



**SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY**

EVENT ID: 3855      EVENT NAME: Pajarito (General Surveillance)  
 Q3 Watershed Sampling  
 SAMPLE ID: CAPA-12-13308      WORK ORDER: NA

	<u>AS PLANNED</u>	<u>AS COLLECTED</u>		<u>AS PLANNED</u>	<u>AS COLLECTED</u>
DATE COLLECTED (MM/DD/YYYY):		05/02/2012	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1327	MEDIA:	WGR	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	GSP
LOCATION ID: R-17 S1		↓	FIELD PREP:	F	OK
LOCATION TYPE: MON		↓	FIELD QC TYPE:	FD	↓
PORT: P1A		↓	SAMPLE USAGE:	QC	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-GENINORG	1 LITER POLY	1	ICE	Y	NA
↓	WSP-Met+B+SN+SR+U	1 LITER POLY	1	HNO3	Y	pH < 2
↓	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	Y	pH < 2

SAMPLE COMMENTS: QC sample of CAPA-12-13292

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen \_\_\_\_\_ mg/L      Oxidation-Reduction Potential \_\_\_\_\_ MV      pH \_\_\_\_\_ SU \_\_\_\_\_  
 Specific Conductance \_\_\_\_\_ uS/cm      Temperature \_\_\_\_\_ deg C      Turbidity \_\_\_\_\_ NTU

for 05/02/12 } see CAPA-12-13292

COLLECTED BY (PRINT) Jonathan Romero

RELINQUISHED BY (Printed Name) (Signature)	Date/Time 5/2/12 1455	RECEIVED BY (Printed Name) (Signature)	Date/Time 5/2/12 2:55
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/11/2012



**SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY**

EVENT ID: 3855      EVENT NAME: Pajarito (General Surveillance)  
 Q3 Watershed Sampling  
 SAMPLE ID: CAPA-12-13282      WORK ORDER: NA

	<u>AS PLANNED</u>	<u>AS COLLECTED</u>		<u>AS PLANNED</u>	<u>AS COLLECTED</u>
DATE COLLECTED (MM/DD/YYYY):		05/02/2012	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1327	MEDIA:	WGR	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	GSP
LOCATION ID: R-17 S1		↓	FIELD PREP:	UF	OK
LOCATION TYPE: MON		↓	FIELD QC TYPE:	REG	↓
PORT: PIA		↓	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	PH < 2
↓	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	Y	PH < 2

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen 7.20 mg/L      Oxidation-Reduction Potential 137.9 MV      pH 7.75 SU  
 Specific Conductance 123 uS/cm      Temperature 22.15 deg C      Turbidity 0.70 NTU

COLLECTED BY (PRINT) Jonathan Romero

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
<u>Andrew Strake</u> <u>[Signature]</u>	5/2/12 1955	<u>K. Greene</u> <u>[Signature]</u>	5/2/12 2:56
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/11/2012

**SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY**

EVENT ID: 3855      EVENT NAME: Pajarito (General Surveillance)  
 Q3 Watershed Sampling  
 SAMPLE ID: CAPA-12-13307      WORK ORDER: NA

	<u>AS PLANNED</u>	<u>AS COLLECTED</u>		<u>AS PLANNED</u>	<u>AS COLLECTED</u>
DATE COLLECTED (MM/DD/YYYY):		05/02/2012	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1327	MEDIA:	WGR	OK
PRS ID:		OK	SAMPLE TECH CODE:	UA	GSP
LOCATION ID: R-17 S1		↓	FIELD PREP:	UF	OK
LOCATION TYPE: Mo N		↓	FIELD QC TYPE:	FD	↓
PORT: PIA		↓	SAMPLE USAGE:	QC	↓

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	NA
↓	WSP-HEXMOD	1 LITER AMBER GLASS	2	ICE	Y	NA
↓	WSP-RAD	1 GAL POLY	1	HNO3	Y	pH < 2
↓	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	Y	pH < 2

SAMPLE COMMENTS: QC sample of CAPA-12-13282

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen \_\_\_\_\_ mg/L      Oxidation-Reduction Potential OK 05/02/12 MV      pH \_\_\_\_\_ SU }  
 Specific Conductance \_\_\_\_\_ uS/cm      Temperature \_\_\_\_\_ deg C      Turbidity \_\_\_\_\_ NTU } sec

COLLECTED BY (PRINT) Jonathan Romero

CAPA-12-13282

RELINQUISHED BY (Printed Name) <i>Jonathan Romero</i> (Signature) <i>[Signature]</i>	Date/Time 5/2/12 1455	RECEIVED BY (Printed Name) <i>[Signature]</i> (Signature) <i>[Signature]</i>	Date/Time 5/2/12 1412
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/11/2012

**SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY**

EVENT ID: 3855      EVENT NAME: Pajarito (General Surveillance)  
 SAMPLE ID: CAPA-12-13283      WORK ORDER: NA  
 Q3 Watershed Sampling

<u>AS</u> <u>PLANNED</u>	<u>AS COLLECTED</u>	<u>AS</u> <u>PLANNED</u>	<u>AS COLLECTED</u>
DATE COLLECTED (MM/DD/YYYY):	<u>05/02/2012</u>	FIELD MATRIX:	<u>WG</u>
TIME COLLECTED (HH:MM):	<u>1117</u>	MEDIA:	<u>WGR</u>
PRS ID:	<u>OK</u>	SAMPLE TECH CODE:	<u>UA</u>
LOCATION ID: R-17 S2	<u>↓</u>	FIELD PREP:	<u>UF</u>
LOCATION TYPE: MON	<u>↓</u>	FIELD QC TYPE:	<u>REG</u>
PORT: P2A	<u>↓</u>	SAMPLE USAGE:	<u>INV</u>

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	
NA	WSP-HEXMOD	1 LITER AMBER GLASS	2	ICE	Y	
NA	WSP-RAD	1 GAL POLY	1	HNO3	Y	PH < 2
NA	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	Y	PH < 2

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen 6.52 mg/L      Oxidation-Reduction Potential 146.9 MV      pH 7.89 SU  
 Specific Conductance 118 uS/cm      Temperature 21.96 deg C      Turbidity 0.28 NTU

COLLECTED BY (PRINT) Jonathan Romero

RELINQUISHED BY (Printed Name) (Signature)	Date/Time <u>5/2/12</u> <u>1955</u>	RECEIVED BY (Printed Name) (Signature)	Date/Time <u>5/2/12</u> <u>2:55</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-12-13284

WORK ORDER:

NA

	<u>AS PLANNED</u>	<u>AS COLLECTED</u>		<u>AS PLANNED</u>	<u>AS COLLECTED</u>
DATE COLLECTED (MM/DD/YYYY):		05/02/2012	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1040	MEDIA:	WGI	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	WES
LOCATION ID: R-19 S2		↓	FIELD PREP:	UF	OK
LOCATION TYPE: MON		↓	FIELD QC TYPE: REG		↓
PORT: MP2A		↓	SAMPLE USAGE: INV		↓

PRIORITY	ORDER	CONTAINER	# PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8321A-NMED HEXP	1 LITER AMBER GLASS	2 ICE DF 5/2/12	Y	NA
↓	WSP-GrossA/B	1 LITER POLY	1 NONE	↓	↓
↓	WSP-HEXMOD	1 LITER AMBER GLASS	2 ICE	↓	↓
↓	WSP-RAD	1 GAL POLY	1 HNO3	↓	↓
↓	WSP-TKN+TOC	500 ML AMBER GLASS	1 H2SO4	↓	↓

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

**FIELD PARAMETERS:**

Dissolved Oxygen 4.17 mg/L      Oxidation-Reduction Potential NC MV      pH 8.24 SU      Zone press.  
 Specific Conductance 168 uS/cm      Temperature 20.29 deg C      Turbidity 0.3 NTU      17.49 psi

COLLECTED BY (PRINT) A. Vigil

RELINQUISHED BY (Printed Name) <u>David Fellenz</u> (Signature) <u>[Signature]</u>	Date/Time <u>5/2/12</u> <u>1445</u>	RECEIVED BY (Printed Name) <u>[Signature]</u> (Signature) <u>[Signature]</u>	Date/Time <u>5/2/12</u> <u>1445</u>
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/11/2012



**SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY**

EVENT ID: 3855      EVENT NAME: Pajarito (General Surveillance)  
 Q3 Watershed Sampling  
 SAMPLE ID: CAPA-12-13294      WORK ORDER: NA

	<u>AS PLANNED</u>	<u>AS COLLECTED</u>		<u>AS PLANNED</u>	<u>AS COLLECTED</u>
DATE COLLECTED (MM/DD/YYYY):		05/02/2012	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1040	MEDIA:	WGI	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	DF 5/2/12 DC WES
LOCATION ID: R-19 S2		↓	FIELD PREP:	F	OK
LOCATION TYPE: MON		↓	FIELD QC TYPE: REG		↓
PORT: MP2A		↓	SAMPLE USAGE: INV		↓

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

SAMPLE COMMENTS:

LOCATION COMMENTS:

*See CAPA-12-13284*

FIELD PARAMETERS:

Dissolved Oxygen \_\_\_\_\_ mg/L      Oxidation-Reduction Potential \_\_\_\_\_ MV      pH \_\_\_\_\_ SU  
 Specific Conductance \_\_\_\_\_ uS/cm      Temperature \_\_\_\_\_ deg C      Turbidity \_\_\_\_\_ NTU

COLLECTED BY (PRINT) *A. Vigil*

RELINQUISHED BY (Printed Name) <i>David Fellera</i> (Signature) <i>[Signature]</i>	Date/Time <i>5/2/12</i> <i>1445</i>	RECEIVED BY (Printed Name) <i>[Signature]</i> (Signature) <i>[Signature]</i>	Date/Time <i>5/2/12</i> <i>1445</i>
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. 12-1274

1. Distribution Of Samples In EDD.

SDG	Analytical Method	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks
303750	EPA:120.1	3	3	1		
303750	EPA:150.1	3	3	1		
303750	EPA:160.1	3	3	1		
303750	EPA:245.2	3	3	1		
303750	EPA:300.0	3	3	1		
303750	EPA:310.1	3	3	1		
303750	EPA:350.1	3	3	1		
303750	EPA:351.2	3	3	1		
303750	EPA:353.2	3	3	1		
303750	EPA:365.4	3	3	1		
303750	EPA:900	3	3	1		
303750	EPA:901.1	3	3	1		
303750	EPA:905.0	3	3	1		
303750	HASL-300:AM-241	3	3	1		
303750	HASL-300:ISOPU	3	3	1		
303750	HASL-300:ISOU	3	3	1		
303750	SM:A2340B	3	3	1		
303750	SW-846:6010B	3	3	1		
303750	SW-846:6020	3	3	1		
303750	SW-846:6850	3	3	1		
303750	SW-846:8321A_MOD	3	3	1		
303750	SW-846:9060	3	3	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
303750	EPA:120.1	1211663	1211663	3	3	1					
303750	EPA:150.1	1209763	1209763	3	3	1					
303750	EPA:160.1	1210914	1210914	3	3	1				1	
303750	EPA:245.2	1210437	1210434	3	3	1				1	1
303750	EPA:300.0	1209599	1209599	3	3	1				1	
303750	EPA:310.1	1212148	1212148	3	3	1				2	1
303750	EPA:350.1	1210499	1210496	3	3	1				1	1
303750	EPA:351.2	1210493	1210489	3	3	1				1	1
303750	EPA:353.2	1210456	1210456	3	3	1				1	
303750	EPA:365.4	1209639	1209638	3	3	1				1	1
303750	EPA:900	1212200	1212200	3	3	1				1	1
303750	EPA:901.1	1208334	1208334	3	3	1				1	
303750	EPA:905.0	1210551	1210551	3	3	1				1	1
303750	HASL-300:AM-241	1207310	1207310	3	3	1				1	
303750	HASL-300:ISOPU	1207311	1207311	3	3	1				1	
303750	HASL-300:ISOU	1207313	1207313	3	3	1				1	
303750	SM:A2340B	1216196	1216196	3	3	1					
303750	SW-846:6010B	1209957	1209955	3	3	1				1	1
303750	SW-846:6020	1209953	1209952	3	3	1				1	1
303750	SW-846:6850	1211963	1211962	3	3	1				1	1
303750	SW-846:8321A_MOD	1210233	1210231	3	3	1				1	1
303750	SW-846:9060	1210398	1210398	3	3	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				1			
		1				1			
		1				1			
		1				1			
		1				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				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	CAPA-12-13272	1202655278	DUP	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CAPA-12-13292	303750002	REG	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CAPA-12-13293	303750006	REG	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CAPA-12-13294	303750008	REG	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CAPA-12-13308	303750004	FD	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	LCS	1202655279	LCS	0	0	1	0
EPA:150.1	GENERAL CHEMISTRY	CAPA-12-13272	1202650549	DUP	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CAPA-12-13292	303750002	REG	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CAPA-12-13293	303750006	REG	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CAPA-12-13294	303750008	REG	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CAPA-12-13308	303750004	FD	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	LCS	1202650550	LCS	0	0	1	0
EPA:160.1	GENERAL CHEMISTRY	CAPA-12-13292	1202653369	DUP	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	CAPA-12-13292	303750002	REG	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	CAPA-12-13293	303750006	REG	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	CAPA-12-13294	303750008	REG	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	CAPA-12-13308	303750004	FD	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	LCS	1202653371	LCS	0	0	1	0
EPA:160.1	GENERAL CHEMISTRY	MB	1202653368	MB	1	0	0	0
EPA:245.2	INORGANIC	CAPA-12-13272	1202652153	DUP	1	0	0	0
EPA:245.2	INORGANIC	CAPA-12-13272	1202652154	MS	0	0	1	0
EPA:245.2	INORGANIC	CAPA-12-13292	303750002	REG	1	0	0	0
EPA:245.2	INORGANIC	CAPA-12-13293	303750006	REG	1	0	0	0
EPA:245.2	INORGANIC	CAPA-12-13294	303750008	REG	1	0	0	0
EPA:245.2	INORGANIC	CAPA-12-13308	303750004	FD	1	0	0	0
EPA:245.2	INORGANIC	LCS	1202652152	LCS	0	0	1	0
EPA:245.2	INORGANIC	MB	1202652151	MB	1	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAPA-12-13292	1202650165	DUP	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAPA-12-13292	303750002	REG	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAPA-12-13293	303750006	REG	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAPA-12-13294	303750008	REG	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAPA-12-13308	303750004	FD	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	LCS	1202650167	LCS	0	0	4	0
EPA:300.0	GENERAL CHEMISTRY	MB	1202650164	MB	4	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAPA-12-13272	1202656551	DUP	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAPA-12-13272	1202656554	MS	0	0	1	0
EPA:310.1	GENERAL CHEMISTRY	CAPA-12-13292	303750002	REG	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAPA-12-13293	303750006	REG	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAPA-12-13294	303750008	REG	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAPA-12-13308	303750004	FD	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	LCS	1202656556	LCS	0	0	1	0
EPA:310.1	GENERAL CHEMISTRY	LCS	1202657251	LCS	0	0	1	0
EPA:310.1	GENERAL CHEMISTRY	MB	1202656549	MB	3	0	0	0
EPA:310.1	GENERAL CHEMISTRY	MB	1202657250	MB	3	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAPA-12-13292	1202652346	DUP	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAPA-12-13292	1202652347	MS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	CAPA-12-13292	1202652348	MSD	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	CAPA-12-13292	303750002	REG	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAPA-12-13293	303750006	REG	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAPA-12-13294	303750008	REG	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAPA-12-13308	303750004	FD	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	LCS	1202652349	LCS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	MB	1202652345	MB	1	0	0	0

Data Validation Report for:

Chain Of Custody No. 12-1274

EPA:351.2	GENERAL CHEMISTRY	CAPA-12-13282	1202652329	DUP	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAPA-12-13282	1202652330	MS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	CAPA-12-13282	1202652331	MSD	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	CAPA-12-13282	303750001	REG	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAPA-12-13283	303750005	REG	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAPA-12-13284	303750007	REG	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAPA-12-13307	303750003	FD	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	LCS	1202652332	LCS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	MB	1202652328	MB	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAPA-12-13292	1202652207	DUP	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAPA-12-13292	303750002	REG	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAPA-12-13293	303750006	REG	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAPA-12-13294	303750008	REG	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAPA-12-13308	303750004	FD	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	LCS	1202652211	LCS	0	0	1	0
EPA:353.2	GENERAL CHEMISTRY	MB	1202652204	MB	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAPA-12-13292	1202650266	DUP	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAPA-12-13292	1202650267	MS	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	CAPA-12-13292	1202650268	MSD	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	CAPA-12-13292	303750002	REG	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAPA-12-13293	303750006	REG	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAPA-12-13294	303750008	REG	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAPA-12-13308	303750004	FD	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	LCS	1202650269	LCS	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	MB	1202650265	MB	1	0	0	0
EPA:900	RAD	CAPA-12-13282	303750001	REG	2	0	0	0
EPA:900	RAD	CAPA-12-13283	303750005	REG	2	0	0	0
EPA:900	RAD	CAPA-12-13284	303750007	REG	2	0	0	0
EPA:900	RAD	CAPA-12-13285	1202656704	DUP	2	0	0	0
EPA:900	RAD	CAPA-12-13285	1202656705	MS	0	0	2	0
EPA:900	RAD	CAPA-12-13285	1202656706	MSD	0	0	2	0
EPA:900	RAD	CAPA-12-13307	303750003	FD	2	0	0	0
EPA:900	RAD	LCS	1202656707	LCS	0	0	2	0
EPA:900	RAD	MB	1202656703	MB	2	0	0	0
EPA:901.1	RAD	CAPA-12-13281	1202647097	DUP	5	0	0	0
EPA:901.1	RAD	CAPA-12-13282	303750001	REG	5	0	0	0
EPA:901.1	RAD	CAPA-12-13283	303750005	REG	5	0	0	0
EPA:901.1	RAD	CAPA-12-13284	303750007	REG	5	0	0	0
EPA:901.1	RAD	CAPA-12-13307	303750003	FD	5	0	0	0
EPA:901.1	RAD	LCS	1202647098	LCS	0	0	2	0
EPA:901.1	RAD	MB	1202647096	MB	5	0	0	0
EPA:905.0	RAD	CAPA-12-13278	1202652529	DUP	1	0	0	0
EPA:905.0	RAD	CAPA-12-13278	1202652530	MS	0	0	1	0
EPA:905.0	RAD	CAPA-12-13282	303750001	REG	1	0	0	0
EPA:905.0	RAD	CAPA-12-13283	303750005	REG	1	0	0	0
EPA:905.0	RAD	CAPA-12-13284	303750007	REG	1	0	0	0
EPA:905.0	RAD	CAPA-12-13307	303750003	FD	1	0	0	0
EPA:905.0	RAD	LCS	1202652531	LCS	0	0	1	0
EPA:905.0	RAD	MB	1202652528	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-12-13282	303750001	REG	1	0	0	0
HASL-300:AM-241	RAD	CAPA-12-13283	303750005	REG	1	0	0	0
HASL-300:AM-241	RAD	CAPA-12-13284	303750007	REG	1	0	0	0
HASL-300:AM-241	RAD	CAPA-12-13307	303750003	FD	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

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HASL-300:ISOPU	RAD	CAPA-12-13282	303750001	REG	2	0	0	0
HASL-300:ISOPU	RAD	CAPA-12-13283	303750005	REG	2	0	0	0
HASL-300:ISOPU	RAD	CAPA-12-13284	303750007	REG	2	0	0	0
HASL-300:ISOPU	RAD	CAPA-12-13307	303750003	FD	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-12-13282	303750001	REG	3	0	0	0
HASL-300:ISOU	RAD	CAPA-12-13283	303750005	REG	3	0	0	0
HASL-300:ISOU	RAD	CAPA-12-13284	303750007	REG	3	0	0	0
HASL-300:ISOU	RAD	CAPA-12-13307	303750003	FD	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-12-13292	303750002	REG	1	0	0	0
SM:A2340B	INORGANIC	CAPA-12-13293	303750006	REG	1	0	0	0
SM:A2340B	INORGANIC	CAPA-12-13294	303750008	REG	1	0	0	0
SM:A2340B	INORGANIC	CAPA-12-13308	303750004	FD	1	0	0	0
SW-846:6010B	INORGANIC	CAPA-12-13292	1202650972	DUP	17	0	0	0
SW-846:6010B	INORGANIC	CAPA-12-13292	1202650973	MS	0	0	17	0
SW-846:6010B	INORGANIC	CAPA-12-13292	303750002	REG	17	0	0	0
SW-846:6010B	INORGANIC	CAPA-12-13293	303750006	REG	17	0	0	0
SW-846:6010B	INORGANIC	CAPA-12-13294	303750008	REG	17	0	0	0
SW-846:6010B	INORGANIC	CAPA-12-13308	303750004	FD	17	0	0	0
SW-846:6010B	INORGANIC	LCS	1202650971	LCS	0	0	17	0
SW-846:6010B	INORGANIC	MB	1202650970	MB	17	0	0	0
SW-846:6020	INORGANIC	CAPA-12-13292	1202650967	DUP	11	0	0	0
SW-846:6020	INORGANIC	CAPA-12-13292	1202650968	MS	0	0	11	0
SW-846:6020	INORGANIC	CAPA-12-13292	303750002	REG	11	0	0	0
SW-846:6020	INORGANIC	CAPA-12-13293	303750006	REG	11	0	0	0
SW-846:6020	INORGANIC	CAPA-12-13294	303750008	REG	11	0	0	0
SW-846:6020	INORGANIC	CAPA-12-13308	303750004	FD	11	0	0	0
SW-846:6020	INORGANIC	LCS	1202650966	LCS	0	0	11	0
SW-846:6020	INORGANIC	MB	1202650965	MB	11	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	CAPA-12-13292	1202655998	MS	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	CAPA-12-13292	1202655999	MSD	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	CAPA-12-13292	303750002	REG	1	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	CAPA-12-13293	303750006	REG	1	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	CAPA-12-13294	303750008	REG	1	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	CAPA-12-13308	303750004	FD	1	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	LCS	1202655997	LCS	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	MB	1202655996	MB	1	0	0	0
SW-846:8321A_MOD	LCMS/MS HIGH EXPLOSIVES	CAPA-12-13282	1202651709	MS	0	2	23	0
SW-846:8321A_MOD	LCMS/MS HIGH EXPLOSIVES	CAPA-12-13282	1202651710	MSD	0	2	23	0
SW-846:8321A_MOD	LCMS/MS HIGH EXPLOSIVES	CAPA-12-13282	303750001	REG	23	2	0	0
SW-846:8321A_MOD	LCMS/MS HIGH EXPLOSIVES	CAPA-12-13283	303750005	REG	23	2	0	0

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SW-846:8321A_MOD	LCMS/MS HIGH EXPLOSIVES	CAPA-12-13284	303750007	REG	23	2	0	0
SW-846:8321A_MOD	LCMS/MS HIGH EXPLOSIVES	CAPA-12-13307	303750003	FD	23	2	0	0
SW-846:8321A_MOD	LCMS/MS HIGH EXPLOSIVES	LCS	1202651708	LCS	0	2	23	0
SW-846:8321A_MOD	LCMS/MS HIGH EXPLOSIVES	MB	1202651707	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-12-13282	303750001	REG	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAPA-12-13283	303750005	REG	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAPA-12-13284	303750007	REG	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAPA-12-13286	1202655722	DUP	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAPA-12-13307	303750003	FD	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

3. Are any analytes missing?

No.

