

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 10310

EVENT NAME: Mortandad/Sandia (Chromium and General Surveillance)
MY2015 Q4 Watershed Sampling_Mortandad

SAMPLE ID: CAMO-15-102558

WORK ORDER:

	<u>AS PLANNED</u>	<u>AS COLLECTED</u>		<u>AS PLANNED</u>	<u>AS COLLECTED</u>
Date Collected (MM/DD/YYYY):	08/06/2015	OK	FIELD MATRIX:	W	OK
TIME COLLECTED (HH:MM):	1334	↓	MEDIA:	UA	↓
PRS ID:	NA	↓	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-33 S1	↓	FIELD PREP:	UF	OK
LOCATION TYPE:	NA	↓	FIELD QC TYPE:	FD	↓
TOP DEPTH:	↓	↓	SAMPLE USAGE:	QC	↓
BOTTOM DEPTH:	↓	↓	EXCAVATED:	YES / NO / <input checked="" type="radio"/> NA	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	MSGP-Hg	1 LITER POLY	1	HNO3	Y	NA
↓	WSP-CN(T)	250 ML POLY	1	NAOH	↓	↓
↓	WSP-GrossA/B	1 LITER POLY	1	HNO3	↓	↓
↓	WSP-RAD	1 GAL POLY	1	HNO3	↓	↓
↓	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Flow (in gpm) _____ GPM Oxidation-Reduction Potential _____ mV
 pH _____ SU Specific Conductance _____ uS/cm Temperature _____ deg C
 Turbidity _____ NTU

AT 8-6-15

COLLECTED BY (PRINT): J. Berryhill & T. Bonham

RELINQUISHED BY (Printed Name) Austin Tosh (Signature) <i>Austin Tosh</i>	Date/Time 8-6-15 1605	RECEIVED BY (Printed Name) Sherwood (Signature) <i>Sherwood</i>	Date/Time 8/6/15 1605
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 10310

EVENT NAME: Mortandad/Sandia (Chromium and General Surveillance)
MY2015 Q4 Watershed Sampling_Mortandad

SAMPLE ID: CAMO-15-102559

WORK ORDER:

	<u>AS PLANNED</u>	<u>AS COLLECTED</u>		<u>AS PLANNED</u>	<u>AS COLLECTED</u>
Date Collected (MM/DD/YYYY):	08/06/2015	GK	FIELD MATRIX:	W	GK
TIME COLLECTED (HH:MM):	1334		MEDIA:	UA	↓
PRS ID:	NA		SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-33 S1		FIELD PREP:	F	OK
LOCATION TYPE:	NA		FIELD QC TYPE:	FD	↓
TOP DEPTH:	↓		SAMPLE USAGE:	QC	↓
BOTTOM DEPTH:	↓	↓	EXCAVATED:		YES / NO / <input checked="" type="radio"/> NA

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

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

AT 8-6-15

Dissolved Oxygen	_____ mg/L	Flow (in gpm)	_____ GPM	Oxidation-Reduction Potential	_____ mV
pH	_____ SU	Specific Conductance	_____ uS/cm	Temperature	_____ deg C
Turbidity	_____ NTU				

COLLECTED BY (PRINT): T. Bonham & J. Berryhill

RELINQUISHED BY (Printed Name) Austin Tosh (Signature) <i>Austin Tosh</i>	Date/Time 8-6-15 1605	RECEIVED BY (Printed Name) S. Sherwood (Signature) <i>S. Sherwood</i>	Date/Time 8/6/15 1605
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 10310

EVENT NAME: Mortandad/Sandia (Chromium and General Surveillance)
MY2015 Q4 Watershed Sampling_Mortandad

SAMPLE ID: CAMO-15-102580

WORK ORDER: NA

	<u>AS PLANNED</u>	<u>AS COLLECTED</u>		<u>AS PLANNED</u>	<u>AS COLLECTED</u>
Date Collected (MM/DD/YYYY):	08/06/2015	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1334	↓	MEDIA:	UA	↓
PRS ID:	NA	↓	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-33 S1	↓	FIELD PREP:	UF	OK
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
TOP DEPTH:	NA	↓	SAMPLE USAGE:	INV	↓
BOTTOM DEPTH:	↓	↓	EXCAVATED:	YES / NO / <u>NA</u>	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	MSGP-Hg	1 LITER POLY	1	HNO3	Y	NA
↓	WSP-CN(T)	250 ML POLY	1	NAOH	↓	↓
↓	WSP-GrossA/B	1 LITER POLY	1	HNO3	↓	↓
↓	WSP-RAD	1 GAL POLY	1	HNO3	↓	↓
↓	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS: None

