

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

Chain of Custody/Analysis Request

COC/Lab Request #:
2013-917

Page 1 of 1

Client Contact:

Lab Agreement # : 126310011

Site Name: Los Alamos National Laboratory

Project Number :

Analysis Turnaround Time:

24 Hour - ☐ Other - ☐

7 Day - ☐

14 Day - ☐

21 Day - ☐

28 Day - ☒

Rad Screening Info:

Yes, Below Background

Field Sample ID

Sample Date

Sample
Time

Sample
Matrix

WSP-CL04

WSP-GENINORG

WSP-GrossA/B

WSP-Met+B+SN+SR+U

WSP-NH3+NO3/NO2+PO4

WSP-RAD

WSP-TKN+TOC

Special Instructions:

CAPU-13-34776

Jun 4 2013

11:36

W

1

1

1

1

1

1

1

CAPU-13-34784

Jun 4 2013

11:36

W

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1

1

1

1

1

Special Instructions:

Relinquished by:

Relinquished by:

Relinquished by:

Date/Time:

Date/Time:

Date/Time:

Received by:

Received by:

Received by:

6/5/13 3:00

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4238 EVENT NAME: LA/Pueblo (TA-21 and General Surveillance Monitoring Group)
Q3 MY2013 Sampling
Event_Pueblo

SAMPLE ID: CAPU-13-34776 WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		06/04/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1136	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	6 SP
LOCATION ID: R-24		↓	FIELD PREP:	UF	OK
LOCATION TYPE: MON		↓	FIELD QC TYPE: REG		↓
PORT: SINGLE COMPLETION		↓	SAMPLE USAGE: INV		↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-GrossA/B	1 LITER POLY	1	NONE	Y	NA
↓	WSP-RAD	1 GAL POLY	1	HNO3	↓	↓
↓	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS:

Sampled within 50' of running diesel generator

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen 4.61 mg/L Oxidation-Reduction Potential 177.9 MV pH 7.80 SU
Specific Conductance 242 uS/cm Temperature 29.09 deg C Turbidity 0.6 NTU

COLLECTED BY (PRINT) A. Vigil

RELINQUISHED BY (Printed Name) David Fellenz (Signature) <i>[Signature]</i>	Date/Time 6/4/13 1235	RECEIVED BY (Printed Name) M. Martin (Signature) <i>[Signature]</i>	Date/Time 6/4/13 1235
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 05/29/2013

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4238 EVENT NAME: LA/Pueblo (TA-21 and General Surveillance Monitoring Group)
Q3 MY2013 Sampling
Event_Pueblo

SAMPLE ID: CAPU-13-34784 WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		06/04/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1136	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	GSP
LOCATION ID: R-24		↓	FIELD PREP:	F	OK
LOCATION TYPE: MON		↓	FIELD QC TYPE: REG		↓
PORT: SINGLE COMPLETION		↓	SAMPLE USAGE: INV		↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-CL04	250 ML POLY	1	ICE	Y	NA
↓	WSP-GENINORG	1 LITER POLY	1	ICE	↓	↓
↓	WSP-Met+B+SN+SR+U	1 LITER POLY	1	HNO3	↓	↓
↓	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS:

NA

LOCATION COMMENTS:

NA

FIELD PARAMETERS:

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

COLLECTED BY (PRINT) A. Vigil

RELINQUISHED BY (Printed Name) David Fellenz (Signature) <i>[Signature]</i>	Date/Time 6/4/13 1235	RECEIVED BY (Printed Name) M. Montoya (Signature) <i>[Signature]</i>	Date/Time 6/4/13 1235
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 05/29/2013

Data Validation Report

Chain Of Custody No. 2013-917

1. Distribution Of Samples In EDD.

SDG	Analytical Method	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks
	327025 EPA:120.1	1				
	327025 EPA:150.1	1				
	327025 EPA:160.1	1				
	327025 EPA:245.2	1				
	327025 EPA:300.0	1				
	327025 EPA:310.1	1				
	327025 EPA:350.1	1				
	327025 EPA:351.2	1				
	327025 EPA:353.2	1				
	327025 EPA:365.4	1				
	327025 EPA:900	1				
	327025 EPA:901.1	1				
	327025 EPA:905.0	1				
	327025 HASL-300:AM-241	1				
	327025 HASL-300:ISOPU	1				
	327025 HASL-300:ISOU	1				
	327025 SM:A2340B	1				
	327025 SW-846:6010B	1				
	327025 SW-846:6020	1				
	327025 SW-846:6850	1				
	327025 SW-846:9060	1				

SDG	Analytical Method	Analysis Lot ID	Prep Lot ID	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks	Method Blanks	Matrix Spikes	Matrix Spike Dups
	327025 EPA:120.1	1306822	1306822	1	1						
	327025 EPA:150.1	1306354	1306354	1	1						
	327025 EPA:160.1	1306350	1306350	1	1					1	
	327025 EPA:245.2	1306762	1306759	1	1					1	1
	327025 EPA:300.0	1306689	1306689	1	1					1	
	327025 EPA:310.1	1306856	1306856	1	1					1	1
	327025 EPA:350.1	1306380	1306379	1	1					1	1
	327025 EPA:351.2	1306064	1306063	1	1					1	1
	327025 EPA:353.2	1306387	1306387	1	1					1	
	327025 EPA:365.4	1306384	1306383	1	1					1	2
	327025 EPA:900	1308529	1308529	1	1					1	1
	327025 EPA:901.1	1306868	1306868	1	1					1	
	327025 EPA:905.0	1306838	1306838	1	1					1	1
	327025 HASL-300:AM-241	1306186	1306186	1	1					1	
	327025 HASL-300:ISOPU	1306187	1306187	1	1					1	
	327025 HASL-300:ISOU	1306189	1306189	1	1					1	
	327025 SM:A2340B	1311156	1311156	1	1						
	327025 SW-846:6010B	1306962	1306961	1	1					1	1
	327025 SW-846:6020	1306964	1306963	1	1					1	1
	327025 SW-846:6850	1306713	1306712	1	1					1	1
	327025 SW-846:9060	1307044	1307044	1	1					1	

2. Distribution Of Analytes In EDD.

[illegible]

Analytical Method	Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spikes	TICS
EPA:120.1	GENERAL CHEMISTRY	CAPU-13-34781	1202889244	DUP	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CAPU-13-34784	327025002	REG	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	LCS	1202889242	LCS	0	0	1	0
EPA:150.1	GENERAL CHEMISTRY	CALA-13-33434	1202887891	DUP	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CAPU-13-34784	327025002	REG	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	LCS	1202887892	LCS	0	0	1	0
EPA:160.1	GENERAL CHEMISTRY	CALA-13-33412	1202887875	DUP	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	CAPU-13-34784	327025002	REG	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	LCS	1202887876	LCS	0	0	1	0
EPA:160.1	GENERAL CHEMISTRY	MB	1202887874	MB	1	0	0	0
EPA:245.2	INORGANIC	CAPU-13-34784	327025002	REG	1	0	0	0
EPA:245.2	INORGANIC	CAPU-13-34788	1202888994	DUP	1	0	0	0
EPA:245.2	INORGANIC	CAPU-13-34788	1202888995	MS	0	0	1	0
EPA:245.2	INORGANIC	LCS	1202888993	LCS	0	0	1	0
EPA:245.2	INORGANIC	MB	1202888992	MB	1	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CALA-13-33434	1202888803	DUP	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAPU-13-34784	327025002	REG	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	LCS	1202888805	LCS	0	0	4	0
EPA:300.0	GENERAL CHEMISTRY	MB	1202888802	MB	4	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAPU-13-34784	1202889347	DUP	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAPU-13-34784	1202889348	MS	0	0	1	0
EPA:310.1	GENERAL CHEMISTRY	CAPU-13-34784	327025002	REG	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	LCS	1202889344	LCS	0	0	1	0
EPA:310.1	GENERAL CHEMISTRY	MB	1202889343	MB	2	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CALA-13-33434	1202887955	DUP	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CALA-13-33434	1202887957	MS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	CAPU-13-34784	327025002	REG	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	LCS	1202887958	LCS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	MB	1202887953	MB	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAPU-13-34774	1202887251	DUP	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAPU-13-34774	1202887252	MS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	CAPU-13-34776	327025001	REG	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	LCS	1202887250	LCS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	MB	1202887249	MB	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CALA-13-33434	1202887979	DUP	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAPU-13-34784	327025002	REG	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	LCS	1202887982	LCS	0	0	1	0
EPA:353.2	GENERAL CHEMISTRY	MB	1202887977	MB	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CALA-13-33433	1202887966	DUP	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CALA-13-33433	1202887968	MS	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	CAPU-13-34782	1202887967	DUP	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAPU-13-34782	1202887969	MS	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	CAPU-13-34784	327025002	REG	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	LCS	1202887970	LCS	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	MB	1202887965	MB	1	0	0	0
EPA:900	RAD	CAPU-13-34775	1202893585	DUP	2	0	0	0
EPA:900	RAD	CAPU-13-34775	1202893586	MS	0	0	2	0
EPA:900	RAD	CAPU-13-34775	1202893587	MSD	0	0	2	0
EPA:900	RAD	CAPU-13-34776	327025001	REG	2	0	0	0
EPA:900	RAD	LCS	1202893588	LCS	0	0	2	0
EPA:900	RAD	MB	1202893584	MB	2	0	0	0
EPA:901.1	RAD	CAPU-13-34776	327025001	REG	5	0	0	0
EPA:901.1	RAD	CAPU-13-34780	1202889386	DUP	5	0	0	0
EPA:901.1	RAD	LCS	1202889387	LCS	0	0	3	0
EPA:901.1	RAD	MB	1202889385	MB	5	0	0	0

EPA-905.0	RAD	CALA-13-33411	1202889288	DUP	1	0	0	0
EPA-905.0	RAD	CALA-13-33411	1202889289	MS	0	0	1	0
EPA-905.0	RAD	CAPU-13-34776	327025001	REG	1	0	0	0
EPA-905.0	RAD	LCS	1202889290	LCS	0	0	1	0
EPA-905.0	RAD	MB	1202889287	MB	1	0	0	0
HASL-300-AM-241	RAD	CAPU-13-34776	1202887499	DUP	1	0	0	0
HASL-300-AM-241	RAD	CAPU-13-34776	327025001	REG	1	0	0	0
HASL-300-AM-241	RAD	LCS	1202887500	LCS	0	0	1	0
HASL-300-AM-241	RAD	MB	1202887498	MB	1	0	0	0
HASL-300-ISOPU	RAD	CAPU-13-34776	1202887502	DUP	2	0	0	0
HASL-300-ISOPU	RAD	CAPU-13-34776	327025001	REG	2	0	0	0
HASL-300-ISOPU	RAD	LCS	1202887503	LCS	0	0	1	0
HASL-300-ISOPU	RAD	MB	1202887501	MB	2	0	0	0
HASL-300-ISOU	RAD	CAPU-13-34776	1202887505	DUP	3	0	0	0
HASL-300-ISOU	RAD	CAPU-13-34776	327025001	REG	3	0	0	0
HASL-300-ISOU	RAD	LCS	1202887506	LCS	0	0	1	0
HASL-300-ISOU	RAD	MB	1202887504	MB	3	0	0	0
SM-A2340B	INORGANIC	CAPU-13-34784	327025002	REG	1	0	0	0
SW-846:6010B	INORGANIC	CAPU-13-34784	327025002	REG	17	0	0	0
SW-846:6010B	INORGANIC	CAPU-13-34788	1202889610	DUP	17	0	0	0
SW-846:6010B	INORGANIC	CAPU-13-34788	1202889611	MS	0	0	17	0
SW-846:6010B	INORGANIC	LCS	1202889609	LCS	0	0	17	0
SW-846:6010B	INORGANIC	MB	1202889608	MB	17	0	0	0
SW-846:6020	INORGANIC	CAPU-13-34784	327025002	REG	11	0	0	0
SW-846:6020	INORGANIC	CAPU-13-34788	1202889615	DUP	11	0	0	0
SW-846:6020	INORGANIC	CAPU-13-34788	1202889616	MS	0	0	11	0
SW-846:6020	INORGANIC	LCS	1202889614	LCS	0	0	11	0
SW-846:6020	INORGANIC	MB	1202889613	MB	11	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	CALA-13-33434	1202888869	MS	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	CALA-13-33434	1202888870	MSD	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	CAPU-13-34784	327025002	REG	1	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	LCS	1202888868	LCS	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	MB	1202888867	MB	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAPU-13-34774	1202889801	DUP	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAPU-13-34776	327025001	REG	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	LCS	1202889805	LCS	0	0	1	0
SW-846:9060	GENERAL CHEMISTRY	MB	1202889800	MB	1	0	0	0

3. Are any analytes missing?

No.

