"/> UPS <input type="radio"/> Field Services <input type="radio"/> Courier <input type="radio"/> Other	
		<u>5908 1782 1777</u>	
Suspected Hazard Information	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.	
Shipped as a DOT Hazardous?	<input type="checkbox"/>	Hazard Class Shipped: _____ UN#: _____	
COC/Samples marked or classified as radioactive?	<input checked="" type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0</u> <u>CPM</u> mR/Hr Classified as: Rad 1 Rad 2 Rad 3	
Is package, COC, and/or Samples marked HAZ?	<input checked="" type="checkbox"/>	If yes, select Hazards below, and contact the GEL Safety Group. <input checked="" type="checkbox"/> PCB's <input type="checkbox"/> Flammable <input type="checkbox"/> Foreign Soil <input type="checkbox"/> RCRA <input type="checkbox"/> Asbestos <input type="checkbox"/> Beryllium <input type="checkbox"/> Other:	

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken    Damaged container    Leaking container    Other (describe)
2 Chain of custody documents included with shipment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Preservation Method: Wet Ice <u>Ice Packs</u> Dry ice    None    Other: *all temperatures are recorded in Celsius    TEMP: <u>20°C</u>
4 Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <u>IR3-16</u> Secondary Temperature Device Serial # (If Applicable): _____
5 Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken    Damaged container    Leaking container    Other (describe)
6 Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and Containers Affected: If Preservation added, Lot#: _____
7 Do any samples require Volatile Analysis?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected: _____
9 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected: _____
10 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected: _____
11 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected: _____
12 Are sample containers identifiable as GEL provided?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Comments (Use Continuation Form if needed):  
\* Rec'd missing Samples from 6/8/17

PM (or PMA) review: Initials MDA

Date

6/13/17

Page

1

of 1

GL-CHL-SR-001 Rev 5

**Subject:** RE: Re: Missing LANL Samples  
**From:** "Greene, Keith Robert" <kgreene@lanl.gov>  
**Date:** 6/12/2017 5:47 PM  
**To:** Margo Herron <Margo.Herron@gel.com>

Please analyze

---

**From:** Margo Herron [mailto:Margo.Herron@gel.com]  
**Sent:** Monday, June 12, 2017 1:35 PM  
**To:** Greene, Keith Robert <kgreene@lanl.gov>  
**Cc:** team.davis <team.davis@gel.com>  
**Subject:** Fwd: Re: Missing LANL Samples

Hi Keith,

The missing cooler came in on Saturday. The samples were out of temperature when the cooler arrived. Please advise.

Thanks,  
Margo Herron

----- Forwarded Message -----

**Subject:** Re: Missing LANL Samples  
**Date:** Fri, 09 Jun 2017 15:16:06 -0400  
**From:** Julie Robinson <Julie.Robinson@gel.com>  
**To:** Greene, Keith Robert <kgreene@lanl.gov>  
**CC:** Margo Herron <Margo.Herron@gel.com>, team.davis <team.davis@gel.com>

Good afternoon Keith,

GEL did not receive the missing cooler today, 6/9/17.

Please let us know if any questions.  
Thanks - Julie

On 6/9/2017 10:15 AM, Greene, Keith Robert wrote:

These were all collected and they are not here, so hopefully cooler will show up

---

**From:** Margo Herron [mailto:Margo.Herron@gel.com]  
**Sent:** Friday, June 09, 2017 7:03 AM  
**To:** Greene, Keith Robert <kgreene@lanl.gov>  
**Cc:** team.davis <team.davis@gel.com>  
**Subject:** Missing LANL Samples

Good Morning,

We had several containers that did not arrive yesterday. Please see below. Please advise.

Chain of custody 2017-1667 Sample CAWA-17-133284 TOC container

Sample CAWA-17-133312 NH3 container  
Sample CAWA-17-133285 HG & TOC container  
Sample CAWA-17-133313 HG & TOC container

Chain of custody 2017-1664    Sample CAWA-17-133286 one explosive container  
Sample CAWA-17-133314 all three containers  
Sample CAWA-17-133287 all three explosive containers  
Sample CAWA-17-133315 metals container

Thanks,  
Margo Herron

--

**Margo Herron**  
**Project Manager Assistant**

2040 Savage Road, Charleston, SC 29407 | PO Box 30712, Charleston, SC 29417  
Office Main: 843.556.8171 Ext. 4707 | Fax: 843.766.1178  
E-Mail: [Margo.Herron@gel.com](mailto:Margo.Herron@gel.com) | Website: [www.gel.com](http://www.gel.com)  
**Environmental | Engineering | Surveying | Analytical Testing**

---

Ask me about GEL's new testing capability for Perfluorinated chemicals (PFCs)!  
<http://www.gellaboratories.com>

--

**Julie Robinson**  
**Project Manager**

2040 Savage Road, Charleston, SC 29407 | PO Box 30712, Charleston, SC 29417  
Office Direct: 843.769.7393 | Office Main: 843.556.8171 | Fax: 843.766.1178  
E-Mail: [julie.robinson@gel.com](mailto:julie.robinson@gel.com) | Website: [www.gel.com](http://www.gel.com)  
**Environmental | Engineering | Surveying | Analytical Testing**

---

Ask me about GEL's new testing capability for Perfluorinated chemicals (PFCs)!  
<http://www.gellaboratories.com>

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Ask me about GEL's new testing capability for Perfluorinated chemicals (PFCs)!  
<http://www.gellaboratories.com>

SHIP DATE: 07 JUN 17  
ACTGCT: 48.0 LB MAN  
CRD: 0014176/CAFE2916

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

BILL SENDER

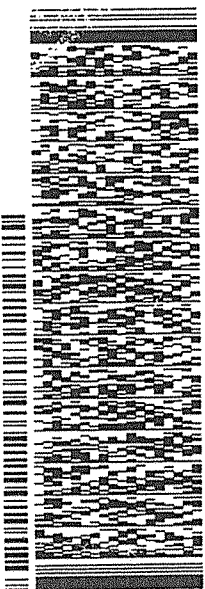
LOS ALAMOS, NM 87545  
UNITED STATES US

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

**CHARLESTON SC 29407**

(843) 666-8171

REF: WE6L11551000



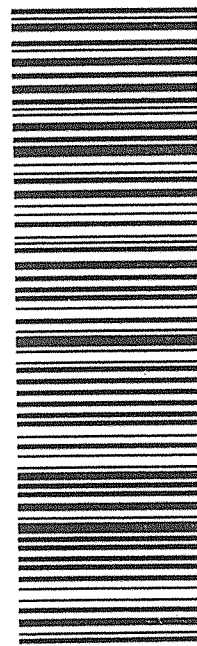
THU - 08 JUN 10:30A  
PRIORITY OVERNIGHT

TRK# 5908 1782 1812

0201

**X7 RBWA**

29407  
SC-US CHS



Part # 156148V-434 RIT2 06/15 \*\*

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

SHIP DATE: 07 JUN 17  
ACTGCT: 61.0 LB MAN  
CRD: 0014176/CAFE2916

BILL SENDER

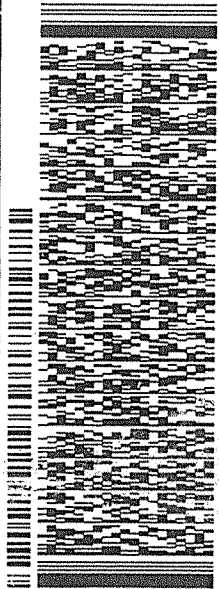
LOS ALAMOS, NM 87545  
UNITED STATES US

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

**CHARLESTON SC 29407**

(843) 666-8171

REF: 21PD0ASRGW04BAGWEO



THU - 08 JUN 10:30A  
PRIORITY OVERNIGHT

MPS# 5908 1782 1801

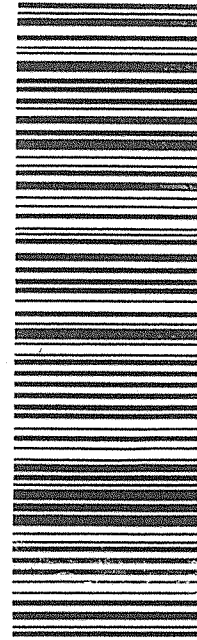
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Mstr# 5908 1782 1797

0201

**X7 RBWA**

29407  
SC-US CHS



Part # 156148V-434 RIT2 06/15 \*\*

590817821797  
Los Alamos Natl Lab.  
Keith Greene  
TA00 Bldg 1237 DpU 03  
LOS ALAMOS  
NM, 87545 5056659966

Part # 150140V-434 RT2 APV EXP 12/17 \*\*\*

General Engineering Lab  
Valerie Davis  
2040 Savage Rd  
CHARLESTON, SC 29407  
843-556-8171

224 RE



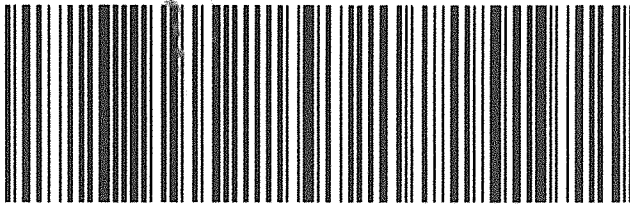
5908 1782 1797

SATURDAY 9:30A  
FIRST OVERNIGHT

X0 RBWA

20°C

29407  
SC-US  
CHS



123682 09Jun 13:57 MEMH 547C1/A502/9561

# **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.

# **Perchlorates by LCMSMS Analysis**

# Case Narrative

**Perchlorates by LCMSMS  
Technical Case Narrative  
ARS International, LLC (ARSL)  
SDG #: 2017-1664  
Work Order #: 425079**

**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: 1673882

Prep Batch Number: 1673881

**Sample Analysis**

<b>Sample ID</b>	<b>Client ID</b>
425079002	425079002 (CAWA-17-133314)
425079004	425079004 (CAWA-17-133315)
1203811124	Interference Check Sample (ICS)
1203811120	Method Blank (MB)
1203811121	Laboratory Control Sample (LCS)
1203811122	424916002(CAWA-17-133329) Matrix Spike (MS)
1203811123	424916002(CAWA-17-133329) 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 424916002 (CAWA-17-133329) was chosen for matrix spike and matrix spike duplicate analysis.

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

The MS recoveries were within the established acceptance limits.

### **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**

The samples in this SDG did not require dilutions.

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

Re-extractions or re-analyses were not required in this SDG.

#### **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**

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: 2017-1664 GEL Work Order: 425079

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

- \* A quality control analyte recovery is outside of specified acceptance criteria
- \*\* Analyte is a surrogate compound
- J Value is estimated
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
- DL Indicates that sample is diluted.
- RA Indicates that sample is re-analyzed without re-extraction.
- RE Indicates that sample is re-extracted.

#### Review/Validation

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

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

Signature: 

Name: Michael Penny

Date: 16 JUN 2017

Title: Group Leader



# **Sample Data Summary**

## Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: SW846 6850 ModifiedMatrix: WATERExtraction Batch ID: 1673881Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAWA-17-133314Date Received: 08-JUN-17GEL Job No (SDG): 2017-1664GEL Sample ID: 425079002Date Filtered: 14-JUN-17Injection 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	14-JUN-17 21:20	per0614021a
	Perchlorate Isotope Ratio						1	14-JUN-17 21:20	per0614021a
14797-73-0	Perchlorate-101	.05	.2	0.200	ug/L	U	1	14-JUN-17 21:20	per0614021a
	Perchlorate-O(18)			0.426	ug/L		1	14-JUN-17 21:20	per0614021a

^ 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 LLCLab Code: GELInstrument: LCMSMSMethod: SW846 6850 ModifiedMatrix: WATERExtraction Batch ID: 1673881Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAWA-17-133315Date Received: 08-JUN-17GEL Job No (SDG): 2017-1664GEL Sample ID: 425079004Date Filtered: 14-JUN-17Injection 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	14-JUN-17 21:33	per0614022a
	Perchlorate Isotope Ratio						1	14-JUN-17 21:33	per0614022a
14797-73-0	Perchlorate-101	.05	.2	0.200	ug/L	U	1	14-JUN-17 21:33	per0614022a
	Perchlorate-O(18)			0.431	ug/L		1	14-JUN-17 21:33	per0614022a

^ 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):** 2017-1664

**Extract Batch Code:** 1673881

**Date Filtered:** 14-JUN-17

**Matrix:** WATER

**Sample ID:** 1203811121

Analyte^	True	Found	Units	%Rec	Q	Control Limits
Perchlorate	0.200	.19	ug/L	95		85 - 115
Perchlorate Isotope Ratio		2.75				-
Perchlorate-101	0.200	.206	ug/L	103		85 - 115
Perchlorate-O(18)		.441	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):** 2017-1664

**Extract Batch Code:** 1673881

**Date Extracted:** 14-JUN-17

**GEL MS/PS ID:** 1203811122

**Client ID:** CAWA-17-133329

**GEL MSD/PSD ID:** 1203811123

**QC Type:** MS

Compound^	Spike Added	Sample Conc	Units	MS Conc	MS Rec #	MSD Conc	MSD Rec #	RPD #	RPD Limit	Recovery Limit
Perchlorate	0.200	0.331	ug/L	0.515	92	.509	89	1	30	75 - 125
Perchlorate Isotope Ratio	0	2.92		2.81		2.93		4		-
Perchlorate-101	0.200	0.338	ug/L	0.548	105	.52	91	5	30	75 - 125
Perchlorate-O(18)	0	0.398	ug/L	0.406		.41		1		-

^ 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 LLCLab Code: GELInstrument: LCMSMSMethod: EPA 6850 ModifiedMatrix: WATERExtraction Batch ID: 1673881Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

MBDate Received: 14-JUN-17GEL Job No (SDG): 2017-1664GEL Sample ID: 1203811120Date Filtered: 14-JUN-17Injection 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	14-JUN-17 19:36	per0614013a
	Perchlorate Isotope Ratio						1	14-JUN-17 19:36	per0614013a
14797-73-0	Perchlorate-101	.05	.2	0.200	ug/L	U	1	14-JUN-17 19:36	per0614013a
	Perchlorate-O(18)			0.457	ug/L		1	14-JUN-17 19:36	per0614013a

^ 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

Client Sample No.

LCSLab Code: GELDate Received: 14-JUN-17Instrument: LCMSMSGEL Job No (SDG): 2017-1664Method: EPA 6850 ModifiedGEL Sample ID: 1203811121Matrix: WATERDate Filtered: 14-JUN-17Extraction Batch ID: 1673881Injection Volume (uL): 20Extraction Type: Filter/DAISample Volume/Weight: 10.0 mL%Solids:     Concentrated Extract Volume: 10.0

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.190	ug/L	J	1	14-JUN-17 19:49	per0614014a
	Perchlorate Isotope Ratio			2.75			1	14-JUN-17 19:49	per0614014a
14797-73-0	Perchlorate-101	.05	.2	0.206	ug/L		1	14-JUN-17 19:49	per0614014a
	Perchlorate-O(18)			0.441	ug/L		1	14-JUN-17 19:49	per0614014a

^ 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 LLCLab Code: GELInstrument: LCMSMSMethod: SW846 6850 ModifiedMatrix: WATERExtraction Batch ID: 1673881Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

ICS

Date Received:

GEL Job No (SDG): 2017-1664GEL Sample ID: 1203811124Date Filtered: 14-JUN-17Injection 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	0.209	ug/L		1	14-JUN-17 20:02	per0614015a
	Perchlorate Isotope Ratio			3.1			1	14-JUN-17 20:02	per0614015a
14797-73-0	Perchlorate-101	.05	.2	0.202	ug/L		1	14-JUN-17 20:02	per0614015a
	Perchlorate-O(18)			0.435	ug/L		1	14-JUN-17 20:02	per0614015a

^ 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 LLCLab Code: GELInstrument: LCMSMSMethod: SW846 6850 ModifiedMatrix: WATERExtraction Batch ID: 1673881Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAWA-17-133329MSDate Received: 07-JUN-17GEL Job No (SDG): 2017-1664GEL Sample ID: 1203811122Date Filtered: 14-JUN-17Injection 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	0.515	ug/L		1	14-JUN-17 20:28	per0614017a
	Perchlorate Isotope Ratio			2.81			1	14-JUN-17 20:28	per0614017a
14797-73-0	Perchlorate-101	.05	.2	0.548	ug/L		1	14-JUN-17 20:28	per0614017a
	Perchlorate-O(18)			0.406	ug/L		1	14-JUN-17 20:28	per0614017a

^ 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 LLCLab Code: GELInstrument: LCMSMSMethod: SW846 6850 ModifiedMatrix: WATERExtraction Batch ID: 1673881Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAWA-17-133329MSDDate Received: 07-JUN-17GEL Job No (SDG): 2017-1664GEL Sample ID: 1203811123Date Filtered: 14-JUN-17Injection 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	0.509	ug/L		1	14-JUN-17 20:41	per0614018a
	Perchlorate Isotope Ratio			2.93			1	14-JUN-17 20:41	per0614018a
14797-73-0	Perchlorate-101	.05	.2	0.520	ug/L		1	14-JUN-17 20:41	per0614018a
	Perchlorate-O(18)			0.410	ug/L		1	14-JUN-17 20:41	per0614018a

^ 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 =

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

# **Explosives by LCMSMS Analysis**

# Case Narrative

**Explosives by LCMSMS  
Technical Case Narrative  
ARS International, LLC (ARSL)  
SDG #: 2017-1664  
Work Order #: 425079**

**Method/Analysis Information**

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

Analytical Method: SW846 3535A/8330B

Prep Method: SW846 3535A

Analytical Batch Number: 1672553

Prep Batch Number: 1672551

**Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
425079001	CAWA-17-133286
1203807731	Method Blank (MB)
1203807732	Laboratory Control Sample (LCS)
1203807733	424916001(CAWA-17-133301) Matrix Spike (MS)
1203807734	424916001(CAWA-17-133301) Matrix Spike Duplicate (MSD)

**Preparation/Analytical Method Verification**

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-068 REV# 7.

**Calibration Information**

**Initial Calibration**

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

**Calibration Verification Standard Requirements**

All continuing calibration verification standards (CCV) have not met requirements of 80-120% for sample 425079001 (CAWA-17-133286) in this SDG. Please refer to Form 7 of the data package for a list of recoveries. Since the recoveries are biased high and target analytes were not detected in the associated samples, the data are considered unaffected. The data are reported.

**Calibration Blank Requirements**

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

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

#### **CRI Requirements**

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

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

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

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

##### **Surrogate Recoveries**

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

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

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

Sample	Analyte	Value
1203807732 (LCS)	2,6-Diamino-4-nitrotoluene	137* (53%-127%)
	TATB	148* (47%-135%)

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

Client sample 424916001 (CAWA-17-133301) was chosen for matrix spike and matrix spike duplicate analysis.

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

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

Sample	Analyte	Value
1203807733 (CAWA-17-133301MS)	TATB	157* (38%-149%)

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

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

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

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

#### **Technical Information**

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

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



**Preparation/Analytical Method Verification**

All procedures were performed as stated in the SOP.

**Sample Dilutions**

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

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

Sample 425079001 (CAWA-17-133286) was re-analyzed to confirm potential carryover from the previous sample analysis. The re-analysis data are reported.

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

Data exception report (DER) 1646371 was generated for samples 1203807732 (LCS) and 1203807733 (CAWA-17-133301MS) in this SDG/batch.

**Manual Integrations**

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

**Additional Comments**

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

**System Configuration**

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

**Electronic Packaging Comment**

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

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

**Chromatographic Columns**

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

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

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

### **Method/Analysis Information**

<b>Procedure:</b>	<b>The Processing, Extraction, and Analysis of Nitroaromatics, Nitroamines, and Nitrate Esters by SW-846 8330B</b>
Analytical Method:	SW846 3535A/8330B
Prep Method:	SW846 3535A
Analytical Batch Number:	1673460
Prep Batch Number:	1673459

### **Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
425079003	CAWA-17-133287
1203810014	Method Blank (MB)
1203810015	Laboratory Control Sample (LCS)
1203810016	425121002(CAWA-17-133348) Matrix Spike (MS)
1203810017	425121002(CAWA-17-133348) Matrix Spike Duplicate (MSD)

### **Preparation/Analytical Method Verification**

#### **SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-068 REV# 7.

### **Calibration Information**

#### **Initial Calibration**

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

#### **Calibration Verification Standard Requirements**

All continuing calibration verification standards (CCV) have not met requirements of 80-120% for 425079003 (CAWA-17-133287) in this SDG. Please refer to Form 7 of the data package for a list of recoveries. A LLOQ level standard was analyzed following the biased low CCV with all target analytes meeting acceptance limits. Since the target analyte was not detected in the associated samples, the data are reported. All continuing calibration verification standards (CCV) have not met requirements of 80-120% for 425079003 (CAWA-17-133287) in this SDG. Please refer to Form 7 of the data package for a list of recoveries. Since the recoveries are biased high and target analytes were not detected in the associated samples, the data are considered unaffected. The data are reported.

#### **Calibration Blank Requirements**

All initial and continuing calibration blanks (ICB and CCB) bracketing the analyses associated with this batch for this analysis were within acceptance criteria. Due to software limitations, the CCBs and/or the ICBs may have a concentration for target analytes in the Found column. These values should be zero.

**CRI Requirements**

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

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

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

**Surrogate Recoveries**

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

**Laboratory Control Sample (LCS) Recovery**

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

Sample	Analyte	Value
1203810015 (LCS)	TATB	151* (47%-135%)

**QC Sample Designation**

Client sample 425121002 (CAWA-17-133348) was chosen for matrix spike and matrix spike duplicate analysis.

**Matrix Spike (MS) Recovery Statement**

One or more of the required spiking analytes were not within the acceptance limits in the matrix spike duplicate (MSD). While the MSD exhibited a high bias, both the LCS and MS met acceptance limits for (insert compound name). Since (insert compound name) was not detected in the associated samples, the data are reported.

Sample	Analyte	Value
1203810017 (CAWA-17-133348MSD)	o-Nitrotoluene	49* (56%-119%)

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

The RPD values between the MS and MSD (See Below) were not within the acceptance limits. Since all other RPD values met acceptance criteria, the noted exceptions are attributed to vagaries in the extraction process. The data are reported.

Sample	Analyte	Value
1203810016MS and 1203810017MSD (CAWA-17-133348)	2,4-Diamino-6-nitrotoluene	36* (0%-30%)
	2,6-Diamino-4-nitrotoluene	32* (0%-30%)
	o-Nitrotoluene	52* (0%-30%)
	tris(o-cresyl) phosphate	36* (0%-30%)

**Internal Standard (ISTD) Acceptance**

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

## **Technical Information**

### **Holding Time Specifications**

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

### **Preparation/Analytical Method Verification**

All procedures were performed as stated in the SOP.

### **Sample Dilutions**

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

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

Re-extractions or re-analyses were not required in this SDG in this analytical batch for this analysis.

## **Miscellaneous Information**

### **Data Exception (DER) Documentation**

Data exception report (DER) 1647079 was generated for samples 1203810015 (LCS) and 1203810017 (CAWA-17-133348MSD) in this SDG/batch.

### **Manual Integrations**

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

### **Additional Comments**

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

## **System Configuration**

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

### **Electronic Packaging Comment**

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

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

electronically, such as hand written pages, will be scanned and inserted into the electronic package.

### **Chromatographic Columns**

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

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

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

### **Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

## GEL LABORATORIES LLC

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

### Qualifier Definition Report for

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

Client SDG: 2017-1664 GEL Work Order: 425079

#### 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
- Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
- DL Indicates that sample is diluted.
- RA Indicates that sample is re-analyzed without re-extraction.
- RE Indicates that sample is re-extracted.

#### Review/Validation

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

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

Signature: 

Name: Michael Penny

Date: 01 JUL 2017

Title: Group Leader

# **Sample Data Summary**

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133286

Lab Code: GEL

GEL Job No (SDG) 2017-1664

Matrix: WATER

GEL Sample ID: 425079001

Sample Amount 950 mL

Date Received: 08-JUN-17

Moisture: .

Extraction Batch ID: 1672551

Extraction Type Sol Exchange

Date Extracted: 09-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0625014.wiff

Date Analyzed: 25-JUN-17 18:27

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
35572-78-2	2-Amino-4,6-dinitrotoluene	.218	J	0.0842	0.263
35572-78-2	2-Amino-4,6-dinitrotoluene				
19406-51-0	4-Amino-2,6-dinitrotoluene	.259	J	0.0842	0.263
19406-51-0	4-Amino-2,6-dinitrotoluene				
118-96-7	2,4,6-Trinitrotoluene	.263	U	0.0842	0.263
118-96-7	2,4,6-Trinitrotoluene				
121-14-2	2,4-Dinitrotoluene	.263	U	0.0842	0.263
121-14-2	2,4-Dinitrotoluene				
606-20-2	2,6-Dinitrotoluene	.263	U	0.0842	0.263
606-20-2	2,6-Dinitrotoluene				
88-72-2	o-Nitrotoluene	.263	U	0.0863	0.263
88-72-2	o-Nitrotoluene				
98-95-3	Nitrobenzene	.263	U	0.0842	0.263
98-95-3	Nitrobenzene				
99-08-1	m-Nitrotoluene	.263	U	0.0842	0.263
99-08-1	m-Nitrotoluene				
99-35-4	1,3,5-Trinitrobenzene	.263	U	0.0842	0.263
99-35-4	1,3,5-Trinitrobenzene				
99-65-0	m-Dinitrobenzene	.263	U	0.0842	0.263
99-65-0	m-Dinitrobenzene				
479-45-8	Tetryl	.526	U	0.0842	0.526
479-45-8	Tetryl				
78-11-5	PETN	.526	U	0.105	0.526
78-11-5	PETN				
99-99-0	p-Nitrotoluene	.526	U	0.158	0.526
99-99-0	p-Nitrotoluene				



1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133286

Lab Code: GEL

GEL Job No (SDG) 2017-1664

Matrix: WATER

GEL Sample ID: 425079001

Sample Amount 950 mL

Date Received: 08-JUN-17

Moisture: .

Extraction Batch ID: 1672551

Extraction Type Sol Exchange

Date Extracted: 09-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
3058-38-6	TATB	1.05	U	0.316	1.05
<i>3058-38-6</i>	<i>TATB</i>				
618-87-1	3,5-Dinitroaniline	1.05	U	0.316	1.05
<i>618-87-1</i>	<i>3,5-Dinitroaniline</i>				
78-30-8	tris(o-cresyl) phosphate	1.05	U	0.316	1.05
<i>78-30-8</i>	<i>tris(o-cresyl) phosphate</i>				
121-82-4	RDX	2.31		0.0842	0.263
<i>121-82-4</i>	<i>RDX</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	2.63	U	0.526	2.63
<i>59229-75-3</i>	<i>2,6-Diamino-4-nitrotoluene</i>				
6629-29-4	2,4-Diamino-6-nitrotoluene	2.63	U	0.526	2.63
<i>6629-29-4</i>	<i>2,4-Diamino-6-nitrotoluene</i>				
2691-41-0	HMX	2.69		0.0842	0.263
<i>2691-41-0</i>	<i>HMX</i>				

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133287

Lab Code: GEL

GEL Job No (SDG) 2017-1664

Matrix: WATER

GEL Sample ID: 425079003

Sample Amount 890 mL

Date Received: 08-JUN-17

Moisture: .

Extraction Batch ID: 1673459

Extraction Type Sol Exchange

Date Extracted: 13-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0625036.wiff

Date Analyzed: 27-JUN-17 12:23

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
118-96-7	2,4,6-Trinitrotoluene	.281	U	0.0899	0.281
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
121-14-2	2,4-Dinitrotoluene	.281	U	0.0899	0.281
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	.281	U	0.0899	0.281
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	.281	U	0.0899	0.281
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
606-20-2	2,6-Dinitrotoluene	.281	U	0.0899	0.281
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				
88-72-2	o-Nitrotoluene	.281	U	0.0921	0.281
<i>88-72-2</i>	<i>o-Nitrotoluene</i>				
98-95-3	Nitrobenzene	.281	U	0.0899	0.281
<i>98-95-3</i>	<i>Nitrobenzene</i>				
99-08-1	m-Nitrotoluene	.281	U	0.0899	0.281
<i>99-08-1</i>	<i>m-Nitrotoluene</i>				
99-35-4	1,3,5-Trinitrobenzene	.281	U	0.0899	0.281
<i>99-35-4</i>	<i>1,3,5-Trinitrobenzene</i>				
99-65-0	m-Dinitrobenzene	.281	U	0.0899	0.281
<i>99-65-0</i>	<i>m-Dinitrobenzene</i>				
479-45-8	Tetryl	.562	U	0.0899	0.562
<i>479-45-8</i>	<i>Tetryl</i>				
78-11-5	PETN	.562	U	0.112	0.562
<i>78-11-5</i>	<i>PETN</i>				
99-99-0	p-Nitrotoluene	.562	U	0.169	0.562
<i>99-99-0</i>	<i>p-Nitrotoluene</i>				

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133287

Lab Code: GEL

GEL Job No (SDG) 2017-1664

Matrix: WATER

GEL Sample ID: 425079003

Sample Amount 890 mL

Date Received: 08-JUN-17

Moisture: .

Extraction Batch ID: 1673459

Extraction Type Sol Exchange

Date Extracted: 13-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
121-82-4	RDX	.564		0.0899	0.281
<i>121-82-4</i>	<i>RDX</i>				
2691-41-0	HMX	.942		0.0899	0.281
<i>2691-41-0</i>	<i>HMX</i>				
3058-38-6	TATB	1.12	U	0.337	1.12
<i>3058-38-6</i>	<i>TATB</i>				
618-87-1	3,5-Dinitroaniline	1.12	U	0.337	1.12
<i>618-87-1</i>	<i>3,5-Dinitroaniline</i>				
78-30-8	tris(o-cresyl) phosphate	1.12	U	0.337	1.12
<i>78-30-8</i>	<i>tris(o-cresyl) phosphate</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	2.81	U	0.562	2.81
<i>59229-75-3</i>	<i>2,6-Diamino-4-nitrotoluene</i>				
6629-29-4	2,4-Diamino-6-nitrotoluene	2.81	U	0.562	2.81
<i>6629-29-4</i>	<i>2,4-Diamino-6-nitrotoluene</i>				

# **Quality Control Summary**

## High Explosives Surrogate Recovery Summary

Lab Name: GEL Laboratories LLCGEL Job No (SDG): 2017-1664Lab Code: GEL

HPLC Column: Ultracarb Phenomenex 5u ODS (20)

Lab Sample ID	Client Sample ID	DNT	QC Limits	Flg
425079001	CAWA-17-133286	96	55 - 115	
1203807731	MB for batch 1672551	102	55 - 115	
1203807732	LCS for batch 1672551	85	55 - 115	
1203807733	CAWA-17-133301MS	81	55 - 115	
1203807734	CAWA-17-133301MSD	97	55 - 115	

DNT = 3,4-Dinitrotoluene

Lab Code: GELHPLC Column: Ultracarb Phenomenex 5u ODS (20), 250 x  
4.60 mm ID

Lab Sample ID	Client Sample ID	DNT	QC Limits	Flg
425079003	CAWA-17-133287	86	55 - 115	
1203810014	MB for batch 1673459	92	55 - 115	
1203810015	LCS for batch 1673459	90	55 - 115	
1203810016	CAWA-17-133348MS	93	55 - 115	
1203810017	CAWA-17-133348MSD	99	55 - 115	

DNT = 3,4-Dinitrotoluene

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

**Lab Name:** GEL Laboratories LLC

**Client ID:** LCS

**Lab Code:** GEL

**GEL Job No (SDG)** 2017-1664

**Extract Batch Code:** 1672551

**Date Extracted:** 09-JUN-17

**GEL LCS ID:** 1203807732

**GEL LCSDUP ID:** .

**Analysis Date/Time:** 16-JUN-17 20:35

**DUP Analysis Date/Time:**

**Reporting Units:** ug/L

**QC Type:** LCS/LCSD

Compound	Spike Added	LCS Conc	LCS Rec #	LCSD Conc	LCSD Rec #	RPD #	RPD	Recovery Limits
2,6-Diamino-4-nitrotoluene	5	6.85	137 *					53 - 127
2,6-Dinitrotoluene	5	4.16	83					72 - 105
2-Amino-4,6-dinitrotoluene	5	4.44	89					70 - 112
3,5-Dinitroaniline	5	5.38	108					70 - 121
HMX	5	4	80					58 - 113
PETN	5	5.39	108					57 - 126
TATB	2.5	3.7	148 *					47 - 135
m-Dinitrobenzene	5	4.86	97					74 - 117
o-Nitrotoluene	5	4.65	93					64 - 115
2,4-Diamino-6-nitrotoluene	5	5.89	118					50 - 121
2,4,6-Trinitrotoluene	5	4.25	85					69 - 113
1,3,5-Trinitrobenzene	5	4.42	88					70 - 110
2,4-Dinitrotoluene	5	4.44	89					71 - 110
tris(o-cresyl) phosphate	5	3.89	78					43 - 104
p-Nitrotoluene	5	4.76	95					66 - 127
m-Nitrotoluene	5	4.03	81					66 - 114
Tetryl	5	4.27	85					64 - 122
RDX	5	4.27	85					64 - 117
Nitrobenzene	5	4.65	93					64 - 115
4-Amino-2,6-dinitrotoluene	5	4.42	88					74 - 116

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

\* Values outside of QC limits

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

**Lab Name:** GEL Laboratories LLC

**Client ID:** LCS

**Lab Code:** GEL

**GEL Job No (SDG)** 2017-1664

**Extract Batch Code:** 1673459

**Date Extracted:** 13-JUN-17

**GEL LCS ID:** 1203810015

**GEL LCSDUP ID:** .

**Analysis Date/Time:** 27-JUN-17 11:49

**DUP Analysis Date/Time:**

**Reporting Units:** ug/L

**QC Type:** LCS/LCSD

Compound	Spike Added	LCS Conc	LCS Rec #	LCSD Conc	LCSD Rec #	RPD #	RPD	Recovery Limits
tris(o-cresyl) phosphate	5	3.47	69					43 - 104
o-Nitrotoluene	5	3.34	67					64 - 115
m-Nitrotoluene	5	3.91	78					66 - 114
m-Dinitrobenzene	5	4.76	95					74 - 117
Tetryl	5	3.62	72					64 - 122
TATB	2.5	3.79	151 *					47 - 135
RDX	5	4.68	94					64 - 117
PETN	5	4.65	93					57 - 126
Nitrobenzene	5	5.33	107					64 - 115
HMX	5	4.7	94					58 - 113
4-Amino-2,6-dinitrotoluene	5	4.24	85					74 - 116
3,5-Dinitroaniline	5	4.88	98					70 - 121
2-Amino-4,6-dinitrotoluene	5	4	80					70 - 112
2,4,6-Trinitrotoluene	5	4.29	86					69 - 113
2,4-Diamino-6-nitrotoluene	5	4.23	85					50 - 121
2,4-Dinitrotoluene	5	4.19	84					71 - 110
2,6-Dinitrotoluene	5	3.9	78					72 - 105
2,6-Diamino-4-nitrotoluene	5	4.87	97					53 - 127
1,3,5-Trinitrobenzene	5	4.67	93					70 - 110
p-Nitrotoluene	5	3.47	69					66 - 127

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

\* Values outside of QC limits

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

**Lab Name:** GEL Laboratories LLC

**Client ID:** CAWA-17-133301

**Lab Code:** GEL

**GEL Job No (SDG)** 2017-1664

**Extract Batch Code:** 1672551

**Date Extracted:** 09-JUN-17

**GEL Spike ID:** 1203807733

**GEL SpikeDup ID:** 1203807734

**Analysis Date/Time:** 16-JUN-17 21:46

**MSD Analysis Date/Time:** 16-JUN-17 22:21

**Reporting Units:** ug/L

**QC Type:** MS/MSD

Compound	Spike Added	Sample Conc	MS Conc	MS Rec #	MSD Conc	MSD Rec #	RPD #	RPD Limit	Rec Limits
1,3,5-Trinitrobenzene	5.43478	0	5.23	96	4.95	93	6	30	67 - 111
2,4,6-Trinitrotoluene	5.43478	0	4.29	79	5.4	102	23	30	66 - 112
2,4-Diamino-6-nitrotoluene	5.43478	0	5.9	109	5.58	105	6	30	50 - 121
2,4-Dinitrotoluene	5.43478	0	4.3	79	5.2	98	19	30	69 - 113
3,5-Dinitroaniline	5.43478	0	5.27	97	5.94	112	12	30	70 - 121
HMX	5.43478	.0391	4.69	86	4.25	79	10	30	44 - 128
PETN	5.43478	0	4.72	87	5.35	101	12	30	51 - 131
TATB	2.71739	0	4.26	157 *	3.84	144	10	30	38 - 149
m-Dinitrobenzene	5.43478	0	5.18	95	5.04	95	3	30	74 - 117
tris(o-cresyl) phosphate	5.43478	0	4.52	83	4.88	92	8	30	38 - 105
p-Nitrotoluene	5.43478	0	4.93	91	5.92	111	18	30	61 - 129
o-Nitrotoluene	5.43478	0	4.81	89	5.43	102	12	30	56 - 119
m-Nitrotoluene	5.43478	0	4.95	91	5.41	102	9	30	59 - 120
Tetryl	5.43478	0	3.63	67	3.42	64	6	30	50 - 126
RDX	5.43478	0	4.35	80	4.5	85	3	30	57 - 125
Nitrobenzene	5.43478	0	5.4	99	5.1	96	6	30	62 - 116
4-Amino-2,6-dinitrotoluene	5.43478	0	4.48	83	4.95	93	10	30	65 - 120
2-Amino-4,6-dinitrotoluene	5.43478	0	4.32	79	4.94	93	13	30	67 - 115
2,6-Dinitrotoluene	5.43478	0	4.25	78	5	94	16	30	70 - 106
2,6-Diamino-4-nitrotoluene	5.43478	0	6.8	125	5.72	108	17	30	53 - 127

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



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

**Lab Name:** GEL Laboratories LLC

**Client ID:** CAWA-17-133348

**Lab Code:** GEL

**GEL Job No (SDG)** 2017-1664

**Extract Batch Code:** 1673459

**Date Extracted:** 13-JUN-17

**GEL Spike ID:** 1203810016

**GEL SpikeDup ID:** 1203810017

**Analysis Date/Time:** 27-JUN-17 15:48

**MSD Analysis Date/Time:** 27-JUN-17 14:05

**Reporting Units:** ug/L

**QC Type:** MS/MSD

Compound	Spike Added	Sample Conc	MS Conc	MS Rec #	MSD Conc	MSD Rec #	RPD #	RPD Limit	Rec Limits
2,4-Dinitrotoluene	5.2356	0	4.97	95	5.02	96	1	30	69 - 113
2,6-Diamino-4-nitrotoluene	5.2356	0	4.77	91	3.45	66	32 *	30	53 - 127
2,6-Dinitrotoluene	5.2356	0	4.66	89	4.79	91	3	30	70 - 106
2-Amino-4,6-dinitrotoluene	5.2356	.0423	4.56	86	4.66	88	2	30	67 - 115
3,5-Dinitroaniline	5.2356	0	5.57	106	5.83	111	5	30	70 - 121
4-Amino-2,6-dinitrotoluene	5.2356	.043	5.08	96	4.29	81	17	30	65 - 120
HMX	5.2356	.0897	5.31	100	6.14	116	14	30	44 - 128
Nitrobenzene	5.2356	0	4.27	82	3.53	67	19	30	62 - 116
PETN	5.2356	0	5.01	96	4.54	87	10	30	51 - 131
2,4-Diamino-6-nitrotoluene	5.2356	0	4.95	95	3.44	66	36 *	30	50 - 121
2,4,6-Trinitrotoluene	5.2356	0	4.65	89	4.79	92	3	30	66 - 112
1,3,5-Trinitrobenzene	5.2356	0	4.23	81	4.32	83	2	30	67 - 111
RDX	5.2356	.0206	5.58	106	5.39	102	3	30	57 - 125
TATB	2.6178	0	3.46	132	3.22	123	7	30	38 - 149
Tetryl	5.2356	0	3.6	69	3.05	58	17	30	50 - 126
m-Dinitrobenzene	5.2356	0	5.19	99	5.38	103	3	30	74 - 117
m-Nitrotoluene	5.2356	0	4.88	93	4.97	95	2	30	59 - 120
o-Nitrotoluene	5.2356	.00667	4.41	84	2.58	49 *	52 *	30	56 - 119
p-Nitrotoluene	5.2356	0	4.42	84	4.53	87	3	30	61 - 129
tris(o-cresyl) phosphate	5.2356	0	4.41	84	3.05	58	36 *	30	38 - 105

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

# Quality Control Data

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: MB for batch 1672551

Lab Code: GEL

GEL Job No (SDG) 2017-1664

Matrix: WATER

GEL Sample ID: 1203807731

Sample Amount 1000 mL

Date Received: 08-JUN-17

Moisture: .