4. Were any holding times exceeded?

No.

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-12-13292	MB	1202652345	METHOD BLANK	EPA:350.1	Ammonia as Nitrogen	mg/L	0.0337	0.107		0.05	Y
CAPA-12-13308	MB	1202652345	METHOD BLANK	EPA:350.1	Ammonia as Nitrogen	mg/L	0.0337	0.03	J	0.05	Y
CAPA-12-13293	MB	1202652345	METHOD BLANK	EPA:350.1	Ammonia as Nitrogen	mg/L	0.0337	0.0798		0.05	Y
CAPA-12-13294	MB	1202652345	METHOD BLANK	EPA:350.1	Ammonia as Nitrogen	mg/L	0.0337	0.0397	J	0.05	Y

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-12-13282	1202652330	1202652331	EPA:351.2	Total Kjeldahl Nitrogen	1210489	5/9/2012	W	116	106	110	90
CAPA-12-13282	1202652330	1202652331	EPA:351.2	Total Kjeldahl Nitrogen	1210489	5/9/2012	W	116	106	110	90
CAPA-12-13285	1202656705	1202656706	EPA:900	Gross alpha	1212200	5/25/2012	W	91.8	103	125	75

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

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

Rejection Limit	RPD	RPD Limit
10	8.93	20
10	8.93	20
10	11.7	6.13

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.**

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
R-17 S1	12-1274	CAPA-12-13282	REG	INIT	RAD	HASL-300:AM-241	Americium-241	U	U	R5	N
R-17 S1	12-1274	CAPA-12-13282	REG	INIT	RAD	EPA:901.1	Cesium-137	U	U	R5	N
R-17 S1	12-1274	CAPA-12-13282	REG	INIT	RAD	EPA:901.1	Cobalt-60	U	U	R5	N
R-17 S1	12-1274	CAPA-12-13282	REG	INIT	RAD	EPA:900	Gross alpha	U	U	R5	N
R-17 S1	12-1274	CAPA-12-13282	REG	INIT	RAD	EPA:900	Gross beta	U	U	R5	N
R-17 S1	12-1274	CAPA-12-13282	REG	INIT	RAD	EPA:901.1	Neptunium-237	U	U	R5	N
R-17 S1	12-1274	CAPA-12-13282	REG	INIT	RAD	HASL-300:ISOPU	Plutonium-238	U	U	R5	N
R-17 S1	12-1274	CAPA-12-13282	REG	INIT	RAD	HASL-300:ISOPU	Plutonium-239/240	U	U	R5	N
R-17 S1	12-1274	CAPA-12-13282	REG	INIT	RAD	EPA:901.1	Potassium-40	U	U	R5	N
R-17 S1	12-1274	CAPA-12-13282	REG	INIT	RAD	EPA:901.1	Sodium-22	U	U	R5	N
R-17 S1	12-1274	CAPA-12-13282	REG	INIT	RAD	EPA:905.0	Strontium-90	U	U	R5	N
R-17 S1	12-1274	CAPA-12-13282	REG	INIT	GENERAL CHEMISTRY	EPA:351.2	Total Kjeldahl Nitrogen	U	UJ	I6b	N
R-17 S1	12-1274	CAPA-12-13282	REG	INIT	RAD	HASL-300:ISOU	Uranium-235/236	U	U	R5	N
R-17 S2	12-1274	CAPA-12-13283	REG	INIT	RAD	HASL-300:AM-241	Americium-241	U	U	R5	N
R-17 S2	12-1274	CAPA-12-13283	REG	INIT	RAD	EPA:901.1	Cesium-137	U	U	R5	N
R-17 S2	12-1274	CAPA-12-13283	REG	INIT	RAD	EPA:901.1	Cobalt-60	U	U	R5	N
R-17 S2	12-1274	CAPA-12-13283	REG	INIT	RAD	EPA:900	Gross alpha	U	U	R5	N
R-17 S2	12-1274	CAPA-12-13283	REG	INIT	RAD	EPA:901.1	Neptunium-237	U	U	R5	N
R-17 S2	12-1274	CAPA-12-13283	REG	INIT	RAD	HASL-300:ISOPU	Plutonium-238	U	U	R5	N
R-17 S2	12-1274	CAPA-12-13283	REG	INIT	RAD	HASL-300:ISOPU	Plutonium-239/240	U	U	R5	N
R-17 S2	12-1274	CAPA-12-13283	REG	INIT	RAD	EPA:901.1	Potassium-40	U	U	R5	N
R-17 S2	12-1274	CAPA-12-13283	REG	INIT	RAD	EPA:901.1	Sodium-22	U	U	R5	N
R-17 S2	12-1274	CAPA-12-13283	REG	INIT	RAD	EPA:905.0	Strontium-90	U	U	R5	N
R-17 S2	12-1274	CAPA-12-13283	REG	INIT	RAD	HASL-300:ISOU	Uranium-235/236	U	U	R5	N
R-19 S2	12-1274	CAPA-12-13284	REG	INIT	RAD	HASL-300:AM-241	Americium-241	U	U	R5	N
R-19 S2	12-1274	CAPA-12-13284	REG	INIT	RAD	EPA:901.1	Cesium-137	U	U	R5	N
R-19 S2	12-1274	CAPA-12-13284	REG	INIT	RAD	EPA:901.1	Cobalt-60	U	U	R5	N
R-19 S2	12-1274	CAPA-12-13284	REG	INIT	RAD	EPA:900	Gross alpha	U	U	R5	N
R-19 S2	12-1274	CAPA-12-13284	REG	INIT	RAD	EPA:900	Gross beta	U	U	R5	N
R-19 S2	12-1274	CAPA-12-13284	REG	INIT	RAD	EPA:901.1	Neptunium-237	U	U	R5	N

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
0.0181	pCi/L	0.0181	pCi/L	0.0723	0.0113	W	5/2/2012		1207310	VAL	Y
-2.04	pCi/L	-2.04	pCi/L	5.4	1.59	W	5/2/2012		1208334	VAL	Y
2.75	pCi/L	2.75	pCi/L	7.5	1.81	W	5/2/2012		1208334	VAL	Y
0.602	pCi/L	0.602	pCi/L	2.09	0.571	W	5/2/2012		1212200	VAL	Y
0.914	pCi/L	0.914	pCi/L	2.54	0.753	W	5/2/2012		1212200	VAL	Y
1.7	pCi/L	1.7	pCi/L	11.2	3.04	W	5/2/2012		1208334	VAL	Y
0	pCi/L	0	pCi/L	0.0465	0.00946	W	5/2/2012		1207311	VAL	Y
0.00299	pCi/L	0.00299	pCi/L	0.0394	0.00299	W	5/2/2012		1207311	VAL	Y
-4.93	pCi/L	-4.93	pCi/L	75.5	20.1	W	5/2/2012		1208334	VAL	Y
3.94	pCi/L	3.94	pCi/L	7.28	1.65	W	5/2/2012		1208334	VAL	Y
-0.184	pCi/L	-0.184	pCi/L	0.452	0.127	W	5/2/2012		1210551	VAL	Y
0.1	mg/L	0.1	mg/L			W	5/2/2012		1210493	VAL	Y
0.0119	pCi/L	0.0119	pCi/L	0.046	0.0104	W	5/2/2012		1207313	VAL	Y
0.00563	pCi/L	0.00563	pCi/L	0.0675	0.0154	W	5/2/2012		1207310	VAL	Y
4.58	pCi/L	4.58	pCi/L	7.35	1.78	W	5/2/2012		1208334	VAL	Y
0.27	pCi/L	0.27	pCi/L	6.72	1.72	W	5/2/2012		1208334	VAL	Y
2.11	pCi/L	2.11	pCi/L	2.25	0.874	W	5/2/2012		1212200	VAL	Y
-0.141	pCi/L	-0.141	pCi/L	11.8	3.33	W	5/2/2012		1208334	VAL	Y
0.00338	pCi/L	0.00338	pCi/L	0.0525	0.0122	W	5/2/2012		1207311	VAL	Y
0	pCi/L	0	pCi/L	0.0445	0.00676	W	5/2/2012		1207311	VAL	Y
-4.91	pCi/L	-4.91	pCi/L	67.5	16.7	W	5/2/2012		1208334	VAL	Y
-2.92	pCi/L	-2.92	pCi/L	4.54	1.45	W	5/2/2012		1208334	VAL	Y
0.4	pCi/L	0.4	pCi/L	0.461	0.143	W	5/2/2012		1210551	VAL	Y
0.0197	pCi/L	0.0197	pCi/L	0.0417	0.0147	W	5/2/2012		1207313	VAL	Y
-0.0282	pCi/L	-0.0282	pCi/L	0.0616	0.0147	W	5/2/2012		1207310	VAL	Y
-0.604	pCi/L	-0.604	pCi/L	6.11	1.9	W	5/2/2012		1208334	VAL	Y
-5.35	pCi/L	-5.35	pCi/L	4.89	1.52	W	5/2/2012		1208334	VAL	Y
1.66	pCi/L	1.66	pCi/L	2.06	0.769	W	5/2/2012		1212200	VAL	Y
0.708	pCi/L	0.708	pCi/L	2.72	0.798	W	5/2/2012		1212200	VAL	Y
-2.56	pCi/L	-2.56	pCi/L	8.09	2.34	W	5/2/2012		1208334	VAL	Y

R-19 S2	12-1274	CAPA-12-13284	REG	INIT	RAD	HASL-300:ISOPU	Plutonium-238	U	U	R5	N
R-19 S2	12-1274	CAPA-12-13284	REG	INIT	RAD	HASL-300:ISOPU	Plutonium-239/240	U	U	R5	N
R-19 S2	12-1274	CAPA-12-13284	REG	INIT	RAD	EPA:901.1	Potassium-40	U	U	R5	N
R-19 S2	12-1274	CAPA-12-13284	REG	INIT	RAD	EPA:901.1	Sodium-22	U	U	R5	N
R-19 S2	12-1274	CAPA-12-13284	REG	INIT	RAD	EPA:905.0	Strontium-90	U	U	R5	N
R-19 S2	12-1274	CAPA-12-13284	REG	INIT	RAD	HASL-300:ISOU	Uranium-235/236	U	U	R5	N
R-19 S2	12-1274	CAPA-12-13284	REG	INIT	RAD	HASL-300:ISOU	Uranium-238		U	R11	N
R-17 S1	12-1274	CAPA-12-13292	REG	INIT	GENERAL CHEMISTRY	EPA:350.1	Ammonia as Nitrogen		U	I4	N
R-17 S2	12-1274	CAPA-12-13293	REG	INIT	GENERAL CHEMISTRY	EPA:350.1	Ammonia as Nitrogen		U	I4	N
R-19 S2	12-1274	CAPA-12-13294	REG	INIT	GENERAL CHEMISTRY	EPA:350.1	Ammonia as Nitrogen	J	U	I4	N
R-17 S1	12-1274	CAPA-12-13307	FD	INIT	RAD	HASL-300:AM-241	Americium-241	U	U	R5	N
R-17 S1	12-1274	CAPA-12-13307	FD	INIT	RAD	EPA:901.1	Cesium-137	U	U	R5	N
R-17 S1	12-1274	CAPA-12-13307	FD	INIT	RAD	EPA:901.1	Cobalt-60	U	U	R5	N
R-17 S1	12-1274	CAPA-12-13307	FD	INIT	RAD	EPA:900	Gross alpha	U	U	R5	N
R-17 S1	12-1274	CAPA-12-13307	FD	INIT	RAD	EPA:900	Gross beta	U	U	R5	N
R-17 S1	12-1274	CAPA-12-13307	FD	INIT	RAD	EPA:901.1	Neptunium-237	U	U	R5	N
R-17 S1	12-1274	CAPA-12-13307	FD	INIT	RAD	HASL-300:ISOPU	Plutonium-238	U	U	R5	N
R-17 S1	12-1274	CAPA-12-13307	FD	INIT	RAD	HASL-300:ISOPU	Plutonium-239/240	U	U	R5	N
R-17 S1	12-1274	CAPA-12-13307	FD	INIT	RAD	EPA:901.1	Potassium-40	U	U	R5	N
R-17 S1	12-1274	CAPA-12-13307	FD	INIT	RAD	EPA:901.1	Sodium-22	U	U	R5	N
R-17 S1	12-1274	CAPA-12-13307	FD	INIT	RAD	EPA:905.0	Strontium-90	U	U	R5	N
R-17 S1	12-1274	CAPA-12-13307	FD	INIT	RAD	HASL-300:ISOU	Uranium-235/236	U	U	R5	N
R-17 S1	12-1274	CAPA-12-13308	FD	INIT	GENERAL CHEMISTRY	EPA:350.1	Ammonia as Nitrogen	J	U	I4	N

- Reason Code** Description
- I4 the sample result is  $\leq 5x$  the concentration of related analyte in the method blank.
  - I6b The associated matrix spike recovery was above the Upper Acceptance Limit (UAL). Follow the external laboratory limits located within the associated data package.
  - J\_LAB The analytical laboratory qualified the detected result as estimated (J) because the result was less the PQL but greater than the MDL
  - NQ The analytical laboratory did not qualify the analyte as not detected and/or any other standard qualifire. The analyte is detected in the sample.
  - R11 The results for the affected analytes should be regarded as not-detected (U) because the associated sample concentration was less than 3x the 1 sigma TPU.
  - 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-12-13282	R-17 S1	REG	EPA:351.2	0	1
CAPA-12-13282	R-17 S1	REG	EPA:900	0	2
CAPA-12-13282	R-17 S1	REG	EPA:901.1	0	5
CAPA-12-13282	R-17 S1	REG	EPA:905.0	0	1
CAPA-12-13282	R-17 S1	REG	HASL-300:AM-241	0	1
CAPA-12-13282	R-17 S1	REG	HASL-300:ISOPU	0	2
CAPA-12-13282	R-17 S1	REG	HASL-300:ISOU	0	3
CAPA-12-13282	R-17 S1	REG	SW-846:8321A_MOD	0	23
CAPA-12-13282	R-17 S1	REG	SW-846:9060	0	1
CAPA-12-13283	R-17 S2	REG	EPA:351.2	0	1

0.00906	pCi/L	0.00906	pCi/L	0.0469	0.00675	W	5/2/2012		1207311	VAL	Y
0.00302	pCi/L	0.00302	pCi/L	0.0398	0.00523	W	5/2/2012		1207311	VAL	Y
-0.388	pCi/L	-0.388	pCi/L	63.1	16.4	W	5/2/2012		1208334	VAL	Y
0.972	pCi/L	0.972	pCi/L	5.26	1.26	W	5/2/2012		1208334	VAL	Y
-0.0459	pCi/L	-0.0459	pCi/L	0.47	0.136	W	5/2/2012		1210551	VAL	Y
-0.0175	pCi/L	-0.0175	pCi/L	0.0427	0.00929	W	5/2/2012		1207313	VAL	Y
0.0498	pCi/L	0.0498	pCi/L	0.0302	0.0172	W	5/2/2012		1207313	VAL	Y
0.107	mg/L	0.107	mg/L			W	5/2/2012		1210499	VAL	Y
0.0798	mg/L	0.0798	mg/L			W	5/2/2012		1210499	VAL	Y
0.0397	mg/L	0.0397	mg/L			W	5/2/2012		1210499	VAL	Y
-0.00715	pCi/L	-0.00715	pCi/L	0.0571	0.0104	W	5/2/2012		1207310	VAL	Y
2.71	pCi/L	2.71	pCi/L	6.98	1.78	W	5/2/2012		1208334	VAL	Y
1.48	pCi/L	1.48	pCi/L	6.24	1.5	W	5/2/2012		1208334	VAL	Y
0.129	pCi/L	0.129	pCi/L	2	0.46	W	5/2/2012		1212200	VAL	Y
2.46	pCi/L	2.46	pCi/L	2.97	0.939	W	5/2/2012		1212200	VAL	Y
1.23	pCi/L	1.23	pCi/L	12	3.34	W	5/2/2012		1208334	VAL	Y
0.0106	pCi/L	0.0106	pCi/L	0.0413	0.0106	W	5/2/2012		1207311	VAL	Y
-0.00266	pCi/L	-0.00266	pCi/L	0.035	0.0046	W	5/2/2012		1207311	VAL	Y
-29.3	pCi/L	-29.3	pCi/L	77.2	20.7	W	5/2/2012		1208334	VAL	Y
-1.81	pCi/L	-1.81	pCi/L	5.77	1.69	W	5/2/2012		1208334	VAL	Y
0.0486	pCi/L	0.0486	pCi/L	0.434	0.127	W	5/2/2012		1210551	VAL	Y
0.00565	pCi/L	0.00565	pCi/L	0.059	0.00565	W	5/2/2012		1207313	VAL	Y
0.03	mg/L	0.03	mg/L			W	5/2/2012		1210499	VAL	Y

CAPA-12-13283	R-17 S2	REG	EPA:900	0	2
CAPA-12-13283	R-17 S2	REG	EPA:901.1	0	5
CAPA-12-13283	R-17 S2	REG	EPA:905.0	0	1
CAPA-12-13283	R-17 S2	REG	HASL-300:AM-241	0	1
CAPA-12-13283	R-17 S2	REG	HASL-300:ISOPU	0	2
CAPA-12-13283	R-17 S2	REG	HASL-300:ISOU	0	3
CAPA-12-13283	R-17 S2	REG	SW-846:8321A_MOD	0	23
CAPA-12-13283	R-17 S2	REG	SW-846:9060	0	1
CAPA-12-13284	R-19 S2	REG	EPA:351.2	0	1
CAPA-12-13284	R-19 S2	REG	EPA:900	0	2
CAPA-12-13284	R-19 S2	REG	EPA:901.1	0	5
CAPA-12-13284	R-19 S2	REG	EPA:905.0	0	1
CAPA-12-13284	R-19 S2	REG	HASL-300:AM-241	0	1
CAPA-12-13284	R-19 S2	REG	HASL-300:ISOPU	0	2
CAPA-12-13284	R-19 S2	REG	HASL-300:ISOU	0	3
CAPA-12-13284	R-19 S2	REG	SW-846:8321A_MOD	0	23
CAPA-12-13284	R-19 S2	REG	SW-846:9060	0	1
CAPA-12-13292	R-17 S1	REG	EPA:120.1	0	1
CAPA-12-13292	R-17 S1	REG	EPA:150.1	0	1
CAPA-12-13292	R-17 S1	REG	EPA:160.1	0	1
CAPA-12-13292	R-17 S1	REG	EPA:245.2	0	1
CAPA-12-13292	R-17 S1	REG	EPA:300.0	0	4
CAPA-12-13292	R-17 S1	REG	EPA:310.1	0	2
CAPA-12-13292	R-17 S1	REG	EPA:350.1	0	1
CAPA-12-13292	R-17 S1	REG	EPA:353.2	0	1
CAPA-12-13292	R-17 S1	REG	EPA:365.4	0	1
CAPA-12-13292	R-17 S1	REG	SM:A2340B	0	1
CAPA-12-13292	R-17 S1	REG	SW-846:6010B	0	17
CAPA-12-13292	R-17 S1	REG	SW-846:6020	0	11
CAPA-12-13292	R-17 S1	REG	SW-846:6850	0	1
CAPA-12-13293	R-17 S2	REG	EPA:120.1	0	1
CAPA-12-13293	R-17 S2	REG	EPA:150.1	0	1
CAPA-12-13293	R-17 S2	REG	EPA:160.1	0	1
CAPA-12-13293	R-17 S2	REG	EPA:245.2	0	1
CAPA-12-13293	R-17 S2	REG	EPA:300.0	0	4
CAPA-12-13293	R-17 S2	REG	EPA:310.1	0	2
CAPA-12-13293	R-17 S2	REG	EPA:350.1	0	1
CAPA-12-13293	R-17 S2	REG	EPA:353.2	0	1
CAPA-12-13293	R-17 S2	REG	EPA:365.4	0	1
CAPA-12-13293	R-17 S2	REG	SM:A2340B	0	1
CAPA-12-13293	R-17 S2	REG	SW-846:6010B	0	17
CAPA-12-13293	R-17 S2	REG	SW-846:6020	0	11
CAPA-12-13293	R-17 S2	REG	SW-846:6850	0	1
CAPA-12-13294	R-19 S2	REG	EPA:120.1	0	1
CAPA-12-13294	R-19 S2	REG	EPA:150.1	0	1
CAPA-12-13294	R-19 S2	REG	EPA:160.1	0	1
CAPA-12-13294	R-19 S2	REG	EPA:245.2	0	1
CAPA-12-13294	R-19 S2	REG	EPA:300.0	0	4
CAPA-12-13294	R-19 S2	REG	EPA:310.1	0	2
CAPA-12-13294	R-19 S2	REG	EPA:350.1	0	1
CAPA-12-13294	R-19 S2	REG	EPA:353.2	0	1
CAPA-12-13294	R-19 S2	REG	EPA:365.4	0	1
CAPA-12-13294	R-19 S2	REG	SM:A2340B	0	1
CAPA-12-13294	R-19 S2	REG	SW-846:6010B	0	17
CAPA-12-13294	R-19 S2	REG	SW-846:6020	0	11
CAPA-12-13294	R-19 S2	REG	SW-846:6850	0	1
CAPA-12-13307	R-17 S1	FD	EPA:351.2	0	1

Data Validation Report for:

Chain Of Custody No. 12-1274

CAPA-12-13307	R-17 S1	FD	EPA:900	0	2
CAPA-12-13307	R-17 S1	FD	EPA:901.1	0	5
CAPA-12-13307	R-17 S1	FD	EPA:905.0	0	1
CAPA-12-13307	R-17 S1	FD	HASL-300:AM-241	0	1
CAPA-12-13307	R-17 S1	FD	HASL-300:ISOPU	0	2
CAPA-12-13307	R-17 S1	FD	HASL-300:ISOU	0	3
CAPA-12-13307	R-17 S1	FD	SW-846:8321A_MOD	0	23
CAPA-12-13307	R-17 S1	FD	SW-846:9060	0	1
CAPA-12-13308	R-17 S1	FD	EPA:120.1	0	1
CAPA-12-13308	R-17 S1	FD	EPA:150.1	0	1
CAPA-12-13308	R-17 S1	FD	EPA:160.1	0	1
CAPA-12-13308	R-17 S1	FD	EPA:245.2	0	1
CAPA-12-13308	R-17 S1	FD	EPA:300.0	0	4
CAPA-12-13308	R-17 S1	FD	EPA:310.1	0	2
CAPA-12-13308	R-17 S1	FD	EPA:350.1	0	1
CAPA-12-13308	R-17 S1	FD	EPA:353.2	0	1
CAPA-12-13308	R-17 S1	FD	EPA:365.4	0	1
CAPA-12-13308	R-17 S1	FD	SM:A2340B	0	1
CAPA-12-13308	R-17 S1	FD	SW-846:6010B	0	17
CAPA-12-13308	R-17 S1	FD	SW-846:6020	0	11
CAPA-12-13308	R-17 S1	FD	SW-846:6850	0	1



May 23, 2012

[www.gel.com](http://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: 303750  
SDG: 12-1274

Dear Keith Greene:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the following analytical results for the sample(s) we received on May 04, 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: 12-1274  
Enclosures



**ARS International (63641-10)**  
**LANL-WQH Water Samples**  
**Work Order #: 303750**  
**SDG: 12-1274**

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# Case Narrative

**Case Narrative for  
ARS International (63641-10)  
LANL-WQH Water Samples  
Workorder #: 303750  
SDG # : 12-1274**

**May 23, 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 May 04, 2012 for analysis. Please see attached email for discrepancies. 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. The containers for radiochemistry were received with a temperature of 19C.