4. Were any holding times exceeded?

No.

5. Any contaminants in blanks?

Field	Lab	Type Of	Analytical	Sample	Parameter	Lab	Lab		Lab
Sample ID	Sample ID	Blank	Method	Matrix	Name	Result	Qualifier	Units	Detection Limit
MB	1202889613	METHOD BLANK	SW-846:6020	W	Molybdenum	0.173	J	ug/L	0.5
MB	1202889613	METHOD BLANK	SW-846:6020	W	Nickel	0.602	J	ug/L	2

Any samples affected by the presence of contaminants in blanks?

No.

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
CAPU-13-34774	1202887252		EPA:351.2	Total Kjeldahl Nitrogen	1306063	6/12/2013	W	86.6		110	90
CAPU-13-34775	1202893586	1202893587	EPA:900	Gross alpha	1308529	6/26/2013	W	94.2	109	125	75

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

No.

9. Any Field Duplicate RPDs outside the desired limits?

No.

10. Any Lab Duplicate RPDs outside the desired limits?

Field	Lab	Lab Duplicate	Analytical	Parameter	Sample	Sample	Dup Sample	Units	Detected	Detected	
Sample ID	SampleID	Sample ID	Method	Name	Matrix	Result	Result		In Sample	In Dup	RPD
CAPU-13-34776	327025001	1202887505	HASL-300:ISOU	Uranium-234	W	0.828	0.755	pCi/L	Y	Y	9.21
CAPU-13-34776	327025001	1202887505	HASL-300:ISOU	Uranium-238	W	0.434	0.402	pCi/L	Y	Y	7.65

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-24	2013-917	CAPU-13-34776	REG	INIT	RAD	HASL-300:AM-241	Americium-241	U	U	R5	N
R-24	2013-917	CAPU-13-34776	REG	INIT	RAD	EPA:901.1	Cesium-137	U	U	R5	N
R-24	2013-917	CAPU-13-34776	REG	INIT	RAD	EPA:901.1	Cobalt-60	U	U	R5	N
R-24	2013-917	CAPU-13-34776	REG	INIT	RAD	EPA:900	Gross alpha	U	U	R5	N
R-24	2013-917	CAPU-13-34776	REG	INIT	RAD	EPA:901.1	Neptunium-237	U	U	R5	N
R-24	2013-917	CAPU-13-34776	REG	INIT	RAD	HASL-300:ISOPU	Plutonium-238	U	U	R5	N
R-24	2013-917	CAPU-13-34776	REG	INIT	RAD	HASL-300:ISOPU	Plutonium-239/240	U	U	R5	N
R-24	2013-917	CAPU-13-34776	REG	INIT	RAD	EPA:901.1	Potassium-40	U	U	R5	N
R-24	2013-917	CAPU-13-34776	REG	INIT	RAD	EPA:901.1	Sodium-22	U	U	R5	N
R-24	2013-917	CAPU-13-34776	REG	INIT	RAD	EPA:905.0	Strontium-90	U	U	R5	N
R-24	2013-917	CAPU-13-34776	REG	INIT	RAD	HASL-300:ISOU	Uranium-234		J	R10	Y

Rejection	RPD	RPD Limit
Limit		
10		
10	14.9	2.13

RPD
Limit
0.0574
0.0367

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
0.00191	pCi/L	0.00191	pCi/L	0.0291	0.00506	W	6/4/2013		1306186	VAL	Y
-0.747	pCi/L	-0.747	pCi/L	7.18	1.98	W	6/4/2013		1306868	VAL	Y
1.89	pCi/L	1.89	pCi/L	7.33	1.47	W	6/4/2013		1306868	VAL	Y
1.14	pCi/L	1.14	pCi/L	2.69	0.797	W	6/4/2013		1308529	VAL	Y
-5.69	pCi/L	-5.69	pCi/L	11.1	3.39	W	6/4/2013		1306868	VAL	Y
0.00476	pCi/L	0.00476	pCi/L	0.0223	0.00476	W	6/4/2013		1306187	VAL	Y
0.00952	pCi/L	0.00952	pCi/L	0.0469	0.00753	W	6/4/2013		1306187	VAL	Y
22.6	pCi/L	22.6	pCi/L	107	25.9	W	6/4/2013		1306868	VAL	Y
0.571	pCi/L	0.571	pCi/L	6.83	1.55	W	6/4/2013		1306868	VAL	Y
-0.113	pCi/L	-0.113	pCi/L	0.444	0.106	W	6/4/2013		1306838	VAL	Y
0.828	pCi/L	0.828	pCi/L	0.0641	0.051	W	6/4/2013		1306189	VAL	Y

R-24	2013-917	CAPU-13-34776	REG	INIT	RAD	HASL-300:ISOU	Uranium-235/236	U	U	R5	N
R-24	2013-917	CAPU-13-34776	REG	INIT	RAD	HASL-300:ISOU	Uranium-238		J	R10	Y

Reason Code Description

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.
R10	Associated duplicate sample has DER or RER> the analytical laboratory's acceptance limits.
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
CAPU-13-34776	R-24	REG	EPA:351.2	0	1
CAPU-13-34776	R-24	REG	EPA:900	0	2
CAPU-13-34776	R-24	REG	EPA:901.1	0	5
CAPU-13-34776	R-24	REG	EPA:905.0	0	1
CAPU-13-34776	R-24	REG	HASL-300:AM-241	0	1
CAPU-13-34776	R-24	REG	HASL-300:ISOPU	0	2
CAPU-13-34776	R-24	REG	HASL-300:ISOU	0	3
CAPU-13-34776	R-24	REG	SW-846:9060	0	1
CAPU-13-34784	R-24	REG	EPA:120.1	0	1
CAPU-13-34784	R-24	REG	EPA:150.1	0	1
CAPU-13-34784	R-24	REG	EPA:160.1	0	1
CAPU-13-34784	R-24	REG	EPA:245.2	0	1
CAPU-13-34784	R-24	REG	EPA:300.0	0	4
CAPU-13-34784	R-24	REG	EPA:310.1	0	2
CAPU-13-34784	R-24	REG	EPA:350.1	0	1
CAPU-13-34784	R-24	REG	EPA:353.2	0	1
CAPU-13-34784	R-24	REG	EPA:365.4	0	1
CAPU-13-34784	R-24	REG	SM:A2340B	0	1
CAPU-13-34784	R-24	REG	SW-846:6010B	0	17
CAPU-13-34784	R-24	REG	SW-846:6020	0	11
CAPU-13-34784	R-24	REG	SW-846:6850	0	1

0.0288	pCi/L	0.0288	pCi/L	0.0498	0.0135	W	6/4/2013		1306189	VAL	Y
0.434	pCi/L	0.434	pCi/L	0.0409	0.0377	W	6/4/2013		1306189	VAL	Y



July 02, 2013

www.gel.com

Mr. 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: 327025
SDG: 2013-917

Dear Mr. Greene:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the following analytical results for the sample(s) we received on June 06, 2013, and analyzed for 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: 2013-917
Enclosures



ARS International (63641-10)
LANL-WQH Water Samples
Work Order #: 327025
SDG: 2013-917

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Case Narrative

**Case Narrative for
ARS International (63641-10)
LANL-WQH Water Samples
Workorder #: 327025
SDG # : 2013-917**

July 02, 2013

Laboratory Identification:

GEL Laboratories LLC
2040 Savage Road
Charleston, South Carolina 29407
(843) 556-8171

Summary

Sample receipt The samples arrived at GEL Laboratories LLC, Charleston, South Carolina on June 06, 2013 for analysis. The samples were delivered with proper chain of custody documentation and signatures. The samples were screened according to GEL Standard Operating Procedure. All sample containers arrived without any visible signs of tampering or breakage. The containers for Gross A/B were preserved prior to analysis. Shipping container temperature was within specification (0 - 6C). The containers for radiochemistry were received at a temperature of 12C. There are no additional comments concerning sample receipt.

Sample Identification The laboratory received the following samples:

<u>Laboratory ID</u>	<u>Client ID</u>
327025001	CAPU-13-34776
327025002	CAPU-13-34784

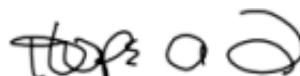
Case Narrative

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: 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 02 July 2013

State	Certification
Alaska	UST-110
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	P330-12-00283, P330-12-00284
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	LA130005
Maryland	270
Massachusetts	M-SC012
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
Plant Material Permit	PDEP-12-00260
South Carolina Chemistry	10120001
South Carolina Radiochemi	10120002
Tennessee	TN 02934
Texas NELAP	T104704235-13-8
Utah NELAP	SC000122013-8
Vermont	VT87156
Virginia NELAP	460202
Washington	C780-12
Wisconsin	999887790

Chain of Custody and Supporting Documentation

Chain of Custody/Analysis Request

COC/Lab Request #:
2013-917

Page 1 of 1

[illegible]



SAMPLE RECEIPT & REVIEW FORM

Client: <u>LANL</u>		SDG/AR/COC/Work Order: <u>2013-917</u>	
Received By: <u>H. Taylor</u>		Date Received: <u>060613</u>	
Suspected Hazard Information	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.	
COC/Samples marked as radioactive?	<input checked="" type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts):	
Classified Radioactive II or III by RSO?	<input checked="" type="checkbox"/>	If yes, Were swipes taken of sample containers < action levels? <u>acpm</u>	
COC/Samples marked containing PCBs?	<input checked="" type="checkbox"/>		
Package, COC, and/or Samples marked as beryllium or asbestos containing?	<input checked="" type="checkbox"/>	If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.	
Shipped as a DOT Hazardous?	<input checked="" type="checkbox"/>	Hazard Class Shipped: UN#:	
Samples identified as Foreign Soil?	<input checked="" type="checkbox"/>		

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Preservation Method: Ice bags <u>Blue ice</u> Dry ice None Other (describe) <u>34</u> *all temperatures are recorded in Celsius <u>12</u>
2a Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <u>61524649</u> Secondary Temperature Device Serial # (If Applicable):
3 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4 Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5 Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's, containers affected and observed pH: <u>See continuation</u> If Preservation added, Lot#:
6 VOA vials free of headspace (defined as < 6mm bubble)?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
7 Are Encore containers present?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	(If yes, immediately deliver to Volatiles laboratory)
8 Samples received within holding time?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected:
9 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
10 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
11 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected: <u>See continuation</u>
12 Are sample containers identifiable as GEL provided?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
14 Carrier and tracking number.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: <u>FedEx Air</u> FedEx Ground UPS Field Services Courier Other <u>5462 9833 0571-3</u> <u>5462 9833 0593-3</u> <u>5462 9833 0582-3</u> <u>5462 9833 0560-4</u> <u>5462 9833 0550-12</u>

Comments (Use Continuation Form if needed):

Client: LANL Received By: H. Taylor Date Received: 06/06/13 SDG/AR/COC/Work Order: 2013-917

Gross AIB containers preserved prior to analysis for the following: CAPU-13-34776, CALA-13-33411, CALA-13-33426, and CALA-13-33409

RN 2013-918

lab received two containers for ISOPU-ISOU not preserved, chain indicates one container

RN 2013-916

CALA-13-33409 lab received 1 container for SWOA, chain indicates 3
received 1 container for HEXP, chain indicates 3

lab did not receive any containers for SWOA for ID CALA-13-33410

Subject: RE: Sample Receipt for 060613
From: "Greene, Keith R" <kgreene@lanl.gov>
Date: 6/7/2013 10:40 AM
To: Hope Taylor <Hope.Taylor@gel.com>

Preserve containers for 2013-918, please double check svoc containers 33410, they should be there.

From: Hope Taylor [mailto:Hope.Taylor@gel.com]
Sent: Friday, June 07, 2013 6:57 AM
To: Greene, Keith R; LANL@amrad.com; team.davis
Subject: Sample Receipt for 060613

The containers for Gross A/B were preserved prior to analysis.