Extraction Batch ID: 1672551

Extraction Type Sol Exchange

Date Extracted: 09-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0616016.wiff

Date Analyzed: 16-JUN-17 20:00

Dilution Factor: 2

Concentration Units: ug/L

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

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: MB for batch 1672551

Lab Code: GEL

GEL Job No (SDG) 2017-1664

Matrix: WATER

GEL Sample ID: 1203807731

Sample Amount 1000 mL

Date Received: 08-JUN-17

Moisture: .

Extraction Batch ID: 1672551

Extraction Type Sol Exchange

Date Extracted: 09-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

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

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: LCS for batch 1672551

Lab Code: GEL

GEL Job No (SDG) 2017-1664

Matrix: WATER

GEL Sample ID: 1203807732

Sample Amount 1000 mL

Date Received: 08-JUN-17

Moisture: .

Extraction Batch ID: 1672551

Extraction Type Sol Exchange

Date Extracted: 09-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0616017.wiff

Date Analyzed: 16-JUN-17 20:35

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
3058-38-6	TATB	3.7		0.300	1.00
<i>3058-38-6</i>	<i>TATB</i>				
78-30-8	tris(o-cresyl) phosphate	3.89	Q	0.300	1.00
<i>78-30-8</i>	<i>tris(o-cresyl) phosphate</i>				
2691-41-0	HMX	4		0.080	0.250
<i>2691-41-0</i>	<i>HMX</i>				
99-08-1	m-Nitrotoluene	4.03		0.080	0.250
<i>99-08-1</i>	<i>m-Nitrotoluene</i>				
606-20-2	2,6-Dinitrotoluene	4.16		0.080	0.250
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				
118-96-7	2,4,6-Trinitrotoluene	4.25		0.080	0.250
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
121-82-4	RDX	4.27		0.080	0.250
<i>121-82-4</i>	<i>RDX</i>				
479-45-8	Tetryl	4.27		0.080	0.500
<i>479-45-8</i>	<i>Tetryl</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	4.42		0.080	0.250
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
99-35-4	1,3,5-Trinitrobenzene	4.42		0.080	0.250
<i>99-35-4</i>	<i>1,3,5-Trinitrobenzene</i>				
121-14-2	2,4-Dinitrotoluene	4.44		0.080	0.250
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	4.44		0.080	0.250
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
88-72-2	o-Nitrotoluene	4.65		0.082	0.250
<i>88-72-2</i>	<i>o-Nitrotoluene</i>				

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: LCS for batch 1672551

Lab Code: GEL

GEL Job No (SDG) 2017-1664

Matrix: WATER

GEL Sample ID: 1203807732

Sample Amount 1000 mL

Date Received: 08-JUN-17

Moisture: .

Extraction Batch ID: 1672551

Extraction Type Sol Exchange

Date Extracted: 09-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
98-95-3	Nitrobenzene	4.65		0.080	0.250
98-95-3	Nitrobenzene				
99-99-0	p-Nitrotoluene	4.76		0.150	0.500
99-99-0	p-Nitrotoluene				
99-65-0	m-Dinitrobenzene	4.86		0.080	0.250
99-65-0	m-Dinitrobenzene				
618-87-1	3,5-Dinitroaniline	5.38		0.300	1.00
618-87-1	3,5-Dinitroaniline				
78-11-5	PETN	5.39		0.100	0.500
78-11-5	PETN				
6629-29-4	2,4-Diamino-6-nitrotoluene	5.89	Q	0.500	2.50
6629-29-4	2,4-Diamino-6-nitrotoluene				
59229-75-3	2,6-Diamino-4-nitrotoluene	6.85	Q	0.500	2.50
59229-75-3	2,6-Diamino-4-nitrotoluene				

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133301(424916001MS)MS

Lab Code: GEL

GEL Job No (SDG) 2017-1664

Matrix: WATER

GEL Sample ID: 1203807733

Sample Amount 920 mL

Date Received: 08-JUN-17

Moisture: .

Extraction Batch ID: 1672551

Extraction Type Sol Exchange

Date Extracted: 09-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0616019.wiff

Date Analyzed: 16-JUN-17 21:46

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
479-45-8	Tetryl	3.63		0.087	0.543
<i>479-45-8</i>	<i>Tetryl</i>				
606-20-2	2,6-Dinitrotoluene	4.25		0.087	0.272
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				
3058-38-6	TATB	4.26		0.326	1.09
<i>3058-38-6</i>	<i>TATB</i>				
118-96-7	2,4,6-Trinitrotoluene	4.29		0.087	0.272
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
121-14-2	2,4-Dinitrotoluene	4.3		0.087	0.272
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	4.32		0.087	0.272
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
121-82-4	RDX	4.35		0.087	0.272
<i>121-82-4</i>	<i>RDX</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	4.48		0.087	0.272
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
78-30-8	tris(o-cresyl) phosphate	4.52	Q	0.326	1.09
<i>78-30-8</i>	<i>tris(o-cresyl) phosphate</i>				
2691-41-0	HMX	4.69		0.087	0.272
<i>2691-41-0</i>	<i>HMX</i>				
78-11-5	PETN	4.72		0.109	0.543
<i>78-11-5</i>	<i>PETN</i>				
88-72-2	o-Nitrotoluene	4.81		0.0891	0.272
<i>88-72-2</i>	<i>o-Nitrotoluene</i>				
99-99-0	p-Nitrotoluene	4.93		0.163	0.543
<i>99-99-0</i>	<i>p-Nitrotoluene</i>				

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133301(424916001MS)MS

Lab Code: GEL

GEL Job No (SDG) 2017-1664

Matrix: WATER

GEL Sample ID: 1203807733

Sample Amount 920 mL

Date Received: 08-JUN-17

Moisture: .

Extraction Batch ID: 1672551

Extraction Type Sol Exchange

Date Extracted: 09-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
99-08-1	m-Nitrotoluene	4.95		0.087	0.272
99-08-1	m-Nitrotoluene				
99-65-0	m-Dinitrobenzene	5.18		0.087	0.272
99-65-0	m-Dinitrobenzene				
99-35-4	1,3,5-Trinitrobenzene	5.23		0.087	0.272
99-35-4	1,3,5-Trinitrobenzene				
618-87-1	3,5-Dinitroaniline	5.27		0.326	1.09
618-87-1	3,5-Dinitroaniline				
98-95-3	Nitrobenzene	5.4		0.087	0.272
98-95-3	Nitrobenzene				
6629-29-4	2,4-Diamino-6-nitrotoluene	5.9	Q	0.543	2.72
6629-29-4	2,4-Diamino-6-nitrotoluene				
59229-75-3	2,6-Diamino-4-nitrotoluene	6.8	Q	0.543	2.72
59229-75-3	2,6-Diamino-4-nitrotoluene				



1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133301(424916001MSD)MSD

Lab Code: GEL

GEL Job No (SDG) 2017-1664

Matrix: WATER

GEL Sample ID: 1203807734

Sample Amount 940 mL

Date Received: 08-JUN-17

Moisture: .

Extraction Batch ID: 1672551

Extraction Type Sol Exchange

Date Extracted: 09-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0616020.wiff

Date Analyzed: 16-JUN-17 22:21

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
479-45-8	Tetryl	3.42		0.0851	0.532
<i>479-45-8</i>	<i>Tetryl</i>				
3058-38-6	TATB	3.84		0.319	1.06
<i>3058-38-6</i>	<i>TATB</i>				
2691-41-0	HMX	4.25		0.0851	0.266
<i>2691-41-0</i>	<i>HMX</i>				
121-82-4	RDX	4.5		0.0851	0.266
<i>121-82-4</i>	<i>RDX</i>				
78-30-8	tris(o-cresyl) phosphate	4.88	Q	0.319	1.06
<i>78-30-8</i>	<i>tris(o-cresyl) phosphate</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	4.94		0.0851	0.266
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	4.95		0.0851	0.266
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
99-35-4	1,3,5-Trinitrobenzene	4.95		0.0851	0.266
<i>99-35-4</i>	<i>1,3,5-Trinitrobenzene</i>				
606-20-2	2,6-Dinitrotoluene	5		0.0851	0.266
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				
99-65-0	m-Dinitrobenzene	5.04		0.0851	0.266
<i>99-65-0</i>	<i>m-Dinitrobenzene</i>				
98-95-3	Nitrobenzene	5.1		0.0851	0.266
<i>98-95-3</i>	<i>Nitrobenzene</i>				
121-14-2	2,4-Dinitrotoluene	5.2		0.0851	0.266
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
78-11-5	PETN	5.35		0.106	0.532
<i>78-11-5</i>	<i>PETN</i>				

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133301(424916001MSD)MSD

Lab Code: GEL

GEL Job No (SDG) 2017-1664

Matrix: WATER

GEL Sample ID: 1203807734

Sample Amount 940 mL

Date Received: 08-JUN-17

Moisture: .

Extraction Batch ID: 1672551

Extraction Type Sol Exchange

Date Extracted: 09-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
118-96-7	2,4,6-Trinitrotoluene	5.4		0.0851	0.266
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
99-08-1	m-Nitrotoluene	5.41		0.0851	0.266
<i>99-08-1</i>	<i>m-Nitrotoluene</i>				
88-72-2	o-Nitrotoluene	5.43		0.0872	0.266
<i>88-72-2</i>	<i>o-Nitrotoluene</i>				
6629-29-4	2,4-Diamino-6-nitrotoluene	5.58	Q	0.532	2.66
<i>6629-29-4</i>	<i>2,4-Diamino-6-nitrotoluene</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	5.72	Q	0.532	2.66
<i>59229-75-3</i>	<i>2,6-Diamino-4-nitrotoluene</i>				
99-99-0	p-Nitrotoluene	5.92		0.160	0.532
<i>99-99-0</i>	<i>p-Nitrotoluene</i>				
618-87-1	3,5-Dinitroaniline	5.94		0.319	1.06
<i>618-87-1</i>	<i>3,5-Dinitroaniline</i>				

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: MB for batch 1673459

Lab Code: GEL

GEL Job No (SDG) 2017-1664

Matrix: WATER

GEL Sample ID: 1203810014

Sample Amount 1000 mL

Date Received: 08-JUN-17

Moisture: .

Extraction Batch ID: 1673459

Extraction Type Sol Exchange

Date Extracted: 13-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0625034.wiff

Date Analyzed: 27-JUN-17 11:15

Dilution Factor: 2

Concentration Units: ug/L

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

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: MB for batch 1673459

Lab Code: GEL

GEL Job No (SDG) 2017-1664

Matrix: WATER

GEL Sample ID: 1203810014

Sample Amount 1000 mL

Date Received: 08-JUN-17

Moisture: .

Extraction Batch ID: 1673459

Extraction Type Sol Exchange

Date Extracted: 13-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

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

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: LCS for batch 1673459

Lab Code: GEL

GEL Job No (SDG) 2017-1664

Matrix: WATER

GEL Sample ID: 1203810015

Sample Amount 1000 mL

Date Received: 08-JUN-17

Moisture: .

Extraction Batch ID: 1673459

Extraction Type Sol Exchange

Date Extracted: 13-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0625035.wiff

Date Analyzed: 27-JUN-17 11:49

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
88-72-2	o-Nitrotoluene	3.34		0.082	0.250
88-72-2	<i>o-Nitrotoluene</i>				
78-30-8	tris(o-cresyl) phosphate	3.47		0.300	1.00
78-30-8	<i>tris(o-cresyl) phosphate</i>				
99-99-0	p-Nitrotoluene	3.47		0.150	0.500
99-99-0	<i>p-Nitrotoluene</i>				
479-45-8	Tetryl	3.62		0.080	0.500
479-45-8	<i>Tetryl</i>				
3058-38-6	TATB	3.79		0.300	1.00
3058-38-6	<i>TATB</i>				
606-20-2	2,6-Dinitrotoluene	3.9		0.080	0.250
606-20-2	<i>2,6-Dinitrotoluene</i>				
99-08-1	m-Nitrotoluene	3.91		0.080	0.250
99-08-1	<i>m-Nitrotoluene</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	4		0.080	0.250
35572-78-2	<i>2-Amino-4,6-dinitrotoluene</i>				
121-14-2	2,4-Dinitrotoluene	4.19		0.080	0.250
121-14-2	<i>2,4-Dinitrotoluene</i>				
6629-29-4	2,4-Diamino-6-nitrotoluene	4.23		0.500	2.50
6629-29-4	<i>2,4-Diamino-6-nitrotoluene</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	4.24		0.080	0.250
19406-51-0	<i>4-Amino-2,6-dinitrotoluene</i>				
118-96-7	2,4,6-Trinitrotoluene	4.29		0.080	0.250
118-96-7	<i>2,4,6-Trinitrotoluene</i>				
78-11-5	PETN	4.65		0.100	0.500
78-11-5	<i>PETN</i>				

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: LCS for batch 1673459

Lab Code: GEL

GEL Job No (SDG) 2017-1664

Matrix: WATER

GEL Sample ID: 1203810015

Sample Amount 1000 mL

Date Received: 08-JUN-17

Moisture: .

Extraction Batch ID: 1673459

Extraction Type Sol Exchange

Date Extracted: 13-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
99-35-4	1,3,5-Trinitrobenzene	4.67		0.080	0.250
<i>99-35-4</i>	<i>1,3,5-Trinitrobenzene</i>				
121-82-4	RDX	4.68		0.080	0.250
<i>121-82-4</i>	<i>RDX</i>				
2691-41-0	HMX	4.7		0.080	0.250
<i>2691-41-0</i>	<i>HMX</i>				
99-65-0	m-Dinitrobenzene	4.76		0.080	0.250
<i>99-65-0</i>	<i>m-Dinitrobenzene</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	4.87		0.500	2.50
<i>59229-75-3</i>	<i>2,6-Diamino-4-nitrotoluene</i>				
618-87-1	3,5-Dinitroaniline	4.88		0.300	1.00
<i>618-87-1</i>	<i>3,5-Dinitroaniline</i>				
98-95-3	Nitrobenzene	5.33		0.080	0.250
<i>98-95-3</i>	<i>Nitrobenzene</i>				

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133348(425121002MS)MS

Lab Code: GEL

GEL Job No (SDG) 2017-1664

Matrix: WATER

GEL Sample ID: 1203810016

Sample Amount 955 mL

Date Received: 08-JUN-17

Moisture: .

Extraction Batch ID: 1673459

Extraction Type Sol Exchange

Date Extracted: 13-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0625042.wiff

Date Analyzed: 27-JUN-17 15:48

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
3058-38-6	TATB	3.46		0.314	1.05
3058-38-6	TATB				
479-45-8	Tetryl	3.6		0.0838	0.524
479-45-8	Tetryl				
99-35-4	1,3,5-Trinitrobenzene	4.23		0.0838	0.262
99-35-4	1,3,5-Trinitrobenzene				
98-95-3	Nitrobenzene	4.27		0.0838	0.262
98-95-3	Nitrobenzene				
78-30-8	tris(o-cresyl) phosphate	4.41		0.314	1.05
78-30-8	tris(o-cresyl) phosphate				
88-72-2	o-Nitrotoluene	4.41		0.0859	0.262
88-72-2	o-Nitrotoluene				
99-99-0	p-Nitrotoluene	4.42		0.157	0.524
99-99-0	p-Nitrotoluene				
35572-78-2	2-Amino-4,6-dinitrotoluene	4.56		0.0838	0.262
35572-78-2	2-Amino-4,6-dinitrotoluene				
118-96-7	2,4,6-Trinitrotoluene	4.65		0.0838	0.262
118-96-7	2,4,6-Trinitrotoluene				
606-20-2	2,6-Dinitrotoluene	4.66		0.0838	0.262
606-20-2	2,6-Dinitrotoluene				
59229-75-3	2,6-Diamino-4-nitrotoluene	4.77		0.524	2.62
59229-75-3	2,6-Diamino-4-nitrotoluene				
99-08-1	m-Nitrotoluene	4.88		0.0838	0.262
99-08-1	m-Nitrotoluene				
6629-29-4	2,4-Diamino-6-nitrotoluene	4.95		0.524	2.62
6629-29-4	2,4-Diamino-6-nitrotoluene				

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133348(425121002MS)MS

Lab Code: GEL

GEL Job No (SDG) 2017-1664

Matrix: WATER

GEL Sample ID: 1203810016

Sample Amount 955 mL

Date Received: 08-JUN-17

Moisture: .

Extraction Batch ID: 1673459

Extraction Type Sol Exchange

Date Extracted: 13-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
121-14-2	2,4-Dinitrotoluene	4.97		0.0838	0.262
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
78-11-5	PETN	5.01		0.105	0.524
<i>78-11-5</i>	<i>PETN</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	5.08		0.0838	0.262
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
99-65-0	m-Dinitrobenzene	5.19		0.0838	0.262
<i>99-65-0</i>	<i>m-Dinitrobenzene</i>				
2691-41-0	HMX	5.31		0.0838	0.262
<i>2691-41-0</i>	<i>HMX</i>				
618-87-1	3,5-Dinitroaniline	5.57		0.314	1.05
<i>618-87-1</i>	<i>3,5-Dinitroaniline</i>				
121-82-4	RDX	5.58		0.0838	0.262
<i>121-82-4</i>	<i>RDX</i>				



1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133348(425121002MSD)MSD

Lab Code: GEL

GEL Job No (SDG) 2017-1664

Matrix: WATER

GEL Sample ID: 1203810017

Sample Amount 955 mL

Date Received: 08-JUN-17

Moisture: .

Extraction Batch ID: 1673459

Extraction Type Sol Exchange

Date Extracted: 13-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0625039.wiff

Date Analyzed: 27-JUN-17 14:05

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
88-72-2	o-Nitrotoluene	2.58		0.0859	0.262
88-72-2	<i>o-Nitrotoluene</i>				
479-45-8	Tetryl	3.05		0.0838	0.524
479-45-8	<i>Tetryl</i>				
78-30-8	tris(o-cresyl) phosphate	3.05		0.314	1.05
78-30-8	<i>tris(o-cresyl) phosphate</i>				
3058-38-6	TATB	3.22		0.314	1.05
3058-38-6	<i>TATB</i>				
6629-29-4	2,4-Diamino-6-nitrotoluene	3.44		0.524	2.62
6629-29-4	<i>2,4-Diamino-6-nitrotoluene</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	3.45		0.524	2.62
59229-75-3	<i>2,6-Diamino-4-nitrotoluene</i>				
98-95-3	Nitrobenzene	3.53		0.0838	0.262
98-95-3	<i>Nitrobenzene</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	4.29		0.0838	0.262
19406-51-0	<i>4-Amino-2,6-dinitrotoluene</i>				
99-35-4	1,3,5-Trinitrobenzene	4.32		0.0838	0.262
99-35-4	<i>1,3,5-Trinitrobenzene</i>				
99-99-0	p-Nitrotoluene	4.53		0.157	0.524
99-99-0	<i>p-Nitrotoluene</i>				
78-11-5	PETN	4.54		0.105	0.524
78-11-5	<i>PETN</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	4.66		0.0838	0.262
35572-78-2	<i>2-Amino-4,6-dinitrotoluene</i>				
118-96-7	2,4,6-Trinitrotoluene	4.79		0.0838	0.262
118-96-7	<i>2,4,6-Trinitrotoluene</i>				

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133348(425121002MSD)MSD

Lab Code: GEL

GEL Job No (SDG) 2017-1664

Matrix: WATER

GEL Sample ID: 1203810017

Sample Amount 955 mL

Date Received: 08-JUN-17

Moisture: .

Extraction Batch ID: 1673459

Extraction Type Sol Exchange

Date Extracted: 13-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
606-20-2	2,6-Dinitrotoluene	4.79		0.0838	0.262
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				
99-08-1	m-Nitrotoluene	4.97		0.0838	0.262
<i>99-08-1</i>	<i>m-Nitrotoluene</i>				
121-14-2	2,4-Dinitrotoluene	5.02		0.0838	0.262
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
99-65-0	m-Dinitrobenzene	5.38		0.0838	0.262
<i>99-65-0</i>	<i>m-Dinitrobenzene</i>				
121-82-4	RDX	5.39		0.0838	0.262
<i>121-82-4</i>	<i>RDX</i>				
618-87-1	3,5-Dinitroaniline	5.83		0.314	1.05
<i>618-87-1</i>	<i>3,5-Dinitroaniline</i>				
2691-41-0	HMX	6.14		0.0838	0.262
<i>2691-41-0</i>	<i>HMX</i>				

## Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLCGEL Job No(SDG): 2017-1664Lab Code: GELLab Sample ID: XIBLK01Analysis Date: 16-JUN-17 11:14GEL Data File: EXP0616001.wiffInstrument ID: LCMSMS5Column: Ultracarb Phenomenex 5u ODS (20)

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

## Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLCGEL Job No(SDG): 2017-1664Lab Code: GELLab Sample ID: XIBLK01Analysis Date: 16-JUN-17 11:49GEL Data File: EXP0616002.wiffInstrument ID: LCMSMS5Column: Ultracarb Phenomenex 5u ODS (20)

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

## Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLCGEL Job No(SDG): 2017-1664Lab Code: GELLab Sample ID: XIBLK01Analysis Date: 25-JUN-17 10:51GEL Data File: EXP0625001.wiffInstrument ID: LCMSMS5Column: Ultracarb Phenomenex 5u ODS (20)

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

## Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLCGEL Job No(SDG): 2017-1664Lab Code: GELLab Sample ID: XIBLK01Analysis Date: 25-JUN-17 11:26GEL Data File: EXP0625002.wiffInstrument ID: LCMSMS5Column: Ultracarb Phenomenex 5u ODS (20)

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

## Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLCGEL Job No(SDG): 2017-1664Lab Code: GELLab Sample ID: XIBLK01Analysis Date: 26-JUN-17 16:29GEL Data File: EXP0625001.wiffInstrument ID: LCMSMS7Column: Ultracarb Phenomenex 5u ODS (20), 250 x 4.60 mm ID

Compound	True	Found (ug/L)
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	.69
p-Nitrotoluene	0	0
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MXN	0	0

## Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLCGEL Job No(SDG): 2017-1664Lab Code: GELLab Sample ID: XIBLK01Analysis Date: 26-JUN-17 17:03GEL Data File: EXP0625002.wiffInstrument ID: LCMSMS7Column: Ultracarb Phenomenex 5u ODS (20), 250 x 4.60 mm ID

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	1.41
p-Nitrotoluene	0	0



4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1664

Lab Code: GEL

Lab Sample ID: XIBLK02

Analysis Date: 16-JUN-17 16:30

GEL Data File: EXP0616010.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	5.72
2,6-Diamino-4-nitrotoluene	0	1.79
DNX	0	0
MXN	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
Picric acid	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0
3,4-Dinitrotoluene	0	1.69
tris(o-cresyl) phosphate	0	0
TATB	0	0

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1664

Lab Code: GEL

Lab Sample ID: XIBLK03

Analysis Date: 16-JUN-17 18:50

GEL Data File: EXP0616014.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

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

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1664

Lab Code: GEL

Lab Sample ID: XIBLK04

Analysis Date: 17-JUN-17 00:41

GEL Data File: EXP0616024.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

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

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1664

Lab Code: GEL

Lab Sample ID: XIBLK05

Analysis Date: 17-JUN-17 01:51

GEL Data File: EXP0616026.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

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

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1664

Lab Code: GEL

Lab Sample ID: XIBLK02

Analysis Date: 25-JUN-17 15:32

GEL Data File: EXP0625009.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

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

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1664

Lab Code: GEL

Lab Sample ID: XIBLK03

Analysis Date: 25-JUN-17 17:17

GEL Data File: EXP0625012.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

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

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1664

Lab Code: GEL

Lab Sample ID: XIBLK04

Analysis Date: 25-JUN-17 19:02

GEL Data File: EXP0625015.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

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

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1664

Lab Code: GEL

Lab Sample ID: XIBLK05

Analysis Date: 25-JUN-17 21:22

GEL Data File: EXP0625019.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

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



4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1664

Lab Code: GEL

Lab Sample ID: XIBLK06

Analysis Date: 25-JUN-17 23:43

GEL Data File: EXP0625023.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

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

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1664

Lab Code: GEL

Lab Sample ID: XIBLK07

Analysis Date: 26-JUN-17 00:53

GEL Data File: EXP0625025.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

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

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

**Lab Name:** GEL Laboratories LLC

**GEL Job No(SDG):** 2017-1664

**Lab Code:** GEL

**Lab Sample ID:** XIBLK02

**Analysis Date:** 26-JUN-17 21:36

**GEL Data File:** EXP0625010.wiff

**Instrument ID:** LCMSMS7

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

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	1.48
tris(o-cresyl) phosphate	0	6.15
TATB	0	1.57
3,5-Dinitroaniline	0	1.82
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	1.65
DNX	0	2.65
MNX	0	2.03
TNX	0	2.15
1,3,5-Trinitrobenzene	0	1.85
2,4,6-Trinitrotoluene	0	1.65
2,4-Dinitrotoluene	0	1.35
2,6-Dinitrotoluene	0	1.18
2-Amino-4,6-dinitrotoluene	0	1.51
4-Amino-2,6-dinitrotoluene	0	1.49
HMX	0	2.19
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	2.17
RDX	0	2.09
Tetryl	0	1.99
m-Dinitrobenzene	0	1.4
m-Nitrotoluene	0	0
o-Nitrotoluene	0	1.58
p-Nitrotoluene	0	0

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1664

Lab Code: GEL

Lab Sample ID: XIBLK03

Analysis Date: 26-JUN-17 23:52

GEL Data File: EXP0625014.wiff

Instrument ID: LCMSMS7

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

Compound	True	Found (ug/L)
1,3,5-Trinitrobenzene	0	1.24
2,4,6-Trinitrotoluene	0	1.29
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	1.27
4-Amino-2,6-dinitrotoluene	0	1.32
HMX	0	1.93
Nitrobenzene	0	0
Nitroglycerin	0	2.25
PETN	0	1.68
RDX	0	1.77
Tetryl	0	1.43
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	.62
p-Nitrotoluene	0	5
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	6.41
TATB	0	0
3,5-Dinitroaniline	0	1.36
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	1.77
MNX	0	1.47
TNX	0	1.56

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

**Lab Name:** GEL Laboratories LLC

**GEL Job No(SDG):** 2017-1664

**Lab Code:** GEL

**Lab Sample ID:** XIBLK04

**Analysis Date:** 27-JUN-17 02:09

**GEL Data File:** EXP0625018.wiff

**Instrument ID:** LCMSMS7

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

Compound	True	Found (ug/L)
m-Nitrotoluene	0	0
o-Nitrotoluene	0	1.36
p-Nitrotoluene	0	0
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0

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

**Lab Name:** GEL Laboratories LLC

**GEL Job No(SDG):** 2017-1664

**Lab Code:** GEL

**Lab Sample ID:** XIBLK05

**Analysis Date:** 27-JUN-17 03:17

**GEL Data File:** EXP0625020.wiff

**Instrument ID:** LCMSMS7

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

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	5.22
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	3.68

4A  
Explosives Continuing Calibration Blank

**Lab Name:** GEL Laboratories LLC

**GEL Job No(SDG):** 2017-1664

**Lab Code:** GEL

**Lab Sample ID:** XIBLK06

**Analysis Date:** 27-JUN-17 03:51

**GEL Data File:** EXP0625021.wiff

**Instrument ID:** LCMSMS7

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

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	1.71
p-Nitrotoluene	0	0

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

**Lab Name:** GEL Laboratories LLC

**GEL Job No(SDG):** 2017-1664

**Lab Code:** GEL

**Lab Sample ID:** XIBLK07

**Analysis Date:** 27-JUN-17 08:58

**GEL Data File:** EXP0625030.wiff

**Instrument ID:** LCMSMS7

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

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	1.31
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0



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

**Lab Name:** GEL Laboratories LLC

**GEL Job No(SDG):** 2017-1664

**Lab Code:** GEL

**Lab Sample ID:** XIBLK08

**Analysis Date:** 27-JUN-17 09:33

**GEL Data File:** EXP0625031.wiff

**Instrument ID:** LCMSMS7

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

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	1.14
p-Nitrotoluene	0	0

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

**Lab Name:** GEL Laboratories LLC

**GEL Job No(SDG):** 2017-1664

**Lab Code:** GEL

**Lab Sample ID:** XIBLK09

**Analysis Date:** 27-JUN-17 10:41

**GEL Data File:** EXP0625033.wiff

**Instrument ID:** LCMSMS7

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

Compound	True	Found (ug/L)
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	.92
p-Nitrotoluene	0	0
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	5.75
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MXN	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	0

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1664

Lab Code: GEL

Lab Sample ID: XIBLK10

Analysis Date: 27-JUN-17 16:56

GEL Data File: EXP0625044.wiff

Instrument ID: LCMSMS7

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

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	5.28
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	.39
p-Nitrotoluene	0	0

# Miscellaneous

DATA EXCEPTION REPORT			
<b>Mo.Day Yr.</b> 27-JUN-17	<b>Division:</b> Industrial	<b>Quality Criteria:</b> Specifications	<b>Type:</b> Process
<b>Instrument Type:</b> LC-MS/MS	<b>Test / Method:</b> SW846 3535A/8330B	<b>Matrix Type:</b> Liquid	<b>Client Code:</b> ESHL
<b>Batch ID:</b> 1672553	<b>Sample Numbers:</b> See Below		
<b>Potentially affected work order(s)(SDG): 424916(2017-1657),425075(2017-1667),425079(2017-1664)</b> <b>Application Issues:</b> Failed Recovery for MS/MSD, or PS/PSD Failed Recovery for LCS/LCSD			
<b>Specification and Requirements</b>		<b>DER Disposition:</b>	
<b>Exception Description:</b>			
1. One or more of the required spiking analytes were not within the acceptance limits in the laboratory control sample (See Below). 1203807732 (LCS) recovered 2,6-Diamino-4-nitrotoluene at 137% (53%-127%) and TATB at 148% (47%-135%).  2. The MS (See Below) recovered spiked analytes outside of the established acceptance limits. 1203807733 (CAWA-17-133301MS) recovered TATB at 157% (38%-149%).		1. While the LCS exhibited a high bias, the analyte was/were not detected in the associated samples, the data are reported.  2. Because the recoveries were biased high and target analytes were not detected in the associated samples above the reporting limit, the data are reported.	

**Originator's Name:**

Michael Penny 27-JUN-17

**Data Validator/Group Leader:**

Charles Wilson 27-JUN-17

### DATA EXCEPTION REPORT

<b>Mo.Day Yr.</b> 29-JUN-17	<b>Division:</b> Industrial	<b>Quality Criteria:</b> Specifications	<b>Type:</b> Process
<b>Instrument Type:</b> LC-MS/MS	<b>Test / Method:</b> SW846 3535A/8330B	<b>Matrix Type:</b> Liquid	<b>Client Code:</b> ESHL
<b>Batch ID:</b> 1673460	<b>Sample Numbers:</b> See Below		
<b>Potentially affected work order(s)(SDG): 425079(2017-1664),425121(2017-1689)</b> <b>Application Issues:</b> Failed Recovery for MS/MSD, or PS/PSD Failed RPD for MS/MSD, or PS/PSD Failed Recovery for LCS/LCSD			
<b>Specification and Requirements</b>		<b>DER Disposition:</b>	
<b>Exception Description:</b>			
1. The RPD values between the MS and MSD (See Below) were not within the acceptance limits. 1203810016MS and 1203810017MSD (CAWA-17-133348) recovered 2,4-Diamino-6-nitrotoluene at 36% (0%-30%), 2,6-Diamino-4-nitrotoluene at 32% (0%-30%), o-Nitrotoluene at 52% (0%-30%) and tris(o-cresyl) phosphate at 36% (0%-30%).  2. One or more of the required spiking analytes were not within the acceptance limits in the laboratory control sample (See Below). 1203810015 (LCS) recovered TATB at 151% (47%-135%).  3. One or more of the required spiking analytes were not within the acceptance limits in the matrix spike duplicate (MSD). 1203810017 (CAWA-17-133348MSD) recovered o-Nitrotoluene at 49% (56%-119%).		1. Since all other RPD values met acceptance criteria, the noted exceptions are attributed to vagaries in the extraction process. The data are reported.  2. While the LCS exhibited a high bias, both the MS and MSD met acceptance limits. Since TATB was not detected in the associated samples, the data are reported.  3. While the MSD exhibited a low bias, both the LCS and MS met acceptance limits for o-Nitrotoluene. Since o-Nitrotoluene was not detected in the associated samples, the data are reported.	