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

<b><u>Laboratory ID</u></b>	<b><u>Client ID</u></b>
303750001	CAPA-12-13282
303750002	CAPA-12-13292
303750003	CAPA-12-13307
303750004	CAPA-12-13308
303750005	CAPA-12-13283
303750006	CAPA-12-13293
303750007	CAPA-12-13284
303750008	CAPA-12-13294

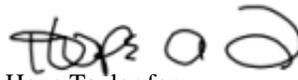
**Case Narrative**

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 23 May 2012**

<b>State</b>	<b>Certification</b>
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

303750

COC/Lab Request #:  
12-1274

Page 1 of 1

Client Contact:

Lab Agreement # : 126310011

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  
 WSP-GENINORG  
 WSP-GrossA/B  
 WSP-HEXMOD  
 WSP-Me+B+SN+SR+U  
 WSP-NH3+NO3/NO2+PO4  
 WSP-RAD  
 WSP-TKN+TOC

Rad Screening Info:

Yes, Below Background

Field Sample ID

Sample Date	Sample Time	Sample Matrix
May 2 2012	13:27	W
May 2 2012	13:27	W
May 2 2012	13:27	W
May 2 2012	13:27	W
May 2 2012	11:17	W
May 2 2012	11:17	W
May 2 2012	10:40	W
May 2 2012	10:40	W

Special Instructions:

Relinquished by: *Melissa Morley*

*[Signature]*

Received by: *P. Went*

5-4-12 0930



Client: LANL		SDG/AR/COC/Work Order: 12-1274	
Received By: Patricia Dent		Date Received: MAY 4, 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 1-3,19C
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-12-13282, 13307, 13283, 13284 for Gross A/B If Preservation added, Lot#: K25047
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: CAPA-12-13284 for HEXP the lab received (2)-containers the COC indicates (3).
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 6170 1C 7209 7856 6180 2C 7209 7856 6206 2C 7209 7856 6191 3C 7209 7856 6169 19C

Comments (Use Continuation Form if needed):

**Subject:** ISSUES FROM 05/04/12  
**From:** Pat Dent <Pat.Dent@gel.com>  
**Date:** Fri, 04 May 2012 16:22:54 -0400  
**To:** "Keith R. Greene" <kgreene@lanl.gov>  
**CC:** "team.davis" <team.davis@gel.com>

Good Evening all listed below are today's issues

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

RN#12-1274 ID-CAPA-12-13284 the lab received (2)-HEXP containers the COC indicates (3)

RN#12-1275 ID-CAPA-12-13253 the lab received (1)-8260B container the COC indicates (2)

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](mailto:pad@gel.com)  
Web: [www.gel.com](http://www.gel.com)

ORIGIN ID: SAFA (505) 665-9968  
JOYLENE VALDEZ  
LOS ALAMOS NATL LAB  
TA00 BLDG 1237 DPU 03

SHIP DATE: 03MAY12  
ACTWGT: 46.0 LB MAN  
CAD: 0014176/CAFE2511

LOS ALAMOS, NM 87545  
UNITED STATES US

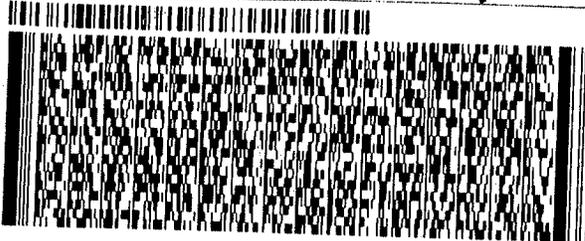
BILL SENDER

VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171  
REF: MR1A015AGWFO

1c



FedEx Express



J11131106060125

2 of 3  
MPS# 7209 7856 6170  
0263  
Mstr# 7209 7856 6169

FRI - 04 MAY A1  
PRIORITY OVERNIGHT

0201

XX CHSA

29407  
SC-US CHS



Part # 156148-434 NAIT V3 09-09

ORIGIN ID: SAFA (505) 665-9968  
JOYLENE VALDEZ  
LOS ALAMOS NATL LAB  
TA00 BLDG 1237 DPU 03

SHIP DATE: 03MAY12  
ACTWGT: 39.0 LB MAN  
CAD: 0014176/CAFE2511

LOS ALAMOS, NM 87545  
UNITED STATES US

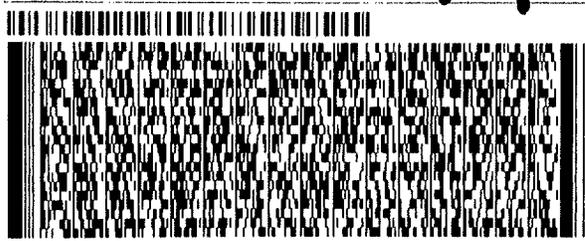
BILL SENDER

VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171  
REF: MR1A015AGWFO

2c



FedEx Express



J11131106060125

2 of 2  
MPS# 7209 7856 6206  
0263  
Mstr# 7209 7856 6191

FRI - 04 MAY A1  
PRIORITY OVERNIGHT

0201

XX CHSA

29407  
SC-US CHS

JOYLENE VALDEZ  
LOS ALAMOS NATL LAB  
TA00 BLDG 1237 DPU 03

LOS ALAMOS, NM 87545  
UNITED STATES US

SHIP DATE: 03MAY12  
ACTWGT: 46.0 LB MAN  
CAD: 0014176/CAFE2511

BILL SENDER

VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171  
REF: MR1A015AGWFO

2c



FedEx Express



3 of 3  
MPS# 7209 7856 6180  
0263  
Mstr# 7209 7856 6169

FRI - 04 MAY A1  
PRIORITY OVERNIGHT

0201

XX CHSA

29407  
SC-US CHS



Part # 156148-434 NAIT V3 09-09

ORIGIN ID: SAFA (505) 665-9968  
JOYLENE VALDEZ  
LOS ALAMOS NATL LAB  
TA00 BLDG 1237 DPU 03

SHIP DATE: 03MAY12  
ACTWGT: 24.0 LB MAN  
CAD: 0014176/CAFE2511

LOS ALAMOS, NM 87545  
UNITED STATES US

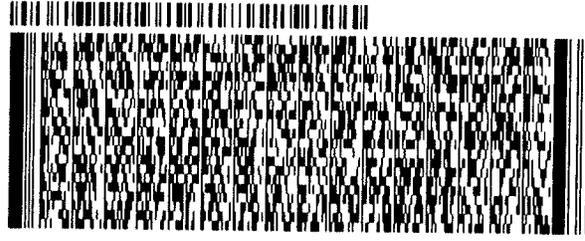
BILL SENDER

VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171  
REF: MR1A015AGWFO

3c



FedEx Express



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1 of 2  
TRK# 7209 7856 6191  
0201  
## MASTER ##

FRI - 04 MAY A1  
PRIORITY OVERNIGHT

XX CHSA

29407  
SC-US CHS

58DC3/61A4/18BC

58DC3/61A4/18BC

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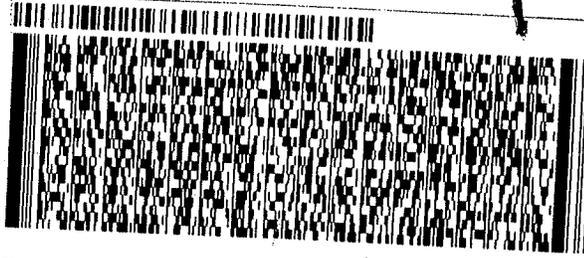
ORIGIN ID: SAFA (505) 665-9968  
JOYLENE VALDEZ  
LOS ALAMOS NATL LAB  
TA00 BLDG 1237 DPU 03  
LOS ALAMOS, NM 87545  
UNITED STATES US

SHIP DATE: 03MAY12  
ACTWGT: 52.0 LB MAN  
CAD: 0014176/CAFE2511  
BILL SENDER

VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

CHARLESTON SC 29407  
(843) 566-8171  
REF: MR1A015AGWFO

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580C3/61A4/10BC  
J1113110600125

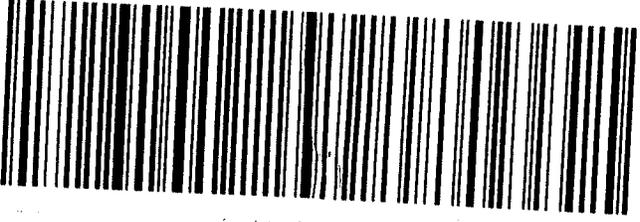
1 of 3  
TRK# 7209 7856 6169  
0201  
## MASTER ##

FRI - 04 MAY A1  
PRIORITY OVERNIGHT

XX CHSA

29407  
SC-US CHS

Part # 155148-434 NRIT V3 09-08



# **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 12-1274**

**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: 1211963

Prep Batch Number: 1211962

**Sample Analysis**

<b>Sample ID</b>	<b>Client ID</b>
303750002	CAPA-12-13292
303750004	CAPA-12-13308
303750006	CAPA-12-13293
303750008	CAPA-12-13294
1202656000	Interference Check Sample (ICS)
1202655996	Method Blank (MB)
1202655997	Laboratory Control Sample (LCS)
1202655998	303750002(CAPA-12-13292) Matrix Spike (MS)
1202655999	303750002(CAPA-12-13292) 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 303750002 (CAPA-12-13292) 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: 12-1274 GEL Work Order: 303750

### 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.
- 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: 24 MAY 2012

Title: Data Validator

# **Sample Data Summary**

## Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample No.

CAPA-12-13292Lab Code: GELDate Received: 04-MAY-12Instrument: LCMSMSGEL Job No (SDG): 12-1274Method: SW846 6850 ModifiedGEL Sample ID: 303750002Matrix: WATERDate Filtered: 17-MAY-12Extraction Batch ID: 1211962Injection 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	0.268	ug/L		1	18-MAY-12 17:37	per0518027a
	Perchlorate Isotope Ratio			3.17			1	18-MAY-12 17:37	per0518027a
14797-73-0	Perchlorate-101	.05	.2	0.267	ug/L		1	18-MAY-12 17:37	per0518027a
	Perchlorate-O(18)			0.518	ug/L		1	18-MAY-12 17:37	per0518027a

^ 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-12-13308Lab Code: GELDate Received: 04-MAY-12Instrument: LCMSMSGEL Job No (SDG): 12-1274Method: SW846 6850 ModifiedGEL Sample ID: 303750004Matrix: WATERDate Filtered: 17-MAY-12Extraction Batch ID: 1211962Injection 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	0.268	ug/L		1	18-MAY-12 18:00	per0518030a
	Perchlorate Isotope Ratio			3.15			1	18-MAY-12 18:00	per0518030a
14797-73-0	Perchlorate-101	.05	.2	0.269	ug/L		1	18-MAY-12 18:00	per0518030a
	Perchlorate-O(18)			0.529	ug/L		1	18-MAY-12 18:00	per0518030a

^ 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-12-13293Lab Code: GELDate Received: 04-MAY-12Instrument: LCMSMSGEL Job No (SDG): 12-1274Method: SW846 6850 ModifiedGEL Sample ID: 303750006Matrix: WATERDate Filtered: 17-MAY-12Extraction Batch ID: 1211962Injection 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	0.286	ug/L		1	18-MAY-12 18:30	per0518034a
	Perchlorate Isotope Ratio			3.24			1	18-MAY-12 18:30	per0518034a
14797-73-0	Perchlorate-101	.05	.2	0.278	ug/L		1	18-MAY-12 18:30	per0518034a
	Perchlorate-O(18)			0.516	ug/L		1	18-MAY-12 18:30	per0518034a

^ 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-12-13294Lab Code: GELDate Received: 04-MAY-12Instrument: LCMSMSGEL Job No (SDG): 12-1274Method: SW846 6850 ModifiedGEL Sample ID: 303750008Matrix: WATERDate Filtered: 17-MAY-12Extraction Batch ID: 1211962Injection 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	0.369	ug/L		1	18-MAY-12 18:37	per0518035a
	Perchlorate Isotope Ratio			3.12			1	18-MAY-12 18:37	per0518035a
14797-73-0	Perchlorate-101	.05	.2	0.373	ug/L		1	18-MAY-12 18:37	per0518035a
	Perchlorate-O(18)			0.535	ug/L		1	18-MAY-12 18:37	per0518035a

^ 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):** 12-1274

**Extract Batch Code:** 1211962

**Date Filtered:** 17-MAY-12

**Matrix:** WATER

**Sample ID:** 1202655997

Analyte <sup>^</sup>	True	Found	Units	%Rec	Q	Control Limits
Perchlorate	0.200	.211	ug/L	106		85 - 115
Perchlorate Isotope Ratio		3.21				-
Perchlorate-101	0.200	.207	ug/L	104		85 - 115
Perchlorate-O(18)		.523	ug/L			-

<sup>^</sup> 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**

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**Lab Name:** General Engineering Laboratories

**Lab Code:** GEL

**GEL Job No (SDG):** 12-1274

**Extract Batch Code:** 1211962

**Date Extracted:** 17-MAY-12

**GEL MS/PS ID:** 1202655998

**Client ID:** CAPA-12-13292

**GEL MSD/PSD ID:** 1202655999

**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	0.268	ug/L	0.469	101	.492	112	4.82	30	75 - 125
Perchlorate Isotope Ratio	0	3.17		3.17		3.16		.5		-
Perchlorate-101	0.200	0.267	ug/L	0.466	99.7	.491	112	5.32	30	75 - 125
Perchlorate-O(18)	0	0.518	ug/L	0.516		.537		3.83		-

^ 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: 1211962Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

MBDate Received: 17-MAY-12GEL Job No (SDG): 12-1274GEL Sample ID: 1202655996Date Filtered: 17-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	18-MAY-12 17:14	per0518024a
	Perchlorate Isotope Ratio						1	18-MAY-12 17:14	per0518024a
14797-73-0	Perchlorate-101	.05	.2	0.050	ug/L	U	1	18-MAY-12 17:14	per0518024a
	Perchlorate-O(18)			0.492	ug/L		1	18-MAY-12 17:14	per0518024a

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

\*Concentration =

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

## Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: EPA 6850 ModifiedMatrix: WATERExtraction Batch ID: 1211962Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

LCSDate Received: 17-MAY-12GEL Job No (SDG): 12-1274GEL Sample ID: 1202655997Date Filtered: 17-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	0.211	ug/L		1	18-MAY-12 17:22	per0518025a
	Perchlorate Isotope Ratio			3.21			1	18-MAY-12 17:22	per0518025a
14797-73-0	Perchlorate-101	.05	.2	0.207	ug/L		1	18-MAY-12 17:22	per0518025a
	Perchlorate-O(18)			0.523	ug/L		1	18-MAY-12 17:22	per0518025a

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

\*Concentration =

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

## Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: SW846 6850 ModifiedMatrix: WATERExtraction Batch ID: 1211962Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

ICS

Date Received:

GEL Job No (SDG): 12-1274GEL Sample ID: 1202656000Date Filtered: 17-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	0.228	ug/L		1	18-MAY-12 17:30	per0518026a
	Perchlorate Isotope Ratio			3.22			1	18-MAY-12 17:30	per0518026a
14797-73-0	Perchlorate-101	.05	.2	0.223	ug/L		1	18-MAY-12 17:30	per0518026a
	Perchlorate-O(18)			0.544	ug/L		1	18-MAY-12 17:30	per0518026a

^ 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-12-13292MSLab Code: GELDate Received: 04-MAY-12Instrument: LCMSMSGEL Job No (SDG): 12-1274Method: SW846 6850 ModifiedGEL Sample ID: 1202655998Matrix: WATERDate Filtered: 17-MAY-12Extraction Batch ID: 1211962Injection 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	0.469	ug/L		1	18-MAY-12 17:45	per0518028a
	Perchlorate Isotope Ratio			3.17			1	18-MAY-12 17:45	per0518028a
14797-73-0	Perchlorate-101	.05	.2	0.466	ug/L		1	18-MAY-12 17:45	per0518028a
	Perchlorate-O(18)			0.516	ug/L		1	18-MAY-12 17:45	per0518028a

^ 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: SW846 6850 ModifiedMatrix: WATERExtraction Batch ID: 1211962Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAPA-12-13292MSDDate Received: 04-MAY-12GEL Job No (SDG): 12-1274GEL Sample ID: 1202655999Date Filtered: 17-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	0.492	ug/L		1	18-MAY-12 17:52	per0518029a
	Perchlorate Isotope Ratio			3.16			1	18-MAY-12 17:52	per0518029a
14797-73-0	Perchlorate-101	.05	.2	0.491	ug/L		1	18-MAY-12 17:52	per0518029a
	Perchlorate-O(18)			0.537	ug/L		1	18-MAY-12 17:52	per0518029a

^ 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 12-1274**

**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: 1210233

Prep Batch Number: 1210231

**Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
303750001	CAPA-12-13282
303750003	CAPA-12-13307
303750005	CAPA-12-13283
303750007	CAPA-12-13284
1202651707	Method Blank (MB)
1202651708	Laboratory Control Sample (LCS)
1202651709	303750001(CAPA-12-13282) Matrix Spike (MS)
1202651710	303750001(CAPA-12-13282) 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**

All associated calibration verification standards (ICV and CCV) for this Primary analyte 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 Primary analyte 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 303750001 (CAPA-12-13282) 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 the 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 Secondary analyte 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 Secondary analyte 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 303750001 (CAPA-12-13282) 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**

Samples were re-analyzed for low recoveries in the closing CRI of the initial Secondary analyte analysis. The low recovery was not confirmed. Only the data from the re-analysis are reported.

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

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

**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: 12-1274 GEL Work Order: 303750

### 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.
- 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: 06 JUN 2012

Title: Group Leader

# **Sample Data Summary**

1  
**High Explosives Analysis Data Sheet**

**Lab Name:** GEL Laboratories LLC

**Client Sample ID:** CAPA-12-13282

**Lab Code:** GEL

**GEL Job No (SDG)** 12-1274

**Matrix:** WATER

**GEL Sample ID:** 303750001

**Sample Amount** 930 mL

**Date Received:** 04-MAY-12

**Moisture:** .

**Extraction Batch ID:** 1210231

**Extraction Type** Sol Exchange

**Date Extracted:** 08-MAY-12

**Concentrated Extract Volume (mL)** 5

**Injection Volume (uL):** 50

**GEL data file:** EXP0604015.wiff

**Date Analyzed:** 04-JUN-12 22:14

**Dilution Factor:** 2

**Concentration Units:** ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
118-96-7	2,4,6-Trinitrotoluene	0.269	U	0.086	0.269
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
121-14-2	2,4-Dinitrotoluene	0.269	U	0.086	0.269
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
121-82-4	RDX	0.269	U	0.086	0.269
<i>121-82-4</i>	<i>RDX</i>				
13980-04-6	TNX	0.269	U	0.086	0.269
<i>13980-04-6</i>	<i>TNX</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	0.269	U	0.086	0.269
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
2691-41-0	HMX	0.269	U	0.086	0.269
<i>2691-41-0</i>	<i>HMX</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	0.269	U	0.086	0.269
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
5755-27-1	MNX	0.269	U	0.086	0.269
<i>5755-27-1</i>	<i>MNX</i>				
606-20-2	2,6-Dinitrotoluene	0.269	U	0.086	0.269
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				
80251-29-2	DNX	0.269	U	0.086	0.269
<i>80251-29-2</i>	<i>DNX</i>				
88-72-2	o-Nitrotoluene	0.269	U	0.0882	0.269
<i>88-72-2</i>	<i>o-Nitrotoluene</i>				
98-95-3	Nitrobenzene	0.269	U	0.086	0.269
<i>98-95-3</i>	<i>Nitrobenzene</i>				
99-08-1	m-Nitrotoluene	0.269	U	0.086	0.269
<i>99-08-1</i>	<i>m-Nitrotoluene</i>				

1  
**High Explosives Analysis Data Sheet**

**Lab Name:** GEL Laboratories LLC

**Client Sample ID:** CAPA-12-13282

**Lab Code:** GEL

**GEL Job No (SDG)** 12-1274

**Matrix:** WATER

**GEL Sample ID:** 303750001

**Sample Amount** 930 mL

**Date Received:** 04-MAY-12

**Moisture:** .

**Extraction Batch ID:** 1210231

**Extraction Type** Sol Exchange

**Date Extracted:** 08-MAY-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>	0.269	U	0.086	0.269
99-65-0 99-65-0	m-Dinitrobenzene <i>m-Dinitrobenzene</i>	0.269	U	0.086	0.269
479-45-8 479-45-8	Tetryl <i>Tetryl</i>	0.538	U	0.086	0.538
78-11-5 78-11-5	PETN <i>PETN</i>	0.538	U	0.108	0.538
99-99-0 99-99-0	p-Nitrotoluene <i>p-Nitrotoluene</i>	0.538	U	0.161	0.538

1  
**High Explosives Analysis Data Sheet**

**Lab Name:** GEL Laboratories LLC

**Client Sample ID:** CAPA-12-13282

**Lab Code:** GEL

**GEL Job No (SDG)** 12-1274

**Matrix:** WATER

**GEL Sample ID:** 303750001

**Sample Amount** 930 mL

**Date Received:** 04-MAY-12

**Moisture:** .

**Extraction Batch ID:** 1210231

**Extraction Type** Sol Exchange

**Date Extracted:** 08-MAY-12

**Concentrated Extract Volume (mL)** 5

**Injection Volume (uL):** 50

**GEL data file:** EXS05110042.wiff

**Date Analyzed:** 12-MAY-12 04:23

**Dilution Factor:** 2

**Concentration Units:** ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
3058-38-6 3058-38-6	TATB TATB	1.08	U	0.323	1.08
618-87-1 618-87-1	3,5-Dinitroaniline 3,5-Dinitroaniline	1.08	U	0.323	1.08
78-30-8 78-30-8	tris(o-cresyl) phosphate tris(o-cresyl) phosphate	1.08	U	0.323	1.08
59229-75-3 59229-75-3	2,6-Diamino-4-nitrotoluene 2,6-Diamino-4-nitrotoluene	2.69	U	0.538	2.69
6629-29-4 6629-29-4	2,4-Diamino-6-nitrotoluene 2,4-Diamino-6-nitrotoluene	2.69	U	0.538	2.69

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAPA-12-13307

Lab Code: GEL

GEL Job No (SDG) 12-1274

Matrix: WATER

GEL Sample ID: 303750003

Sample Amount 940 mL

Date Received: 04-MAY-12

Moisture:           

Extraction Batch ID: 1210231

Extraction Type Sol Exchange

Date Extracted: 08-MAY-12

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

GEL data file: EXP0604018.wiff

Date Analyzed: 04-JUN-12 23:59

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	U	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-12-13307

**Lab Code:** GEL

**GEL Job No (SDG)** 12-1274

**Matrix:** WATER

**GEL Sample ID:** 303750003

**Sample Amount** 940 mL

**Date Received:** 04-MAY-12

**Moisture:** .

**Extraction Batch ID:** 1210231

**Extraction Type** Sol Exchange

**Date Extracted:** 08-MAY-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-12-13307

**Lab Code:** GEL

**GEL Job No (SDG)** 12-1274

**Matrix:** WATER

**GEL Sample ID:** 303750003

**Sample Amount** 940 mL

**Date Received:** 04-MAY-12

**Moisture:** .

**Extraction Batch ID:** 1210231

**Extraction Type** Sol Exchange

**Date Extracted:** 08-MAY-12

**Concentrated Extract Volume (mL)** 5

**Injection Volume (uL):** 50

**GEL data file:** EXS05140017.wiff

**Date Analyzed:** 14-MAY-12 15:52

**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>				

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAPA-12-13283

Lab Code: GEL

GEL Job No (SDG) 12-1274

Matrix: WATER

GEL Sample ID: 303750005

Sample Amount 930 mL

Date Received: 04-MAY-12

Moisture: .