RN 2013-918
lab received two containers for ISOPU and ISOU not preserved, chain indicates one. Please advise

RN 2013-916
ID CALA-13-33409 lab received 1 container each for SVOA and HEXP, chain indicates two.
ID CALA-13-33410 lab did not receive any containers for SVOA, chain indicates 3. Please advise

--
Hope Taylor
Project Manager Assistant
GEL Laboratories, LLC
2040 Savage Road
Charleston, SC 29407
Direct: 843.769.7376 ext. 4778
Main: 843.556.8171
Fax: 843.766.1178
E-mail: hop012000@gel.com
Web: www.gel.com

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

SHIP DATE: 05JUN13
ACTWGT: 31.0 LB MAN
CAD: 0014176/CAFE2511

LOS ALAMOS, NM 87545
UNITED STATES US

BILL SENDER

TO VALERIE DAVIS

GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407
(843) 556-8171
REF: M348CDW4JS00



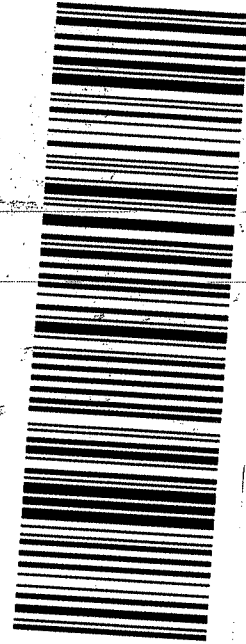
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0263

Mstr# 5462 9833 0582

XX CHSA

29407
SC-US CHS



Form 158148-434 R1T2 08/10

THU - 06 JUN 10:30A
PRIORITY OVERNIGHT
0201

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

SHIP DATE: 05JUN13
ACTWGT: 46.0 LB MAN
CAD: 0014176/CAFE2511

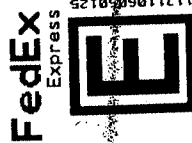
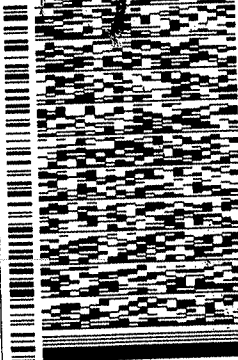
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TO VALERIE DAVIS

GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171
REF: WE991158M100



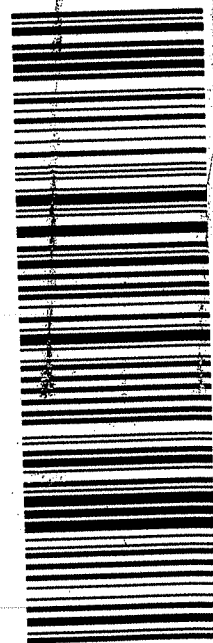
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MPS# 5462 9833 0571
0263

Mstr# 5462 9833 0550

XX CHSA

29407
SC-US CHS



Form 158148-434 R1T2 08/10

THU - 06 JUN 10:30A
PRIORITY OVERNIGHT
0201

3

580C1/0777/108C

580C1/0777/108C

ORIGIN ID: SAFA (505) 665-9966

SHIP DATE: 05JUN13
ACTGCT: 46.0 LB MAN
CAD: 0014176/CAFE2511

LOS ALAMOS NATL LAB
TR00 BLDG 1237 DPU 03

BILL SENDER

LOS ALAMOS, NM 87545
UNITED STATES US

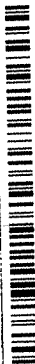
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GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171

REF: M348CDW4JS00



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Express



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1 of 2

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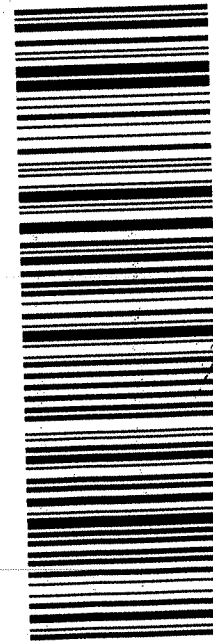
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PRIORITY OVERNIGHT

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SC-US CHS



Part # 156148-434 RIT2 08/10

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SHIP DATE: 05JUN13
ACTGCT: 40.0 LB MAN
CAD: 0014176/CAFE2511

LOS ALAMOS NATL LAB
TR00 BLDG 1237 DPU 03

LOS ALAMOS, NM 87545
UNITED STATES US

TO VALERIE DAVIS

GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171

REF: WE991158W100



FedEx
Express



J11131106060125

1 of 3

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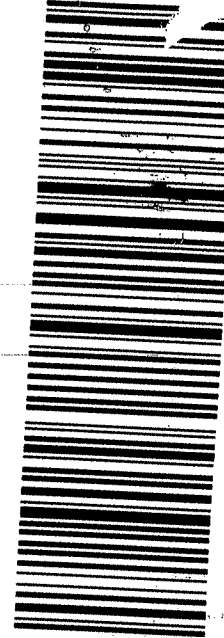
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MASTER

XX CHSA

THU - 06 JUN 10:30A
PRIORITY OVERNIGHT

29407
SC-US CHS



Part # 156148-434 RIT2 08/10

580C1/D777/108C

12

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

LOS ALAMOS, NM 87545
UNITED STATES US

SHIP DATE: 05JUN13
ACTWGT: 57.0 LB MAN
CAD: 0014176/CAFE2611

BILL SENDER

TO VALERIE DAVIS

GENERAL ENGINEERING LAB
2040 SAVAGE RD

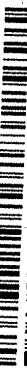
CHARLESTON SC 29407

(843) 556-8171

REF: WE991158M100

4

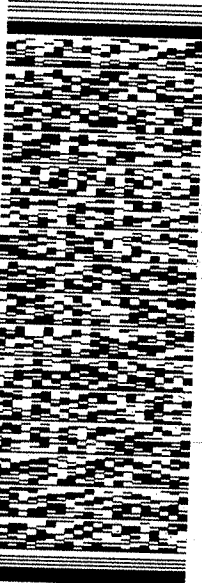
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FedEx
Express



JT113110600125



2 of 3

MPS# 5462 9833 0560

0263

Mstr# 5462 9833 0550

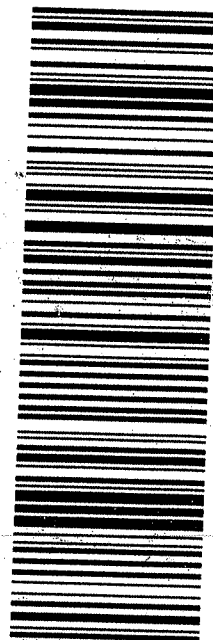
0201

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PRIORITY OVERNIGHT

XX CHSA

29407

SC-US CHS



Part# 156148-434 RITE 0270

Data Review Qualifier Flag Definition Sheet

Data Review Qualifier Definitions

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

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

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

Perchlorates by LCMSMS Analysis

Case Narrative

**Perchlorate by LC-MS/MS
ARS International (ARSL)
SDG 2013-917**

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: 1306713

Prep Batch Number: 1306712

Sample Analysis

Sample ID	Client ID
327025002	CAPU-13-34784
1202888871	Interference Check Sample (ICS)
1202888867	Method Blank (MB)
1202888868	Laboratory Control Sample (LCS)
1202888869	327024002(CALA-13-33434) Matrix Spike (MS)
1202888870	327024002(CALA-13-33434) 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# 10.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this SDG.

Due to software constraints, all Initial Calibration Blanks must be designated as IPB001.

ICV Requirements

All associated initial calibration verification standards (ICV) met the acceptance criteria.

CCB Requirements

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

CCV Requirements

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

Low Level Standard (CRI) Requirements

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

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

The MB analyzed with this SDG met the acceptance criteria.

Interference Check Sample (ICS)

The ICS met all recovery acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

QC Sample Designation

Client sample 327024002 (CALA-13-33434) from SDG 2013-916 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 RPDs 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

Due to poor injection of the MSD, both matrix spikes were re-analyzed the following day. The re-analysis data 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.

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: 2013-917 GEL Work Order: 327025

The Qualifiers in this report are defined as follows:

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

Review/Validation

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

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

Signature: 

Name: Michael Penny

Date: 26 JUN 2013

Title: Group Leader

Sample Data Summary

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: SW846 6850 ModifiedMatrix: WATERExtraction Batch ID: 1306712Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAPU-13-34784Date Received: 06-JUN-13GEL Job No (SDG): 2013-917GEL Sample ID: 327025002Date Filtered: 13-JUN-13Injection 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	0.426	ug/L		1	13-JUN-13 20:28	per0613025a
	Perchlorate Isotope Ratio			3.03			1	13-JUN-13 20:28	per0613025a
14797-73-0	Perchlorate-101	.05	.2	0.435	ug/L		1	13-JUN-13 20:28	per0613025a
	Perchlorate-O(18)			0.530	ug/L		1	13-JUN-13 20:28	per0613025a

^ 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): 2013-917

Extract Batch Code: 1306712

Date Filtered: 13-JUN-13

Matrix: WATER

Sample ID: 1202888868

Analyte^	True	Found	Units	%Rec	Q	Control Limits
Perchlorate	0.200	.222	ug/L	111		85 - 115
Perchlorate Isotope Ratio		3.17				-
Perchlorate-101	0.200	.217	ug/L	108		85 - 115
Perchlorate-O(18)		.568	ug/L			-

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

Perchlorate Spike/Spike Duplicate Summary

Lab Name: General Engineering Laboratories

Lab Code: GEL

GEL Job No (SDG): 2013-917

Extract Batch Code: 1306712

Date Extracted: 13-JUN-13

GEL MS/PS ID: 1202888869

Client ID: CALA-13-33434

GEL MSD/PSD ID: 1202888870

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	0.491	ug/L	0.667	87.9	.67	89.7	.518	30	75 - 125
Perchlorate Isotope Ratio	0	3.12		3.08		3.08		.0359		-
Perchlorate-101	0.200	0.487	ug/L	0.683	97.6	.686	99.4	.553	30	75 - 125
Perchlorate-O(18)	0	0.504	ug/L	0.498		.508		1.93		-

^ 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: 1306712Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

MBDate Received: 13-JUN-13GEL Job No (SDG): 2013-917GEL Sample ID: 1202888867Date Filtered: 13-JUN-13Injection Volume (uL): 20%Solids:

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.200	ug/L	U	1	13-JUN-13 18:44	per0613012a
	Perchlorate Isotope Ratio						1	13-JUN-13 18:44	per0613012a
14797-73-0	Perchlorate-101	.05	.2	0.200	ug/L	U	1	13-JUN-13 18:44	per0613012a
	Perchlorate-O(18)			0.506	ug/L		1	13-JUN-13 18:44	per0613012a

^ 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: 1306712Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

LCSDate Received: 13-JUN-13GEL Job No (SDG): 2013-917GEL Sample ID: 1202888868Date Filtered: 13-JUN-13Injection 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	0.222	ug/L		1	13-JUN-13 18:52	per0613013a
	Perchlorate Isotope Ratio			3.17			1	13-JUN-13 18:52	per0613013a
14797-73-0	Perchlorate-101	.05	.2	0.217	ug/L		1	13-JUN-13 18:52	per0613013a
	Perchlorate-O(18)			0.568	ug/L		1	13-JUN-13 18:52	per0613013a

^ 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: 1306712Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

ICS

Date Received:

GEL Job No (SDG): 2013-917GEL Sample ID: 1202888871Date Filtered: 13-JUN-13Injection Volume (uL): 20

%Solids:

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.201	ug/L		1	13-JUN-13 19:00	per0613014a
	Perchlorate Isotope Ratio			3.3			1	13-JUN-13 19:00	per0613014a
14797-73-0	Perchlorate-101	.05	.2	0.189	ug/L	J	1	13-JUN-13 19:00	per0613014a
	Perchlorate-O(18)			0.523	ug/L		1	13-JUN-13 19:00	per0613014a

^ 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: 1306712Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CALA-13-33434MSDate Received: 06-JUN-13GEL Job No (SDG): 2013-917GEL Sample ID: 1202888869Date Filtered: 13-JUN-13Injection 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	0.667	ug/L		1	14-JUN-13 18:04	per0614012a
	Perchlorate Isotope Ratio			3.08			1	14-JUN-13 18:04	per0614012a
14797-73-0	Perchlorate-101	.05	.2	0.683	ug/L		1	14-JUN-13 18:04	per0614012a
	Perchlorate-O(18)			0.498	ug/L		1	14-JUN-13 18:04	per0614012a

^ 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: 1306712Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CALA-13-33434MSDDate Received: 06-JUN-13GEL Job No (SDG): 2013-917GEL Sample ID: 1202888870Date Filtered: 13-JUN-13Injection 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	0.670	ug/L		1	14-JUN-13 18:12	per0614013a
	Perchlorate Isotope Ratio			3.08			1	14-JUN-13 18:12	per0614013a
14797-73-0	Perchlorate-101	.05	.2	0.686	ug/L		1	14-JUN-13 18:12	per0614013a
	Perchlorate-O(18)			0.508	ug/L		1	14-JUN-13 18:12	per0614013a