**Originator's Name:**

Jannie Shaw-Busby 29-JUN-17

**Data Validator/Group Leader:**

Michael Penny 30-JUN-17

# **Metals Analysis**

# Case Narrative



**Metals**  
**Technical Case Narrative**  
**ARS International, LLC (ARSL)**  
**SDG #: 2017-1664**  
**Work Order #: 425079**

<b>Sample ID</b>	<b>Client ID</b>
425079001	CAWA-17-133286
425079002	CAWA-17-133314
425079003	CAWA-17-133287
425079004	CAWA-17-133315
1203808401	Method Blank (MB) <b>ICP</b>
1203808402	Laboratory Control Sample (LCS)
1203808405	425079002(CAWA-17-133314L) Serial Dilution (SD)
1203808403	425079002(CAWA-17-133314D) Sample Duplicate (DUP)
1203808404	425079002(CAWA-17-133314S) Matrix Spike (MS)
1203808335	Method Blank (MB) <b>ICP-MS</b>
1203808336	Laboratory Control Sample (LCS)
1203808339	425079002(CAWA-17-133314L) Serial Dilution (SD)
1203808337	425079002(CAWA-17-133314D) Sample Duplicate (DUP)
1203808338	425079002(CAWA-17-133314S) Matrix Spike (MS)
1203811029	Method Blank (MB) <b>CVAA</b>
1203811030	Laboratory Control Sample (LCS)
1203811036	425079001(CAWA-17-133286L) Serial Dilution (SD)
1203811032	425079001(CAWA-17-133286D) Sample Duplicate (DUP)
1203811034	425079001(CAWA-17-133286S) Matrix Spike (MS)

**Sample Analysis**

Samples 425079001,002,003 and 004 in this SDG were analyzed for metals and mercury on an "as received" basis.

**Method/Analysis Information**

<b>Analytical Batch:</b>	1672788, 1672758, 1673857 and 1678964
<b>Prep Batch :</b>	1672787, 1672757 and 1673856
<b>Standard Operating Procedures:</b>	GL-MA-E-013 REV# 28, GL-MA-E-006 REV# 13, GL-MA-E-014 REV# 30, GL-MA-E-010 REV# 34 and GL-GC-E-107 REV# 10
<b>Analytical Method:</b>	SW846 3005A/6010C, SW846 3005A/6020A, EPA 245.2 1974 and SM:A2340B
<b>Prep Method :</b>	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 CaCO<sub>3</sub> is calculated from Calcium and Magnesium results.

The Metals analysis-ICP was performed on a PE 7300 Optima radial/axial-viewing inductively coupled plasma atomic emission spectrometer. The instrument is equipped with an ESI SC-FAST introduction, cyclonic spray chamber, and yttrium or scandium internal standard.

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

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

## **Calibration Information**

### **Instrument Calibration**

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

### **CRDL/PQL Requirements**

The 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. For the ICP-MS analysis, the ICSA solution contains 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: 425079002 (CAWA-17-133314)-ICP and ICP-MS and 425079001 (CAWA-17-133286)-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**

The serial dilution is used to assess matrix suppression or enhancement. Raw element concentrations 25x the IDL/MDL for CVAA, 50X the IDL/MDL for ICP and 100X the IDL/MDL for ICP-MS analyses are applicable for serial dilution assessment. Not all the applicable analytes were within the established acceptance criteria. Matrix suppression may be suspected. The data has been qualified.

Sample	Analyte	Value
1203808405 (CAWA-17-133314SDILT)	Potassium	11.9 *(0%-10%)

**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 (DER) was generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) 1646571 was generated for sample 1203808405 (CAWA-17-133314SDILT) in this SDG/batch.

**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.

$$\text{Hardness} = 2.497 (\text{Ca}) + 4.118 (\text{Mg})$$

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: 2017-1664 GEL Work Order: 425079

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

- \* A quality control analyte recovery is outside of specified acceptance criteria
- E %difference of sample and SD is >10%. Sample concentration must meet flagging 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:**



**Name: Nik-Cole Elmore**

**Date: 03 JUL 2017**

**Title: Data Validator**

# **Sample Data Summary**

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**METALS**  
**-1-**  
**INORGANICS ANALYSIS DATA PACKAGE**

**SDG No:** 2017-1664**CONTRACT:** ESHL00114**METHOD TYPE:** EPA**SAMPLE ID:** 425079001**BASIS:** As Received**DATE COLLECTED** 06-JUN-17**CLIENT ID:** CAWA-17-133286**LEVEL:** Low**DATE RECEIVED** 08-JUN-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	06/15/17 11:58	061517W1-3	1673857

**Prep Information:**

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1673857	1673856	EPA 245.1/245.2 Prep	20	mL	20	mL	06/14/17	AXS5

**\*Analytical Methods:**

AV EPA 245.2 1974

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**METALS**  
**-1-**  
**INORGANICS ANALYSIS DATA PACKAGE**

**SDG No:** 2017-1664**CONTRACT:** ESHL00114**METHOD TYPE:** EPA**SAMPLE ID:** 425079002**BASIS:** As Received**DATE COLLECTED** 06-JUN-17**CLIENT ID:** CAWA-17-133314**LEVEL:** Low**DATE RECEIVED** 08-JUN-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	06/15/17 12:10	061517W1-3	1673857



**METALS**  
**-1-**  
**INORGANICS ANALYSIS DATA PACKAGE**

SDG No: 2017-1664

CONTRACT: ESHL00114

METHOD TYPE: SW846

SAMPLE ID: 425079002

BASIS: As Received

DATE COLLECTED 06-JUN-17

CLIENT ID: CAWA-17-133314

LEVEL: Low

DATE RECEIVED 08-JUN-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	73.3	ug/L	J	68	200	200	1	P	JWJ	06/26/17 16:16	062617-1	1672788
7440-36-0	Antimony	3	ug/L	U	1	3	3	1	MS	BAJ	06/27/17 13:25	170627-2	1672758
7440-38-2	Arsenic	2.18	ug/L	J	2	5	5	1	MS	BAJ	06/27/17 13:25	170627-2	1672758
7440-39-3	Barium	6810	ug/L		1	5	5	1	P	JWJ	06/26/17 16:16	062617-1	1672788
7440-41-7	Beryllium	5	ug/L	U	1	5	5	1	P	JWJ	06/26/17 16:16	062617-1	1672788
7440-42-8	Boron	30.2	ug/L	J	15	50	50	1	P	JWJ	06/26/17 16:16	062617-1	1672788
7440-43-9	Cadmium	1	ug/L	U	0.3	1	1	1	MS	BAJ	06/27/17 13:25	170627-2	1672758
7440-70-2	Calcium	21600	ug/L		50	200	200	1	P	JWJ	06/26/17 16:16	062617-1	1672788
7440-47-3	Chromium	10	ug/L	U	3	10	10	1	MS	BAJ	06/27/17 13:25	170627-2	1672758
7440-48-4	Cobalt	5.85	ug/L		1	5	5	1	P	JWJ	06/26/17 16:16	062617-1	1672788
7440-50-8	Copper	10	ug/L	U	3	10	10	1	P	JWJ	06/26/17 16:16	062617-1	1672788
7439-89-6	Iron	939	ug/L		30	100	100	1	P	JWJ	06/26/17 16:16	062617-1	1672788
7439-92-1	Lead	2	ug/L	U	0.5	2	2	1	MS	BAJ	06/27/17 13:25	170627-2	1672758
7439-95-4	Magnesium	5460	ug/L		110	300	300	1	P	JWJ	06/26/17 16:16	062617-1	1672788
7439-96-5	Manganese	238	ug/L		2	10	10	1	P	JWJ	06/26/17 16:16	062617-1	1672788
7439-98-7	Molybdenum	0.670	ug/L		0.2	0.5	0.5	1	MS	BAJ	06/27/17 13:25	170627-2	1672758
7440-02-0	Nickel	1.37	ug/L	J	0.6	2	2	1	MS	BAJ	06/27/17 13:25	170627-2	1672758
7440-09-7	Potassium	3150	ug/L	E	50	150	150	1	P	JWJ	06/26/17 16:16	062617-1	1672788
7782-49-2	Selenium	5	ug/L	U	2	5	5	1	MS	BAJ	06/27/17 13:25	170627-2	1672758
7631-86-9	Silica	46600	ug/L		53	213	213	1	P	JWJ	06/26/17 16:16	062617-1	1672788
7440-22-4	Silver	1	ug/L	U	0.3	1	1	1	MS	BAJ	06/27/17 13:25	170627-2	1672758
7440-23-5	Sodium	17600	ug/L		100	300	300	1	P	JWJ	06/26/17 16:16	062617-1	1672788
7440-24-6	Strontium	193	ug/L		1	5	5	1	P	JWJ	06/26/17 16:16	062617-1	1672788
7440-28-0	Thallium	2	ug/L	U	0.6	2	2	1	MS	BAJ	06/27/17 13:25	170627-2	1672758
7440-31-5	Tin	10	ug/L	U	2.5	10	10	1	P	JWJ	06/26/17 16:16	062617-1	1672788
7440-61-1	Uranium	0.20	ug/L	U	0.067	0.2	0.2	1	MS	BAJ	06/27/17 13:25	170627-2	1672758
7440-62-2	Vanadium	1.94	ug/L	J	1	5	5	1	P	JWJ	06/26/17 16:16	062617-1	1672788
7440-66-6	Zinc	10	ug/L	U	3.3	10	10	1	P	JWJ	06/26/17 16:16	062617-1	1672788

**METALS**  
**-1-**  
**INORGANICS ANALYSIS DATA PACKAGE**

**SDG No:** 2017-1664**CONTRACT:** ESHL00114**METHOD TYPE:****SAMPLE ID:** 425079002**BASIS:** As Received**DATE COLLECTED** 06-JUN-17**CLIENT ID:** CAWA-17-133314**LEVEL:** Low**DATE RECEIVED** 08-JUN-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	76.5	mg/L		0.453	1.24	1.24	1		TXT1	06/30/17 14:46		1678964

**Prep Information:**

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1672758	1672757	SW846 3005A	50	mL	50	mL	06/19/17	CXW4
1672788	1672787	SW846 3005A	50	mL	50	mL	06/19/17	CXW4
1673857	1673856	EPA 245.1/245.2 Prep	20	mL	20	mL	06/14/17	AXS5

**\*Analytical Methods:****P** SW846 3005A/6010C**MS** SW846 3005A/6020A**AV** EPA 245.2 1974

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**METALS**  
**-1-**  
**INORGANICS ANALYSIS DATA PACKAGE**

**SDG No:** 2017-1664**CONTRACT:** ESHL00114**METHOD TYPE:** EPA**SAMPLE ID:** 425079003**BASIS:** As Received**DATE COLLECTED** 06-JUN-17**CLIENT ID:** CAWA-17-133287**LEVEL:** Low**DATE RECEIVED** 08-JUN-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	06/15/17 12:11	061517W1-3	1673857

**Prep Information:**

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1673857	1673856	EPA 245.1/245.2 Prep	20	mL	20	mL	06/14/17	AXS5

**\*Analytical Methods:**

AV EPA 245.2 1974

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**METALS**  
**-1-**  
**INORGANICS ANALYSIS DATA PACKAGE**

**SDG No:** 2017-1664**CONTRACT:** ESHL00114**METHOD TYPE:** EPA**SAMPLE ID:** 425079004**BASIS:** As Received**DATE COLLECTED** 06-JUN-17**CLIENT ID:** CAWA-17-133315**LEVEL:** Low**DATE RECEIVED** 08-JUN-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	06/15/17 12:13	061517W1-3	1673857

**METALS**  
**-1-**  
**INORGANICS ANALYSIS DATA PACKAGE**

SDG No: 2017-1664

CONTRACT: ESHL00114

METHOD TYPE: SW846

SAMPLE ID: 425079004

BASIS: As Received

DATE COLLECTED 06-JUN-17

CLIENT ID: CAWA-17-133315

LEVEL: Low

DATE RECEIVED 08-JUN-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	321	ug/L		68	200	200	1	P	JWJ	06/26/17 16:29	062617-1	1672788
7440-36-0	Antimony	3	ug/L	U	1	3	3	1	MS	BAJ	06/27/17 13:41	170627-2	1672758
7440-38-2	Arsenic	2.25	ug/L	J	2	5	5	1	MS	BAJ	06/27/17 13:41	170627-2	1672758
7440-39-3	Barium	544	ug/L		1	5	5	1	P	JWJ	06/26/17 16:29	062617-1	1672788
7440-41-7	Beryllium	5	ug/L	U	1	5	5	1	P	JWJ	06/26/17 16:29	062617-1	1672788
7440-42-8	Boron	29	ug/L	J	15	50	50	1	P	JWJ	06/26/17 16:29	062617-1	1672788
7440-43-9	Cadmium	1	ug/L	U	0.3	1	1	1	MS	BAJ	06/27/17 13:41	170627-2	1672758
7440-70-2	Calcium	11500	ug/L		50	200	200	1	P	JWJ	06/26/17 16:29	062617-1	1672788
7440-47-3	Chromium	10	ug/L	U	3	10	10	1	MS	BAJ	06/27/17 13:41	170627-2	1672758
7440-48-4	Cobalt	3.02	ug/L	J	1	5	5	1	P	JWJ	06/26/17 16:29	062617-1	1672788
7440-50-8	Copper	10	ug/L	U	3	10	10	1	P	JWJ	06/26/17 16:29	062617-1	1672788
7439-89-6	Iron	486	ug/L		30	100	100	1	P	JWJ	06/26/17 16:29	062617-1	1672788
7439-92-1	Lead	2	ug/L	U	0.5	2	2	1	MS	BAJ	06/27/17 13:41	170627-2	1672758
7439-95-4	Magnesium	2270	ug/L		110	300	300	1	P	JWJ	06/26/17 16:29	062617-1	1672788
7439-96-5	Manganese	1030	ug/L		2	10	10	1	P	JWJ	06/26/17 16:29	062617-1	1672788
7439-98-7	Molybdenum	1.26	ug/L		0.2	0.5	0.5	1	MS	BAJ	06/27/17 13:41	170627-2	1672758
7440-02-0	Nickel	1.83	ug/L	J	0.6	2	2	1	MS	BAJ	06/27/17 13:41	170627-2	1672758
7440-09-7	Potassium	3280	ug/L	E	50	150	150	1	P	JWJ	06/26/17 16:29	062617-1	1672788
7782-49-2	Selenium	5	ug/L	U	2	5	5	1	MS	BAJ	06/27/17 13:41	170627-2	1672758
7631-86-9	Silica	38800	ug/L		53	213	213	1	P	JWJ	06/26/17 16:29	062617-1	1672788
7440-22-4	Silver	1	ug/L	U	0.3	1	1	1	MS	BAJ	06/27/17 13:41	170627-2	1672758
7440-23-5	Sodium	17800	ug/L		100	300	300	1	P	JWJ	06/26/17 16:29	062617-1	1672788
7440-24-6	Strontium	51.2	ug/L		1	5	5	1	P	JWJ	06/26/17 16:29	062617-1	1672788
7440-28-0	Thallium	2	ug/L	U	0.6	2	2	1	MS	BAJ	06/27/17 13:41	170627-2	1672758
7440-31-5	Tin	10	ug/L	U	2.5	10	10	1	P	JWJ	06/26/17 16:29	062617-1	1672788
7440-61-1	Uranium	0.20	ug/L	U	0.067	0.2	0.2	1	MS	BAJ	06/27/17 13:41	170627-2	1672758
7440-62-2	Vanadium	5	ug/L	U	1	5	5	1	P	JWJ	06/26/17 16:29	062617-1	1672788
7440-66-6	Zinc	8.21	ug/L	J	3.3	10	10	1	P	JWJ	06/26/17 16:29	062617-1	1672788

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**METALS**  
**-1-**  
**INORGANICS ANALYSIS DATA PACKAGE**

**SDG No:** 2017-1664**CONTRACT:** ESHL00114**METHOD TYPE:****SAMPLE ID:** 425079004**BASIS:** As Received**DATE COLLECTED** 06-JUN-17**CLIENT ID:** CAWA-17-133315**LEVEL:** Low**DATE RECEIVED** 08-JUN-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	38.1	mg/L		0.453	1.24	1.24	1		TXT1	06/30/17 14:46		1678964

**Prep Information:**

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1672758	1672757	SW846 3005A	50	mL	50	mL	06/19/17	CXW4
1672788	1672787	SW846 3005A	50	mL	50	mL	06/19/17	CXW4
1673857	1673856	EPA 245.1/245.2 Prep	20	mL	20	mL	06/14/17	AXS5

**\*Analytical Methods:**

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

# **Quality Control Summary**

**METALS**  
**-3b-**  
**PREPARATION BLANK SUMMARY**

SDG NO. 2017-1664

Contract: ESHL00114

Matrix: W

<u>Sample ID</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Acceptance Window</u>	<u>Conc Qual</u>	<u>M*</u>	<u>MDL</u>	<u>RDL</u>
1203808335	Antimony	1	ug/L	+/-3	U	MS	1	3
	Arsenic	2	ug/L	+/-5	U	MS	2	5
	Chromium	3	ug/L	+/-10	U	MS	3	10
	Lead	0.5	ug/L	+/-2	U	MS	0.5	2
	Cadmium	0.3	ug/L	+/-1	U	MS	0.3	1
	Molybdenum	0.231	ug/L	+/-0.5	J	MS	0.2	0.5
	Selenium	2	ug/L	+/-5	U	MS	2	5
	Thallium	0.6	ug/L	+/-2	U	MS	0.6	2
	Uranium	0.067	ug/L	+/-0.2	U	MS	0.067	0.2
	Silver	0.3	ug/L	+/-1	U	MS	0.3	1
	Nickel	0.6	ug/L	+/-2	U	MS	0.6	2
1203808401	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
	Cobalt	1	ug/L	+/-5	U	P	1	5
	Calcium	50	ug/L	+/-200	U	P	50	200
	Boron	15	ug/L	+/-50	U	P	15	50
	Beryllium	1	ug/L	+/-5	U	P	1	5
	Barium	1	ug/L	+/-5	U	P	1	5
	Aluminum	68	ug/L	+/-200	U	P	68	200
	Silica	53	ug/L	+/-213	U	P	53	213
	Sodium	100	ug/L	+/-300	U	P	100	300
	Strontium	1	ug/L	+/-5	U	P	1	5
	Tin	2.5	ug/L	+/-10	U	P	2.5	10
	Vanadium	1	ug/L	+/-5	U	P	1	5
	Zinc	3.3	ug/L	+/-10	U	P	3.3	10
1203811029	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.** 2017-1664 **Client ID:** CAWA-17-133314S

**Contract:** ESHL00114 **Level:** Low

**Matrix:** WATER **% Solids:**

**Sample ID:** 425079002 **Spike ID:** 1203808338

<u>Analyte</u>	<u>Units</u>	<u>Acceptance Limit</u>	<u>Spiked Result</u>	<u>C</u>	<u>Sample Result</u>	<u>C</u>	<u>Spike Added</u>	<u>% Recovery</u>	<u>Qual</u>	<u>M*</u>
Antimony	ug/L	75-125	48.9		1	U	50	97.1		MS
Arsenic	ug/L	75-125	51.7		2.18	J	50	99.1		MS
Cadmium	ug/L	75-125	49.1		0.3	U	50	98.2		MS
Chromium	ug/L	75-125	50.1		3	U	50	99.4		MS
Lead	ug/L	75-125	48.7		0.5	U	50	97.4		MS
Molybdenum	ug/L	75-125	51.7		0.67		50	102		MS
Nickel	ug/L	75-125	52.9		1.37	J	50	103		MS
Selenium	ug/L	75-125	47.4		2	U	50	94.5		MS
Silver	ug/L	75-125	51.1		0.3	U	50	102		MS
Thallium	ug/L	75-125	47.2		0.6	U	50	94.3		MS
Uranium	ug/L	75-125	48.9		0.067	U	50	97.8		MS

## \*Analytical Methods:

MS SW846 3005A/6020A

## METALS

-5a-

## Matrix Spike Summary

SDG NO. 2017-1664 Client ID: CAWA-17-133314S

Contract: ESHL00114 Level: Low

Matrix: WATER % Solids:

Sample ID: 425079002 Spike ID: 1203808404

<u>Analyte</u>	<u>Units</u>	<u>Acceptance Limit</u>	<u>Spiked Result</u>	<u>C</u>	<u>Sample Result</u>	<u>C</u>	<u>Spike Added</u>	<u>% Recovery</u>	<u>Qual</u>	<u>M*</u>
Boron	ug/L	75-125	538		30.2	J	500	102		P
Calcium	ug/L		26700		21600		5000	102	N/A	P
Cobalt	ug/L	75-125	511		5.85		500	101		P
Copper	ug/L	75-125	514		3	U	500	103		P
Iron	ug/L	75-125	6010		939		5000	101		P
Magnesium	ug/L	75-125	10600		5460		5000	102		P
Manganese	ug/L	75-125	741		238		500	101		P
Potassium	ug/L	75-125	8210		3150		5000	101		P
Silica	ug/L		58900		46600		10700	115	N/A	P
Sodium	ug/L	75-125	23100		17600		5000	110		P
Strontium	ug/L	75-125	685		193		500	98.4		P
Tin	ug/L	75-125	505		2.5	U	500	101		P
Vanadium	ug/L	75-125	515		1.94	J	500	103		P
Zinc	ug/L	75-125	482		3.3	U	500	96.4		P
Aluminum	ug/L	75-125	5110		73.3	J	5000	101		P
Barium	ug/L		7510		6810		500	141	N/A	P
Beryllium	ug/L	75-125	508		1	U	500	102		P

\*Analytical Methods:

P SW846 3005A/6010C

## METALS

-5a-

## Matrix Spike Summary

SDG NO. 2017-1664 Client ID CAWA-17-133286S

Contract: ESHL00114 Level: Low

Matrix: WATER % Solids:

Sample ID: 425079001 Spike ID: 1203811034

<u>Analyte</u>	<u>Units</u>	<u>Acceptance Limit</u>	<u>Spiked Result</u>	<u>C</u>	<u>Sample Result</u>	<u>C</u>	<u>Spike Added</u>	<u>% Recovery</u>	<u>Qual</u>	<u>M*</u>
Mercury	ug/L	75-125	2.06		0.067	U	2	103		AV

## \*Analytical Methods:

AV EPA 245.1/245.2

**Metals**  
**-6-**  
**Duplicate Sample Summary**

SDG No.: 2017-1664

Lab Code: GEL

Contract: ESHL00114

Client ID: CAWA-17-133314D

Matrix: WATER

Level: Low

Sample ID: 425079002

Duplicate ID: 1203808337

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		2.18 J		2 U		200		MS
Cadmium	ug/L		0.3 U		0.3 U				MS
Chromium	ug/L		3 U		3 U				MS
Lead	ug/L		0.5 U		0.5 U				MS
Molybdenum	ug/L	+/- .5	0.67		0.643		4.11		MS
Nickel	ug/L	+/- 2	1.37 J		1.23 J		10.5		MS
Selenium	ug/L		2 U		2 U				MS
Silver	ug/L		0.3 U		0.3 U				MS
Thallium	ug/L		0.6 U		0.6 U				MS
Uranium	ug/L		0.067 U		0.067 U				MS

\*Analytical Methods:

MS SW846 3005A/6020A

**Metals**  
**-6-**  
**Duplicate Sample Summary**

SDG No.: 2017-1664

Lab Code: GEL

Contract: ESHL00114

Client ID: CAWA-17-133314D

Matrix: WATER

Level: Low

Sample ID: 425079002

Duplicate ID: 1203808403

Percent Solids for Dup: N/A

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M*
Aluminum	ug/L	+/-200	73.3 J		82.8 J		12.1		P
Barium	ug/L	+/-20%	6810		6960		2.24		P
Beryllium	ug/L		1 U		1 U				P
Boron	ug/L	+/-50	30.2 J		32.2 J		6.45		P
Calcium	ug/L	+/-20%	21600		22200		2.37		P
Cobalt	ug/L	+/-5	5.85		5.72		2.24		P
Copper	ug/L		3 U		3 U				P
Iron	ug/L	+/-20%	939		969		3.14		P
Magnesium	ug/L	+/-20%	5460		5580		2.24		P
Manganese	ug/L	+/-20%	238		244		2.2		P
Potassium	ug/L	+/-20%	3150		3300		4.54		P
Silica	ug/L	+/-20%	46600		47500		1.83		P
Sodium	ug/L	+/-20%	17600		18100		2.57		P
Strontium	ug/L	+/-20%	193		198		2.74		P
Tin	ug/L		2.5 U		2.5 U				P
Vanadium	ug/L	+/-5	1.94 J		1.22 J		45.3		P
Zinc	ug/L		3.3 U		3.3 U				P

\*Analytical Methods:

P SW846 3005A/6010C

**Metals**  
**–6–**  
**Duplicate Sample Summary**

**SDG No.:** 2017–1664**Lab Code:** GEL**Contract:** ESHL00114**Client ID:** CAWA–17–133286D**Matrix:** WATER**Level:** Low**Sample ID:** 425079001**Duplicate ID:** 1203811032**Percent Solids for Dup:** N/A

<b>Analyte</b>	<b>Units</b>	<b>Acceptance Limit</b>	<b>Sample Result</b>	<b>C</b>	<b>Duplicate Result</b>	<b>C</b>	<b>RPD</b>	<b>Qual</b>	<b>M*</b>
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. 2017-1664

Contract: ESHL00114

Aqueous LCS Source:O2Si

Solid LCS Source:

<u>Sample ID</u>	<u>Analyte</u>	<u>Units</u>	<u>True Value</u>	<u>Result</u>	<u>C</u>	<u>% Recovery</u>	<u>Acceptance Limit</u>	<u>M*</u>
1203808336								
	Antimony	ug/L	50	50.1		100	80-120	MS
	Arsenic	ug/L	50	50.7		101	80-120	MS
	Cadmium	ug/L	50	51		102	80-120	MS
	Chromium	ug/L	50	51.7		103	80-120	MS
	Lead	ug/L	50	49.2		98.4	80-120	MS
	Molybdenum	ug/L	50	50.9		102	80-120	MS
	Nickel	ug/L	50	51.4		103	80-120	MS
	Selenium	ug/L	50	49.4		98.7	80-120	MS
	Silver	ug/L	50	51.5		103	80-120	MS
	Thallium	ug/L	50	47.7		95.4	80-120	MS
	Uranium	ug/L	50	47.5		95.1	80-120	MS

## \*Analytical Methods:

MS SW846 3005A/6020A

## METALS

-7-

## Laboratory Control Sample Summary

SDG NO. 2017-1664

Contract: ESHL00114

Aqueous LCS Source:OS2I

Solid LCS Source:

<u>Sample ID</u>	<u>Analyte</u>	<u>Units</u>	<u>True Value</u>	<u>Result</u>	<u>C</u>	<u>% Recovery</u>	<u>Acceptance Limit</u>	<u>M*</u>
1203808402								
	Aluminum	ug/L	5000	5160		103	80-120	P
	Barium	ug/L	500	505		101	80-120	P
	Beryllium	ug/L	500	500		100	80-120	P
	Boron	ug/L	500	493		98.5	80-120	P
	Calcium	ug/L	5000	5140		103	80-120	P
	Cobalt	ug/L	500	514		103	80-120	P
	Copper	ug/L	500	506		101	80-120	P
	Iron	ug/L	5000	5110		102	80-120	P
	Magnesium	ug/L	5000	5210		104	80-120	P
	Manganese	ug/L	500	504		101	80-120	P
	Potassium	ug/L	5000	5250		105	80-120	P
	Silica	ug/L	10700	10500		98.3	80-120	P
	Sodium	ug/L	5000	5250		105	80-120	P
	Strontium	ug/L	500	501		100	80-120	P
	Tin	ug/L	500	509		102	80-120	P
	Vanadium	ug/L	500	507		101	80-120	P
	Zinc	ug/L	500	486		97.2	80-120	P

## \*Analytical Methods:

P SW846 3005A/6010C



## METALS

-7-

## Laboratory Control Sample Summary

SDG NO. 2017-1664

Contract: ESHL00114

Aqueous LCS Source: GEL

Solid LCS Source:

<u>Sample ID</u>	<u>Analyte</u>	<u>Units</u>	<u>True Value</u>	<u>Result</u>	<u>C</u>	<u>% Recovery</u>	<u>Acceptance Limit</u>	<u>M*</u>
1203811030	Mercury	ug/L	2	2.08		104	85-115	AV

## \*Analytical Methods:

AV EPA 245.1/245.2

## METALS

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## Serial Dilution Sample Summary

SDG NO. 2017-1664 Client ID CAWA-17-133314L

Contract: ESHL00114

Matrix: LIQUID Level: Low

Sample ID: 425079002 Serial Dilution ID: 1203808339

<u>Analyte</u>	<u>Initial Value ug/L</u>	<u>C</u>	<u>Serial Value ug/L</u>	<u>C</u>	<u>% Difference</u>	<u>Qual</u>	<u>Acceptance Limit</u>	<u>M*</u>
Antimony	1	U	5	U				MS
Arsenic	2.18	J	10	U	13.183			MS
Cadmium	.3	U	1.5	U				MS
Chromium	3	U	15	U				MS
Lead	.5	U	2.5	U				MS
Molybdenum	.67		1	U	14.925			MS
Nickel	1.37	J	3	U	4.745			MS
Selenium	2	U	10	U				MS
Silver	.3	U	1.5	U				MS
Thallium	.6	U	3	U				MS
Uranium	.067	U	.335	U				MS

## \*Analytical Methods:

MS SW846 3005A/6020A

## METALS

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## Serial Dilution Sample Summary

**SDG NO.** 2017-1664 **Client ID:** CAWA-17-133314L

**Contract:** ESHL00114

**Matrix:** LIQUID **Level:** Low

**Sample ID:** 425079002 **Serial Dilution ID:** 1203808405

<u>Analyte</u>	<u>Initial Value ug/L</u>	<u>C</u>	<u>Serial Value ug/L</u>	<u>C</u>	<u>% Difference</u>	<u>Qual</u>	<u>Acceptance Limit</u>	<u>M*</u>
Aluminum	73.3	J	340	U	64.951			P
Barium	6810		7110		4.451		10	P
Beryllium	1	U	5	U				P
Boron	30.2	J	75	U	5.654			P
Calcium	21600		21300		1.585		10	P
Cobalt	5.85		5.27	J	9.82			P
Copper	3	U	15	U				P
Iron	939		920		1.99			P
Magnesium	5460		5570		2.107			P
Manganese	238		250		4.632		10	P
Potassium	3150		3530		11.944	E	10	P
Silica	46600		47100		1.064		10	P
Sodium	17600		18400		4.126		10	P
Strontium	193		195		.969		10	P
Tin	2.5	U	12.5	U				P
Vanadium	1.94	J	5	U	38.072			P
Zinc	3.3	U	16.5	U				P

## \*Analytical Methods:

P SW846 3005A/6010C

## METALS

-9-

## Serial Dilution Sample Summary

**SDG NO.** 2017-1664 **Client ID:** CAWA-17-133286L

**Contract:** ESHL00114

**Matrix:** LIQUID **Level:** Low

**Sample ID:** 425079001 **Serial Dilution ID:** 1203811036

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

## \*Analytical Methods:

AV EPA 245.1/245.2

# Miscellaneous

DATA EXCEPTION REPORT			
<b>Mo.Day Yr.</b> 27-JUN-17	<b>Division:</b> Industrial	<b>Quality Criteria:</b> Specifications	<b>Type:</b> Process
<b>Instrument Type:</b> ICP	<b>Test / Method:</b> SW846 3005A/6010C	<b>Matrix Type:</b> Liquid	<b>Client Code:</b> ESHL
<b>Batch ID:</b> 1672788	<b>Sample Numbers:</b> See Below		
<b>Potentially affected work order(s)(SDG):</b> 425075(2017-1667),425079(2017-1664),425115(2017-1690),425121(2017-1689) <b>Application Issues:</b> Failed difference for SDILT			
<b>Specification and Requirements Exception Description:</b>		<b>DER Disposition:</b>	
1. Failed difference for SDILT:  QC   1203808405SDILT		1. Not all the applicable analytes were within the established acceptance criteria. Matrix suppression may be suspected. The data has been qualified. 1203808405 (CAWA-17-133314SDILT) Potassium [11.9 *(0%-10%)].	

**Originator's Name:**  
Jerry Wigfall            27-JUN-17

**Data Validator/Group Leader:**  
Helen Camello            28-JUN-17

# **General Chem Analysis**

# Case Narrative



**General Chemistry  
Technical Case Narrative  
ARS International, LLC (ARSL)  
SDG #: 2017-1664  
Work Order #: 425079**

**Method/Analysis Information**

**Product:** Carbon and Total Organic

**Analytical Batch:** 1673634

**Method:** SW 9060 Total Organic Carbon

**Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
425079001	CAWA-17-133286
425079003	CAWA-17-133287
1203812102	Method Blank (MB)
1203812103	Laboratory Control Sample (LCS)
1203812277	Laboratory Control Sample Duplicate (LCSD)
1203812104	425075001(CAWA-17-133284) Sample Duplicate (DUP)
1203812106	425075001(CAWA-17-133284) 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.

**LCS/LCSD Relative Percent Difference (RPD) Statement**

The RPD between the LCS and LCSD met the acceptance limits.

**Quality Control (QC) Designation**

Sample 425075001 (CAWA-17-133284) 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**

<b>Product:</b>	<b>Cyanide and Total</b>		
<b>Analytical Batch:</b>	1671991	<b>Method:</b>	WSP-CN(T)
<b>Prep Batch :</b>	1671990	<b>Method:</b>	EPA 335.4

### **Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
425079001	CAWA-17-133286
425079003	CAWA-17-133287
1203806299	Method Blank (MB)
1203806300	Laboratory Control Sample (LCS)
1203806301	424904001(NonSDG) Sample Duplicate (DUP)
1203806302	424904001(NonSDG) 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 424904001 (NonSDG) 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:** Ion Chromatography

**Analytical Batch:** 1672927 and 1673741 **Method:** WSP-ANIONS

### **Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
425079002	CAWA-17-133314
425079004	CAWA-17-133315
1203808700	Method Blank (MB)
1203810741	Method Blank (MB)
1203808701	Laboratory Control Sample (LCS)
1203810742	Laboratory Control Sample (LCS)
1203808702	425075004(CAWA-17-133313) Sample Duplicate (DUP)
1203810743	425079002(CAWA-17-133314) Sample Duplicate (DUP)
1203808703	425075004(CAWA-17-133313) Post Spike (PS)
1203810744	425079002(CAWA-17-133314) 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.

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

### **Initial Calibration**

All initial calibration requirements have been met for this SDG.

### **Continuing Calibration Blanks**

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

**Calibration Verification Information (CCV)**

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

**Y Intercept Rule**

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

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

The 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**

Samples 425075004 (CAWA-17-133313) and 425079002 (CAWA-17-133314) were selected for QC analysis.

**Matrix Spike (MS)/Post Spike (PS) Recovery Statement**

The MS/PS recoveries for this sample set were within the required acceptance limits where applicable.

**Duplicate Relative Percent Difference (RPD) Statement**

The RPD between the sample and its duplicate met the acceptance limits.

**Technical Information**

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

**Holding Times**

All samples in this SDG met the specified holding time.

**Sample Dilutions**

The following samples 425079004 (CAWA-17-133315), 1203810743 (CAWA-17-133314DUP), 1203810744 (CAWA-17-133314PS) and 425079002 (CAWA-17-133314) were diluted because target analyte concentrations exceeded the calibration range. Dilutions may be required for many reasons, including to minimize matrix interferences or to bring over range target analyte concentrations into the linear calibration range.

Analyte	425079	
	002	004
Chloride	2X	2X

**Sample Re-analysis**

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

**Miscellaneous Information**



**Data Exception (DER) Documentation**

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

**Manual Integrations**

Samples 1203808702 (CAWA-17-133313DUP), 1203808703 (CAWA-17-133313PS), 425079004 (CAWA-17-133315), 1203810743 (CAWA-17-133314DUP), 1203810744 (CAWA-17-133314PS) and 425079002 (CAWA-17-133314) 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:** 1672879 and 1673875 **Method:** NH3  
**Prep Batch :** 1672878 and 1673874 **Method:** EPA 350.1 Prep

### **Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
425079002	CAWA-17-133314
425079004	CAWA-17-133315
1203808632	Method Blank (MB)
1203811097	Method Blank (MB)
1203808633	Laboratory Control Sample (LCS)
1203811098	Laboratory Control Sample (LCS)
1203808634	425079004(CAWA-17-133315) Sample Duplicate (DUP)
1203811099	425079002(CAWA-17-133314) Sample Duplicate (DUP)
1203808636	425079004(CAWA-17-133315) Matrix Spike (MS)
1203811100	425079002(CAWA-17-133314) 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.

