

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 3855 EVENT NAME: Pajarito (General Surveillance)
 Q3 Watershed Sampling
 SAMPLE ID: CAPA-12-13281 WORK ORDER: NA

	<u>AS PLANNED</u>	<u>AS COLLECTED</u>		<u>AS PLANNED</u>	<u>AS COLLECTED</u>
DATE COLLECTED (MM/DD/YYYY):		4/24/2012	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1135	MEDIA:	WGI	OK
PRS ID:		OK	SAMPLE TECH CODE:	UA	RSP
LOCATION ID: PCI-2			FIELD PREP:	UF	OK
LOCATION TYPE: MON			FIELD QC TYPE:	REG	
PORT: SINGLE COMPLETION			SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8321A-NMED HEXP	1 LITER AMBER GLASS	3	ICE	Y	NA
	WSP-GrossA/B	1 LITER POLY	1	NONE	Y	
	WSP-HEXMOD	1 LITER AMBER GLASS	2	ICE	Y	
	WSP-RAD	1 GAL POLY	1	HNO3	Y	
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	Y	

SAMPLE COMMENTS:

4/24/12 ^{WS} ~~time~~ light rain while sampling

LOCATION COMMENTS:

NA

FIELD PARAMETERS:

Dissolved Oxygen 8.23 mg/L Oxidation-Reduction Potential 134.8 MV pH 7.33 SU
 Specific Conductance 107 uS/cm Temperature 13.46 deg C Turbidity 0.35 NTU

COLLECTED BY (PRINT) B. Rappe

RELINQUISHED BY (Printed Name) <u>Bobbie Rappe</u> (Signature) <u>[Signature]</u>	Date/Time <u>04/24/12</u> <u>1342</u>	RECEIVED BY (Printed Name) <u>K. Greene</u> (Signature) <u>[Signature]</u>	Date/Time <u>4/24/12</u> <u>11:42</u>
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 3855 EVENT NAME: Pajarito (General Surveillance)
 Q3 Watershed Sampling
 SAMPLE ID: CAPA-12-13291 WORK ORDER: NA

	<u>AS PLANNED</u>	<u>AS COLLECTED</u>		<u>AS PLANNED</u>	<u>AS COLLECTED</u>
DATE COLLECTED (MM/DD/YYYY):		4/24/2012	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1135	MEDIA:	WGI	
PRS ID:		OK	SAMPLE TECH CODE:	UA	RSP
LOCATION ID: PCI-2			FIELD PREP:	F	OK
LOCATION TYPE: MON			FIELD QC TYPE:	REG	
PORT: SINGLE COMPLETION			SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
N/A	WSP-GENINORG	1 LITER POLY	1	ICE	X	N/A
	WSP-Met+B+SN+SR+U	1 LITER POLY	1	HNO3		L
	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4		L

SAMPLE COMMENTS:

LOCATION COMMENTS:

} see CAPA-12-13281

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ pH
 Specific Conductance _____ uS/cm ~~See CAPA-12-13281~~ Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) B. Rappe

RELINQUISHED BY (Printed Name) Bobbie Rappe (Signature) <i>B. Rappe</i>	Date/Time 04/24/12 1342	RECEIVED BY (Printed Name) H. Green (Signature) <i>H. Green</i>	Date/Time 4/24/12 1142
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/11/2012

Data Validation Report

Chain Of Custody No. 12-1241

1. Distribution Of Samples In EDD.

SDG	Analytical Method	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks
303234	EPA:120.1		1			
303234	EPA:150.1		1			
303234	EPA:160.1		1			
303234	EPA:245.2		1			
303234	EPA:300.0		1			
303234	EPA:310.1		1			
303234	EPA:350.1		1			
303234	EPA:351.2		1			
303234	EPA:353.2		1			
303234	EPA:365.4		1			
303234	EPA:900		1			
303234	EPA:901.1		1			
303234	EPA:905.0		1			
303234	HASL-300:AM-241		1			
303234	HASL-300:ISOPU		1			
303234	HASL-300:ISOU		1			
303234	SM:A2340B		1			
303234	SW-846:6010B		1			
303234	SW-846:6020		1			
303234	SW-846:6850		1			
303234	SW-846:8321A_MOD		1			
303234	SW-846:9060		1			

SDG	Analytical Method	Analysis Lot ID	Prep Lot ID	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks	Method Blanks	Matrix Spikes	Matrix Spike Dups
303234	EPA:120.1	1207629	1207629		1						
303234	EPA:150.1	1207364	1207364		1						
303234	EPA:160.1	1208487	1208487		1					1	
303234	EPA:245.2	1208500	1208499		1					1	1
303234	EPA:300.0	1207431	1207431		1					1	
303234	EPA:310.1	1207761	1207761		1					1	1
303234	EPA:350.1	1207674	1207670		1					1	1
303234	EPA:351.2	1207684	1207679		1					1	1
303234	EPA:353.2	1207641	1207641		1					1	
303234	EPA:365.4	1207687	1207685		1					1	1
303234	EPA:900	1208279	1208279		1					1	1
303234	EPA:901.1	1208334	1208334		1					1	
303234	EPA:905.0	1208282	1208282		1					1	1
303234	HASL-300:AM-241	1207310	1207310		1					1	
303234	HASL-300:ISOPU	1207311	1207311		1					1	
303234	HASL-300:ISOU	1207313	1207313		1					1	
303234	SM:A2340B	1213521	1213521		1						
303234	SW-846:6010B	1207545	1207544		1					1	1
303234	SW-846:6020	1207543	1207542		1					1	1
303234	SW-846:6850	1208033	1208032		1					1	1
303234	SW-846:8321A_MOD	1207463	1207460		1					1	1
303234	SW-846:9060	1210398	1210398		1					1	

Analytical Spikes	Post-Digestion Spikes	Lab Control Samples	Lab Control Sample Dups	Blank Spikes	Blank Spike Dups	Lab Duplicates	Storage Blanks	Preparation Blanks	Reagent Blanks
		1				2			
		1				1			
		1				1			
		1				1			
		1				1			
		1				1			
		1				1			
		1				1			
		1				1			
		1				1			
		1				1			
		1				1			
		1				1			
		1				1			
		1				1			
		1				1			
		1				1			
		1				1			
		1				1			
		1				1			
		1				2			

2. Distribution Of Analytes In EDD.

Analytical Method	Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spikes	TICS
EPA:120.1	GENERAL CHEMISTRY	CALA-12-12552	1202645404	DUP	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CAPA-12-13291	303234002	REG	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CAPU-12-12576	1202645405	DUP	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	LCS	1202645406	LCS	0	0	1	0
EPA:150.1	GENERAL CHEMISTRY	CAPA-12-13287	1202644768	DUP	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CAPA-12-13291	303234002	REG	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	LCS	1202644765	LCS	0	0	1	0
EPA:160.1	GENERAL CHEMISTRY	CAPA-12-13291	1202647496	DUP	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	CAPA-12-13291	303234002	REG	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	LCS	1202647500	LCS	0	0	1	0
EPA:160.1	GENERAL CHEMISTRY	MB	1202647495	MB	1	0	0	0
EPA:245.2	INORGANIC	CAPA-12-13287	1202647539	DUP	1	0	0	0
EPA:245.2	INORGANIC	CAPA-12-13287	1202647540	MS	0	0	1	0
EPA:245.2	INORGANIC	CAPA-12-13291	303234002	REG	1	0	0	0
EPA:245.2	INORGANIC	LCS	1202647538	LCS	0	0	1	0
EPA:245.2	INORGANIC	MB	1202647537	MB	1	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAPA-12-13287	1202644915	DUP	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAPA-12-13291	303234002	REG	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	LCS	1202644917	LCS	0	0	4	0
EPA:300.0	GENERAL CHEMISTRY	MB	1202644914	MB	4	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAPA-12-13287	1202645758	DUP	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAPA-12-13287	1202645761	MS	0	0	1	0
EPA:310.1	GENERAL CHEMISTRY	CAPA-12-13291	303234002	REG	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	LCS	1202645755	LCS	0	0	1	0
EPA:310.1	GENERAL CHEMISTRY	MB	1202645754	MB	3	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAPA-12-13277	1202645522	DUP	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAPA-12-13277	1202645524	MS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	CAPA-12-13277	1202645526	MSD	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	CAPA-12-13291	303234002	REG	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	LCS	1202645528	LCS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	MB	1202645521	MB	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAPA-12-13281	1202645554	DUP	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAPA-12-13281	1202645555	MS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	CAPA-12-13281	1202645556	MSD	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	CAPA-12-13281	303234001	REG	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	LCS	1202645557	LCS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	MB	1202645553	MB	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAPA-12-13277	1202645436	DUP	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAPA-12-13291	303234002	REG	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	LCS	1202645442	LCS	0	0	1	0
EPA:353.2	GENERAL CHEMISTRY	MB	1202645435	MB	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAPA-12-13287	1202645563	DUP	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAPA-12-13287	1202645564	MS	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	CAPA-12-13287	1202645565	MSD	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	CAPA-12-13291	303234002	REG	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	LCS	1202645566	LCS	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	MB	1202645562	MB	1	0	0	0
EPA:900	RAD	CAPA-12-13281	303234001	REG	2	0	0	0
EPA:900	RAD	CAPU-12-12567	1202646911	DUP	2	0	0	0
EPA:900	RAD	CAPU-12-12567	1202646912	MS	0	0	2	0
EPA:900	RAD	CAPU-12-12567	1202646913	MSD	0	0	2	0
EPA:900	RAD	LCS	1202646914	LCS	0	0	2	0
EPA:900	RAD	MB	1202646910	MB	2	0	0	0

Data Validation Report for:

Chain Of Custody No. 12-1241

EPA:901.1	RAD	CAPA-12-13281	1202647097	DUP	5	0	0	0
EPA:901.1	RAD	CAPA-12-13281	303234001	REG	5	0	0	0
EPA:901.1	RAD	LCS	1202647098	LCS	0	0	3	0
EPA:901.1	RAD	MB	1202647096	MB	5	0	0	0
EPA:905.0	RAD	CAPA-12-13281	1202646923	DUP	1	0	0	0
EPA:905.0	RAD	CAPA-12-13281	1202646924	MS	0	0	1	0
EPA:905.0	RAD	CAPA-12-13281	303234001	REG	1	0	0	0
EPA:905.0	RAD	LCS	1202646925	LCS	0	0	1	0
EPA:905.0	RAD	MB	1202646922	MB	1	0	0	0
HASL-300:AM-241	RAD	CAPA-12-13277	1202644609	DUP	1	0	0	0
HASL-300:AM-241	RAD	CAPA-12-13281	303234001	REG	1	0	0	0
HASL-300:AM-241	RAD	LCS	1202644610	LCS	0	0	1	0
HASL-300:AM-241	RAD	MB	1202644608	MB	1	0	0	0
HASL-300:ISOPU	RAD	CAPA-12-13277	1202644612	DUP	2	0	0	0
HASL-300:ISOPU	RAD	CAPA-12-13281	303234001	REG	2	0	0	0
HASL-300:ISOPU	RAD	LCS	1202644613	LCS	0	0	1	0
HASL-300:ISOPU	RAD	MB	1202644611	MB	2	0	0	0
HASL-300:ISOU	RAD	CAPA-12-13277	1202644615	DUP	3	0	0	0
HASL-300:ISOU	RAD	CAPA-12-13281	303234001	REG	3	0	0	0
HASL-300:ISOU	RAD	LCS	1202644616	LCS	0	0	1	0
HASL-300:ISOU	RAD	MB	1202644614	MB	3	0	0	0
SM:A2340B	INORGANIC	CAPA-12-13291	303234002	REG	1	0	0	0
SW-846:6010B	INORGANIC	CAPA-12-13291	1202645182	DUP	17	0	0	0
SW-846:6010B	INORGANIC	CAPA-12-13291	1202645183	MS	0	0	17	0
SW-846:6010B	INORGANIC	CAPA-12-13291	303234002	REG	17	0	0	0
SW-846:6010B	INORGANIC	LCS	1202645181	LCS	0	0	17	0
SW-846:6010B	INORGANIC	MB	1202645180	MB	17	0	0	0
SW-846:6020	INORGANIC	CAPA-12-13291	1202645177	DUP	11	0	0	0
SW-846:6020	INORGANIC	CAPA-12-13291	1202645178	MS	0	0	11	0
SW-846:6020	INORGANIC	CAPA-12-13291	303234002	REG	11	0	0	0
SW-846:6020	INORGANIC	LCS	1202645176	LCS	0	0	11	0
SW-846:6020	INORGANIC	MB	1202645175	MB	11	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	CAPA-12-13287	1202646393	MS	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	CAPA-12-13287	1202646394	MSD	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	CAPA-12-13291	303234002	REG	1	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	LCS	1202646392	LCS	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	MB	1202646391	MB	1	0	0	0
SW-846:8321A_MOD	LCMS/MS HIGH EXPLOSIVES	CAPA-12-13277	1202644998	MS	0	2	23	0
SW-846:8321A_MOD	LCMS/MS HIGH EXPLOSIVES	CAPA-12-13277	1202644999	MSD	0	2	23	0
SW-846:8321A_MOD	LCMS/MS HIGH EXPLOSIVES	CAPA-12-13281	303234001	REG	23	2	0	0
SW-846:8321A_MOD	LCMS/MS HIGH EXPLOSIVES	LCS	1202644997	LCS	0	2	23	0
SW-846:8321A_MOD	LCMS/MS HIGH EXPLOSIVES	MB	1202644996	MB	23	2	0	0
SW-846:9060	GENERAL CHEMISTRY	CAPA-12-13277	1202652080	DUP	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAPA-12-13281	303234001	REG	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAPA-12-13286	1202655722	DUP	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	LCS	1202652082	LCS	0	0	1	0
SW-846:9060	GENERAL CHEMISTRY	MB	1202652079	MB	1	0	0	0

Data Validation Report for:

Chain Of Custody No. 12-1241

3. Are any analytes missing?

No.

4. Were any holding times exceeded?

Field	Lab	Analytical	Sample	Extraction	Analysis	Extraction	Max Extract	Reject	Exceeds	Analysis	Max Analysis
Sample ID	Sample ID	Method	Date	Date	Date	Hold Time	Hold Time	Above	Limit	Hold Time	Hold Time
CAPA-12-13281	303234001	SW-846:9060	4/24/2012		5/11/2012	NA				17	14

5. Any contaminants in blanks?

No.

Any samples affected by the presence of contaminants in blanks?

Field	Blank Field	Blank Lab	Blank	Analytical	Parameter		Blank	Sample	Lab	Detect	
Sample ID	Sample ID	Sample ID	Type	Method	Name	Units	Result	Result	Qualifier	Limit	Detected
CAPA-12-13291	MB	1202647537	METHOD BLANK	EPA:245.2	Mercury	ug/L	-0.094	0.2	U	0.2	N

6. Any surrogate recoveries outside the control limits?

No.

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

Field	Matrix	Matrix	Analytical	Parameter	Analysis	Analysis	Sample	MS %	MSD %	Upper	Lower
Sample ID	Spike ID	Spike Dup ID	Method	Name	Lot ID	Date	Matrix	Recvry	Recvry	Limit	Limit
CAPA-12-13281	1202645555	1202645556	EPA:351.2	Total Kjeldahl Nitrogen	1207679	5/8/2012	W	87.5	88.2	110	90
CAPA-12-13281	1202645555	1202645556	EPA:351.2	Total Kjeldahl Nitrogen	1207679	5/8/2012	W	87.5	88.2	110	90

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.

None.

13. Display Flagged Data.

Reject	Exceeds
Above	Limit
28	X

Correction	Correction	Use
Factor (ND)	Factor (J)	Factors
5		Y

Rejection			RPD
Limit	RPD		Limit
10	0.797		20
10	0.797		20

Location ID	Chain Of Custody No	Field Sample ID	Sample Purpose	Analysis Type Code	Analytical Suite	Analytical Method	Parameter Name	Lab Qualifier	Validation Qualifier	Validation Reason Codes	Detected
PCI-2	12-1241	CAPA-12-13281	REG	INIT	RAD	HASL-300:AM-241	Americium-241	U	U	R5	N
PCI-2	12-1241	CAPA-12-13281	REG	INIT	RAD	EPA:901.1	Cesium-137	U	U	R5	N
PCI-2	12-1241	CAPA-12-13281	REG	INIT	RAD	EPA:901.1	Cobalt-60	U	U	R5	N
PCI-2	12-1241	CAPA-12-13281	REG	INIT	RAD	EPA:900	Gross alpha	U	U	R5	N
PCI-2	12-1241	CAPA-12-13281	REG	INIT	RAD	EPA:900	Gross beta	U	U	R5	N
PCI-2	12-1241	CAPA-12-13281	REG	INIT	RAD	EPA:901.1	Neptunium-237	U	U	R5	N
PCI-2	12-1241	CAPA-12-13281	REG	INIT	RAD	HASL-300:ISOPU	Plutonium-238	U	U	R5	N
PCI-2	12-1241	CAPA-12-13281	REG	INIT	RAD	HASL-300:ISOPU	Plutonium-239/240	U	U	R5	N
PCI-2	12-1241	CAPA-12-13281	REG	INIT	RAD	EPA:901.1	Potassium-40	U	U	R5	N
PCI-2	12-1241	CAPA-12-13281	REG	INIT	RAD	EPA:901.1	Sodium-22	U	U	R5	N
PCI-2	12-1241	CAPA-12-13281	REG	INIT	RAD	EPA:905.0	Strontium-90	U	U	R5	N
PCI-2	12-1241	CAPA-12-13281	REG	INIT	GENERAL CHEMISTRY	EPA:351.2	Total Kjeldahl Nitrogen	U	UJ	16a	N
PCI-2	12-1241	CAPA-12-13281	REG	INIT	GENERAL CHEMISTRY	SW-846:9060	Total Organic Carbon	J	J-	19	Y
PCI-2	12-1241	CAPA-12-13281	REG	INIT	RAD	HASL-300:ISOU	Uranium-235/236	U	U	R5	N

Reason Code	Description
I6a	The associated matrix spike recovery was below the lower acceptance limit (LAL) but >10%. Follow the external laboratory limits located within the associated data package.
I9	The holding time was >1 and <=2 times the applicable holding time requirement.
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.
R5	Analyte is not detected because the amount reported is less than the MDC.
U_LAB	The analytical laboratory qualified the analyte as not detected.