LOCATION COMMENTS: Sampled 40' From running generator

FIELD PARAMETERS:

Dissolved Oxygen	5.35	mg/L	Flow (in gpm)	0.6	GPM	Oxidation-Reduction Potential	102.0	mV
pH	7.32	SU	Specific Conductance	147	uS/cm	Temperature	22.76	deg C
Turbidity	0.6	NTU						

COLLECTED BY (PRINT): T. Bonham & J. Berryhill

RELINQUISHED BY (Printed Name) Austin Tash (Signature) <i>Austin Tash</i>	Date/Time 8-6-15 1605	RECEIVED BY (Printed Name) S. Sherwood (Signature) <i>Sherwood</i>	Date/Time 8/6/15 1605
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 10310

EVENT NAME: Mortandad/Sandia (Chromium and General Surveillance)
MY2015 Q4 Watershed Sampling_Mortandad

SAMPLE ID: CAMO-15-102581

WORK ORDER: NA

	<u>AS PLANNED</u>	<u>AS COLLECTED</u>		<u>AS PLANNED</u>	<u>AS COLLECTED</u>
Date Collected (MM/DD/YYYY):	08/06/2015	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1500	↓	MEDIA:	UA	↓
PRS ID:	NA	↓	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-33 S2	↓	FIELD PREP:	UF	OK
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
TOP DEPTH:	NA	↓	SAMPLE USAGE:	INV	↓
BOTTOM DEPTH:	↓	↓	EXCAVATED:	YES / NO / (NA)	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	MSGP-Hg	1 LITER POLY	1	HNO3	Y	NA
↓	WSP-CN(T)	250 ML POLY	1	NAOH	↓	↓
↓	WSP-GrossA/B	1 LITER POLY	1	HNO3	↓	↓
↓	WSP-RAD	1 GAL POLY	1	HNO3	↓	↓
↓	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS: None

LOCATION COMMENTS: Sampled 40' from running diesel generator

FIELD PARAMETERS:

Dissolved Oxygen	6.55 mg/L	Flow (in gpm)	2.8 GPM	Oxidation-Reduction Potential	104.2 mV
pH	7.40 SU	Specific Conductance	144 uS/cm	Temperature	22.38 deg C
Turbidity	At 8-6-15 0.007 NTU				

COLLECTED BY (PRINT): T. Bonham & J. Berryhill

RELINQUISHED BY (Printed Name) Austin Tsch (Signature) <i>Austin Tsch</i>	Date/Time 8-6-15 1605	RECEIVED BY (Printed Name) S. Sherwood (Signature) <i>S. Sherwood</i>	Date/Time 8/6/15 1605
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 10310

EVENT NAME: Mortandad/Sandia (Chromium and General Surveillance)
MY2015 Q4 Watershed Sampling_Mortandad

SAMPLE ID: CAMO-15-102584

WORK ORDER: NA

	<u>AS PLANNED</u>	<u>AS COLLECTED</u>		<u>AS PLANNED</u>	<u>AS COLLECTED</u>
Date Collected (MM/DD/YYYY):	08/06/2015	ok	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):	1121		MEDIA:	UA	
PRS ID:	ok		SAMPLE TECH CODE:	UA	BSP
LOCATION ID:	R-44 S1		FIELD PREP:	UF	ok
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
TOP DEPTH:	ok		SAMPLE USAGE:	INV	
BOTTOM DEPTH:	f		EXCAVATED:	YES / <input checked="" type="checkbox"/> NO / NA	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
MA	MSGP-Hg	1 LITER POLY	1	HNO3	Y	MA
J	WSP-CN(T)	250 ML POLY	1	NAOH		
J	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

LOCATION COMMENTS:

MA
dised generator running 50' away

FIELD PARAMETERS:

Dissolved Oxygen	6.84	mg/L	Flow (in gpm)	3.33	GPM	Oxidation-Reduction Potential	156.6	mV
pH	7.77	SU	Specific Conductance	138	uS/cm	Temperature	21.00	deg C
Turbidity	0.4	NTU						

COLLECTED BY (PRINT):

A. V. J. + D. Jernaska

RELINQUISHED BY (Printed Name) (Signature)	Date/Time 8/6/15 1400	RECEIVED BY (Printed Name) (Signature)	Date/Time 8/6/15 1400
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 10310

EVENT NAME: Mortandad/Sandia (Chromium and General Surveillance)
MY2015 Q4 Watershed Sampling_Mortandad

SAMPLE ID: CAMO-15-102585

WORK ORDER: NA

	<u>AS PLANNED</u>	<u>AS COLLECTED</u>		<u>AS PLANNED</u>	<u>AS COLLECTED</u>
Date Collected (MM/DD/YYYY):	08/06/2015	ok	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):	1309	↓	MEDIA:	UA	↓
PRS ID:	ok	↓	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-44 S2	↓	FIELD PREP:	UF	ok
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
TOP DEPTH:	ok	↓	SAMPLE USAGE:	INV	↓
BOTTOM DEPTH:	↓	↓	EXCAVATED:	YES / <input checked="" type="radio"/> / NA	

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

SAMPLE COMMENTS:

LOCATION COMMENTS:

diesel generator running 50' away

FIELD PARAMETERS:

Dissolved Oxygen	<u>7.06</u>	mg/L	Flow (in gpm)	<u>3.45</u>	GPM	Oxidation-Reduction Potential	<u>136.2</u>	mV
pH	<u>7.85</u>	SU	Specific Conductance	<u>145</u>	uS/cm	Temperature	<u>21.57</u>	deg C
Turbidity	<u>0.3</u>	NTU						

COLLECTED BY (PRINT):

D. Sawawillo

RELINQUISHED BY (Printed Name) (Signature)	Date/Time 8/6/15 1400	RECEIVED BY (Printed Name) (Signature)	Date/Time 8/6/15 1400
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 10310

EVENT NAME: Mortandad/Sandia (Chromium and General Surveillance)
MY2015 Q4 Watershed Sampling_Mortandad

SAMPLE ID: CAMO-15-102604

WORK ORDER: NA

	<u>AS PLANNED</u>	<u>AS COLLECTED</u>		<u>AS PLANNED</u>	<u>AS COLLECTED</u>
Date Collected (MM/DD/YYYY):	08/06/2015	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1334	↓	MEDIA:	UA	↓
PRS ID:	NA	↓	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-33 S1	↓	FIELD PREP:	F	OK
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
TOP DEPTH:	NA	↓	SAMPLE USAGE:	INV	↓
BOTTOM DEPTH:	↓	↓	EXCAVATED:	YES / NO / (NA)	

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

SAMPLE COMMENTS:

LOCATION COMMENTS:

AT 8-6-15

FIELD PARAMETERS:

Dissolved Oxygen	mg/L	Flow (in gpm)	GPM	Oxidation-Reduction Potential	mV
pH	SU	Specific Conductance	uS/cm	Temperature	deg C
Turbidity	NTU				

COLLECTED BY (PRINT):

RELINQUISHED BY (Printed Name) Austin Tesh (Signature) <i>Austin Tesh</i>	Date/Time 8-6-15 1605	RECEIVED BY (Printed Name) S. Sherwood (Signature) <i>S. Sherwood</i>	Date/Time 8/6/15 1605
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 10310

EVENT NAME: Mortandad/Sandia (Chromium and General Surveillance)
MY2015 Q4 Watershed Sampling_Mortandad

SAMPLE ID: CAMO-15-102605

WORK ORDER: NA

	<u>AS PLANNED</u>	<u>AS COLLECTED</u>		<u>AS PLANNED</u>	<u>AS COLLECTED</u>
Date Collected (MM/DD/YYYY):	08/06/2015	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1500	↓	MEDIA:	UA	↓
PRS ID:	NA	↓	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-33 S2	↓	FIELD PREP:	F	OK
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
TOP DEPTH:	NA	↓	SAMPLE USAGE:	INV	↓
BOTTOM DEPTH:	↓	↓	EXCAVATED:	YES / NO / <u>NA</u>	