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 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**

Samples 425079004 (CAWA-17-133315) and 425079002 (CAWA-17-133314) were selected for QC analysis.

**Matrix Spike (MS)/Post Spike (PS) Recovery Statement**

The MS/PS recoveries for this sample set were within the required acceptance limits where applicable.

**Duplicate Relative Percent Difference (RPD) Statement**

The RPD between the sample and its duplicate met the acceptance limits.

**Technical Information**

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

**Holding Times**

All samples in this SDG met the specified holding time.

**Sample Preservation/Integrity**

All the samples from this sample group met the preservation and integrity requirements of the method.

**Sample Dilutions**

The samples in this SDG did not require dilutions.

**Sample Re-analysis**

Sample 425079004 (CAWA-17-133315) was re-analyzed due to (its) proximity to an overrange sample. 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**

<b>Product:</b>	<b>Total Kjeldahl Nitrogen</b>		
<b>Analytical Batch:</b>	1672889 and 1673872	<b>Method:</b>	TKN
<b>Prep Batch :</b>	1672888 and 1673870	<b>Method:</b>	EPA 351.2 Prep

### **Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
425079001	CAWA-17-133286
425079003	CAWA-17-133287
1203808648	Method Blank (MB)
1203811089	Method Blank (MB)
1203808649	Laboratory Control Sample (LCS)
1203811090	Laboratory Control Sample (LCS)
1203808650	425079003(CAWA-17-133287) Sample Duplicate (DUP)
1203811091	425079001(CAWA-17-133286) Sample Duplicate (DUP)
1203808651	425079003(CAWA-17-133287) Matrix Spike (MS)
1203811092	425079001(CAWA-17-133286) 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 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**

Samples 425079003 (CAWA-17-133287) and 425079001 (CAWA-17-133286) were selected for QC analysis.

**Matrix Spike (MS)/Post Spike (PS) Recovery Statement**

The MS/PS recoveries for this sample set were within the required acceptance limits where applicable.

**Duplicate Relative Percent Difference (RPD) Statement**

The RPD between the sample and its duplicate met the acceptance limits.

**Technical Information**

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

**Holding Times**

All samples in this SDG met the specified holding time.

**Sample Preservation/Integrity**

All the samples from this sample group met the preservation and integrity requirements of the method.

**Sample Dilutions**

The samples in this SDG did not require dilutions.

**Sample Re-analysis**

Samples 1203808648 (MB), 1203808649 (LCS), 1203808650 (CAWA-17-133287DUP), 1203808651 (CAWA-17-133287MS) and 425079003 (CAWA-17-133287) were re-analyzed due to CCB failure. The reanalysis data with passing instrument QC was reported. Samples 1203811089 (MB), 1203811090 (LCS), 1203811091 (CAWA-17-133286DUP), 1203811092 (CAWA-17-133286MS) and 425079001 (CAWA-17-133286) 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:** 1672172 and 1673506

**Method:** NO3NO2

### **Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
425079002	CAWA-17-133314
425079004	CAWA-17-133315
1203806723	Method Blank (MB)
1203810164	Method Blank (MB)
1203806724	Laboratory Control Sample (LCS)
1203810165	Laboratory Control Sample (LCS)
1203810166	Laboratory Control Sample Duplicate (LCSD)
1203807680	425079004(CAWA-17-133315) Sample Duplicate (DUP)
1203810167	425075002(CAWA-17-133312) Sample Duplicate (DUP)
1203807682	425079004(CAWA-17-133315) Post Spike (PS)
1203810168	425075002(CAWA-17-133312) 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 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**

Samples 425079004 (CAWA-17-133315) and 425075002 (CAWA-17-133312) were selected for QC analysis.

**Matrix Spike (MS)/Post Spike (PS) Recovery Statement**

The MS/PS recoveries for this sample set were within the required acceptance limits where applicable.

**Duplicate Relative Percent Difference (RPD) Statement**

The RPD between the sample and its duplicate met the acceptance limits.

**LCS/LCSD Relative Percent Difference (RPD) Statement**

The RPD between the LCS and LCSD 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:**                    **Total Phosphorus**  
**Analytical Batch:**    1672893 and 1673877    **Method:**    PO4  
**Prep Batch :**            1672892 and 1673876    **Method:**    EPA 365.4 Prep

### **Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
425079002	CAWA-17-133314
425079004	CAWA-17-133315
1203808658	Method Blank (MB)
1203811104	Method Blank (MB)
1203808659	Laboratory Control Sample (LCS)
1203811105	Laboratory Control Sample (LCS)
1203808660	425079004(CAWA-17-133315) Sample Duplicate (DUP)
1203811108	425079002(CAWA-17-133314) Sample Duplicate (DUP)
1203808661	425079004(CAWA-17-133315) Matrix Spike (MS)
1203811109	425079002(CAWA-17-133314) 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 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**

Samples 425079004 (CAWA-17-133315) and 425079002 (CAWA-17-133314) were selected for QC analysis.

**Matrix Spike (MS)/Post Spike (PS) Recovery Statement**

The MS/PS recoveries for this sample set were within the required acceptance limits where applicable.

**Duplicate Relative Percent Difference (RPD) Statement**

The RPD between the sample and its duplicate met the acceptance limits.

**Technical Information**

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

**Holding Times**

All samples in this SDG met the specified holding time.

**Sample Preservation/Integrity**

All the samples from this sample group met the preservation and integrity requirements of the method.

**Sample Dilutions**

The samples in this SDG did not require dilutions.

**Sample Re-analysis**

Samples 1203811104 (MB) and 1203811105 (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:** Solids and Total Dissolved

**Analytical Batch:** 1673663

**Method:** TDS

### **Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
425079002	CAWA-17-133314
425079004	CAWA-17-133315
1203810548	Method Blank (MB)
1203810549	Laboratory Control Sample (LCS)
1203810556	425075002(CAWA-17-133312) 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 425075002 (CAWA-17-133312) 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:** 1678861

**Method:** EPA120.1 Specific Conductivity

### **Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
425079002	CAWA-17-133314
425079004	CAWA-17-133315
1203822826	Laboratory Control Sample (LCS)
1203822828	425121001(CAWA-17-133347) 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**



Sample 425121001 (CAWA-17-133347) 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:** pH  
**Analytical Batch:** 1673523 **Method:** PH

### **Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
425079002	CAWA-17-133314
425079004	CAWA-17-133315
1203811672	Laboratory Control Sample (LCS)
1203810238	425121001(CAWA-17-133347) 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 425121001 (CAWA-17-133347) 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
1203810238 (CAWA-17-133347DUP)	pH	Received 09-JUN-17, out of holding 07-JUN-17
425079002 (CAWA-17-133314)	pH	Received 08-JUN-17, out of holding 06-JUN-17
425079004 (CAWA-17-133315)	pH	Received 08-JUN-17, out of holding 06-JUN-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) 1642299 was generated for samples 425079002 (CAWA-17-133314), 425079004 (CAWA-17-133315) and 1203810238 (CAWA-17-133347DUP) 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:** 1673522      **Method:** EPA 310.1 Total Alkalinity

### **Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
425079002	CAWA-17-133314
425079004	CAWA-17-133315
1203810229	Laboratory Control Sample (LCS)
1203810232	425121001(CAWA-17-133347) Sample Duplicate (DUP)
1203810235	425121001(CAWA-17-133347) 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 425121001 (CAWA-17-133347) was selected for QC analysis.

**Matrix Spike (MS)/Post Spike (PS) Recovery Statement**

The MS/PS recovery for this sample set was within the required acceptance limits where applicable.

**Duplicate Relative Percent Difference (RPD) Statement**

The RPD between the sample and its duplicate met the acceptance limits.

**Technical Information**

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

**Holding Times**

All samples in this SDG met the specified holding time.

**Sample Dilutions**

The samples in this SDG did not require dilutions.

**Sample Re-analysis**

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

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

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

**Additional Comments**

Additional comments were not required for this SDG.

**Electronic Packaging Comment**

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

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**Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

## **GEL LABORATORIES LLC**

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

### **Qualifier Definition Report for**

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

Client SDG: 2017-1664 GEL Work Order: 425079


#### **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:** 

**Name:** Aubrey Kingsbury

**Date:** 30 JUN 2017

**Title:** Analyst I

# **Sample Data Summary**

# GEL LABORATORIES LLC

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

## Certificate of Analysis

Report Date: June 30, 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: 2017-1664

Client Sample ID: CAWA-17-133286  
Sample ID: 425079001  
Matrix: W  
Collect Date: 06-JUN-17 10:43  
Receive Date: 08-JUN-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		3.75	0.330	1.00	mg/L		1	TSM	06/21/17	2128	1673634	1
Flow Injection Analysis												
WSP-CN(T) "As Received"												
Cyanide, Total	U	ND	1.67	5.00	ug/L	1.00	1	AXH3	06/12/17	1140	1671991	2
Nutrient Analysis												
TKN "As Received"												
Nitrogen, Total Kjeldahl	U	ND	0.033	0.100	mg/L	1.00	1	KLP1	06/21/17	0953	1673872	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 335.4	EPA 335.4 Total Cyanide	AXH3	06/12/17	0925	1671990
EPA 351.2 Prep	EPA 351.2 Total Kjeldahl Nitrogen Prep	AXH3	06/19/17	1700	1673870

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



# GEL LABORATORIES LLC

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

## Certificate of Analysis

Report Date: June 30, 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: 2017-1664

Client Sample ID: CAWA-17-133314  
Sample ID: 425079002  
Matrix: W  
Collect Date: 06-JUN-17 10:43  
Receive Date: 08-JUN-17  
Collector: Client

Project: ESHL00114  
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
WSP-ANIONS "As Received"												
Bromide	J	0.0867	0.067	0.200	mg/L		1	MXL2	06/13/17	2034	1673741	1
Fluoride		0.171	0.033	0.100	mg/L		1					
Sulfate		6.08	0.133	0.400	mg/L		1					
Chloride		13.8	0.134	0.400	mg/L		2	MXL2	06/14/17	1418	1673741	2
Nutrient Analysis												
NH3 "As Received"												
Nitrogen, Ammonia		0.0967	0.017	0.050	mg/L	1.00	1	KLP1	06/15/17	1130	1673875	3
NO3NO2 "As Received"												
Nitrogen, Nitrate/Nitrite	J	0.0316	0.017	0.050	mg/L		1	AXH3	06/14/17	0812	1673506	4
PO4 "As Received"												
Phosphorus, Total as P		0.0742	0.020	0.050	mg/L	1.00	1	KLP1	06/20/17	1028	1673877	5
Solids Analysis												
TDS "As Received"												
Total Dissolved Solids		177	3.40	14.3	mg/L			KLP1	06/13/17	1542	1673663	6
Titration and Ion Analysis												
EPA 310.1 Total Alkalinity "As Received"												
Alkalinity, Total as CaCO3		97.0	1.45	4.00	mg/L			RXB5	06/14/17	1458	1673522	7
Carbonate alkalinity (CaCO3)	U	ND	1.45	4.00	mg/L							
EPA120.1 Specific Conductivity "As Received"												
Conductivity		256	1.00	1.00	umhos/cm		1	RXB5	06/30/17	1334	1678861	8
PH "As Received"												
pH at Temp 20.4C	H	7.07	0.010	0.100	SU		1	RXB5	06/14/17	1456	1673523	9

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.1 Prep	EPA 350.1 Ammonia Nitrogen Prep	AXH3	06/15/17	0855	1673874
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	AXH3	06/19/17	1700	1673876

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## Certificate of Analysis

Report Date: June 30, 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: 2017-1664

Client Sample ID: CAWA-17-133314  
Sample ID: 425079002

Project: ESHL00114  
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
The following Analytical Methods were performed:												
Method	Description					Analyst Comments						
1	EPA:300.0											
2	EPA:300.0											
3	EPA:350.1											
4	EPA:353.2											
5	EPA 365.4 1974											
6	EPA:160.1											
7	EPA:310.1											
8	EPA:120.1											
9	EPA 150.1 1982											

### Notes:

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

MDA: Minimum Detectable Activity

MDC: Minimum Detectable Concentration

Lc/LC: Critical Level

PF: Prep Factor

RL: Reporting Limit

SQL: Sample Quantitation Limit

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## Certificate of Analysis

Report Date: June 30, 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: 2017-1664

Client Sample ID: CAWA-17-133287  
Sample ID: 425079003  
Matrix: W  
Collect Date: 06-JUN-17 15:13  
Receive Date: 08-JUN-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		3.76	0.330	1.00	mg/L		1	TSM	06/21/17	2215	1673634	1
Flow Injection Analysis												
WSP-CN(T) "As Received"												
Cyanide, Total	U	ND	1.67	5.00	ug/L	1.00	1	AXH3	06/12/17	1141	1671991	2
Nutrient Analysis												
TKN "As Received"												
Nitrogen, Total Kjeldahl		0.349	0.033	0.100	mg/L	1.00	1	KLP1	06/13/17	1115	1672889	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 335.4	EPA 335.4 Total Cyanide	AXH3	06/12/17	0925	1671990
EPA 351.2 Prep	EPA 351.2 Total Kjeldahl Nitrogen Prep	KLP1	06/12/17	1630	1672888

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

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## Certificate of Analysis

Report Date: June 30, 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: 2017-1664

Client Sample ID: CAWA-17-133315  
Sample ID: 425079004  
Matrix: W  
Collect Date: 06-JUN-17 15:13  
Receive Date: 08-JUN-17  
Collector: Client

Project: ESHL00114  
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
WSP-ANIONS "As Received"												
Bromide	J	0.0782	0.067	0.200	mg/L		1	MXL2	06/10/17	0247	1672927	1
Fluoride	J	0.0917	0.033	0.100	mg/L		1					
Sulfate		9.66	0.133	0.400	mg/L		1					
Chloride		16.7	0.134	0.400	mg/L		2	MXL2	06/12/17	1620	1672927	2
Nutrient Analysis												
NH3 "As Received"												
Nitrogen, Ammonia		0.182	0.017	0.050	mg/L	1.00	1	KLP1	06/13/17	1318	1672879	3
NO3NO2 "As Received"												
Nitrogen, Nitrate/Nitrite	U	ND	0.017	0.050	mg/L		1	AXH3	06/09/17	1235	1672172	4
PO4 "As Received"												
Phosphorus, Total as P		0.122	0.020	0.050	mg/L	1.00	1	KLP1	06/13/17	1427	1672893	5
Solids Analysis												
TDS "As Received"												
Total Dissolved Solids		114	3.40	14.3	mg/L			KLP1	06/13/17	1542	1673663	6
Titration and Ion Analysis												
EPA 310.1 Total Alkalinity "As Received"												
Alkalinity, Total as CaCO3		50.8	1.45	4.00	mg/L			RXB5	06/14/17	1502	1673522	7
Carbonate alkalinity (CaCO3)	U	ND	1.45	4.00	mg/L							
EPA120.1 Specific Conductivity "As Received"												
Conductivity		184	1.00	1.00	umhos/cm		1	RXB5	06/30/17	1335	1678861	8
PH "As Received"												
pH at Temp 20.6C	H	6.83	0.010	0.100	SU		1	RXB5	06/14/17	1459	1673523	9

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.1 Prep	EPA 350.1 Ammonia Nitrogen Prep	KLP1	06/13/17	0930	1672878
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	KLP1	06/12/17	1630	1672892

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## Certificate of Analysis

Report Date: June 30, 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: 2017-1664

Client Sample ID: CAWA-17-133315  
Sample ID: 425079004

Project: ESHL00114  
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
The following Analytical Methods were performed:												
Method	Description		Analyst Comments									
1	EPA:300.0											
2	EPA:300.0											
3	EPA:350.1											
4	EPA:353.2											
5	EPA 365.4 1974											
6	EPA:160.1											
7	EPA:310.1											
8	EPA:120.1											
9	EPA 150.1 1982											

### Notes:

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

MDA: Minimum Detectable Activity

MDC: Minimum Detectable Concentration

Lc/LC: Critical Level

PF: Prep Factor

RL: Reporting Limit

SQL: Sample Quantitation Limit

# **Quality Control Summary**

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## QC Summary

Report Date: June 30, 2017

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

Contact: Mr. Keith Greene

Workorder: 425079

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Carbon Analysis</b>											
Batch	1673634										
QC1203812104	425075001	DUP									
Total Organic Carbon Average	J	0.387	J	0.373	mg/L	3.68	^	(+/-1.00)	TSM	06/21/17	19:07
QC1203812103	LCS										
Total Organic Carbon Average	10.0			9.81	mg/L			98.1 (80%-120%)		06/21/17	17:57
QC1203812277	LCSD										
Total Organic Carbon Average	10.0			9.89	mg/L	0.873		98.9 (0%-20%)		06/21/17	18:09
QC1203812102	MB										
Total Organic Carbon Average			U	ND	mg/L					06/21/17	17:45
QC1203812106	425075001	PS									
Total Organic Carbon Average	10.0	J	0.387	11.0	mg/L			106 (75%-125%)		06/21/17	19:54
<b>Flow Injection Analysis</b>											
Batch	1671991										
QC1203806301	424904001	DUP									
Cyanide, Total	U	ND	U	ND	ug/L	N/A			AXH3	06/12/17	11:10
QC1203806300	LCS										
Cyanide, Total	50.0			50.2	ug/L			100 (90%-110%)		06/12/17	11:08
QC1203806299	MB										
Cyanide, Total			U	ND	ug/L					06/12/17	11:07
QC1203806302	424904001	MS									
Cyanide, Total	100	U	ND	102	ug/L			101 (90%-110%)		06/12/17	11:11

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## QC Summary

Workorder: 425079

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Ion Chromatography</b>											
Batch	1672927										
QC1203808702	425075004	DUP									
Bromide		J	0.0828	J	0.0829	mg/L	0.121 ^	(+/-0.200)	MXL2	06/10/17	01:49
Chloride			3.64		3.64	mg/L	0.0962	(0%-20%)			
Fluoride		J	0.0877	J	0.090	mg/L	2.59 ^	(+/-0.100)			
Sulfate			3.88		3.85	mg/L	0.787	(0%-20%)			
QC1203808701	LCS										
Bromide	1.25				1.31	mg/L		105	(80%-120%)	06/09/17	23:25
Chloride	5.00				4.93	mg/L		98.5	(80%-120%)		
Fluoride	2.50				2.57	mg/L		103	(80%-120%)		
Sulfate	10.0				10.2	mg/L		102	(80%-120%)		
QC1203808700	MB										
Bromide			U		ND	mg/L				06/09/17	22:56
Chloride			U		ND	mg/L					
Fluoride			U		ND	mg/L					
Sulfate			U		ND	mg/L					
QC1203808703	425075004	PS									
Bromide	1.25	J	0.0828		1.31	mg/L		98.5	(75%-125%)	06/10/17	02:18
Chloride	5.00		3.64		8.91	mg/L		105	(75%-125%)		



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## QC Summary

Workorder: 425079

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Ion Chromatography</b>											
Batch	1672927										
Fluoride	2.50	J	0.0877	2.54	mg/L		98.2	(75%-125%)	MXL2	06/10/17	02:18
Sulfate	10.0		3.88	14.0	mg/L		101	(75%-125%)			
Batch	1673741										
QC1203810743	425079002	DUP									
Bromide		J	0.0867	J	0.0848	mg/L	2.22	^	(+/-0.200)	MXL2	06/13/17 21:03
Chloride			13.8		13.8	mg/L	0.084		(0%-20%)		06/14/17 14:46
Fluoride			0.171		0.169	mg/L	1	^	(+/-0.100)		06/13/17 21:03
Sulfate			6.08		5.94	mg/L	2.35		(0%-20%)		
QC1203810742	LCS										
Bromide	1.25			1.26	mg/L		101	(80%-120%)		06/13/17	20:06
Chloride	5.00			4.72	mg/L		94.3	(80%-120%)			
Fluoride	2.50			2.45	mg/L		97.9	(80%-120%)			
Sulfate	10.0			9.78	mg/L		97.8	(80%-120%)			
QC1203810741	MB										
Bromide			U	ND	mg/L					06/13/17	19:37
Chloride			U	ND	mg/L						
Fluoride			U	ND	mg/L						
Sulfate			U	ND	mg/L						

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## QC Summary

Workorder: 425079

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Ion Chromatography</b>											
Batch	1673741										
QC1203810744	425079002	PS									
Bromide	1.25	J	0.0867	1.31	mg/L		97.8	(75%-125%)	MXL2	06/13/17	21:32
Chloride	5.00		6.91	12.4	mg/L		110	(75%-125%)		06/14/17	15:15
Fluoride	2.50		0.171	2.57	mg/L		96	(75%-125%)		06/13/17	21:32
Sulfate	10.0		6.08	16.3	mg/L		102	(75%-125%)			
<b>Nutrient Analysis</b>											
Batch	1672172										
QC1203807680	425079004	DUP									
Nitrogen, Nitrate/Nitrite		U	ND	U	ND	mg/L	N/A		AXH3	06/09/17	12:36
QC1203806724	LCS										
Nitrogen, Nitrate/Nitrite	1.00			1.00	mg/L		100	(90%-110%)		06/09/17	10:45
QC1203806723	MB										
Nitrogen, Nitrate/Nitrite			U	ND	mg/L					06/09/17	10:43
QC1203807682	425079004	PS									
Nitrogen, Nitrate/Nitrite	1.00	U	ND	0.950	mg/L		95	(90%-110%)		06/09/17	12:42
Batch	1672879										
QC1203808634	425079004	DUP									
Nitrogen, Ammonia			0.182	0.173	mg/L	5.07	^	(+/-0.050)	KLP1	06/13/17	13:10
QC1203808633	LCS										
Nitrogen, Ammonia	1.00			0.937	mg/L		93.7	(90%-110%)		06/13/17	12:52
QC1203808632	MB										
Nitrogen, Ammonia			J	0.0252	mg/L					06/13/17	12:51

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## QC Summary

Workorder: 425079

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Nutrient Analysis</b>											
Batch	1672879										
QC1203808636	425079004	MS									
Nitrogen, Ammonia	1.00	0.182		1.13	mg/L		94.8	(90%-110%)	KLP1	06/13/17	13:11
Batch	1672889										
QC1203808650	425079003	DUP									
Nitrogen, Total Kjeldahl		0.349		0.329	mg/L	5.9 ^		(+/-0.100)	KLP1	06/13/17	11:16
QC1203808649	LCS										
Nitrogen, Total Kjeldahl	1.00			0.925	mg/L		92.5	(90%-110%)		06/13/17	11:14
QC1203808648	MB										
Nitrogen, Total Kjeldahl			U	ND	mg/L					06/13/17	11:13
QC1203808651	425079003	MS									
Nitrogen, Total Kjeldahl	1.00	0.349		1.31	mg/L		96.1	(90%-110%)		06/13/17	11:17
Batch	1672893										
QC1203808660	425079004	DUP									
Phosphorus, Total as P		0.122		0.103	mg/L	16.9 ^		(+/-0.050)	KLP1	06/13/17	14:28
QC1203808659	LCS										
Phosphorus, Total as P	1.00			0.982	mg/L		98.2	(80%-124%)		06/13/17	14:24
QC1203808658	MB										
Phosphorus, Total as P			U	ND	mg/L					06/13/17	14:23
QC1203808661	425079004	MS									
Phosphorus, Total as P	1.00	0.122		1.22	mg/L		110	(63%-139%)		06/13/17	14:29
Batch	1673506										
QC1203810167	425075002	DUP									
Nitrogen, Nitrate/Nitrite		0.593		0.591	mg/L	0.338		(0%-20%)	AXH3	06/14/17	08:04

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## QC Summary

Workorder: 425079

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Nutrient Analysis</b>											
Batch	1673506										
QC1203810165	LCS										
Nitrogen, Nitrate/Nitrite	1.00			0.985	mg/L		98.5	(90%-110%)	AXH3	06/14/17	08:01
QC1203810166	LCSD										
Nitrogen, Nitrate/Nitrite	1.00			1.00	mg/L	1.51	100	(0%-20%)		06/14/17	08:02
QC1203810164	MB										
Nitrogen, Nitrate/Nitrite			U	ND	mg/L					06/14/17	07:59
QC1203810168	425075002	PS									
Nitrogen, Nitrate/Nitrite	1.00	0.593		1.55	mg/L		95.7	(90%-110%)		06/14/17	08:05
Batch	1673872										
QC1203811091	425079001	DUP									
Nitrogen, Total Kjeldahl		U	ND	J	0.038	mg/L	200		KLP1	06/21/17	09:54
QC1203811090	LCS										
Nitrogen, Total Kjeldahl	1.00			1.10	mg/L		110	(90%-110%)		06/21/17	09:50
QC1203811089	MB										
Nitrogen, Total Kjeldahl			U	ND	mg/L					06/21/17	09:50
QC1203811092	425079001	MS									
Nitrogen, Total Kjeldahl	1.00	U	ND	0.974	mg/L		97.4	(90%-110%)		06/21/17	09:55
Batch	1673875										
QC1203811099	425079002	DUP									
Nitrogen, Ammonia		0.0967		0.0902	mg/L	6.96	^	(+/-0.050)	KLP1	06/15/17	11:36
QC1203811098	LCS										
Nitrogen, Ammonia	1.00			1.01	mg/L		101	(90%-110%)		06/15/17	11:28
QC1203811097	MB										
Nitrogen, Ammonia			U	ND	mg/L					06/15/17	11:27

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## QC Summary

Workorder: 425079

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Nutrient Analysis</b>											
Batch	1673875										
QC1203811100	425079002	MS									
Nitrogen, Ammonia	1.00	0.0967		1.03	mg/L		93.3	(90%-110%)	KLP1	06/15/17	11:37
Batch	1673877										
QC1203811108	425079002	DUP									
Phosphorus, Total as P		0.0742		0.0979	mg/L	27.5	^	(+/-0.050)	KLP1	06/20/17	10:29
QC1203811105	LCS										
Phosphorus, Total as P	1.00			0.975	mg/L		97.5	(80%-124%)		06/20/17	10:38
QC1203811104	MB										
Phosphorus, Total as P			J	0.0324	mg/L					06/20/17	10:38
QC1203811109	425079002	MS									
Phosphorus, Total as P	1.00	0.0742		1.23	mg/L		116	(63%-139%)		06/20/17	10:30
<b>Solids Analysis</b>											
Batch	1673663										
QC1203810556	425075002	DUP									
Total Dissolved Solids		114		114	mg/L	0		(0%-5%)	KLP1	06/13/17	15:42
QC1203810549	LCS										
Total Dissolved Solids	300			290	mg/L		96.7	(95%-105%)		06/13/17	15:42
QC1203810548	MB										
Total Dissolved Solids			U	ND	mg/L					06/13/17	15:42
<b>Titration and Ion Analysis</b>											
Batch	1673522										
QC1203810232	425121001	DUP									
Alkalinity, Total as CaCO3		62.0		61.8	mg/L	0.323		(0%-20%)	RXB5	06/14/17	15:10
Carbonate alkalinity (CaCO3)	U	ND	U	ND	mg/L	N/A					

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## QC Summary

Workorder: 425079

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Titration and Ion Analysis</b>											
Batch	1673522										
QC1203810229	LCS										
Alkalinity, Total as CaCO3	100			105	mg/L		105	(90%-110%)	RXB5	06/14/17	13:54
QC1203810235	425121001	MS									
Alkalinity, Total as CaCO3	100	62.0		166	mg/L		104	(80%-120%)		06/14/17	15:12
Batch	1673523										
QC1203810238	425121001	DUP									
pH		H	8.04	H	8.05	SU	0.124	(0%-5%)	RXB5	06/14/17	15:10
QC1203811672	LCS										
pH	7.00			7.00	SU		100	(99%-101%)		06/14/17	14:49
Batch	1678861										
QC1203822828	425121001	DUP									
Conductivity		190		197	umhos/cm	3.31		(0%-10%)	RXB5	06/30/17	13:39
QC1203822826	LCS										
Conductivity	1410			1410	umhos/cm		99.4	(95%-105%)		06/30/17	13:23

### Notes:

- < Result is less than value reported
- > Result is greater than value reported
- B The target analyte was detected in the associated blank.
- E General Chemistry--Concentration of the target analyte exceeds the instrument calibration range
- H Analytical holding time was exceeded
- J Value is estimated
- N/A RPD or %Recovery limits do not apply.
- N1 See case narrative
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
- R Per section 9.3.4.1 of Method 1664 Revision B, due to matrix spike recovery issues, this result may not be reported or used for regulatory compliance purposes.
- R Sample results are rejected

# GEL LABORATORIES LLC

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

## QC Summary

Workorder: 425079

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

<b>Mo.Day Yr.</b> 15-JUN-17	<b>Division:</b> Industrial	<b>Quality Criteria:</b> Specifications	<b>Type:</b> Process
<b>Instrument Type:</b> ELECTRODE	<b>Test / Method:</b> EPA 150.1, SM 4500-H B, SW846 9040C	<b>Matrix Type:</b> Liquid	<b>Client Code:</b> BELI, ESHL, UCOR
<b>Batch ID:</b> 1673523	<b>Sample Numbers:</b> See Below		
<b>Potentially affected work order(s)(SDG):</b> 423944(2017-1573),423945(2017-1572),424030(2017-1589),424080,424916(2017-1657),424952,425075(2017-1667),425079(2017-1664),425115(2017-1690),425121(2017-1689) <b>Application Issues:</b> Sample received out of holding			
<b>Specification and Requirements</b>		<b>DER Disposition:</b>	
<b>Exception Description:</b>			
1. Sample received out of holding:  423944 001  423945 001  424030 001  424080 004  424916 002  424952 001,002,003  425075 002,004  425079 002,004  425115 002  425121 001  QC 1203810237DUP,1203810238DUP		1. Samples (See Below) were received by the laboratory outside of the method specified holding time. The data is qualified. 1203810237 (EMWGW7913DUP) [Received 25-MAY-17, out of holding 24-MAY-17]. 1203810238 (CAWA-17-133347DUP) [Received 09-JUN-17, out of holding 07-JUN-17]. 423944001 (WST35-17-135774) [Received 24-MAY-17, out of holding 22-MAY-17]. 423945001 (WST35-17-135775) [Received 24-MAY-17, out of holding 22-MAY-17]. 424030001 (WST03-17-135771) [Received 25-MAY-17, out of holding 23-MAY-17]. 424080004 (EMWGW7913) [Received 25-MAY-17, out of holding 24-MAY-17]. 424916002 (CAWA-17-133329) [Received 07-JUN-17, out of holding 05-JUN-17]. 424952001 (1. Kaiser Capitol Hill - Cold Water) [Received 07-JUN-17, out of holding 06-JUN-17]. 424952002 (2. Kaiser Capitol Hill - Hot Water) [Received 07-JUN-17, out of holding 06-JUN-17]. 424952003 (3. Kaiser Capitol Hill - RO/DI) [Received 07-JUN-17, out of holding 06-JUN-17]. 425075002 (CAWA-17-133312) [Received 08-JUN-17, out of holding 06-JUN-17]. 425075004 (CAWA-17-133313) [Received 08-JUN-17, out of holding 06-JUN-17]. 425079002 (CAWA-17-133314) [Received 08-JUN-17, out of holding 06-JUN-17]. 425079004 (CAWA-17-133315) [Received 08-JUN-17, out of holding 06-JUN-17]. 425115002 (CAWA-17-133326) [Received 09-JUN-17, out of holding 07-JUN-17]. 425121001 (CAWA-17-133347) [Received 09-JUN-17, out of holding 07-JUN-17].	

**Originator's Name:**

Rachael Bell 15-JUN-17

**Data Validator/Group Leader:**

Elzbieta Szulc 15-JUN-17

July 19, 2017

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

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

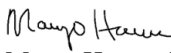
Re: LANL- WQH Water Samples  
Work Order: 425079  
SDG: 2017-1664

Dear Mr. Greene:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the following analytical results for the sample(s) we received on June 08, 2017, and analyzed for Explosives by LCMSMS, General Chemistry, Metals and Perchlorates by LCMSMS. This revised data report has been prepared and reviewed in accordance with GEL's standard operating procedures. This package has been revised to include the results for HMX, DNX, and TNX on the HE Form 1s.

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

Sincerely,

  
Margo Herron for  
Valerie Davis  
Project Manager

Chain of Custody: 2017-1664  
Enclosures



**ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)**  
**LANL- WQH Water Samples**  
**Work Order #: 425079**  
**SDG: 2017-1664**

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# Case Narrative

**Case Narrative for  
ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)  
LANL- WQH Water Samples  
Workorder #: 425079  
SDG # : 2017-1664**

**June 30, 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 June 08, 2017 for analysis. The samples were delivered with proper chain of custody documentation and signatures. The samples were screened according to GEL Standard Operating Procedure. All sample containers arrived without any visible signs of tampering or breakage. Containers were checked for pH, where appropriate, and matched the preservative as documented on the accompanying chain of custody. Shipping container temperature was within specification (0 - 6C). Shipping container temperatures were checked, documented, and within specifications. There are no additional comments concerning sample receipt.

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

<b><u>Laboratory ID</u></b>	<b><u>Client ID</u></b>
425079001	CAWA-17-133286
425079002	CAWA-17-133314
425079003	CAWA-17-133287
425079004	CAWA-17-133315

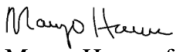
**Case Narrative**

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

**Data Package**

The enclosed data package contains the following sections: Case Narrative, Chain of Custody, Cooler Receipt Checklist, Data Package Qualifier Definitions and data from the following fractions: Explosives by LCMSMS, 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 30 June 2017**

<b>State</b>	<b>Certification</b>
Alaska	UST-0110
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC00012
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA170010
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122017-1
New Hampshire NELAP	205415
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	9904
Pennsylvania NELAP	68-00485
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-17-12
Utah NELAP	SC000122017-22
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

# **Chain of Custody and Supporting Documentation**

Chain of Custody/Analysis Request 425079



Laboratories LLC

## SAMPLE RECEIPT &amp; REVIEW FORM

Client: <b>ESHCL</b>		SDG/AR/COC/Work Order: <b>425079</b>	
Received By: <b>ZKW</b>		Date Received: <b>6/8/17</b>	
Carrier and Tracking Number		Circle Applicable: <input checked="" type="radio"/> FedEx Express <input type="radio"/> FedEx Ground <input type="radio"/> UPS <input type="radio"/> Field Services <input type="radio"/> Courier <input type="radio"/> Other	
		<b>5906 1782 1812</b> <b>5906 1782 1801</b>	
Suspected Hazard Information	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.	
Shipped as a DOT Hazardous?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Hazard Class Shipped: _____ UN#: _____	
COC/Samples marked or classified as radioactive?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <b>0</b> <b>CPM</b> mR/Hr Classified as: Rad 1 Rad 2 Rad 3	
Is package, COC, and/or Samples marked HAZ?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	If yes, select Hazards below, and contact the GEL Safety Group. PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other: _____	
Sample Receipt Criteria	Yes	NA	No
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4 Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5 Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6 Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7 Do any samples require Volatile Analysis?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8 Samples received within holding time?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11 Number of containers received match number indicated on COC?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
12 Are sample containers identifiable as GEL provided?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Comments (Use Continuation Form if needed): <b>* TOC cont. for -133284, NH<sub>3</sub> cont. for -133312, Hg; TOC cont. for -133285, NH<sub>3</sub> cont. for -133313, Hg, TOC, ; 1 Exp. Cont. for -133286, All cont. for -133314, All 3 Exp. Cont. for -133287, and Metals Cont. for -133315</b>			

PM (or PMA) review: Initials

**MEJA**

Date

**6/9/17**

Page

**1**

of

**1**

GL-CHL-SR-001 Rev 5



Laboratories LLC

## SAMPLE RECEIPT &amp; REVIEW FORM

Client: <u>ESHC</u>		SDG/AR/COC/Work Order: <u>425079</u>	
Received By: <u>ZKW</u>		Date Received: <u>6/12/17</u>	
Carrier and Tracking Number		Circle Applicable: <input checked="" type="radio"/> FedEx Express <input type="radio"/> FedEx Ground <input type="radio"/> UPS <input type="radio"/> Field Services <input type="radio"/> Courier <input type="radio"/> Other	
		<u>5908 1782 1777</u>	
Suspected Hazard Information	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.	
Shipped as a DOT Hazardous?	<input type="checkbox"/>	Hazard Class Shipped: _____ UN#: _____	
COC/Samples marked or classified as radioactive?	<input checked="" type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0</u> <u>CPM</u> mR/Hr Classified as: Rad 1 Rad 2 Rad 3	
Is package, COC, and/or Samples marked HAZ?	<input checked="" type="checkbox"/>	If yes, select Hazards below, and contact the GEL Safety Group. <input checked="" type="checkbox"/> PCB's <input type="checkbox"/> Flammable <input type="checkbox"/> Foreign Soil <input type="checkbox"/> RCRA <input type="checkbox"/> Asbestos <input type="checkbox"/> Beryllium <input type="checkbox"/> Other:	

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Chain of custody documents included with shipment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Preservation Method: Wet Ice <u>Ice Packs</u> Dry ice None Other: *all temperatures are recorded in Celsius TEMP: <u>20°C</u>
4 Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <u>IR3-16</u> Secondary Temperature Device Serial # (If Applicable): _____
5 Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6 Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's and Containers Affected: If Preservation added, Lot#: _____
7 Do any samples require Volatile Analysis?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	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) <input checked="" type="checkbox"/> VOA vials free of headspace? Yes ___ No ___ N/A ___ Sample ID's and containers affected: _____
8 Samples received within holding time?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected: _____
9 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected: _____
10 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected: _____
11 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected: _____
12 Are sample containers identifiable as GEL provided?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Comments (Use Continuation Form if needed):  
\* Rec'd missing Samples from 6/8/17

PM (or PMA) review: Initials

MDA

Date

6/13/17

Page

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of 1

GL-CHL-SR-001 Rev 5

**Subject:** RE: Re: Missing LANL Samples  
**From:** "Greene, Keith Robert" <kgreene@lanl.gov>  
**Date:** 6/12/2017 5:47 PM  
**To:** Margo Herron <Margo.Herron@gel.com>

Please analyze

---

**From:** Margo Herron [mailto:Margo.Herron@gel.com]  
**Sent:** Monday, June 12, 2017 1:35 PM  
**To:** Greene, Keith Robert <kgreene@lanl.gov>  
**Cc:** team.davis <team.davis@gel.com>  
**Subject:** Fwd: Re: Missing LANL Samples

Hi Keith,

The missing cooler came in on Saturday. The samples were out of temperature when the cooler arrived. Please advise.