Extraction Batch ID: 1210231

Extraction Type Sol Exchange

Date Extracted: 08-MAY-12

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

GEL data file: EXP0604019.wiff

Date Analyzed: 05-JUN-12 00:33

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
118-96-7	2,4,6-Trinitrotoluene	0.269	U	0.086	0.269
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
121-14-2	2,4-Dinitrotoluene	0.269	U	0.086	0.269
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
121-82-4	RDX	0.269	U	0.086	0.269
<i>121-82-4</i>	<i>RDX</i>				
13980-04-6	TNX	0.269	U	0.086	0.269
<i>13980-04-6</i>	<i>TNX</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	0.269	U	0.086	0.269
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
2691-41-0	HMX	0.269	U	0.086	0.269
<i>2691-41-0</i>	<i>HMX</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	0.269	U	0.086	0.269
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
5755-27-1	MNX	0.269	U	0.086	0.269
<i>5755-27-1</i>	<i>MNX</i>				
606-20-2	2,6-Dinitrotoluene	0.269	U	0.086	0.269
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				
80251-29-2	DNX	0.269	U	0.086	0.269
<i>80251-29-2</i>	<i>DNX</i>				
88-72-2	o-Nitrotoluene	0.269	U	0.0882	0.269
<i>88-72-2</i>	<i>o-Nitrotoluene</i>				
98-95-3	Nitrobenzene	0.269	U	0.086	0.269
<i>98-95-3</i>	<i>Nitrobenzene</i>				
99-08-1	m-Nitrotoluene	0.269	U	0.086	0.269
<i>99-08-1</i>	<i>m-Nitrotoluene</i>				

1  
**High Explosives Analysis Data Sheet**

**Lab Name:** GEL Laboratories LLC

**Client Sample ID:** CAPA-12-13283

**Lab Code:** GEL

**GEL Job No (SDG)** 12-1274

**Matrix:** WATER

**GEL Sample ID:** 303750005

**Sample Amount** 930 mL

**Date Received:** 04-MAY-12

**Moisture:** .

**Extraction Batch ID:** 1210231

**Extraction Type** Sol Exchange

**Date Extracted:** 08-MAY-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>	0.269	U	0.086	0.269
99-65-0 99-65-0	m-Dinitrobenzene <i>m-Dinitrobenzene</i>	0.269	U	0.086	0.269
479-45-8 479-45-8	Tetryl <i>Tetryl</i>	0.538	U	0.086	0.538
78-11-5 78-11-5	PETN <i>PETN</i>	0.538	U	0.108	0.538
99-99-0 99-99-0	p-Nitrotoluene <i>p-Nitrotoluene</i>	0.538	U	0.161	0.538

1  
**High Explosives Analysis Data Sheet**

**Lab Name:** GEL Laboratories LLC

**Client Sample ID:** CAPA-12-13283

**Lab Code:** GEL

**GEL Job No (SDG)** 12-1274

**Matrix:** WATER

**GEL Sample ID:** 303750005

**Sample Amount** 930 mL

**Date Received:** 04-MAY-12

**Moisture:** .

**Extraction Batch ID:** 1210231

**Extraction Type** Sol Exchange

**Date Extracted:** 08-MAY-12

**Concentrated Extract Volume (mL)** 5

**Injection Volume (uL):** 50

**GEL data file:** EXS05140018.wiff

**Date Analyzed:** 14-MAY-12 16:09

**Dilution Factor:** 2

**Concentration Units:** ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
3058-38-6 3058-38-6	TATB <i>TATB</i>	1.08	U	0.323	1.08
618-87-1 618-87-1	3,5-Dinitroaniline <i>3,5-Dinitroaniline</i>	1.08	U	0.323	1.08
78-30-8 78-30-8	tris(o-cresyl) phosphate <i>tris(o-cresyl) phosphate</i>	1.08	U	0.323	1.08
59229-75-3 59229-75-3	2,6-Diamino-4-nitrotoluene <i>2,6-Diamino-4-nitrotoluene</i>	2.69	U	0.538	2.69
6629-29-4 6629-29-4	2,4-Diamino-6-nitrotoluene <i>2,4-Diamino-6-nitrotoluene</i>	2.69	U	0.538	2.69

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAPA-12-13284

Lab Code: GEL

GEL Job No (SDG) 12-1274

Matrix: WATER

GEL Sample ID: 303750007

Sample Amount 810 mL

Date Received: 04-MAY-12

Moisture: .

Extraction Batch ID: 1210231

Extraction Type Sol Exchange

Date Extracted: 08-MAY-12

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

GEL data file: EXP0604020.wiff

Date Analyzed: 05-JUN-12 01:08

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
118-96-7	2,4,6-Trinitrotoluene	0.309	U	0.0988	0.309
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
121-14-2	2,4-Dinitrotoluene	0.309	U	0.0988	0.309
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
121-82-4	RDX	0.309	U	0.0988	0.309
<i>121-82-4</i>	<i>RDX</i>				
13980-04-6	TNX	0.309	U	0.0988	0.309
<i>13980-04-6</i>	<i>TNX</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	0.309	U	0.0988	0.309
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
2691-41-0	HMX	0.309	U	0.0988	0.309
<i>2691-41-0</i>	<i>HMX</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	0.309	U	0.0988	0.309
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
5755-27-1	MNX	0.309	U	0.0988	0.309
<i>5755-27-1</i>	<i>MNX</i>				
606-20-2	2,6-Dinitrotoluene	0.309	U	0.0988	0.309
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				
80251-29-2	DNX	0.309	U	0.0988	0.309
<i>80251-29-2</i>	<i>DNX</i>				
88-72-2	o-Nitrotoluene	0.309	U	0.101	0.309
<i>88-72-2</i>	<i>o-Nitrotoluene</i>				
98-95-3	Nitrobenzene	0.309	U	0.0988	0.309
<i>98-95-3</i>	<i>Nitrobenzene</i>				
99-08-1	m-Nitrotoluene	0.309	U	0.0988	0.309
<i>99-08-1</i>	<i>m-Nitrotoluene</i>				

1  
**High Explosives Analysis Data Sheet**

**Lab Name:** GEL Laboratories LLC

**Client Sample ID:** CAPA-12-13284

**Lab Code:** GEL

**GEL Job No (SDG)** 12-1274

**Matrix:** WATER

**GEL Sample ID:** 303750007

**Sample Amount** 810 mL

**Date Received:** 04-MAY-12

**Moisture:** .

**Extraction Batch ID:** 1210231

**Extraction Type** Sol Exchange

**Date Extracted:** 08-MAY-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>	0.309	U	0.0988	0.309
99-65-0 99-65-0	m-Dinitrobenzene <i>m-Dinitrobenzene</i>	0.309	U	0.0988	0.309
479-45-8 479-45-8	Tetryl <i>Tetryl</i>	0.617	U	0.0988	0.617
78-11-5 78-11-5	PETN <i>PETN</i>	0.617	U	0.123	0.617
99-99-0 99-99-0	p-Nitrotoluene <i>p-Nitrotoluene</i>	0.617	U	0.185	0.617

1  
**High Explosives Analysis Data Sheet**

**Lab Name:** GEL Laboratories LLC

**Client Sample ID:** CAPA-12-13284

**Lab Code:** GEL

**GEL Job No (SDG)** 12-1274

**Matrix:** WATER

**GEL Sample ID:** 303750007

**Sample Amount** 810 mL

**Date Received:** 04-MAY-12

**Moisture:** .

**Extraction Batch ID:** 1210231

**Extraction Type** Sol Exchange

**Date Extracted:** 08-MAY-12

**Concentrated Extract Volume (mL)** 5

**Injection Volume (uL):** 50

**GEL data file:** EXS05140019.wiff

**Date Analyzed:** 14-MAY-12 16:25

**Dilution Factor:** 2

**Concentration Units:** ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
3058-38-6 3058-38-6	TATB TATB	1.23	U	0.370	1.23
618-87-1 618-87-1	3,5-Dinitroaniline 3,5-Dinitroaniline	1.23	U	0.370	1.23
78-30-8 78-30-8	tris(o-cresyl) phosphate tris(o-cresyl) phosphate	1.23	U	0.370	1.23
59229-75-3 59229-75-3	2,6-Diamino-4-nitrotoluene 2,6-Diamino-4-nitrotoluene	3.09	U	0.617	3.09
6629-29-4 6629-29-4	2,4-Diamino-6-nitrotoluene 2,4-Diamino-6-nitrotoluene	3.09	U	0.617	3.09

# **Quality Control Summary**

## High Explosives Surrogate Recovery Summary

Lab Name: GEL Laboratories LLCGEL Job No (SDG): 12-1274Lab Code: GELHPLC Column: Phenomenex Ultracarb 5u ODS(20)

Lab Sample ID	Client Sample ID	DNT	QC Limits	Flg
303750001	CAPA-12-13282	74.4	68 - 122	
303750001	CAPA-12-13282	80	68 - 122	
303750003	CAPA-12-13307	88.8	68 - 122	
303750003	CAPA-12-13307	83.2	68 - 122	
303750005	CAPA-12-13283	95.2	68 - 122	
303750005	CAPA-12-13283	89.6	68 - 122	
303750007	CAPA-12-13284	93.2	68 - 122	
303750007	CAPA-12-13284	90	68 - 122	
1202651707	MB for batch 1210231	91.6	68 - 122	
1202651707	MB for batch 1210231	92.8	68 - 122	
1202651708	LCS for batch 1210231	94	68 - 122	
1202651708	LCS for batch 1210231	95.2	68 - 122	
1202651709	CAPA-12-13282(303750001MS)	92	68 - 122	
1202651709	CAPA-12-13282(303750001MS)	92.8	68 - 122	
1202651710	CAPA-12-13282(303750001MSD)	92	68 - 122	
1202651710	CAPA-12-13282(303750001MSD)	87.2	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)** 12-1274

**Extract Batch Code:** 1210231

**Date Extracted:** 08-MAY-12

**GEL LCS ID:** 1202651708

**GEL LCSDUP ID:**

**Analysis Date/Time:** 04-JUN-12 21:39

**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	4.54	90.8					60 - 115
2,4,6-Trinitrotoluene	5	4.75	95					77 - 132
2,4-Dinitrotoluene	5	4.55	91					78 - 125
2-Amino-4,6-dinitrotoluene	5	4.55	91					75 - 129
DNX	5	4.31	86.2					73 - 117
MXN	5	4.36	87.2					68 - 129
PETN	5	4.26	85.2					61 - 138
TNX	5	4.06	81.2					66 - 118
m-Dinitrobenzene	5	4.73	94.6					86 - 119
p-Nitrotoluene	5	4.98	99.6					64 - 112
o-Nitrotoluene	5	4.65	93					61 - 109
m-Nitrotoluene	5	4.93	98.6					63 - 109
Tetryl	5	4.36	87.2					38 - 150
RDX	5	4.35	87					79 - 128
Nitrobenzene	5	4.88	97.6					63 - 110
HMX	5	3.8	76					65 - 112
4-Amino-2,6-dinitrotoluene	5	4.49	89.8					78 - 125
2,6-Dinitrotoluene	5	4.5	90					82 - 111

# 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)** 12-1274

**Extract Batch Code:** 1210231

**Date Extracted:** 08-MAY-12

**GEL LCS ID:** 1202651708

**GEL LCSDUP ID:**

**Analysis Date/Time:** 12-MAY-12 04:07

**DUP Analysis Date/Time:**

**Reporting Units:** ug/L

**QC Type:** LCS/LCSD

Compound	Spike Added	LCS Conc	LCS Rec #	LCSD Conc	LCSD Rec #	RPD #	RPD	Recovery Limits
tris(o-cresyl) phosphate	5	2.73	54.6					38 - 87
2,4-Diamino-6-nitrotoluene	5	4.14	82.8					49 - 112
2,6-Diamino-4-nitrotoluene	5	4.35	87					61 - 116
3,5-Dinitroaniline	5	4.74	94.8					66 - 119
TATB	5	3.45	69					32 - 169

# 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-12-13282

Lab Code: GEL

GEL Job No (SDG) 12-1274

Extract Batch Code: 1210231

Date Extracted: 08-MAY-12

GEL Spike ID: 1202651709

GEL SpikeDup ID: 1202651710

Analysis Date/Time: 04-JUN-12 22:49

MSD Analysis Date/Time: 04-JUN-12 23:24

Reporting Units: ug/L

QC Type: MS/MSD

Compound	Spike Added	Sample Conc	MS Conc	MS Rec #	MSD Conc	MSD Rec #	RPD #	RPD Limit	Rec Limits
1,3,5-Trinitrobenzene	5.31915	0	4.74	89.2	5.01	93.2	5.46	25	58 - 114
2,4,6-Trinitrotoluene	5.31915	0	5.01	94.2	5.13	95.4	2.34	25	65 - 140
2,4-Dinitrotoluene	5.31915	0	5.03	94.6	5.09	94.6	1.07	25	73 - 128
2,6-Dinitrotoluene	5.31915	0	4.79	90	4.92	91.6	2.83	25	79 - 115
2-Amino-4,6-dinitrotoluene	5.31915	0	5	94	5.08	94.4	1.49	25	66 - 137
4-Amino-2,6-dinitrotoluene	5.31915	0	4.96	93.2	5.06	94.2	2.14	25	65 - 137
DNX	5.31915	0	4.74	89.2	5.05	94	6.31	34	67 - 126
HMX	5.31915	0	4.15	78	4.66	86.6	11.5	25	51 - 128
MNX	5.31915	0	4.55	85.6	5.05	94	10.4	25	74 - 127
Nitrobenzene	5.31915	0	4.89	92	5.26	97.8	7.18	25	61 - 118
PETN	5.31915	0	4.37	82.2	4.48	83.4	2.52	27	53 - 143
RDX	5.31915	0	4.54	85.4	5.18	96.4	13.2	25	63 - 145
TNX	5.31915	0	4.54	85.4	4.75	88.4	4.52	31	51 - 133
Tetryl	5.31915	0	4.39	82.6	4.59	85.4	4.4	28	31 - 119
m-Dinitrobenzene	5.31915	0	4.79	90	5.24	97.4	8.97	25	79 - 126
m-Nitrotoluene	5.31915	0	4.8	90.2	4.86	90.4	1.29	25	55 - 123
o-Nitrotoluene	5.31915	0	4.93	92.6	4.96	92.2	.637	25	57 - 119
p-Nitrotoluene	5.31915	0	5.14	96.6	5.3	98.6	3.12	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-12-13282

Lab Code: GEL

GEL Job No (SDG) 12-1274

Extract Batch Code: 1210231

Date Extracted: 08-MAY-12

GEL Spike ID: 1202651709

GEL SpikeDup ID: 1202651710

Analysis Date/Time: 12-MAY-12 04:40

MSD Analysis Date/Time: 12-MAY-12 04:57

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	5.31915	0	4.88	91.8	4.73	88	3.16	25	42 - 117
2,6-Diamino-4-nitrotoluene	5.31915	0	4.88	91.8	5.1	94.8	4.29	25	50 - 121
3,5-Dinitroaniline	5.31915	0	5.1	95.8	5.02	93.4	1.47	25	59 - 125
TATB	5.31915	0	3.98	74.8	3.99	74.2	.264	25	30 - 169
tris(o-cresyl) phosphate	5.31915	0	3.31	62.2	2.86	53.2	14.5	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 1210231

Lab Code: GEL

GEL Job No (SDG) 12-1274

Matrix: WATER

GEL Sample ID: 1202651707

Sample Amount 1000 mL

Date Received: 04-MAY-12

Moisture: .

Extraction Batch ID: 1210231

Extraction Type Sol Exchange

Date Extracted: 08-MAY-12

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

GEL data file: EXP0604013.wiff

Date Analyzed: 04-JUN-12 21:04

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	U	0.080	0.250
<i>99-08-1</i>	<i>m-Nitrotoluene</i>				

1  
**High Explosives Analysis Data Sheet**

**Lab Name:** GEL Laboratories LLC

**Client Sample ID:** MB for batch 1210231

**Lab Code:** GEL

**GEL Job No (SDG)** 12-1274

**Matrix:** WATER

**GEL Sample ID:** 1202651707

**Sample Amount** 1000 mL

**Date Received:** 04-MAY-12

**Moisture:** .

**Extraction Batch ID:** 1210231

**Extraction Type** Sol Exchange

**Date Extracted:** 08-MAY-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 1210231

**Lab Code:** GEL

**GEL Job No (SDG)** 12-1274

**Matrix:** WATER

**GEL Sample ID:** 1202651707

**Sample Amount** 1000 mL

**Date Received:** 04-MAY-12

**Moisture:** .

**Extraction Batch ID:** 1210231

**Extraction Type** Sol Exchange

**Date Extracted:** 08-MAY-12

**Concentrated Extract Volume (mL)** 5

**Injection Volume (uL):** 50

**GEL data file:** EXS05110040.wiff

**Date Analyzed:** 12-MAY-12 03:50

**Dilution Factor:** 2

**Concentration Units:** ug/L

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

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: LCS for batch 1210231

Lab Code: GEL

GEL Job No (SDG) 12-1274

Matrix: WATER

GEL Sample ID: 1202651708

Sample Amount 1000 mL

Date Received: 04-MAY-12

Moisture: .

Extraction Batch ID: 1210231

Extraction Type Sol Exchange

Date Extracted: 08-MAY-12

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

GEL data file: EXP0604014.wiff

Date Analyzed: 04-JUN-12 21:39

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
2691-41-0 <i>2691-41-0</i>	HMX <i>HMX</i>	3.8		0.080	0.250
13980-04-6 <i>13980-04-6</i>	TNX <i>TNX</i>	4.06		0.080	0.250
78-11-5 <i>78-11-5</i>	PETN <i>PETN</i>	4.26		0.100	0.500
80251-29-2 <i>80251-29-2</i>	DNX <i>DNX</i>	4.31		0.080	0.250
121-82-4 <i>121-82-4</i>	RDX <i>RDX</i>	4.35		0.080	0.250
479-45-8 <i>479-45-8</i>	Tetryl <i>Tetryl</i>	4.36		0.080	0.500
5755-27-1 <i>5755-27-1</i>	MNX <i>MNX</i>	4.36		0.080	0.250
19406-51-0 <i>19406-51-0</i>	4-Amino-2,6-dinitrotoluene <i>4-Amino-2,6-dinitrotoluene</i>	4.49		0.080	0.250
606-20-2 <i>606-20-2</i>	2,6-Dinitrotoluene <i>2,6-Dinitrotoluene</i>	4.5		0.080	0.250
99-35-4 <i>99-35-4</i>	1,3,5-Trinitrobenzene <i>1,3,5-Trinitrobenzene</i>	4.54		0.080	0.250
121-14-2 <i>121-14-2</i>	2,4-Dinitrotoluene <i>2,4-Dinitrotoluene</i>	4.55		0.080	0.250
35572-78-2 <i>35572-78-2</i>	2-Amino-4,6-dinitrotoluene <i>2-Amino-4,6-dinitrotoluene</i>	4.55		0.080	0.250
88-72-2 <i>88-72-2</i>	o-Nitrotoluene <i>o-Nitrotoluene</i>	4.65		0.082	0.250

1  
**High Explosives Analysis Data Sheet**

**Lab Name:** GEL Laboratories LLC

**Client Sample ID:** LCS for batch 1210231

**Lab Code:** GEL

**GEL Job No (SDG)** 12-1274

**Matrix:** WATER

**GEL Sample ID:** 1202651708

**Sample Amount** 1000 mL

**Date Received:** 04-MAY-12

**Moisture:** .

**Extraction Batch ID:** 1210231

**Extraction Type** Sol Exchange

**Date Extracted:** 08-MAY-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>	4.73		0.080	0.250
118-96-7 <i>118-96-7</i>	2,4,6-Trinitrotoluene <i>2,4,6-Trinitrotoluene</i>	4.75		0.080	0.250
98-95-3 <i>98-95-3</i>	Nitrobenzene <i>Nitrobenzene</i>	4.88		0.080	0.250
99-08-1 <i>99-08-1</i>	m-Nitrotoluene <i>m-Nitrotoluene</i>	4.93		0.080	0.250
99-99-0 <i>99-99-0</i>	p-Nitrotoluene <i>p-Nitrotoluene</i>	4.98		0.150	0.500

1  
**High Explosives Analysis Data Sheet**

**Lab Name:** GEL Laboratories LLC

**Client Sample ID:** LCS for batch 1210231

**Lab Code:** GEL

**GEL Job No (SDG)** 12-1274

**Matrix:** WATER

**GEL Sample ID:** 1202651708

**Sample Amount** 1000 mL

**Date Received:** 04-MAY-12

**Moisture:** .

**Extraction Batch ID:** 1210231

**Extraction Type** Sol Exchange

**Date Extracted:** 08-MAY-12

**Concentrated Extract Volume (mL)** 5

**Injection Volume (uL):** 50

**GEL data file:** EXS05110041.wiff

**Date Analyzed:** 12-MAY-12 04:07

**Dilution Factor:** 2

**Concentration Units:** ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
78-30-8	tris(o-cresyl) phosphate	2.73		0.300	1.00
78-30-8	<i>tris(o-cresyl) phosphate</i>				
3058-38-6	TATB	3.45		0.300	1.00
3058-38-6	<i>TATB</i>				
6629-29-4	2,4-Diamino-6-nitrotoluene	4.14		0.500	2.50
6629-29-4	<i>2,4-Diamino-6-nitrotoluene</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	4.35		0.500	2.50
59229-75-3	<i>2,6-Diamino-4-nitrotoluene</i>				
618-87-1	3,5-Dinitroaniline	4.74		0.300	1.00
618-87-1	<i>3,5-Dinitroaniline</i>				

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAPA-12-13282(303750001MS)MS

Lab Code: GEL

GEL Job No (SDG) 12-1274

Matrix: WATER

GEL Sample ID: 1202651709

Sample Amount 940 mL

Date Received: 04-MAY-12

Moisture:           