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

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Flow (in gpm) _____ GPM Oxidation-Reduction Potential _____ mV
 pH _____ SU Specific Conductance _____ uS/cm Temperature _____ deg C
 Turbidity _____ NTU

AT 8-6-15

AT 8-6-15

COLLECTED BY (PRINT): T. Bonham & J. Bee Barryhill

RELINQUISHED BY (Printed Name) Austin Tesh (Signature) <i>Austin Tesh</i>	Date/Time 8-6-15 1605	RECEIVED BY Sherwood (Printed Name) (Signature) <i>Sherwood</i>	Date/Time 8/6/15 1605
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 10310

EVENT NAME: Mortandad/Sandia (Chromium and General Surveillance)
MY2015 Q4 Watershed Sampling_Mortandad

SAMPLE ID: CAMO-15-102608

WORK ORDER: NA

	<u>AS PLANNED</u>	<u>AS COLLECTED</u>		<u>AS PLANNED</u>	<u>AS COLLECTED</u>
Date Collected (MM/DD/YYYY):	08/16/2015	ok	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):	1121		MEDIA:	UA	↓
PRS ID:	ok		SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-44 S1		FIELD PREP:	F	ok
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	↓
TOP DEPTH:	ok		SAMPLE USAGE:	INV	↓
BOTTOM DEPTH:			EXCAVATED:	YES / <input checked="" type="radio"/> / NA	

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

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen	_____	mg/L	Flow (l/gpm)	_____	GPM	Oxidation-Reduction Potential	_____	mV
pH	_____	SU	Specific Conductance	_____	uS/cm	Temperature	_____	deg C
Turbidity	_____	NTU	<div style="border: 1px solid black; border-radius: 50%; padding: 10px; display: inline-block;"> <p style="font-size: 2em; margin: 0;">8/16/15</p> </div>					

COLLECTED BY (PRINT): D. Jaramillo

RELINQUISHED BY (Printed Name) (Signature)	Date/Time 8/16/15 1400	RECEIVED BY (Printed Name) (Signature)	Date/Time 8/16/15 1400
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 10310

EVENT NAME: Mortandad/Sandia (Chromium and General Surveillance)
MY2015 Q4 Watershed Sampling_Mortandad

SAMPLE ID: CAMO-15-102609

WORK ORDER: NA

	<u>AS PLANNED</u>	<u>AS COLLECTED</u>		<u>AS PLANNED</u>	<u>AS COLLECTED</u>
Date Collected (MM/DD/YYYY):	08/06/2015	ok	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):	1304		MEDIA:	UA	↓
PRS ID:	ok		SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-44 S2		FIELD PREP:	F	ok
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	↓
TOP DEPTH:	ok	↓	SAMPLE USAGE:	INV	↓
BOTTOM DEPTH:	↓	↓	EXCAVATED:	YES / NO / NA	

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

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Flow (in gpm) _____ GPM Oxidation-Reduction Potential _____ mV
 pH _____ SU Specific Conductance _____ uS/cm Temperature _____ deg C
 Turbidity _____ NTU

AS & CLIS

COLLECTED BY (PRINT): *D. Sawwillo*

RELINQUISHED BY (Printed Name) (Signature)	Date/Time 8/6/15 1400	RECEIVED BY (Printed Name) (Signature)	Date/Time 8/6/15 1400
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

DATA VALIDATION REPORT

Chain Of Custody No. 2015-2084

1. Distribution Of Samples In EDD.

SDG	Analytical Method	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks
379019	EPA:120.1	4	1			
379019	EPA:150.1	4	1			
379019	EPA:160.1	4	1			
379019	EPA:245.2	8	2			
379019	EPA:300.0	4	1			
379019	EPA:310.1	4	1			
379019	EPA:335.4	4	1			
379019	EPA:350.1	4	1			
379019	EPA:351.2	4	1			
379019	EPA:353.2	4	1			
379019	EPA:365.4	4	1			
379019	EPA:900	2	1			
379019	EPA:901.1	2	1			
379019	EPA:905.0	2	1			
379019	HASL-300:AM-241	2	1			
379019	HASL-300:ISOPU	2	1			
379019	HASL-300:ISOU	2	1			
379019	SM:A2340B	4	1			
379019	SW-846:6010C	4	1			
379019	SW-846:6020	4	1			
379019	SW-846:6850	4	1			
379019	SW-846:9060	4	1			