14. Useable Result Count.

Field	Location	Sample	Analytical	No. Unuseable	Total No. Of
Sample ID	ID	Purpose	Method	Records	Records
CAPA-12-13281	PCI-2	REG	EPA:351.2	0	1
CAPA-12-13281	PCI-2	REG	EPA:900	0	2
CAPA-12-13281	PCI-2	REG	EPA:901.1	0	5
CAPA-12-13281	PCI-2	REG	EPA:905.0	0	1
CAPA-12-13281	PCI-2	REG	HASL-300:AM-241	0	1
CAPA-12-13281	PCI-2	REG	HASL-300:ISOPU	0	2
CAPA-12-13281	PCI-2	REG	HASL-300:ISOU	0	3
CAPA-12-13281	PCI-2	REG	SW-846:8321A_MOD	0	23
CAPA-12-13281	PCI-2	REG	SW-846:9060	0	1
CAPA-12-13291	PCI-2	REG	EPA:120.1	0	1
CAPA-12-13291	PCI-2	REG	EPA:150.1	0	1
CAPA-12-13291	PCI-2	REG	EPA:160.1	0	1
CAPA-12-13291	PCI-2	REG	EPA:245.2	0	1
CAPA-12-13291	PCI-2	REG	EPA:300.0	0	4
CAPA-12-13291	PCI-2	REG	EPA:310.1	0	2
CAPA-12-13291	PCI-2	REG	EPA:350.1	0	1
CAPA-12-13291	PCI-2	REG	EPA:353.2	0	1
CAPA-12-13291	PCI-2	REG	EPA:365.4	0	1
CAPA-12-13291	PCI-2	REG	SM:A2340B	0	1
CAPA-12-13291	PCI-2	REG	SW-846:6010B	0	17
CAPA-12-13291	PCI-2	REG	SW-846:6020	0	11

Lab Result	Lab Units	Report Result	Report Units	Report MDA	Report Uncertainty	Lab Matrix	Sample Date	Percent Moisture	Analysis Lot ID	Validation Status Code	Use Flag
0	pCi/L	0	pCi/L	0.0959	0.0212	W	4/24/2012		1207310	VAL	Y
1.85	pCi/L	1.85	pCi/L	6.43	1.67	W	4/24/2012		1208334	VAL	Y
3.13	pCi/L	3.13	pCi/L	6.88	1.57	W	4/24/2012		1208334	VAL	Y
1.13	pCi/L	1.13	pCi/L	2.98	0.861	W	4/24/2012		1208279	VAL	Y
-0.0664	pCi/L	-0.0664	pCi/L	2.23	0.574	W	4/24/2012		1208279	VAL	Y
1.94	pCi/L	1.94	pCi/L	9.9	2.69	W	4/24/2012		1208334	VAL	Y
-0.00272	pCi/L	-0.00272	pCi/L	0.0423	0.00472	W	4/24/2012		1207311	VAL	Y
0.00545	pCi/L	0.00545	pCi/L	0.0359	0.00545	W	4/24/2012		1207311	VAL	Y
-30.2	pCi/L	-30.2	pCi/L	59.2	16.4	W	4/24/2012		1208334	VAL	Y
-0.2	pCi/L	-0.2	pCi/L	4.75	1.22	W	4/24/2012		1208334	VAL	Y
0.25	pCi/L	0.25	pCi/L	0.485	0.147	W	4/24/2012		1208282	VAL	Y
0.1	mg/L	0.1	mg/L			W	4/24/2012		1207684	VAL	Y
0.361	mg/L	0.361	mg/L			W	4/24/2012		1210398	VAL	Y
0	pCi/L	0	pCi/L	0.0743	0.00712	W	4/24/2012		1207313	VAL	Y

Data Validation Report for:

Chain Of Custody No. 12-1241

CAPA-12-13291	PCI-2	REG	SW-846:6850	0	1
---------------	-------	-----	-------------	---	---



May 22, 2012

www.gel.com

Keith Greene
Los Alamos National Laboratory
PO Box 1663
TA-03, SM271, Drop Pt. 02U, Rm111
Los Alamos, New Mexico 87545

Re: LANL-WQH Water Samples
Work Order: 303234
SDG: 12-1241

Dear Keith Greene:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the following analytical results for the sample(s) we received on April 26, 2012, and analyzed for Explosives by LCMSMS, General Chemistry, Metals, Perchlorates by LCMSMS and Radiochemistry. 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,

Hope Taylor for
Valerie Davis
Project Manager

Purchase Order: 63641-10
Chain of Custody: 12-1241
Enclosures



ARS International (63641-10)
LANL-WQH Water Samples
Work Order #: 303234
SDG: 12-1241

Table of Contents

Case Narrative.....	1
Chain of Custody and Supporting Documentation.....	4
Data Review Qualifier Flag Definition Sheet.....	9
Perchlorates by LCMSMS Analysis.....	11
Case Narrative.....	12
Sample Data Summary.....	18
Quality Control Summary.....	20
Quality Control Data.....	23
Explosives by LCMSMS Analysis.....	29
Case Narrative.....	30
Sample Data Summary.....	37
Quality Control Summary.....	41
Quality Control Data.....	47
Metals Analysis.....	75
Case Narrative.....	76
Sample Data Summary.....	82
Quality Control Summary.....	86
General Chem Analysis.....	100
Case Narrative.....	101
Sample Data Summary.....	129

Quality Control Summary.....	134
Miscellaneous.....	139
Radiological Analysis.....	144
Sample Data Summary.....	157
Quality Control Data.....	160

Case Narrative

**Case Narrative for
ARS International (63641-10)
LANL-WQH Water Samples
Workorder #: 303234
SDG # : 12-1241**

May 22, 2012

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 April 26, 2012 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. The containers for Gross A/B were preserved prior to analysis. 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:

<u>Laboratory ID</u>	<u>Client ID</u>
303234001	CAPA-12-13281
303234002	CAPA-12-13291

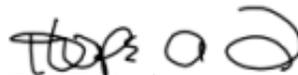
Case Narrative

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, Perchlorates by LCMSMS and Radiochemistry.

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.



Hope Taylor for
Valerie Davis
Project Manager

List of current GEL Certifications as of 22 May 2012

State	Certification
Arizona	AZ0766
Arkansas	88-0651
CLIA	42D0904046
California NELAP	01151CA
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC00012
DoD ELAP A2LA ISO 17025	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-09-00191
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA120008
Maryland	270
Massachusetts	M-SC012
Mississippi	SC00012
Nevada	SC000122011-1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
Oklahoma	9904
Pennsylvania NELAP	68-00485
South Carolina Chemistry	10120001
South Carolina Radiochemi	10120002
Tennessee	TN 02934
Texas NELAP	T104704235-12-7
Utah NELAP	SC00012
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
Wisconsin	999887790

Chain of Custody and Supporting Documentation

General Engineering Laboratories, Inc., Charleston, SC.
 2040 Savage Rd
 Charleston SC 29407

Chain of Custody/Analysis Request

COC/Lab Request #:
 12-1241

Page 1 of 1

303234

Client Contact:

Lab Agreement # : 128310011

Project Number :

Analysis Turnaround Time:

- 24 Hour - Other -
- 7 Day -
- 14 Day -
- 21 Day -
- 28 Day -

Site Name: Los Alamos National Laboratory

WSP-8321A-NMED HEXP 3 1

WSP-GENINORG 1 1

WSP-GrossA/B 1 2

WSP-HEXMOD 1 1

WSP-Met+B+SN+SR+U 1 1

WSP-NH3+NO3/NO2+P04 1 1

WSP-RAD 1 1

WSP-TKN+TOC 1 1

Rad Screening Info:

Yes, Below Background

Special Instructions:

Field Sample ID
 CAPA-12-13281
 CAPA-12-13281

Sample Date
 Apr 24 2012
 Apr 24 2012

Sample Time
 11:35
 11:35

Sample Matrix
 W
 W

Special Instructions:

Relinquished by:

Alexis Montoya

Relinquished by:

[Signature]

Relinquished by:

[Signature]

Date/Time:

4/25/12 3:00

Date/Time:

4-24-12 08:45

Received by:

P. Went

Received by:

Received by:

Received by:



SAMPLE RECEIPT & REVIEW FORM

Client: LANL		SDG/AR/COC/Work Order: 12-1241
Received By: Patricia Dent		Date Received: April 26, 2012
Suspected Hazard Information	Yes	No
*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.		
COC/Samples marked as radioactive?		X
Maximum Net Counts Observed* (Observed Counts - Area Background Counts): 0 CPM		
Classified Radioactive II or III by RSO?		X
If yes, Were swipes taken of sample containers < action levels?		
COC/Samples marked containing PCBs?		X
Package, COC, and/or Samples marked as beryllium or asbestos containing?		X
If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.		
Shipped as a DOT Hazardous?		X
Hazard Class Shipped:		UN#:
Samples identified as Foreign Soil?		X

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	X			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	X			Preservation Method: Ice bags Blue ice Dry ice None Other (describe) *all temperatures are recorded in Celsius 1,2C
2a Daily check performed and passed on IR temperature gun?	X			Temperature Device Serial #: Secondary Temperature Device Serial # (If Applicable): 61524646
3 Chain of custody documents included with shipment?	X			
4 Sample containers intact and sealed?	X			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5 Samples requiring chemical preservation at proper pH?			X	Sample ID's, containers affected and observed pH: CAPA-12-13281 for Gross A/B If Preservation added, Lot#: K45047
6 VOA vials free of headspace (defined as < 6mm bubble)?	X			Sample ID's and containers affected:
7 Are Encore containers present?			X	(If yes, immediately deliver to Volatiles laboratory)
8 Samples received within holding time?	X			ID's and tests affected:
9 Sample ID's on COC match ID's on bottles?	X			Sample ID's and containers affected:
10 Date & time on COC match date & time on bottles?	X			Sample ID's affected:
11 Number of containers received match number indicated on COC?	X			Sample ID's affected:
12 Are sample containers identifiable as GEL provided?			X	CLIENT
13 COC form is properly signed in relinquished/received sections?	X			
14 Carrier and tracking number.				Circle Applicable: FedEx Air FedEx Ground UPS Field Services Courier Other 7209 7856 5840 1C 7209 7856 5839 2C

Comments (Use Continuation Form if needed):

Subject: Today's Issues 04/26/12
From: Pat Dent <Pat.Dent@gel.com>
Date: Thu, 26 Apr 2012 13:17:15 -0400
To: "Keith R. Greene" <kgreene@lanl.gov>
CC: "team.davis" <team.davis@gel.com>

Good Afternoon all listed below are today's issues

Container received for Gross A/B was preserved prior to analysis

RN#12-1242 ID'S-CAPA-12-13426, 13425, 13418 for 8260B the lab received
(1)-container each COC indicates (2) each.

Thanks!
Pat Dent

--
Patricia Dent
Project Manager Assistant
GEL Laboratories, LLC
2040 Savage Rd.
Charleston, S.C. 29407
Main: 843-556-8171 Ext 4264
Fax: 843-766-1178
Email: pad@gel.com
Web: www.gel.com

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.

Perchlorates by LCMSMS Analysis

Case Narrative

**Perchlorate by LC/MSMS
ARS International (ARSL)
SDG 12-1241**

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: SW846 6850 Modified

Prep Method: SW846 6850 Modified

Analytical Batch Number: 1208033

Prep Batch Number: 1208032

Sample Analysis

Sample ID	Client ID
303234002	CAPA-12-13291
1202646395	Interference Check Sample (ICS)
1202646391	Method Blank (MB)
1202646392	Laboratory Control Sample (LCS)
1202646393	303221003(CAPA-12-13287) Matrix Spike (MS)
1202646394	303221003(CAPA-12-13287) 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# 9.

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.

CCV Requirements

All associated calibration verification standard(s) (ICV or CCV) 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(s) analyzed with this SDG met the acceptance criteria.

Interference Check Sample (ICS)

The interference check sample (ICS) met all recovery acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

QC Sample Designation

Sample 303221003 (CAPA-12-13287) was chosen for matrix spike and matrix spike duplicate analysis.

Matrix Spike (MS) Recovery Statement

The MS recoveries were within the established acceptance limits.

Matrix Spike Duplicate (MSD) Recovery Statement

The MSD recoveries were within the established acceptance limits.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD(s) between the MS and MSD met the acceptance limits.

Retention Time Standard Area Acceptance

The retention time 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 Method 332.0, 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 for this analytical batch.

Manual Integrations

Some initial calibration standards, continuing calibration standards, and/or samples may require manual integrations due to software limitations.

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 not internally corrected for using Perchlorate-O (18). They are external calibrations.

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 either a Micromass Quattro Micro Mass Spectrometer/ Mass Spectrometer, or a Micromass Quattro Ultima Mass Spectrometer/ Mass Spectrometer. Each being designated as LCMSMS #1 and LCMSMS #2, respectively. 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

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

ARSL001 ARS International (63641-10)

Client SDG: 12-1241 GEL Work Order: 303234

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, 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: Patricia Steele

Date: 23 MAY 2012

Title: Data Validator

Sample Data Summary

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample No.

CAPA-12-13291Lab Code: GELDate Received: 26-APR-12Instrument: LCMSMSGEL Job No (SDG): 12-1241Method: SW846 6850 ModifiedGEL Sample ID: 303234002Matrix: WATERDate Filtered: 14-MAY-12Extraction Batch ID: 1208032Injection 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	0.181	ug/L	J	1	14-MAY-12 18:50	per0514020a
	Perchlorate Isotope Ratio			3.04			1	14-MAY-12 18:50	per0514020a
14797-73-0	Perchlorate-101	.05	.2	0.188	ug/L	J	1	14-MAY-12 18:50	per0514020a
	Perchlorate-O(18)			0.541	ug/L		1	14-MAY-12 18:50	per0514020a

^ 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): 12-1241

Extract Batch Code: 1208032

Date Filtered: 14-MAY-12

Matrix: WATER

Sample ID: 1202646392

Analyte [^]	True	Found	Units	%Rec	Q	Control Limits
Perchlorate	0.200	.186	ug/L	93.2		85 - 115
Perchlorate Isotope Ratio		3.08				-
Perchlorate-101	0.200	.191	ug/L	95.4		85 - 115
Perchlorate-O(18)		.48	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): 12-1241

Extract Batch Code: 1208032

Date Extracted: 14-MAY-12

GEL MS/PS ID: 1202646393

Client ID: CAPA-12-13287

GEL MSD/PSD ID: 1202646394

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	0.265	ug/L	0.482	108	.511	123	5.74	30	75 - 125
Perchlorate Isotope Ratio	0	3.16		3.12		3.19		2.23		-
Perchlorate-101	0.200	0.265	ug/L	0.487	111	.504	120	3.51	30	75 - 125
Perchlorate-O(18)	0	0.581	ug/L	0.579		.6		3.68		-

^ 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: 1208032Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

MBDate Received: 14-MAY-12GEL Job No (SDG): 12-1241GEL Sample ID: 1202646391Date Filtered: 14-MAY-12Injection 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	0.050	ug/L	U	1	14-MAY-12 18:04	per0514014a
	Perchlorate Isotope Ratio						1	14-MAY-12 18:04	per0514014a
14797-73-0	Perchlorate-101	.05	.2	0.050	ug/L	U	1	14-MAY-12 18:04	per0514014a
	Perchlorate-O(18)			0.517	ug/L		1	14-MAY-12 18:04	per0514014a

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

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

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: EPA 6850 ModifiedMatrix: WATERExtraction Batch ID: 1208032Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

LCSDate Received: 14-MAY-12GEL Job No (SDG): 12-1241GEL Sample ID: 1202646392Date Filtered: 14-MAY-12Injection 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	0.186	ug/L	J	1	14-MAY-12 18:12	per0514015a
	Perchlorate Isotope Ratio			3.08			1	14-MAY-12 18:12	per0514015a
14797-73-0	Perchlorate-101	.05	.2	0.191	ug/L	J	1	14-MAY-12 18:12	per0514015a
	Perchlorate-O(18)			0.480	ug/L		1	14-MAY-12 18:12	per0514015a

^ 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.

ICSLab Code: GEL

Date Received:

Instrument: LCMSMSGEL Job No (SDG): 12-1241Method: SW846 6850 ModifiedGEL Sample ID: 1202646395Matrix: WATERDate Filtered: 14-MAY-12Extraction Batch ID: 1208032Injection 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	0.226	ug/L		1	14-MAY-12 18:19	per0514016a
	Perchlorate Isotope Ratio			3.24			1	14-MAY-12 18:19	per0514016a
14797-73-0	Perchlorate-101	.05	.2	0.221	ug/L		1	14-MAY-12 18:19	per0514016a
	Perchlorate-O(18)			0.558	ug/L		1	14-MAY-12 18:19	per0514016a

^ 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.

CAPA-12-13287MSLab Code: GELDate Received: 25-APR-12Instrument: LCMSMSGEL Job No (SDG): 12-1241Method: SW846 6850 ModifiedGEL Sample ID: 1202646393Matrix: WATERDate Filtered: 14-MAY-12Extraction Batch ID: 1208032Injection 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	0.482	ug/L		1	14-MAY-12 18:34	per0514018a
	Perchlorate Isotope Ratio			3.12			1	14-MAY-12 18:34	per0514018a
14797-73-0	Perchlorate-101	.05	.2	0.487	ug/L		1	14-MAY-12 18:34	per0514018a
	Perchlorate-O(18)			0.579	ug/L		1	14-MAY-12 18:34	per0514018a

^ 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.

CAPA-12-13287MSDLab Code: GELDate Received: 25-APR-12Instrument: LCMSMSGEL Job No (SDG): 12-1241Method: SW846 6850 ModifiedGEL Sample ID: 1202646394Matrix: WATERDate Filtered: 14-MAY-12Extraction Batch ID: 1208032Injection 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	0.511	ug/L		1	14-MAY-12 18:42	per0514019a
	Perchlorate Isotope Ratio			3.19			1	14-MAY-12 18:42	per0514019a
14797-73-0	Perchlorate-101	.05	.2	0.504	ug/L		1	14-MAY-12 18:42	per0514019a
	Perchlorate-O(18)			0.600	ug/L		1	14-MAY-12 18:42	per0514019a

^ 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

**LC/MS/MS Case Narrative
ARS International (ARSL)
SDG 12-1241**

Method/Analysis Information

Procedure: **Definitive Low Level Analysis of Nitroaromatic Explosives Utilizing Liquid Chromatography / Mass Spectrometry / Mass Spectrometry (LC/MS/MS) by SW-846 Method 8321 Modified (8321M)**

Analytical Method: SW846 3535/8321A Modified

Prep Method: SW846 Method 3535

Analytical Batch Number: 1207463

Prep Batch Number: 1207460

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 3535/8321A Modified :

Sample ID	Client ID
303234001	CAPA-12-13281
1202644996	Method Blank (MB)
1202644997	Laboratory Control Sample (LCS)
1202644998	303221002(CAPA-12-13277) Matrix Spike (MS)
1202644999	303221002(CAPA-12-13277) 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-056 REV# 16.