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

*Concentration =

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

Metals Analysis

Case Narrative

**Metals Fractional Narrative
ARS International (ARSL)
SDG 2013-917**

Sample Analysis

Sample ID	Client ID
327025002	CAPU-13-34784
1202889608	Method Blank (MB) ICP
1202889609	Laboratory Control Sample (LCS)
1202889612	327280002(CAPU-13-34788L) Serial Dilution (SD)
1202889610	327280002(CAPU-13-34788D) Sample Duplicate (DUP)
1202889611	327280002(CAPU-13-34788S) Matrix Spike (MS)
1202889613	Method Blank (MB) ICP-MS
1202889614	Laboratory Control Sample (LCS)
1202889617	327280002(CAPU-13-34788L) Serial Dilution (SD)
1202889615	327280002(CAPU-13-34788D) Sample Duplicate (DUP)
1202889616	327280002(CAPU-13-34788S) Matrix Spike (MS)
1202888992	Method Blank (MB) CVAA
1202888993	Laboratory Control Sample (LCS)
1202888996	327280002(CAPU-13-34788L) Serial Dilution (SD)
1202888994	327280002(CAPU-13-34788D) Sample Duplicate (DUP)
1202888995	327280002(CAPU-13-34788S) Matrix Spike (MS)

Method/Analysis Information

Analytical Batch:	1306962, 1306964, 1306762 and 1311156
Prep Batch :	1306961, 1306963 and 1306759
Standard Operating Procedures:	GL-MA-E-013 REV# 22, GL-MA-E-006 REV# 9, GL-MA-E-014 REV# 25, GL-MA-E-010 REV# 26 and GL-GC-E-107 REV# 8
Analytical Method:	SW846 3005/6010B, SW846 3005/6020 DOE-AL, EPA 245.1/245.2 and SM 2340 B
Prep Method :	SW846 3005A and EPA 245.1/245.2 Prep

Preparation/Analytical Method Verification

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

System Configuration

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

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

The Metals analysis-ICP was performed on a PE 7300 Optima radial/axial-viewing inductively coupled plasma atomic emission spectrometer. The instrument is equipped with a Burgener nebulizer, cyclonic spray chamber, and yttrium or scandium internal standard. Operating conditions for the ICP are set at a power level of 1500 watts. The instrument has a peristaltic pump flow rate of 1.4L/min, argon gas flows of 15 L/min and 0.2 L/min for the torch and auxiliary gases, and a flow setting of 0.65L/min for the nebulizer.

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

The Metals analysis-Mercury was performed on a Perkin-Elmer Flow Injection Mercury System (FIMS-100) automated mercury analyzer. The instrument consists of a cold vapor atomic absorption spectrometer set to detect mercury at a wavelength of 253.7 nm. Sample introduction through the flow injection system is performed via a peristaltic pump at 9 mL/min and nitrogen carrier gas rate of 80 mL/min.

Calibration Information

Instrument Calibration

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

CRDL Requirements

All CRDL standard(s) met the referenced advisory control limits.

ICSA/ICSAB Statement

All interference check samples (ICSA and ICSAB) associated with this SDG met the established acceptance criteria.

Continuing Calibration Blank (CCB) Requirements

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

Continuing Calibration Verification (CCV) Requirements

All continuing calibration verifications (CCV) bracketing this SDG met the acceptance criteria.

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

The MBs analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Quality Control (QC) Sample Statement

The following sample was selected as the quality control (QC) sample for this SDG: 327280002 (CAPU-13-34788).

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.

Hardness = 2.497 (Ca) + 4.118 (Mg)

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


Certification Statement

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

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: 06/28/13

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: 2013-917 GEL Work Order: 327025

The Qualifiers in this report are defined as follows:

* A quality control analyte recovery is outside of specified acceptance criteria

J Value is estimated


U Analyte was analyzed for, but not detected above the MDL, MDA, 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 limit as defined in the 'U' qualifier above.

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

 02/28/13

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2013-917**CONTRACT:** ESHL00210**METHOD TYPE:** EPA**SAMPLE ID:** 327025002**BASIS:** As Received**DATE COLLECTED** 04-JUN-13**CLIENT ID:** CAPU-13-34784**LEVEL:** Low**DATE RECEIVED** 06-JUN-13**MATRIX:** W**%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7439-97-6	Mercury	0.20	ug/L	U	0.067	0.2	0.2	1	AV	NOR1	06/11/13 11:27	061113W2-8	1306762

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2013-917

CONTRACT: ESHL00210

METHOD TYPE: SW846

SAMPLE ID: 327025002

BASIS: As Received

DATE COLLECTED 04-JUN-13

CLIENT ID: CAPU-13-34784

LEVEL: Low

DATE RECEIVED 06-JUN-13

MATRIX: W

%SOLIDS: 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	200	ug/L	U	68	200	200	1	P	HSC	06/19/13 12:01	061913A-1	1306962
7440-36-0	Antimony	3	ug/L	U	1	3	3	1	MS	BAJ	06/20/13 20:44	130620-3	1306964
7440-38-2	Arsenic	3.4	ug/L	J	1.7	5	5	1	MS	BAJ	06/20/13 20:44	130620-3	1306964
7440-39-3	Barium	53.1	ug/L		1	5	5	1	P	HSC	06/19/13 12:01	061913A-1	1306962
7440-41-7	Beryllium	5	ug/L	U	1	5	5	1	P	HSC	06/19/13 12:01	061913A-1	1306962
7440-42-8	Boron	45.9	ug/L	J	15	50	50	1	P	HSC	06/19/13 12:01	061913A-1	1306962
7440-43-9	Cadmium	1	ug/L	U	0.11	1	1	1	MS	BAJ	06/20/13 20:44	130620-3	1306964
7440-70-2	Calcium	20800	ug/L		50	200	200	1	P	HSC	06/19/13 12:01	061913A-1	1306962
7440-47-3	Chromium	6.45	ug/L	J	2	10	10	1	MS	BAJ	06/20/13 20:44	130620-3	1306964
7440-48-4	Cobalt	5	ug/L	U	1	5	5	1	P	HSC	06/19/13 12:01	061913A-1	1306962
7440-50-8	Copper	10	ug/L	U	3	10	10	1	P	HSC	06/19/13 12:01	061913A-1	1306962
7439-89-6	Iron	100	ug/L	U	30	100	100	1	P	HSC	06/19/13 12:01	061913A-1	1306962
7439-92-1	Lead	2	ug/L	U	0.5	2	2	1	MS	BAJ	06/20/13 20:44	130620-3	1306964
7439-95-4	Magnesium	3590	ug/L		110	300	300	1	P	HSC	06/19/13 12:01	061913A-1	1306962
7439-96-5	Manganese	10	ug/L	U	2	10	10	1	P	HSC	06/19/13 12:01	061913A-1	1306962
7439-98-7	Molybdenum	2	ug/L		0.165	0.5	0.5	1	MS	BAJ	06/20/13 20:44	130620-3	1306964
7440-02-0	Nickel	7.71	ug/L		0.5	2	2	1	MS	BAJ	06/20/13 20:44	130620-3	1306964
7440-09-7	Potassium	3190	ug/L		50	150	150	1	P	HSC	06/19/13 14:42	061913A-2	1306962
7782-49-2	Selenium	5	ug/L	U	1.5	5	5	1	MS	BAJ	06/20/13 20:44	130620-3	1306964
7631-86-9	Silica	56000	ug/L		53	213	213	1	P	HSC	06/19/13 12:01	061913A-1	1306962
7440-22-4	Silver	1	ug/L	U	0.2	1	1	1	MS	BAJ	06/20/13 20:44	130620-3	1306964
7440-23-5	Sodium	23600	ug/L		100	300	300	1	P	HSC	06/19/13 12:01	061913A-1	1306962
7440-24-6	Strontium	115	ug/L		1	5	5	1	P	HSC	06/19/13 12:01	061913A-1	1306962
7440-28-0	Thallium	2	ug/L	U	0.45	2	2	1	MS	BAJ	06/20/13 20:44	130620-3	1306964
7440-31-5	Tin	10	ug/L	U	2.5	10	10	1	P	HSC	06/19/13 14:42	061913A-2	1306962
7440-61-1	Uranium	1.25	ug/L		0.067	0.2	0.2	1	MS	BAJ	06/21/13 13:17	130621-7	1306964
7440-62-2	Vanadium	18.7	ug/L		1	5	5	1	P	HSC	06/19/13 12:01	061913A-1	1306962
7440-66-6	Zinc	11.9	ug/L		3.3	10	10	1	P	HSC	06/19/13 12:01	061913A-1	1306962

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2013-917**CONTRACT:** ESHL00210**METHOD TYPE:****SAMPLE ID:** 327025002 **BASIS:** As Received **DATE COLLECTED** 04-JUN-13**CLIENT ID:** CAPU-13-34784 **LEVEL:** Low **DATE RECEIVED** 06-JUN-13**MATRIX:** W **%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
	Hardness as CaCO3	66.8	mg/L		0.453	1.24	1.24	1		JJ2	06/27/13 16:28		1311156

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1306762	1306759	EPA 245.1/245.2 Prep	20	mL	20	mL	06/10/13	AXS5
1306962	1306961	SW846 3005A	50	mL	50	mL	06/18/13	MTM1
1306964	1306963	SW846 3005A	50	mL	50	mL	06/18/13	MTM1

***Analytical Methods:**

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

Quality Control Summary

METALS
-3b-
PREPARATION BLANK SUMMARY

SDG NO. 2013-917
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>
1202888992	Mercury	0.067	ug/L	+/-0.2	U	AV	0.067	0.2
1202889608	Aluminum	68	ug/L	+/-200	U	P	68	200
	Barium	1	ug/L	+/-5	U	P	1	5
	Beryllium	1	ug/L	+/-5	U	P	1	5
	Boron	15	ug/L	+/-50	U	P	15	50
	Calcium	50	ug/L	+/-200	U	P	50	200
	Cobalt	1	ug/L	+/-5	U	P	1	5
	Copper	3	ug/L	+/-10	U	P	3	10
	Iron	30	ug/L	+/-100	U	P	30	100
	Magnesium	110	ug/L	+/-300	U	P	110	300
	Manganese	2	ug/L	+/-10	U	P	2	10
	Potassium	50	ug/L	+/-150	U	P	50	150
	Silica	53	ug/L	+/-213	U	P	53	213
	Sodium	100	ug/L	+/-300	U	P	100	300
	Strontium	1	ug/L	+/-5	U	P	1	5
	Tin	2.5	ug/L	+/-10	U	P	2.5	10
	Vanadium	1	ug/L	+/-5	U	P	1	5
	Zinc	3.3	ug/L	+/-10	U	P	3.3	10
1202889613	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	0.173	ug/L	+/-0.5	J	MS	0.165	0.5
	Nickel	0.602	ug/L	+/-2	J	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

***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. 2013-917 **Client ID:** CAPU-13-34788S**Contract:** ESHL00210 **Level:** Low**Matrix:** WATER **% Solids:****Sample ID:** 327280002 **Spike ID:** 1202888995

<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		0.067	U	2	100		AV

*Analytical Methods:

AV EPA 245.1/245.2

METALS

-5a-

Matrix Spike Summary

SDG NO. 2013-917

Client ID: CAPU-13-34788S

Contract: ESHL00210

Level: Low

Matrix: WATER

% Solids:

Sample ID: 327280002

Spike ID: 1202889611

<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	4900		68	U	5000	97.3		P
Barium	ug/L	75-125	554		62.4		500	98.2		P
Beryllium	ug/L	75-125	499		1	U	500	99.9		P
Boron	ug/L	75-125	653		157		500	99.3		P
Calcium	ug/L		42900		37200		5000	115	N/A	P
Cobalt	ug/L	75-125	476		1	U	500	95.2		P
Copper	ug/L	75-125	516		5.54	J	500	102		P
Iron	ug/L	75-125	5020		30	U	5000	99.8		P
Magnesium	ug/L	75-125	12000		6830		5000	102		P
Manganese	ug/L	75-125	486		4.03	J	500	96.3		P
Potassium	ug/L	75-125	7060		2170		5000	97.9		P
Silica	ug/L		81700		69400		10700	114	N/A	P
Sodium	ug/L		28100		22500		5000	112	N/A	P
Strontium	ug/L	75-125	694		196		500	99.5		P
Vanadium	ug/L	75-125	505		1.41	J	500	101		P
Zinc	ug/L	75-125	492		3.42	J	500	97.8		P
Tin	ug/L	75-125	509		2.5	U	500	102		P