Extraction Batch ID: 1210231

Extraction Type Sol Exchange

Date Extracted: 08-MAY-12

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

GEL data file: EXP0604016.wiff

Date Analyzed: 04-JUN-12 22:49

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
2691-41-0 <i>2691-41-0</i>	HMX <i>HMX</i>	4.15		0.0851	0.266
78-11-5 <i>78-11-5</i>	PETN <i>PETN</i>	4.37		0.106	0.532
479-45-8 <i>479-45-8</i>	Tetryl <i>Tetryl</i>	4.39		0.0851	0.532
121-82-4 <i>121-82-4</i>	RDX <i>RDX</i>	4.54		0.0851	0.266
13980-04-6 <i>13980-04-6</i>	TNX <i>TNX</i>	4.54		0.0851	0.266
5755-27-1 <i>5755-27-1</i>	MNX <i>MNX</i>	4.55		0.0851	0.266
80251-29-2 <i>80251-29-2</i>	DNX <i>DNX</i>	4.74		0.0851	0.266
99-35-4 <i>99-35-4</i>	1,3,5-Trinitrobenzene <i>1,3,5-Trinitrobenzene</i>	4.74		0.0851	0.266
606-20-2 <i>606-20-2</i>	2,6-Dinitrotoluene <i>2,6-Dinitrotoluene</i>	4.79		0.0851	0.266
99-65-0 <i>99-65-0</i>	m-Dinitrobenzene <i>m-Dinitrobenzene</i>	4.79		0.0851	0.266
99-08-1 <i>99-08-1</i>	m-Nitrotoluene <i>m-Nitrotoluene</i>	4.8		0.0851	0.266
98-95-3 <i>98-95-3</i>	Nitrobenzene <i>Nitrobenzene</i>	4.89		0.0851	0.266
88-72-2 <i>88-72-2</i>	o-Nitrotoluene <i>o-Nitrotoluene</i>	4.93		0.0872	0.266

1  
**High Explosives Analysis Data Sheet**

**Lab Name:** GEL Laboratories LLC

**Client Sample ID:** CAPA-12-13282(303750001MS)MS

**Lab Code:** GEL

**GEL Job No (SDG)** 12-1274

**Matrix:** WATER

**GEL Sample ID:** 1202651709

**Sample Amount** 940 mL

**Date Received:** 04-MAY-12

**Moisture:** .

**Extraction Batch ID:** 1210231

**Extraction Type** Sol Exchange

**Date Extracted:** 08-MAY-12

**Concentrated Extract Volume (mL)** 5

**Injection Volume (uL):** 50

Cas No.	Compound	Concentration*	Q	MDL	PQL
19406-51-0 <i>19406-51-0</i>	4-Amino-2,6-dinitrotoluene <i>4-Amino-2,6-dinitrotoluene</i>	4.96		0.0851	0.266
35572-78-2 <i>35572-78-2</i>	2-Amino-4,6-dinitrotoluene <i>2-Amino-4,6-dinitrotoluene</i>	5		0.0851	0.266
118-96-7 <i>118-96-7</i>	2,4,6-Trinitrotoluene <i>2,4,6-Trinitrotoluene</i>	5.01		0.0851	0.266
121-14-2 <i>121-14-2</i>	2,4-Dinitrotoluene <i>2,4-Dinitrotoluene</i>	5.03		0.0851	0.266
99-99-0 <i>99-99-0</i>	p-Nitrotoluene <i>p-Nitrotoluene</i>	5.14		0.160	0.532

1  
**High Explosives Analysis Data Sheet**

**Lab Name:** GEL Laboratories LLC

**Client Sample ID:** CAPA-12-13282(303750001MS)MS

**Lab Code:** GEL

**GEL Job No (SDG)** 12-1274

**Matrix:** WATER

**GEL Sample ID:** 1202651709

**Sample Amount** 940 mL

**Date Received:** 04-MAY-12

**Moisture:** .

**Extraction Batch ID:** 1210231

**Extraction Type** Sol Exchange

**Date Extracted:** 08-MAY-12

**Concentrated Extract Volume (mL)** 5

**Injection Volume (uL):** 50

**GEL data file:** EXS05110043.wiff

**Date Analyzed:** 12-MAY-12 04:40

**Dilution Factor:** 2

**Concentration Units:** ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
78-30-8	tris(o-cresyl) phosphate	3.31		0.319	1.06
78-30-8	<i>tris(o-cresyl) phosphate</i>				
3058-38-6	TATB	3.98		0.319	1.06
3058-38-6	<i>TATB</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	4.88		0.532	2.66
59229-75-3	<i>2,6-Diamino-4-nitrotoluene</i>				
6629-29-4	2,4-Diamino-6-nitrotoluene	4.88		0.532	2.66
6629-29-4	<i>2,4-Diamino-6-nitrotoluene</i>				
618-87-1	3,5-Dinitroaniline	5.1		0.319	1.06
618-87-1	<i>3,5-Dinitroaniline</i>				

1  
**High Explosives Analysis Data Sheet**

**Lab Name:** GEL Laboratories LLC

**Client Sample ID:** CAPA-12-13282(303750001MSD)MSD

**Lab Code:** GEL

**GEL Job No (SDG)** 12-1274

**Matrix:** WATER

**GEL Sample ID:** 1202651710

**Sample Amount** 930 mL

**Date Received:** 04-MAY-12

**Moisture:** .

**Extraction Batch ID:** 1210231

**Extraction Type** Sol Exchange

**Date Extracted:** 08-MAY-12

**Concentrated Extract Volume (mL)** 5

**Injection Volume (uL):** 50

**GEL data file:** EXP0604017.wiff

**Date Analyzed:** 04-JUN-12 23:24

**Dilution Factor:** 2

**Concentration Units:** ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
78-11-5	PETN	4.48		0.108	0.538
<i>78-11-5</i>	<i>PETN</i>				
479-45-8	Tetryl	4.59		0.086	0.538
<i>479-45-8</i>	<i>Tetryl</i>				
2691-41-0	HMX	4.66		0.086	0.269
<i>2691-41-0</i>	<i>HMX</i>				
13980-04-6	TNX	4.75		0.086	0.269
<i>13980-04-6</i>	<i>TNX</i>				
99-08-1	m-Nitrotoluene	4.86		0.086	0.269
<i>99-08-1</i>	<i>m-Nitrotoluene</i>				
606-20-2	2,6-Dinitrotoluene	4.92		0.086	0.269
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				
88-72-2	o-Nitrotoluene	4.96		0.0882	0.269
<i>88-72-2</i>	<i>o-Nitrotoluene</i>				
99-35-4	1,3,5-Trinitrobenzene	5.01		0.086	0.269
<i>99-35-4</i>	<i>1,3,5-Trinitrobenzene</i>				
5755-27-1	MNX	5.05		0.086	0.269
<i>5755-27-1</i>	<i>MNX</i>				
80251-29-2	DNX	5.05		0.086	0.269
<i>80251-29-2</i>	<i>DNX</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	5.06		0.086	0.269
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	5.08		0.086	0.269
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
121-14-2	2,4-Dinitrotoluene	5.09		0.086	0.269
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				

1  
**High Explosives Analysis Data Sheet**

**Lab Name:** GEL Laboratories LLC

**Client Sample ID:** CAPA-12-13282(303750001MSD)MSD

**Lab Code:** GEL

**GEL Job No (SDG)** 12-1274

**Matrix:** WATER

**GEL Sample ID:** 1202651710

**Sample Amount** 930 mL

**Date Received:** 04-MAY-12

**Moisture:** .

**Extraction Batch ID:** 1210231

**Extraction Type** Sol Exchange

**Date Extracted:** 08-MAY-12

**Concentrated Extract Volume (mL)** 5

**Injection Volume (uL):** 50

Cas No.	Compound	Concentration*	Q	MDL	PQL
118-96-7	2,4,6-Trinitrotoluene	5.13		0.086	0.269
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
121-82-4	RDX	5.18		0.086	0.269
<i>121-82-4</i>	<i>RDX</i>				
99-65-0	m-Dinitrobenzene	5.24		0.086	0.269
<i>99-65-0</i>	<i>m-Dinitrobenzene</i>				
98-95-3	Nitrobenzene	5.26		0.086	0.269
<i>98-95-3</i>	<i>Nitrobenzene</i>				
99-99-0	p-Nitrotoluene	5.3		0.161	0.538
<i>99-99-0</i>	<i>p-Nitrotoluene</i>				

1  
**High Explosives Analysis Data Sheet**

**Lab Name:** GEL Laboratories LLC

**Client Sample ID:** CAPA-12-13282(303750001MSD)MSD

**Lab Code:** GEL

**GEL Job No (SDG)** 12-1274

**Matrix:** WATER

**GEL Sample ID:** 1202651710

**Sample Amount** 930 mL

**Date Received:** 04-MAY-12

**Moisture:** .

**Extraction Batch ID:** 1210231

**Extraction Type** Sol Exchange

**Date Extracted:** 08-MAY-12

**Concentrated Extract Volume (mL)** 5

**Injection Volume (uL):** 50

**GEL data file:** EXS05110044.wiff

**Date Analyzed:** 12-MAY-12 04:57

**Dilution Factor:** 2

**Concentration Units:** ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
78-30-8	tris(o-cresyl) phosphate	2.86		0.323	1.08
78-30-8	<i>tris(o-cresyl) phosphate</i>				
3058-38-6	TATB	3.99		0.323	1.08
3058-38-6	<i>TATB</i>				
6629-29-4	2,4-Diamino-6-nitrotoluene	4.73		0.538	2.69
6629-29-4	<i>2,4-Diamino-6-nitrotoluene</i>				
618-87-1	3,5-Dinitroaniline	5.02		0.323	1.08
618-87-1	<i>3,5-Dinitroaniline</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	5.1		0.538	2.69
59229-75-3	<i>2,6-Diamino-4-nitrotoluene</i>				

## Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLCGEL Job No(SDG): 12-1274Lab Code: GELLab Sample ID: XIBLK01Analysis Date: 04-JUN-12 14:05GEL Data File: EXP0604001.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
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

## Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLCGEL Job No(SDG): 12-1274Lab Code: GELLab Sample ID: XIBLK01Analysis Date: 04-JUN-12 14:40GEL Data File: EXP0604002.wiffInstrument ID: LCMSMSColumn: Phenomenex Ultracarb 5u ODS(20)

Compound	True	Found (ug/L)
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0
Tetryl	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
PETN	0	0
RDX	0	0

## Explosives Initial Calibration Blank

**Lab Name:** GEL Laboratories LLC**GEL Job No(SDG):** 12-1274**Lab Code:** GEL**Lab Sample ID:** XIBLK01**Analysis Date:** 11-MAY-12 16:58**GEL Data File:** EXS05110001.wiff**Instrument ID:** LCMSMS**Column:** Phenomenex Ultracarb 5u ODS(20)

<b>Compound</b>	<b>True</b>	<b>Found (ug/L)</b>
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	10.9
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 LLCGEL Job No(SDG): 12-1274Lab Code: GELLab Sample ID: XIBLK01Analysis Date: 11-MAY-12 17:15GEL Data File: EXS05110002.wiffInstrument ID: LCMSMSColumn: Phenomenex Ultracarb 5u ODS(20)

Compound	True	Found (ug/L)
2,6-Diamino-4-nitrotoluene	0	0
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	7.08
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0

## Explosives Initial Calibration Blank

**Lab Name:** GEL Laboratories LLC**GEL Job No(SDG):** 12-1274**Lab Code:** GEL**Lab Sample ID:** XIBLK01**Analysis Date:** 14-MAY-12 11:24**GEL Data File:** EXS05140001.wiff**Instrument ID:** LCMSMS**Column:** Phenomenex Ultracarb 5u ODS(20)

<b>Compound</b>	<b>True</b>	<b>Found (ug/L)</b>
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	4.73
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):** 12-1274**Lab Code:** GEL**Lab Sample ID:** XIBLK01**Analysis Date:** 14-MAY-12 11:41**GEL Data File:** EXS05140002.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	1.64
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): 12-1274

Lab Code: GEL

Lab Sample ID: XIBLK02

Analysis Date: 04-JUN-12 18:44

GEL Data File: EXP0604009.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
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): 12-1274

Lab Code: GEL

Lab Sample ID: XIBLK03

Analysis Date: 04-JUN-12 19:54

GEL Data File: EXP0604011.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
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): 12-1274

Lab Code: GEL

Lab Sample ID: XIBLK04

Analysis Date: 05-JUN-12 02:53

GEL Data File: EXP0604023.wiff

Instrument ID: LCMSMS

Column: Phenomenex Ultracarb 5u ODS(20)

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

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 12-1274

Lab Code: GEL

Lab Sample ID: XIBLK02

Analysis Date: 11-MAY-12 19:29

GEL Data File: EXS05110010.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	13.2
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): 12-1274

Lab Code: GEL

Lab Sample ID: XIBLK03

Analysis Date: 11-MAY-12 20:02

GEL Data File: EXS05110012.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	9.15
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): 12-1274

Lab Code: GEL

Lab Sample ID: XIBLK04

Analysis Date: 11-MAY-12 22:32

GEL Data File: EXS05110021.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	9.06
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): 12-1274

Lab Code: GEL

Lab Sample ID: XIBLK05

Analysis Date: 12-MAY-12 02:10

GEL Data File: EXS05110034.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	8.06
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): 12-1274

Lab Code: GEL

Lab Sample ID: XIBLK06

Analysis Date: 12-MAY-12 03:33

GEL Data File: EXS05110039.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	6.56
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): 12-1274

Lab Code: GEL

Lab Sample ID: XIBLK07

Analysis Date: 12-MAY-12 05:30

GEL Data File: EXS05110046.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	8.4
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): 12-1274

Lab Code: GEL

Lab Sample ID: XIBLK02

Analysis Date: 14-MAY-12 13:55

GEL Data File: EXS05140010.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	10.4
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): 12-1274

Lab Code: GEL

Lab Sample ID: XIBLK03

Analysis Date: 14-MAY-12 14:28

GEL Data File: EXS05140012.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	5.33
TATB	0	0

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 12-1274

Lab Code: GEL

Lab Sample ID: XIBLK04

Analysis Date: 14-MAY-12 15:35

GEL Data File: EXS05140016.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	2.33
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): 12-1274

Lab Code: GEL

Lab Sample ID: XIBLK05

Analysis Date: 14-MAY-12 17:15

GEL Data File: EXS05140022.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	4.01
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 12-1274**

**Sample Analysis**

<b>Sample ID</b>	<b>Client ID</b>
303750002	CAPA-12-13292
303750004	CAPA-12-13308
303750006	CAPA-12-13293
303750008	CAPA-12-13294
1202650970	Method Blank (MB) <b>ICP</b>
1202650971	Laboratory Control Sample (LCS)
1202650974	303750002(CAPA-12-13292L) Serial Dilution (SD)
1202650972	303750002(CAPA-12-13292D) Sample Duplicate (DUP)
1202650973	303750002(CAPA-12-13292S) Matrix Spike (MS)
1202650965	Method Blank (MB) <b>ICP-MS</b>
1202650966	Laboratory Control Sample (LCS)
1202650969	303750002(CAPA-12-13292L) Serial Dilution (SD)
1202650967	303750002(CAPA-12-13292D) Sample Duplicate (DUP)
1202650968	303750002(CAPA-12-13292S) Matrix Spike (MS)
1202652151	Method Blank (MB) <b>CVAA</b>
1202652152	Laboratory Control Sample (LCS)
1202652155	303613003(CAPA-12-13272L) Serial Dilution (SD)
1202652153	303613003(CAPA-12-13272D) Sample Duplicate (DUP)
1202652154	303613003(CAPA-12-13272S) Matrix Spike (MS)

**Method/Analysis Information**

**Analytical Batch:** 1209957, 1209953, 1210437 and 1216196  
**Prep Batch :** 1209955, 1209952 and 1210434  
**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 CaCO<sub>3</sub> 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**

The instrument calibrations are conducted using the method and instrument manufacturer's specifications. All initial calibration requirements were not met for this SDG. The ICV is slightly over-range for the Hg 245 method. However, all samples are below the MDL.

#### **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: 303750002 (CAPA-12-13292)-ICP and ICP-MS and 303613003 (CAPA-12-13272)-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 A. Emore Date: 05.31.12

# **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: 12-1274 GEL Work Order: 303750

**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

Dick Cole A. Elmore

05.31.12

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

SDG No: 12-1274

METHOD TYPE: EPA

SAMPLE ID: 303750002

CLIENT ID: CAPA-12-13292

CONTRACT: ESHL00210

MATRIX:W

DATE RECEIVED 04-MAY-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	050912W5-4
7631-86-9	Silica	77.2	mg/L			P	0.053	1	OPTIMA3	051712-1
7429-90-5	Aluminum	68	ug/L	U		P	68	1	OPTIMA3	051712-1
7440-36-0	Antimony	1	ug/L	U		MS	1	1	ICPMS6	120521-3
7440-38-2	Arsenic	1.7	ug/L	U		MS	1.7	1	ICPMS6	120521-3
7440-39-3	Barium	38.8	ug/L			P	1	1	OPTIMA3	051712-1
7440-41-7	Beryllium	1	ug/L	U		P	1	1	OPTIMA3	051712-1
7440-42-8	Boron	15	ug/L	U		P	15	1	OPTIMA3	051712-1
7440-43-9	Cadmium	0.11	ug/L	U		MS	0.11	1	ICPMS6	120518-2
7440-70-2	Calcium	10200	ug/L			P	50	1	OPTIMA3	051712-1
7440-47-3	Chromium	3.78	ug/L	J		MS	2	1	ICPMS6	120521-3
7440-48-4	Cobalt	1	ug/L	U		P	1	1	OPTIMA3	051712-1
7440-50-8	Copper	3	ug/L	U		P	3	1	OPTIMA3	051712-1
7439-89-6	Iron	67.8	ug/L	J		P	30	1	OPTIMA3	051712-1
7439-92-1	Lead	0.5	ug/L	U		MS	0.5	1	ICPMS6	120518-2
7439-95-4	Magnesium	3050	ug/L			P	110	1	OPTIMA3	051712-1
7439-96-5	Manganese	2	ug/L	U		P	2	1	OPTIMA3	051712-1
7439-98-7	Molybdenum	1.2	ug/L			MS	0.165	1	ICPMS6	120518-2
7440-02-0	Nickel	2.84	ug/L			MS	0.5	1	ICPMS6	120521-3
7440-09-7	Potassium	1650	ug/L			P	50	1	OPTIMA3	051712-1
7782-49-2	Selenium	1.5	ug/L	U		MS	1.5	1	ICPMS6	120521-3
7440-22-4	Silver	0.2	ug/L	U		MS	0.2	1	ICPMS6	120521-3
7440-23-5	Sodium	11900	ug/L			P	100	1	OPTIMA3	051712-1
7440-24-6	Strontium	44.7	ug/L			P	1	1	OPTIMA3	051712-1
7440-28-0	Thallium	0.45	ug/L	U		MS	0.45	1	ICPMS6	120518-2
7440-31-5	Tin	2.5	ug/L	U		P	2.5	1	OPTIMA3	051712-1

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

**SDG No:** 12-1274

**METHOD TYPE:** EPA

**SAMPLE ID:** 303750002

**CLIENT ID:** CAPA-12-13292

**CONTRACT:** ESHL00210

**MATRIX:**W

**DATE RECEIVED** 04-MAY-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	0.509	ug/L			MS	0.067	1	ICPMS6	120518-2
7440-62-2	Vanadium	4.99	ug/L	J		P	1	1	OPTIMA3	051712-1
7440-66-6	Zinc	3.55	ug/L	J		P	3.3	1	OPTIMA3	051712-1
	Hardness as CaCO3	38.1	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**

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

**SDG No:** 12-1274

**METHOD TYPE:** EPA

**SAMPLE ID:** 303750004

**CLIENT ID:** CAPA-12-13308

**CONTRACT:** ESHL00210

**MATRIX:**W

**DATE RECEIVED** 04-MAY-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	050912W5-4
7631-86-9	Silica	76.3	mg/L			P	0.053	1	OPTIMA3	051712-1
7429-90-5	Aluminum	68	ug/L	U		P	68	1	OPTIMA3	051712-1
7440-36-0	Antimony	1	ug/L	U		MS	1	1	ICPMS6	120521-3
7440-38-2	Arsenic	1.7	ug/L	U		MS	1.7	1	ICPMS6	120521-3
7440-39-3	Barium	38.4	ug/L			P	1	1	OPTIMA3	051712-1
7440-41-7	Beryllium	1	ug/L	U		P	1	1	OPTIMA3	051712-1
7440-42-8	Boron	15	ug/L	U		P	15	1	OPTIMA3	051712-1
7440-43-9	Cadmium	0.11	ug/L	U		MS	0.11	1	ICPMS6	120518-2
7440-70-2	Calcium	10100	ug/L			P	50	1	OPTIMA3	051712-1
7440-47-3	Chromium	3.31	ug/L	J		MS	2	1	ICPMS6	120521-3
7440-48-4	Cobalt	1	ug/L	U		P	1	1	OPTIMA3	051712-1
7440-50-8	Copper	3	ug/L	U		P	3	1	OPTIMA3	051712-1
7439-89-6	Iron	66.9	ug/L	J		P	30	1	OPTIMA3	051712-1
7439-92-1	Lead	0.5	ug/L	U		MS	0.5	1	ICPMS6	120518-2
7439-95-4	Magnesium	2980	ug/L			P	110	1	OPTIMA3	051712-1
7439-96-5	Manganese	2	ug/L	U		P	2	1	OPTIMA3	051712-1
7439-98-7	Molybdenum	1.12	ug/L			MS	0.165	1	ICPMS6	120518-2
7440-02-0	Nickel	2.69	ug/L			MS	0.5	1	ICPMS6	120521-3
7440-09-7	Potassium	1600	ug/L			P	50	1	OPTIMA3	051712-1
7782-49-2	Selenium	1.5	ug/L	U		MS	1.5	1	ICPMS6	120521-3
7440-22-4	Silver	0.2	ug/L	U		MS	0.2	1	ICPMS6	120521-3
7440-23-5	Sodium	11800	ug/L			P	100	1	OPTIMA3	051712-1
7440-24-6	Strontium	44.3	ug/L			P	1	1	OPTIMA3	051712-1
7440-28-0	Thallium	0.45	ug/L	U		MS	0.45	1	ICPMS6	120518-2
7440-31-5	Tin	2.5	ug/L	U		P	2.5	1	OPTIMA3	051712-1

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

**SDG No:** 12-1274

**METHOD TYPE:** EPA

**SAMPLE ID:** 303750004

**CLIENT ID:** CAPA-12-13308

**CONTRACT:** ESHL00210

**MATRIX:**W

**DATE RECEIVED** 04-MAY-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	0.493	ug/L			MS	0.067	1	ICPMS6	120518-2
7440-62-2	Vanadium	4.9	ug/L	J		P	1	1	OPTIMA3	051712-1
7440-66-6	Zinc	3.3	ug/L	U		P	3.3	1	OPTIMA3	051712-1
	Hardness as CaCO3	37.4	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