Thanks,  
Margo Herron

----- Forwarded Message -----

**Subject:** Re: Missing LANL Samples  
**Date:** Fri, 09 Jun 2017 15:16:06 -0400  
**From:** Julie Robinson <Julie.Robinson@gel.com>  
**To:** Greene, Keith Robert <kgreene@lanl.gov>  
**CC:** Margo Herron <Margo.Herron@gel.com>, team.davis <team.davis@gel.com>

Good afternoon Keith,

GEL did not receive the missing cooler today, 6/9/17.

Please let us know if any questions.  
Thanks - Julie

On 6/9/2017 10:15 AM, Greene, Keith Robert wrote:

These were all collected and they are not here, so hopefully cooler will show up

---

**From:** Margo Herron [mailto:Margo.Herron@gel.com]  
**Sent:** Friday, June 09, 2017 7:03 AM  
**To:** Greene, Keith Robert <kgreene@lanl.gov>  
**Cc:** team.davis <team.davis@gel.com>  
**Subject:** Missing LANL Samples

Good Morning,

We had several containers that did not arrive yesterday. Please see below. Please advise.

Chain of custody 2017-1667 Sample CAWA-17-133284 TOC container

Sample CAWA-17-133312 NH3 container  
Sample CAWA-17-133285 HG & TOC container  
Sample CAWA-17-133313 HG & TOC container

Chain of custody 2017-1664    Sample CAWA-17-133286 one explosive container  
Sample CAWA-17-133314 all three containers  
Sample CAWA-17-133287 all three explosive containers  
Sample CAWA-17-133315 metals container

Thanks,  
Margo Herron

--

**Margo Herron**  
**Project Manager Assistant**

2040 Savage Road, Charleston, SC 29407 | PO Box 30712, Charleston, SC 29417  
Office Main: 843.556.8171 Ext. 4707 | Fax: 843.766.1178  
E-Mail: [Margo.Herron@gel.com](mailto:Margo.Herron@gel.com) | Website: [www.gel.com](http://www.gel.com)  
**Environmental | Engineering | Surveying | Analytical Testing**

---

Ask me about GEL's new testing capability for Perfluorinated chemicals (PFCs)!  
<http://www.gellaboratories.com>

--

**Julie Robinson**  
**Project Manager**

2040 Savage Road, Charleston, SC 29407 | PO Box 30712, Charleston, SC 29417  
Office Direct: 843.769.7393 | Office Main: 843.556.8171 | Fax: 843.766.1178  
E-Mail: [julie.robinson@gel.com](mailto:julie.robinson@gel.com) | Website: [www.gel.com](http://www.gel.com)  
**Environmental | Engineering | Surveying | Analytical Testing**

---

Ask me about GEL's new testing capability for Perfluorinated chemicals (PFCs)!  
<http://www.gellaboratories.com>

---

Ask me about GEL's new testing capability for Perfluorinated chemicals (PFCs)!  
<http://www.gellaboratories.com>

SHIP DATE: 07 JUN 17  
ACTGCT: 48.0 LB MAN  
CRD: 0014176/CAFE2916

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

BILL SENDER

LOS ALAMOS, NM 87545  
UNITED STATES US

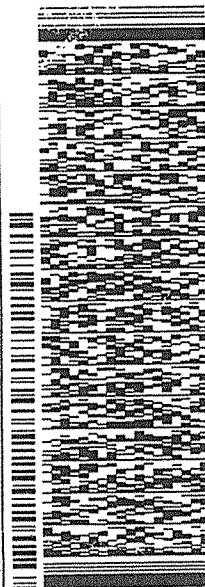
TO **VALERIE DAVIS**  
**GENERAL ENGINEERING LAB**  
**2040 SAVAGE RD**

**CHARLESTON SC 29407**

(843) 666-8171

REF: WE6L11551000

FedEx  
Express



THU - 08 JUN 10:30A  
PRIORITY OVERNIGHT

TRK# 5908 1782 1812

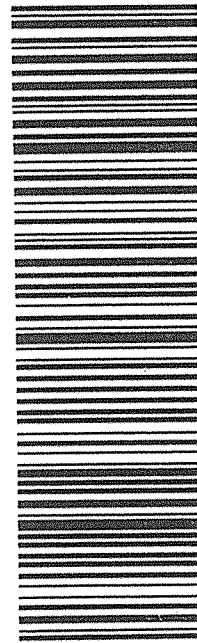
0201

**X7 RBWA**

29407

SC-US

CHS



Part # 156148V-434 R1T2 06/15 \*\*

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

LOS ALAMOS, NM 87545  
UNITED STATES US

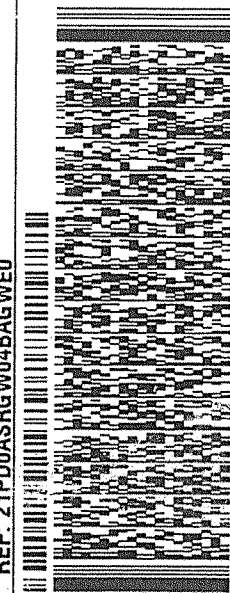
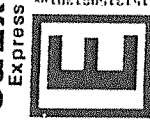
TO **VALERIE DAVIS**  
**GENERAL ENGINEERING LAB**  
**2040 SAVAGE RD**

**CHARLESTON SC 29407**

(843) 666-8171

REF: 21PD0ASRGW04BAGWEO

FedEx  
Express



THU - 08 JUN 10:30A  
PRIORITY OVERNIGHT

2 of 2

MPS# 5908 1782 1801

0263

Mstr# 5908 1782 1797

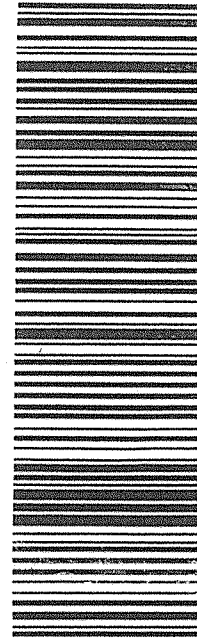
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**X7 RBWA**

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SC-US

CHS



Part # 156148V-434 R1T2 06/15 \*\*

SHIP DATE: 07 JUN 17  
ACTGCT: 61.0 LB MAN  
CRD: 0014176/CAFE2916

BILL SENDER

LOS ALAMOS, NM 87545  
UNITED STATES US

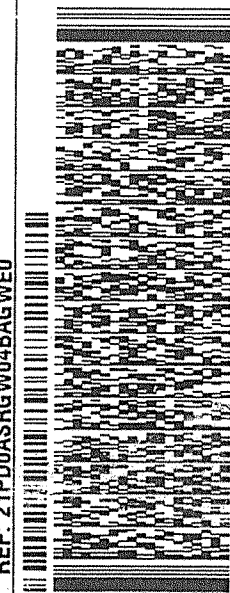
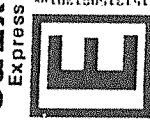
TO **VALERIE DAVIS**  
**GENERAL ENGINEERING LAB**  
**2040 SAVAGE RD**

**CHARLESTON SC 29407**

(843) 666-8171

REF: 21PD0ASRGW04BAGWEO

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PRIORITY OVERNIGHT

2 of 2

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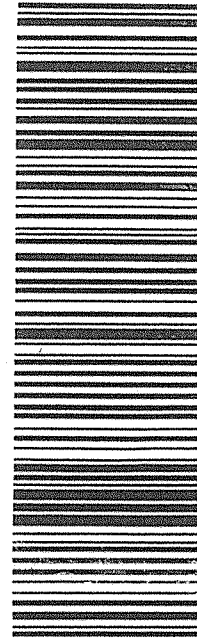
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**X7 RBWA**

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SC-US

CHS



Part # 156148V-434 R1T2 06/15 \*\*



590817821797  
Los Alamos Natl Lab.  
Keith Greene  
TA00 Bldg 1237 DpU 03  
LOS ALAMOS  
NM, 87545 5056659966

Part # 150140V-434 RT2 APV EXP 12/17 \*\*\*

General Engineering Lab  
Valerie Davis  
2040 Savage Rd  
CHARLESTON, SC 29407  
843-556-8171

224 RE



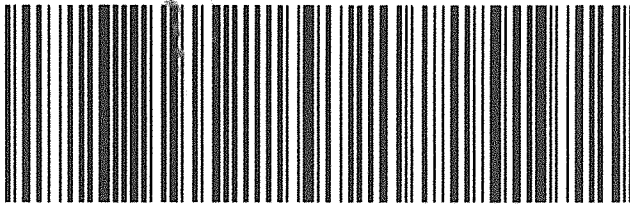
5908 1782 1797

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123682 09Jun 13:57 MEMH 547C1/A502/9561

# **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.

# **Perchlorates by LCMSMS Analysis**

# Case Narrative

**Perchlorates by LCMSMS  
Technical Case Narrative  
ARS International, LLC (ARSL)  
SDG #: 2017-1664  
Work Order #: 425079**

**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: 1673882

Prep Batch Number: 1673881

**Sample Analysis**

<b>Sample ID</b>	<b>Client ID</b>
425079002	425079002 (CAWA-17-133314)
425079004	425079004 (CAWA-17-133315)
1203811124	Interference Check Sample (ICS)
1203811120	Method Blank (MB)
1203811121	Laboratory Control Sample (LCS)
1203811122	424916002(CAWA-17-133329) Matrix Spike (MS)
1203811123	424916002(CAWA-17-133329) 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 424916002 (CAWA-17-133329) was chosen for matrix spike and matrix spike duplicate analysis.

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

The MS recoveries were within the established acceptance limits.

### **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**

The samples in this SDG did not require dilutions.

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

Re-extractions or re-analyses were not required in this SDG.

#### **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**

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: 2017-1664 GEL Work Order: 425079

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

- \* A quality control analyte recovery is outside of specified acceptance criteria
- \*\* Analyte is a surrogate compound
- J Value is estimated
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
- DL Indicates that sample is diluted.
- RA Indicates that sample is re-analyzed without re-extraction.
- RE Indicates that sample is re-extracted.

#### Review/Validation

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

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

Signature: 

Name: Michael Penny

Date: 16 JUN 2017

Title: Group Leader

# **Sample Data Summary**

## Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: SW846 6850 ModifiedMatrix: WATERExtraction Batch ID: 1673881Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAWA-17-133314Date Received: 08-JUN-17GEL Job No (SDG): 2017-1664GEL Sample ID: 425079002Date Filtered: 14-JUN-17Injection 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	14-JUN-17 21:20	per0614021a
	Perchlorate Isotope Ratio						1	14-JUN-17 21:20	per0614021a
14797-73-0	Perchlorate-101	.05	.2	0.200	ug/L	U	1	14-JUN-17 21:20	per0614021a
	Perchlorate-O(18)			0.426	ug/L		1	14-JUN-17 21:20	per0614021a

^ 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 LLCLab Code: GELInstrument: LCMSMSMethod: SW846 6850 ModifiedMatrix: WATERExtraction Batch ID: 1673881Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAWA-17-133315Date Received: 08-JUN-17GEL Job No (SDG): 2017-1664GEL Sample ID: 425079004Date Filtered: 14-JUN-17Injection 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	14-JUN-17 21:33	per0614022a
	Perchlorate Isotope Ratio						1	14-JUN-17 21:33	per0614022a
14797-73-0	Perchlorate-101	.05	.2	0.200	ug/L	U	1	14-JUN-17 21:33	per0614022a
	Perchlorate-O(18)			0.431	ug/L		1	14-JUN-17 21:33	per0614022a

^ 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):** 2017-1664

**Extract Batch Code:** 1673881

**Date Filtered:** 14-JUN-17

**Matrix:** WATER

**Sample ID:** 1203811121

Analyte^	True	Found	Units	%Rec	Q	Control Limits
Perchlorate	0.200	.19	ug/L	95		85 - 115
Perchlorate Isotope Ratio		2.75				-
Perchlorate-101	0.200	.206	ug/L	103		85 - 115
Perchlorate-O(18)		.441	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):** 2017-1664

**Extract Batch Code:** 1673881

**Date Extracted:** 14-JUN-17

**GEL MS/PS ID:** 1203811122

**Client ID:** CAWA-17-133329

**GEL MSD/PSD ID:** 1203811123

**QC Type:** MS

Compound^	Spike Added	Sample Conc	Units	MS Conc	MS Rec #	MSD Conc	MSD Rec #	RPD #	RPD Limit	Recovery Limit
Perchlorate	0.200	0.331	ug/L	0.515	92	.509	89	1	30	75 - 125
Perchlorate Isotope Ratio	0	2.92		2.81		2.93		4		-
Perchlorate-101	0.200	0.338	ug/L	0.548	105	.52	91	5	30	75 - 125
Perchlorate-O(18)	0	0.398	ug/L	0.406		.41		1		-

^ 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 LLCLab Code: GELInstrument: LCMSMSMethod: EPA 6850 ModifiedMatrix: WATERExtraction Batch ID: 1673881Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

MBDate Received: 14-JUN-17GEL Job No (SDG): 2017-1664GEL Sample ID: 1203811120Date Filtered: 14-JUN-17Injection 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	14-JUN-17 19:36	per0614013a
	Perchlorate Isotope Ratio						1	14-JUN-17 19:36	per0614013a
14797-73-0	Perchlorate-101	.05	.2	0.200	ug/L	U	1	14-JUN-17 19:36	per0614013a
	Perchlorate-O(18)			0.457	ug/L		1	14-JUN-17 19:36	per0614013a

^ 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 LLCLab Code: GELInstrument: LCMSMSMethod: EPA 6850 ModifiedMatrix: WATERExtraction Batch ID: 1673881Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

LCSDate Received: 14-JUN-17GEL Job No (SDG): 2017-1664GEL Sample ID: 1203811121Date Filtered: 14-JUN-17Injection 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	0.190	ug/L	J	1	14-JUN-17 19:49	per0614014a
	Perchlorate Isotope Ratio			2.75			1	14-JUN-17 19:49	per0614014a
14797-73-0	Perchlorate-101	.05	.2	0.206	ug/L		1	14-JUN-17 19:49	per0614014a
	Perchlorate-O(18)			0.441	ug/L		1	14-JUN-17 19:49	per0614014a

^ 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 LLCLab Code: GELInstrument: LCMSMSMethod: SW846 6850 ModifiedMatrix: WATERExtraction Batch ID: 1673881Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

ICS

Date Received:

GEL Job No (SDG): 2017-1664GEL Sample ID: 1203811124Date Filtered: 14-JUN-17Injection 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	0.209	ug/L		1	14-JUN-17 20:02	per0614015a
	Perchlorate Isotope Ratio			3.1			1	14-JUN-17 20:02	per0614015a
14797-73-0	Perchlorate-101	.05	.2	0.202	ug/L		1	14-JUN-17 20:02	per0614015a
	Perchlorate-O(18)			0.435	ug/L		1	14-JUN-17 20:02	per0614015a

^ 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 LLCLab Code: GELInstrument: LCMSMSMethod: SW846 6850 ModifiedMatrix: WATERExtraction Batch ID: 1673881Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAWA-17-133329MSDate Received: 07-JUN-17GEL Job No (SDG): 2017-1664GEL Sample ID: 1203811122Date Filtered: 14-JUN-17Injection 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	0.515	ug/L		1	14-JUN-17 20:28	per0614017a
	Perchlorate Isotope Ratio			2.81			1	14-JUN-17 20:28	per0614017a
14797-73-0	Perchlorate-101	.05	.2	0.548	ug/L		1	14-JUN-17 20:28	per0614017a
	Perchlorate-O(18)			0.406	ug/L		1	14-JUN-17 20:28	per0614017a

^ 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 LLCLab Code: GELInstrument: LCMSMSMethod: SW846 6850 ModifiedMatrix: WATERExtraction Batch ID: 1673881Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAWA-17-133329MSDDate Received: 07-JUN-17GEL Job No (SDG): 2017-1664GEL Sample ID: 1203811123Date Filtered: 14-JUN-17Injection 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	0.509	ug/L		1	14-JUN-17 20:41	per0614018a
	Perchlorate Isotope Ratio			2.93			1	14-JUN-17 20:41	per0614018a
14797-73-0	Perchlorate-101	.05	.2	0.520	ug/L		1	14-JUN-17 20:41	per0614018a
	Perchlorate-O(18)			0.410	ug/L		1	14-JUN-17 20:41	per0614018a

^ 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 =

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

# **Explosives by LCMSMS Analysis**



# Case Narrative

**Explosives by LCMSMS  
Technical Case Narrative  
ARS International, LLC (ARSL)  
SDG #: 2017-1664  
Work Order #: 425079**

**Method/Analysis Information**

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

Analytical Method: SW846 3535A/8330B

Prep Method: SW846 3535A

Analytical Batch Number: 1672553

Prep Batch Number: 1672551

**Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
425079001	CAWA-17-133286
1203807731	Method Blank (MB)
1203807732	Laboratory Control Sample (LCS)
1203807733	424916001(CAWA-17-133301) Matrix Spike (MS)
1203807734	424916001(CAWA-17-133301) Matrix Spike Duplicate (MSD)

**Preparation/Analytical Method Verification**

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-068 REV# 7.

**Calibration Information**

**Initial Calibration**

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

**Calibration Verification Standard Requirements**

All continuing calibration verification standards (CCV) have not met requirements of 80-120% for sample 425079001 (CAWA-17-133286) in this SDG. Please refer to Form 7 of the data package for a list of recoveries. Since the recoveries are biased high and target analytes were not detected in the associated samples, the data are considered unaffected. The data are reported.

**Calibration Blank Requirements**

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

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

#### **CRI Requirements**

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

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

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

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

##### **Surrogate Recoveries**

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

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

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

Sample	Analyte	Value
1203807732 (LCS)	2,6-Diamino-4-nitrotoluene	137* (53%-127%)
	TATB	148* (47%-135%)

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

Client sample 424916001 (CAWA-17-133301) was chosen for matrix spike and matrix spike duplicate analysis.

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

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

Sample	Analyte	Value
1203807733 (CAWA-17-133301MS)	TATB	157* (38%-149%)

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

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

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

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

#### **Technical Information**

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

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

**Preparation/Analytical Method Verification**

All procedures were performed as stated in the SOP.

**Sample Dilutions**

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

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

Sample 425079001 (CAWA-17-133286) was re-analyzed to confirm potential carryover from the previous sample analysis. The re-analysis data are reported.

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

Data exception report (DER) 1646371 was generated for samples 1203807732 (LCS) and 1203807733 (CAWA-17-133301MS) in this SDG/batch.

**Manual Integrations**

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

**Additional Comments**

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

**System Configuration**

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

**Electronic Packaging Comment**

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

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

**Chromatographic Columns**

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

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

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

### **Method/Analysis Information**

<b>Procedure:</b>	<b>The Processing, Extraction, and Analysis of Nitroaromatics, Nitroamines, and Nitrate Esters by SW-846 8330B</b>
Analytical Method:	SW846 3535A/8330B
Prep Method:	SW846 3535A
Analytical Batch Number:	1673460
Prep Batch Number:	1673459

### **Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
425079003	CAWA-17-133287
1203810014	Method Blank (MB)
1203810015	Laboratory Control Sample (LCS)
1203810016	425121002(CAWA-17-133348) Matrix Spike (MS)
1203810017	425121002(CAWA-17-133348) Matrix Spike Duplicate (MSD)

### **Preparation/Analytical Method Verification**

#### **SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-068 REV# 7.

### **Calibration Information**

#### **Initial Calibration**

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

#### **Calibration Verification Standard Requirements**

All continuing calibration verification standards (CCV) have not met requirements of 80-120% for 425079003 (CAWA-17-133287) in this SDG. Please refer to Form 7 of the data package for a list of recoveries. A LLOQ level standard was analyzed following the biased low CCV with all target analytes meeting acceptance limits. Since the target analyte was not detected in the associated samples, the data are reported. All continuing calibration verification standards (CCV) have not met requirements of 80-120% for 425079003 (CAWA-17-133287) in this SDG. Please refer to Form 7 of the data package for a list of recoveries. Since the recoveries are biased high and target analytes were not detected in the associated samples, the data are considered unaffected. The data are reported.

#### **Calibration Blank Requirements**

All initial and continuing calibration blanks (ICB and CCB) bracketing the analyses associated with this batch for this analysis were within acceptance criteria. Due to software limitations, the CCBs and/or the ICBs may have a concentration for target analytes in the Found column. These values should be zero.

**CRI Requirements**

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

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

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

**Surrogate Recoveries**

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

**Laboratory Control Sample (LCS) Recovery**

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

Sample	Analyte	Value
1203810015 (LCS)	TATB	151* (47%-135%)

**QC Sample Designation**

Client sample 425121002 (CAWA-17-133348) was chosen for matrix spike and matrix spike duplicate analysis.

**Matrix Spike (MS) Recovery Statement**

One or more of the required spiking analytes were not within the acceptance limits in the matrix spike duplicate (MSD). While the MSD exhibited a high bias, both the LCS and MS met acceptance limits for (insert compound name). Since (insert compound name) was not detected in the associated samples, the data are reported.

Sample	Analyte	Value
1203810017 (CAWA-17-133348MSD)	o-Nitrotoluene	49* (56%-119%)

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

The RPD values between the MS and MSD (See Below) were not within the acceptance limits. Since all other RPD values met acceptance criteria, the noted exceptions are attributed to vagaries in the extraction process. The data are reported.

Sample	Analyte	Value
1203810016MS and 1203810017MSD (CAWA-17-133348)	2,4-Diamino-6-nitrotoluene	36* (0%-30%)
	2,6-Diamino-4-nitrotoluene	32* (0%-30%)
	o-Nitrotoluene	52* (0%-30%)
	tris(o-cresyl) phosphate	36* (0%-30%)

**Internal Standard (ISTD) Acceptance**

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

## **Technical Information**

### **Holding Time Specifications**

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

### **Preparation/Analytical Method Verification**

All procedures were performed as stated in the SOP.

### **Sample Dilutions**

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

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

Re-extractions or re-analyses were not required in this SDG in this analytical batch for this analysis.

## **Miscellaneous Information**

### **Data Exception (DER) Documentation**

Data exception report (DER) 1647079 was generated for samples 1203810015 (LCS) and 1203810017 (CAWA-17-133348MSD) in this SDG/batch.

### **Manual Integrations**

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

### **Additional Comments**

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

## **System Configuration**

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

### **Electronic Packaging Comment**

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

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

electronically, such as hand written pages, will be scanned and inserted into the electronic package.

### **Chromatographic Columns**

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

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

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

### **Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.



## GEL LABORATORIES LLC

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

### Qualifier Definition Report for

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

Client SDG: 2017-1664 GEL Work Order: 425079

#### 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
- Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
- DL Indicates that sample is diluted.
- RA Indicates that sample is re-analyzed without re-extraction.
- RE Indicates that sample is re-extracted.

#### Review/Validation

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

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

Signature: 

Name: Michael Penny

Date: 01 JUL 2017

Title: Group Leader

# **Sample Data Summary**

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133286

Lab Code: GEL

GEL Job No (SDG) 2017-1664

Matrix: WATER

GEL Sample ID: 425079001

Sample Amount 950 mL

Date Received: 08-JUN-17

Moisture: .

Extraction Batch ID: 1672551

Extraction Type Sol Exchange

Date Extracted: 09-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0625014.wiff

Date Analyzed: 25-JUN-17 18:27

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
80251-29-2	DNX	.196	J	0.0842	0.263
80251-29-2	DNX				
35572-78-2	2-Amino-4,6-dinitrotoluene	.218	J	0.0842	0.263
35572-78-2	2-Amino-4,6-dinitrotoluene				
5755-27-1	MNX	.243	J	0.0842	0.263
5755-27-1	MNX				
19406-51-0	4-Amino-2,6-dinitrotoluene	.259	J	0.0842	0.263
19406-51-0	4-Amino-2,6-dinitrotoluene				
118-96-7	2,4,6-Trinitrotoluene	.263	U	0.0842	0.263
118-96-7	2,4,6-Trinitrotoluene				
121-14-2	2,4-Dinitrotoluene	.263	U	0.0842	0.263
121-14-2	2,4-Dinitrotoluene				
13980-04-6	TNX	.263	U	0.0842	0.263
13980-04-6	TNX				
606-20-2	2,6-Dinitrotoluene	.263	U	0.0842	0.263
606-20-2	2,6-Dinitrotoluene				
88-72-2	o-Nitrotoluene	.263	U	0.0863	0.263
88-72-2	o-Nitrotoluene				
98-95-3	Nitrobenzene	.263	U	0.0842	0.263
98-95-3	Nitrobenzene				
99-08-1	m-Nitrotoluene	.263	U	0.0842	0.263
99-08-1	m-Nitrotoluene				
99-35-4	1,3,5-Trinitrobenzene	.263	U	0.0842	0.263
99-35-4	1,3,5-Trinitrobenzene				
99-65-0	m-Dinitrobenzene	.263	U	0.0842	0.263
99-65-0	m-Dinitrobenzene				

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133286

Lab Code: GEL

GEL Job No (SDG) 2017-1664

Matrix: WATER

GEL Sample ID: 425079001

Sample Amount 950 mL

Date Received: 08-JUN-17

Moisture: .

Extraction Batch ID: 1672551

Extraction Type Sol Exchange

Date Extracted: 09-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
479-45-8 <i>479-45-8</i>	Tetryl <i>Tetryl</i>	.526	U	0.0842	0.526
78-11-5 <i>78-11-5</i>	PETN <i>PETN</i>	.526	U	0.105	0.526
99-99-0 <i>99-99-0</i>	p-Nitrotoluene <i>p-Nitrotoluene</i>	.526	U	0.158	0.526
3058-38-6 <i>3058-38-6</i>	TATB <i>TATB</i>	1.05	U	0.316	1.05
618-87-1 <i>618-87-1</i>	3,5-Dinitroaniline <i>3,5-Dinitroaniline</i>	1.05	U	0.316	1.05
78-30-8 <i>78-30-8</i>	tris(o-cresyl) phosphate <i>tris(o-cresyl) phosphate</i>	1.05	U	0.316	1.05
121-82-4 <i>121-82-4</i>	RDX <i>RDX</i>	2.31		0.0842	0.263
59229-75-3 <i>59229-75-3</i>	2,6-Diamino-4-nitrotoluene <i>2,6-Diamino-4-nitrotoluene</i>	2.63	U	0.526	2.63
6629-29-4 <i>6629-29-4</i>	2,4-Diamino-6-nitrotoluene <i>2,4-Diamino-6-nitrotoluene</i>	2.63	U	0.526	2.63
2691-41-0 <i>2691-41-0</i>	HMX <i>HMX</i>	2.69		0.0842	0.263

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133287

Lab Code: GEL

GEL Job No (SDG) 2017-1664

Matrix: WATER

GEL Sample ID: 425079003

Sample Amount 890 mL

Date Received: 08-JUN-17

Moisture: .

Extraction Batch ID: 1673459

Extraction Type Sol Exchange

Date Extracted: 13-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0625036.wiff

Date Analyzed: 27-JUN-17 12:23

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
5755-27-1	MNX	.128	J	0.0899	0.281
<i>5755-27-1</i>	<i>MNX</i>				
118-96-7	2,4,6-Trinitrotoluene	.281	U	0.0899	0.281
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
121-14-2	2,4-Dinitrotoluene	.281	U	0.0899	0.281
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
13980-04-6	TNX	.281	U	0.0899	0.281
<i>13980-04-6</i>	<i>TNX</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	.281	U	0.0899	0.281
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	.281	U	0.0899	0.281
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
606-20-2	2,6-Dinitrotoluene	.281	U	0.0899	0.281
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				
80251-29-2	DNX	.281	U	0.0899	0.281
<i>80251-29-2</i>	<i>DNX</i>				
88-72-2	o-Nitrotoluene	.281	U	0.0921	0.281
<i>88-72-2</i>	<i>o-Nitrotoluene</i>				
98-95-3	Nitrobenzene	.281	U	0.0899	0.281
<i>98-95-3</i>	<i>Nitrobenzene</i>				
99-08-1	m-Nitrotoluene	.281	U	0.0899	0.281
<i>99-08-1</i>	<i>m-Nitrotoluene</i>				
99-35-4	1,3,5-Trinitrobenzene	.281	U	0.0899	0.281
<i>99-35-4</i>	<i>1,3,5-Trinitrobenzene</i>				
99-65-0	m-Dinitrobenzene	.281	U	0.0899	0.281
<i>99-65-0</i>	<i>m-Dinitrobenzene</i>				

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133287

Lab Code: GEL

GEL Job No (SDG) 2017-1664

Matrix: WATER

GEL Sample ID: 425079003

Sample Amount 890 mL

Date Received: 08-JUN-17

Moisture: .

Extraction Batch ID: 1673459

Extraction Type Sol Exchange

Date Extracted: 13-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
479-45-8 <i>479-45-8</i>	Tetryl <i>Tetryl</i>	.562	U	0.0899	0.562
78-11-5 <i>78-11-5</i>	PETN <i>PETN</i>	.562	U	0.112	0.562
99-99-0 <i>99-99-0</i>	p-Nitrotoluene <i>p-Nitrotoluene</i>	.562	U	0.169	0.562
121-82-4 <i>121-82-4</i>	RDX <i>RDX</i>	.564		0.0899	0.281
2691-41-0 <i>2691-41-0</i>	HMX <i>HMX</i>	.942		0.0899	0.281
3058-38-6 <i>3058-38-6</i>	TATB <i>TATB</i>	1.12	U	0.337	1.12
618-87-1 <i>618-87-1</i>	3,5-Dinitroaniline <i>3,5-Dinitroaniline</i>	1.12	U	0.337	1.12
78-30-8 <i>78-30-8</i>	tris(o-cresyl) phosphate <i>tris(o-cresyl) phosphate</i>	1.12	U	0.337	1.12
59229-75-3 <i>59229-75-3</i>	2,6-Diamino-4-nitrotoluene <i>2,6-Diamino-4-nitrotoluene</i>	2.81	U	0.562	2.81
6629-29-4 <i>6629-29-4</i>	2,4-Diamino-6-nitrotoluene <i>2,4-Diamino-6-nitrotoluene</i>	2.81	U	0.562	2.81

# **Quality Control Summary**

## High Explosives Surrogate Recovery Summary

Lab Name: GEL Laboratories LLCGEL Job No (SDG): 2017-1664Lab Code: GEL

HPLC Column: Ultracarb Phenomenex 5u ODS (20)

Lab Sample ID	Client Sample ID	DNT	QC Limits	Flg
425079001	CAWA-17-133286	96	55 - 115	
1203807731	MB for batch 1672551	102	55 - 115	
1203807732	LCS for batch 1672551	85	55 - 115	
1203807733	CAWA-17-133301MS	81	55 - 115	
1203807734	CAWA-17-133301MSD	97	55 - 115	

DNT = 3,4-Dinitrotoluene

Lab Code: GELHPLC Column: Ultracarb Phenomenex 5u ODS (20), 250 x  
4.60 mm ID

Lab Sample ID	Client Sample ID	DNT	QC Limits	Flg
425079003	CAWA-17-133287	86	55 - 115	
1203810014	MB for batch 1673459	92	55 - 115	
1203810015	LCS for batch 1673459	90	55 - 115	
1203810016	CAWA-17-133348MS	93	55 - 115	
1203810017	CAWA-17-133348MSD	99	55 - 115	

DNT = 3,4-Dinitrotoluene



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

**Lab Name:** GEL Laboratories LLC

**Client ID:** LCS

**Lab Code:** GEL

**GEL Job No (SDG)** 2017-1664

**Extract Batch Code:** 1672551

**Date Extracted:** 09-JUN-17

**GEL LCS ID:** 1203807732

**GEL LCSDUP ID:** .

**Analysis Date/Time:** 16-JUN-17 20:35

**DUP Analysis Date/Time:**

**Reporting Units:** ug/L

**QC Type:** LCS/LCSD

Compound	Spike Added	LCS Conc	LCS Rec #	LCSD Conc	LCSD Rec #	RPD #	RPD	Recovery Limits
2,6-Diamino-4-nitrotoluene	5	6.85	137 *					53 - 127
2,6-Dinitrotoluene	5	4.16	83					72 - 105
2-Amino-4,6-dinitrotoluene	5	4.44	89					70 - 112
3,5-Dinitroaniline	5	5.38	108					70 - 121
HMX	5	4	80					58 - 113
PETN	5	5.39	108					57 - 126
TATB	2.5	3.7	148 *					47 - 135
m-Dinitrobenzene	5	4.86	97					74 - 117
o-Nitrotoluene	5	4.65	93					64 - 115
2,4-Diamino-6-nitrotoluene	5	5.89	118					50 - 121
2,4,6-Trinitrotoluene	5	4.25	85					69 - 113
1,3,5-Trinitrobenzene	5	4.42	88					70 - 110
2,4-Dinitrotoluene	5	4.44	89					71 - 110
tris(o-cresyl) phosphate	5	3.89	78					43 - 104
p-Nitrotoluene	5	4.76	95					66 - 127
m-Nitrotoluene	5	4.03	81					66 - 114
Tetryl	5	4.27	85					64 - 122
RDX	5	4.27	85					64 - 117
Nitrobenzene	5	4.65	93					64 - 115
4-Amino-2,6-dinitrotoluene	5	4.42	88					74 - 116

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

\* Values outside of QC limits

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

**Lab Name:** GEL Laboratories LLC

**Client ID:** LCS

**Lab Code:** GEL

**GEL Job No (SDG)** 2017-1664

**Extract Batch Code:** 1673459

**Date Extracted:** 13-JUN-17

**GEL LCS ID:** 1203810015

**GEL LCSDUP ID:** .

**Analysis Date/Time:** 27-JUN-17 11:49

**DUP Analysis Date/Time:**

**Reporting Units:** ug/L

**QC Type:** LCS/LCSD

Compound	Spike Added	LCS Conc	LCS Rec #	LCSD Conc	LCSD Rec #	RPD #	RPD	Recovery Limits
tris(o-cresyl) phosphate	5	3.47	69					43 - 104
o-Nitrotoluene	5	3.34	67					64 - 115
m-Nitrotoluene	5	3.91	78					66 - 114
m-Dinitrobenzene	5	4.76	95					74 - 117
Tetryl	5	3.62	72					64 - 122
TATB	2.5	3.79	151 *					47 - 135
RDX	5	4.68	94					64 - 117
PETN	5	4.65	93					57 - 126
Nitrobenzene	5	5.33	107					64 - 115
HMX	5	4.7	94					58 - 113
4-Amino-2,6-dinitrotoluene	5	4.24	85					74 - 116
3,5-Dinitroaniline	5	4.88	98					70 - 121
2-Amino-4,6-dinitrotoluene	5	4	80					70 - 112
2,4,6-Trinitrotoluene	5	4.29	86					69 - 113
2,4-Diamino-6-nitrotoluene	5	4.23	85					50 - 121
2,4-Dinitrotoluene	5	4.19	84					71 - 110
2,6-Dinitrotoluene	5	3.9	78					72 - 105
2,6-Diamino-4-nitrotoluene	5	4.87	97					53 - 127
1,3,5-Trinitrobenzene	5	4.67	93					70 - 110
p-Nitrotoluene	5	3.47	69					66 - 127