*Analytical Methods:

P SW846 3005/6010B

METALS

-5a-

Matrix Spike Summary

SDG NO. 2013-917 **Client ID:** CAPU-13-34788S

Contract: ESHL00210 **Level:** Low

Matrix: WATER **% Solids:**

Sample ID: 327280002 **Spike ID:** 1202889616

<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	57.3		1	U	50	114		MS
Arsenic	ug/L	75-125	51.8		1.7	U	50	102		MS
Cadmium	ug/L	75-125	56.4		0.11	U	50	113		MS
Chromium	ug/L	75-125	57.8		3.23	J	50	109		MS
Lead	ug/L	75-125	55.6		0.5	U	50	111		MS
Molybdenum	ug/L	75-125	59.6		1.09		50	117		MS
Nickel	ug/L	75-125	70.5		20.1		50	101		MS
Selenium	ug/L	75-125	54.4		1.5	U	50	109		MS
Silver	ug/L	75-125	57.6		0.2	U	50	115		MS
Thallium	ug/L	75-125	53.4		0.45	U	50	107		MS
Uranium	ug/L	75-125	46.5		0.261		50	92.4		MS

*Analytical Methods:

MS SW846 3005/6020 DOE-AL

Metals
–6–
Duplicate Sample Summary

SDG No.: 2013–917**Lab Code:** GEL**Contract:** ESHL00210**Client ID:** CAPU–13–34788D**Matrix:** LIQUID**Level:** Low**Sample ID:** 327280002**Duplicate ID:** 1202888994**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
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Duplicate Sample Summary

SDG No.: 2013-917

Lab Code: GEL

Contract: ESHL00210

Client ID: CAPU-13-34788D

Matrix: LIQUID

Level: Low

Sample ID: 327280002

Duplicate ID: 1202889610

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%	62.4		64.8		3.76		P
Beryllium	ug/L		1 U		1 U				P
Boron	ug/L	+/-50	157		161		2.66		P
Calcium	ug/L	+/-20%	37200		38600		3.69		P
Cobalt	ug/L		1 U		1 U				P
Copper	ug/L	+/-10	5.54 J		6.49 J		15.8		P
Iron	ug/L		30 U		34.4 J		200		P
Magnesium	ug/L	+/-20%	6830		7070		3.33		P
Manganese	ug/L	+/-10	4.03 J		4.16 J		3.24		P
Potassium	ug/L	+/-20%	2170		2170		.276		P
Silica	ug/L	+/-20%	69400		72000		3.67		P
Sodium	ug/L	+/-20%	22500		23100		2.83		P
Strontium	ug/L	+/-20%	196		204		3.93		P
Tin	ug/L		2.5 U		2.5 U				P
Vanadium	ug/L	+/-5	1.41 J		2.24 J		45.2		P
Zinc	ug/L	+/-10	3.42 J		3.61 J		5.15		P

*Analytical Methods:

P SW846 3005/6010B

Metals
-6-
Duplicate Sample Summary

SDG No.: 2013-917

Lab Code: GEL

Contract: ESHL00210

Client ID: CAPU-13-34788D

Matrix: LIQUID

Level: Low

Sample ID: 327280002

Duplicate ID: 1202889615

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		3.23 J		2 U		200		MS
Lead	ug/L		0.5 U		0.5 U				MS
Molybdenum	ug/L	+/- .5	1.09		0.968		11.9		MS
Nickel	ug/L	+/-20%	20.1		19.8		1.29		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	0.261		0.265		1.52		MS

*Analytical Methods:

MS SW846 3005/6020 DOE-AL

METALS

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Laboratory Control Sample Summary

SDG NO. 2013-917

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>
1202888993	Mercury	ug/L	2	2.05		103	85-115	AV

*Analytical Methods:

AV EPA 245.1/245.2

METALS

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Laboratory Control Sample Summary

SDG NO. 2013-917

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>
1202889609								
	Barium	ug/L	500	499		99.8	80-120	P
	Beryllium	ug/L	500	499		99.7	80-120	P
	Boron	ug/L	500	490		98	80-120	P
	Calcium	ug/L	5000	5100		102	80-120	P
	Cobalt	ug/L	500	501		100	80-120	P
	Copper	ug/L	500	510		102	80-120	P
	Iron	ug/L	5000	5080		102	80-120	P
	Magnesium	ug/L	5000	5220		104	80-120	P
	Manganese	ug/L	500	500		100	80-120	P
	Potassium	ug/L	5000	5030		101	80-120	P
	Silica	ug/L	10700	10700		99.5	80-120	P
	Sodium	ug/L	5000	5140		103	80-120	P
	Strontium	ug/L	500	509		102	80-120	P
	Tin	ug/L	500	511		102	80-120	P
	Vanadium	ug/L	500	507		101	80-120	P
	Zinc	ug/L	500	495		99	80-120	P
	Aluminum	ug/L	5000	5020		100	80-120	P

*Analytical Methods:

P SW846 3005/6010B

METALS

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Laboratory Control Sample Summary

SDG NO. 2013-917

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>
1202889614								
	Antimony	ug/L	50	52.3		105	80-120	MS
	Arsenic	ug/L	50	49		98	80-120	MS
	Cadmium	ug/L	50	52.6		105	80-120	MS
	Chromium	ug/L	50	51.1		102	80-120	MS
	Lead	ug/L	50	51.4		103	80-120	MS
	Molybdenum	ug/L	50	49.2		98.3	80-120	MS
	Nickel	ug/L	50	55.6		111	80-120	MS
	Selenium	ug/L	50	54		108	80-120	MS
	Silver	ug/L	50	55.1		110	80-120	MS
	Thallium	ug/L	50	48.3		96.6	80-120	MS
	Uranium	ug/L	50	50.9		102	80-120	MS

*Analytical Methods:

MS SW846 3005/6020 DOE-AL

METALS

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Serial Dilution Sample Summary

SDG NO. 2013-917 **Client ID:** CAPU-13-34788L**Contract:** ESHL00210**Matrix:** LIQUID **Level:** Low**Sample ID:** 327280002 **Serial Dilution ID:** 1202888996

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

*Analytical Methods:

AV EPA 245.1/245.2

METALS

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Serial Dilution Sample Summary

SDG NO. 2013-917

Client ID: CAPU-13-34788L

Contract: ESHL00210

Matrix: LIQUID

Level: Low

Sample ID: 327280002

Serial Dilution ID: 1202889612

<u>Analyte</u>	<u>Initial Value ug/L</u>	<u>C</u>	<u>Serial Value ug/L</u>	<u>C</u>	<u>% Difference</u>	<u>Qual</u>	<u>Acceptance Limit</u>	<u>M*</u>
Aluminum	68	U	340	U				P
Barium	62.4		63.7		1.97		10	P
Beryllium	1	U	5	U				P
Boron	157		150	J	4.1			P
Calcium	37200		37100		.33		10	P
Cobalt	1	U	5	U				P
Copper	5.54	J	15	U	100			P
Iron	30	U	150	U				P
Magnesium	6830		6950		1.68		10	P
Manganese	4.03	J	10	U	100			P
Potassium	2170		2380		9.93			P
Silica	69400		68300		1.7		10	P
Sodium	22500		22900		1.95		10	P
Strontium	196		197		.382		10	P
Tin	2.5	U	12.5	U				P
Vanadium	1.41	J	5.94	J	320			P
Zinc	3.42	J	16.5	U	100			P

*Analytical Methods:

P SW846 3005/6010B

METALS

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Serial Dilution Sample Summary

SDG NO. 2013-917

Client ID: CAPU-13-34788L

Contract: ESHL00210

Matrix: LIQUID

Level: Low

Sample ID: 327280002

Serial Dilution ID: 1202889617

<u>Analyte</u>	<u>Initial Value ug/L</u>	<u>C</u>	<u>Serial Value ug/L</u>	<u>C</u>	<u>% Difference</u>	<u>Qual</u>	<u>Acceptance Limit</u>	<u>M*</u>
Antimony	1	U	5	U				MS
Arsenic	1.7	U	8.5	U				MS
Cadmium	.11	U	.55	U				MS
Chromium	3.23	J	10	U	100			MS
Lead	.5	U	2.5	U				MS
Molybdenum	1.09		1.18	J	7.8			MS
Nickel	20.1		20.8		3.73			MS
Selenium	1.5	U	7.5	U				MS
Silver	.2	U	1	U				MS
Thallium	.45	U	2.26	J				MS
Uranium	.261		.45	J	72.4			MS

*Analytical Methods:

MS SW846 3005/6020 DOE-AL

General Chem Analysis

Case Narrative

**General Chemistry Narrative
ARS International (ARSL)
SDG 2013-917**

Method/Analysis Information

Product: Carbon, Total Organic

Analytical Batch: 1307044

Method: SW 9060 Total Organic Carbon

Sample Analysis

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

Sample ID	Client ID
327025001	CAPU-13-34776
1202889800	Method Blank (MB)
1202889801	326938001(CAPU-13-34774) Sample Duplicate (DUP)
1202889803	326938001(CAPU-13-34774) Post Spike (PS)
1202889805	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-093 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 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 sample was selected for QC analysis: 326938001 (CAPU-13-34774).

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 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: 1306822

Method: EPA120.1 Specific Conductivity

Sample Analysis

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

Sample ID	Client ID
327025002	CAPU-13-34784
1202889242	Laboratory Control Sample (LCS)
1202889244	327172002(CAPU-13-34781) Sample Duplicate (DUP)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-009 REV# 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 Conductivity analysis was performed on a Orion 160 Conductivity Meter.

Initial Calibration

All initial calibration requirements have been met for this SDG.

Calibration Verification Information

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

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: 327172002 (CAPU-13-34781).

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: 1306354 **Method:** EPA 150.1 pH

Sample Analysis

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

Sample ID	Client ID
327025002	CAPU-13-34784
1202887891	327024002(CALA-13-33434) Sample Duplicate (DUP)
1202887892	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# 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 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: 327024002 (CALA-13-33434).

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: 1202887891 (CALA-13-33434) and 327025002 (CAPU-13-34784).

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: 1193678 1202887891 (CALA-13-33434) and 327025002 (CAPU-13-34784).

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: 1306689

Method: EPA 300.0 Anions Liquid 28 day

Sample Analysis

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

Sample ID	Client ID
327025002	CAPU-13-34784
1202888802	Method Blank (MB)
1202888803	327024002(CALA-13-33434) Sample Duplicate (DUP)
1202888804	327024002(CALA-13-33434) Post Spike (PS)
1202888805	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: 327024002 (CALA-13-33434).

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 values for the sample and duplicate are less than the Practical Quantitation Limit (PQL); therefore, the RPD is not applicable. 1202888803 (CALA-13-33434).

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: 1202888803 (CALA-13-33434), 1202888804 (CALA-13-33434) and 327025002 (CAPU-13-34784).

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: 1306380 **Method:** EPA 350.1 Nitrogen and Ammonia L

Prep Batch : 1306379 **Method:** EEPA 350.2 Prep

Sample Analysis

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

Sample ID	Client ID
327025002	CAPU-13-34784
1202887953	Method Blank (MB)
1202887955	327024002(CALA-13-33434) Sample Duplicate (DUP)
1202887957	327024002(CALA-13-33434) Matrix Spike (MS)
1202887958	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# 9.

Preparation/Analytical Method Verification

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

Calibration Information

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

Initial Calibration

All initial calibration requirements have been met for this SDG.

Calibration Verification Information

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

Continuing Calibration Blanks

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

Calibration Verification Information (CCV)

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

Y Intercept Rule

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

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

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 327024002 (CALA-13-33434).

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.

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:	1306064	Method:	Nitrogen and Total Kjeldahl (TKN)
Prep Batch :	1306063	Method:	EEPA 351.2 Prep

Sample Analysis

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

Sample ID	Client ID
327025001	CAPU-13-34776
1202887249	Method Blank (MB)
1202887250	Laboratory Control Sample (LCS)
1202887251	326938001(CAPU-13-34774) Sample Duplicate (DUP)
1202887252	326938001(CAPU-13-34774) Matrix Spike (MS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-104 REV# 14.

Preparation/Analytical Method Verification

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

Calibration Information

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

Calibration Verification Information

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

Continuing Calibration Blanks

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

Calibration Verification Information (CCV)

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

Y Intercept Rule

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

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

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 326938001 (CAPU-13-34774).

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

The spike recovery falls outside of the established acceptance limits due to matrix interference: 1202887252 (CAPU-13-34774).