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

SDG No: 12-1274

METHOD TYPE: EPA

SAMPLE ID: 303750006

CLIENT ID: CAPA-12-13293

CONTRACT: ESHL00210

MATRIX:W

DATE RECEIVED 04-MAY-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	050912W5-4
7631-86-9	Silica	80.6	mg/L			P	0.053	1	OPTIMA3	051712-1
7429-90-5	Aluminum	68	ug/L	U		P	68	1	OPTIMA3	051712-1
7440-36-0	Antimony	1	ug/L	U		MS	1	1	ICPMS6	120521-3
7440-38-2	Arsenic	1.7	ug/L	U		MS	1.7	1	ICPMS6	120521-3
7440-39-3	Barium	30.9	ug/L			P	1	1	OPTIMA3	051712-1
7440-41-7	Beryllium	1	ug/L	U		P	1	1	OPTIMA3	051712-1
7440-42-8	Boron	15	ug/L	U		P	15	1	OPTIMA3	051712-1
7440-43-9	Cadmium	0.11	ug/L	U		MS	0.11	1	ICPMS6	120518-2
7440-70-2	Calcium	9120	ug/L			P	50	1	OPTIMA3	051712-1
7440-47-3	Chromium	4.99	ug/L	J		MS	2	1	ICPMS6	120521-3
7440-48-4	Cobalt	1	ug/L	U		P	1	1	OPTIMA3	051712-1
7440-50-8	Copper	3	ug/L	U		P	3	1	OPTIMA3	051712-1
7439-89-6	Iron	30	ug/L	U		P	30	1	OPTIMA3	051712-1
7439-92-1	Lead	0.5	ug/L	U		MS	0.5	1	ICPMS6	120518-2
7439-95-4	Magnesium	3030	ug/L			P	110	1	OPTIMA3	051712-1
7439-96-5	Manganese	2	ug/L	U		P	2	1	OPTIMA3	051712-1
7439-98-7	Molybdenum	1.08	ug/L			MS	0.165	1	ICPMS6	120518-2
7440-02-0	Nickel	0.776	ug/L	J		MS	0.5	1	ICPMS6	120521-3
7440-09-7	Potassium	2570	ug/L			P	50	1	OPTIMA3	051712-1
7782-49-2	Selenium	1.5	ug/L	U		MS	1.5	1	ICPMS6	120521-3
7440-22-4	Silver	0.2	ug/L	U		MS	0.2	1	ICPMS6	120521-3
7440-23-5	Sodium	10200	ug/L			P	100	1	OPTIMA3	051712-1
7440-24-6	Strontium	43.6	ug/L			P	1	1	OPTIMA3	051712-1
7440-28-0	Thallium	0.45	ug/L	U		MS	0.45	1	ICPMS6	120518-2
7440-31-5	Tin	2.5	ug/L	U		P	2.5	1	OPTIMA3	051712-1

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

**SDG No:** 12-1274

**METHOD TYPE:** EPA

**SAMPLE ID:** 303750006

**CLIENT ID:** CAPA-12-13293

**CONTRACT:** ESHL00210

**MATRIX:**W

**DATE RECEIVED** 04-MAY-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	0.442	ug/L			MS	0.067	1	ICPMS6	120518-2
7440-62-2	Vanadium	7.49	ug/L			P	1	1	OPTIMA3	051712-1
7440-66-6	Zinc	3.3	ug/L	U		P	3.3	1	OPTIMA3	051712-1
	Hardness as CaCO3	35.2	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**

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

SDG No: 12-1274

METHOD TYPE: EPA

SAMPLE ID: 303750008

CLIENT ID: CAPA-12-13294

CONTRACT: ESHL00210

MATRIX:W

DATE RECEIVED 04-MAY-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	050912W5-4
7631-86-9	Silica	73.8	mg/L			P	0.053	1	OPTIMA3	051712-1
7429-90-5	Aluminum	68	ug/L	U		P	68	1	OPTIMA3	051712-1
7440-36-0	Antimony	1	ug/L	U		MS	1	1	ICPMS6	120521-3
7440-38-2	Arsenic	1.7	ug/L	U		MS	1.7	1	ICPMS6	120521-3
7440-39-3	Barium	24.9	ug/L			P	1	1	OPTIMA3	051712-1
7440-41-7	Beryllium	1	ug/L	U		P	1	1	OPTIMA3	051712-1
7440-42-8	Boron	15	ug/L	U		P	15	1	OPTIMA3	051712-1
7440-43-9	Cadmium	0.11	ug/L	U		MS	0.11	1	ICPMS6	120518-2
7440-70-2	Calcium	16400	ug/L			P	50	1	OPTIMA3	051712-1
7440-47-3	Chromium	3.1	ug/L	J		MS	2	1	ICPMS6	120521-3
7440-48-4	Cobalt	1	ug/L	U		P	1	1	OPTIMA3	051712-1
7440-50-8	Copper	3	ug/L	U		P	3	1	OPTIMA3	051712-1
7439-89-6	Iron	30	ug/L	U		P	30	1	OPTIMA3	051712-1
7439-92-1	Lead	0.5	ug/L	U		MS	0.5	1	ICPMS6	120518-2
7439-95-4	Magnesium	2940	ug/L			P	110	1	OPTIMA3	051712-1
7439-96-5	Manganese	2	ug/L	U		P	2	1	OPTIMA3	051712-1
7439-98-7	Molybdenum	1.15	ug/L			MS	0.165	1	ICPMS6	120518-2
7440-02-0	Nickel	0.665	ug/L	J		MS	0.5	1	ICPMS6	120521-3
7440-09-7	Potassium	1010	ug/L			P	50	1	OPTIMA3	051712-1
7782-49-2	Selenium	1.5	ug/L	U		MS	1.5	1	ICPMS6	120521-3
7440-22-4	Silver	0.2	ug/L	U		MS	0.2	1	ICPMS6	120521-3
7440-23-5	Sodium	14200	ug/L			P	100	1	OPTIMA3	051712-1
7440-24-6	Strontium	69.3	ug/L			P	1	1	OPTIMA3	051712-1
7440-28-0	Thallium	0.45	ug/L	U		MS	0.45	1	ICPMS6	120518-2
7440-31-5	Tin	2.5	ug/L	U		P	2.5	1	OPTIMA3	051712-1

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

**SDG No:** 12-1274

**METHOD TYPE:** EPA

**SAMPLE ID:** 303750008

**CLIENT ID:** CAPA-12-13294

**CONTRACT:** ESHL00210

**MATRIX:**W

**DATE RECEIVED** 04-MAY-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	0.277	ug/L			MS	0.067	1	ICPMS6	120518-2
7440-62-2	Vanadium	1.68	ug/L	J		P	1	1	OPTIMA3	051712-1
7440-66-6	Zinc	3.3	ug/L	U		P	3.3	1	OPTIMA3	051712-1
	Hardness as CaCO3	53	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.** 12-1274  
**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>
1202650965								
	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
1202650970								
	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
1202652151								
	Mercury	0.067	ug/L	+/-0.2	U	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. 12-1274 Client ID: CAPA-12-13292S  
 Contract: ESHL00210 Level: Low  
 Matrix: WATER % Solids:  
 Sample ID: 303750002 Spike ID: 1202650968

<u>Analyte</u>	<u>Units</u>	<u>Acceptance Limit</u>	<u>Spiked Result</u>	<u>C</u>	<u>Sample Result</u>	<u>C</u>	<u>Spike Added</u>	<u>% Recovery</u>	<u>Qual</u>	<u>M*</u>
Antimony	ug/L	75-125	204		1	U	200	102		MS
Arsenic	ug/L	75-125	80		1.7	U	80	100		MS
Cadmium	ug/L	75-125	10.4		0.11	U	10	104		MS
Chromium	ug/L	75-125	52.5		3.78	J	50	97.5		MS
Lead	ug/L	75-125	40.4		0.5	U	40	101		MS
Molybdenum	ug/L	75-125	51.1		1.2		50	99.8		MS
Nickel	ug/L	75-125	54.7		2.84		50	104		MS
Selenium	ug/L	75-125	21.5		1.5	U	20	102		MS
Silver	ug/L	75-125	54.4		0.2	U	50	109		MS
Thallium	ug/L	75-125	94		0.45	U	100	93.8		MS
Uranium	ug/L	75-125	52.3		0.509		50	104		MS

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

METALS

-5a-

Matrix Spike Summary

SDG NO. 12-1274 Client ID: CAPA-12-13292S

Contract: ESHL00210 Level: Low

Matrix: WATER % Solids:

Sample ID: 303750002 Spike ID: 1202650973

<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	5040		68	U	5000	101		P
Barium	ug/L	75-125	556		38.8		500	103		P
Beryllium	ug/L	75-125	519		1	U	500	104		P
Boron	ug/L	75-125	529		15	U	500	103		P
Calcium	ug/L	75-125	14900		10200		5000	93.6		P
Cobalt	ug/L	75-125	511		1	U	500	102		P
Copper	ug/L	75-125	534		3	U	500	107		P
Iron	ug/L	75-125	5250		67.8	J	5000	104		P
Magnesium	ug/L	75-125	8180		3050		5000	102		P
Manganese	ug/L	75-125	515		2	U	500	103		P
Potassium	ug/L	75-125	6690		1650		5000	101		P
Silica	mg/L		86.5		77.2		10.7	87.5	N/A	P
Sodium	ug/L	75-125	16900		11900		5000	101		P
Strontium	ug/L	75-125	551		44.7		500	101		P
Tin	ug/L	75-125	516		2.5	U	500	103		P
Vanadium	ug/L	75-125	527		4.99	J	500	104		P
Zinc	ug/L	75-125	507		3.55	J	500	101		P

\*Analytical Methods:  
P SW846 3005/6010B

METALS

-5a-

Matrix Spike Summary

SDG NO. 12-1274 Client ID: CAPA-12-13272S

Contract: ESHL00210 Level: Low

Matrix: WATER % Solids:

Sample ID: 303613003 Spike ID: 1202652154

<u>Analyte</u>	<u>Units</u>	<u>Acceptance Limit</u>	<u>Spiked Result</u>	<u>C</u>	<u>Sample Result</u>	<u>C</u>	<u>Spike Added</u>	<u>% Recovery</u>	<u>Qual</u>	<u>M*</u>
Mercury	ug/L	75-125	2.25		0.067	U	2	112		AV

\*Analytical Methods:  
AV EPA 245.1/245.2

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

**SDG No.:** 12-1274

**Lab Code:** GEL

**Contract:** ESHL00210

**Client ID:** CAPA-12-13292D

**Matrix:** LIQUID

**Level:** Low

**Sample ID:** 303750002

**Duplicate ID:** 1202650967

**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	+/-10	3.78 J		3.49 J		7.98		MS
Lead	ug/L		0.5 U		0.5 U				MS
Molybdenum	ug/L	+/- .5	1.2		1.11		8.03		MS
Nickel	ug/L	+/-2	2.84		2.79		1.67		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	0.509		0.485		4.83		MS

**\*Analytical Methods:**

MS SW846 3005/6020 DOE-AL

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

**SDG No.:** 12-1274

**Lab Code:** GEL

**Contract:** ESHL00210

**Client ID:** CAPA-12-13292D

**Matrix:** LIQUID

**Level:** Low

**Sample ID:** 303750002

**Duplicate ID:** 1202650972

**Percent Solids for Dup:** N/A

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M*
Aluminum	ug/L		68	U	68	U			P
Barium	ug/L	+/-20%	38.8		38.8		.106		P
Beryllium	ug/L		1	U	1	U			P
Boron	ug/L		15	U	15	U			P
Calcium	ug/L	+/-20%	10200		10300		.468		P
Cobalt	ug/L		1	U	1	U			P
Copper	ug/L		3	U	3	U			P
Iron	ug/L	+/-100	67.8	J	68.3	J	.798		P
Magnesium	ug/L	+/-20%	3050		3050		.23		P
Manganese	ug/L		2	U	2	U			P
Potassium	ug/L	+/-20%	1650		1620		1.71		P
Silica	mg/L	+/-20%	77.2		77.2		.00648		P
Sodium	ug/L	+/-20%	11900		12000		1.11		P
Strontium	ug/L	+/-20%	44.7		45.2		1.06		P
Tin	ug/L		2.5	U	2.5	U			P
Vanadium	ug/L	+/-5	4.99	J	4.86	J	2.63		P
Zinc	ug/L		3.55	J	3.3	U	200		P

\*Analytical Methods:

**P SW846 3005/6010B**

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

**SDG No.:** 12-1274

**Lab Code:** GEL

**Contract:** ESHL00210

**Client ID:** CAPA-12-13272D

**Matrix:** LIQUID

**Level:** Low

**Sample ID:** 303613003

**Duplicate ID:** 1202652153

**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. 12-1274

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>
1202650966	Arsenic	ug/L	50	50.7		101	80-120	MS
	Cadmium	ug/L	50	51		102	80-120	MS
	Chromium	ug/L	50	52.2		104	80-120	MS
	Lead	ug/L	50	48.6		97.3	80-120	MS
	Molybdenum	ug/L	50	51.3		103	80-120	MS
	Nickel	ug/L	50	54.1		108	80-120	MS
	Selenium	ug/L	50	53.5		107	80-120	MS
	Silver	ug/L	50	55.1		110	80-120	MS
	Thallium	ug/L	50	46.5		93.1	80-120	MS
	Uranium	ug/L	50	49.7		99.3	80-120	MS
	Antimony	ug/L	50	52.2		104	80-120	MS

\*Analytical Methods:

MS SW846 3005/6020 DOE-AL

METALS

-7-

Laboratory Control Sample Summary

SDG NO. 12-1274

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>
1202650971								
	Silica	mg/L	10.7	11.3		106	80-120	P
	Sodium	ug/L	5000	5250		105	80-120	P
	Strontium	ug/L	500	528		106	80-120	P
	Tin	ug/L	500	538		108	80-120	P
	Vanadium	ug/L	500	537		107	80-120	P
	Zinc	ug/L	500	517		103	80-120	P
	Potassium	ug/L	5000	5320		106	80-120	P
	Aluminum	ug/L	5000	5240		105	80-120	P
	Barium	ug/L	500	537		107	80-120	P
	Beryllium	ug/L	500	529		106	80-120	P
	Boron	ug/L	500	526		105	80-120	P
	Calcium	ug/L	5000	5340		107	80-120	P
	Cobalt	ug/L	500	529		106	80-120	P
	Copper	ug/L	500	532		106	80-120	P
	Iron	ug/L	5000	5320		106	80-120	P
	Magnesium	ug/L	5000	5510		110	80-120	P
	Manganese	ug/L	500	530		106	80-120	P

\*Analytical Methods:

P SW846 3005/6010B

METALS

-7-

Laboratory Control Sample Summary

SDG NO. 12-1274

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>
1202652152	Mercury	ug/L	2	2.27		114	85-115	AV

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\*Analytical Methods:

AV EPA 245.1/245.2

METALS

-9-

Serial Dilution Sample Summary

SDG NO. 12-1274 Client ID: CAPA-12-13292L

Contract: ESHL00210

Matrix: LIQUID Level: Low

Sample ID: 303750002 Serial Dilution ID: 1202650969

<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	3.78	J	10	U	100			MS
Lead	.5	U	2.5	U				MS
Molybdenum	1.2		1.15	J	4.9			MS
Nickel	2.84		2.93	J	2.96			MS
Selenium	1.5	U	7.5	U				MS
Silver	.2	U	1	U				MS
Thallium	.45	U	2.25	U				MS
Uranium	.509		.57	J	12			MS

\*Analytical Methods:

MS SW846 3005/6020 DOE-AL

METALS

-9-

Serial Dilution Sample Summary

SDG NO. 12-1274 Client ID: CAPA-12-13292L

Contract: ESHL00210

Matrix: LIQUID Level: Low

Sample ID: 303750002 Serial Dilution ID: 1202650974

Analyte	Initial Value ug/L	C	Serial Value ug/L	C	% Difference	Qual	Acceptance Limit	M*
Aluminum	68	U	340	U				P
Barium	38.8		39.5		1.78			P
Beryllium	1	U	5	U				P
Boron	15	U	75	U				P
Calcium	10200		10000		2.23		10	P
Cobalt	1	U	5	U				P
Copper	3	U	15	U				P
Iron	67.8	J	150	U	100			P
Magnesium	3050		3180		4.27			P
Manganese	2	U	10	U				P
Potassium	1650		1700		2.94			P
Silica	77200		76800		.523		10	P
Sodium	11900		11900		.249		10	P
Strontium	44.7		47.2		5.58			P
Tin	2.5	U	12.5	U				P
Vanadium	4.99	J	5	U	100			P
Zinc	3.55	J	16.5	U	100			P

\*Analytical Methods:

P SW846 3005/6010B

METALS

-9-

Serial Dilution Sample Summary

SDG NO. 12-1274 Client ID: CAPA-12-13272L

Contract: ESHL00210

Matrix: LIQUID Level: Low

Sample ID: 303613003 Serial Dilution ID: 1202652155

<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 12-1274**

**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:

<b>Sample ID</b>	<b>Client ID</b>
303750001	CAPA-12-13282
303750003	CAPA-12-13307
303750005	CAPA-12-13283
303750007	CAPA-12-13284
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**

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**

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:** 1211663                      **Method:** EPA120.1 Specific Conductivity

**Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
303750002	CAPA-12-13292
303750004	CAPA-12-13308
303750006	CAPA-12-13293
303750008	CAPA-12-13294
1202655278	303613003(CAPA-12-13272) Sample Duplicate (DUP)
1202655279	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 sample was selected for QC analysis: 303613003 (CAPA-12-13272).

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

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

**Technical Information**

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

**Holding Times**

All samples in this SDG met the specified holding time.

**Sample Dilutions**

The samples in this SDG did not require dilutions.

**Sample Re-analysis**

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

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

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

**Additional Comments**

Additional comments were not required for this SDG.

**Electronic Packaging Comment**

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

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

**Method/Analysis Information**

**Product:** pH  
**Analytical Batch:** 1209763 **Method:** EPA 150.1 pH

**Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
303750002	CAPA-12-13292
303750004	CAPA-12-13308
303750006	CAPA-12-13293
303750008	CAPA-12-13294
1202650549	303613003(CAPA-12-13272) Sample Duplicate (DUP)
1202650550	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-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: 303613003 (CAPA-12-13272).

#### **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 samples from this sample group were received by the lab outside of the method specified holding time: 303750002 (CAPA-12-13292), 303750004 (CAPA-12-13308), 303750006 (CAPA-12-13293) and 303750008 (CAPA-12-13294).

#### **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: 1075833 303750002 (CAPA-12-13292), 303750004 (CAPA-12-13308), 303750006 (CAPA-12-13293) and 303750008 (CAPA-12-13294).

#### **Additional Comments**

Additional comments were not required for this SDG.

#### **Electronic Packaging Comment**

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

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

**Method/Analysis Information**

**Product:** Ion Chromatography  
**Analytical Batch:** 1209599                      **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:

<b>Sample ID</b>	<b>Client ID</b>
303750002	CAPA-12-13292
303750004	CAPA-12-13308
303750006	CAPA-12-13293
303750008	CAPA-12-13294
1202650164	Method Blank (MB)
1202650165	303750002(CAPA-12-13292) Sample Duplicate (DUP)
1202650166	303750002(CAPA-12-13292) Post Spike (PS)
1202650167	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: 303750002 (CAPA-12-13292).

**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 Dilutions**

The samples in this SDG did not require dilutions.

**Sample Re-analysis**

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

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

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

**Manual Integrations**

The following samples from this sample group had to be manually integrated due to errors in the instrument software peak integration: 1202650165 (CAPA-12-13292), 1202650166 (CAPA-12-13292), 303750002 (CAPA-12-13292), 303750004 (CAPA-12-13308), 303750006 (CAPA-12-13293) and 303750008 (CAPA-12-13294).

**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:** 1210499                      **Method:** EPA 350.1 Nitrogen and Ammonia L  
**Prep Batch :** 1210496                      **Method:** EEPA 350.2 Prep

**Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
303750002	CAPA-12-13292
303750004	CAPA-12-13308
303750006	CAPA-12-13293
303750008	CAPA-12-13294
1202652345	Method Blank (MB)
1202652346	303750002(CAPA-12-13292) Sample Duplicate (DUP)
1202652347	303750002(CAPA-12-13292) Matrix Spike (MS)
1202652348	303750002(CAPA-12-13292) Matrix Spike Duplicate (MSD)
1202652349	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: 303750002 (CAPA-12-13292).

**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 following samples were re-analyzed due to their proximity to an overrange sample: 1202652345 (MB) and 1202652349 (LCS).

**Miscellaneous Information**

**Data Exception (DER) Documentation**

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

**Additional Comments**

Additional comments were not required for this SDG.

**Electronic Packaging Comment**

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

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

**Method/Analysis Information**

**Product:** Total Kjeldahl Nitrogen  
**Analytical Batch:** 1210493 **Method:** Nitrogen and Total Kjeldahl (TKN)  
**Prep Batch :** 1210489 **Method:** EEPA 351.2 Prep

**Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
303750001	CAPA-12-13282
303750003	CAPA-12-13307
303750005	CAPA-12-13283
303750007	CAPA-12-13284
1202652328	Method Blank (MB)
1202652329	303750001(CAPA-12-13282) Sample Duplicate (DUP)
1202652330	303750001(CAPA-12-13282) Matrix Spike (MS)
1202652331	303750001(CAPA-12-13282) Matrix Spike Duplicate (MSD)
1202652332	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: 303750001 (CAPA-12-13282).

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

The spike recovery falls outside of the established acceptance limits. Since both the spike duplicate recovery and the RPD between the spike and spike duplicate fall within acceptance limits, the data is reported. 1202652330 (CAPA-12-13282).

**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 values for the sample and duplicate are less than the Practical Quantitation Limit (PQL); therefore, the RPD is not applicable. 1202652329 (CAPA-12-13282).

**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: 1077098 1202652330 (CAPA-12-13282).

### **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:** 1210456  
**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:

<b>Sample ID</b>	<b>Client ID</b>
303750002	CAPA-12-13292
303750004	CAPA-12-13308
303750006	CAPA-12-13293
303750008	CAPA-12-13294
1202652204	Method Blank (MB)
1202652207	303750002(CAPA-12-13292) Sample Duplicate (DUP)
1202652210	303750002(CAPA-12-13292) Post Spike (PS)
1202652211	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: 303750002 (CAPA-12-13292).

**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 values for the sample and duplicate are less than the Practical Quantitation Limit (PQL); therefore, the RPD is not applicable. 1202652207 (CAPA-12-13292).

**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: 1202652207 (CAPA-12-13292), 1202652210 (CAPA-12-13292), 303750002 (CAPA-12-13292), 303750004 (CAPA-12-13308), 303750006 (CAPA-12-13293) and 303750008 (CAPA-12-13294).

**Sample Re-analysis**

The following samples were reanalyzed due to PS failure: 1202652207 (CAPA-12-13292), 1202652210 (CAPA-12-13292) and 303750002 (CAPA-12-13292).

**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.

**Additional Comments**

Additional comments were not required for this SDG.

**Electronic Packaging Comment**

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

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

**Method/Analysis Information**

<b>Product:</b>	<b>Total Phosphorus</b>		
<b>Analytical Batch:</b>	1209639	<b>Method:</b>	EPA 365.4 Phosphorus and Total in
<b>Prep Batch :</b>	1209638	<b>Method:</b>	EEPA 365.4 Prep

**Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
303750002	CAPA-12-13292
303750004	CAPA-12-13308
303750006	CAPA-12-13293
303750008	CAPA-12-13294
1202650265	Method Blank (MB)
1202650266	303750002(CAPA-12-13292) Sample Duplicate (DUP)
1202650267	303750002(CAPA-12-13292) Matrix Spike (MS)
1202650268	303750002(CAPA-12-13292) Matrix Spike Duplicate (MSD)
1202650269	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: 303750002 (CAPA-12-13292).