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

\* Values outside of QC limits

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

**Lab Name:** GEL Laboratories LLC

**Client ID:** CAWA-17-133301

**Lab Code:** GEL

**GEL Job No (SDG)** 2017-1664

**Extract Batch Code:** 1672551

**Date Extracted:** 09-JUN-17

**GEL Spike ID:** 1203807733

**GEL SpikeDup ID:** 1203807734

**Analysis Date/Time:** 16-JUN-17 21:46

**MSD Analysis Date/Time:** 16-JUN-17 22:21

**Reporting Units:** ug/L

**QC Type:** MS/MSD

Compound	Spike Added	Sample Conc	MS Conc	MS Rec #	MSD Conc	MSD Rec #	RPD #	RPD Limit	Rec Limits
1,3,5-Trinitrobenzene	5.43478	0	5.23	96	4.95	93	6	30	67 - 111
2,4,6-Trinitrotoluene	5.43478	0	4.29	79	5.4	102	23	30	66 - 112
2,4-Diamino-6-nitrotoluene	5.43478	0	5.9	109	5.58	105	6	30	50 - 121
2,4-Dinitrotoluene	5.43478	0	4.3	79	5.2	98	19	30	69 - 113
3,5-Dinitroaniline	5.43478	0	5.27	97	5.94	112	12	30	70 - 121
HMX	5.43478	.0391	4.69	86	4.25	79	10	30	44 - 128
PETN	5.43478	0	4.72	87	5.35	101	12	30	51 - 131
TATB	2.71739	0	4.26	157 *	3.84	144	10	30	38 - 149
m-Dinitrobenzene	5.43478	0	5.18	95	5.04	95	3	30	74 - 117
tris(o-cresyl) phosphate	5.43478	0	4.52	83	4.88	92	8	30	38 - 105
p-Nitrotoluene	5.43478	0	4.93	91	5.92	111	18	30	61 - 129
o-Nitrotoluene	5.43478	0	4.81	89	5.43	102	12	30	56 - 119
m-Nitrotoluene	5.43478	0	4.95	91	5.41	102	9	30	59 - 120
Tetryl	5.43478	0	3.63	67	3.42	64	6	30	50 - 126
RDX	5.43478	0	4.35	80	4.5	85	3	30	57 - 125
Nitrobenzene	5.43478	0	5.4	99	5.1	96	6	30	62 - 116
4-Amino-2,6-dinitrotoluene	5.43478	0	4.48	83	4.95	93	10	30	65 - 120
2-Amino-4,6-dinitrotoluene	5.43478	0	4.32	79	4.94	93	13	30	67 - 115
2,6-Dinitrotoluene	5.43478	0	4.25	78	5	94	16	30	70 - 106
2,6-Diamino-4-nitrotoluene	5.43478	0	6.8	125	5.72	108	17	30	53 - 127

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

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

**Lab Name:** GEL Laboratories LLC

**Client ID:** CAWA-17-133348

**Lab Code:** GEL

**GEL Job No (SDG)** 2017-1664

**Extract Batch Code:** 1673459

**Date Extracted:** 13-JUN-17

**GEL Spike ID:** 1203810016

**GEL SpikeDup ID:** 1203810017

**Analysis Date/Time:** 27-JUN-17 15:48

**MSD Analysis Date/Time:** 27-JUN-17 14:05

**Reporting Units:** ug/L

**QC Type:** MS/MSD

Compound	Spike Added	Sample Conc	MS Conc	MS Rec #	MSD Conc	MSD Rec #	RPD #	RPD Limit	Rec Limits
2,4-Dinitrotoluene	5.2356	0	4.97	95	5.02	96	1	30	69 - 113
2,6-Diamino-4-nitrotoluene	5.2356	0	4.77	91	3.45	66	32 *	30	53 - 127
2,6-Dinitrotoluene	5.2356	0	4.66	89	4.79	91	3	30	70 - 106
2-Amino-4,6-dinitrotoluene	5.2356	.0423	4.56	86	4.66	88	2	30	67 - 115
3,5-Dinitroaniline	5.2356	0	5.57	106	5.83	111	5	30	70 - 121
4-Amino-2,6-dinitrotoluene	5.2356	.043	5.08	96	4.29	81	17	30	65 - 120
HMX	5.2356	.0897	5.31	100	6.14	116	14	30	44 - 128
Nitrobenzene	5.2356	0	4.27	82	3.53	67	19	30	62 - 116
PETN	5.2356	0	5.01	96	4.54	87	10	30	51 - 131
2,4-Diamino-6-nitrotoluene	5.2356	0	4.95	95	3.44	66	36 *	30	50 - 121
2,4,6-Trinitrotoluene	5.2356	0	4.65	89	4.79	92	3	30	66 - 112
1,3,5-Trinitrobenzene	5.2356	0	4.23	81	4.32	83	2	30	67 - 111
RDX	5.2356	.0206	5.58	106	5.39	102	3	30	57 - 125
TATB	2.6178	0	3.46	132	3.22	123	7	30	38 - 149
Tetryl	5.2356	0	3.6	69	3.05	58	17	30	50 - 126
m-Dinitrobenzene	5.2356	0	5.19	99	5.38	103	3	30	74 - 117
m-Nitrotoluene	5.2356	0	4.88	93	4.97	95	2	30	59 - 120
o-Nitrotoluene	5.2356	.00667	4.41	84	2.58	49 *	52 *	30	56 - 119
p-Nitrotoluene	5.2356	0	4.42	84	4.53	87	3	30	61 - 129
tris(o-cresyl) phosphate	5.2356	0	4.41	84	3.05	58	36 *	30	38 - 105

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

# Quality Control Data

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: MB for batch 1672551

Lab Code: GEL

GEL Job No (SDG) 2017-1664

Matrix: WATER

GEL Sample ID: 1203807731

Sample Amount 1000 mL

Date Received: 08-JUN-17

Moisture: .

Extraction Batch ID: 1672551

Extraction Type Sol Exchange

Date Extracted: 09-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0616016.wiff

Date Analyzed: 16-JUN-17 20:00

Dilution Factor: 2

Concentration Units: ug/L

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

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: MB for batch 1672551

Lab Code: GEL

GEL Job No (SDG) 2017-1664

Matrix: WATER

GEL Sample ID: 1203807731

Sample Amount 1000 mL

Date Received: 08-JUN-17

Moisture: .

Extraction Batch ID: 1672551

Extraction Type Sol Exchange

Date Extracted: 09-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

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

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: LCS for batch 1672551

Lab Code: GEL

GEL Job No (SDG) 2017-1664

Matrix: WATER

GEL Sample ID: 1203807732

Sample Amount 1000 mL

Date Received: 08-JUN-17

Moisture: .

Extraction Batch ID: 1672551

Extraction Type Sol Exchange

Date Extracted: 09-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0616017.wiff

Date Analyzed: 16-JUN-17 20:35

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
13980-04-6 <i>13980-04-6</i>	TNX <i>TNX</i>	.25	U	0.080	0.250
5755-27-1 <i>5755-27-1</i>	MNX <i>MNX</i>	.25	U	0.080	0.250
80251-29-2 <i>80251-29-2</i>	DNX <i>DNX</i>	.25	U	0.080	0.250
3058-38-6 <i>3058-38-6</i>	TATB <i>TATB</i>	3.7		0.300	1.00
78-30-8 <i>78-30-8</i>	tris(o-cresyl) phosphate <i>tris(o-cresyl) phosphate</i>	3.89	Q	0.300	1.00
2691-41-0 <i>2691-41-0</i>	HMX <i>HMX</i>	4		0.080	0.250
99-08-1 <i>99-08-1</i>	m-Nitrotoluene <i>m-Nitrotoluene</i>	4.03		0.080	0.250
606-20-2 <i>606-20-2</i>	2,6-Dinitrotoluene <i>2,6-Dinitrotoluene</i>	4.16		0.080	0.250
118-96-7 <i>118-96-7</i>	2,4,6-Trinitrotoluene <i>2,4,6-Trinitrotoluene</i>	4.25		0.080	0.250
121-82-4 <i>121-82-4</i>	RDX <i>RDX</i>	4.27		0.080	0.250
479-45-8 <i>479-45-8</i>	Tetryl <i>Tetryl</i>	4.27		0.080	0.500
19406-51-0 <i>19406-51-0</i>	4-Amino-2,6-dinitrotoluene <i>4-Amino-2,6-dinitrotoluene</i>	4.42		0.080	0.250
99-35-4 <i>99-35-4</i>	1,3,5-Trinitrobenzene <i>1,3,5-Trinitrobenzene</i>	4.42		0.080	0.250



1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: LCS for batch 1672551

Lab Code: GEL

GEL Job No (SDG) 2017-1664

Matrix: WATER

GEL Sample ID: 1203807732

Sample Amount 1000 mL

Date Received: 08-JUN-17

Moisture: .

Extraction Batch ID: 1672551

Extraction Type Sol Exchange

Date Extracted: 09-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
121-14-2	2,4-Dinitrotoluene	4.44		0.080	0.250
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	4.44		0.080	0.250
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
88-72-2	o-Nitrotoluene	4.65		0.082	0.250
<i>88-72-2</i>	<i>o-Nitrotoluene</i>				
98-95-3	Nitrobenzene	4.65		0.080	0.250
<i>98-95-3</i>	<i>Nitrobenzene</i>				
99-99-0	p-Nitrotoluene	4.76		0.150	0.500
<i>99-99-0</i>	<i>p-Nitrotoluene</i>				
99-65-0	m-Dinitrobenzene	4.86		0.080	0.250
<i>99-65-0</i>	<i>m-Dinitrobenzene</i>				
618-87-1	3,5-Dinitroaniline	5.38		0.300	1.00
<i>618-87-1</i>	<i>3,5-Dinitroaniline</i>				
78-11-5	PETN	5.39		0.100	0.500
<i>78-11-5</i>	<i>PETN</i>				
6629-29-4	2,4-Diamino-6-nitrotoluene	5.89	Q	0.500	2.50
<i>6629-29-4</i>	<i>2,4-Diamino-6-nitrotoluene</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	6.85	Q	0.500	2.50
<i>59229-75-3</i>	<i>2,6-Diamino-4-nitrotoluene</i>				

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133301(424916001MS)MS

Lab Code: GEL

GEL Job No (SDG) 2017-1664

Matrix: WATER

GEL Sample ID: 1203807733

Sample Amount 920 mL

Date Received: 08-JUN-17

Moisture: .

Extraction Batch ID: 1672551

Extraction Type Sol Exchange

Date Extracted: 09-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0616019.wiff

Date Analyzed: 16-JUN-17 21:46

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
13980-04-6 <i>13980-04-6</i>	TNX <i>TNX</i>	.272	U	0.087	0.272
5755-27-1 <i>5755-27-1</i>	MNX <i>MNX</i>	.272	U	0.087	0.272
80251-29-2 <i>80251-29-2</i>	DNX <i>DNX</i>	.272	U	0.087	0.272
479-45-8 <i>479-45-8</i>	Tetryl <i>Tetryl</i>	3.63		0.087	0.543
606-20-2 <i>606-20-2</i>	2,6-Dinitrotoluene <i>2,6-Dinitrotoluene</i>	4.25		0.087	0.272
3058-38-6 <i>3058-38-6</i>	TATB <i>TATB</i>	4.26		0.326	1.09
118-96-7 <i>118-96-7</i>	2,4,6-Trinitrotoluene <i>2,4,6-Trinitrotoluene</i>	4.29		0.087	0.272
121-14-2 <i>121-14-2</i>	2,4-Dinitrotoluene <i>2,4-Dinitrotoluene</i>	4.3		0.087	0.272
35572-78-2 <i>35572-78-2</i>	2-Amino-4,6-dinitrotoluene <i>2-Amino-4,6-dinitrotoluene</i>	4.32		0.087	0.272
121-82-4 <i>121-82-4</i>	RDX <i>RDX</i>	4.35		0.087	0.272
19406-51-0 <i>19406-51-0</i>	4-Amino-2,6-dinitrotoluene <i>4-Amino-2,6-dinitrotoluene</i>	4.48		0.087	0.272
78-30-8 <i>78-30-8</i>	tris(o-cresyl) phosphate <i>tris(o-cresyl) phosphate</i>	4.52	Q	0.326	1.09
2691-41-0 <i>2691-41-0</i>	HMX <i>HMX</i>	4.69		0.087	0.272

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133301(424916001MS)MS

Lab Code: GEL

GEL Job No (SDG) 2017-1664

Matrix: WATER

GEL Sample ID: 1203807733

Sample Amount 920 mL

Date Received: 08-JUN-17

Moisture: .

Extraction Batch ID: 1672551

Extraction Type Sol Exchange

Date Extracted: 09-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
78-11-5	PETN	4.72		0.109	0.543
<i>78-11-5</i>	<i>PETN</i>				
88-72-2	o-Nitrotoluene	4.81		0.0891	0.272
<i>88-72-2</i>	<i>o-Nitrotoluene</i>				
99-99-0	p-Nitrotoluene	4.93		0.163	0.543
<i>99-99-0</i>	<i>p-Nitrotoluene</i>				
99-08-1	m-Nitrotoluene	4.95		0.087	0.272
<i>99-08-1</i>	<i>m-Nitrotoluene</i>				
99-65-0	m-Dinitrobenzene	5.18		0.087	0.272
<i>99-65-0</i>	<i>m-Dinitrobenzene</i>				
99-35-4	1,3,5-Trinitrobenzene	5.23		0.087	0.272
<i>99-35-4</i>	<i>1,3,5-Trinitrobenzene</i>				
618-87-1	3,5-Dinitroaniline	5.27		0.326	1.09
<i>618-87-1</i>	<i>3,5-Dinitroaniline</i>				
98-95-3	Nitrobenzene	5.4		0.087	0.272
<i>98-95-3</i>	<i>Nitrobenzene</i>				
6629-29-4	2,4-Diamino-6-nitrotoluene	5.9	Q	0.543	2.72
<i>6629-29-4</i>	<i>2,4-Diamino-6-nitrotoluene</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	6.8	Q	0.543	2.72
<i>59229-75-3</i>	<i>2,6-Diamino-4-nitrotoluene</i>				

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133301(424916001MSD)MSD

Lab Code: GEL

GEL Job No (SDG) 2017-1664

Matrix: WATER

GEL Sample ID: 1203807734

Sample Amount 940 mL

Date Received: 08-JUN-17

Moisture: .

Extraction Batch ID: 1672551

Extraction Type Sol Exchange

Date Extracted: 09-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0616020.wiff

Date Analyzed: 16-JUN-17 22:21

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
13980-04-6	TNX	.266	U	0.0851	0.266
<i>13980-04-6</i>	<i>TNX</i>				
5755-27-1	MNX	.266	U	0.0851	0.266
<i>5755-27-1</i>	<i>MNX</i>				
80251-29-2	DNX	.266	U	0.0851	0.266
<i>80251-29-2</i>	<i>DNX</i>				
479-45-8	Tetryl	3.42		0.0851	0.532
<i>479-45-8</i>	<i>Tetryl</i>				
3058-38-6	TATB	3.84		0.319	1.06
<i>3058-38-6</i>	<i>TATB</i>				
2691-41-0	HMX	4.25		0.0851	0.266
<i>2691-41-0</i>	<i>HMX</i>				
121-82-4	RDX	4.5		0.0851	0.266
<i>121-82-4</i>	<i>RDX</i>				
78-30-8	tris(o-cresyl) phosphate	4.88	Q	0.319	1.06
<i>78-30-8</i>	<i>tris(o-cresyl) phosphate</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	4.94		0.0851	0.266
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	4.95		0.0851	0.266
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
99-35-4	1,3,5-Trinitrobenzene	4.95		0.0851	0.266
<i>99-35-4</i>	<i>1,3,5-Trinitrobenzene</i>				
606-20-2	2,6-Dinitrotoluene	5		0.0851	0.266
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				
99-65-0	m-Dinitrobenzene	5.04		0.0851	0.266
<i>99-65-0</i>	<i>m-Dinitrobenzene</i>				

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133301(424916001MSD)MSD

Lab Code: GEL

GEL Job No (SDG) 2017-1664

Matrix: WATER

GEL Sample ID: 1203807734

Sample Amount 940 mL

Date Received: 08-JUN-17

Moisture: .

Extraction Batch ID: 1672551

Extraction Type Sol Exchange

Date Extracted: 09-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
98-95-3	Nitrobenzene	5.1		0.0851	0.266
98-95-3	Nitrobenzene				
121-14-2	2,4-Dinitrotoluene	5.2		0.0851	0.266
121-14-2	2,4-Dinitrotoluene				
78-11-5	PETN	5.35		0.106	0.532
78-11-5	PETN				
118-96-7	2,4,6-Trinitrotoluene	5.4		0.0851	0.266
118-96-7	2,4,6-Trinitrotoluene				
99-08-1	m-Nitrotoluene	5.41		0.0851	0.266
99-08-1	m-Nitrotoluene				
88-72-2	o-Nitrotoluene	5.43		0.0872	0.266
88-72-2	o-Nitrotoluene				
6629-29-4	2,4-Diamino-6-nitrotoluene	5.58	Q	0.532	2.66
6629-29-4	2,4-Diamino-6-nitrotoluene				
59229-75-3	2,6-Diamino-4-nitrotoluene	5.72	Q	0.532	2.66
59229-75-3	2,6-Diamino-4-nitrotoluene				
99-99-0	p-Nitrotoluene	5.92		0.160	0.532
99-99-0	p-Nitrotoluene				
618-87-1	3,5-Dinitroaniline	5.94		0.319	1.06
618-87-1	3,5-Dinitroaniline				

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: MB for batch 1673459

Lab Code: GEL

GEL Job No (SDG) 2017-1664

Matrix: WATER

GEL Sample ID: 1203810014

Sample Amount 1000 mL

Date Received: 08-JUN-17

Moisture: .

Extraction Batch ID: 1673459

Extraction Type Sol Exchange

Date Extracted: 13-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0625034.wiff

Date Analyzed: 27-JUN-17 11:15

Dilution Factor: 2

Concentration Units: ug/L

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

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: MB for batch 1673459

Lab Code: GEL

GEL Job No (SDG) 2017-1664

Matrix: WATER

GEL Sample ID: 1203810014

Sample Amount 1000 mL

Date Received: 08-JUN-17

Moisture: .

Extraction Batch ID: 1673459

Extraction Type Sol Exchange

Date Extracted: 13-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

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

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: LCS for batch 1673459

Lab Code: GEL

GEL Job No (SDG) 2017-1664

Matrix: WATER

GEL Sample ID: 1203810015

Sample Amount 1000 mL

Date Received: 08-JUN-17

Moisture: .

Extraction Batch ID: 1673459

Extraction Type Sol Exchange

Date Extracted: 13-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0625035.wiff

Date Analyzed: 27-JUN-17 11:49

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
13980-04-6 <i>13980-04-6</i>	TNX <i>TNX</i>	.25	U	0.080	0.250
5755-27-1 <i>5755-27-1</i>	MNX <i>MNX</i>	.25	U	0.080	0.250
80251-29-2 <i>80251-29-2</i>	DNX <i>DNX</i>	.25	U	0.080	0.250
88-72-2 <i>88-72-2</i>	o-Nitrotoluene <i>o-Nitrotoluene</i>	3.34		0.082	0.250
78-30-8 <i>78-30-8</i>	tris(o-cresyl) phosphate <i>tris(o-cresyl) phosphate</i>	3.47		0.300	1.00
99-99-0 <i>99-99-0</i>	p-Nitrotoluene <i>p-Nitrotoluene</i>	3.47		0.150	0.500
479-45-8 <i>479-45-8</i>	Tetryl <i>Tetryl</i>	3.62		0.080	0.500
3058-38-6 <i>3058-38-6</i>	TATB <i>TATB</i>	3.79		0.300	1.00
6629-29-4 <i>6629-29-4</i>	2,4-Diamino-6-nitrotoluene <i>2,4-Diamino-6-nitrotoluene</i>	3.79		0.500	2.50
606-20-2 <i>606-20-2</i>	2,6-Dinitrotoluene <i>2,6-Dinitrotoluene</i>	3.9		0.080	0.250
99-08-1 <i>99-08-1</i>	m-Nitrotoluene <i>m-Nitrotoluene</i>	3.91		0.080	0.250
35572-78-2 <i>35572-78-2</i>	2-Amino-4,6-dinitrotoluene <i>2-Amino-4,6-dinitrotoluene</i>	4		0.080	0.250
121-14-2 <i>121-14-2</i>	2,4-Dinitrotoluene <i>2,4-Dinitrotoluene</i>	4.19		0.080	0.250



1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: LCS for batch 1673459

Lab Code: GEL

GEL Job No (SDG) 2017-1664

Matrix: WATER

GEL Sample ID: 1203810015

Sample Amount 1000 mL

Date Received: 08-JUN-17

Moisture: .

Extraction Batch ID: 1673459

Extraction Type Sol Exchange

Date Extracted: 13-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
19406-51-0	4-Amino-2,6-dinitrotoluene	4.24		0.080	0.250
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
118-96-7	2,4,6-Trinitrotoluene	4.29		0.080	0.250
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
78-11-5	PETN	4.65		0.100	0.500
<i>78-11-5</i>	<i>PETN</i>				
99-35-4	1,3,5-Trinitrobenzene	4.67		0.080	0.250
<i>99-35-4</i>	<i>1,3,5-Trinitrobenzene</i>				
121-82-4	RDX	4.68		0.080	0.250
<i>121-82-4</i>	<i>RDX</i>				
2691-41-0	HMX	4.7		0.080	0.250
<i>2691-41-0</i>	<i>HMX</i>				
99-65-0	m-Dinitrobenzene	4.76		0.080	0.250
<i>99-65-0</i>	<i>m-Dinitrobenzene</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	4.87		0.500	2.50
<i>59229-75-3</i>	<i>2,6-Diamino-4-nitrotoluene</i>				
618-87-1	3,5-Dinitroaniline	4.88		0.300	1.00
<i>618-87-1</i>	<i>3,5-Dinitroaniline</i>				
98-95-3	Nitrobenzene	5.33		0.080	0.250
<i>98-95-3</i>	<i>Nitrobenzene</i>				

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133348(425121002MS)MS

Lab Code: GEL

GEL Job No (SDG) 2017-1664

Matrix: WATER

GEL Sample ID: 1203810016

Sample Amount 955 mL

Date Received: 08-JUN-17

Moisture: .

Extraction Batch ID: 1673459

Extraction Type Sol Exchange

Date Extracted: 13-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0625042.wiff

Date Analyzed: 27-JUN-17 15:48

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
13980-04-6	TNX	.262	U	0.0838	0.262
<i>13980-04-6</i>	<i>TNX</i>				
5755-27-1	MNX	.262	U	0.0838	0.262
<i>5755-27-1</i>	<i>MNX</i>				
80251-29-2	DNX	.262	U	0.0838	0.262
<i>80251-29-2</i>	<i>DNX</i>				
3058-38-6	TATB	3.46		0.314	1.05
<i>3058-38-6</i>	<i>TATB</i>				
479-45-8	Tetryl	3.6		0.0838	0.524
<i>479-45-8</i>	<i>Tetryl</i>				
99-35-4	1,3,5-Trinitrobenzene	4.23		0.0838	0.262
<i>99-35-4</i>	<i>1,3,5-Trinitrobenzene</i>				
98-95-3	Nitrobenzene	4.27		0.0838	0.262
<i>98-95-3</i>	<i>Nitrobenzene</i>				
78-30-8	tris(o-cresyl) phosphate	4.41		0.314	1.05
<i>78-30-8</i>	<i>tris(o-cresyl) phosphate</i>				
88-72-2	o-Nitrotoluene	4.41		0.0859	0.262
<i>88-72-2</i>	<i>o-Nitrotoluene</i>				
99-99-0	p-Nitrotoluene	4.42		0.157	0.524
<i>99-99-0</i>	<i>p-Nitrotoluene</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	4.56		0.0838	0.262
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
118-96-7	2,4,6-Trinitrotoluene	4.65		0.0838	0.262
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
606-20-2	2,6-Dinitrotoluene	4.66		0.0838	0.262
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133348(425121002MS)MS

Lab Code: GEL

GEL Job No (SDG) 2017-1664

Matrix: WATER

GEL Sample ID: 1203810016

Sample Amount 955 mL

Date Received: 08-JUN-17

Moisture: .

Extraction Batch ID: 1673459

Extraction Type Sol Exchange

Date Extracted: 13-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
59229-75-3	2,6-Diamino-4-nitrotoluene	4.77		0.524	2.62
<i>59229-75-3</i>	<i>2,6-Diamino-4-nitrotoluene</i>				
99-08-1	m-Nitrotoluene	4.88		0.0838	0.262
<i>99-08-1</i>	<i>m-Nitrotoluene</i>				
6629-29-4	2,4-Diamino-6-nitrotoluene	4.96		0.524	2.62
<i>6629-29-4</i>	<i>2,4-Diamino-6-nitrotoluene</i>				
121-14-2	2,4-Dinitrotoluene	4.97		0.0838	0.262
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
78-11-5	PETN	5.01		0.105	0.524
<i>78-11-5</i>	<i>PETN</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	5.08		0.0838	0.262
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
99-65-0	m-Dinitrobenzene	5.19		0.0838	0.262
<i>99-65-0</i>	<i>m-Dinitrobenzene</i>				
2691-41-0	HMX	5.31		0.0838	0.262
<i>2691-41-0</i>	<i>HMX</i>				
618-87-1	3,5-Dinitroaniline	5.57		0.314	1.05
<i>618-87-1</i>	<i>3,5-Dinitroaniline</i>				
121-82-4	RDX	5.58		0.0838	0.262
<i>121-82-4</i>	<i>RDX</i>				

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133348(425121002MSD)MSD

Lab Code: GEL

GEL Job No (SDG) 2017-1664

Matrix: WATER

GEL Sample ID: 1203810017

Sample Amount 955 mL

Date Received: 08-JUN-17

Moisture: .

Extraction Batch ID: 1673459

Extraction Type Sol Exchange

Date Extracted: 13-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0625039.wiff

Date Analyzed: 27-JUN-17 14:05

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
13980-04-6	TNX	.262	U	0.0838	0.262
<i>13980-04-6</i>	<i>TNX</i>				
5755-27-1	MNX	.262	U	0.0838	0.262
<i>5755-27-1</i>	<i>MNX</i>				
80251-29-2	DNX	.262	U	0.0838	0.262
<i>80251-29-2</i>	<i>DNX</i>				
88-72-2	o-Nitrotoluene	2.58		0.0859	0.262
<i>88-72-2</i>	<i>o-Nitrotoluene</i>				
479-45-8	Tetryl	3.05		0.0838	0.524
<i>479-45-8</i>	<i>Tetryl</i>				
78-30-8	tris(o-cresyl) phosphate	3.05		0.314	1.05
<i>78-30-8</i>	<i>tris(o-cresyl) phosphate</i>				
3058-38-6	TATB	3.22		0.314	1.05
<i>3058-38-6</i>	<i>TATB</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	3.45		0.524	2.62
<i>59229-75-3</i>	<i>2,6-Diamino-4-nitrotoluene</i>				
6629-29-4	2,4-Diamino-6-nitrotoluene	3.47		0.524	2.62
<i>6629-29-4</i>	<i>2,4-Diamino-6-nitrotoluene</i>				
98-95-3	Nitrobenzene	3.53		0.0838	0.262
<i>98-95-3</i>	<i>Nitrobenzene</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	4.29		0.0838	0.262
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
99-35-4	1,3,5-Trinitrobenzene	4.32		0.0838	0.262
<i>99-35-4</i>	<i>1,3,5-Trinitrobenzene</i>				
99-99-0	p-Nitrotoluene	4.53		0.157	0.524
<i>99-99-0</i>	<i>p-Nitrotoluene</i>				

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133348(425121002MSD)MSD

Lab Code: GEL

GEL Job No (SDG) 2017-1664

Matrix: WATER

GEL Sample ID: 1203810017

Sample Amount 955 mL

Date Received: 08-JUN-17

Moisture: .

Extraction Batch ID: 1673459

Extraction Type Sol Exchange

Date Extracted: 13-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
78-11-5	PETN	4.54		0.105	0.524
<i>78-11-5</i>	<i>PETN</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	4.66		0.0838	0.262
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
118-96-7	2,4,6-Trinitrotoluene	4.79		0.0838	0.262
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
606-20-2	2,6-Dinitrotoluene	4.79		0.0838	0.262
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				
99-08-1	m-Nitrotoluene	4.97		0.0838	0.262
<i>99-08-1</i>	<i>m-Nitrotoluene</i>				
121-14-2	2,4-Dinitrotoluene	5.02		0.0838	0.262
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
99-65-0	m-Dinitrobenzene	5.38		0.0838	0.262
<i>99-65-0</i>	<i>m-Dinitrobenzene</i>				
121-82-4	RDX	5.39		0.0838	0.262
<i>121-82-4</i>	<i>RDX</i>				
618-87-1	3,5-Dinitroaniline	5.83		0.314	1.05
<i>618-87-1</i>	<i>3,5-Dinitroaniline</i>				
2691-41-0	HMX	6.14		0.0838	0.262
<i>2691-41-0</i>	<i>HMX</i>				

## Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLCGEL Job No(SDG): 2017-1664Lab Code: GELLab Sample ID: XIBLK01Analysis Date: 16-JUN-17 11:14GEL Data File: EXP0616001.wiffInstrument ID: LCMSMS5Column: Ultracarb Phenomenex 5u ODS (20)

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

## Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLCGEL Job No(SDG): 2017-1664Lab Code: GELLab Sample ID: XIBLK01Analysis Date: 16-JUN-17 11:49GEL Data File: EXP0616002.wiffInstrument ID: LCMSMS5Column: Ultracarb Phenomenex 5u ODS (20)

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

## Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLCGEL Job No(SDG): 2017-1664Lab Code: GELLab Sample ID: XIBLK01Analysis Date: 25-JUN-17 10:51GEL Data File: EXP0625001.wiffInstrument ID: LCMSMS5Column: Ultracarb Phenomenex 5u ODS (20)

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



## Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLCGEL Job No(SDG): 2017-1664Lab Code: GELLab Sample ID: XIBLK01Analysis Date: 25-JUN-17 11:26GEL Data File: EXP0625002.wiffInstrument ID: LCMSMS5Column: Ultracarb Phenomenex 5u ODS (20)

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

## Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLCGEL Job No(SDG): 2017-1664Lab Code: GELLab Sample ID: XIBLK01Analysis Date: 26-JUN-17 16:29GEL Data File: EXP0625001.wiffInstrument ID: LCMSMS7Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	.69
p-Nitrotoluene	0	0

## Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLCGEL Job No(SDG): 2017-1664Lab Code: GELLab Sample ID: XIBLK01Analysis Date: 26-JUN-17 17:03GEL Data File: EXP0625002.wiffInstrument ID: LCMSMS7Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	1.41
p-Nitrotoluene	0	0
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MXN	0	0

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1664

Lab Code: GEL

Lab Sample ID: XIBLK02

Analysis Date: 16-JUN-17 16:30

GEL Data File: EXP0616010.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	1.69
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	5.72
2,6-Diamino-4-nitrotoluene	0	1.79
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
Picric acid	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1664

Lab Code: GEL

Lab Sample ID: XIBLK03

Analysis Date: 16-JUN-17 18:50

GEL Data File: EXP0616014.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

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

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1664

Lab Code: GEL

Lab Sample ID: XIBLK04

Analysis Date: 17-JUN-17 00:41

GEL Data File: EXP0616024.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

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

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1664

Lab Code: GEL

Lab Sample ID: XIBLK05

Analysis Date: 17-JUN-17 01:51

GEL Data File: EXP0616026.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

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

4A  
Explosives Continuing Calibration Blank

**Lab Name:** GEL Laboratories LLC

**GEL Job No(SDG):** 2017-1664

**Lab Code:** GEL

**Lab Sample ID:** XIBLK02

**Analysis Date:** 25-JUN-17 15:32

**GEL Data File:** EXP0625009.wiff

**Instrument ID:** LCMSMS5

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

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



4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1664

Lab Code: GEL

Lab Sample ID: XIBLK03

Analysis Date: 25-JUN-17 17:17

GEL Data File: EXP0625012.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

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

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1664

Lab Code: GEL

Lab Sample ID: XIBLK04

Analysis Date: 25-JUN-17 19:02

GEL Data File: EXP0625015.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

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

4A  
Explosives Continuing Calibration Blank

**Lab Name:** GEL Laboratories LLC

**GEL Job No(SDG):** 2017-1664

**Lab Code:** GEL

**Lab Sample ID:** XIBLK05

**Analysis Date:** 25-JUN-17 21:22

**GEL Data File:** EXP0625019.wiff

**Instrument ID:** LCMSMS5

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

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

4A  
Explosives Continuing Calibration Blank

**Lab Name:** GEL Laboratories LLC

**GEL Job No(SDG):** 2017-1664

**Lab Code:** GEL

**Lab Sample ID:** XIBLK06

**Analysis Date:** 25-JUN-17 23:43

**GEL Data File:** EXP0625023.wiff

**Instrument ID:** LCMSMS5

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

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

4A  
Explosives Continuing Calibration Blank

**Lab Name:** GEL Laboratories LLC

**GEL Job No(SDG):** 2017-1664

**Lab Code:** GEL

**Lab Sample ID:** XIBLK07

**Analysis Date:** 26-JUN-17 00:53

**GEL Data File:** EXP0625025.wiff

**Instrument ID:** LCMSMS5

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

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

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

**Lab Name:** GEL Laboratories LLC

**GEL Job No(SDG):** 2017-1664

**Lab Code:** GEL

**Lab Sample ID:** XIBLK02

**Analysis Date:** 26-JUN-17 21:36

**GEL Data File:** EXP0625010.wiff

**Instrument ID:** LCMSMS7

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

Compound	True	Found (ug/L)
m-Dinitrobenzene	0	1.4
m-Nitrotoluene	0	0
o-Nitrotoluene	0	1.58
p-Nitrotoluene	0	0
3,4-Dinitrotoluene	0	1.48
tris(o-cresyl) phosphate	0	6.15
TATB	0	1.57
3,5-Dinitroaniline	0	1.82
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	1.65
DNX	0	2.65
MXN	0	2.03
TNX	0	2.15
1,3,5-Trinitrobenzene	0	1.85
2,4,6-Trinitrotoluene	0	1.65
2,4-Dinitrotoluene	0	1.35
2,6-Dinitrotoluene	0	1.18
2-Amino-4,6-dinitrotoluene	0	1.51
4-Amino-2,6-dinitrotoluene	0	1.49
HMX	0	2.19
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	2.17
RDX	0	2.09
Tetryl	0	1.99

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1664

Lab Code: GEL

Lab Sample ID: XIBLK03

Analysis Date: 26-JUN-17 23:52

GEL Data File: EXP0625014.wiff

Instrument ID: LCMSMS7

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	6.41
TATB	0	0
3,5-Dinitroaniline	0	1.36
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	1.77
MNX	0	1.47
TNX	0	1.56
1,3,5-Trinitrobenzene	0	1.24
2,4,6-Trinitrotoluene	0	1.29
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	1.27
4-Amino-2,6-dinitrotoluene	0	1.32
HMX	0	1.93
Nitrobenzene	0	0
Nitroglycerin	0	2.25
PETN	0	1.68
RDX	0	1.77
Tetryl	0	1.43
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	.62
p-Nitrotoluene	0	5

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1664

Lab Code: GEL

Lab Sample ID: XIBLK04

Analysis Date: 27-JUN-17 02:09

GEL Data File: EXP0625018.wiff

Instrument ID: LCMSMS7

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	1.36
p-Nitrotoluene	0	0
3,4-Dinitrotoluene	0	0



4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1664

Lab Code: GEL

Lab Sample ID: XIBLK05

Analysis Date: 27-JUN-17 03:17

GEL Data File: EXP0625020.wiff

Instrument ID: LCMSMS7

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	3.68
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	5.22
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1664

Lab Code: GEL

Lab Sample ID: XIBLK06

Analysis Date: 27-JUN-17 03:51

GEL Data File: EXP0625021.wiff

Instrument ID: LCMSMS7

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	1.71
p-Nitrotoluene	0	0
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MXN	0	0

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1664

Lab Code: GEL

Lab Sample ID: XIBLK07

Analysis Date: 27-JUN-17 08:58

GEL Data File: EXP0625030.wiff

Instrument ID: LCMSMS7

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	1.31
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1664

Lab Code: GEL

Lab Sample ID: XIBLK08

Analysis Date: 27-JUN-17 09:33

GEL Data File: EXP0625031.wiff

Instrument ID: LCMSMS7

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
m-Nitrotoluene	0	0
o-Nitrotoluene	0	1.14
p-Nitrotoluene	0	0
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1664

Lab Code: GEL

Lab Sample ID: XIBLK09

Analysis Date: 27-JUN-17 10:41

GEL Data File: EXP0625033.wiff

Instrument ID: LCMSMS7

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	5.75
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	.92
p-Nitrotoluene	0	0

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

**Lab Name:** GEL Laboratories LLC

**GEL Job No(SDG):** 2017-1664

**Lab Code:** GEL

**Lab Sample ID:** XIBLK10

**Analysis Date:** 27-JUN-17 16:56

**GEL Data File:** EXP0625044.wiff

**Instrument ID:** LCMSMS7

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

Compound	True	Found (ug/L)
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	.39
p-Nitrotoluene	0	0
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	5.28
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0

# Miscellaneous

DATA EXCEPTION REPORT			
<b>Mo.Day Yr.</b> 27-JUN-17	<b>Division:</b> Industrial	<b>Quality Criteria:</b> Specifications	<b>Type:</b> Process
<b>Instrument Type:</b> LC-MS/MS	<b>Test / Method:</b> SW846 3535A/8330B	<b>Matrix Type:</b> Liquid	<b>Client Code:</b> ESHL
<b>Batch ID:</b> 1672553	<b>Sample Numbers:</b> See Below		
<b>Potentially affected work order(s)(SDG): 424916(2017-1657),425075(2017-1667),425079(2017-1664)</b> <b>Application Issues:</b> Failed Recovery for MS/MSD, or PS/PSD Failed Recovery for LCS/LCSD			
<b>Specification and Requirements</b>		<b>DER Disposition:</b>	
<b>Exception Description:</b>			
1. One or more of the required spiking analytes were not within the acceptance limits in the laboratory control sample (See Below). 1203807732 (LCS) recovered 2,6-Diamino-4-nitrotoluene at 137% (53%-127%) and TATB at 148% (47%-135%).  2. The MS (See Below) recovered spiked analytes outside of the established acceptance limits. 1203807733 (CAWA-17-133301MS) recovered TATB at 157% (38%-149%).		1. While the LCS exhibited a high bias, the analyte was/were not detected in the associated samples, the data are reported.  2. Because the recoveries were biased high and target analytes were not detected in the associated samples above the reporting limit, the data are reported.	