Duplicate Relative Percent Difference (RPD) Statement

One or more of the values for the sample and/or duplicate are less than 5 times the Practical Quantitation Limit (PQL), and the difference is within one PQL value; therefore, the RPD is not applicable. 1202887251 (CAPU-13-34774).

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 CCV failure: 1202887249 (MB), 1202887250 (LCS), 1202887251 (CAPU-13-34774) and 1202887252 (CAPU-13-34774).

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

The following DER was generated for this SDG: 1193916 1202887252 (CAPU-13-34774).

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:	1306387	Method:	EPA 353.2 Nitrogen and Nitrate/Nitrite

Sample Analysis

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

Sample ID	Client ID
327025002	CAPU-13-34784
1202887977	Method Blank (MB)
1202887979	327024002(CALA-13-33434) Sample Duplicate (DUP)
1202887981	327024002(CALA-13-33434) Post Spike (PS)
1202887982	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# 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.

Calibration Verification Information

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

Continuing Calibration Blanks

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

Calibration Verification Information (CCV)

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

acceptance limits.

Y Intercept Rule

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

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

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 327024002 (CALA-13-33434).

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 Preservation/Integrity

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

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

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

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

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

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

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

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

Method/Analysis Information

Product:	Total Phosphorus		
Analytical Batch:	1306384	Method:	EPA 365.4 Phosphorus and Total in
Prep Batch :	1306383	Method:	EEPA 365.4 Prep

Sample Analysis

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

Sample ID	Client ID
327025002	CAPU-13-34784
1202887965	Method Blank (MB)
1202887966	326937002(CALA-13-33433) Sample Duplicate (DUP)
1202887967	326938002(CAPU-13-34782) Sample Duplicate (DUP)
1202887968	326937002(CALA-13-33433) Matrix Spike (MS)
1202887969	326938002(CAPU-13-34782) Matrix Spike (MS)
1202887970	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# 10.

Preparation/Analytical Method Verification

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

Calibration Information

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

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 samples were selected for QC analysis: 326937002 (CALA-13-33433) and 326938002 (CAPU-13-34782).

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 following sample was re-analyzed due to CCV failure: 327025002 (CAPU-13-34784).

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: 1306350

Method: EPA 160.1 Solids and Dissolved-F

Sample Analysis

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

Sample ID	Client ID
327025002	CAPU-13-34784
1202887874	Method Blank (MB)
1202887875	327024007(CALA-13-33412) Sample Duplicate (DUP)
1202887876	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# 13.

Preparation/Analytical Method Verification

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

Calibration Information

The 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: 327024007 (CALA-13-33412).

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.

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. 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: Alkalinity

Analytical Batch: 1306856 **Method:** EPA 310.1 Total Alkalinity

Sample Analysis

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

Sample ID	Client ID
327025002	CAPU-13-34784
1202889343	Method Blank (MB)
1202889344	Laboratory Control Sample (LCS)
1202889347	327025002(CAPU-13-34784) Sample Duplicate (DUP)
1202889348	327025002(CAPU-13-34784) Matrix Spike (MS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-033 REV# 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 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: 327025002 (CAPU-13-34784).

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.

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

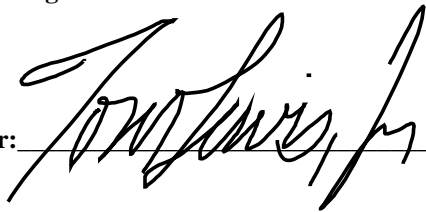
Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

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:

01 July 13

Sample Data Summary

GEL LABORATORIES LLC

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

Certificate of Analysis Report for

ARSL001 ARS International (63641-10)

Client SDG: 2013-917 GEL Work Order: 327025

The Qualifiers in this report are defined as follows:

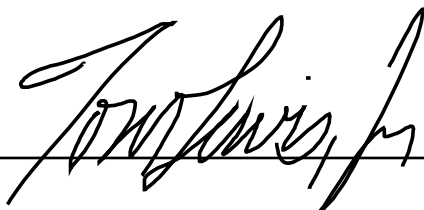
- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a Tracer compound
- ** Analyte is a surrogate compound
- H Analytical holding time was exceeded
- J Value is estimated
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.

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 limit as defined in the 'U' qualifier above.

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

A handwritten signature in black ink, appearing to read 'Valerie Davis', is written over a horizontal line.

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: June 28, 2013

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

Contact: Mr. Keith Greene
Project: LANL-WQH Water Samples

Client SDG: 2013-917

Client Sample ID: CAPU-13-34776

Sample ID: 327025001

Matrix: W

Collect Date: 04-JUN-13 11:36

Receive Date: 06-JUN-13

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	0.671	0.330	1.00	mg/L	1	TSM	06/14/13	1833	1307044	1
Nutrient Analysis											
Nitrogen, Total Kjeldahl (TKN) "As Received"											
Nitrogen, Total Kjeldahl	U	ND	0.033	0.100	mg/L	1	KLP1	06/12/13	1701	1306064	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	06/11/13	1800	1306063

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 351.2	

Notes:

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Certificate of Analysis

Report Date: June 28, 2013

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

Client SDG: 2013-917

Client Sample ID: CAPU-13-34784
Sample ID: 327025002
Matrix: W
Collect Date: 04-JUN-13 11:36
Receive Date: 06-JUN-13
Collector: Client

Project: ESHL00210
Client ID: ARSL001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Conductivity Analysis											
EPA120.1 Specific Conductivity "As Received"											
Conductivity		243	1.00	1.00	umhos/cm	1	LXA1	06/11/13	1121	1306822	1
Electrode Analysis											
EPA 150.1 pH "As Received"											
pH at Temp 14.8C	H	8.04	0.010	0.100	SU	1	LYG1	06/07/13	0858	1306354	2
Ion Chromatography											
EPA 300.0 Anions Liquid 28 day "As Received"											
Bromide	J	0.0692	0.067	0.200	mg/L	1	MAR1	06/18/13	0252	1306689	3
Chloride		7.96	0.067	0.200	mg/L	1					
Fluoride		0.283	0.033	0.100	mg/L	1					
Sulfate		7.26	0.133	0.400	mg/L	1					
Nutrient Analysis											
EPA 350.1 Nitrogen, Ammonia L "As Received"											
Nitrogen, Ammonia	J	0.0369	0.017	0.050	mg/L	1	KLP1	06/12/13	1438	1306380	4
EPA 353.2 Nitrogen, Nitrate/Nitrite "As Received"											
Nitrogen, Nitrate/Nitrite		0.372	0.017	0.050	mg/L	1	KLP1	06/12/13	1508	1306387	5
EPA 365.4 Phosphorus, Total in "As Received"											
Phosphorus, Total as P	U	ND	0.017	0.050	mg/L	1	KLP1	06/11/13	1417	1306384	6
Solids Analysis											
EPA 160.1 Solids, Dissolved-F "As Received"											
Total Dissolved Solids		153	3.40	14.3	mg/L		LYG1	06/07/13	0908	1306350	7
Titration Analysis											
EPA 310.1 Total Alkalinity "As Received"											
Alkalinity, Total as CaCO3		105	0.725	1.00	mg/L		LXA1	06/10/13	1648	1306856	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	06/12/13	1320	1306379
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	KLP1	06/10/13	1800	1306383

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Certificate of Analysis

Report Date: June 28, 2013

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

Client SDG: 2013-917

Client Sample ID: CAPU-13-34784
Sample ID: 327025002

Project: ESHL00210
Client ID: ARSL001

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	

Notes:

Quality Control Summary

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QC Summary

Report Date: June 28, 2013

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

Contact:

Workorder: 327025

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Carbon Analysis											
Batch	1307044										
QC1202889801	326938001	DUP									
Total Organic Carbon Average		1.64		1.57	mg/L	4.37	^	(+/-1.00)	TSM	06/14/13	16:06
QC1202889805	LCS										
Total Organic Carbon Average	10.0			10.1	mg/L			(85%-115%)		06/14/13	13:56
QC1202889800	MB										
Total Organic Carbon Average			U	ND	mg/L					06/14/13	13:47
QC1202889803	326938001	PS									
Total Organic Carbon Average	10.0	1.64		11.6	mg/L			(65%-120%)		06/14/13	16:26
Conductivity Analysis											
Batch	1306822										
QC1202889244	327172002	DUP									
Conductivity		447		451	umhos/cm	0.891		(0%-10%)	LXA1	06/11/13	11:22
QC1202889242	LCS										
Conductivity	1410			1440	umhos/cm			(95%-105%)		06/11/13	11:08
Electrode Analysis											
Batch	1306354										
QC1202887891	327024002	DUP									
pH		H	7.87	H	7.89	SU	0.254	(0%-10%)	LYG1	06/07/13	08:52
QC1202887892	LCS										
pH	7.00			7.01	SU			(99%-101%)		06/07/13	08:49
Ion Chromatography											
Batch	1306689										
QC1202888803	327024002	DUP									
Bromide		U	ND	U	ND	mg/L	N/A		MAR1	06/17/13	23:52
Chloride			3.52		3.57	mg/L	1.24	(0%-20%)			
Fluoride			0.299		0.306	mg/L	2.18	^	(+/-0.100)		
Sulfate			3.47		3.45	mg/L	0.468	(0%-20%)			
QC1202888805	LCS										
Bromide	1.25			1.26	mg/L			(90%-110%)		06/17/13	21:53

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QC Summary

Workorder: 327025

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1306689										
Chloride	5.00			4.77	mg/L		95.3	(90%-110%)	MAR1	06/17/13	21:53
Fluoride	2.50			2.50	mg/L		100	(90%-110%)			
Sulfate	10.0			9.97	mg/L		99.7	(90%-110%)			
QC1202888802	MB										
Bromide			U	ND	mg/L					06/17/13	21:23
Chloride			U	ND	mg/L						
Fluoride			U	ND	mg/L						
Sulfate			U	ND	mg/L						
QC1202888804	327024002	PS									
Bromide	1.25	U	ND	1.38	mg/L		106	(90%-110%)		06/18/13	00:22
Chloride	5.00		3.52	8.83	mg/L		106	(90%-110%)			
Fluoride	2.50		0.299	2.93	mg/L		105	(90%-110%)			
Sulfate	10.0		3.47	13.9	mg/L		105	(90%-110%)			
Nutrient Analysis											
Batch	1306064										
QC1202887251	326938001	DUP									
Nitrogen, Total Kjeldahl			0.194	0.150	mg/L	25.6 ^		(+/-0.100)	KLP1	06/12/13	16:51
QC1202887250	LCS										
Nitrogen, Total Kjeldahl	1.00			1.01	mg/L		101	(90%-110%)		06/12/13	16:40
QC1202887249	MB										
Nitrogen, Total Kjeldahl			U	ND	mg/L					06/12/13	16:40
QC1202887252	326938001	MS									
Nitrogen, Total Kjeldahl	1.00		0.194	1.06	mg/L		86.6*	(90%-110%)		06/12/13	16:52
Batch	1306380										
QC1202887955	327024002	DUP									
Nitrogen, Ammonia		J	0.0486	J	0.0448	mg/L	8.14 ^	(+/-0.050)	KLP1	06/12/13	14:34
QC1202887958	LCS										
Nitrogen, Ammonia	1.00			0.986	mg/L		98.6	(90%-110%)		06/12/13	14:23

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QC Summary

Workorder: 327025

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Nutrient Analysis											
Batch	1306380										
QC1202887953	MB										
Nitrogen, Ammonia			U	ND	mg/L				KLP1	06/12/13	14:22
QC1202887957	327024002	MS									
Nitrogen, Ammonia	1.00	J	0.0486	1.05	mg/L		100	(90%-110%)		06/12/13	14:35
Batch	1306384										
QC1202887966	326937002	DUP									
Phosphorus, Total as P		J	0.0335	J	0.0289	mg/L	14.7	^	(+/-0.050)	KLP1	06/11/13 13:48
QC1202887967	326938002	DUP									
Phosphorus, Total as P			0.973	0.974	mg/L	0.103		(0%-31%)		06/11/13	13:50
QC1202887970	LCS										
Phosphorus, Total as P	1.00			0.965	mg/L		96.5	(76%-120%)		06/11/13	13:46
QC1202887965	MB										
Phosphorus, Total as P			U	ND	mg/L					06/11/13	13:45
QC1202887968	326937002	MS									
Phosphorus, Total as P	1.00	J	0.0335	1.05	mg/L		102	(62%-139%)		06/11/13	13:49
QC1202887969	326938002	MS									
Phosphorus, Total as P	1.00		0.973	1.93	mg/L		95.7	(62%-139%)		06/11/13	13:51
Batch	1306387										
QC1202887979	327024002	DUP									
Nitrogen, Nitrate/Nitrite			0.627	0.627	mg/L	0.00		(0%-20%)	KLP1	06/12/13	15:03
QC1202887982	LCS										
Nitrogen, Nitrate/Nitrite	1.00			0.966	mg/L		96.6	(90%-110%)		06/12/13	15:01
QC1202887977	MB										
Nitrogen, Nitrate/Nitrite			U	ND	mg/L					06/12/13	14:59
QC1202887981	327024002	PS									
Nitrogen, Nitrate/Nitrite	1.00		0.627	1.60	mg/L		97.3	(90%-110%)		06/12/13	15:04
Solids Analysis											
Batch	1306350										
QC1202887875	327024007	DUP									
Total Dissolved Solids			141	143	mg/L	1.01		(0%-10%)	LYG1	06/07/13	09:08
QC1202887876	LCS										
Total Dissolved Solids	300			289	mg/L		96.2	(95%-105%)		06/07/13	09:08