Primary Analyte Analysis

Calibration Information

Initial Calibration

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

Calibration Verification Standard Requirements

The closing CCV EXP0518041.wiff did not meet acceptance criteria of 80-120% for 3-Nitrotoluene at 75.6%. The data are Q qualified according to the SOP and are reported.

Calibration Blank Requirements

All initial or continuing calibration blanks (ICB or 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(s) 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

The LCS spike recoveries were within the established acceptance limits.

QC Sample Designation

Client sample 303221002 (CAPA-12-13277) from SDG 12-1236 was chosen for matrix spike and matrix spike duplicate analysis.

Matrix Spike (MS) Recovery Statement

The MS spike recoveries were within the established acceptance limits.

Matrix Spike Duplicate (MSD) Recovery Statement

The MSD spike recoveries were within the established acceptance limits.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD(s) between the MS and MSD met the acceptance limits for this analysis.

Internal Standard (ISTD) Acceptance

A final internal standard concentration of 100ug/L is employed in order to meet the minimum response factor requirement of 0.01 per EPA Method 8000C for the analysis of explosives on the API 4000. 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

According to the GEL SOP for Method 8321A, all sample and QC extracts are diluted 1:1 v/v with HPLC 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 Primary analyte analysis.

Secondary Analyte Analysis

Calibration Information

Initial Calibration

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

Calibration Verification Standard Requirements

All associated calibration verification standards (ICV and CCV) for this analysis met the acceptance criteria.

Calibration Blank Requirements

All initial or continuing calibration blanks (ICB or 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(s) 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

The LCS spike recoveries were within the established acceptance limits.

QC Sample Designation

Client sample 303221002 (CAPA-12-13277) from SDG 12-1236 was chosen for matrix spike and matrix spike duplicate analysis.

Matrix Spike (MS) Recovery Statement

The MS spike recoveries were within the established acceptance limits.

Matrix Spike Duplicate (MSD) Recovery Statement

The MSD spike recoveries were within the established acceptance limits.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD(s) between the MS and MSD met the acceptance limits for this analysis.

Internal Standard (ISTD) Acceptance

The internal standard was not added to the Secondary analyte analysis extracts.

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

According to the GEL SOP for Method 8321A, all sample and QC extracts are diluted 1:1 v/v with HPLC 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 Secondary analyte 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

Some initial calibration standards, continuing calibration standards, and/or samples may require manual integrations due to software limitations.

Flagging Convention

The samples were not originally analyzed using SW-846 Method 8330.

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 in the Secondary analyte analysis, false positives and analytes detected below the MDL cannot be deleted from the raw data.

Due to software limitations, file extensions such as DL, RE, etc. may not appear on the generated forms and/or raw data.

System Configuration

The laboratory utilizes a Waters LC 2795 liquid chromatography instrument for Primary analyte analysis. It is coupled with either a Micromass Quattro Micro Mass Spectrometer/ Mass Spectrometer, or a Micromass Quattro Ultima Mass Spectrometer/ Mass Spectrometer. Each being designated as LCMSMS #1 and LCMSMS #2, respectively. It is fitted with an APCI (Atmospheric Pressure chemical Ionization) probe that is operated in the negative ionization mode for the Primary analyte analysis. The laboratory also 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 LCMSMS #3 or LCMSMS #4. It is 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 detection of the Primary analyte Nitroaromatic and Nitramines is accomplished through analysis on the following reversed phase column:

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

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

YMC: J'sphere ODS-H80, 150 x 4.6mm I.D.

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

ARSL001 ARS International (63641-10)

Client SDG: 12-1241 GEL Work Order: 303234

The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
- U Analyte was analyzed for, but not detected above the MDL, MDA, 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: 22 MAY 2012

Title: Group Leader

Sample Data Summary

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAPA-12-13281

Lab Code: GEL

GEL Job No (SDG) 12-1241

Matrix: WATER

GEL Sample ID: 303234001

Sample Amount 940 mL

Date Received: 26-APR-12

Moisture:

Extraction Batch ID: 1207460

Extraction Type Sol Exchange

Date Extracted: 27-APR-12

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

GEL data file: EXP0518040.wiff

Date Analyzed: 19-MAY-12 14:19

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
118-96-7	2,4,6-Trinitrotoluene	0.266	U	0.0851	0.266
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
121-14-2	2,4-Dinitrotoluene	0.266	U	0.0851	0.266
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
121-82-4	RDX	0.266	U	0.0851	0.266
<i>121-82-4</i>	<i>RDX</i>				
13980-04-6	TNX	0.266	U	0.0851	0.266
<i>13980-04-6</i>	<i>TNX</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	0.266	U	0.0851	0.266
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
2691-41-0	HMX	0.266	U	0.0851	0.266
<i>2691-41-0</i>	<i>HMX</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	0.266	U	0.0851	0.266
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
5755-27-1	MNX	0.266	U	0.0851	0.266
<i>5755-27-1</i>	<i>MNX</i>				
606-20-2	2,6-Dinitrotoluene	0.266	U	0.0851	0.266
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				
80251-29-2	DNX	0.266	U	0.0851	0.266
<i>80251-29-2</i>	<i>DNX</i>				
88-72-2	o-Nitrotoluene	0.266	U	0.0872	0.266
<i>88-72-2</i>	<i>o-Nitrotoluene</i>				
98-95-3	Nitrobenzene	0.266	U	0.0851	0.266
<i>98-95-3</i>	<i>Nitrobenzene</i>				
99-08-1	m-Nitrotoluene	0.266	QU	0.0851	0.266
<i>99-08-1</i>	<i>m-Nitrotoluene</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAPA-12-13281

Lab Code: GEL

GEL Job No (SDG) 12-1241

Matrix: WATER

GEL Sample ID: 303234001

Sample Amount 940 mL

Date Received: 26-APR-12

Moisture: .

Extraction Batch ID: 1207460

Extraction Type Sol Exchange

Date Extracted: 27-APR-12

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

Cas No.	Compound	Concentration*	Q	MDL	PQL
99-35-4 <i>99-35-4</i>	1,3,5-Trinitrobenzene <i>1,3,5-Trinitrobenzene</i>	0.266	U	0.0851	0.266
99-65-0 <i>99-65-0</i>	m-Dinitrobenzene <i>m-Dinitrobenzene</i>	0.266	U	0.0851	0.266
479-45-8 <i>479-45-8</i>	Tetryl <i>Tetryl</i>	0.532	U	0.0851	0.532
78-11-5 <i>78-11-5</i>	PETN <i>PETN</i>	0.532	U	0.106	0.532
99-99-0 <i>99-99-0</i>	p-Nitrotoluene <i>p-Nitrotoluene</i>	0.532	U	0.160	0.532

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAPA-12-13281

Lab Code: GEL

GEL Job No (SDG) 12-1241

Matrix: WATER

GEL Sample ID: 303234001

Sample Amount 940 mL

Date Received: 26-APR-12

Moisture: .

Extraction Batch ID: 1207460

Extraction Type Sol Exchange

Date Extracted: 27-APR-12

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

GEL data file: EXS05010019.wiff

Date Analyzed: 01-MAY-12 19:21

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
3058-38-6	TATB	1.06	U	0.319	1.06
<i>3058-38-6</i>	<i>TATB</i>				
618-87-1	3,5-Dinitroaniline	1.06	U	0.319	1.06
<i>618-87-1</i>	<i>3,5-Dinitroaniline</i>				
78-30-8	tris(o-cresyl) phosphate	1.06	U	0.319	1.06
<i>78-30-8</i>	<i>tris(o-cresyl) phosphate</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	2.66	U	0.532	2.66
<i>59229-75-3</i>	<i>2,6-Diamino-4-nitrotoluene</i>				
6629-29-4	2,4-Diamino-6-nitrotoluene	2.66	U	0.532	2.66
<i>6629-29-4</i>	<i>2,4-Diamino-6-nitrotoluene</i>				

Quality Control Summary

High Explosives Surrogate Recovery Summary

Lab Name: GEL Laboratories LLCGEL Job No (SDG): 12-1241Lab Code: GELHPLC Column: Phenomenex Ultracarb 5u ODS(20)

Lab Sample ID	Client Sample ID	DNT	QC Limits	Flg
303234001	CAPA-12-13281	97.2	68 - 122	
303234001	CAPA-12-13281	84.8	68 - 122	
1202644996	MB for batch 1207460	94	68 - 122	
1202644996	MB for batch 1207460	87.6	68 - 122	
1202644997	LCS for batch 1207460	105	68 - 122	
1202644997	LCS for batch 1207460	89.2	68 - 122	
1202644998	CAPA-12-13277(303221002MS)	103	68 - 122	
1202644998	CAPA-12-13277(303221002MS)	91.2	68 - 122	
1202644999	CAPA-12-13277(303221002MSD)	92.8	68 - 122	
1202644999	CAPA-12-13277(303221002MSD)	93.2	68 - 122	

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) 12-1241

Extract Batch Code: 1207460

Date Extracted: 27-APR-12

GEL LCS ID: 1202644997

GEL LCSDUP ID:

Analysis Date/Time: 19-MAY-12 11:59

DUP Analysis Date/Time:

Reporting Units: ug/L

QC Type: LCS/LCSD

Compound	Spike Added	LCS Conc	LCS Rec #	LCSD Conc	LCSD Rec #	RPD #	RPD	Recovery Limits
1,3,5-Trinitrobenzene	5	4.41	88.2					60 - 115
2,4,6-Trinitrotoluene	5	5.11	102					77 - 132
2,4-Dinitrotoluene	5	4.99	99.8					78 - 125
2,6-Dinitrotoluene	5	4.27	85.4					82 - 111
2-Amino-4,6-dinitrotoluene	5	4.98	99.6					75 - 129
4-Amino-2,6-dinitrotoluene	5	5.18	104					78 - 125
DNX	5	4.75	95					73 - 117
HMX	5	4.88	97.6					65 - 112
MNX	5	4.67	93.4					68 - 129
Nitrobenzene	5	3.61	72.2					63 - 110
PETN	5	5.06	101					61 - 138
RDX	5	4.86	97.2					79 - 128
TNX	5	4.02	80.4					66 - 118
Tetryl	5	4.28	85.6					38 - 150
m-Dinitrobenzene	5	4.47	89.4					86 - 119
m-Nitrotoluene	5	3.6	72					63 - 109
o-Nitrotoluene	5	4.07	81.4					61 - 109
p-Nitrotoluene	5	3.56	71.2					64 - 112

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) 12-1241

Extract Batch Code: 1207460

Date Extracted: 27-APR-12

GEL LCS ID: 1202644997

GEL LCSDUP ID:

Analysis Date/Time: 01-MAY-12 18:14

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
2,4-Diamino-6-nitrotoluene	5	4.1	82					49 - 112
2,6-Diamino-4-nitrotoluene	5	4.31	86.2					61 - 116
3,5-Dinitroaniline	5	4.29	85.8					66 - 119
TATB	5	3.27	65.4					32 - 169
tris(o-cresyl) phosphate	5	2.92	58.4					38 - 87

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: CAPA-12-13277

Lab Code: GEL

GEL Job No (SDG) 12-1241

Extract Batch Code: 1207460

Date Extracted: 27-APR-12

GEL Spike ID: 1202644998

GEL SpikeDup ID: 1202644999

Analysis Date/Time: 19-MAY-12 13:09

MSD Analysis Date/Time: 19-MAY-12 13:44

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
DNX	6.25	0	5.29	84.6	5.14	90	2.77	34	67 - 126
HMX	6.25	0	5.59	89.4	5.47	95.8	2.05	25	51 - 128
MNX	6.25	0	5.39	86.2	5.5	96.2	2.02	25	74 - 127
Nitrobenzene	6.25	0	3.95	63.2	3.58	62.6	9.91	25	61 - 118
PETN	6.25	0	5.41	86.6	4.9	85.8	9.88	27	53 - 143
RDX	6.25	0	5.44	87	5.17	90.4	5.13	25	63 - 145
TNX	6.25	0	4.98	79.6	4.9	85.8	1.46	31	51 - 133
Tetryl	6.25	0	3.96	63.4	3.14	55	23.1	28	31 - 119
m-Dinitrobenzene	6.25	0	5.63	90	5.01	87.6	11.7	25	79 - 126
4-Amino-2,6-dinitrotoluene	6.25	0	6.11	97.8	5.34	93.4	13.5	25	65 - 137
2-Amino-4,6-dinitrotoluene	6.25	0	6.19	99	5.44	95.2	12.9	25	66 - 137
2,6-Dinitrotoluene	6.25	0	5.46	87.4	4.83	84.6	12.2	25	79 - 115
2,4-Dinitrotoluene	6.25	0	5.94	95	5.13	89.8	14.6	25	73 - 128
2,4,6-Trinitrotoluene	6.25	0	6.15	98.4	5.25	91.8	15.9	25	65 - 140
1,3,5-Trinitrobenzene	6.25	0	5.3	84.8	5.01	87.6	5.71	25	58 - 114
m-Nitrotoluene	6.25	0	3.94	63	3.54	62	10.6	25	55 - 123
o-Nitrotoluene	6.25	.0101	4.39	70	3.86	67.4	12.7	25	57 - 119
p-Nitrotoluene	6.25	0	4.74	75.8	3.83	67	21.2	25	57 - 124

#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: CAPA-12-13277

Lab Code: GEL

GEL Job No (SDG) 12-1241

Extract Batch Code: 1207460

Date Extracted: 27-APR-12

GEL Spike ID: 1202644998

GEL SpikeDup ID: 1202644999

Analysis Date/Time: 01-MAY-12 18:48

MSD Analysis Date/Time: 01-MAY-12 19:05

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-Diamino-6-nitrotoluene	6.25	0	4.93	78.8	4.73	82.8	4.01	25	42 - 117
2,6-Diamino-4-nitrotoluene	6.25	0	5.79	92.6	5.41	94.6	6.82	25	50 - 121
3,5-Dinitroaniline	6.25	0	5.69	91	5.43	95	4.66	25	59 - 125
TATB	6.25	0	4.03	64.4	3.82	66.8	5.3	25	30 - 169
tris(o-cresyl) phosphate	6.25	.0255	3.95	62.8	3.55	61.8	10.5	25	28 - 87

#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 1207460

Lab Code: GEL

GEL Job No (SDG) 12-1241

Matrix: WATER

GEL Sample ID: 1202644996

Sample Amount 1000 mL

Date Received: 26-APR-12

Moisture: .

Extraction Batch ID: 1207460

Extraction Type Sol Exchange

Date Extracted: 27-APR-12

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

GEL data file: EXP0518035.wiff

Date Analyzed: 19-MAY-12 11:24

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
118-96-7	2,4,6-Trinitrotoluene	0.250	U	0.080	0.250
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
121-14-2	2,4-Dinitrotoluene	0.250	U	0.080	0.250
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
121-82-4	RDX	0.250	U	0.080	0.250
<i>121-82-4</i>	<i>RDX</i>				
13980-04-6	TNX	0.250	U	0.080	0.250
<i>13980-04-6</i>	<i>TNX</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	0.250	U	0.080	0.250
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
2691-41-0	HMX	0.250	U	0.080	0.250
<i>2691-41-0</i>	<i>HMX</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	0.250	U	0.080	0.250
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
5755-27-1	MNX	0.250	U	0.080	0.250
<i>5755-27-1</i>	<i>MNX</i>				
606-20-2	2,6-Dinitrotoluene	0.250	U	0.080	0.250
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				
80251-29-2	DNX	0.250	U	0.080	0.250
<i>80251-29-2</i>	<i>DNX</i>				
88-72-2	o-Nitrotoluene	0.250	U	0.082	0.250
<i>88-72-2</i>	<i>o-Nitrotoluene</i>				
98-95-3	Nitrobenzene	0.250	U	0.080	0.250
<i>98-95-3</i>	<i>Nitrobenzene</i>				
99-08-1	m-Nitrotoluene	0.250	QU	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 1207460

Lab Code: GEL

GEL Job No (SDG) 12-1241

Matrix: WATER

GEL Sample ID: 1202644996

Sample Amount 1000 mL

Date Received: 26-APR-12

Moisture: .

Extraction Batch ID: 1207460

Extraction Type Sol Exchange

Date Extracted: 27-APR-12

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

Cas No.	Compound	Concentration*	Q	MDL	PQL
99-35-4 99-35-4	1,3,5-Trinitrobenzene <i>1,3,5-Trinitrobenzene</i>	0.250	U	0.080	0.250
99-65-0 99-65-0	m-Dinitrobenzene <i>m-Dinitrobenzene</i>	0.250	U	0.080	0.250
479-45-8 479-45-8	Tetryl <i>Tetryl</i>	0.500	U	0.080	0.500
78-11-5 78-11-5	PETN <i>PETN</i>	0.500	U	0.100	0.500
99-99-0 99-99-0	p-Nitrotoluene <i>p-Nitrotoluene</i>	0.500	U	0.150	0.500

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: MB for batch 1207460

Lab Code: GEL

GEL Job No (SDG) 12-1241

Matrix: WATER

GEL Sample ID: 1202644996

Sample Amount 1000 mL

Date Received: 26-APR-12

Moisture: .

Extraction Batch ID: 1207460

Extraction Type Sol Exchange

Date Extracted: 27-APR-12

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

GEL data file: EXS05010014.wiff

Date Analyzed: 01-MAY-12 17:58

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
3058-38-6	TATB	1.00	U	0.300	1.00
<i>3058-38-6</i>	<i>TATB</i>				
618-87-1	3,5-Dinitroaniline	1.00	U	0.300	1.00
<i>618-87-1</i>	<i>3,5-Dinitroaniline</i>				
78-30-8	tris(o-cresyl) phosphate	1.00	U	0.300	1.00
<i>78-30-8</i>	<i>tris(o-cresyl) phosphate</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	2.50	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	2.50	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 1207460

Lab Code: GEL

GEL Job No (SDG) 12-1241

Matrix: WATER

GEL Sample ID: 1202644997

Sample Amount 1000 mL

Date Received: 26-APR-12

Moisture: .