**Originator's Name:**

Michael Penny 27-JUN-17

**Data Validator/Group Leader:**

Charles Wilson 27-JUN-17



### DATA EXCEPTION REPORT

<b>Mo.Day Yr.</b> 29-JUN-17	<b>Division:</b> Industrial	<b>Quality Criteria:</b> Specifications	<b>Type:</b> Process
<b>Instrument Type:</b> LC-MS/MS	<b>Test / Method:</b> SW846 3535A/8330B	<b>Matrix Type:</b> Liquid	<b>Client Code:</b> ESHL
<b>Batch ID:</b> 1673460	<b>Sample Numbers:</b> See Below		
<b>Potentially affected work order(s)(SDG): 425079(2017-1664),425121(2017-1689)</b> <b>Application Issues:</b> Failed Recovery for MS/MSD, or PS/PSD Failed RPD for MS/MSD, or PS/PSD Failed Recovery for LCS/LCSD			
<b>Specification and Requirements</b>		<b>DER Disposition:</b>	
<b>Exception Description:</b>			
<p>1. The RPD values between the MS and MSD (See Below) were not within the acceptance limits. 1203810016MS and 1203810017MSD (CAWA-17-133348) recovered 2,4-Diamino-6-nitrotoluene at 36% (0%-30%), 2,6-Diamino-4-nitrotoluene at 32% (0%-30%), o-Nitrotoluene at 52% (0%-30%) and tris(o-cresyl) phosphate at 36% (0%-30%).</p> <p>2. One or more of the required spiking analytes were not within the acceptance limits in the laboratory control sample (See Below). 1203810015 (LCS) recovered TATB at 151% (47%-135%).</p> <p>3. One or more of the required spiking analytes were not within the acceptance limits in the matrix spike duplicate (MSD). 1203810017 (CAWA-17-133348MSD) recovered o-Nitrotoluene at 49% (56%-119%).</p>		<p>1. Since all other RPD values met acceptance criteria, the noted exceptions are attributed to vagaries in the extraction process. The data are reported.</p> <p>2. While the LCS exhibited a high bias, both the MS and MSD met acceptance limits. Since TATB was not detected in the associated samples, the data are reported.</p> <p>3. While the MSD exhibited a low bias, both the LCS and MS met acceptance limits for o-Nitrotoluene. Since o-Nitrotoluene was not detected in the associated samples, the data are reported.</p>	

**Originator's Name:**

Jannie Shaw-Busby 29-JUN-17

**Data Validator/Group Leader:**

Michael Penny 30-JUN-17

# **Metals Analysis**

# Case Narrative

**Metals**  
**Technical Case Narrative**  
**ARS International, LLC (ARSL)**  
**SDG #: 2017-1664**  
**Work Order #: 425079**

<b>Sample ID</b>	<b>Client ID</b>
425079001	CAWA-17-133286
425079002	CAWA-17-133314
425079003	CAWA-17-133287
425079004	CAWA-17-133315
1203808401	Method Blank (MB) <b>ICP</b>
1203808402	Laboratory Control Sample (LCS)
1203808405	425079002(CAWA-17-133314L) Serial Dilution (SD)
1203808403	425079002(CAWA-17-133314D) Sample Duplicate (DUP)
1203808404	425079002(CAWA-17-133314S) Matrix Spike (MS)
1203808335	Method Blank (MB) <b>ICP-MS</b>
1203808336	Laboratory Control Sample (LCS)
1203808339	425079002(CAWA-17-133314L) Serial Dilution (SD)
1203808337	425079002(CAWA-17-133314D) Sample Duplicate (DUP)
1203808338	425079002(CAWA-17-133314S) Matrix Spike (MS)
1203811029	Method Blank (MB) <b>CVAA</b>
1203811030	Laboratory Control Sample (LCS)
1203811036	425079001(CAWA-17-133286L) Serial Dilution (SD)
1203811032	425079001(CAWA-17-133286D) Sample Duplicate (DUP)
1203811034	425079001(CAWA-17-133286S) Matrix Spike (MS)

**Sample Analysis**

Samples 425079001,002,003 and 004 in this SDG were analyzed for metals and mercury on an "as received" basis.

**Method/Analysis Information**

<b>Analytical Batch:</b>	1672788, 1672758, 1673857 and 1678964
<b>Prep Batch :</b>	1672787, 1672757 and 1673856
<b>Standard Operating Procedures:</b>	GL-MA-E-013 REV# 28, GL-MA-E-006 REV# 13, GL-MA-E-014 REV# 30, GL-MA-E-010 REV# 34 and GL-GC-E-107 REV# 10
<b>Analytical Method:</b>	SW846 3005A/6010C, SW846 3005A/6020A, EPA 245.2 1974 and SM:A2340B
<b>Prep Method :</b>	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 CaCO<sub>3</sub> is calculated from Calcium and Magnesium results.

The Metals analysis-ICP was performed on a PE 7300 Optima radial/axial-viewing inductively coupled plasma atomic emission spectrometer. The instrument is equipped with an ESI SC-FAST introduction, cyclonic spray chamber, and yttrium or scandium internal standard.

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

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

## **Calibration Information**

### **Instrument Calibration**

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

### **CRDL/PQL Requirements**

The 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. For the ICP-MS analysis, the ICSA solution contains 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: 425079002 (CAWA-17-133314)-ICP and ICP-MS and 425079001 (CAWA-17-133286)-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**

The serial dilution is used to assess matrix suppression or enhancement. Raw element concentrations 25x the IDL/MDL for CVAA, 50X the IDL/MDL for ICP and 100X the IDL/MDL for ICP-MS analyses are applicable for serial dilution assessment. Not all the applicable analytes were within the established acceptance criteria. Matrix suppression may be suspected. The data has been qualified.

Sample	Analyte	Value
1203808405 (CAWA-17-133314SDILT)	Potassium	11.9 *(0%-10%)

**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 (DER) was generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) 1646571 was generated for sample 1203808405 (CAWA-17-133314SDILT) in this SDG/batch.

**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.

$$\text{Hardness} = 2.497 (\text{Ca}) + 4.118 (\text{Mg})$$

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: 2017-1664 GEL Work Order: 425079

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

- \* A quality control analyte recovery is outside of specified acceptance criteria
- E %difference of sample and SD is >10%. Sample concentration must meet flagging 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:**



**Name: Nik-Cole Elmore**

**Date: 03 JUL 2017**

**Title: Data Validator**



# **Sample Data Summary**

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**METALS**  
**-1-**  
**INORGANICS ANALYSIS DATA PACKAGE**

**SDG No:** 2017-1664**CONTRACT:** ESHL00114**METHOD TYPE:** EPA**SAMPLE ID:** 425079001**BASIS:** As Received**DATE COLLECTED** 06-JUN-17**CLIENT ID:** CAWA-17-133286**LEVEL:** Low**DATE RECEIVED** 08-JUN-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	06/15/17 11:58	061517W1-3	1673857

**Prep Information:**

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1673857	1673856	EPA 245.1/245.2 Prep	20	mL	20	mL	06/14/17	AXS5

**\*Analytical Methods:**

AV EPA 245.2 1974

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**METALS**  
**-1-**  
**INORGANICS ANALYSIS DATA PACKAGE**

**SDG No:** 2017-1664**CONTRACT:** ESHL00114**METHOD TYPE:** EPA**SAMPLE ID:** 425079002**BASIS:** As Received**DATE COLLECTED** 06-JUN-17**CLIENT ID:** CAWA-17-133314**LEVEL:** Low**DATE RECEIVED** 08-JUN-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	06/15/17 12:10	061517W1-3	1673857

**METALS**  
**-1-**  
**INORGANICS ANALYSIS DATA PACKAGE**

SDG No: 2017-1664

CONTRACT: ESHL00114

METHOD TYPE: SW846

SAMPLE ID: 425079002

BASIS: As Received

DATE COLLECTED 06-JUN-17

CLIENT ID: CAWA-17-133314

LEVEL: Low

DATE RECEIVED 08-JUN-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	73.3	ug/L	J	68	200	200	1	P	JWJ	06/26/17 16:16	062617-1	1672788
7440-36-0	Antimony	3	ug/L	U	1	3	3	1	MS	BAJ	06/27/17 13:25	170627-2	1672758
7440-38-2	Arsenic	2.18	ug/L	J	2	5	5	1	MS	BAJ	06/27/17 13:25	170627-2	1672758
7440-39-3	Barium	6810	ug/L		1	5	5	1	P	JWJ	06/26/17 16:16	062617-1	1672788
7440-41-7	Beryllium	5	ug/L	U	1	5	5	1	P	JWJ	06/26/17 16:16	062617-1	1672788
7440-42-8	Boron	30.2	ug/L	J	15	50	50	1	P	JWJ	06/26/17 16:16	062617-1	1672788
7440-43-9	Cadmium	1	ug/L	U	0.3	1	1	1	MS	BAJ	06/27/17 13:25	170627-2	1672758
7440-70-2	Calcium	21600	ug/L		50	200	200	1	P	JWJ	06/26/17 16:16	062617-1	1672788
7440-47-3	Chromium	10	ug/L	U	3	10	10	1	MS	BAJ	06/27/17 13:25	170627-2	1672758
7440-48-4	Cobalt	5.85	ug/L		1	5	5	1	P	JWJ	06/26/17 16:16	062617-1	1672788
7440-50-8	Copper	10	ug/L	U	3	10	10	1	P	JWJ	06/26/17 16:16	062617-1	1672788
7439-89-6	Iron	939	ug/L		30	100	100	1	P	JWJ	06/26/17 16:16	062617-1	1672788
7439-92-1	Lead	2	ug/L	U	0.5	2	2	1	MS	BAJ	06/27/17 13:25	170627-2	1672758
7439-95-4	Magnesium	5460	ug/L		110	300	300	1	P	JWJ	06/26/17 16:16	062617-1	1672788
7439-96-5	Manganese	238	ug/L		2	10	10	1	P	JWJ	06/26/17 16:16	062617-1	1672788
7439-98-7	Molybdenum	0.670	ug/L		0.2	0.5	0.5	1	MS	BAJ	06/27/17 13:25	170627-2	1672758
7440-02-0	Nickel	1.37	ug/L	J	0.6	2	2	1	MS	BAJ	06/27/17 13:25	170627-2	1672758
7440-09-7	Potassium	3150	ug/L	E	50	150	150	1	P	JWJ	06/26/17 16:16	062617-1	1672788
7782-49-2	Selenium	5	ug/L	U	2	5	5	1	MS	BAJ	06/27/17 13:25	170627-2	1672758
7631-86-9	Silica	46600	ug/L		53	213	213	1	P	JWJ	06/26/17 16:16	062617-1	1672788
7440-22-4	Silver	1	ug/L	U	0.3	1	1	1	MS	BAJ	06/27/17 13:25	170627-2	1672758
7440-23-5	Sodium	17600	ug/L		100	300	300	1	P	JWJ	06/26/17 16:16	062617-1	1672788
7440-24-6	Strontium	193	ug/L		1	5	5	1	P	JWJ	06/26/17 16:16	062617-1	1672788
7440-28-0	Thallium	2	ug/L	U	0.6	2	2	1	MS	BAJ	06/27/17 13:25	170627-2	1672758
7440-31-5	Tin	10	ug/L	U	2.5	10	10	1	P	JWJ	06/26/17 16:16	062617-1	1672788
7440-61-1	Uranium	0.20	ug/L	U	0.067	0.2	0.2	1	MS	BAJ	06/27/17 13:25	170627-2	1672758
7440-62-2	Vanadium	1.94	ug/L	J	1	5	5	1	P	JWJ	06/26/17 16:16	062617-1	1672788
7440-66-6	Zinc	10	ug/L	U	3.3	10	10	1	P	JWJ	06/26/17 16:16	062617-1	1672788

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**METALS**  
**-1-**  
**INORGANICS ANALYSIS DATA PACKAGE**

**SDG No:** 2017-1664**CONTRACT:** ESHL00114**METHOD TYPE:****SAMPLE ID:** 425079002**BASIS:** As Received**DATE COLLECTED** 06-JUN-17**CLIENT ID:** CAWA-17-133314**LEVEL:** Low**DATE RECEIVED** 08-JUN-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	76.5	mg/L		0.453	1.24	1.24	1		TXT1	06/30/17 14:46		1678964

**Prep Information:**

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1672758	1672757	SW846 3005A	50	mL	50	mL	06/19/17	CXW4
1672788	1672787	SW846 3005A	50	mL	50	mL	06/19/17	CXW4
1673857	1673856	EPA 245.1/245.2 Prep	20	mL	20	mL	06/14/17	AXS5

**\*Analytical Methods:****P** SW846 3005A/6010C**MS** SW846 3005A/6020A**AV** EPA 245.2 1974

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**METALS**  
**-1-**  
**INORGANICS ANALYSIS DATA PACKAGE**

**SDG No:** 2017-1664**CONTRACT:** ESHL00114**METHOD TYPE:** EPA**SAMPLE ID:** 425079003**BASIS:** As Received**DATE COLLECTED** 06-JUN-17**CLIENT ID:** CAWA-17-133287**LEVEL:** Low**DATE RECEIVED** 08-JUN-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	06/15/17 12:11	061517W1-3	1673857

**Prep Information:**

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1673857	1673856	EPA 245.1/245.2 Prep	20	mL	20	mL	06/14/17	AXS5

**\*Analytical Methods:**

AV EPA 245.2 1974

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**METALS**  
**-1-**  
**INORGANICS ANALYSIS DATA PACKAGE**

**SDG No:** 2017-1664**CONTRACT:** ESHL00114**METHOD TYPE:** EPA**SAMPLE ID:** 425079004**BASIS:** As Received**DATE COLLECTED** 06-JUN-17**CLIENT ID:** CAWA-17-133315**LEVEL:** Low**DATE RECEIVED** 08-JUN-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	06/15/17 12:13	061517W1-3	1673857

**METALS**  
**-1-**  
**INORGANICS ANALYSIS DATA PACKAGE**

SDG No: 2017-1664

CONTRACT: ESHL00114

METHOD TYPE: SW846

SAMPLE ID: 425079004

BASIS: As Received

DATE COLLECTED 06-JUN-17

CLIENT ID: CAWA-17-133315

LEVEL: Low

DATE RECEIVED 08-JUN-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	321	ug/L		68	200	200	1	P	JWJ	06/26/17 16:29	062617-1	1672788
7440-36-0	Antimony	3	ug/L	U	1	3	3	1	MS	BAJ	06/27/17 13:41	170627-2	1672758
7440-38-2	Arsenic	2.25	ug/L	J	2	5	5	1	MS	BAJ	06/27/17 13:41	170627-2	1672758
7440-39-3	Barium	544	ug/L		1	5	5	1	P	JWJ	06/26/17 16:29	062617-1	1672788
7440-41-7	Beryllium	5	ug/L	U	1	5	5	1	P	JWJ	06/26/17 16:29	062617-1	1672788
7440-42-8	Boron	29	ug/L	J	15	50	50	1	P	JWJ	06/26/17 16:29	062617-1	1672788
7440-43-9	Cadmium	1	ug/L	U	0.3	1	1	1	MS	BAJ	06/27/17 13:41	170627-2	1672758
7440-70-2	Calcium	11500	ug/L		50	200	200	1	P	JWJ	06/26/17 16:29	062617-1	1672788
7440-47-3	Chromium	10	ug/L	U	3	10	10	1	MS	BAJ	06/27/17 13:41	170627-2	1672758
7440-48-4	Cobalt	3.02	ug/L	J	1	5	5	1	P	JWJ	06/26/17 16:29	062617-1	1672788
7440-50-8	Copper	10	ug/L	U	3	10	10	1	P	JWJ	06/26/17 16:29	062617-1	1672788
7439-89-6	Iron	486	ug/L		30	100	100	1	P	JWJ	06/26/17 16:29	062617-1	1672788
7439-92-1	Lead	2	ug/L	U	0.5	2	2	1	MS	BAJ	06/27/17 13:41	170627-2	1672758
7439-95-4	Magnesium	2270	ug/L		110	300	300	1	P	JWJ	06/26/17 16:29	062617-1	1672788
7439-96-5	Manganese	1030	ug/L		2	10	10	1	P	JWJ	06/26/17 16:29	062617-1	1672788
7439-98-7	Molybdenum	1.26	ug/L		0.2	0.5	0.5	1	MS	BAJ	06/27/17 13:41	170627-2	1672758
7440-02-0	Nickel	1.83	ug/L	J	0.6	2	2	1	MS	BAJ	06/27/17 13:41	170627-2	1672758
7440-09-7	Potassium	3280	ug/L	E	50	150	150	1	P	JWJ	06/26/17 16:29	062617-1	1672788
7782-49-2	Selenium	5	ug/L	U	2	5	5	1	MS	BAJ	06/27/17 13:41	170627-2	1672758
7631-86-9	Silica	38800	ug/L		53	213	213	1	P	JWJ	06/26/17 16:29	062617-1	1672788
7440-22-4	Silver	1	ug/L	U	0.3	1	1	1	MS	BAJ	06/27/17 13:41	170627-2	1672758
7440-23-5	Sodium	17800	ug/L		100	300	300	1	P	JWJ	06/26/17 16:29	062617-1	1672788
7440-24-6	Strontium	51.2	ug/L		1	5	5	1	P	JWJ	06/26/17 16:29	062617-1	1672788
7440-28-0	Thallium	2	ug/L	U	0.6	2	2	1	MS	BAJ	06/27/17 13:41	170627-2	1672758
7440-31-5	Tin	10	ug/L	U	2.5	10	10	1	P	JWJ	06/26/17 16:29	062617-1	1672788
7440-61-1	Uranium	0.20	ug/L	U	0.067	0.2	0.2	1	MS	BAJ	06/27/17 13:41	170627-2	1672758
7440-62-2	Vanadium	5	ug/L	U	1	5	5	1	P	JWJ	06/26/17 16:29	062617-1	1672788
7440-66-6	Zinc	8.21	ug/L	J	3.3	10	10	1	P	JWJ	06/26/17 16:29	062617-1	1672788



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**METALS**  
**-1-**  
**INORGANICS ANALYSIS DATA PACKAGE**

**SDG No:** 2017-1664**CONTRACT:** ESHL00114**METHOD TYPE:****SAMPLE ID:** 425079004**BASIS:** As Received**DATE COLLECTED** 06-JUN-17**CLIENT ID:** CAWA-17-133315**LEVEL:** Low**DATE RECEIVED** 08-JUN-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	38.1	mg/L		0.453	1.24	1.24	1		TXT1	06/30/17 14:46		1678964

**Prep Information:**

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1672758	1672757	SW846 3005A	50	mL	50	mL	06/19/17	CXW4
1672788	1672787	SW846 3005A	50	mL	50	mL	06/19/17	CXW4
1673857	1673856	EPA 245.1/245.2 Prep	20	mL	20	mL	06/14/17	AXS5

**\*Analytical Methods:**

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

# **Quality Control Summary**

**METALS**  
**-3b-**  
**PREPARATION BLANK SUMMARY**

SDG NO. 2017-1664

Contract: ESHL00114

Matrix: W

<u>Sample ID</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Acceptance Window</u>	<u>Conc Qual</u>	<u>M*</u>	<u>MDL</u>	<u>RDL</u>
1203808335	Antimony	1	ug/L	+/-3	U	MS	1	3
	Arsenic	2	ug/L	+/-5	U	MS	2	5
	Chromium	3	ug/L	+/-10	U	MS	3	10
	Lead	0.5	ug/L	+/-2	U	MS	0.5	2
	Cadmium	0.3	ug/L	+/-1	U	MS	0.3	1
	Molybdenum	0.231	ug/L	+/-0.5	J	MS	0.2	0.5
	Selenium	2	ug/L	+/-5	U	MS	2	5
	Thallium	0.6	ug/L	+/-2	U	MS	0.6	2
	Uranium	0.067	ug/L	+/-0.2	U	MS	0.067	0.2
	Silver	0.3	ug/L	+/-1	U	MS	0.3	1
	Nickel	0.6	ug/L	+/-2	U	MS	0.6	2
1203808401	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
	Cobalt	1	ug/L	+/-5	U	P	1	5
	Calcium	50	ug/L	+/-200	U	P	50	200
	Boron	15	ug/L	+/-50	U	P	15	50
	Beryllium	1	ug/L	+/-5	U	P	1	5
	Barium	1	ug/L	+/-5	U	P	1	5
	Aluminum	68	ug/L	+/-200	U	P	68	200
	Silica	53	ug/L	+/-213	U	P	53	213
	Sodium	100	ug/L	+/-300	U	P	100	300
	Strontium	1	ug/L	+/-5	U	P	1	5
	Tin	2.5	ug/L	+/-10	U	P	2.5	10
	Vanadium	1	ug/L	+/-5	U	P	1	5
	Zinc	3.3	ug/L	+/-10	U	P	3.3	10
1203811029	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.** 2017-1664 **Client ID:** CAWA-17-133314S

**Contract:** ESHL00114 **Level:** Low

**Matrix:** WATER **% Solids:**

**Sample ID:** 425079002 **Spike ID:** 1203808338

<u>Analyte</u>	<u>Units</u>	<u>Acceptance Limit</u>	<u>Spiked Result</u>	<u>C</u>	<u>Sample Result</u>	<u>C</u>	<u>Spike Added</u>	<u>% Recovery</u>	<u>Qual</u>	<u>M*</u>
Antimony	ug/L	75-125	48.9		1	U	50	97.1		MS
Arsenic	ug/L	75-125	51.7		2.18	J	50	99.1		MS
Cadmium	ug/L	75-125	49.1		0.3	U	50	98.2		MS
Chromium	ug/L	75-125	50.1		3	U	50	99.4		MS
Lead	ug/L	75-125	48.7		0.5	U	50	97.4		MS
Molybdenum	ug/L	75-125	51.7		0.67		50	102		MS
Nickel	ug/L	75-125	52.9		1.37	J	50	103		MS
Selenium	ug/L	75-125	47.4		2	U	50	94.5		MS
Silver	ug/L	75-125	51.1		0.3	U	50	102		MS
Thallium	ug/L	75-125	47.2		0.6	U	50	94.3		MS
Uranium	ug/L	75-125	48.9		0.067	U	50	97.8		MS

## \*Analytical Methods:

MS SW846 3005A/6020A

## METALS

-5a-

## Matrix Spike Summary

**SDG NO.** 2017-1664 **Client ID:** CAWA-17-133314S

**Contract:** ESHL00114 **Level:** Low

**Matrix:** WATER **% Solids:**

**Sample ID:** 425079002 **Spike ID:** 1203808404

<u>Analyte</u>	<u>Units</u>	<u>Acceptance Limit</u>	<u>Spiked Result</u>	<u>C</u>	<u>Sample Result</u>	<u>C</u>	<u>Spike Added</u>	<u>% Recovery</u>	<u>Qual</u>	<u>M*</u>
Boron	ug/L	75-125	538		30.2	J	500	102		P
Calcium	ug/L		26700		21600		5000	102	N/A	P
Cobalt	ug/L	75-125	511		5.85		500	101		P
Copper	ug/L	75-125	514		3	U	500	103		P
Iron	ug/L	75-125	6010		939		5000	101		P
Magnesium	ug/L	75-125	10600		5460		5000	102		P
Manganese	ug/L	75-125	741		238		500	101		P
Potassium	ug/L	75-125	8210		3150		5000	101		P
Silica	ug/L		58900		46600		10700	115	N/A	P
Sodium	ug/L	75-125	23100		17600		5000	110		P
Strontium	ug/L	75-125	685		193		500	98.4		P
Tin	ug/L	75-125	505		2.5	U	500	101		P
Vanadium	ug/L	75-125	515		1.94	J	500	103		P
Zinc	ug/L	75-125	482		3.3	U	500	96.4		P
Aluminum	ug/L	75-125	5110		73.3	J	5000	101		P
Barium	ug/L		7510		6810		500	141	N/A	P
Beryllium	ug/L	75-125	508		1	U	500	102		P

## \*Analytical Methods:

**P** SW846 3005A/6010C

## METALS

-5a-

## Matrix Spike Summary

SDG NO. 2017-1664 Client ID CAWA-17-133286S

Contract: ESHL00114 Level: Low

Matrix: WATER % Solids:

Sample ID: 425079001 Spike ID: 1203811034

<u>Analyte</u>	<u>Units</u>	<u>Acceptance Limit</u>	<u>Spiked Result</u>	<u>C</u>	<u>Sample Result</u>	<u>C</u>	<u>Spike Added</u>	<u>% Recovery</u>	<u>Qual</u>	<u>M*</u>
Mercury	ug/L	75-125	2.06		0.067	U	2	103		AV

## \*Analytical Methods:

AV EPA 245.1/245.2

**Metals**  
**-6-**  
**Duplicate Sample Summary**

SDG No.: 2017-1664

Lab Code: GEL

Contract: ESHL00114

Client ID: CAWA-17-133314D

Matrix: WATER

Level: Low

Sample ID: 425079002

Duplicate ID: 1203808337

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		2.18 J		2 U		200		MS
Cadmium	ug/L		0.3 U		0.3 U				MS
Chromium	ug/L		3 U		3 U				MS
Lead	ug/L		0.5 U		0.5 U				MS
Molybdenum	ug/L	+/- .5	0.67		0.643		4.11		MS
Nickel	ug/L	+/- 2	1.37 J		1.23 J		10.5		MS
Selenium	ug/L		2 U		2 U				MS
Silver	ug/L		0.3 U		0.3 U				MS
Thallium	ug/L		0.6 U		0.6 U				MS
Uranium	ug/L		0.067 U		0.067 U				MS

\*Analytical Methods:

MS SW846 3005A/6020A

**Metals**  
**-6-**  
**Duplicate Sample Summary**

SDG No.: 2017-1664

Lab Code: GEL

Contract: ESHL00114

Client ID: CAWA-17-133314D

Matrix: WATER

Level: Low

Sample ID: 425079002

Duplicate ID: 1203808403

Percent Solids for Dup: N/A

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M*
Aluminum	ug/L	+/-200	73.3 J		82.8 J		12.1		P
Barium	ug/L	+/-20%	6810		6960		2.24		P
Beryllium	ug/L		1 U		1 U				P
Boron	ug/L	+/-50	30.2 J		32.2 J		6.45		P
Calcium	ug/L	+/-20%	21600		22200		2.37		P
Cobalt	ug/L	+/-5	5.85		5.72		2.24		P
Copper	ug/L		3 U		3 U				P
Iron	ug/L	+/-20%	939		969		3.14		P
Magnesium	ug/L	+/-20%	5460		5580		2.24		P
Manganese	ug/L	+/-20%	238		244		2.2		P
Potassium	ug/L	+/-20%	3150		3300		4.54		P
Silica	ug/L	+/-20%	46600		47500		1.83		P
Sodium	ug/L	+/-20%	17600		18100		2.57		P
Strontium	ug/L	+/-20%	193		198		2.74		P
Tin	ug/L		2.5 U		2.5 U				P
Vanadium	ug/L	+/-5	1.94 J		1.22 J		45.3		P
Zinc	ug/L		3.3 U		3.3 U				P

\*Analytical Methods:

P SW846 3005A/6010C



**Metals**  
**–6–**  
**Duplicate Sample Summary**

**SDG No.:** 2017–1664**Lab Code:** GEL**Contract:** ESHL00114**Client ID:** CAWA–17–133286D**Matrix:** WATER**Level:** Low**Sample ID:** 425079001**Duplicate ID:** 1203811032**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. 2017-1664

Contract: ESHL00114

Aqueous LCS Source:O2Si

Solid LCS Source:

<u>Sample ID</u>	<u>Analyte</u>	<u>Units</u>	<u>True Value</u>	<u>Result</u>	<u>C</u>	<u>% Recovery</u>	<u>Acceptance Limit</u>	<u>M*</u>
1203808336								
	Antimony	ug/L	50	50.1		100	80-120	MS
	Arsenic	ug/L	50	50.7		101	80-120	MS
	Cadmium	ug/L	50	51		102	80-120	MS
	Chromium	ug/L	50	51.7		103	80-120	MS
	Lead	ug/L	50	49.2		98.4	80-120	MS
	Molybdenum	ug/L	50	50.9		102	80-120	MS
	Nickel	ug/L	50	51.4		103	80-120	MS
	Selenium	ug/L	50	49.4		98.7	80-120	MS
	Silver	ug/L	50	51.5		103	80-120	MS
	Thallium	ug/L	50	47.7		95.4	80-120	MS
	Uranium	ug/L	50	47.5		95.1	80-120	MS

## \*Analytical Methods:

MS SW846 3005A/6020A

## METALS

-7-

## Laboratory Control Sample Summary

SDG NO. 2017-1664

Contract: ESHL00114

Aqueous LCS Source:OS2I

Solid LCS Source:

<u>Sample ID</u>	<u>Analyte</u>	<u>Units</u>	<u>True Value</u>	<u>Result</u>	<u>C</u>	<u>% Recovery</u>	<u>Acceptance Limit</u>	<u>M*</u>
1203808402								
	Aluminum	ug/L	5000	5160		103	80-120	P
	Barium	ug/L	500	505		101	80-120	P
	Beryllium	ug/L	500	500		100	80-120	P
	Boron	ug/L	500	493		98.5	80-120	P
	Calcium	ug/L	5000	5140		103	80-120	P
	Cobalt	ug/L	500	514		103	80-120	P
	Copper	ug/L	500	506		101	80-120	P
	Iron	ug/L	5000	5110		102	80-120	P
	Magnesium	ug/L	5000	5210		104	80-120	P
	Manganese	ug/L	500	504		101	80-120	P
	Potassium	ug/L	5000	5250		105	80-120	P
	Silica	ug/L	10700	10500		98.3	80-120	P
	Sodium	ug/L	5000	5250		105	80-120	P
	Strontium	ug/L	500	501		100	80-120	P
	Tin	ug/L	500	509		102	80-120	P
	Vanadium	ug/L	500	507		101	80-120	P
	Zinc	ug/L	500	486		97.2	80-120	P

## \*Analytical Methods:

P SW846 3005A/6010C

## METALS

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## Laboratory Control Sample Summary

SDG NO. 2017-1664

Contract: ESHL00114

Aqueous LCS Source: GEL

Solid LCS Source:

<u>Sample ID</u>	<u>Analyte</u>	<u>Units</u>	<u>True Value</u>	<u>Result</u>	<u>C</u>	<u>% Recovery</u>	<u>Acceptance Limit</u>	<u>M*</u>
1203811030	Mercury	ug/L	2	2.08		104	85-115	AV

## \*Analytical Methods:

AV EPA 245.1/245.2

## METALS

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## Serial Dilution Sample Summary

**SDG NO.** 2017-1664 **Client ID:** CAWA-17-133314L

**Contract:** ESHL00114

**Matrix:** LIQUID **Level:** Low

**Sample ID:** 425079002 **Serial Dilution ID:** 1203808339

<u>Analyte</u>	<u>Initial Value ug/L</u>	<u>C</u>	<u>Serial Value ug/L</u>	<u>C</u>	<u>% Difference</u>	<u>Qual</u>	<u>Acceptance Limit</u>	<u>M*</u>
Antimony	1	U	5	U				MS
Arsenic	2.18	J	10	U	13.183			MS
Cadmium	.3	U	1.5	U				MS
Chromium	3	U	15	U				MS
Lead	.5	U	2.5	U				MS
Molybdenum	.67		1	U	14.925			MS
Nickel	1.37	J	3	U	4.745			MS
Selenium	2	U	10	U				MS
Silver	.3	U	1.5	U				MS
Thallium	.6	U	3	U				MS
Uranium	.067	U	.335	U				MS

## \*Analytical Methods:

MS SW846 3005A/6020A

## METALS

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## Serial Dilution Sample Summary

SDG NO. 2017-1664 Client ID: CAWA-17-133314L

Contract: ESHL00114

Matrix: LIQUID Level: Low

Sample ID: 425079002 Serial Dilution ID: 1203808405

<u>Analyte</u>	<u>Initial Value</u> ug/L	<u>C</u>	<u>Serial Value</u> ug/L	<u>C</u>	<u>% Difference</u>	<u>Qual</u>	<u>Acceptance Limit</u>	<u>M*</u>
Aluminum	73.3	J	340	U	64.951			P
Barium	6810		7110		4.451		10	P
Beryllium	1	U	5	U				P
Boron	30.2	J	75	U	5.654			P
Calcium	21600		21300		1.585		10	P
Cobalt	5.85		5.27	J	9.82			P
Copper	3	U	15	U				P
Iron	939		920		1.99			P
Magnesium	5460		5570		2.107			P
Manganese	238		250		4.632		10	P
Potassium	3150		3530		11.944	E	10	P
Silica	46600		47100		1.064		10	P
Sodium	17600		18400		4.126		10	P
Strontium	193		195		.969		10	P
Tin	2.5	U	12.5	U				P
Vanadium	1.94	J	5	U	38.072			P
Zinc	3.3	U	16.5	U				P

## \*Analytical Methods:

P SW846 3005A/6010C

## METALS

-9-

## Serial Dilution Sample Summary

**SDG NO.** 2017-1664 **Client ID:** CAWA-17-133286L**Contract:** ESHL00114**Matrix:** LIQUID **Level:** Low**Sample ID:** 425079001 **Serial Dilution ID:** 1203811036

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

## \*Analytical Methods:

AV EPA 245.1/245.2

# Miscellaneous



DATA EXCEPTION REPORT			
<b>Mo.Day Yr.</b> 27-JUN-17	<b>Division:</b> Industrial	<b>Quality Criteria:</b> Specifications	<b>Type:</b> Process
<b>Instrument Type:</b> ICP	<b>Test / Method:</b> SW846 3005A/6010C	<b>Matrix Type:</b> Liquid	<b>Client Code:</b> ESHL
<b>Batch ID:</b> 1672788	<b>Sample Numbers:</b> See Below		
<b>Potentially affected work order(s)(SDG):</b> 425075(2017-1667),425079(2017-1664),425115(2017-1690),425121(2017-1689) <b>Application Issues:</b> Failed difference for SDILT			
<b>Specification and Requirements Exception Description:</b>		<b>DER Disposition:</b>	
1. Failed difference for SDILT:  QC   1203808405SDILT		1. Not all the applicable analytes were within the established acceptance criteria. Matrix suppression may be suspected. The data has been qualified. 1203808405 (CAWA-17-133314SDILT) Potassium [11.9 *(0%-10%)].	