**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 following samples were re-analyzed due to their proximity to an overrange sample: 1202650266 (CAPA-12-13292) and 303750002 (CAPA-12-13292).

**Miscellaneous Information**

**Data Exception (DER) Documentation**

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

**Additional Comments**

Additional comments were not required for this SDG.

**Electronic Packaging Comment**

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

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

**Method/Analysis Information**

**Product:** Solids, Total Dissolved  
**Analytical Batch:** 1210914                      **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:

<b>Sample ID</b>	<b>Client ID</b>
303750002	CAPA-12-13292
303750004	CAPA-12-13308
303750006	CAPA-12-13293
303750008	CAPA-12-13294
1202653368	Method Blank (MB)
1202653369	303750002(CAPA-12-13292) Sample Duplicate (DUP)
1202653371	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: 303750002 (CAPA-12-13292).

**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**

Data exception reports (DERs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents.

**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:** 1212148      **Method:** EPA 310.1 Total Alkalinity

**Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
303750002	CAPA-12-13292
303750004	CAPA-12-13308
303750006	CAPA-12-13293
303750008	CAPA-12-13294
1202656549	Method Blank (MB)
1202656551	303613003(CAPA-12-13272) Sample Duplicate (DUP)
1202656554	303613003(CAPA-12-13272) Matrix Spike (MS)
1202656556	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-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: 303613003 (CAPA-12-13272).

**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**

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

**Additional Comments**

Additional comments were not required for this SDG.

**Electronic Packaging Comment**

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

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

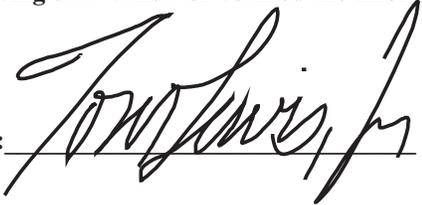
**Certification Statement**

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

**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: 31May12

# **Sample Data Summary**

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## Certificate of Analysis Report for

ARSL001 ARS International (63641-10)

Client SDG: 12-1274 GEL Work Order: 303750

**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



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# GEL LABORATORIES LLC

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## Certificate of Analysis

Report Date: May 30, 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: 12-1274

Client Sample ID: CAPA-12-13282  
Sample ID: 303750001  
Matrix: W  
Collect Date: 02-MAY-12 13:27  
Receive Date: 04-MAY-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	0.540	0.330	1.00	mg/L	1	TSM	05/11/12	1956	1210398	1
Nutrient Analysis											
Nitrogen, Total Kjeldahl (TKN) "As Received"											
Nitrogen, Total Kjeldahl	U	ND	0.035	0.100	mg/L	1	KLP1	05/09/12	1603	1210493	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	05/09/12	1246	1210489

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 351.2	

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## Certificate of Analysis

Report Date: May 30, 2012

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 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: 12-1274

Client Sample ID: CAPA-12-13292  
 Sample ID: 303750002  
 Matrix: W  
 Collect Date: 02-MAY-12 13:27  
 Receive Date: 04-MAY-12  
 Collector: Client

Project: ESHL00210  
 Client ID: ARSL001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Conductivity Analysis</b>											
EPA120.1 Specific Conductivity "As Received"											
Conductivity		125	1.00	1.00	umhos/cm	1	TXT1	05/11/12	1748	1211663	1
<b>Electrode Analysis</b>											
EPA 150.1 pH "As Received"											
pH at Temp 15.0C	H	7.97	0.010	0.100	SU	1	TXT1	05/04/12	1644	1209763	2
<b>Ion Chromatography</b>											
EPA 300.0 Anions Liquid 28 day "As Received"											
Bromide	U	ND	0.067	0.200	mg/L	1	MAR1	05/09/12	0646	1209599	3
Chloride		1.85	0.067	0.200	mg/L	1					
Fluoride		0.211	0.033	0.100	mg/L	1					
Sulfate		1.94	0.133	0.400	mg/L	1					
<b>Nutrient Analysis</b>											
EPA 350.1 Nitrogen, Ammonia L "As Received"											
Nitrogen, Ammonia		0.107	0.017	0.050	mg/L	1	KLP1	05/09/12	1002	1210499	4
EPA 353.2 Nitrogen, Nitrate/Nitrite "As Received"											
Nitrogen, Nitrate/Nitrite	J	0.297	0.170	0.500	mg/L	10	AXH3	05/08/12	1451	1210456	5
EPA 365.4 Phosphorus, Total in "As Received"											
Phosphorus, Total as P		0.0663	0.017	0.050	mg/L	1	KLP1	05/09/12	1509	1209639	6
<b>Solids Analysis</b>											
EPA 160.1 Solids, Dissolved-F "As Received"											
Total Dissolved Solids		121	3.40	14.3	mg/L		LYG1	05/09/12	1547	1210914	7
<b>Titration Analysis</b>											
EPA 310.1 Total Alkalinity "As Received"											
Alkalinity, Total as CaCO3		55.4	0.725	1.00	mg/L		LXA1	05/14/12	1744	1212148	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	05/08/12	1541	1210496
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	KLP1	05/09/12	1245	1209638

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## Certificate of Analysis

Report Date: May 30, 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: 12-1274

Client Sample ID: CAPA-12-13292  
Sample ID: 303750002

Project: ESHL00210  
Client ID: ARSL001

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

# GEL LABORATORIES LLC

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## Certificate of Analysis

Report Date: May 30, 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: 12-1274

Client Sample ID: CAPA-12-13307  
 Sample ID: 303750003  
 Matrix: W  
 Collect Date: 02-MAY-12 13:27  
 Receive Date: 04-MAY-12  
 Collector: Client

Project: ESHL00210  
 Client ID: ARSL001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Carbon Analysis</b>											
SW 9060 Total Organic Carbon "As Received"											
Total Organic Carbon Average	J	0.442	0.330	1.00	mg/L	1	TSM	05/11/12	2030	1210398	1
<b>Nutrient Analysis</b>											
Nitrogen, Total Kjeldahl (TKN) "As Received"											
Nitrogen, Total Kjeldahl	U	ND	0.035	0.100	mg/L	1	KLP1	05/09/12	1606	1210493	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	05/09/12	1246	1210489

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 351.2	

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## Certificate of Analysis

Report Date: May 30, 2012

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

Contact: Keith Greene  
 Project: LANL-WQH Water Samples

Client SDG: 12-1274

Client Sample ID: CAPA-12-13308  
 Sample ID: 303750004  
 Matrix: W  
 Collect Date: 02-MAY-12 13:27  
 Receive Date: 04-MAY-12  
 Collector: Client

Project: ESHL00210  
 Client ID: ARSL001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Conductivity Analysis</b>											
EPA120.1 Specific Conductivity "As Received"											
Conductivity		124	1.00	1.00	umhos/cm	1	TXT1	05/11/12	1748	1211663	1
<b>Electrode Analysis</b>											
EPA 150.1 pH "As Received"											
pH at Temp 13.8C	H	8.01	0.010	0.100	SU	1	TXT1	05/04/12	1649	1209763	2
<b>Ion Chromatography</b>											
EPA 300.0 Anions Liquid 28 day "As Received"											
Bromide	U	ND	0.067	0.200	mg/L	1	MAR1	05/09/12	0825	1209599	3
Chloride		1.94	0.067	0.200	mg/L	1					
Fluoride		0.221	0.033	0.100	mg/L	1					
Sulfate		2.03	0.133	0.400	mg/L	1					
<b>Nutrient Analysis</b>											
EPA 350.1 Nitrogen, Ammonia L "As Received"											
Nitrogen, Ammonia	J	0.030	0.017	0.050	mg/L	1	KLP1	05/09/12	1010	1210499	4
EPA 353.2 Nitrogen, Nitrate/Nitrite "As Received"											
Nitrogen, Nitrate/Nitrite	J	0.248	0.085	0.250	mg/L	5	AXH3	05/08/12	1403	1210456	5
EPA 365.4 Phosphorus, Total in "As Received"											
Phosphorus, Total as P		0.102	0.017	0.050	mg/L	1	KLP1	05/09/12	1502	1209639	6
<b>Solids Analysis</b>											
EPA 160.1 Solids, Dissolved-F "As Received"											
Total Dissolved Solids		70.0	3.40	14.3	mg/L		LYG1	05/09/12	1547	1210914	7
<b>Titration Analysis</b>											
EPA 310.1 Total Alkalinity "As Received"											
Alkalinity, Total as CaCO3		55.9	0.725	1.00	mg/L		LXA1	05/14/12	1749	1212148	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	05/08/12	1541	1210496
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	KLP1	05/09/12	1245	1209638

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## Certificate of Analysis

Report Date: May 30, 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: 12-1274

Client Sample ID: CAPA-12-13308  
Sample ID: 303750004

Project: ESHL00210  
Client ID: ARSL001

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

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## Certificate of Analysis

Report Date: May 30, 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: 12-1274

Client Sample ID: CAPA-12-13283  
Sample ID: 303750005  
Matrix: W  
Collect Date: 02-MAY-12 11:17  
Receive Date: 04-MAY-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	U	ND	0.330	1.00	mg/L	1	TSM	05/11/12	2104	1210398	1
Nutrient Analysis											
Nitrogen, Total Kjeldahl (TKN) "As Received"											
Nitrogen, Total Kjeldahl	U	ND	0.035	0.100	mg/L	1	KLP1	05/09/12	1607	1210493	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	05/09/12	1246	1210489

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 351.2	

# GEL LABORATORIES LLC

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## Certificate of Analysis

Report Date: May 30, 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: 12-1274

Client Sample ID: CAPA-12-13293  
 Sample ID: 303750006  
 Matrix: W  
 Collect Date: 02-MAY-12 11:17  
 Receive Date: 04-MAY-12  
 Collector: Client

Project: ESHL00210  
 Client ID: ARSL001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Conductivity Analysis</b>											
EPA120.1 Specific Conductivity "As Received"											
Conductivity		115	1.00	1.00	umhos/cm	1	TXT1	05/11/12	1748	1211663	1
<b>Electrode Analysis</b>											
EPA 150.1 pH "As Received"											
pH at Temp 13.7C	H	7.89	0.010	0.100	SU	1	TXT1	05/04/12	1651	1209763	2
<b>Ion Chromatography</b>											
EPA 300.0 Anions Liquid 28 day "As Received"											
Bromide	U	ND	0.067	0.200	mg/L	1	MAR1	05/09/12	0858	1209599	3
Chloride		1.70	0.067	0.200	mg/L	1					
Fluoride		0.188	0.033	0.100	mg/L	1					
Sulfate		1.78	0.133	0.400	mg/L	1					
<b>Nutrient Analysis</b>											
EPA 350.1 Nitrogen, Ammonia L "As Received"											
Nitrogen, Ammonia		0.0798	0.017	0.050	mg/L	1	KLP1	05/09/12	1011	1210499	4
EPA 353.2 Nitrogen, Nitrate/Nitrite "As Received"											
Nitrogen, Nitrate/Nitrite		0.472	0.085	0.250	mg/L	5	AXH3	05/08/12	1404	1210456	5
EPA 365.4 Phosphorus, Total in "As Received"											
Phosphorus, Total as P		0.0906	0.017	0.050	mg/L	1	KLP1	05/09/12	1503	1209639	6
<b>Solids Analysis</b>											
EPA 160.1 Solids, Dissolved-F "As Received"											
Total Dissolved Solids		131	3.40	14.3	mg/L		LYG1	05/09/12	1547	1210914	7
<b>Titration Analysis</b>											
EPA 310.1 Total Alkalinity "As Received"											
Alkalinity, Total as CaCO3		52.3	0.725	1.00	mg/L		LXA1	05/14/12	1759	1212148	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	05/08/12	1541	1210496
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	KLP1	05/09/12	1245	1209638

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## Certificate of Analysis

Report Date: May 30, 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: 12-1274

Client Sample ID: CAPA-12-13293  
Sample ID: 303750006

Project: ESHL00210  
Client ID: ARSL001

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

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## Certificate of Analysis

Report Date: May 30, 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: 12-1274

Client Sample ID: CAPA-12-13284  
 Sample ID: 303750007  
 Matrix: W  
 Collect Date: 02-MAY-12 10:40  
 Receive Date: 04-MAY-12  
 Collector: Client

Project: ESHL00210  
 Client ID: ARSL001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Carbon Analysis</b>											
SW 9060 Total Organic Carbon "As Received"											
Total Organic Carbon Average	J	0.433	0.330	1.00	mg/L	1	TSM	05/11/12	2137	1210398	1
<b>Nutrient Analysis</b>											
Nitrogen, Total Kjeldahl (TKN) "As Received"											
Nitrogen, Total Kjeldahl	U	ND	0.035	0.100	mg/L	1	KLP1	05/09/12	1608	1210493	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	05/09/12	1246	1210489

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 351.2	

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## Certificate of Analysis

Report Date: May 30, 2012

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 TA-03, SM271, Drop Pt. 02U, Rm111  
 Los Alamos, New Mexico 87545

Contact: Keith Greene  
 Project: LANL-WQH Water Samples

Client SDG: 12-1274

Client Sample ID: CAPA-12-13294  
 Sample ID: 303750008  
 Matrix: W  
 Collect Date: 02-MAY-12 10:40  
 Receive Date: 04-MAY-12  
 Collector: Client

Project: ESHL00210  
 Client ID: ARSL001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Conductivity Analysis</b>											
EPA120.1 Specific Conductivity "As Received"											
Conductivity		166	1.00	1.00	umhos/cm	1	TXT1	05/11/12	1748	1211663	1
<b>Electrode Analysis</b>											
EPA 150.1 pH "As Received"											
pH at Temp 15.0C	H	8.33	0.010	0.100	SU	1	TXT1	05/04/12	1654	1209763	2
<b>Ion Chromatography</b>											
EPA 300.0 Anions Liquid 28 day "As Received"											
Bromide	U	ND	0.067	0.200	mg/L	1	MAR1	05/09/12	0930	1209599	3
Chloride		2.89	0.067	0.200	mg/L	1					
Fluoride		0.572	0.033	0.100	mg/L	1					
Sulfate		3.35	0.133	0.400	mg/L	1					
<b>Nutrient Analysis</b>											
EPA 350.1 Nitrogen, Ammonia L "As Received"											
Nitrogen, Ammonia	J	0.0397	0.017	0.050	mg/L	1	KLP1	05/09/12	1012	1210499	4
EPA 353.2 Nitrogen, Nitrate/Nitrite "As Received"											
Nitrogen, Nitrate/Nitrite		0.386	0.085	0.250	mg/L	5	AXH3	05/08/12	1405	1210456	5
EPA 365.4 Phosphorus, Total in "As Received"											
Phosphorus, Total as P		0.0915	0.017	0.050	mg/L	1	KLP1	05/09/12	1504	1209639	6
<b>Solids Analysis</b>											
EPA 160.1 Solids, Dissolved-F "As Received"											
Total Dissolved Solids		149	3.40	14.3	mg/L		LYG1	05/09/12	1547	1210914	7
<b>Titration Analysis</b>											
EPA 310.1 Total Alkalinity "As Received"											
Alkalinity, Total as CaCO3		74.6	0.725	1.00	mg/L		LXA1	05/14/12	1803	1212148	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	05/08/12	1541	1210496
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	KLP1	05/09/12	1245	1209638

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## Certificate of Analysis

Report Date: May 30, 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: 12-1274

Client Sample ID: CAPA-12-13294

Project: ESHL00210

Sample ID: 303750008

Client ID: ARSL001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
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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 30, 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: 303750

Paramname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Carbon Analysis</b>											
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
<b>Conductivity Analysis</b>											
Batch	1211663										
QC1202655278	303613003	DUP									
Conductivity		312		312	umhos/cm	0.00		(0%-10%)	TXT1	05/11/12	17:48
QC1202655279	LCS										
Conductivity	1410			1420	umhos/cm			(95%-105%)		05/11/12	17:48
<b>Electrode Analysis</b>											
Batch	1209763										
QC1202650549	303613003	DUP									
pH		H	7.66	H	7.67	SU	0.130	(0%-10%)	TXT1	05/04/12	16:34
QC1202650550	LCS										
pH	7.00			7.02	SU			(99%-101%)		05/04/12	16:25
<b>Ion Chromatography</b>											
Batch	1209599										
QC1202650165	303750002	DUP									
Bromide		U	ND	U	ND	mg/L	N/A		MAR1	05/09/12	07:19
Chloride			1.85		1.93	mg/L	4.36	(0%-20%)			
Fluoride			0.211		0.219	mg/L	3.35	^	(+/-0.100)		
Sulfate			1.94		2.01	mg/L	3.53	^	(+/-0.400)		
QC1202650167	LCS										
Bromide	2.50			2.66	mg/L			106	(90%-110%)	05/09/12	06:13
Chloride	10.0			9.77	mg/L			97.7	(90%-110%)		
Fluoride	5.00			5.08	mg/L			102	(90%-110%)		
Sulfate	20.0			19.9	mg/L			99.7	(90%-110%)		
QC1202650164	MB										
Bromide			U		ND	mg/L				05/09/12	05:40
Chloride			U		ND	mg/L					
Fluoride			U		ND	mg/L					
Sulfate			U		ND	mg/L					

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## QC Summary

Workorder: 303750

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Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Ion Chromatography</b>											
Batch	1209599										
QC1202650166	303750002	PS									
Bromide	2.50	U	ND	2.59	mg/L		103	(90%-110%)	MAR1	05/09/12	07:52
Chloride	10.0		1.85	12.0	mg/L		101	(90%-110%)			
Fluoride	5.00		0.211	5.30	mg/L		102	(90%-110%)			
Sulfate	20.0		1.94	21.9	mg/L		99.7	(90%-110%)			
<b>Nutrient Analysis</b>											
Batch	1209639										
QC1202650266	303750002	DUP									
Phosphorus, Total as P			0.0663	0.071	mg/L	6.85 ^		(+/-0.050)	KLP1	05/09/12	15:10
QC1202650269	LCS										
Phosphorus, Total as P	1.00			1.08	mg/L		108	(84%-122%)		05/09/12	14:57
QC1202650265	MB										
Phosphorus, Total as P			U	ND	mg/L					05/09/12	14:56
QC1202650267	303750002	MS									
Phosphorus, Total as P	1.00		0.0663	1.08	mg/L		101	(46%-146%)		05/09/12	15:00
QC1202650268	303750002	MSD									
Phosphorus, Total as P	1.00		0.0663	1.05	mg/L	2.82	98.4	(0%-21%)		05/09/12	15:01
Batch	1210456										
QC1202652207	303750002	DUP									
Nitrogen, Nitrate/Nitrite		J	0.297 J	0.229	mg/L	25.9 ^		(+/-0.500)	AXH3	05/08/12	14:52
QC1202652211	LCS										
Nitrogen, Nitrate/Nitrite	1.00			1.07	mg/L		107	(90%-110%)		05/08/12	12:56
QC1202652204	MB										
Nitrogen, Nitrate/Nitrite			U	ND	mg/L					05/08/12	12:55
QC1202652210	303750002	PS									
Nitrogen, Nitrate/Nitrite	1.00	J	0.0297	1.09	mg/L		106	(90%-110%)		05/08/12	14:54
Batch	1210493										
QC1202652329	303750001	DUP									
Nitrogen, Total Kjeldahl		U	ND U	ND	mg/L	N/A			KLP1	05/09/12	16:03
QC1202652332	LCS										
Nitrogen, Total Kjeldahl	1.00			1.04	mg/L		104	(90%-110%)		05/09/12	16:02
QC1202652328	MB										
Nitrogen, Total Kjeldahl			U	ND	mg/L					05/09/12	16:01
QC1202652330	303750001	MS									
Nitrogen, Total Kjeldahl	1.00	U	ND	1.17	mg/L		116*	(90%-110%)		05/09/12	16:04
QC1202652331	303750001	MSD									
Nitrogen, Total Kjeldahl	1.00	U	ND	1.07	mg/L	8.93	106	(0%-20%)		05/09/12	16:05
Batch	1210499										
QC1202652346	303750002	DUP									
Nitrogen, Ammonia			0.107	0.114	mg/L	6.33 ^		(+/-0.050)	KLP1	05/09/12	10:03
QC1202652349	LCS										
Nitrogen, Ammonia	1.00			1.06	mg/L		106	(90%-110%)		05/09/12	10:08
QC1202652345	MB										
Nitrogen, Ammonia			J	0.0337	mg/L					05/09/12	10:07
QC1202652347	303750002	MS									
Nitrogen, Ammonia	1.00		0.107	1.20	mg/L		109	(90%-110%)		05/09/12	10:09
QC1202652348	303750002	MSD									

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## QC Summary

Workorder: 303750

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Nutrient Analysis</b>											
Batch	1210499										
Nitrogen, Ammonia	1.00	0.107		1.17	mg/L	2.53	106	(0%-15%)		05/09/12	10:10
<b>Solids Analysis</b>											
Batch	1210914										
QC1202653369	303750002 DUP										
Total Dissolved Solids		121		127	mg/L	4.60		(0%-10%)	LYG1	05/09/12	15:47
QC1202653371	LCS										
Total Dissolved Solids	300			300	mg/L		100	(95%-105%)		05/09/12	15:47
QC1202653368	MB										
Total Dissolved Solids			U	ND	mg/L					05/09/12	15:47
<b>Titration Analysis</b>											
Batch	1212148										
QC1202656551	303613003 DUP										
Alkalinity, Total as CaCO3		84.9		84.4	mg/L	0.612		(0%-20%)	LXA1	05/14/12	17:21
Carbonate alkalinity (CaCO3)	U	ND	U	ND	mg/L	N/A					
QC1202656556	LCS										
Alkalinity, Total as CaCO3	50.0			50.7	mg/L		101	(90%-110%)		05/14/12	14:49
QC1202656549	MB										
Alkalinity, Total as CaCO3			U	ND	mg/L					05/14/12	14:36
Carbonate alkalinity (CaCO3)			U	ND	mg/L						
QC1202656554	303613003 MS										
Alkalinity, Total as CaCO3	50.0	84.9		136	mg/L		101	(80%-120%)		05/14/12	17:28

**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
- J Value is estimated
- K Analyte present. Reported value may be biased high. Actual value is expected to be lower.