Extraction Batch ID: 1207460

Extraction Type Sol Exchange

Date Extracted: 27-APR-12

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

GEL data file: EXP0518036.wiff

Date Analyzed: 19-MAY-12 11:59

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
99-99-0 <i>99-99-0</i>	p-Nitrotoluene <i>p-Nitrotoluene</i>	3.56		0.150	0.500
99-08-1 <i>99-08-1</i>	m-Nitrotoluene <i>m-Nitrotoluene</i>	3.6	Q	0.080	0.250
98-95-3 <i>98-95-3</i>	Nitrobenzene <i>Nitrobenzene</i>	3.61		0.080	0.250
13980-04-6 <i>13980-04-6</i>	TNX <i>TNX</i>	4.02		0.080	0.250
88-72-2 <i>88-72-2</i>	o-Nitrotoluene <i>o-Nitrotoluene</i>	4.07		0.082	0.250
606-20-2 <i>606-20-2</i>	2,6-Dinitrotoluene <i>2,6-Dinitrotoluene</i>	4.27		0.080	0.250
479-45-8 <i>479-45-8</i>	Tetryl <i>Tetryl</i>	4.28		0.080	0.500
99-35-4 <i>99-35-4</i>	1,3,5-Trinitrobenzene <i>1,3,5-Trinitrobenzene</i>	4.41		0.080	0.250
99-65-0 <i>99-65-0</i>	m-Dinitrobenzene <i>m-Dinitrobenzene</i>	4.47		0.080	0.250
5755-27-1 <i>5755-27-1</i>	MNX <i>MNX</i>	4.67		0.080	0.250
80251-29-2 <i>80251-29-2</i>	DNX <i>DNX</i>	4.75		0.080	0.250
121-82-4 <i>121-82-4</i>	RDX <i>RDX</i>	4.86		0.080	0.250
2691-41-0 <i>2691-41-0</i>	HMX <i>HMX</i>	4.88		0.080	0.250

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: LCS for batch 1207460

Lab Code: GEL

GEL Job No (SDG) 12-1241

Matrix: WATER

GEL Sample ID: 1202644997

Sample Amount 1000 mL

Date Received: 26-APR-12

Moisture: .

Extraction Batch ID: 1207460

Extraction Type Sol Exchange

Date Extracted: 27-APR-12

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

Cas No.	Compound	Concentration*	Q	MDL	PQL
35572-78-2	2-Amino-4,6-dinitrotoluene	4.98		0.080	0.250
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
121-14-2	2,4-Dinitrotoluene	4.99		0.080	0.250
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
78-11-5	PETN	5.06		0.100	0.500
<i>78-11-5</i>	<i>PETN</i>				
118-96-7	2,4,6-Trinitrotoluene	5.11		0.080	0.250
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	5.18		0.080	0.250
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: LCS for batch 1207460

Lab Code: GEL

GEL Job No (SDG) 12-1241

Matrix: WATER

GEL Sample ID: 1202644997

Sample Amount 1000 mL

Date Received: 26-APR-12

Moisture: .

Extraction Batch ID: 1207460

Extraction Type Sol Exchange

Date Extracted: 27-APR-12

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

GEL data file: EXS05010015.wiff

Date Analyzed: 01-MAY-12 18:14

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
78-30-8	tris(o-cresyl) phosphate	2.92		0.300	1.00
78-30-8	<i>tris(o-cresyl) phosphate</i>				
3058-38-6	TATB	3.27		0.300	1.00
3058-38-6	<i>TATB</i>				
6629-29-4	2,4-Diamino-6-nitrotoluene	4.1		0.500	2.50
6629-29-4	<i>2,4-Diamino-6-nitrotoluene</i>				
618-87-1	3,5-Dinitroaniline	4.29		0.300	1.00
618-87-1	<i>3,5-Dinitroaniline</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	4.31		0.500	2.50
59229-75-3	<i>2,6-Diamino-4-nitrotoluene</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAPA-12-13277(303221002MS)MS

Lab Code: GEL

GEL Job No (SDG) 12-1241

Matrix: WATER

GEL Sample ID: 1202644998

Sample Amount 800 mL

Date Received: 26-APR-12

Moisture: .

Extraction Batch ID: 1207460

Extraction Type Sol Exchange

Date Extracted: 27-APR-12

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

GEL data file: EXP0518038.wiff

Date Analyzed: 19-MAY-12 13:09

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
99-08-1 <i>99-08-1</i>	m-Nitrotoluene <i>m-Nitrotoluene</i>	3.94	Q	0.100	0.313
98-95-3 <i>98-95-3</i>	Nitrobenzene <i>Nitrobenzene</i>	3.95		0.100	0.313
479-45-8 <i>479-45-8</i>	Tetryl <i>Tetryl</i>	3.96		0.100	0.625
88-72-2 <i>88-72-2</i>	o-Nitrotoluene <i>o-Nitrotoluene</i>	4.39		0.103	0.313
99-99-0 <i>99-99-0</i>	p-Nitrotoluene <i>p-Nitrotoluene</i>	4.74		0.188	0.625
13980-04-6 <i>13980-04-6</i>	TNX <i>TNX</i>	4.98		0.100	0.313
80251-29-2 <i>80251-29-2</i>	DNX <i>DNX</i>	5.29		0.100	0.313
99-35-4 <i>99-35-4</i>	1,3,5-Trinitrobenzene <i>1,3,5-Trinitrobenzene</i>	5.3		0.100	0.313
5755-27-1 <i>5755-27-1</i>	MNX <i>MNX</i>	5.39		0.100	0.313
78-11-5 <i>78-11-5</i>	PETN <i>PETN</i>	5.41		0.125	0.625
121-82-4 <i>121-82-4</i>	RDX <i>RDX</i>	5.44		0.100	0.313
606-20-2 <i>606-20-2</i>	2,6-Dinitrotoluene <i>2,6-Dinitrotoluene</i>	5.46		0.100	0.313
2691-41-0 <i>2691-41-0</i>	HMX <i>HMX</i>	5.59		0.100	0.313

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAPA-12-13277(303221002MS)MS

Lab Code: GEL

GEL Job No (SDG) 12-1241

Matrix: WATER

GEL Sample ID: 1202644998

Sample Amount 800 mL

Date Received: 26-APR-12

Moisture: .

Extraction Batch ID: 1207460

Extraction Type Sol Exchange

Date Extracted: 27-APR-12

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

Cas No.	Compound	Concentration*	Q	MDL	PQL
99-65-0 <i>99-65-0</i>	m-Dinitrobenzene <i>m-Dinitrobenzene</i>	5.63		0.100	0.313
121-14-2 <i>121-14-2</i>	2,4-Dinitrotoluene <i>2,4-Dinitrotoluene</i>	5.94		0.100	0.313
19406-51-0 <i>19406-51-0</i>	4-Amino-2,6-dinitrotoluene <i>4-Amino-2,6-dinitrotoluene</i>	6.11		0.100	0.313
118-96-7 <i>118-96-7</i>	2,4,6-Trinitrotoluene <i>2,4,6-Trinitrotoluene</i>	6.15		0.100	0.313
35572-78-2 <i>35572-78-2</i>	2-Amino-4,6-dinitrotoluene <i>2-Amino-4,6-dinitrotoluene</i>	6.19		0.100	0.313

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAPA-12-13277(303221002MS)MS

Lab Code: GEL

GEL Job No (SDG) 12-1241

Matrix: WATER

GEL Sample ID: 1202644998

Sample Amount 800 mL

Date Received: 26-APR-12

Moisture: .

Extraction Batch ID: 1207460

Extraction Type Sol Exchange

Date Extracted: 27-APR-12

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

GEL data file: EXS05010017.wiff

Date Analyzed: 01-MAY-12 18:48

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
78-30-8	tris(o-cresyl) phosphate	3.95		0.375	1.25
78-30-8	<i>tris(o-cresyl) phosphate</i>				
3058-38-6	TATB	4.03		0.375	1.25
3058-38-6	<i>TATB</i>				
6629-29-4	2,4-Diamino-6-nitrotoluene	4.93		0.625	3.13
6629-29-4	<i>2,4-Diamino-6-nitrotoluene</i>				
618-87-1	3,5-Dinitroaniline	5.69		0.375	1.25
618-87-1	<i>3,5-Dinitroaniline</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	5.79		0.625	3.13
59229-75-3	<i>2,6-Diamino-4-nitrotoluene</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAPA-12-13277(303221002MSD)MSD

Lab Code: GEL

GEL Job No (SDG) 12-1241

Matrix: WATER

GEL Sample ID: 1202644999

Sample Amount 875 mL

Date Received: 26-APR-12

Moisture:

Extraction Batch ID: 1207460

Extraction Type Sol Exchange

Date Extracted: 27-APR-12

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

GEL data file: EXP0518039.wiff

Date Analyzed: 19-MAY-12 13:44

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
479-45-8 <i>479-45-8</i>	Tetryl <i>Tetryl</i>	3.14		0.0914	0.571
99-08-1 <i>99-08-1</i>	m-Nitrotoluene <i>m-Nitrotoluene</i>	3.54	Q	0.0914	0.286
98-95-3 <i>98-95-3</i>	Nitrobenzene <i>Nitrobenzene</i>	3.58		0.0914	0.286
99-99-0 <i>99-99-0</i>	p-Nitrotoluene <i>p-Nitrotoluene</i>	3.83		0.171	0.571
88-72-2 <i>88-72-2</i>	o-Nitrotoluene <i>o-Nitrotoluene</i>	3.86		0.0937	0.286
606-20-2 <i>606-20-2</i>	2,6-Dinitrotoluene <i>2,6-Dinitrotoluene</i>	4.83		0.0914	0.286
13980-04-6 <i>13980-04-6</i>	TNX <i>TNX</i>	4.9		0.0914	0.286
78-11-5 <i>78-11-5</i>	PETN <i>PETN</i>	4.9		0.114	0.571
99-35-4 <i>99-35-4</i>	1,3,5-Trinitrobenzene <i>1,3,5-Trinitrobenzene</i>	5.01		0.0914	0.286
99-65-0 <i>99-65-0</i>	m-Dinitrobenzene <i>m-Dinitrobenzene</i>	5.01		0.0914	0.286
121-14-2 <i>121-14-2</i>	2,4-Dinitrotoluene <i>2,4-Dinitrotoluene</i>	5.13		0.0914	0.286
80251-29-2 <i>80251-29-2</i>	DNX <i>DNX</i>	5.14		0.0914	0.286
121-82-4 <i>121-82-4</i>	RDX <i>RDX</i>	5.17		0.0914	0.286

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAPA-12-13277(303221002MSD)MSD

Lab Code: GEL

GEL Job No (SDG) 12-1241

Matrix: WATER

GEL Sample ID: 1202644999

Sample Amount 875 mL

Date Received: 26-APR-12

Moisture: .

Extraction Batch ID: 1207460

Extraction Type Sol Exchange

Date Extracted: 27-APR-12

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

Cas No.	Compound	Concentration*	Q	MDL	PQL
118-96-7	2,4,6-Trinitrotoluene	5.25		0.0914	0.286
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	5.34		0.0914	0.286
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	5.44		0.0914	0.286
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
2691-41-0	HMX	5.47		0.0914	0.286
<i>2691-41-0</i>	<i>HMX</i>				
5755-27-1	MNX	5.5		0.0914	0.286
<i>5755-27-1</i>	<i>MNX</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAPA-12-13277(303221002MSD)MSD

Lab Code: GEL

GEL Job No (SDG) 12-1241

Matrix: WATER

GEL Sample ID: 1202644999

Sample Amount 875 mL

Date Received: 26-APR-12

Moisture: .

Extraction Batch ID: 1207460

Extraction Type Sol Exchange

Date Extracted: 27-APR-12

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

GEL data file: EXS05010018.wiff

Date Analyzed: 01-MAY-12 19:05

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
78-30-8	tris(o-cresyl) phosphate	3.55		0.343	1.14
78-30-8	<i>tris(o-cresyl) phosphate</i>				
3058-38-6	TATB	3.82		0.343	1.14
3058-38-6	<i>TATB</i>				
6629-29-4	2,4-Diamino-6-nitrotoluene	4.73		0.571	2.86
6629-29-4	<i>2,4-Diamino-6-nitrotoluene</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	5.41		0.571	2.86
59229-75-3	<i>2,6-Diamino-4-nitrotoluene</i>				
618-87-1	3,5-Dinitroaniline	5.43		0.343	1.14
618-87-1	<i>3,5-Dinitroaniline</i>				

Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLCGEL Job No(SDG): 12-1241Lab Code: GELLab Sample ID: XIBLK01Analysis Date: 18-MAY-12 15:36GEL Data File: EXP0518001.wiffInstrument ID: LCMSMSColumn: Phenomenex Ultracarb 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	0
p-Nitrotoluene	0	0
MNX	0	0
3,4-Dinitrotoluene	0	0
DNX	0	0

Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLCGEL Job No(SDG): 12-1241Lab Code: GELLab Sample ID: XIBLK01Analysis Date: 18-MAY-12 16:11GEL Data File: EXP0518002.wiffInstrument ID: LCMSMSColumn: Phenomenex Ultracarb 5u ODS(20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	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	1.54
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0

Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLC**GEL Job No(SDG):** 12-1241**Lab Code:** GEL**Lab Sample ID:** XIBLK01**Analysis Date:** 01-MAY-12 14:20**GEL Data File:** EXS05010001.wiff**Instrument ID:** LCMSMS**Column:** Phenomenex Ultracarb 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

Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLC**GEL Job No(SDG):** 12-1241**Lab Code:** GEL**Lab Sample ID:** XIBLK01**Analysis Date:** 01-MAY-12 14:37**GEL Data File:** EXS05010002.wiff**Instrument ID:** LCMSMS**Column:** Phenomenex Ultracarb 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

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 12-1241

Lab Code: GEL

Lab Sample ID: XIBLK02

Analysis Date: 18-MAY-12 20:15

GEL Data File: EXP0518009.wiff

Instrument ID: LCMSMS

Column: Phenomenex Ultracarb 5u ODS(20)

Compound	True	Found (ug/L)
TNX	0	1.02
1,3,5-Trinitrobenzene	0	.601
2,4,6-Trinitrotoluene	0	.539
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	.438
2-Amino-4,6-dinitrotoluene	0	.989
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	.987
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	.73
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0
3,4-Dinitrotoluene	0	0
DNX	0	1.15
MNX	0	.968

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 12-1241

Lab Code: GEL

Lab Sample ID: XIBLK03

Analysis Date: 18-MAY-12 21:25

GEL Data File: EXP0518011.wiff

Instrument ID: LCMSMS

Column: Phenomenex Ultracarb 5u ODS(20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	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	.972
p-Nitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 12-1241

Lab Code: GEL

Lab Sample ID: XIBLK04

Analysis Date: 18-MAY-12 23:45

GEL Data File: EXP0518015.wiff

Instrument ID: LCMSMS

Column: Phenomenex Ultracarb 5u ODS(20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	.3
2,4,6-Trinitrotoluene	0	.29
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): 12-1241

Lab Code: GEL

Lab Sample ID: XIBLK05

Analysis Date: 19-MAY-12 03:50

GEL Data File: EXP0518022.wiff

Instrument ID: LCMSMS

Column: Phenomenex Ultracarb 5u ODS(20)

Compound	True	Found (ug/L)
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0
3,4-Dinitrotoluene	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): 12-1241

Lab Code: GEL

Lab Sample ID: XIBLK06

Analysis Date: 19-MAY-12 04:59

GEL Data File: EXP0518024.wiff

Instrument ID: LCMSMS

Column: Phenomenex Ultracarb 5u ODS(20)

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

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 12-1241

Lab Code: GEL

Lab Sample ID: XIBLK07

Analysis Date: 19-MAY-12 10:14

GEL Data File: EXP0518033.wiff

Instrument ID: LCMSMS

Column: Phenomenex Ultracarb 5u ODS(20)

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

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 12-1241

Lab Code: GEL

Lab Sample ID: XIBLK08

Analysis Date: 19-MAY-12 15:29

GEL Data File: EXP0518042.wiff

Instrument ID: LCMSMS

Column: Phenomenex Ultracarb 5u ODS(20)

Compound	True	Found (ug/L)
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	2.5
3,4-Dinitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 12-1241

Lab Code: GEL

Lab Sample ID: XIBLK02

Analysis Date: 01-MAY-12 16:51

GEL Data File: EXS05010010.wiff

Instrument ID: LCMSMS

Column: Phenomenex Ultracarb 5u ODS(20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	9.44
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 12-1241

Lab Code: GEL

Lab Sample ID: XIBLK03

Analysis Date: 01-MAY-12 17:24

GEL Data File: EXS05010012.wiff

Instrument ID: LCMSMS

Column: Phenomenex Ultracarb 5u ODS(20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	4.11
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 12-1241

Lab Code: GEL

Lab Sample ID: XIBLK04

Analysis Date: 01-MAY-12 19:38

GEL Data File: EXS05010020.wiff

Instrument ID: LCMSMS

Column: Phenomenex Ultracarb 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
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): 12-1241

Lab Code: GEL

Lab Sample ID: XIBLK05

Analysis Date: 01-MAY-12 20:28

GEL Data File: EXS05010023.wiff

Instrument ID: LCMSMS

Column: Phenomenex Ultracarb 5u ODS(20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	3.46
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0

Metals Analysis

Case Narrative

**Metals Fractional Narrative
ARS International (ARSL)
SDG 12-1241**

Sample Analysis

Sample ID	Client ID
303234002	CAPA-12-13291
1202645180	Method Blank (MB) ICP
1202645181	Laboratory Control Sample (LCS)
1202645184	303234002(CAPA-12-13291L) Serial Dilution (SD)
1202645182	303234002(CAPA-12-13291D) Sample Duplicate (DUP)
1202645183	303234002(CAPA-12-13291S) Matrix Spike (MS)
1202645175	Method Blank (MB) ICP-MS
1202645176	Laboratory Control Sample (LCS)
1202645179	303234002(CAPA-12-13291L) Serial Dilution (SD)
1202645177	303234002(CAPA-12-13291D) Sample Duplicate (DUP)
1202645178	303234002(CAPA-12-13291S) Matrix Spike (MS)
1202647537	Method Blank (MB) CVAA
1202647538	Laboratory Control Sample (LCS)
1202647541	303221003(CAPA-12-13287L) Serial Dilution (SD)
1202647539	303221003(CAPA-12-13287D) Sample Duplicate (DUP)
1202647540	303221003(CAPA-12-13287S) Matrix Spike (MS)

Method/Analysis Information

Analytical Batch:	1207545, 1207543, 1208500 and 1213521
Prep Batch :	1207544, 1207542 and 1208499
Standard Operating Procedures:	GL-MA-E-013 REV# 20, GL-MA-E-006 REV# 9, GL-MA-E-014 REV# 24, GL-MA-E-010 REV# 25 and GL-GC-E-107 REV# 7
Analytical Method:	SW846 3005/6010B, SW846 3005/6020 DOE-AL, EPA 245.1/245.2 and SM 2340 B
Prep Method :	SW846 3005A and EPA 245.1/245.2 Prep

Preparation/Analytical Method Verification

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

System Configuration

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

The Metals analysis-ICP was performed on a P E 5300 Optima radial/axial-viewing inductively coupled plasma atomic emission spectrometer. The instrument is equipped with a Burgener nebulizer, cyclonic spray chamber, and yttrium or scandium internal standard. Operating conditions for the ICP are set at a power level of 1500 watts. The instrument has a peristaltic pump flow rate of 1.4L/min, argon gas flows of 15 L/min and 0.2 L/min for the torch and auxiliary gases, and a flow setting of 0.65L/min for the nebulizer.