**Originator's Name:**  
Jerry Wigfall            27-JUN-17

**Data Validator/Group Leader:**  
Helen Camello            28-JUN-17

# **General Chem Analysis**

# Case Narrative

**General Chemistry  
Technical Case Narrative  
ARS International, LLC (ARSL)  
SDG #: 2017-1664  
Work Order #: 425079**

**Method/Analysis Information**

**Product:** Carbon and Total Organic

**Analytical Batch:** 1673634

**Method:** SW 9060 Total Organic Carbon

**Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
425079001	CAWA-17-133286
425079003	CAWA-17-133287
1203812102	Method Blank (MB)
1203812103	Laboratory Control Sample (LCS)
1203812277	Laboratory Control Sample Duplicate (LCSD)
1203812104	425075001(CAWA-17-133284) Sample Duplicate (DUP)
1203812106	425075001(CAWA-17-133284) 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.

**LCS/LCSD Relative Percent Difference (RPD) Statement**

The RPD between the LCS and LCSD met the acceptance limits.

**Quality Control (QC) Designation**

Sample 425075001 (CAWA-17-133284) 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**

<b>Product:</b>	<b>Cyanide and Total</b>		
<b>Analytical Batch:</b>	1671991	<b>Method:</b>	WSP-CN(T)
<b>Prep Batch :</b>	1671990	<b>Method:</b>	EPA 335.4

### **Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
425079001	CAWA-17-133286
425079003	CAWA-17-133287
1203806299	Method Blank (MB)
1203806300	Laboratory Control Sample (LCS)
1203806301	424904001(NonSDG) Sample Duplicate (DUP)
1203806302	424904001(NonSDG) 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 424904001 (NonSDG) 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:** Ion Chromatography

**Analytical Batch:** 1672927 and 1673741 **Method:** WSP-ANIONS

### **Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
425079002	CAWA-17-133314
425079004	CAWA-17-133315
1203808700	Method Blank (MB)
1203810741	Method Blank (MB)
1203808701	Laboratory Control Sample (LCS)
1203810742	Laboratory Control Sample (LCS)
1203808702	425075004(CAWA-17-133313) Sample Duplicate (DUP)
1203810743	425079002(CAWA-17-133314) Sample Duplicate (DUP)
1203808703	425075004(CAWA-17-133313) Post Spike (PS)
1203810744	425079002(CAWA-17-133314) 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.

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

### **Initial Calibration**

All initial calibration requirements have been met for this SDG.

### **Continuing Calibration Blanks**

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

**Calibration Verification Information (CCV)**

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

**Y Intercept Rule**

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

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

The 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**

Samples 425075004 (CAWA-17-133313) and 425079002 (CAWA-17-133314) were selected for QC analysis.

**Matrix Spike (MS)/Post Spike (PS) Recovery Statement**

The MS/PS recoveries for this sample set were within the required acceptance limits where applicable.

**Duplicate Relative Percent Difference (RPD) Statement**

The RPD between the sample and its duplicate met the acceptance limits.

**Technical Information**

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

**Holding Times**

All samples in this SDG met the specified holding time.

**Sample Dilutions**

The following samples 425079004 (CAWA-17-133315), 1203810743 (CAWA-17-133314DUP), 1203810744 (CAWA-17-133314PS) and 425079002 (CAWA-17-133314) were diluted because target analyte concentrations exceeded the calibration range. Dilutions may be required for many reasons, including to minimize matrix interferences or to bring over range target analyte concentrations into the linear calibration range.

Analyte	425079	
	002	004
Chloride	2X	2X

**Sample Re-analysis**

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

**Miscellaneous Information**

**Data Exception (DER) Documentation**

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

**Manual Integrations**

Samples 1203808702 (CAWA-17-133313DUP), 1203808703 (CAWA-17-133313PS), 425079004 (CAWA-17-133315), 1203810743 (CAWA-17-133314DUP), 1203810744 (CAWA-17-133314PS) and 425079002 (CAWA-17-133314) 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:** 1672879 and 1673875 **Method:** NH3  
**Prep Batch :** 1672878 and 1673874 **Method:** EPA 350.1 Prep

### **Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
425079002	CAWA-17-133314
425079004	CAWA-17-133315
1203808632	Method Blank (MB)
1203811097	Method Blank (MB)
1203808633	Laboratory Control Sample (LCS)
1203811098	Laboratory Control Sample (LCS)
1203808634	425079004(CAWA-17-133315) Sample Duplicate (DUP)
1203811099	425079002(CAWA-17-133314) Sample Duplicate (DUP)
1203808636	425079004(CAWA-17-133315) Matrix Spike (MS)
1203811100	425079002(CAWA-17-133314) 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.

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 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**

Samples 425079004 (CAWA-17-133315) and 425079002 (CAWA-17-133314) were selected for QC analysis.

**Matrix Spike (MS)/Post Spike (PS) Recovery Statement**

The MS/PS recoveries for this sample set were within the required acceptance limits where applicable.

**Duplicate Relative Percent Difference (RPD) Statement**

The RPD between the sample and its duplicate met the acceptance limits.

**Technical Information**

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

**Holding Times**

All samples in this SDG met the specified holding time.

**Sample Preservation/Integrity**

All the samples from this sample group met the preservation and integrity requirements of the method.

**Sample Dilutions**

The samples in this SDG did not require dilutions.

**Sample Re-analysis**

Sample 425079004 (CAWA-17-133315) was re-analyzed due to (its) proximity to an overrange sample. 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**

<b>Product:</b>	<b>Total Kjeldahl Nitrogen</b>		
<b>Analytical Batch:</b>	1672889 and 1673872	<b>Method:</b>	TKN
<b>Prep Batch :</b>	1672888 and 1673870	<b>Method:</b>	EPA 351.2 Prep

### **Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
425079001	CAWA-17-133286
425079003	CAWA-17-133287
1203808648	Method Blank (MB)
1203811089	Method Blank (MB)
1203808649	Laboratory Control Sample (LCS)
1203811090	Laboratory Control Sample (LCS)
1203808650	425079003(CAWA-17-133287) Sample Duplicate (DUP)
1203811091	425079001(CAWA-17-133286) Sample Duplicate (DUP)
1203808651	425079003(CAWA-17-133287) Matrix Spike (MS)
1203811092	425079001(CAWA-17-133286) 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 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**

Samples 425079003 (CAWA-17-133287) and 425079001 (CAWA-17-133286) were selected for QC analysis.

**Matrix Spike (MS)/Post Spike (PS) Recovery Statement**

The MS/PS recoveries for this sample set were within the required acceptance limits where applicable.

**Duplicate Relative Percent Difference (RPD) Statement**

The RPD between the sample and its duplicate met the acceptance limits.

**Technical Information**

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

**Holding Times**

All samples in this SDG met the specified holding time.

**Sample Preservation/Integrity**

All the samples from this sample group met the preservation and integrity requirements of the method.

**Sample Dilutions**

The samples in this SDG did not require dilutions.

**Sample Re-analysis**

Samples 1203808648 (MB), 1203808649 (LCS), 1203808650 (CAWA-17-133287DUP), 1203808651 (CAWA-17-133287MS) and 425079003 (CAWA-17-133287) were re-analyzed due to CCB failure. The reanalysis data with passing instrument QC was reported. Samples 1203811089 (MB), 1203811090 (LCS), 1203811091 (CAWA-17-133286DUP), 1203811092 (CAWA-17-133286MS) and 425079001 (CAWA-17-133286) 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:** 1672172 and 1673506

**Method:** NO3NO2

### **Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
425079002	CAWA-17-133314
425079004	CAWA-17-133315
1203806723	Method Blank (MB)
1203810164	Method Blank (MB)
1203806724	Laboratory Control Sample (LCS)
1203810165	Laboratory Control Sample (LCS)
1203810166	Laboratory Control Sample Duplicate (LCSD)
1203807680	425079004(CAWA-17-133315) Sample Duplicate (DUP)
1203810167	425075002(CAWA-17-133312) Sample Duplicate (DUP)
1203807682	425079004(CAWA-17-133315) Post Spike (PS)
1203810168	425075002(CAWA-17-133312) 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 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**

Samples 425079004 (CAWA-17-133315) and 425075002 (CAWA-17-133312) were selected for QC analysis.

**Matrix Spike (MS)/Post Spike (PS) Recovery Statement**

The MS/PS recoveries for this sample set were within the required acceptance limits where applicable.

**Duplicate Relative Percent Difference (RPD) Statement**

The RPD between the sample and its duplicate met the acceptance limits.

**LCS/LCSD Relative Percent Difference (RPD) Statement**

The RPD between the LCS and LCSD 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:**                    **Total Phosphorus**  
**Analytical Batch:**    1672893 and 1673877    **Method:**    PO4  
**Prep Batch :**            1672892 and 1673876    **Method:**    EPA 365.4 Prep

### **Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
425079002	CAWA-17-133314
425079004	CAWA-17-133315
1203808658	Method Blank (MB)
1203811104	Method Blank (MB)
1203808659	Laboratory Control Sample (LCS)
1203811105	Laboratory Control Sample (LCS)
1203808660	425079004(CAWA-17-133315) Sample Duplicate (DUP)
1203811108	425079002(CAWA-17-133314) Sample Duplicate (DUP)
1203808661	425079004(CAWA-17-133315) Matrix Spike (MS)
1203811109	425079002(CAWA-17-133314) 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 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**

Samples 425079004 (CAWA-17-133315) and 425079002 (CAWA-17-133314) were selected for QC analysis.

**Matrix Spike (MS)/Post Spike (PS) Recovery Statement**

The MS/PS recoveries for this sample set were within the required acceptance limits where applicable.

**Duplicate Relative Percent Difference (RPD) Statement**

The RPD between the sample and its duplicate met the acceptance limits.

**Technical Information**

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

**Holding Times**

All samples in this SDG met the specified holding time.

**Sample Preservation/Integrity**

All the samples from this sample group met the preservation and integrity requirements of the method.

**Sample Dilutions**

The samples in this SDG did not require dilutions.

**Sample Re-analysis**

Samples 1203811104 (MB) and 1203811105 (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:

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### **Method/Analysis Information**

**Product:** Solids and Total Dissolved

**Analytical Batch:** 1673663

**Method:** TDS

### **Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
425079002	CAWA-17-133314
425079004	CAWA-17-133315
1203810548	Method Blank (MB)
1203810549	Laboratory Control Sample (LCS)
1203810556	425075002(CAWA-17-133312) 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 425075002 (CAWA-17-133312) 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:**    1678861                    **Method:**    EPA120.1 Specific Conductivity

### **Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
425079002	CAWA-17-133314
425079004	CAWA-17-133315
1203822826	Laboratory Control Sample (LCS)
1203822828	425121001(CAWA-17-133347) 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**

Sample 425121001 (CAWA-17-133347) 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:** pH  
**Analytical Batch:** 1673523 **Method:** PH

### **Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
425079002	CAWA-17-133314
425079004	CAWA-17-133315
1203811672	Laboratory Control Sample (LCS)
1203810238	425121001(CAWA-17-133347) 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 425121001 (CAWA-17-133347) 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
1203810238 (CAWA-17-133347DUP)	pH	Received 09-JUN-17, out of holding 07-JUN-17
425079002 (CAWA-17-133314)	pH	Received 08-JUN-17, out of holding 06-JUN-17
425079004 (CAWA-17-133315)	pH	Received 08-JUN-17, out of holding 06-JUN-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) 1642299 was generated for samples 425079002 (CAWA-17-133314), 425079004 (CAWA-17-133315) and 1203810238 (CAWA-17-133347DUP) 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:

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### **Method/Analysis Information**

**Product:** Alkalinity

**Analytical Batch:** 1673522      **Method:** EPA 310.1 Total Alkalinity

### **Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
425079002	CAWA-17-133314
425079004	CAWA-17-133315
1203810229	Laboratory Control Sample (LCS)
1203810232	425121001(CAWA-17-133347) Sample Duplicate (DUP)
1203810235	425121001(CAWA-17-133347) 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 425121001 (CAWA-17-133347) 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**

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**Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.



## **GEL LABORATORIES LLC**

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

### **Qualifier Definition Report for**

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

Client SDG: 2017-1664 GEL Work Order: 425079


#### **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:** 

**Name:** Aubrey Kingsbury

**Date:** 30 JUN 2017

**Title:** Analyst I

# **Sample Data Summary**

# GEL LABORATORIES LLC

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## Certificate of Analysis

Report Date: June 30, 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: 2017-1664

Client Sample ID: CAWA-17-133286  
Sample ID: 425079001  
Matrix: W  
Collect Date: 06-JUN-17 10:43  
Receive Date: 08-JUN-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		3.75	0.330	1.00	mg/L		1	TSM	06/21/17	2128	1673634	1
Flow Injection Analysis												
WSP-CN(T) "As Received"												
Cyanide, Total	U	ND	1.67	5.00	ug/L	1.00	1	AXH3	06/12/17	1140	1671991	2
Nutrient Analysis												
TKN "As Received"												
Nitrogen, Total Kjeldahl	U	ND	0.033	0.100	mg/L	1.00	1	KLP1	06/21/17	0953	1673872	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 335.4	EPA 335.4 Total Cyanide	AXH3	06/12/17	0925	1671990
EPA 351.2 Prep	EPA 351.2 Total Kjeldahl Nitrogen Prep	AXH3	06/19/17	1700	1673870

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

# GEL LABORATORIES LLC

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

## Certificate of Analysis

Report Date: June 30, 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: 2017-1664

Client Sample ID: CAWA-17-133314  
Sample ID: 425079002  
Matrix: W  
Collect Date: 06-JUN-17 10:43  
Receive Date: 08-JUN-17  
Collector: Client

Project: ESHL00114  
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
WSP-ANIONS "As Received"												
Bromide	J	0.0867	0.067	0.200	mg/L		1	MXL2	06/13/17	2034	1673741	1
Fluoride		0.171	0.033	0.100	mg/L		1					
Sulfate		6.08	0.133	0.400	mg/L		1					
Chloride		13.8	0.134	0.400	mg/L		2	MXL2	06/14/17	1418	1673741	2
Nutrient Analysis												
NH3 "As Received"												
Nitrogen, Ammonia		0.0967	0.017	0.050	mg/L	1.00	1	KLP1	06/15/17	1130	1673875	3
NO3NO2 "As Received"												
Nitrogen, Nitrate/Nitrite	J	0.0316	0.017	0.050	mg/L		1	AXH3	06/14/17	0812	1673506	4
PO4 "As Received"												
Phosphorus, Total as P		0.0742	0.020	0.050	mg/L	1.00	1	KLP1	06/20/17	1028	1673877	5
Solids Analysis												
TDS "As Received"												
Total Dissolved Solids		177	3.40	14.3	mg/L			KLP1	06/13/17	1542	1673663	6
Titration and Ion Analysis												
EPA 310.1 Total Alkalinity "As Received"												
Alkalinity, Total as CaCO3		97.0	1.45	4.00	mg/L			RXB5	06/14/17	1458	1673522	7
Carbonate alkalinity (CaCO3)	U	ND	1.45	4.00	mg/L							
EPA120.1 Specific Conductivity "As Received"												
Conductivity		256	1.00	1.00	umhos/cm		1	RXB5	06/30/17	1334	1678861	8
PH "As Received"												
pH at Temp 20.4C	H	7.07	0.010	0.100	SU		1	RXB5	06/14/17	1456	1673523	9

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.1 Prep	EPA 350.1 Ammonia Nitrogen Prep	AXH3	06/15/17	0855	1673874
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	AXH3	06/19/17	1700	1673876

# GEL LABORATORIES LLC

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## Certificate of Analysis

Report Date: June 30, 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: 2017-1664

Client Sample ID: CAWA-17-133314  
Sample ID: 425079002

Project: ESHL00114  
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
The following Analytical Methods were performed:												
Method	Description		Analyst Comments									
1	EPA:300.0											
2	EPA:300.0											
3	EPA:350.1											
4	EPA:353.2											
5	EPA 365.4 1974											
6	EPA:160.1											
7	EPA:310.1											
8	EPA:120.1											
9	EPA 150.1 1982											

### Notes:

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

MDA: Minimum Detectable Activity

MDC: Minimum Detectable Concentration

Lc/LC: Critical Level

PF: Prep Factor

RL: Reporting Limit

SQL: Sample Quantitation Limit

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## Certificate of Analysis

Report Date: June 30, 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: 2017-1664

Client Sample ID: CAWA-17-133287  
Sample ID: 425079003  
Matrix: W  
Collect Date: 06-JUN-17 15:13  
Receive Date: 08-JUN-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		3.76	0.330	1.00	mg/L		1	TSM	06/21/17	2215	1673634	1
Flow Injection Analysis												
WSP-CN(T) "As Received"												
Cyanide, Total	U	ND	1.67	5.00	ug/L	1.00	1	AXH3	06/12/17	1141	1671991	2
Nutrient Analysis												
TKN "As Received"												
Nitrogen, Total Kjeldahl		0.349	0.033	0.100	mg/L	1.00	1	KLP1	06/13/17	1115	1672889	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 335.4	EPA 335.4 Total Cyanide	AXH3	06/12/17	0925	1671990
EPA 351.2 Prep	EPA 351.2 Total Kjeldahl Nitrogen Prep	KLP1	06/12/17	1630	1672888

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

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## Certificate of Analysis

Report Date: June 30, 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: 2017-1664

Client Sample ID: CAWA-17-133315  
Sample ID: 425079004  
Matrix: W  
Collect Date: 06-JUN-17 15:13  
Receive Date: 08-JUN-17  
Collector: Client

Project: ESHL00114  
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
WSP-ANIONS "As Received"												
Bromide	J	0.0782	0.067	0.200	mg/L		1	MXL2	06/10/17	0247	1672927	1
Fluoride	J	0.0917	0.033	0.100	mg/L		1					
Sulfate		9.66	0.133	0.400	mg/L		1					
Chloride		16.7	0.134	0.400	mg/L		2	MXL2	06/12/17	1620	1672927	2
Nutrient Analysis												
NH3 "As Received"												
Nitrogen, Ammonia		0.182	0.017	0.050	mg/L	1.00	1	KLP1	06/13/17	1318	1672879	3
NO3NO2 "As Received"												
Nitrogen, Nitrate/Nitrite	U	ND	0.017	0.050	mg/L		1	AXH3	06/09/17	1235	1672172	4
PO4 "As Received"												
Phosphorus, Total as P		0.122	0.020	0.050	mg/L	1.00	1	KLP1	06/13/17	1427	1672893	5
Solids Analysis												
TDS "As Received"												
Total Dissolved Solids		114	3.40	14.3	mg/L			KLP1	06/13/17	1542	1673663	6
Titration and Ion Analysis												
EPA 310.1 Total Alkalinity "As Received"												
Alkalinity, Total as CaCO3		50.8	1.45	4.00	mg/L			RXB5	06/14/17	1502	1673522	7
Carbonate alkalinity (CaCO3)	U	ND	1.45	4.00	mg/L							
EPA120.1 Specific Conductivity "As Received"												
Conductivity		184	1.00	1.00	umhos/cm		1	RXB5	06/30/17	1335	1678861	8
PH "As Received"												
pH at Temp 20.6C	H	6.83	0.010	0.100	SU		1	RXB5	06/14/17	1459	1673523	9

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.1 Prep	EPA 350.1 Ammonia Nitrogen Prep	KLP1	06/13/17	0930	1672878
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	KLP1	06/12/17	1630	1672892

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## Certificate of Analysis

Report Date: June 30, 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: 2017-1664

Client Sample ID: CAWA-17-133315  
Sample ID: 425079004

Project: ESHL00114  
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
The following Analytical Methods were performed:												
Method	Description		Analyst Comments									
1	EPA:300.0											
2	EPA:300.0											
3	EPA:350.1											
4	EPA:353.2											
5	EPA 365.4 1974											
6	EPA:160.1											
7	EPA:310.1											
8	EPA:120.1											
9	EPA 150.1 1982											

### Notes:

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

MDA: Minimum Detectable Activity

MDC: Minimum Detectable Concentration

Lc/LC: Critical Level

PF: Prep Factor

RL: Reporting Limit

SQL: Sample Quantitation Limit



# **Quality Control Summary**

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## QC Summary

Report Date: June 30, 2017

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

Contact: Mr. Keith Greene

Workorder: 425079

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Carbon Analysis</b>											
Batch	1673634										
QC1203812104	425075001	DUP									
Total Organic Carbon Average	J	0.387	J	0.373	mg/L	3.68	^	(+/-1.00)	TSM	06/21/17	19:07
QC1203812103	LCS										
Total Organic Carbon Average	10.0			9.81	mg/L			98.1 (80%-120%)		06/21/17	17:57
QC1203812277	LCSD										
Total Organic Carbon Average	10.0			9.89	mg/L	0.873		98.9 (0%-20%)		06/21/17	18:09
QC1203812102	MB										
Total Organic Carbon Average			U	ND	mg/L					06/21/17	17:45
QC1203812106	425075001	PS									
Total Organic Carbon Average	10.0	J	0.387	11.0	mg/L			106 (75%-125%)		06/21/17	19:54
<b>Flow Injection Analysis</b>											
Batch	1671991										
QC1203806301	424904001	DUP									
Cyanide, Total	U	ND	U	ND	ug/L	N/A			AXH3	06/12/17	11:10
QC1203806300	LCS										
Cyanide, Total	50.0			50.2	ug/L			100 (90%-110%)		06/12/17	11:08
QC1203806299	MB										
Cyanide, Total			U	ND	ug/L					06/12/17	11:07
QC1203806302	424904001	MS									
Cyanide, Total	100	U	ND	102	ug/L			101 (90%-110%)		06/12/17	11:11

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## QC Summary

Workorder: 425079

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Ion Chromatography</b>											
Batch	1672927										
QC1203808702	425075004	DUP									
Bromide		J	0.0828	J	0.0829	mg/L	0.121 ^	(+/-0.200)	MXL2	06/10/17	01:49
Chloride			3.64		3.64	mg/L	0.0962	(0%-20%)			
Fluoride		J	0.0877	J	0.090	mg/L	2.59 ^	(+/-0.100)			
Sulfate			3.88		3.85	mg/L	0.787	(0%-20%)			
QC1203808701	LCS										
Bromide	1.25				1.31	mg/L		105	(80%-120%)	06/09/17	23:25
Chloride	5.00				4.93	mg/L		98.5	(80%-120%)		
Fluoride	2.50				2.57	mg/L		103	(80%-120%)		
Sulfate	10.0				10.2	mg/L		102	(80%-120%)		
QC1203808700	MB										
Bromide			U		ND	mg/L				06/09/17	22:56
Chloride			U		ND	mg/L					
Fluoride			U		ND	mg/L					
Sulfate			U		ND	mg/L					
QC1203808703	425075004	PS									
Bromide	1.25	J	0.0828		1.31	mg/L		98.5	(75%-125%)	06/10/17	02:18
Chloride	5.00		3.64		8.91	mg/L		105	(75%-125%)		

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## QC Summary

Workorder: 425079

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Ion Chromatography</b>											
Batch	1672927										
Fluoride	2.50	J	0.0877	2.54	mg/L		98.2	(75%-125%)	MXL2	06/10/17	02:18
Sulfate	10.0		3.88	14.0	mg/L		101	(75%-125%)			
Batch	1673741										
QC1203810743	425079002	DUP									
Bromide		J	0.0867	J	0.0848	mg/L	2.22 ^	(+/-0.200)	MXL2	06/13/17	21:03
Chloride			13.8		13.8	mg/L	0.084	(0%-20%)		06/14/17	14:46
Fluoride			0.171		0.169	mg/L	1 ^	(+/-0.100)		06/13/17	21:03
Sulfate			6.08		5.94	mg/L	2.35	(0%-20%)			
QC1203810742	LCS										
Bromide			1.25		1.26	mg/L		101	(80%-120%)		06/13/17 20:06
Chloride			5.00		4.72	mg/L		94.3	(80%-120%)		
Fluoride			2.50		2.45	mg/L		97.9	(80%-120%)		
Sulfate			10.0		9.78	mg/L		97.8	(80%-120%)		
QC1203810741	MB										
Bromide			U		ND	mg/L					06/13/17 19:37
Chloride			U		ND	mg/L					
Fluoride			U		ND	mg/L					
Sulfate			U		ND	mg/L					

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## QC Summary

Workorder: 425079

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Ion Chromatography</b>											
Batch	1673741										
QC1203810744	425079002	PS									
Bromide	1.25	J	0.0867	1.31	mg/L		97.8	(75%-125%)	MXL2	06/13/17	21:32
Chloride	5.00		6.91	12.4	mg/L		110	(75%-125%)		06/14/17	15:15
Fluoride	2.50		0.171	2.57	mg/L		96	(75%-125%)		06/13/17	21:32
Sulfate	10.0		6.08	16.3	mg/L		102	(75%-125%)			
<b>Nutrient Analysis</b>											
Batch	1672172										
QC1203807680	425079004	DUP									
Nitrogen, Nitrate/Nitrite		U	ND	U	ND	mg/L	N/A		AXH3	06/09/17	12:36
QC1203806724	LCS										
Nitrogen, Nitrate/Nitrite	1.00			1.00	mg/L		100	(90%-110%)		06/09/17	10:45
QC1203806723	MB										
Nitrogen, Nitrate/Nitrite			U	ND	mg/L					06/09/17	10:43
QC1203807682	425079004	PS									
Nitrogen, Nitrate/Nitrite	1.00	U	ND	0.950	mg/L		95	(90%-110%)		06/09/17	12:42
Batch	1672879										
QC1203808634	425079004	DUP									
Nitrogen, Ammonia			0.182	0.173	mg/L	5.07	^	(+/-0.050)	KLP1	06/13/17	13:10
QC1203808633	LCS										
Nitrogen, Ammonia	1.00			0.937	mg/L		93.7	(90%-110%)		06/13/17	12:52
QC1203808632	MB										
Nitrogen, Ammonia			J	0.0252	mg/L					06/13/17	12:51

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## QC Summary

Workorder: 425079

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Nutrient Analysis</b>											
Batch	1672879										
QC1203808636	425079004	MS									
Nitrogen, Ammonia	1.00	0.182		1.13	mg/L		94.8	(90%-110%)	KLP1	06/13/17	13:11
Batch	1672889										
QC1203808650	425079003	DUP									
Nitrogen, Total Kjeldahl		0.349		0.329	mg/L	5.9	^	(+/-0.100)	KLP1	06/13/17	11:16
QC1203808649	LCS										
Nitrogen, Total Kjeldahl	1.00			0.925	mg/L		92.5	(90%-110%)		06/13/17	11:14
QC1203808648	MB										
Nitrogen, Total Kjeldahl			U	ND	mg/L					06/13/17	11:13
QC1203808651	425079003	MS									
Nitrogen, Total Kjeldahl	1.00	0.349		1.31	mg/L		96.1	(90%-110%)		06/13/17	11:17
Batch	1672893										
QC1203808660	425079004	DUP									
Phosphorus, Total as P		0.122		0.103	mg/L	16.9	^	(+/-0.050)	KLP1	06/13/17	14:28
QC1203808659	LCS										
Phosphorus, Total as P	1.00			0.982	mg/L		98.2	(80%-124%)		06/13/17	14:24
QC1203808658	MB										
Phosphorus, Total as P			U	ND	mg/L					06/13/17	14:23
QC1203808661	425079004	MS									
Phosphorus, Total as P	1.00	0.122		1.22	mg/L		110	(63%-139%)		06/13/17	14:29
Batch	1673506										
QC1203810167	425075002	DUP									
Nitrogen, Nitrate/Nitrite		0.593		0.591	mg/L	0.338		(0%-20%)	AXH3	06/14/17	08:04

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## QC Summary

Workorder: 425079

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Nutrient Analysis</b>											
Batch	1673506										
QC1203810165	LCS										
Nitrogen, Nitrate/Nitrite	1.00			0.985	mg/L		98.5	(90%-110%)	AXH3	06/14/17	08:01
QC1203810166	LCSD										
Nitrogen, Nitrate/Nitrite	1.00			1.00	mg/L	1.51	100	(0%-20%)		06/14/17	08:02
QC1203810164	MB										
Nitrogen, Nitrate/Nitrite			U	ND	mg/L					06/14/17	07:59
QC1203810168	425075002	PS									
Nitrogen, Nitrate/Nitrite	1.00	0.593		1.55	mg/L		95.7	(90%-110%)		06/14/17	08:05
Batch	1673872										
QC1203811091	425079001	DUP									
Nitrogen, Total Kjeldahl		U	ND	J	0.038	mg/L	200		KLP1	06/21/17	09:54
QC1203811090	LCS										
Nitrogen, Total Kjeldahl	1.00			1.10	mg/L		110	(90%-110%)		06/21/17	09:50
QC1203811089	MB										
Nitrogen, Total Kjeldahl			U	ND	mg/L					06/21/17	09:50
QC1203811092	425079001	MS									
Nitrogen, Total Kjeldahl	1.00	U	ND	0.974	mg/L		97.4	(90%-110%)		06/21/17	09:55
Batch	1673875										
QC1203811099	425079002	DUP									
Nitrogen, Ammonia		0.0967		0.0902	mg/L	6.96	^	(+/-0.050)	KLP1	06/15/17	11:36
QC1203811098	LCS										
Nitrogen, Ammonia	1.00			1.01	mg/L		101	(90%-110%)		06/15/17	11:28
QC1203811097	MB										
Nitrogen, Ammonia			U	ND	mg/L					06/15/17	11:27

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## QC Summary

Workorder: 425079

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Nutrient Analysis</b>											
Batch	1673875										
QC1203811100	425079002	MS									
Nitrogen, Ammonia	1.00	0.0967		1.03	mg/L		93.3	(90%-110%)	KLP1	06/15/17	11:37
Batch	1673877										
QC1203811108	425079002	DUP									
Phosphorus, Total as P		0.0742		0.0979	mg/L	27.5 ^		(+/-0.050)	KLP1	06/20/17	10:29
QC1203811105	LCS										
Phosphorus, Total as P	1.00			0.975	mg/L		97.5	(80%-124%)		06/20/17	10:38
QC1203811104	MB										
Phosphorus, Total as P			J	0.0324	mg/L					06/20/17	10:38
QC1203811109	425079002	MS									
Phosphorus, Total as P	1.00	0.0742		1.23	mg/L		116	(63%-139%)		06/20/17	10:30
<b>Solids Analysis</b>											
Batch	1673663										
QC1203810556	425075002	DUP									
Total Dissolved Solids		114		114	mg/L	0		(0%-5%)	KLP1	06/13/17	15:42
QC1203810549	LCS										
Total Dissolved Solids	300			290	mg/L		96.7	(95%-105%)		06/13/17	15:42
QC1203810548	MB										
Total Dissolved Solids			U	ND	mg/L					06/13/17	15:42
<b>Titration and Ion Analysis</b>											
Batch	1673522										
QC1203810232	425121001	DUP									
Alkalinity, Total as CaCO3		62.0		61.8	mg/L	0.323		(0%-20%)	RXB5	06/14/17	15:10
Carbonate alkalinity (CaCO3)	U	ND	U	ND	mg/L	N/A					



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## QC Summary

Workorder: 425079

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Titration and Ion Analysis</b>											
Batch	1673522										
QC1203810229	LCS										
Alkalinity, Total as CaCO3	100			105	mg/L		105	(90%-110%)	RXB5	06/14/17	13:54
QC1203810235	425121001	MS									
Alkalinity, Total as CaCO3	100	62.0		166	mg/L		104	(80%-120%)		06/14/17	15:12
Batch	1673523										
QC1203810238	425121001	DUP									
pH		H	8.04	H	8.05	SU	0.124	(0%-5%)	RXB5	06/14/17	15:10
QC1203811672	LCS										
pH	7.00			7.00	SU		100	(99%-101%)		06/14/17	14:49
Batch	1678861										
QC1203822828	425121001	DUP									
Conductivity		190		197	umhos/cm	3.31		(0%-10%)	RXB5	06/30/17	13:39
QC1203822826	LCS										
Conductivity	1410			1410	umhos/cm		99.4	(95%-105%)		06/30/17	13:23

### Notes:

- < Result is less than value reported
- > Result is greater than value reported
- B The target analyte was detected in the associated blank.
- E General Chemistry--Concentration of the target analyte exceeds the instrument calibration range
- H Analytical holding time was exceeded
- J Value is estimated
- N/A RPD or %Recovery limits do not apply.
- N1 See case narrative
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
- R Per section 9.3.4.1 of Method 1664 Revision B, due to matrix spike recovery issues, this result may not be reported or used for regulatory compliance purposes.
- R Sample results are rejected

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## QC Summary

Workorder: 425079

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

<b>Mo.Day Yr.</b> 15-JUN-17	<b>Division:</b> Industrial	<b>Quality Criteria:</b> Specifications	<b>Type:</b> Process
<b>Instrument Type:</b> ELECTRODE	<b>Test / Method:</b> EPA 150.1, SM 4500-H B, SW846 9040C	<b>Matrix Type:</b> Liquid	<b>Client Code:</b> BELI, ESHL, UCOR
<b>Batch ID:</b> 1673523	<b>Sample Numbers:</b> See Below		
<b>Potentially affected work order(s)(SDG):</b> 423944(2017-1573),423945(2017-1572),424030(2017-1589),424080,424916(2017-1657),424952,425075(2017-1667),425079(2017-1664),425115(2017-1690),425121(2017-1689) <b>Application Issues:</b> Sample received out of holding			
<b>Specification and Requirements</b> <b>Exception Description:</b>		<b>DER Disposition:</b>	
1. Sample received out of holding:  423944 001  423945 001  424030 001  424080 004  424916 002  424952 001,002,003  425075 002,004  425079 002,004  425115 002  425121 001  QC 1203810237DUP,1203810238DUP		1. Samples (See Below) were received by the laboratory outside of the method specified holding time. The data is qualified. 1203810237 (EMWGW7913DUP) [Received 25-MAY-17, out of holding 24-MAY-17]. 1203810238 (CAWA-17-133347DUP) [Received 09-JUN-17, out of holding 07-JUN-17]. 423944001 (WST35-17-135774) [Received 24-MAY-17, out of holding 22-MAY-17]. 423945001 (WST35-17-135775) [Received 24-MAY-17, out of holding 22-MAY-17]. 424030001 (WST03-17-135771) [Received 25-MAY-17, out of holding 23-MAY-17]. 424080004 (EMWGW7913) [Received 25-MAY-17, out of holding 24-MAY-17]. 424916002 (CAWA-17-133329) [Received 07-JUN-17, out of holding 05-JUN-17]. 424952001 (1. Kaiser Capitol Hill - Cold Water) [Received 07-JUN-17, out of holding 06-JUN-17]. 424952002 (2. Kaiser Capitol Hill - Hot Water) [Received 07-JUN-17, out of holding 06-JUN-17]. 424952003 (3. Kaiser Capitol Hill - RO/DI) [Received 07-JUN-17, out of holding 06-JUN-17]. 425075002 (CAWA-17-133312) [Received 08-JUN-17, out of holding 06-JUN-17]. 425075004 (CAWA-17-133313) [Received 08-JUN-17, out of holding 06-JUN-17]. 425079002 (CAWA-17-133314) [Received 08-JUN-17, out of holding 06-JUN-17]. 425079004 (CAWA-17-133315) [Received 08-JUN-17, out of holding 06-JUN-17]. 425115002 (CAWA-17-133326) [Received 09-JUN-17, out of holding 07-JUN-17]. 425121001 (CAWA-17-133347) [Received 09-JUN-17, out of holding 07-JUN-17].	

**Originator's Name:**

Rachael Bell 15-JUN-17

**Data Validator/Group Leader:**

Elzbieta Szulc 15-JUN-17