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## QC Summary

Workorder: 303750

Page 4 of 4

Parname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
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.								
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.								
^		RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.								
d		5-day BOD--The 2:1 depletion requirement was not met for this sample								
h		Preparation or preservation holding time was exceeded								

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

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

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

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

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

# Miscellaneous

**DATA EXCEPTION REPORT**

<b>Mo.Day Yr.</b> 04-MAY-12	<b>Division:</b> Industrial	<b>Quality Criteria:</b> Specifications	<b>Type:</b> Process
<b>Instrument Type:</b> ELECTRODE	<b>Test / Method:</b> EPA 150.1	<b>Matrix Type:</b> Liquid	<b>Client Code:</b> EMPL, ESHL, KMRN
<b>Batch ID:</b> 1209763	<b>Sample Numbers:</b> See below.		
<b>Potentially affected work order(s)(SDG): 303606,303613(12-1268),303626,303750(12-1274)</b>			
<b>Application Issues:</b> Sample received out of holding			
<b>Specification and Requirements Exception Description:</b>		<b>DER Disposition:</b>	
<p>1. Sample received out of holding:</p> <p>303606 001</p> <p>303613 003,007</p> <p>303626 003</p> <p>303750 002,004,006,008</p>		<p>1. Samples were received out of holding.</p>	

**Originator's Name:**

Travis Tola 04-MAY-12

**Data Validator/Group Leader:**

Julia Hamilton 14-MAY-12

**DATA EXCEPTION REPORT**

<b>Mo.Day Yr.</b> 09-MAY-12	<b>Division:</b> Industrial	<b>Quality Criteria:</b> Specifications	<b>Type:</b> Process
<b>Instrument Type:</b> LACHAT Flow Injection Analyzer	<b>Test / Method:</b> EPA 351.2	<b>Matrix Type:</b> Liquid	<b>Client Code:</b> AECM, ESHL
<b>Batch ID:</b> 1210493	<b>Sample Numbers:</b> See below.		
<b>Potentially affected work order(s)(SDG): 303750(12-1274),303759,303859(12-1277)</b>			
<b>Application Issues:</b> Failed Recovery for MS/PS			
<b>Specification and Requirements Exception Description:</b>		<b>DER Disposition:</b>	
<p>1. Failed Recovery for MS: QC 1202652330MS</p> <p>1. Failed Recovery for MS (for WOs 303750 and 303859): QC 1202652330MS</p>		<p>1. The spike recovery falls outside of the established acceptance limits. Since both the spike duplicate recovery and the RPD between the spike and spike duplicate fall within acceptance limits, the data is reported.</p> <p>2. The spike recovery falls outside of the GEL acceptance limits but within the client specified limits.</p>	

**Originator's Name:**

Kristen Parson 09-MAY-12

**Data Validator/Group Leader:**

Julia Hamilton 09-MAY-12

# **Radiological Analysis**

**Radiochemistry Case Narrative**  
**ARS International (ARSL)**  
**SDG 12-1274**  
**Work Order 303750**

**Method/Analysis Information**

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

<b>Sample ID</b>	<b>Client ID</b>
303750001	CAPA-12-13282
303750003	CAPA-12-13307
303750005	CAPA-12-13283
303750007	CAPA-12-13284
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 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. 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**  
303750001      CAPA-12-13282

303750003	CAPA-12-13307
303750005	CAPA-12-13283
303750007	CAPA-12-13284
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**

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.

**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

<b>Sample ID</b>	<b>Client ID</b>
303750001	CAPA-12-13282
303750003	CAPA-12-13307
303750005	CAPA-12-13283
303750007	CAPA-12-13284
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 303750003 (CAPA-12-13307) 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 303750003 (CAPA-12-13307) 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**

<b>Product:</b>	<b>GammaSpec</b>
Analytical Method:	EPA 901.1
Analytical Batch Number:	1208334

<b>Sample ID</b>	<b>Client ID</b>
303750001	CAPA-12-13282
303750003	CAPA-12-13307
303750005	CAPA-12-13283
303750007	CAPA-12-13284
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, November 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:** GFPC, Sr90, liquid  
**Analytical Method:** EPA 905.0 Modified  
**Analytical Batch Number:** 1210551

<b>Sample ID</b>	<b>Client ID</b>
303750001	CAPA-12-13282
303750003	CAPA-12-13307
303750005	CAPA-12-13283
303750007	CAPA-12-13284
1202652528	Method Blank (MB)
1202652529	303489001(CAPA-12-13278) Sample Duplicate (DUP)
1202652530	303489001(CAPA-12-13278) Matrix Spike (MS)
1202652531	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 1202652528 (MB) and 1202652531 (LCS) were changed to 1.0 per client request.

**Designated QC**

The following sample was used for QC: 303489001 (CAPA-12-13278). The QC was from ARSL work order 303489.

**QC Information**

All of the QC samples met the required acceptance limits.

**CSU**

The blank 1202652528 (MB) 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**

Sample 1202652528 (MB) was recounted due to high MDC. The recount is reported.

**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, 1202652530 (CAPA-12-13278), 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.

**Method/Analysis Information**

**Product:**

**WSP-GrossA/B**

Analytical Method: EPA 900.0/SW846 9310

Analytical Batch Number: 1212200

<b>Sample ID</b>	<b>Client ID</b>
303750001	CAPA-12-13282
303750003	CAPA-12-13307
303750005	CAPA-12-13283
303750007	CAPA-12-13284
1202656703	Method Blank (MB)
1202656704	303859001(CAPA-12-13285) Sample Duplicate (DUP)
1202656705	303859001(CAPA-12-13285) Matrix Spike (MS)
1202656706	303859001(CAPA-12-13285) Matrix Spike Duplicate (MSD)
1202656707	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 1202656703 (MB) and 1202656707 (LCS) were changed to 1.0 per client request.

**Designated QC**

The following sample was used for QC: 303859001 (CAPA-12-13285). The QC was from ARSL work order 303859.

**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.

#### **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, 1202656705 (CAPA-12-13285) and 1202656706 (CAPA-12-13285), aliquots were 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

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### Qualifier Definition Report for

ARSL001 ARS International (63641-10)

Client SDG: 12-1274 GEL Work Order: 303750

**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: 30 MAY 2012**

**Title: Analyst I**

**DATA EXCEPTION REPORT**

<b>Mo.Day Yr.</b> 14-MAY-12	<b>Division:</b> Radiochemistry	<b>Quality Criteria:</b> Specifications	<b>Type:</b> Process
<b>Instrument Type:</b> ALPHA SPECTROMETER	<b>Test / Method:</b> DOE EML HASL-300, Am-05-RC Modified	<b>Matrix Type:</b> Liquid	<b>Client Code:</b> ESHL
<b>Batch ID:</b> 1207310	<b>Sample Numbers:</b> See Below		
<b>Potentially affected work order(s)(SDG): 303221(12-1236),303234(12-1241),303489(12-1254),303750(12-1274)</b>			
<b>Application Issues:</b> RDL less than MDA			
<b>Specification and Requirements Exception Description:</b>		<b>DER Disposition:</b>	
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**

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## 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 29, 2012

Client Sample ID: CAPA-12-13282  
 Sample ID: 303750001  
 Matrix: W  
 Collect Date: 02-MAY-12  
 Receive Date: 04-MAY-12  
 Collector: Client

Project: ESHL00210  
 Client ID: ARSL001

Parameter	Qualifier	Result	Uncertainty	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Alpha Spec Analysis</b>													
<i>Alphaspec Am241 Liquid "As Received"</i>													
Americium-241	U	0.0181	+/-0.0113	0.0723	+/-0.0113	0.050	pCi/L		JXD2	05/12/12	1152	1207310	1
<i>Alphaspec Pu, Liquid "As Received"</i>													
Plutonium-238	U	0.00	+/-0.00946	0.0465	+/-0.00946	0.050	pCi/L		JXD2	05/15/12	1833	1207311	2
Plutonium-239/240	U	0.00299	+/-0.00299	0.0394	+/-0.00299	0.050	pCi/L						
<i>Alphaspec U, Liquid "As Received"</i>													
Uranium-234		0.291	+/-0.0364	0.0644	+/-0.0414	1.00	pCi/L		JXD2	05/15/12	1740	1207313	3
Uranium-235/236	U	0.0119	+/-0.0104	0.046	+/-0.0105	1.00	pCi/L						
Uranium-238		0.173	+/-0.0265	0.0325	+/-0.029	0.500	pCi/L						
<b>Rad Gamma Spec Analysis</b>													
<i>Gammascpec "As Received"</i>													
Cesium-137	U	-2.04	+/-1.59	5.40	+/-1.59	8.00	pCi/L		MJH1	05/10/12	1033	1208334	4
Cobalt-60	U	2.75	+/-1.81	7.50	+/-1.81	8.00	pCi/L						
Neptunium-237	U	1.70	+/-3.04	11.2	+/-3.04	10.0	pCi/L						
Potassium-40	U	-4.93	+/-20.1	75.5	+/-20.1	10.0	pCi/L						
Sodium-22	U	3.94	+/-1.65	7.28	+/-1.65	10.0	pCi/L						
<b>Rad Gas Flow Proportional Counting</b>													
<i>GFPC, Sr90, liquid "As Received"</i>													
Strontium-90	U	-0.184	+/-0.127	0.452	+/-0.127	0.500	pCi/L		VXC2	05/25/12	0910	1210551	5
<i>WSP-GrossA/B "As Received"</i>													
Beta	U	0.914	+/-0.753	2.54	+/-0.758	3.00	pCi/L		BXF1	05/24/12	1025	1212200	6
Alpha	U	0.602	+/-0.571	2.09	+/-0.574	3.00	pCi/L		BXF1	05/25/12	0823	1212200	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	81.1	(50%-105%)
Plutonium-242 Tracer	Alphaspec Pu, Liquid "As Received"	1207311	71.7	(50%-105%)
Uranium-232 Tracer	Alphaspec U, Liquid "As Received"	1207313	60.0	(50%-105%)
Strontium Carrier	GFPC, Sr90, liquid "As Received"	1210551	93.3	(50%-105%)

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## 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 29, 2012

Contact: Keith Greene  
Project: LANL-WQH Water Samples

Client Sample ID: CAPA-12-13282  
Sample ID: 303750001

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).

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## Certificate of Analysis

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 Los Alamos, New Mexico 87545

Report Date: May 29, 2012

Contact: Keith Greene  
 Project: LANL-WQH Water Samples

Client Sample ID: CAPA-12-13307  
 Sample ID: 303750003  
 Matrix: W  
 Collect Date: 02-MAY-12  
 Receive Date: 04-MAY-12  
 Collector: Client

Project: ESHL00210  
 Client ID: ARSL001

Parameter	Qualifier	Result	Uncertainty	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Alpha Spec Analysis</b>													
<i>Alphaspec Am241 Liquid "As Received"</i>													
Americium-241	U	-0.00715	+/-0.0104	0.0571	+/-0.0104	0.050	pCi/L		JXD2	05/12/12	1152	1207310	1
<i>Alphaspec Pu, Liquid "As Received"</i>													
Plutonium-238	U	0.0106	+/-0.0106	0.0413	+/-0.0106	0.050	pCi/L		JXD2	05/15/12	1833	1207311	2
Plutonium-239/240	U	-0.00266	+/-0.0046	0.035	+/-0.00461	0.050	pCi/L						
<i>Alphaspec U, Liquid "As Received"</i>													
Uranium-234		0.270	+/-0.0369	0.0832	+/-0.0414	1.00	pCi/L		JXD2	05/16/12	1349	1207313	3
Uranium-235/236	U	0.00565	+/-0.00565	0.059	+/-0.00566	1.00	pCi/L						
Uranium-238		0.155	+/-0.0274	0.0416	+/-0.0295	0.500	pCi/L						
<b>Rad Gamma Spec Analysis</b>													
<i>Gammasespec "As Received"</i>													
Cesium-137	U	2.71	+/-1.78	6.98	+/-1.78	8.00	pCi/L		MJH1	05/10/12	1139	1208334	4
Cobalt-60	U	1.48	+/-1.50	6.24	+/-1.50	8.00	pCi/L						
Neptunium-237	U	1.23	+/-3.34	12.0	+/-3.34	10.0	pCi/L						
Potassium-40	U	-29.3	+/-20.7	77.2	+/-20.7	10.0	pCi/L						
Sodium-22	U	-1.81	+/-1.69	5.77	+/-1.69	10.0	pCi/L						
<b>Rad Gas Flow Proportional Counting</b>													
<i>GFPC, Sr90, liquid "As Received"</i>													
Strontium-90	U	0.0486	+/-0.127	0.434	+/-0.127	0.500	pCi/L		VXC2	05/25/12	0910	1210551	5
<i>WSP-GrossA/B "As Received"</i>													
Beta	U	2.46	+/-0.939	2.97	+/-0.964	3.00	pCi/L		BXF1	05/24/12	1025	1212200	6
Alpha	U	0.129	+/-0.460	2.00	+/-0.460	3.00	pCi/L		BXF1	05/25/12	0823	1212200	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	101	(50%-105%)
Plutonium-242 Tracer		Alphaspec Pu, Liquid "As Received"	1207311	79.2	(50%-105%)
Uranium-232 Tracer		Alphaspec U, Liquid "As Received"	1207313	47.7 *	(50%-105%)
Strontium Carrier		GFPC, Sr90, liquid "As Received"	1210551	91.1	(50%-105%)

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## 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 29, 2012

Contact: Keith Greene  
Project: LANL-WQH Water Samples

Client Sample ID: CAPA-12-13307  
Sample ID: 303750003

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).

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## 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 29, 2012

Contact: Keith Greene  
 Project: LANL-WQH Water Samples

Client Sample ID: CAPA-12-13283  
 Sample ID: 303750005  
 Matrix: W  
 Collect Date: 02-MAY-12  
 Receive Date: 04-MAY-12  
 Collector: Client

Project: ESHL00210  
 Client ID: ARSL001

Parameter	Qualifier	Result	Uncertainty	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Alpha Spec Analysis</b>													
<i>Alphaspec Am241 Liquid "As Received"</i>													
Americium-241	U	0.00563	+/-0.0154	0.0675	+/-0.0154	0.050	pCi/L		JXD2	05/12/12	1152	1207310	1
<i>Alphaspec Pu, Liquid "As Received"</i>													
Plutonium-238	U	0.00338	+/-0.0122	0.0525	+/-0.0122	0.050	pCi/L		JXD2	05/15/12	1833	1207311	2
Plutonium-239/240	U	0.00	+/-0.00676	0.0445	+/-0.00676	0.050	pCi/L						
<i>Alphaspec U, Liquid "As Received"</i>													
Uranium-234		0.245	+/-0.0342	0.0583	+/-0.0379	1.00	pCi/L		JXD2	05/15/12	1740	1207313	3
Uranium-235/236	U	0.0197	+/-0.0147	0.0417	+/-0.0147	1.00	pCi/L						
Uranium-238		0.108	+/-0.0213	0.0294	+/-0.0225	0.500	pCi/L						
<b>Rad Gamma Spec Analysis</b>													
<i>Gammasespec "As Received"</i>													
Cesium-137	U	4.58	+/-1.78	7.35	+/-1.78	8.00	pCi/L		MJH1	05/10/12	1139	1208334	4
Cobalt-60	U	0.270	+/-1.72	6.72	+/-1.72	8.00	pCi/L						
Neptunium-237	U	-0.141	+/-3.33	11.8	+/-3.33	10.0	pCi/L						
Potassium-40	U	-4.91	+/-16.7	67.5	+/-16.7	10.0	pCi/L						
Sodium-22	U	-2.92	+/-1.45	4.54	+/-1.45	10.0	pCi/L						
<b>Rad Gas Flow Proportional Counting</b>													
<i>GFPC, Sr90, liquid "As Received"</i>													
Strontium-90	U	0.400	+/-0.143	0.461	+/-0.147	0.500	pCi/L		VXC2	05/25/12	0910	1210551	5
<i>WSP-GrossA/B "As Received"</i>													
Beta		2.83	+/-0.874	2.69	+/-0.906	3.00	pCi/L		BXF1	05/24/12	0954	1212200	6
Alpha	U	2.11	+/-0.874	2.25	+/-0.893	3.00	pCi/L		BXF1	05/25/12	0830	1212200	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	76.1	(50%-105%)
Plutonium-242 Tracer		Alphaspec Pu, Liquid "As Received"	1207311	63.1	(50%-105%)
Uranium-232 Tracer		Alphaspec U, Liquid "As Received"	1207313	83.6	(50%-105%)
Strontium Carrier		GFPC, Sr90, liquid "As Received"	1210551	93.3	(50%-105%)

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## 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 29, 2012

Contact: Keith Greene  
Project: LANL-WQH Water Samples

Client Sample ID: CAPA-12-13283  
Sample ID: 303750005

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).

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## 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  
 Client Sample ID: CAPA-12-13284  
 Sample ID: 303750007  
 Matrix: W  
 Collect Date: 02-MAY-12  
 Receive Date: 04-MAY-12  
 Collector: Client

Report Date: May 29, 2012

Project: ESHL00210  
 Client ID: ARSL001

Parameter	Qualifier	Result	Uncertainty	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Alpha Spec Analysis</b>													
<i>Alphaspec Am241 Liquid "As Received"</i>													
Americium-241	U	-0.0282	+/-0.0147	0.0616	+/-0.0147	0.050	pCi/L		JXD2	05/12/12	1153	1207310	1
<i>Alphaspec Pu, Liquid "As Received"</i>													
Plutonium-238	U	0.00906	+/-0.00675	0.0469	+/-0.00677	0.050	pCi/L		JXD2	05/15/12	1833	1207311	2
Plutonium-239/240	U	0.00302	+/-0.00523	0.0398	+/-0.00523	0.050	pCi/L						
<i>Alphaspec U, Liquid "As Received"</i>													
Uranium-234		0.232	+/-0.0327	0.0597	+/-0.0361	1.00	pCi/L		JXD2	05/15/12	1740	1207313	3
Uranium-235/236	U	-0.0175	+/-0.00929	0.0427	+/-0.0093	1.00	pCi/L						
Uranium-238		0.0498	+/-0.0172	0.0302	+/-0.0175	0.500	pCi/L						
<b>Rad Gamma Spec Analysis</b>													
<i>Gammasespec "As Received"</i>													
Cesium-137	U	-0.604	+/-1.90	6.11	+/-1.90	8.00	pCi/L		MJH1	05/10/12	1139	1208334	4
Cobalt-60	U	-5.35	+/-1.52	4.89	+/-1.52	8.00	pCi/L						
Neptunium-237	U	-2.56	+/-2.34	8.09	+/-2.34	10.0	pCi/L						
Potassium-40	U	-0.388	+/-16.4	63.1	+/-16.4	10.0	pCi/L						
Sodium-22	U	0.972	+/-1.26	5.26	+/-1.26	10.0	pCi/L						
<b>Rad Gas Flow Proportional Counting</b>													
<i>GFPC, Sr90, liquid "As Received"</i>													
Strontium-90	U	-0.0459	+/-0.136	0.470	+/-0.136	0.500	pCi/L		VXC2	05/25/12	0910	1210551	5
<i>WSP-GrossA/B "As Received"</i>													
Beta	U	0.708	+/-0.798	2.72	+/-0.800	3.00	pCi/L		BXF1	05/24/12	0954	1212200	6
Alpha	U	1.66	+/-0.769	2.06	+/-0.782	3.00	pCi/L		BXF1	05/25/12	0830	1212200	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	83.0	(50%-105%)
Plutonium-242 Tracer		Alphaspec Pu, Liquid "As Received"	1207311	77.1	(50%-105%)
Uranium-232 Tracer		Alphaspec U, Liquid "As Received"	1207313	73.9	(50%-105%)
Strontium Carrier		GFPC, Sr90, liquid "As Received"	1210551	96.7	(50%-105%)

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## 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 29, 2012

Contact: Keith Greene  
Project: LANL-WQH Water Samples

Client Sample ID: CAPA-12-13284  
Sample ID: 303750007

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

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## QC Summary

Report Date: May 29, 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: 303750**

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date Time
<b>Rad Alpha Spec</b>										
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						

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## QC Summary

Workorder: 303750

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Parmname	NOM	Sample Qual	QC	Units	RER	REC%	Range	Anlst	Date Time
<b>Rad Alpha Spec</b>									
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					
<b>Rad Gamma Spec</b>									
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					

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## QC Summary

Workorder: 303750

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Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
<b>Rad Gamma Spec</b>											
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							
<b>Rad Gas Flow</b>											
Batch	1210551										
QC1202652529	303489001 DUP										
Strontium-90	U	-0.158	U	0.0466	pCi/L	0.383		(0-1) VXC2		05/25/1209:44	

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## QC Summary

Workorder: 303750

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Parname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
<b>Rad Gas Flow</b>											
Batch	1210551										
		Uncert:	+/-0.130	+/-0.137							
		TPU:	+/-0.130	+/-0.137							
		Yield:	90.0	91.1							
QC1202652531	LCS										
Strontium-90	25.1			22.4	pCi/L		89.3	(80%-120%)		05/25/1209:48	
		Uncert:		+/-0.633							
		TPU:		+/-1.92							
		Yield:		94.4							
QC1202652528	MB										
Strontium-90			U	0.228	pCi/L					05/25/1216:27	
		Uncert:		+/-0.133							
		TPU:		+/-0.134							
		Yield:		90.0							
QC1202652530	303489001	MS									
Strontium-90	126	U	-0.158	118	pCi/L		93.5	(75%-125%)		05/25/1209:48	
		Uncert:	+/-0.130	+/-3.19							
		TPU:	+/-0.130	+/-9.95							
		Yield:	90.0	95.6							
Batch	1212200										
QC1202656704	303859001	DUP									
Alpha		U	0.746	U	-0.162	pCi/L	0.463	(0-1)	BXF1	05/25/1208:31	
		Uncert:	+/-0.543	+/-0.433							
		TPU:	+/-0.547	+/-0.433							
Beta		U	1.47	U	1.15	pCi/L	0.109	(0-1)		05/24/1210:00	
		Uncert:	+/-0.722	+/-0.700							
		TPU:	+/-0.733	+/-0.707							
QC1202656707	LCS										
Alpha	12.0			11.4	pCi/L		94.4	(80%-120%)		05/25/1208:15	
		Uncert:		+/-0.568							
		TPU:		+/-1.13							
Beta	50.2			56.3	pCi/L		112	(80%-120%)		05/24/1207:49	
		Uncert:		+/-0.985							
		TPU:		+/-4.83							
QC1202656703	MB										
Alpha			U	-0.0173	pCi/L					05/25/1208:31	
		Uncert:		+/-0.0535							
		TPU:		+/-0.0536							
Beta			U	-0.0467	pCi/L					05/24/1209:56	
		Uncert:		+/-0.149							
		TPU:		+/-0.149							
QC1202656705	303859001	MS									
Alpha	241	U	0.746	221	pCi/L		91.8	(75%-125%)		05/25/1208:15	
		Uncert:	+/-0.543	+/-11.4							
		TPU:	+/-0.547	+/-21.9							
Beta	1000	U	1.47	1120	pCi/L		111	(75%-125%)		05/24/1207:49	
		Uncert:	+/-0.722	+/-19.8							
		TPU:	+/-0.733	+/-95.2							
QC1202656706	303859001	MSD									
Alpha	241	U	0.746	248	pCi/L	0.296	103	(0-1)		05/25/1208:15	

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## QC Summary

Workorder: 303750

Page 5 of 6

Parmname	NOM	Sample Qual	QC	Units	RER	REC%	Range	Anlst	Date Time
<b>Rad Gas Flow</b>									
Batch	1212200								
		Uncert:	+/-0.543						
		TPU:	+/-0.547						
Beta	1000	U	1.47	1130	pCi/L	0.0276	112	(0-1)	05/24/1207:49
		Uncert:	+/-0.722						
		TPU:	+/-0.733						

**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.

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## QC Summary

Workorder: 303750

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.