The Metals analysis - ICPMS was performed on a Perkin Elmer ELAN 9000 inductively coupled plasma mass spectrometer (ICP-MS). The instrument is equipped with a cross-flow nebulizer, quadrupole mass spectrometer, and dual mode electron multiplier detector. Internal standards of scandium, germanium, indium, tantalum, and/or lutetium were utilized to cover the mass spectrum. Operating conditions are set at 1400W power and combined argon pressures of 360+/- 7 kPa for the plasma and auxiliary gases, and 0.85 L/min carrier gas flow, and an initial lens voltage of 5.2.

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. Sample introduction through the flow injection system is performed via a peristaltic pump at 9 mL/min and nitrogen carrier gas rate of 80 mL/min.

Calibration Information

Instrument Calibration

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

CRDL Requirements

All CRDL standard(s) 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.

Continuing Calibration Blank (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 (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: 303234002 (CAPA-12-13291)-ICP and ICP-MS and 303221003 (CAPA-12-13287)-CVAA.

Matrix Spike (MS) Recovery Statement

The percent recoveries (%R) obtained from the MS analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. All applicable elements met the acceptance criteria.

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 detection 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. All applicable analytes met these requirements.

Serial Dilution % Difference Statement

The serial dilution is used to assess matrix suppression or enhancement. Raw element concentrations that are 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. All applicable analytes met the acceptance criteria of less than 10% difference (%D).

Technical Information

Holding Time Specifications

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. 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

Dilutions are performed to minimize matrix interferences resulting from elevated mineral element concentrations present in solid samples and/or to bring over range target analyte

concentrations into the linear calibration range of the instrument. The samples in this SDG did not require dilutions.

Preparation Information

The samples in this SDG were prepared exactly 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

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.

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.

Review Validation:

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

The following data validator verified the information presented in this case narrative:

Reviewer: Nick Cole Elmore Date: 05-23-12

Sample Data Summary

GEL LABORATORIES LLC

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

Qualifier Definition Report for

ARSL001 ARS International (63641-10)

Client SDG: 12-1241 GEL Work Order: 303234

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, or LOD.

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 Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the detection limit.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Reviewed by

Nick Cole & Elmore 05-23-12

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 12-1241

METHOD TYPE: EPA

SAMPLE ID: 303234002

CLIENT ID: CAPA-12-13291

CONTRACT: ESHL00210

MATRIX: W

DATE RECEIVED 26-APR-12

LEVEL: Low %SOLIDS:

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7439-97-6	Mercury	0.067	ug/L	U		AV	0.067	1	MER536	051512W1-4
7631-86-9	Silica	72.5	mg/L			P	0.053	1	OPTIMA3	050212-1
7429-90-5	Aluminum	68	ug/L	U		P	68	1	OPTIMA3	050212-1
7440-36-0	Antimony	1	ug/L	U		MS	1	1	ICPMS5	120508-2
7440-38-2	Arsenic	1.7	ug/L	U		MS	1.7	1	ICPMS5	120508-2
7440-39-3	Barium	4.56	ug/L	J		P	1	1	OPTIMA3	050212-1
7440-41-7	Beryllium	1	ug/L	U		P	1	1	OPTIMA3	050212-1
7440-42-8	Boron	15	ug/L	U		P	15	1	OPTIMA3	050212-1
7440-43-9	Cadmium	0.11	ug/L	U		MS	0.11	1	ICPMS5	120508-2
7440-70-2	Calcium	8890	ug/L			P	50	1	OPTIMA3	050212-1
7440-47-3	Chromium	2	ug/L	U		MS	2	1	ICPMS5	120509-3
7440-48-4	Cobalt	1	ug/L	U		P	1	1	OPTIMA3	050212-1
7440-50-8	Copper	3	ug/L	U		P	3	1	OPTIMA3	050212-1
7439-89-6	Iron	33.2	ug/L	J		P	30	1	OPTIMA3	050212-1
7439-92-1	Lead	0.5	ug/L	U		MS	0.5	1	ICPMS5	120508-2
7439-95-4	Magnesium	2230	ug/L			P	110	1	OPTIMA3	050212-1
7439-96-5	Manganese	2	ug/L	U		P	2	1	OPTIMA3	050212-1
7439-98-7	Molybdenum	1.01	ug/L			MS	0.165	1	ICPMS5	120508-2
7440-02-0	Nickel	0.5	ug/L	U		MS	0.5	1	ICPMS5	120509-3
7440-09-7	Potassium	317	ug/L			P	50	1	OPTIMA3	050212-1
7782-49-2	Selenium	1.5	ug/L	U		MS	1.5	1	ICPMS5	120508-2
7440-22-4	Silver	0.2	ug/L	U		MS	0.2	1	ICPMS5	120508-2
7440-23-5	Sodium	11500	ug/L			P	100	1	OPTIMA3	050212-1
7440-24-6	Strontium	48.2	ug/L			P	1	1	OPTIMA3	050212-1
7440-28-0	Thallium	0.45	ug/L	U		MS	0.45	1	ICPMS5	120508-2
7440-31-5	Tin	2.5	ug/L	U		P	2.5	1	OPTIMA3	050212-1

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 12-1241

METHOD TYPE: EPA

SAMPLE ID: 303234002

CLIENT ID: CAPA-12-13291

CONTRACT: ESHL00210

MATRIX:W

DATE RECEIVED 26-APR-12

LEVEL: Low **%SOLIDS:**

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7440-61-1	Uranium	0.366	ug/L			MS	0.067	1	ICPMS5	120508-2
7440-62-2	Vanadium	1.38	ug/L	J		P	1	1	OPTIMA3	050212-1
7440-66-6	Zinc	3.3	ug/L	U		P	3.3	1	OPTIMA3	050212-1
	Hardness as CaCO3	31.4	mg/L				0.453	1	CALC001	

***Analytical Methods:**

- MS SW846 3005/6020 DOE-AL**
- P SW846 3005/6010B**
- AV EPA 245.1/245.2**
- SM 2340 B**

Quality Control Summary

METALS
-3b-
PREPARATION BLANK SUMMARY

SDG NO. 12-1241
Contract: ESHL00210
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>
1202645175								
	Antimony	1	ug/L	+/-3	U	MS	1	3
	Arsenic	1.7	ug/L	+/-5	U	MS	1.7	5
	Cadmium	0.11	ug/L	+/-1	U	MS	0.11	1
	Chromium	2	ug/L	+/-10	U	MS	2	10
	Lead	0.5	ug/L	+/-2	U	MS	0.5	2
	Molybdenum	0.165	ug/L	+/-0.5	U	MS	0.165	0.5
	Nickel	0.5	ug/L	+/-2	U	MS	0.5	2
	Selenium	1.5	ug/L	+/-5	U	MS	1.5	5
	Silver	0.2	ug/L	+/-1	U	MS	0.2	1
	Thallium	0.45	ug/L	+/-2	U	MS	0.45	2
	Uranium	0.067	ug/L	+/-0.2	U	MS	0.067	0.2
1202645180								
	Aluminum	68	ug/L	+/-200	U	P	68	200
	Barium	1	ug/L	+/-5	U	P	1	5
	Beryllium	1	ug/L	+/-5	U	P	1	5
	Boron	15	ug/L	+/-50	U	P	15	50
	Calcium	50	ug/L	+/-200	U	P	50	200
	Cobalt	1	ug/L	+/-5	U	P	1	5
	Copper	3	ug/L	+/-10	U	P	3	10
	Iron	30	ug/L	+/-100	U	P	30	100
	Magnesium	110	ug/L	+/-300	U	P	110	300
	Manganese	2	ug/L	+/-10	U	P	2	10
	Potassium	50	ug/L	+/-150	U	P	50	150
	Silica	0.053	mg/L	+/-0.213	U	P	0.053	0.213
	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
1202647537								
	Mercury	-0.094	ug/L	+/-0.2	J	AV	0.067	0.2

*Analytical Methods:

MS SW846 3005/6020 DOE-AL
P SW846 3005/6010B
AV EPA 245.1/245.2

METALS

-5a-

Matrix Spike Summary

SDG NO. 12-1241 Client ID: CAPA-12-13291S

Contract: ESHL00210 Level: Low

Matrix: WATER % Solids:

Sample ID: 303234002 Spike ID: 1202645178

Analyte	Units	Acceptance Limit	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M*
Antimony	ug/L	75-125	196		1	U	200	97.8		MS
Arsenic	ug/L	75-125	77.7		1.7	U	80	97.2		MS
Cadmium	ug/L	75-125	10.5		0.11	U	10	105		MS
Chromium	ug/L	75-125	48.3		2	U	50	96.7		MS
Lead	ug/L	75-125	41		0.5	U	40	102		MS
Molybdenum	ug/L	75-125	52.6		1.01		50	103		MS
Nickel	ug/L	75-125	46.4		0.5	U	50	91.8		MS
Selenium	ug/L	75-125	19.8		1.5	U	20	98		MS
Silver	ug/L	75-125	52.2		0.2	U	50	104		MS
Thallium	ug/L	75-125	98.1		0.45	U	100	98.1		MS
Uranium	ug/L	75-125	58.3		0.366		50	116		MS

*Analytical Methods:
MS SW846 3005/6020 DOE-AL

METALS

-5a-

Matrix Spike Summary

SDG NO. 12-1241 Client ID: CAPA-12-13291S

Contract: ESHL00210 Level: Low

Matrix: WATER % Solids:

Sample ID: 303234002 Spike ID: 1202645183

<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>
Aluminum	ug/L	75-125	4880		68	U	5000	97.3		P
Barium	ug/L	75-125	510		4.56	J	500	101		P
Beryllium	ug/L	75-125	507		1	U	500	101		P
Boron	ug/L	75-125	517		15	U	500	101		P
Calcium	ug/L	75-125	13500		8890		5000	91.5		P
Cobalt	ug/L	75-125	509		1	U	500	102		P
Copper	ug/L	75-125	518		3	U	500	103		P
Iron	ug/L	75-125	5080		33.2	J	5000	101		P
Magnesium	ug/L	75-125	7180		2230		5000	99		P
Manganese	ug/L	75-125	501		2	U	500	100		P
Potassium	ug/L	75-125	5300		317		5000	99.7		P
Silica	mg/L		80.8		72.5		10.7	77.6	N/A	P
Sodium	ug/L	75-125	16400		11500		5000	97.7		P
Strontium	ug/L	75-125	544		48.2		500	99.1		P
Tin	ug/L	75-125	513		2.5	U	500	103		P
Vanadium	ug/L	75-125	511		1.38	J	500	102		P
Zinc	ug/L	75-125	492		3.3	U	500	97.9		P

*Analytical Methods:
P SW846 3005/6010B

METALS

-5a-

Matrix Spike Summary

SDG NO. 12-1241 Client ID: CAPA-12-13287S

Contract: ESHL00210 Level: Low

Matrix: WATER % Solids:

Sample ID: 303221003 Spike ID: 1202647540

<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	1.99		0.067	U	2	99.3		AV

*Analytical Methods:
 AV EPA 245.1/245.2

Metals
-6-
Duplicate Sample Summary

SDG No.: 12-1241

Lab Code: GEL

Contract: ESHL00210

Client ID: CAPA-12-13291D

Matrix: LIQUID

Level: Low

Sample ID: 303234002

Duplicate ID: 1202645177

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		1.7 U		1.7 U				MS
Cadmium	ug/L		0.11 U		0.11 U				MS
Chromium	ug/L		2 U		2 U				MS
Lead	ug/L		0.5 U		0.5 U				MS
Molybdenum	ug/L	+/- .5	1.01		0.986		2.21		MS
Nickel	ug/L		0.5 U		0.5 U				MS
Selenium	ug/L		1.5 U		1.5 U				MS
Silver	ug/L		0.2 U		0.2 U				MS
Thallium	ug/L		0.45 U		0.45 U				MS
Uranium	ug/L	+/- .2	0.366		0.372		1.63		MS

***Analytical Methods:**

MS SW846 3005/6020 DOE-AL

Metals
-6-
Duplicate Sample Summary

SDG No.: 12-1241

Lab Code: GEL

Contract: ESHL00210

Client ID: CAPA-12-13291D

Matrix: LIQUID

Level: Low

Sample ID: 303234002

Duplicate ID: 1202645182

Percent Solids for Dup: N/A

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M*
Aluminum	ug/L		68	U	68	U			P
Barium	ug/L	+/-5	4.56	J	4.17	J	8.96		P
Beryllium	ug/L		1	U	1	U			P
Boron	ug/L		15	U	15	U			P
Calcium	ug/L	+/-20%	8890		8640		2.77		P
Cobalt	ug/L		1	U	1	U			P
Copper	ug/L		3	U	3	U			P
Iron	ug/L		33.2	J	30	U	200		P
Magnesium	ug/L	+/-20%	2230		2150		3.71		P
Manganese	ug/L		2	U	2	U			P
Potassium	ug/L	+/-150	317		301		5.18		P
Silica	mg/L	+/-20%	72.5		70.5		2.75		P
Sodium	ug/L	+/-20%	11500		11300		1.48		P
Strontium	ug/L	+/-20%	48.2		47.1		2.3		P
Tin	ug/L		2.5	U	2.5	U			P
Vanadium	ug/L	+/-5	1.38	J	1.16	J	17.6		P
Zinc	ug/L		3.3	U	3.3	U			P

*Analytical Methods:

P SW846 3005/6010B

Metals
-6-
Duplicate Sample Summary

SDG No.: 12-1241

Lab Code: GEL

Contract: ESHL00210

Client ID: CAPA-12-13287D

Matrix: LIQUID

Level: Low

Sample ID: 303221003

Duplicate ID: 1202647539

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. 12-1241

Contract: ESHL00210

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>
1202645176								
	Antimony	ug/L	50	48.7		97.4	80-120	MS
	Arsenic	ug/L	50	49.1		98.1	80-120	MS
	Cadmium	ug/L	50	51.1		102	80-120	MS
	Chromium	ug/L	50	49.1		98.2	80-120	MS
	Lead	ug/L	50	50.9		102	80-120	MS
	Molybdenum	ug/L	50	51.3		103	80-120	MS
	Nickel	ug/L	50	49.6		99.1	80-120	MS
	Selenium	ug/L	50	49		98.1	80-120	MS
	Silver	ug/L	50	51.6		103	80-120	MS
	Thallium	ug/L	50	50.3		101	80-120	MS
	Uranium	ug/L	50	55		110	80-120	MS

*Analytical Methods:

MS SW846 3005/6020 DOE-AL

METALS

-7-

Laboratory Control Sample Summary

SDG NO. 12-1241

Contract: ESHL00210

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>
1202645181	Aluminum	ug/L	5000	4930		98.6	80-120	P
	Barium	ug/L	500	517		103	80-120	P
	Beryllium	ug/L	500	510		102	80-120	P
	Boron	ug/L	500	505		101	80-120	P
	Calcium	ug/L	5000	4990		99.8	80-120	P
	Cobalt	ug/L	500	518		104	80-120	P
	Copper	ug/L	500	511		102	80-120	P
	Iron	ug/L	5000	5080		102	80-120	P
	Magnesium	ug/L	5000	5140		103	80-120	P
	Manganese	ug/L	500	509		102	80-120	P
	Potassium	ug/L	5000	5090		102	80-120	P
	Silica	mg/L	10.7	10.9		102	80-120	P
	Sodium	ug/L	5000	5110		102	80-120	P
	Strontium	ug/L	500	504		101	80-120	P
	Tin	ug/L	500	525		105	80-120	P
	Vanadium	ug/L	500	517		103	80-120	P
	Zinc	ug/L	500	498		99.7	80-120	P

*Analytical Methods:

P SW846 3005/6010B

METALS

-7-

Laboratory Control Sample Summary

SDG NO. 12-1241

Contract: ESHL00210

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>
1202647538	Mercury	ug/L	2	2.02		101	85-115	AV

*Analytical Methods:

AV EPA 245.1/245.2

METALS

-9-

Serial Dilution Sample Summary

SDG NO. 12-1241 Client ID: CAPA-12-13291L

Contract: ESHL00210

Matrix: LIQUID Level: Low

Sample ID: 303234002 Serial Dilution ID: 1202645179

<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>
Antimony	1	U	5	U				MS
Arsenic	1.7	U	8.5	U				MS
Cadmium	.11	U	.55	U				MS
Chromium	2	U	10	U				MS
Lead	.5	U	2.5	U				MS
Molybdenum	1.01		.985	J	2.28			MS
Nickel	.5	U	2.5	U				MS
Selenium	1.5	U	7.5	U				MS
Silver	.2	U	1	U				MS
Thallium	.45	U	2.25	U				MS
Uranium	.366		.345	J	5.74			MS

*Analytical Methods:

MS SW846 3005/6020 DOE-AL

METALS

-9-

Serial Dilution Sample Summary

SDG NO. 12-1241 Client ID: CAPA-12-13291L

Contract: ESHL00210

Matrix: LIQUID Level: Low

Sample ID: 303234002 Serial Dilution ID: 1202645184

Analyte	Initial Value ug/L	C	Serial Value ug/L	C	% Difference	Qual	Acceptance Limit	M*
Aluminum	68	U	340	U				P
Barium	4.56	J	5	U	100			P
Beryllium	1	U	5	U				P
Boron	15	U	75	U				P
Calcium	8890		8630		2.85		10	P
Cobalt	1	U	5	U				P
Copper	3	U	15	U				P
Iron	33.2	J	150	U	100			P
Magnesium	2230		2280		2.07			P
Manganese	2	U	10	U				P
Potassium	317		250	U	100			P
Silica	72500		71600		1.28		10	P
Sodium	11500		11200		2.68		10	P
Strontium	48.2		48		.308			P
Tin	2.5	U	12.5	U				P
Vanadium	1.38	J	5	U	100			P
Zinc	3.3	U	16.5	U				P

*Analytical Methods:

P SW846 3005/6010B

METALS

-9-

Serial Dilution Sample Summary

SDG NO. 12-1241 Client ID: CAPA-12-13287L

Contract: ESHL00210

Matrix: LIQUID Level: Low

Sample ID: 303221003 Serial Dilution ID: 1202647541

<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>
Mercury	.067	U	.335	U				AV

*Analytical Methods:

AV EPA 245.1/245.2

General Chem Analysis

Case Narrative

**General Chemistry Narrative
ARS International (ARSL)
SDG 12-1241**

Method/Analysis Information

Product: Carbon, Total Organic

Analytical Batch: 1210398 **Method:** SW 9060 Total Organic Carbon

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 9060:

Sample ID	Client ID
303234001	CAPA-12-13281
1202652079	Method Blank (MB)
1202652080	303221002(CAPA-12-13277) Sample Duplicate (DUP)
1202652081	303221002(CAPA-12-13277) Post Spike (PS)
1202652082	Laboratory Control Sample (LCS)
1202655722	303971001(CAPA-12-13286) Sample Duplicate (DUP)
1202655723	303971001(CAPA-12-13286) 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# 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 Carbon analysis was performed on a O-I Analytical Model 1010 Total Organic 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 (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following samples were selected for QC analysis: 303221002 (CAPA-12-13277) and 303971001 (CAPA-12-13286).