SDG	Analytical Method	Analysis Lot ID	Prep Lot ID	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks	Method Blanks	Matrix Spikes	Matrix Spike Dups	Analytical Spikes	Post-Digestion Spikes	Lab Control Samples	Lab Control Sample Dups	Blank Spike	Blank Spike Dups	Lab Duplicates	Storage Blanks	Preparation Blanks	Reagent Blanks
379019	EPA:120.1	1499837	1499837	4	1									1				1			
379019	EPA:150.1	1499835	1499835	4	1									1				2			

DATA VALIDATION REPORT

SDG	Analytical Method	Analysis Lot ID	Prep Lot ID	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks	Method Blanks	Matrix Spikes	Matrix Spike Dups	Analytical Spikes	Post-Digestion Spikes	Lab Control Samples	Lab Control Sample Dups	Blank Spike	Blank Spike Dups	Lab Duplicates	Storage Blanks	Preparation Blanks	Reagent Blanks
379019	EPA:160.1	1499735	1499735	4	1				1					1			1				
379019	EPA:245.2	1503572	1503571	8	2				1	2				1			2				
379019	EPA:300.0	1500059	1500059	4	1				1					1			1				
379019	EPA:310.1	1499840	1499840	4	1				1	1				1			1				
379019	EPA:335.4	1498741	1498740	4	1				1	1				1			1				
379019	EPA:350.1	1499451	1499449	4	1				1	1				1			1				
379019	EPA:351.2	1499653	1499651	4	1				1	1				1			1				
379019	EPA:353.2	1499212	1499212	4	1				1					1			1				
379019	EPA:365.4	1499655	1499654	4	1				1	2				1			2				
379019	EPA:900	1501030	1501030	2	1				1	1	1			1			1				
379019	EPA:900	1504918	1504918	2	1				1	1	1			1			1				
379019	EPA:901.1	1499679	1499679	2	1				1					1			2				
379019	EPA:905.0	1501028	1501028	2	1				1	1				1			1				
379019	HASL-300:AM-241	1499559	1499559	2	1				1					1			1				
379019	HASL-300:ISOPU	1499560	1499560	2	1				1					1			1				
379019	HASL-300:ISOU	1499562	1499562	2	1				1					1			1				
379019	SM:A2340B	1501953	1501953	4	1																
379019	SW-846:6010C	1499471	1499470	4	1				1	1				1			1				
379019	SW-846:6020	1499480	1499479	4	1				1	1				1			1				
379019	SW-846:6850	1500488	1500487	4	1				1	1	1			1							
379019	SW-846:9060	1500166	1500166	4	1				1					1			1				

2. Distribution Of Analytes In EDD.

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
EPA:120.1	GENERAL CHEMISTRY	CAMO-15-102559	379019004	FD	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CAMO-15-102604	379019002	REG	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CAMO-15-102605	379019006	REG	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CAMO-15-102608	379019008	REG	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CAMO-15-102609	379019010	REG	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CASA-15-102647	1203372696	DUP	1	0	0	0