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QC Summary

Workorder: 327025

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Solids Analysis											
Batch	1306350										
QC1202887874	MB										
Total Dissolved Solids			U	ND	mg/L				LYG1	06/07/13	09:08
Titration Analysis											
Batch	1306856										
QC1202889347	327025002	DUP									
Alkalinity, Total as CaCO3			105	104	mg/L	3.24		(0%-20%)	LXA1	06/10/13	17:30
Carbonate alkalinity (CaCO3)		U	ND	U	ND	mg/L	N/A				
QC1202889344	LCS										
Alkalinity, Total as CaCO3	50.0			51.9	mg/L		104	(90%-110%)		06/10/13	12:36
QC1202889343	MB										
Alkalinity, Total as CaCO3			U	ND	mg/L					06/10/13	12:35
Carbonate alkalinity (CaCO3)			U	ND	mg/L						
QC1202889348	327025002	MS									
Alkalinity, Total as CaCO3	50.0		105	155	mg/L		99.5	(80%-120%)		06/10/13	17:31

Notes:

- ** Analyte is a Tracer compound
- ** 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 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 %difference of sample and SD is >10%. Sample concentration must meet flagging criteria
- E Concentration of the target analyte exceeds the instrument calibration range
- E General Chemistry--Concentration of the target analyte exceeds the instrument calibration range
- FA Failed analysis.
- 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

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QC Summary

Workorder: 327025

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
J	Value is estimated										
JNX	Non Calibrated Compound										
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	REMP Result > MDC/CL and < RDL										
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	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, the difference is >70%.										
Q	One or more quality control criteria have not been met. Refer to the applicable narrative or DER.										
R	Per section 9.3.4.1 of Method 1664 Revision B, due to matrix spike recovery issues, this result may not be reported or used for regulatory compliance purposes.										
R	Sample results are rejected										
U	Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.										
UI	Gamma Spectroscopy--Uncertain identification										
UJ	Compound cannot be extracted										
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	Other specific qualifiers were required to properly define the results. Consult case narrative.										
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			
Mo.Day Yr. 12-JUN-13	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: ELECTRODE	Test / Method: EPA 150.1	Matrix Type: Liquid	Client Code: ESHL, FSMI
Batch ID: 1306354	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 327024(2013-916),327025(2013-917),327056 Application Issues: Sample received out of holding			
Specification and Requirements		DER Disposition:	
Exception Description:			
1. Sample received out of holding: 327024 002,004,007 327025 002 327056 001 QC 1202887891DUP		1. Sample received out of holding	

Originator's Name:
Lisa Gregory 12-JUN-13

Data Validator/Group Leader:
Thomas Lewis 18-JUN-13

DATA EXCEPTION REPORT			
Mo.Day Yr. 12-JUN-13	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: LACHAT Flow Injection Analyzer	Test / Method: EPA 351.2	Matrix Type: Liquid	Client Code: AECM, CBMW, ESHL, INMN,
Batch ID: 1306064	Sample Numbers: See below.		
Potentially affected work order(s)(SDG): 326937(2013-913),326938(2013-914),326947,326948,327024(2013-916),327025(2013-917),327026,327046,327047,327096,327141 Application Issues: Failed Recovery for MS/PS			
Specification and Requirements		DER Disposition:	
Exception Description:			
1. Failed Recovery for MS: QC 1202887252MS, QC 1202887948MS		1. The spike recoveries fall outside of the established acceptance limits due to matrix interference: 1202887948	

Originator's Name:
Kristen Parson 12-JUN-13

Data Validator/Group Leader:
Julia Hamilton 13-JUN-13

Radiological Analysis

**Radiochemistry Case Narrative
ARS International (ARSL)
SDG 2013-917
Work Order 327025**

Method/Analysis Information

Product: Alphaspec Am241 Liquid
Analytical Method: DOE EML HASL-300, Am-05-RC Modified
Analytical Batch Number: 1306186

Sample ID	Client ID
327025001	CAPU-13-34776
1202887498	Method Blank (MB)
1202887499	327025001(CAPU-13-34776) Sample Duplicate (DUP)
1202887500	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# 24.

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 1202887498 (MB) and 1202887500 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 327025001 (CAPU-13-34776). The QC was from ARSL work order 327025.

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 Pu, Liquid
Analytical Method:	DOE EML HASL-300, Pu-11-RC Modified
Analytical Batch Number:	1306187

Sample ID	Client ID
327025001	CAPU-13-34776
1202887501	Method Blank (MB)
1202887502	327025001(CAPU-13-34776) Sample Duplicate (DUP)
1202887503	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# 24.

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 1202887501 (MB) and 1202887503 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 327025001 (CAPU-13-34776). The QC was from ARSL work order 327025.

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: 1306189

Sample ID	Client ID
327025001	CAPU-13-34776
1202887504	Method Blank (MB)
1202887505	327025001(CAPU-13-34776) Sample Duplicate (DUP)
1202887506	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# 24.

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 1202887504 (MB) and 1202887506 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 327025001 (CAPU-13-34776). The QC was from ARSL work order 327025.

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: **Gammascpec**

Analytical Method: EPA 901.1

Analytical Batch Number: 1306868

Sample ID	Client ID
327025001	CAPU-13-34776
1202889385	Method Blank (MB)
1202889386	327280001(CAPU-13-34780) Sample Duplicate (DUP)
1202889387	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# 25.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met. The initial Calibrations were performed in July 2012, May 2013 and June 2013.

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: 327280001 (CAPU-13-34780). The QC was from ARSL work order 327280.

QC Information

All of the QC samples met the required acceptance limits.

CSU

The blank (1202889385 (MB)) results for Be-7, Cs-137 and I-131 are greater than 1.65 times the CSU but less than the MDC.

Technical Information:

Holding Time

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

Sample Re-prep/Re-analysis

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

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 (1202889385 (MB)) results for Be-7 and Cs-137 are greater than the decision level but less than the MDC.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: GFPC, Sr90, liquid

Analytical Method: EPA 905.0 Modified

Analytical Batch Number: 1306838

Sample ID	Client ID
327025001	CAPU-13-34776
1202889287	Method Blank (MB)
1202889288	327024006(CALA-13-33411) Sample Duplicate (DUP)
1202889289	327024006(CALA-13-33411) Matrix Spike (MS)
1202889290	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# 16.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met. The initial Calibration was performed in March 2013.

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 1202889287 (MB) and 1202889290 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 327024006 (CALA-13-33411). The QC was from ARSL work order 327024.

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 327025001 (CAPU-13-34776) was recounted due to results more negative than the three sigma TPU. The second count 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, 1202889289 (CALA-13-33411), 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:	1308529

Sample ID	Client ID
327025001	CAPU-13-34776
1202893584	Method Blank (MB)
1202893585	327623001(CAPU-13-34775) Sample Duplicate (DUP)
1202893586	327623001(CAPU-13-34775) Matrix Spike (MS)
1202893587	327623001(CAPU-13-34775) Matrix Spike Duplicate (MSD)
1202893588	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# 16.

Calibration Information:

Calibration Information

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

Aliquots for samples 1202893584 (MB) and 1202893588 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 327623001 (CAPU-13-34775). The QC was from ARSL work order 327623.

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 1202893586 (CAPU-13-34775) was recounted due to high recovery. The recount is reported. Sample 1202893585 (CAPU-13-34775) was recounted due to high relative percent difference/relative error ratio. The recount is reported.

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, 1202893586 (CAPU-13-34775) and 1202893587 (CAPU-13-34775), 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.

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Qualifier Definition Report for

ARSL001 ARS International (63641-10)

Client SDG: 2013-917 GEL Work Order: 327025

The Qualifiers in this report are defined as follows:

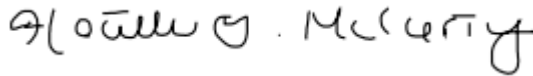
- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a Tracer compound
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.

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: Heather McCarty

Date: 28 JUN 2013

Title: Analyst II

Sample Data Summary

GEL LABORATORIES LLC

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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: Mr. Keith Greene
Project: LANL-WQH Water Samples

Report Date: June 28, 2013

Client Sample ID: CAPU-13-34776
Sample ID: 327025001
Matrix: W
Collect Date: 04-JUN-13
Receive Date: 06-JUN-13
Collector: Client

Project: ESHL00210
Client ID: ARSL001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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Rad Alpha Spec Analysis

Alphaspec Am241 Liquid "As Received"

Americium-241	U	0.00191	+/-0.00506	0.0291	0.0119	+/-0.00506	0.050	pCi/L		HAKB	06/13/13	1012	1306186	1
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Alphaspec Pu, Liquid "As Received"

Plutonium-238	U	0.00476	+/-0.00476	0.0223	0.00791	+/-0.00477	0.050	pCi/L		HAKB	06/13/13	1012	1306187	2
Plutonium-239/240	U	0.00952	+/-0.00753	0.0469	0.0202	+/-0.00754	0.050	pCi/L						

Alphaspec U, Liquid "As Received"

Uranium-234		0.828	+/-0.051	0.0641	0.0281	+/-0.0744	1.00	pCi/L		HAKB	06/13/13	1008	1306189	3
Uranium-235/236	U	0.0288	+/-0.0135	0.0498	0.020	+/-0.0136	1.00	pCi/L						
Uranium-238		0.434	+/-0.0377	0.0409	0.0165	+/-0.0472	0.500	pCi/L						

Rad Gamma Spec Analysis

Gammasppec "As Received"

Cesium-137	U	-0.747	+/-1.98	7.18	3.12	+/-1.99	8.00	pCi/L		MXR1	06/13/13	0900	1306868	4
Cobalt-60	U	1.89	+/-1.47	7.33	2.94	+/-1.54	8.00	pCi/L						
Neptunium-237	U	-5.69	+/-3.39	11.1	5.01	+/-3.64	10.0	pCi/L						
Potassium-40	U	22.6	+/-25.9	107	46.2	+/-26.5	10.0	pCi/L						
Sodium-22	U	0.571	+/-1.55	6.83	2.71	+/-1.55	10.0	pCi/L						

Rad Gas Flow Proportional Counting

GFPC, Sr90, liquid "As Received"

Strontium-90	U	-0.113	+/-0.106	0.444	0.191	+/-0.106	0.500	pCi/L		JXR1	06/24/13	1056	1306838	5
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WSP-GrossA/B "As Received"

Beta		4.04	+/-0.512	1.53	0.745	+/-0.615	3.00	pCi/L		DYT1	06/24/13	1906	1308529	6
Alpha	U	1.14	+/-0.797	2.69	0.903	+/-0.803	3.00	pCi/L		DYT1	06/26/13	1600	1308529	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"	1306186	85.5	(50%-105%)
Plutonium-242 Tracer	Alphaspec Pu, Liquid "As Received"	1306187	69.9	(50%-105%)
Uranium-232 Tracer	Alphaspec U, Liquid "As Received"	1306189	79.0	(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: June 28, 2013

Contact: Mr. Keith Greene

Project: LANL-WQH Water Samples

Client Sample ID: CAPU-13-34776
Sample ID: 327025001

Project: ESHL00210
Client ID: ARSL001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer Recovery	Test							Batch ID	Recovery%	Acceptable Limits				
Strontium Carrier		GFPC, Sr90, liquid "As Received"						1306838	70.2	(50%-105%)				

Notes:

TPU and Counting Uncertainty are calculated at the 68% confidence level (1-sigma).