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

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

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

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

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

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

A DER was not required for this SDG.

Additional Comments

A 15 mg/L Total Inorganic Carbon check standard is analyzed with each analytical run to prove that the instrument is effectively sparging away the inorganic carbon.

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: 1207629 **Method:** EPA120.1 Specific Conductivity

Sample Analysis

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

Sample ID	Client ID
303234002	CAPA-12-13291
1202645404	302385003(CALA-12-12552) Sample Duplicate (DUP)
1202645405	302901002(CAPU-12-12576) Sample Duplicate (DUP)
1202645406	Laboratory Control Sample (LCS)

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# 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 Conductivity analysis was performed on a Orion 160 Conductivity Meter.

Initial Calibration

All initial calibration requirements have been met for this SDG.

Quality Control (QC) Information

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following samples were selected for QC analysis: 302385003 (CALA-12-12552) and 302901002 (CAPU-12-12576).

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

A DER was not required 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: 1207364 **Method:** EPA 150.1 pH

Sample Analysis

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

Sample ID	Client ID
303234002	CAPA-12-13291
1202644765	Laboratory Control Sample (LCS)
1202644768	303221003(CAPA-12-13287) 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# 20.

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 Electrode analysis was performed on a PerpHect pH Meter Orion 370.

Initial Calibration

All initial calibration requirements have been met for this SDG.

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

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 303221003 (CAPA-12-13287).

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

The following sample from this sample group was received by the lab outside of the method specified holding time: 303234002 (CAPA-12-13291).

Sample Re-analysis

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

Miscellaneous Information

Data Exception (DER) Documentation

The following DER was generated for this SDG: 1073972 303234002 (CAPA-12-13291).

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: 1207431 **Method:** EPA 300.0 Anions Liquid 28 day

Sample Analysis

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

Sample ID	Client ID
303234002	CAPA-12-13291
1202644914	Method Blank (MB)
1202644915	303221003(CAPA-12-13287) Sample Duplicate (DUP)
1202644916	303221003(CAPA-12-13287) Post Spike (PS)
1202644917	Laboratory Control Sample (LCS)

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# 21.

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-3000 Ion Chromatograph.

Initial Calibration

All initial calibration requirements have been met for this SDG.

Continuing Calibration Blanks

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

Calibration Verification Information (CCV)

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

Y Intercept Rule

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

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 303221003 (CAPA-12-13287).

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

The spike recovery falls outside of the established acceptance limits due to matrix interference: 1202644916 (CAPA-12-13287).

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 in this sample group were diluted due to high concentration: 1202644915 (CAPA-12-13287) and 1202644916 (CAPA-12-13287).

Sample Re-analysis

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

Miscellaneous Information

Data Exception (DER) Documentation

The following DER was generated for this SDG: 1076964 1202644916 (CAPA-12-13287).

Manual Integrations

The following samples from this sample group had to be manually integrated due to errors in the instrument software peak integration: 1202644915 (CAPA-12-13287), 1202644916 (CAPA-12-13287), 1202644917 (LCS) and 303234002 (CAPA-12-13291).

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: 1207674 **Method:** EPA 350.1 Nitrogen and Ammonia L
Prep Batch : 1207670 **Method:** EEPA 350.2 Prep

Sample Analysis

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

Sample ID	Client ID
303234002	CAPA-12-13291
1202645521	Method Blank (MB)
1202645522	303221002(CAPA-12-13277) Sample Duplicate (DUP)
1202645524	303221002(CAPA-12-13277) Matrix Spike (MS)
1202645526	303221002(CAPA-12-13277) Matrix Spike Duplicate (MSD)
1202645528	Laboratory Control Sample (LCS)

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# 7.

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.

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 (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 303221002 (CAPA-12-13277).

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

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

Matrix Spike Duplicate (MSD) Recovery Statement

The MSD recoveries for this sample set were within the required acceptance limits.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD between the spike and spike duplicate met the acceptance limits.

Duplicate Relative Percent Difference (RPD) Statement

The Relative Percent Difference (RPD) between the sample and duplicate falls outside of the established acceptance limits because of the heterogeneous matrix of the sample: 1202645522 (CAPA-12-13277).

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

The following DER was generated for this SDG: 1074223 1202645522 (CAPA-12-13277).

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

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

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Method/Analysis Information

Product: Total Kjeldahl Nitrogen
Analytical Batch: 1207684 **Method:** Nitrogen and Total Kjeldahl (TKN)
Prep Batch : 1207679 **Method:** EEPA 351.2 Prep

Sample Analysis

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

Sample ID	Client ID
303234001	CAPA-12-13281
1202645553	Method Blank (MB)
1202645554	303234001(CAPA-12-13281) Sample Duplicate (DUP)
1202645555	303234001(CAPA-12-13281) Matrix Spike (MS)
1202645556	303234001(CAPA-12-13281) Matrix Spike Duplicate (MSD)
1202645557	Laboratory Control Sample (LCS)

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# 12.

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.

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 (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 303234001 (CAPA-12-13281).

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

The spike recovery falls outside of the established acceptance limits due to matrix interference: 1202645555 (CAPA-12-13281).

Matrix Spike Duplicate (MSD) Recovery Statement

The spike duplicate recovery falls outside of the established acceptance limits due to matrix interference: 1202645556 (CAPA-12-13281).

MS/MSD Relative Percent Difference (RPD) Statement

The RPD between the spike and spike duplicate met the acceptance limits.

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

The following DER was generated for this SDG: 1076467 1202645555 (CAPA-12-13281) and 1202645556

(CAPA-12-13281).

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: 1207641
Method: EPA 353.2 Nitrogen and Nitrate/Nitrite

Sample Analysis

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

Sample ID	Client ID
303234002	CAPA-12-13291
1202645435	Method Blank (MB)
1202645436	303221002(CAPA-12-13277) Sample Duplicate (DUP)
1202645439	303221002(CAPA-12-13277) Post Spike (PS)
1202645442	Laboratory Control Sample (LCS)

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# 7.

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.

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 (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 303221002 (CAPA-12-13277).

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

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

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

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

Sample Dilutions

The following samples in this sample group were diluted due to matrix interference: 1202645436 (CAPA-12-13277), 1202645439 (CAPA-12-13277) and 303234002 (CAPA-12-13291).

Sample Re-analysis

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

Miscellaneous Information

Data Exception (DER) Documentation

A DER was not required 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:	1207687	Method:	EPA 365.4 Phosphorus and Total in
Prep Batch :	1207685	Method:	EEPA 365.4 Prep

Sample Analysis

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

Sample ID	Client ID
303234002	CAPA-12-13291
1202645562	Method Blank (MB)
1202645563	303221003(CAPA-12-13287) Sample Duplicate (DUP)
1202645564	303221003(CAPA-12-13287) Matrix Spike (MS)
1202645565	303221003(CAPA-12-13287) Matrix Spike Duplicate (MSD)
1202645566	Laboratory Control Sample (LCS)

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# 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+ 8000 Series.

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 (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 303221003 (CAPA-12-13287).

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

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

Matrix Spike Duplicate (MSD) Recovery Statement

The MSD recovery for this sample set was within the required acceptance limits.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD between the spike and spike duplicate met the acceptance limits.

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

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

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

Miscellaneous Information

Data Exception (DER) Documentation

A DER was not required 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, Total Dissolved
Analytical Batch: 1208487 **Method:** EPA 160.1 Solids and Dissolved-F

Sample Analysis

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

Sample ID	Client ID
303234002	CAPA-12-13291
1202647495	Method Blank (MB)
1202647496	303234002(CAPA-12-13291) Sample Duplicate (DUP)
1202647500	Laboratory Control Sample (LCS)

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# 11.

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 (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 303234002 (CAPA-12-13291).

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 Re-analysis

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

Sample Aliquot

A sufficient amount of sample was provided by the client for analysis.

Miscellaneous Information

Data Exception (DER) Documentation

A DER was not required 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: Alkalinity
Analytical Batch: 1207761 **Method:** EPA 310.1 Total Alkalinity

Sample Analysis

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

Sample ID	Client ID
303234002	CAPA-12-13291
1202645754	Method Blank (MB)
1202645755	Laboratory Control Sample (LCS)
1202645758	303221003(CAPA-12-13287) Sample Duplicate (DUP)
1202645761	303221003(CAPA-12-13287) 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# 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 Titration analysis was performed on a manually operated buret.

Initial Standardization

The titrant was properly standardized

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 303221003 (CAPA-12-13287).

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

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

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 Re-analysis

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

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

A DER was not required for this SDG.

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

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

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Certification Statement

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

Review Validation:

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

The following data validator verified the information presented in this case narrative:

Reviewer:  Date: 23May12

Sample Data Summary

GEL LABORATORIES LLC

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

Certificate of Analysis Report for

ARSL001 ARS International (63641-10)

Client SDG: 12-1241 GEL Work Order: 303234

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

H Analytical holding time was exceeded

J Value is estimated

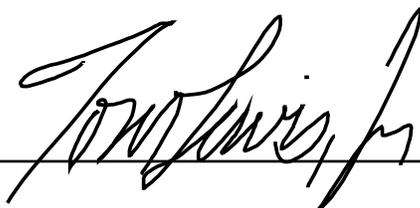
U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.

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 Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the detection limit.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Reviewed by



GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: May 21, 2012

Company : Los Alamos National Laboratory
 Address : PO Box 1663
 TA-03, SM271, Drop Pt. 02U, Rm111
 Los Alamos, New Mexico 87545

Contact: Keith Greene
 Project: LANL-WQH Water Samples

Client SDG: 12-1241

Client Sample ID: CAPA-12-13281
 Sample ID: 303234001
 Matrix: W
 Collect Date: 24-APR-12 11:35
 Receive Date: 26-APR-12
 Collector: Client

Project: ESHL00210
 Client ID: ARSL001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis											
SW 9060 Total Organic Carbon "As Received"											
Total Organic Carbon Average	J	0.361	0.330	1.00	mg/L	1	TSM	05/11/12	1651	1210398	1
Nutrient Analysis											
Nitrogen, Total Kjeldahl (TKN) "As Received"											
Nitrogen, Total Kjeldahl	U	ND	0.035	0.100	mg/L	1	KLP1	05/08/12	1005	1207684	2

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 351.2 Prep	EPA 351.2 Total Kjeldahl Nitrogen Prep	KLP1	05/07/12	1405	1207679

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 351.2	

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: May 21, 2012

Company : Los Alamos National Laboratory
 Address : PO Box 1663
 TA-03, SM271, Drop Pt. 02U, Rm111
 Los Alamos, New Mexico 87545

Contact: Keith Greene
 Project: LANL-WQH Water Samples

Client SDG: 12-1241

Client Sample ID: CAPA-12-13291
 Sample ID: 303234002
 Matrix: W
 Collect Date: 24-APR-12 11:35
 Receive Date: 26-APR-12
 Collector: Client

Project: ESHL00210
 Client ID: ARSL001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Conductivity Analysis											
EPA120.1 Specific Conductivity "As Received"											
Conductivity		108	1.00	1.00	umhos/cm	1	TXT1	04/27/12	1314	1207629	1
Electrode Analysis											
EPA 150.1 pH "As Received"											
pH at Temp 17.0C	H	7.44	0.010	0.100	SU	1	LXA1	04/27/12	1308	1207364	2
Ion Chromatography											
EPA 300.0 Anions Liquid 28 day "As Received"											
Bromide	U	ND	0.067	0.200	mg/L	1	MAR1	05/08/12	0257	1207431	3
Chloride		1.45	0.067	0.200	mg/L	1					
Fluoride		0.205	0.033	0.100	mg/L	1					
Sulfate		1.70	0.133	0.400	mg/L	1					
Nutrient Analysis											
EPA 350.1 Nitrogen, Ammonia L "As Received"											
Nitrogen, Ammonia	J	0.0403	0.017	0.050	mg/L	1	KLP1	04/30/12	1439	1207674	4
EPA 353.2 Nitrogen, Nitrate/Nitrite "As Received"											
Nitrogen, Nitrate/Nitrite	J	0.155	0.085	0.250	mg/L	5	KLP1	05/02/12	1136	1207641	5
EPA 365.4 Phosphorus, Total in "As Received"											
Phosphorus, Total as P	J	0.0492	0.017	0.050	mg/L	1	KLP1	05/09/12	1521	1207687	6
Solids Analysis											
EPA 160.1 Solids, Dissolved-F "As Received"											
Total Dissolved Solids		123	3.40	14.3	mg/L		LYG1	05/01/12	1017	1208487	7
Titration Analysis											
EPA 310.1 Total Alkalinity "As Received"											
Alkalinity, Total as CaCO3		51.6	0.725	1.00	mg/L		LXA1	04/27/12	1829	1207761	8
Carbonate alkalinity (CaCO3)	U	ND	0.725	1.00	mg/L						

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Prep	EPA 350.1 Ammonia Nitrogen Prep	KLP1	04/30/12	1309	1207670
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	KLP1	05/09/12	1245	1207685

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: May 21, 2012

Company : Los Alamos National Laboratory
Address : PO Box 1663
TA-03, SM271, Drop Pt. 02U, Rm111
Los Alamos, New Mexico 87545

Contact: Keith Greene
Project: LANL-WQH Water Samples

Client SDG: 12-1241

Client Sample ID: CAPA-12-13291

Project: ESHL00210

Sample ID: 303234002

Client ID: ARSL001

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

The following Analytical Methods were performed:

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

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: May 21, 2012
Page 1 of 4

Los Alamos National Laboratory
PO Box 1663
TA-03, SM271, Drop Pt. 02U, Rm111
Los Alamos, New Mexico

Contact: Keith Greene

Workorder: 303234

Paramname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Carbon Analysis											
Batch	1210398										
QC1202652080	303221002	DUP									
Total Organic Carbon Average		4.18		4.15	mg/L	0.865	^	(+/-1.00)	TSM	05/11/12	16:22
QC1202655722	303971001	DUP									
Total Organic Carbon Average		1.71		1.70	mg/L	0.234	^	(+/-1.00)		05/11/12	23:18
QC1202652082	LCS										
Total Organic Carbon Average	10.0			9.59	mg/L			(85%-115%)		05/11/12	15:41
QC1202652079	MB										
Total Organic Carbon Average			U	ND	mg/L					05/11/12	15:32
QC1202652081	303221002	PS									
Total Organic Carbon Average	10.0	4.18		12.8	mg/L			(65%-120%)		05/11/12	16:42
QC1202655723	303971001	PS									
Total Organic Carbon Average	10.0	1.71		11.1	mg/L			(65%-120%)		05/11/12	23:37
Conductivity Analysis											
Batch	1207629										
QC1202645404	302385003	DUP									
Conductivity		362		364	umhos/cm	0.551		(0%-10%)	TXT1	04/27/12	13:10
QC1202645405	302901002	DUP									
Conductivity		381		383	umhos/cm	0.524		(0%-10%)		04/27/12	13:12
QC1202645406	LCS										
Conductivity	1410			1410	umhos/cm			(95%-105%)		04/27/12	13:09
Electrode Analysis											
Batch	1207364										
QC1202644768	303221003	DUP									
pH	H	6.42	H	6.44	SU	0.311		(0%-10%)	LXA1	04/27/12	13:06
QC1202644765	LCS										
pH	7.00			7.00	SU			(99%-101%)		04/27/12	11:53
Ion Chromatography											
Batch	1207431										
QC1202644915	303221003	DUP									
Bromide	U	ND	U	ND	mg/L	N/A			MAR1	05/08/12	01:51
Chloride		130		130	mg/L	0.110		(0%-20%)		05/08/12	20:21
Fluoride		0.133		0.134	mg/L	1.12	^	(+/-0.100)		05/08/12	01:51
Sulfate		13.3		13.8	mg/L	4.10		(0%-20%)			
QC1202644917	LCS										
Bromide	2.50			2.60	mg/L			104 (90%-110%)		05/08/12	00:45
Chloride	10.0			9.73	mg/L			97.3 (90%-110%)			
Fluoride	5.00			5.09	mg/L			102 (90%-110%)			
Sulfate	20.0			20.0	mg/L			99.8 (90%-110%)			
QC1202644914	MB										
Bromide			U	ND	mg/L					05/08/12	00:12
Chloride			U	ND	mg/L						