DATA VALIDATION REPORT

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
EPA:120.1	GENERAL CHEMISTRY	LCS	1203372695	LCS	0	0	1	0
EPA:150.1	GENERAL CHEMISTRY	CAMO-15-102559	379019004	FD	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CAMO-15-102604	1203372688	DUP	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CAMO-15-102604	379019002	REG	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CAMO-15-102605	379019006	REG	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CAMO-15-102608	379019008	REG	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CAMO-15-102609	379019010	REG	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CASA-15-102647	1203372687	DUP	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	LCS	1203372686	LCS	0	0	1	0
EPA:160.1	GENERAL CHEMISTRY	CAMO-15-102559	379019004	FD	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	CAMO-15-102604	1203372379	DUP	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	CAMO-15-102604	379019002	REG	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	CAMO-15-102605	379019006	REG	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	CAMO-15-102608	379019008	REG	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	CAMO-15-102609	379019010	REG	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	LCS	1203372378	LCS	0	0	1	0
EPA:160.1	GENERAL CHEMISTRY	MB	1203372377	MB	1	0	0	0
EPA:245.2	INORGANIC	CAMO-15-102558	379019003	FD	1	0	0	0
EPA:245.2	INORGANIC	CAMO-15-102559	379019004	FD	1	0	0	0
EPA:245.2	INORGANIC	CAMO-15-102580	379019001	REG	1	0	0	0
EPA:245.2	INORGANIC	CAMO-15-102581	379019005	REG	1	0	0	0
EPA:245.2	INORGANIC	CAMO-15-102584	379019007	REG	1	0	0	0
EPA:245.2	INORGANIC	CAMO-15-102585	379019009	REG	1	0	0	0
EPA:245.2	INORGANIC	CAMO-15-102604	379019002	REG	1	0	0	0
EPA:245.2	INORGANIC	CAMO-15-102605	379019006	REG	1	0	0	0
EPA:245.2	INORGANIC	CAMO-15-102608	379019008	REG	1	0	0	0
EPA:245.2	INORGANIC	CAMO-15-102609	379019010	REG	1	0	0	0
EPA:245.2	INORGANIC	CASA-15-102643	1203382650	DUP	1	0	0	0
EPA:245.2	INORGANIC	CASA-15-102643	1203382652	MS	0	0	1	0
EPA:245.2	INORGANIC	LCS	1203382648	LCS	0	0	1	0
EPA:245.2	INORGANIC	MB	1203382647	MB	1	0	0	0
EPA:245.2	INORGANIC	WTESR-15-97804	1203382649	DUP	1	0	0	0
EPA:245.2	INORGANIC	WTESR-15-97804	1203382651	MS	0	0	1	0
EPA:300.0	GENERAL CHEMISTRY	CAMO-15-102559	379019004	FD	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAMO-15-102604	379019002	REG	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAMO-15-102605	379019006	REG	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAMO-15-102608	379019008	REG	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAMO-15-102609	379019010	REG	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CASA-15-102647	1203373270	DUP	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	LCS	1203373269	LCS	0	0	4	0

DATA VALIDATION REPORT

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
EPA:300.0	GENERAL CHEMISTRY	MB	1203373268	MB	4	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAMO-15-102559	379019004	FD	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAMO-15-102604	379019002	REG	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAMO-15-102605	379019006	REG	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAMO-15-102608	379019008	REG	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAMO-15-102609	379019010	REG	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CASA-15-102647	1203372714	DUP	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CASA-15-102647	1203372716	MS	0	0	1	0
EPA:310.1	GENERAL CHEMISTRY	LCS	1203372712	LCS	0	0	1	0
EPA:310.1	GENERAL CHEMISTRY	MB	1203372710	MB	2	0	0	0
EPA:335.4	GENERAL CHEMISTRY	CAMO-15-102558	379019003	FD	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	CAMO-15-102580	1203371911	DUP	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	CAMO-15-102580	1203371912	MS	0	0	1	0
EPA:335.4	GENERAL CHEMISTRY	CAMO-15-102580	379019001	REG	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	CAMO-15-102581	379019005	REG	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	CAMO-15-102584	379019007	REG	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	CAMO-15-102585	379019009	REG	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	LCS	1203369924	LCS	0	0	1	0
EPA:335.4	GENERAL CHEMISTRY	MB	1203369923	MB	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAMO-15-102559	379019004	FD	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAMO-15-102604	379019002	REG	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAMO-15-102605	379019006	REG	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAMO-15-102608	379019008	REG	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAMO-15-102609	379019010	REG	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CASA-15-102647	1203371696	DUP	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CASA-15-102647	1203371697	MS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	LCS	1203371693	LCS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	MB	1203371692	MB	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAMO-15-102558	379019003	FD	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAMO-15-102580	379019001	REG	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAMO-15-102581	379019005	REG	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAMO-15-102584	379019007	REG	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAMO-15-102585	379019009	REG	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CASA-15-102633	1203372231	DUP	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CASA-15-102633	1203372232	MS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	LCS	1203372230	LCS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	MB	1203372229	MB	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAMO-15-102559	379019004	FD	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAMO-15-102604	379019002	REG	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAMO-15-102605	379019006	REG	1	0	0	0