Quality Control Data

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QC Summary

Report Date: June 28, 2013

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Client : Los Alamos National Laboratory
PO Box 1663
TA-03, SM271, Drop Pt. 02U, Rm111
Los Alamos, New Mexico
Contact: Mr. Keith Greene
Workorder: 327025

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Alpha Spec											
Batch	1306186										
QC1202887499	327025001	DUP									
Americium-241	U	0.00191	U	0.00445	pCi/L	0.133		(0-1)	HAKB	06/13/1310:12	
	Uncert:	+/-0.00506		+/-0.00445							
	TPU:	+/-0.00506		+/-0.00445							
**Americium-243 Tracer	2.62	2.24		2.16	pCi/L		82.7	(50%-105%)			
	Uncert:	+/-0.0704		+/-0.0759							
	TPU:	+/-0.124		+/-0.130							
QC1202887500	LCS										
Americium-241	1.41			1.26	pCi/L		89	(80%-120%)	HAKB	06/13/1310:12	
	Uncert:			+/-0.0435							
	TPU:			+/-0.0653							
**Americium-243 Tracer	2.09			1.81	pCi/L		86.5	(50%-105%)			
	Uncert:			+/-0.0557							
	TPU:			+/-0.0984							
QC1202887498	MB										
Americium-241			U	0.00363	pCi/L				HAKB	06/13/1310:12	
	Uncert:			+/-0.00679							
	TPU:			+/-0.00679							
**Americium-243 Tracer	2.09			1.66	pCi/L		79.3	(50%-105%)			
	Uncert:			+/-0.0613							
	TPU:			+/-0.105							
Batch	1306187										
QC1202887502	327025001	DUP									
Plutonium-238	U	0.00476	U	-0.00651	pCi/L	0.536		(0-1)	HAKB	06/13/1310:12	
	Uncert:	+/-0.00476		+/-0.00574							
	TPU:	+/-0.00477		+/-0.00574							
Plutonium-239/240	U	0.00952	U	-0.00217	pCi/L	0.381		(0-1)			
	Uncert:	+/-0.00753		+/-0.00782							
	TPU:	+/-0.00754		+/-0.00782							
**Plutonium-242 Tracer	2.44	1.71		1.97	pCi/L		80.6	(50%-105%)			
	Uncert:	+/-0.0764		+/-0.0735							
	TPU:	+/-0.128		+/-0.124							
QC1202887503	LCS										
Plutonium-238			U	0.0146	pCi/L			(80%-120%)	HAKB	06/13/1310:12	
	Uncert:			+/-0.00538							
	TPU:			+/-0.00541							
Plutonium-239/240	1.97			1.98	pCi/L		101	(80%-120%)			
	Uncert:			+/-0.0568							
	TPU:			+/-0.098							
**Plutonium-242 Tracer	1.95			1.78	pCi/L		91.1	(50%-105%)			
	Uncert:			+/-0.0564							
	TPU:			+/-0.0967							
QC1202887501	MB										

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QC Summary

Workorder: 327025

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Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Alpha Spec											
Batch	1306187										
Plutonium-238			U	-0.00369	pCi/L				HAKB	06/13/1310:12	
				Uncert: +/-0.00522							
				TPU: +/-0.00522							
Plutonium-239/240			U	0.00922	pCi/L						
				Uncert: +/-0.00612							
				TPU: +/-0.00613							
**Plutonium-242 Tracer	1.95			1.55	pCi/L		79.6	(50%-105%)			
				Uncert: +/-0.0611							
				TPU: +/-0.102							
Batch	1306189										
QC1202887505	327025001	DUP									
Uranium-234		0.828		0.755	pCi/L	0.259		(0-1)	HAKB	06/13/1310:08	
		Uncert: +/-0.051		+/-0.0447							
		TPU: +/-0.0744		+/-0.0661							
Uranium-235/236		U 0.0288	U	0.00969	pCi/L	0.393		(0-1)			
		Uncert: +/-0.0135		+/-0.0107							
		TPU: +/-0.0136		+/-0.0107							
Uranium-238		0.434		0.402	pCi/L	0.179		(0-1)			
		Uncert: +/-0.0377		+/-0.033							
		TPU: +/-0.0472		+/-0.042							
**Uranium-232 Tracer	2.69	2.13		2.22	pCi/L		82.5	(50%-105%)			
		Uncert: +/-0.0896		+/-0.0842							
		TPU: +/-0.198		+/-0.193							
QC1202887506	LCS										
Uranium-234				2.53	pCi/L				HAKB	06/13/1310:08	
				Uncert: +/-0.0774							
				TPU: +/-0.183							
Uranium-235/236				0.139	pCi/L						
				Uncert: +/-0.0208							
				TPU: +/-0.0227							
Uranium-238	2.70			2.72	pCi/L		101	(80%-120%)			
				Uncert: +/-0.0799							
				TPU: +/-0.195							
**Uranium-232 Tracer	2.15			1.70	pCi/L		79.1	(50%-105%)			
				Uncert: +/-0.0716							
				TPU: +/-0.158							
QC1202887504	MB										
Uranium-234			U	0.0108	pCi/L				HAKB	06/13/1310:08	
				Uncert: +/-0.00836							
				TPU: +/-0.00839							
Uranium-235/236			U	0.00267	pCi/L						
				Uncert: +/-0.00462							
				TPU: +/-0.00463							
Uranium-238			U	0.00864	pCi/L						
				Uncert: +/-0.00529							
				TPU: +/-0.00532							
**Uranium-232 Tracer	2.15			1.74	pCi/L		80.7	(50%-105%)			
				Uncert: +/-0.0687							

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QC Summary

Workorder: 327025

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Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Alpha Spec											
Batch	1306189										
		TPU:		+/-0.156							
Rad Gamma Spec											
Batch	1306868										
QC1202889386	327280001	DUP									
Cesium-137		U	-1.08	U	-0.289	pCi/L	0.139	(0-1)	MXR1	06/13/13	14:02
		Uncert:	+/-1.40		+/-1.42						
		TPU:	+/-1.43		+/-1.42						
Cobalt-60		U	2.20	U	-0.837	pCi/L	0.489	(0-1)			
		Uncert:	+/-1.21		+/-1.78						
		TPU:	+/-1.31		+/-1.79						
Neptunium-237		U	5.49	U	0.0831	pCi/L	0.506	(0-1)			
		Uncert:	+/-2.75		+/-2.31						
		TPU:	+/-3.03		+/-2.31						
Potassium-40		U	-31.3	U	2.10	pCi/L	0.390	(0-1)			
		Uncert:	+/-14.8		+/-26.3						
		TPU:	+/-16.5		+/-26.3						
Sodium-22		U	-0.30	U	-2.52	pCi/L	0.375	(0-1)			
		Uncert:	+/-1.41		+/-1.43						
		TPU:	+/-1.41		+/-1.55						
QC1202889387	LCS										
Americium-241	2780				2710	pCi/L	97.6	(80%-120%)	MXR1	06/13/13	11:30
		Uncert:			+/-105						
		TPU:			+/-177						
Cesium-137	6010				5990	pCi/L	99.6	(80%-120%)			
		Uncert:			+/-72.4						
		TPU:			+/-258						
Cobalt-60	5240				5190	pCi/L	99	(80%-120%)			
		Uncert:			+/-76.3						
		TPU:			+/-223						
Neptunium-237				U	-40.4	pCi/L					
		Uncert:			+/-28.0						
		TPU:			+/-29.5						
Potassium-40				U	15.9	pCi/L					
		Uncert:			+/-51.1						
		TPU:			+/-51.3						
Sodium-22				U	0.637	pCi/L					
		Uncert:			+/-9.58						
		TPU:			+/-9.59						
QC1202889385	MB										
Cesium-137				U	4.07	pCi/L					MXR1 06/13/13 11:30
		Uncert:			+/-2.08						
		TPU:			+/-2.09						
Cobalt-60				U	-1.75	pCi/L					
		Uncert:			+/-1.18						
		TPU:			+/-1.25						
Neptunium-237				U	3.72	pCi/L					
		Uncert:			+/-2.44						
		TPU:			+/-2.59						

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QC Summary

Workorder: 327025

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Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Gamma Spec											
Batch	1306868										
Potassium-40			U	-10.5	pCi/L						
				+/-15.9							
				+/-16.1							
Sodium-22			U	0.00232	pCi/L						
				+/-1.10							
				+/-1.10							
Rad Gas Flow											
Batch	1306838										
QC1202889288	327024006	DUP									
Strontium-90		U	-0.138	U	0.301	pCi/L	0.788	(0-1)	JXR1	06/23/13	12:51
				+/-0.126							
				+/-0.126							
**Strontium Carrier	8.55	5.40		6.40	mg		74.9	(50%-105%)			
QC1202889290	LCS										
Strontium-90		24.2		26.6	pCi/L		110	(80%-120%)	JXR1	06/23/13	12:53
				+/-0.717							
				+/-2.42							
**Strontium Carrier	8.55			5.70	mg		66.7	(50%-105%)			
QC1202889287	MB										
Strontium-90			U	-0.0012	pCi/L				JXR1	06/23/13	12:51
				+/-0.0691							
				+/-0.0691							
**Strontium Carrier	8.55			5.90	mg		69	(50%-105%)			
QC1202889289	327024006	MS									
Strontium-90		243	U	-0.138	pCi/L		114	(75%-125%)	JXR1	06/23/13	12:51
				+/-0.126							
				+/-0.126							
**Strontium Carrier	8.55	5.40		5.80	mg		67.8	(50%-105%)			
Batch	1308529										
QC1202893585	327623001	DUP									
Alpha		U	-0.0322	U	0.431	pCi/L	0.231	(0-1)	DYT1	06/26/13	17:21
				+/-0.464							
				+/-0.464							
Beta		U	0.373	U	1.05	pCi/L	0.206	(0-1)		06/25/13	17:45
				+/-0.753							
				+/-0.754							
QC1202893588	LCS										
Alpha		12.3		13.7	pCi/L		111	(80%-120%)	DYT1	06/26/13	17:41
				+/-0.643							
				+/-1.43							
Beta		48.5		54.5	pCi/L		112	(80%-120%)		06/24/13	16:29
				+/-0.952							
				+/-4.60							
QC1202893584	MB										
Alpha			U	-0.0731	pCi/L				DYT1	06/26/13	17:21
				+/-0.0167							
				+/-0.017							
Beta			U	-0.104	pCi/L					06/24/13	18:48

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QC Summary

Workorder: 327025

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Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Gas Flow											
Batch	1308529										
		Uncert:		+/-0.0438							
		TPU:		+/-0.0438							
QC1202893586 327623001 MS											
Alpha	82.3	U	-0.0322	77.5	pCi/L		94.2	(75%-125%)	DYT1	06/27/1312:54	
		Uncert:	+/-0.464	+/-4.18							
		TPU:	+/-0.464	+/-8.01							
Beta	1940	U	0.373	2190	pCi/L		113	(75%-125%)		06/24/1316:29	
		Uncert:	+/-0.753	+/-38.7							
		TPU:	+/-0.754	+/-186							
QC1202893587 327623001 MSD											
Alpha	82.3	U	-0.0322	90.0	pCi/L	0.370	109	(0-1)	DYT1	06/26/1317:21	
		Uncert:	+/-0.464	+/-4.76							
		TPU:	+/-0.464	+/-8.88							
Beta	1940	U	0.373	2290	pCi/L	0.129	118	(0-1)		06/24/1316:29	
		Uncert:	+/-0.753	+/-39.3							
		TPU:	+/-0.754	+/-194							

Notes:

TPU and Counting Uncertainty are calculated at the 68% confidence level (1-sigma).

The Qualifiers in this report are defined as follows:

- ** Analyte is a Tracer compound
- ** 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 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 %difference of sample and SD is >10%. Sample concentration must meet flagging criteria
- E Concentration of the target analyte exceeds the instrument calibration range
- E General Chemistry--Concentration of the target analyte exceeds the instrument calibration range
- FA Failed analysis.
- 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
- JNX Non Calibrated Compound
- 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 REMF Result > MDC/CL and < RDL
- 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

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QC Summary

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Parmname	NOM	Sample Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
N	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, the difference is >70%.									
Q	One or more quality control criteria have not been met. Refer to the applicable narrative or DER.									
R	Per section 9.3.4.1 of Method 1664 Revision B, due to matrix spike recovery issues, this result may not be reported or used for regulatory compliance purposes.									
R	Sample results are rejected									
U	Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.									
UI	Gamma Spectroscopy--Uncertain identification									
UJ	Compound cannot be extracted									
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	Other specific qualifiers were required to properly define the results. Consult case narrative.									
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.

** Indicates analyte is a surrogate/tracer 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.