GEL LABORATORIES LLC

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

QC Summary

Workorder: 303234

Page 2 of 4

Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time	
Ion Chromatography												
Batch	1207431											
Fluoride			U	ND	mg/L							
Sulfate			U	ND	mg/L				MAR1	05/08/12	00:12	
QC1202644916	303221003	PS										
Bromide	2.50	U	ND	2.64	mg/L		103	(90%-110%)		05/08/12	02:24	
Chloride	10.0		13.0	24.6	mg/L		116*	(90%-110%)		05/08/12	20:54	
Fluoride	5.00		0.133	5.13	mg/L		99.9	(90%-110%)		05/08/12	02:24	
Sulfate	20.0		13.3	35.5	mg/L		111*	(90%-110%)				
Nutrient Analysis												
Batch	1207641											
QC1202645436	303221002	DUP										
Nitrogen, Nitrate/Nitrite			0.464	0.459	mg/L	1.08	^	(+/-0.250)	KLP1	05/02/12	11:28	
QC1202645442	LCS											
Nitrogen, Nitrate/Nitrite	1.00			1.06	mg/L		106	(90%-110%)		05/02/12	10:31	
QC1202645435	MB											
Nitrogen, Nitrate/Nitrite			U	ND	mg/L					05/02/12	10:29	
QC1202645439	303221002	PS										
Nitrogen, Nitrate/Nitrite	1.00		0.0927	1.15	mg/L		106	(90%-110%)		05/02/12	11:29	
Batch	1207674											
QC1202645522	303221002	DUP										
Nitrogen, Ammonia			0.190	0.0975	mg/L	64.3*	^	(+/-0.050)	KLP1	04/30/12	14:36	
QC1202645528	LCS											
Nitrogen, Ammonia	1.00			1.04	mg/L		104	(90%-110%)		04/30/12	14:24	
QC1202645521	MB											
Nitrogen, Ammonia			U	ND	mg/L					04/30/12	14:23	
QC1202645524	303221002	MS										
Nitrogen, Ammonia	1.00		0.190	1.15	mg/L		96	(90%-110%)		04/30/12	14:37	
QC1202645526	303221002	MSD										
Nitrogen, Ammonia	1.00		0.190	1.23	mg/L	6.72	104	(0%-15%)		04/30/12	14:38	
Batch	1207684											
QC1202645554	303234001	DUP										
Nitrogen, Total Kjeldahl		U	ND	U	ND	mg/L	N/A		KLP1	05/08/12	10:06	
QC1202645557	LCS											
Nitrogen, Total Kjeldahl	1.00			0.928	mg/L		92.8	(90%-110%)		05/08/12	10:01	
QC1202645553	MB											
Nitrogen, Total Kjeldahl			U	ND	mg/L					05/08/12	10:00	
QC1202645555	303234001	MS										
Nitrogen, Total Kjeldahl	1.00	U	ND	0.875	mg/L		87.5*	(90%-110%)		05/08/12	10:07	
QC1202645556	303234001	MSD										
Nitrogen, Total Kjeldahl	1.00	U	ND	0.882	mg/L	0.797	88.2*	(0%-20%)		05/08/12	10:07	
Batch	1207687											
QC1202645563	303221003	DUP										
Phosphorus, Total as P		J	0.0396	J	0.0462	mg/L	15.4	^	(+/-0.050)	KLP1	05/09/12	15:14
QC1202645566	LCS											
Phosphorus, Total as P	1.00			0.984	mg/L		98.4	(84%-122%)		05/09/12	15:13	
QC1202645562	MB											
Phosphorus, Total as P			U	ND	mg/L					05/09/12	15:12	
QC1202645564	303221003	MS										

GEL LABORATORIES LLC

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

QC Summary

Workorder: 303234

Page 3 of 4

Paramname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Nutrient Analysis											
Batch	1207687										
Phosphorus, Total as P	1.00	J	0.0396	1.02	mg/L		98	(46%-146%)		05/09/12	15:15
QC1202645565 303221003 MSD											
Phosphorus, Total as P	1.00	J	0.0396	1.03	mg/L	0.976	99	(0%-21%)	KLP1	05/09/12	15:16
Solids Analysis											
Batch	1208487										
QC1202647496 303234002 DUP											
Total Dissolved Solids			123	120	mg/L	2.35		(0%-10%)	LYG1	05/01/12	10:17
QC1202647500 LCS											
Total Dissolved Solids	300			290	mg/L		96.7	(95%-105%)		05/01/12	10:17
QC1202647495 MB											
Total Dissolved Solids			U	ND	mg/L					05/01/12	10:17
Titration Analysis											
Batch	1207761										
QC1202645758 303221003 DUP											
Alkalinity, Total as CaCO3			48.5	48.5	mg/L	0.00		(0%-20%)	LXA1	04/27/12	16:21
Carbonate alkalinity (CaCO3)		U	ND	U	ND	mg/L	N/A				
QC1202645755 LCS											
Alkalinity, Total as CaCO3	50.0			51.6	mg/L		103	(90%-110%)		04/27/12	14:46
QC1202645754 MB											
Alkalinity, Total as CaCO3			U	ND	mg/L					04/27/12	14:43
Carbonate alkalinity (CaCO3)			U	ND	mg/L						
QC1202645761 303221003 MS											
Alkalinity, Total as CaCO3	50.0		48.5	99.0	mg/L		101	(80%-120%)		04/27/12	16:22

Notes:

RER is calculated at the 95% confidence level (2-sigma).

The Qualifiers in this report are defined as follows:

- ** Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- 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
- E General Chemistry--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
- E Organics--Concentration of the target analyte exceeds the instrument calibration range
- F Estimated Value
- FB Mercury was found present at quantifiable concentrations in field blanks received with these samples. Data associated with the blank are deemed invalid for reporting to regulatory agencies
- H Analytical holding time was exceeded

GEL LABORATORIES LLC

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

QC Summary

Workorder: 303234

Page 4 of 4

Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
J										
K										
L										
M										
M										
N										
N										
N/A										
N1										
ND										
NJ										
P										
Q										
R										
U										
UI										
UJ										
UL										
X										
Y										
Z										
^										
d										
h										

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Miscellaneous

DATA EXCEPTION REPORT

Mo.Day Yr. 30-APR-12	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: ELECTRODE	Test / Method: EPA 150.1	Matrix Type: Liquid	Client Code: ARGN, BETT, ESHL, GELC,
Batch ID: 1207364	Sample Numbers: See below.		
Potentially affected work order(s)(SDG): 303144,303181,303187,303201,303206,303221(12-1236),303234(12-1241)			
Application Issues: Sample received out of holding			
Specification and Requirements Exception Description:		DER Disposition:	
<p>1. Sample received out of holding:</p> <p>303144 001,002</p> <p>303181 001</p> <p>303187 004,005,006</p> <p>303201 001,002</p> <p>303206 001,002,003,004,005,006,007</p> <p>303221 003</p> <p>303234 002</p>		<p>1. Samples were received out of holding.</p>	

Originator's Name:
Lindsey Jensen 30-APR-12

Data Validator/Group Leader:
Julia Hamilton 03-MAY-12

DATA EXCEPTION REPORT

Mo.Day Yr. 30-APR-12	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: LACHAT Flow Injection Analyzer	Test / Method: EPA 350.1	Matrix Type: Liquid	Client Code: ESHL
Batch ID: 1207674	Sample Numbers: See below.		
Potentially affected work order(s)(SDG): 303180,303206,303221(12-1236),303234(12-1241),303295			
Application Issues: Failed RPD for DUP			
Specification and Requirements Exception Description:		DER Disposition:	
<p>1. Failed RPD for DUP: QC 1202645522DUP</p>		<p>1. The Relative Percent Difference (RPD) between the sample and duplicate falls outside of the established acceptance limits because of the heterogeneous matrix of the sample.</p>	

Originator's Name:

Kristen Parson 30-APR-12

Data Validator/Group Leader:

Julia Hamilton 01-MAY-12

DATA EXCEPTION REPORT

Mo.Day Yr. 08-MAY-12	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: LACHAT Flow Injection Analyzer	Test / Method: EPA 351.2	Matrix Type: Liquid	Client Code: BETT, ESHL
Batch ID: 1207684	Sample Numbers: See below.		
Potentially affected work order(s)(SDG): 303187,303221(12-1236),303234(12-1241),303443(12-1249),303489(12-1254),303613(12-1268)			
Application Issues: Failed Recovery for MS/PS Failed Recovery for MSD/PSD			
Specification and Requirements Exception Description:		DER Disposition:	
<p>1. Failed Recovery for MS/MSD: QC 1202645555MS, QC 1202645556MSD</p>		<p>1. The MS recovery falls outside of the established acceptance limits. The MSD verifies the recovery failure with a passing RPD; therefore, the failure is attributed to matrix interference.</p>	

Originator's Name:

Kristen Parson 08-MAY-12

Data Validator/Group Leader:

Julia Hamilton 21-MAY-12

DATA EXCEPTION REPORT

Mo.Day Yr. 09-MAY-12	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: IC	Test / Method: EPA 300.0	Matrix Type: Liquid	Client Code: ESHL
Batch ID: 1207431	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 303221(12-1236),303234(12-1241),303443(12-1249),303488(12-1253),303489(12-1254)			
Application Issues: Failed Recovery for MS/PS			
Specification and Requirements Exception Description:		DER Disposition:	
<p>1. Failed Recovery for MS/PS: QC 1202644916PS</p>		<p>1. The MS/PS failed required acceptance limits for chloride and sulfate due to matrix interference. Of the remaining anions in the MS/PS, all except Orthophosphate required acceptance limits. This failure is attributed to the matrix of the sample because the successful recovery of the other compounds indicate that the laboratory process was in control. This variance is judged to have no negative impact on the data. The deviation is noted in the Case Narrative and DER, and the data has been reported.</p>	

Originator's Name:
Mary Sherwood 09-MAY-12

Data Validator/Group Leader:
Virginia Winger 09-MAY-12

Radiological Analysis

**Radiochemistry Case Narrative
ARS International (ARSL)
SDG 12-1241
Work Order 303234**

Method/Analysis Information

Product: Alphaspec Am241 Liquid
Analytical Method: DOE EML HASL-300, Am-05-RC Modified
Analytical Batch Number: 1207310

Sample ID	Client ID
303234001	CAPA-12-13281
1202644608	Method Blank (MB)
1202644609	303221002(CAPA-12-13277) Sample Duplicate (DUP)
1202644610	Laboratory Control Sample (LCS)

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-RAD-A-011 REV# 21.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met. Calibrations are performed monthly using mixed alpha standards comprised of the following: Gd-148, Np-237, and Cm-244.

Standards Information

Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information

Aliquots for samples 1202644608 (MB) and 1202644610 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 303221002 (CAPA-12-13277). The QC was from ARSL work order 303221.

QC Information

All of the QC samples meet the required acceptance limits with the following exceptions: Refer to Data Exception Report (DER).

CSU

The blank result is less than 1.65 times the CSU.

Technical Information:

Holding Time

All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis

None of the samples in this sample set required prep or reanalysis.

Miscellaneous Information:

Data Exception (DER) Documentation

Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. The following DER was generated for this SDG:
DER 1078237 was generated due to RDL less than MDA. 1. Samples 303221002, 303234001, 303489001, 303750001, 303750003, 303750005, 303750007, 1202644608, and 1202644609 did not meet the Am-241 detection limit. 1. When a blank population is performed the MDC may be greater than the RDL due to the high standard deviation. The samples did meet the client's tracer yield requirement and were counted for 1000 minutes to achieve the lowest MDC possible. Reporting results.

Manual Integration

No manual integrations were performed on data in this batch.

Additional Comments

The MDCs are calculated using a blank population.

Blank Decision Level

The blank result is less than the decision level.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: Alphaspec Pu, Liquid
Analytical Method: DOE EML HASL-300, Pu-11-RC Modified
Analytical Batch Number: 1207311

Sample ID	Client ID
303234001	CAPA-12-13281
1202644611	Method Blank (MB)
1202644612	303221002(CAPA-12-13277) Sample Duplicate (DUP)
1202644613	Laboratory Control Sample (LCS)

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-RAD-A-011 REV# 21.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met. Calibrations are performed monthly using mixed alpha standards comprised of the following: Gd-148, Np-237, and Cm-244.

Standards Information

Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information

Aliquots for samples 1202644611 (MB) and 1202644613 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 303221002 (CAPA-12-13277). The QC was from ARSL work order 303221.

QC Information

All of the QC samples met the required acceptance limits.

CSU

The blank result is less than 1.65 times the CSU.

Technical Information:

Holding Time

All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis

Sample 303234001 (CAPA-12-13281) was recounted due to high MDC. The recount is reported.

Miscellaneous Information:

Data Exception (DER) Documentation

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

Manual Integration

No manual integrations were performed on data in this batch.

Additional Comments

The MDCs are calculated using a blank population.

Blank Decision Level

The blank result is less than the decision level.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: Alphaspec U, Liquid

Analytical Method: DOE EML HASL-300, U-02-RC Modified

Analytical Batch Number: 1207313

Sample ID	Client ID
303234001	CAPA-12-13281
1202644614	Method Blank (MB)
1202644615	303221002(CAPA-12-13277) Sample Duplicate (DUP)
1202644616	Laboratory Control Sample (LCS)

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-RAD-A-011 REV# 21.

Calibration Information:**Calibration Information**

All initial and continuing calibration requirements have been met. Calibrations are performed monthly using mixed alpha standards comprised of the following: Gd-148, Np-237, and Cm-244.

Standards Information

Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:**Blank Information**

Aliquots for samples 1202644614 (MB) and 1202644616 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 303221002 (CAPA-12-13277). The QC was from ARSL work order 303221.

QC Information

All of the QC samples met the required acceptance limits.

CSU

The blank result is less than 1.65 times the CSU.

Technical Information:

Holding Time

All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis

Sample 303234001 (CAPA-12-13281) was recounted due to low carrier/tracer yield. The recount is reported.

Miscellaneous Information:

Data Exception (DER) Documentation

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

Manual Integration

No manual integrations were performed on data in this batch.

Additional Comments

The MDCs are calculated using a blank population. Sample 303234001 (CAPA-12-13281) did not meet the client’s yield requirement. However, there are 400 tracer counts, GEL’s standard tracer yield requirements are met, and the client’s detection limits are met.

Blank Decision Level

The blank result is less than the decision level.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product:	GammaSpec
Analytical Method:	EPA 901.1
Analytical Batch Number:	1208334

Sample ID	Client ID
303234001	CAPA-12-13281
1202647096	Method Blank (MB)
1202647097	303234001(CAPA-12-13281) Sample Duplicate (DUP)
1202647098	Laboratory Control Sample (LCS)

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-RAD-A-013 REV# 24.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met. The initial Calibrations were performed in August 2011, February 2012 and March 2012.

Standards Information

Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information

The blank volume is representative of the sample volume in this batch.

Designated QC

The following sample was used for QC: 303234001 (CAPA-12-13281). The QC was from ARSL work order 303234.

QC Information

All of the QC samples met the required acceptance limits.

CSU

The blank 1202647096 (MB) result is greater than 1.65 times the CSU but less than the MDC for K-40.

Technical Information:

Holding Time

All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Miscellaneous Information:

Data Exception (DER) Documentation

Data exception reports are generated to document any 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 sample set.

Blank Decision Level

The blank 1202647096 (MB) result is greater than the decision level but less than the MDC for K-40.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: WSP-GrossA/B
Analytical Method: EPA 900.0/SW846 9310
Analytical Batch Number: 1208279

Sample ID	Client ID
303234001	CAPA-12-13281
1202646910	Method Blank (MB)
1202646911	302717001(CAPU-12-12567) Sample Duplicate (DUP)
1202646912	302717001(CAPU-12-12567) Matrix Spike (MS)
1202646913	302717001(CAPU-12-12567) Matrix Spike Duplicate (MSD)
1202646914	Laboratory Control Sample (LCS)

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-RAD-A-001 REV# 15.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met. The initial Calibration was performed in September 2011. The discrimination settings are calibrated in beta discriminating mode to reduce beta to alpha crosstalk.

Standards Information

Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information

Aliquots for samples 1202646910 (MB) and 1202646914 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 302717001 (CAPU-12-12567). The QC was from ARSL work order 302717.

QC Information

All of the QC samples met the required acceptance limits.

CSU

The blank 1202646910 (MB) beta result is greater than 1.65 times the CSU but less than the MDC.

Technical Information:**Holding Time**

All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Chemical Recoveries

All chemical recoveries meet the required acceptance limits for this sample set.

Gross Alpha/Beta Preparation Information

High hygroscopic salt content in evaporated samples can cause the sample mass to fluctuate due to moisture absorption. To minimize this interference, the salts are converted to oxides by heating the sample under a flame until a dull red color is obtained. The conversion to oxides stabilizes the sample weight and ensures that proper alpha/beta efficiencies are assigned for each sample. Volatile radioisotopes of carbon, hydrogen, technetium, polonium and cesium may be lost during sample heating, especially to a dull red heat. For this sample set, the prepared planchet was counted for beta activity before being flamed. After flaming, the planchet was counted for alpha activity.

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

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

Additional Comments

The matrix spike and matrix spike duplicate, 1202646912 (CAPU-12-12567) and 1202646913 (CAPU-12-12567), aliquots were reduced to conserve sample volume.

Blank Decision Level

The blank 1202646910 (MB) beta result is greater than the decision level but less than the MDC.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product:	GFPC, Sr90, liquid
Analytical Method:	EPA 905.0 Modified
Analytical Batch Number:	1208282

Sample ID	Client ID
303234001	CAPA-12-13281
1202646922	Method Blank (MB)
1202646923	303234001(CAPA-12-13281) Sample Duplicate (DUP)
1202646924	303234001(CAPA-12-13281) Matrix Spike (MS)
1202646925	Laboratory Control Sample (LCS)

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-RAD-A-004 REV# 15.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met. The initial Calibration was performed in April 2012.

Calibration Information

All of the calibration verification standard requirements were met.

Standards Information

Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information

Aliquots for samples 1202646922 (MB) and 1202646925 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 303234001 (CAPA-12-13281). The QC was from ARSL work order 303234.

QC Information

All of the QC samples met the required acceptance limits.

CSU

The blank result is less than 1.65 times the CSU.

Technical Information:

Holding Time

All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Chemical Recoveries

All chemical recoveries meet the required acceptance limits for this sample set.

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

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

Additional Comments

The matrix spike, 1202646924 (CAPA-12-13281), aliquot was reduced to conserve sample volume.

Blank Decision Level

The blank result is less than the decision level.

Qualifier Information

Manual qualifiers were not required.

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

ARSL001 ARS International (63641-10)

Client SDG: 12-1241 GEL Work Order: 303234

The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- U Analyte was analyzed for, but not detected above the MDL, MDA, 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: Kate Gellatly

Date: 22 MAY 2012

Title: Analyst I

DATA EXCEPTION REPORT

Mo.Day Yr. 14-MAY-12	Division: Radiochemistry	Quality Criteria: Specifications	Type: Process
Instrument Type: ALPHA SPECTROMETER	Test / Method: DOE EML HASL-300, Am-05-RC Modified	Matrix Type: Liquid	Client Code: ESHL
Batch ID: 1207310	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 303221(12-1236),303234(12-1241),303489(12-1254),303750(12-1274)			
Application Issues: RDL less than MDA			
Specification and Requirements Exception Description:		DER Disposition:	
1. Samples 303221002, 303234001, 303489001, 303750001, 303750003, 303750005, 303750007, 1202644608, and 1202644609 did not meet the Am-241 detection limit.		1. When a blank population is performed the MDC may be greater than the RDL due to the high standard deviation. The samples did meet the client's tracer yield requirement and were counted for 1000 minutes to achieve the lowest MDC possible. Reporting results.	

Originator's Name:
Melanie Aycock 14-MAY-12

Data Validator/Group Leader:
Denise Smalls 15-MAY-12

Sample Data Summary

GEL LABORATORIES LLC

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

Certificate of Analysis

Company : Los Alamos National Laboratory
 Address : PO Box 1663
 TA-03, SM271, Drop Pt. 02U, Rm111
 Los Alamos, New Mexico 87545
 Contact: Keith Greene
 Project: LANL-WQH Water Samples

Report Date: May 22, 2012

Client Sample ID: CAPA-12-13281
 Sample ID: 303234001
 Matrix: W
 Collect Date: 24-APR-12
 Receive Date: 26-APR-12
 Collector: Client

Project: ESHL00210
 Client ID: ARSL001

Parameter	Qualifier	Result	Uncertainty	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis													
<i>Alphaspec Am241 Liquid "As Received"</i>													
Americium-241	U	0.00	+/-0.0212	0.0959	+/-0.0212	0.050	pCi/L		JXD2	05/12/12	1152	1207310	1
<i>Alphaspec Pu, Liquid "As Received"</i>													
Plutonium-238	U	-0.00272	+/-0.00472	0.0423	+/-0.00472	0.050	pCi/L		JXD2	05/17/12	1407	1207311	2
Plutonium-239/240	U	0.00545	+/-0.00545	0.0359	+/-0.00545	0.050	pCi/L						
<i>Alphaspec U, Liquid "As Received"</i>													
Uranium-234		0.147	+/-0.0333	0.105	+/-0.035	1.00	pCi/L		JXD2	05/16/12	1349	1207313	3
Uranium-235/236	U	0.00	+/-0.00712	0.0743	+/-0.00713	1.00	pCi/L						
Uranium-238		0.0921	+/-0.0257	0.0524	+/-0.0266	0.500	pCi/L						
Rad Gamma Spec Analysis													
<i>Gammaspac "As Received"</i>													
Cesium-137	U	1.85	+/-1.67	6.43	+/-1.67	8.00	pCi/L		MJH1	05/10/12	1013	1208334	4
Cobalt-60	U	3.13	+/-1.57	6.88	+/-1.57	8.00	pCi/L						
Neptunium-237	U	1.94	+/-2.69	9.90	+/-2.69	10.0	pCi/L						
Potassium-40	U	-30.2	+/-16.4	59.2	+/-16.4	10.0	pCi/L						
Sodium-22	U	-0.20	+/-1.22	4.75	+/-1.22	10.0	pCi/L						
Rad Gas Flow Proportional Counting													
<i>GFPC, Sr90, liquid "As Received"</i>													
Strontium-90	U	0.250	+/-0.147	0.485	+/-0.148	0.500	pCi/L		VXC2	05/19/12	1445	1208282	5
<i>WSP-GrossA/B "As Received"</i>													
Beta	U	-0.0664	+/-0.574	2.23	+/-0.574	3.00	pCi/L		BXF1	05/11/12	1100	1208279	6
Alpha	U	1.13	+/-0.861	2.98	+/-0.867	3.00	pCi/L		BXF1	05/11/12	1437	1208279	7

The following Analytical Methods were performed

Method	Description
1	DOE EML HASL-300, Am-05-RC Modified
2	DOE EML HASL-300, Pu-11-RC Modified
3	DOE EML HASL-300, U-02-RC Modified
4	EPA 901.1
5	EPA 905.0 Modified
6	EPA 900.0/SW846 9310
7	EPA 900.0/SW846 9310

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Americium-243 Tracer	Alphaspec Am241 Liquid "As Received"	1207310	51.4	(50%-105%)
Plutonium-242 Tracer	Alphaspec Pu, Liquid "As Received"	1207311	55.6	(50%-105%)
Uranium-232 Tracer	Alphaspec U, Liquid "As Received"	1207313	41.9 *	(50%-105%)
Strontium Carrier	GFPC, Sr90, liquid "As Received"	1208282	88.9	(50%-105%)

GEL LABORATORIES LLC

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

Certificate of Analysis

Company : Los Alamos National Laboratory
Address : PO Box 1663
TA-03, SM271, Drop Pt. 02U, Rm111
Los Alamos, New Mexico 87545

Report Date: May 22, 2012

Contact: Keith Greene
Project: LANL-WQH Water Samples

Client Sample ID: CAPA-12-13281
Sample ID: 303234001

Project: ESHL00210
Client ID: ARSL001

Parameter	Qualifier	Result	Uncertainty	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer	Recovery	Test								Batch ID	Recovery%	Acceptable Limits	

Notes:

TPU and Uncertainty are calculated at the 67% confidence level (1-sigma).

Quality Control Data

GEL LABORATORIES LLC

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

QC Summary

Report Date: May 22, 2012
Page 1 of 6

Client : Los Alamos National Laboratory
PO Box 1663
TA-03, SM271, Drop Pt. 02U, Rm
Los Alamos, New Mexico
Contact: Keith Greene
Workorder: 303234

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date Time
Rad Alpha Spec										
Batch	1207310									
QC1202644609	303221002	DUP								
Americium-241	U	0.0244	U	0.0151	pCi/L	0.157		(0-1)	JXD2	05/12/1211:53
	Uncert:	+/-0.0161		+/-0.0133						
	TPU:	+/-0.0162		+/-0.0133						
	Yield:	72.4		84.2						
QC1202644610	LCS									
Americium-241	1.42			1.39	pCi/L		97.8	(80%-120%)		05/12/1211:53
	Uncert:			+/-0.0508						
	TPU:			+/-0.0767						
	Yield:			97.5						
QC1202644608	MB									
Americium-241			U	-0.0334	pCi/L					05/12/1211:53
	Uncert:			+/-0.0164						
	TPU:			+/-0.0164						
	Yield:			66.6						
Batch	1207311									
QC1202644612	303221002	DUP								
Plutonium-238	U	-0.0151	U	-0.0402	pCi/L	0.587		(0-1)	JXD2	05/15/1218:34
	Uncert:	+/-0.00796		+/-0.0135						
	TPU:	+/-0.00797		+/-0.0135						
	Yield:	76.5		67.0						
Plutonium-239/240	U	-0.00903	U	0.00	pCi/L	0.366		(0-1)		
	Uncert:	+/-0.00796		+/-0.00437						
	TPU:	+/-0.00796		+/-0.00438						
	Yield:	76.5		67.0						
QC1202644613	LCS									
Plutonium-238			U	0.00211	pCi/L			(80%-120%)		05/15/1218:34
	Uncert:			+/-0.00761						
	TPU:			+/-0.00761						
	Yield:			83.3						
Plutonium-239/240	2.03			2.07	pCi/L		102	(80%-120%)		
	Uncert:			+/-0.0662						
	TPU:			+/-0.128						
	Yield:			83.3						
QC1202644611	MB									
Plutonium-238			U	0.00932	pCi/L					05/15/1218:33
	Uncert:			+/-0.00737						
	TPU:			+/-0.00738						
	Yield:			74.3						
Plutonium-239/240			U	-0.00699	pCi/L					
	Uncert:			+/-0.00521						
	TPU:			+/-0.00521						
	Yield:			74.3						

GEL LABORATORIES LLC

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

QC Summary

Workorder: 303234

Page 2 of 6

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date Time
Rad Alpha Spec										
Batch	1207313									
QC1202644615	303221002 DUP									
Uranium-234	U	0.066	U	0.055	pCi/L	0.144		(0-1)	JXD2	05/15/1218:41
	Uncert:	+/-0.0186		+/-0.0186						
	TPU:	+/-0.0192		+/-0.019						
	Yield:	66.4		67.2						
Uranium-235/236	U	0.00156	U	-0.00244	pCi/L	0.135		(0-1)		
	Uncert:	+/-0.00685		+/-0.00793						
	TPU:	+/-0.00686		+/-0.00794						
	Yield:	66.4		67.2						
Uranium-238	U	0.0237	U	0.0115	pCi/L	0.282		(0-1)		
	Uncert:	+/-0.0115		+/-0.0101						
	TPU:	+/-0.0116		+/-0.0101						
	Yield:	66.4		67.2						
QC1202644616	LCS									
Uranium-234				2.45	pCi/L					
	Uncert:			+/-0.0822						
	TPU:			+/-0.182						
	Yield:			78.4						
Uranium-235/236				0.155	pCi/L					
	Uncert:			+/-0.0228						
	TPU:			+/-0.025						
	Yield:			78.4						
Uranium-238	2.67			2.55	pCi/L		95.4	(80%-120%)		
	Uncert:			+/-0.0833						
	TPU:			+/-0.189						
	Yield:			78.4						
QC1202644614	MB									
Uranium-234			U	-0.00317	pCi/L					
	Uncert:			+/-0.00738						
	TPU:			+/-0.00738						
	Yield:			83.5						
Uranium-235/236			U	-0.00629	pCi/L					
	Uncert:			+/-0.00466						
	TPU:			+/-0.00466						
	Yield:			83.5						
Uranium-238			U	0.00132	pCi/L					
	Uncert:			+/-0.00411						
	TPU:			+/-0.00411						
	Yield:			83.5						
Rad Gamma Spec										
Batch	1208334									
QC1202647097	303234001 DUP									
Cesium-137	U	1.85	U	0.869	pCi/L	0.159		(0-1)	MJH1	05/10/1212:19
	Uncert:	+/-1.67		+/-1.41						
	TPU:	+/-1.67		+/-1.41						
Cobalt-60	U	3.13	U	-1.91	pCi/L	0.797		(0-1)		
	Uncert:	+/-1.57		+/-1.59						
	TPU:	+/-1.57		+/-1.59						

GEL LABORATORIES LLC

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

QC Summary

Workorder: 303234

Page 3 of 6

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Gamma Spec											
Batch	1208334										
Neptunium-237	U	1.94	U	2.80	pCi/L	0.0756		(0-1)			
	Uncert:	+/-2.69		+/-3.03							
	TPU:	+/-2.69		+/-3.03							
Potassium-40	U	-30.2	U	16.7	pCi/L	0.626		(0-1)			
	Uncert:	+/-16.4		+/-21.0							
	TPU:	+/-16.4		+/-21.0							
Sodium-22	U	-0.20	U	-1.35	pCi/L	0.210		(0-1)			
	Uncert:	+/-1.22		+/-1.51							
	TPU:	+/-1.22		+/-1.51							
QC1202647098	LCS										
Americium-241	2780			2910	pCi/L		104	(80%-120%)		05/10/1211:59	
	Uncert:			+/-186							
	TPU:			+/-186							
Cesium-137	6160			6350	pCi/L		103	(80%-120%)			
	Uncert:			+/-270							
	TPU:			+/-270							
Cobalt-60	6050			6060	pCi/L		100	(80%-120%)			
	Uncert:			+/-254							
	TPU:			+/-254							
Neptunium-237			U	-16.1	pCi/L						
	Uncert:			+/-27.1							
	TPU:			+/-27.1							
Potassium-40			U	119	pCi/L						
	Uncert:			+/-68.6							
	TPU:			+/-68.6							
Sodium-22			U	-12.9	pCi/L						
	Uncert:			+/-8.76							
	TPU:			+/-8.76							
QC1202647096	MB										
Cesium-137			U	0.238	pCi/L					05/10/1211:40	
	Uncert:			+/-1.35							
	TPU:			+/-1.35							
Cobalt-60			U	-7.63	pCi/L						
	Uncert:			+/-1.93							
	TPU:			+/-1.93							
Neptunium-237			U	-5.24	pCi/L						
	Uncert:			+/-2.93							
	TPU:			+/-2.93							
Potassium-40			U	32.4	pCi/L						
	Uncert:			+/-17.3							
	TPU:			+/-17.3							
Sodium-22			U	-0.034	pCi/L						
	Uncert:			+/-1.62							
	TPU:			+/-1.62							
Rad Gas Flow											
Batch	1208279										
QC1202646911	302717001 DUP										
Alpha	U	0.840	U	1.41	pCi/L	0.209		(0-1)	BXF1	05/11/1214:40	

GEL LABORATORIES LLC

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

QC Summary

Workorder: 303234

Page 4 of 6

Parmname	NOM	Sample Qual	QC	Units	RER	REC%	Range	Anlst	Date Time
Rad Gas Flow									
Batch	1208279								
	Uncert:	+/-0.665	+/-0.680						
	TPU:	+/-0.669	+/-0.690						
Beta	U	2.05	4.02	pCi/L	0.534		(0-1)		05/11/1211:00
	Uncert:	+/-0.832	+/-0.935						
	TPU:	+/-0.850	+/-0.994						
QC1202646914	LCS								
Alpha	12.0		12.4	pCi/L		103	(80%-120%)		05/11/1214:48
	Uncert:		+/-0.633						
	TPU:		+/-1.30						
Beta	50.3		54.5	pCi/L		108	(80%-120%)		05/11/1211:01
	Uncert:		+/-0.935						
	TPU:		+/-4.62						
QC1202646910	MB								
Alpha		U	-0.0801	pCi/L					05/11/1214:38
	Uncert:		+/-0.0945						
	TPU:		+/-0.0945						
Beta		U	0.275	pCi/L					05/11/1211:00
	Uncert:		+/-0.119						
	TPU:		+/-0.122						
QC1202646912	302717001 MS								
Alpha	241	U	0.840	pCi/L		105	(75%-125%)		05/11/1214:57
	Uncert:		+/-0.665						
	TPU:		+/-0.669						
Beta	1010	U	2.05	pCi/L		107	(75%-125%)		05/11/1211:00
	Uncert:		+/-0.832						
	TPU:		+/-0.850						
QC1202646913	302717001 MSD								
Alpha	241	U	0.840	pCi/L	0.0249	104	(0-1)		05/11/1214:47
	Uncert:		+/-0.665						
	TPU:		+/-0.669						
Beta	1010	U	2.05	pCi/L	0.133	112	(0-1)		05/11/1211:00
	Uncert:		+/-0.832						
	TPU:		+/-0.850						
Batch	1208282								
QC1202646923	303234001 DUP								
Strontium-90		U	0.250	U	0.213	pCi/L	0.0622	(0-1) VXC2	05/19/1214:46
	Uncert:		+/-0.147		+/-0.145				
	TPU:		+/-0.148		+/-0.146				
	Yield:		88.9		95.6				
QC1202646925	LCS								
Strontium-90	25.1			pCi/L		98.7	(80%-120%)		05/19/1214:46
	Uncert:				+/-0.662				
	TPU:				+/-2.07				
	Yield:				94.4				
QC1202646922	MB								
Strontium-90				U	-0.22	pCi/L			05/19/1214:46
	Uncert:				+/-0.120				
	TPU:				+/-0.120				
	Yield:				93.3				

GEL LABORATORIES LLC

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

QC Summary

Workorder: 303234

Page 5 of 6

Parmname	NOM	Sample Qual	QC	Units	RER	REC%	Range	Anlst	Date Time
Rad Gas Flow									
Batch	1208282								
QC1202646924	303234001	MS							
Strontium-90	126	U	0.250	122	pCi/L	97.2	(75%-125%)		05/19/1214:46
	Uncert:		+/-0.147						+/-3.34
	TPU:		+/-0.148						+/-10.3
	Yield:		88.9						90.0

Notes:

The Qualifiers in this report are defined as follows:

- ** Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- 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
- E General Chemistry--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
- E Organics--Concentration of the target analyte exceeds the instrument calibration range
- F Estimated Value
- FB Mercury was found present at quantifiable concentrations in field blanks received with these samples. Data associated with the blank are deemed invalid for reporting to regulatory agencies
- H Analytical holding time was exceeded
- J Value is estimated
- K Analyte present. Reported value may be biased high. Actual value is expected to be lower.
- L Analyte present. Reported value may be biased low. Actual value is expected to be higher.
- M M if above MDC and less than LLD
- M Matrix Related Failure
- 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 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
- P Organics--The concentrations between the primary and confirmation columns/detectors is >40% different. For HPLC, difference is also <70%
- Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy--Uncertain identification
- UJ Gamma Spectroscopy--Uncertain identification
- UL Not considered detected. The associated number is the reported concentration, which may be inaccurate due to a low bias.

GEL LABORATORIES LLC

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

QC Summary

Workorder: 303234

Page 6 of 6

Parname	NOM	Sample Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
X										
Y										
Z										
^										
d										
h										

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more.

** Indicates analyte is a surrogate compound.

^ 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.

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.