DATA VALIDATION REPORT

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
EPA:353.2	GENERAL CHEMISTRY	CAMO-15-102608	379019008	REG	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAMO-15-102609	379019010	REG	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CASA-15-102647	1203372742	DUP	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	LCS	1203371096	LCS	0	0	1	0
EPA:353.2	GENERAL CHEMISTRY	MB	1203371095	MB	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAMO-15-102559	379019004	FD	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAMO-15-102604	379019002	REG	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAMO-15-102605	379019006	REG	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAMO-15-102608	379019008	REG	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAMO-15-102609	379019010	REG	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CASA-15-102647	1203372235	DUP	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CASA-15-102647	1203372236	MS	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	CASA-15-102650	1203375689	DUP	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CASA-15-102650	1203375690	MS	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	LCS	1203372234	LCS	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	MB	1203372233	MB	1	0	0	0
EPA:900	RAD	CAMO-15-102558	1203375956	DUP	1	0	0	0
EPA:900	RAD	CAMO-15-102558	1203375957	MS	0	0	1	0
EPA:900	RAD	CAMO-15-102558	1203375958	MSD	0	0	1	0
EPA:900	RAD	CAMO-15-102558	379019003	FD	2	0	0	0
EPA:900	RAD	CAMO-15-102580	1203386176	DUP	1	0	0	0
EPA:900	RAD	CAMO-15-102580	1203386177	MS	0	0	1	0
EPA:900	RAD	CAMO-15-102580	1203386178	MSD	0	0	1	0
EPA:900	RAD	CAMO-15-102580	379019001	REG	2	0	0	0
EPA:900	RAD	CAMO-15-102581	379019005	REG	2	0	0	0
EPA:900	RAD	LCS	1203375959	LCS	0	0	1	0
EPA:900	RAD	LCS	1203386179	LCS	0	0	1	0
EPA:900	RAD	MB	1203375955	MB	1	0	0	0
EPA:900	RAD	MB	1203386175	MB	1	0	0	0
EPA:901.1	RAD	CAMO-15-102558	379019003	FD	5	0	0	0
EPA:901.1	RAD	CAMO-15-102580	1203372294	DUP	5	0	0	0
EPA:901.1	RAD	CAMO-15-102580	379019001	REG	5	0	0	0
EPA:901.1	RAD	CAMO-15-102581	379019005	REG	5	0	0	0
EPA:901.1	RAD	LCS	1203372293	LCS	0	0	3	0
EPA:901.1	RAD	MB	1203372291	MB	5	0	0	0
EPA:901.1	RAD	WTLAP-15-97349	1203372292	DUP	5	0	0	0
EPA:905.0	RAD	CAMO-15-102558	379019003	FD	1	0	0	0
EPA:905.0	RAD	CAMO-15-102580	379019001	REG	1	0	0	0
EPA:905.0	RAD	CAMO-15-102581	1203375952	DUP	1	0	0	0
EPA:905.0	RAD	CAMO-15-102581	1203375953	MS	0	0	1	0

DATA VALIDATION REPORT

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
EPA:905.0	RAD	CAMO-15-102581	379019005	REG	1	0	0	0
EPA:905.0	RAD	LCS	1203375954	LCS	0	0	1	0
EPA:905.0	RAD	MB	1203375951	MB	1	0	0	0
HASL-300:AM-241	RAD	CAMO-15-102558	379019003	FD	1	0	0	0
HASL-300:AM-241	RAD	CAMO-15-102580	1203371987	DUP	1	0	0	0
HASL-300:AM-241	RAD	CAMO-15-102580	379019001	REG	1	0	0	0
HASL-300:AM-241	RAD	CAMO-15-102581	379019005	REG	1	0	0	0
HASL-300:AM-241	RAD	LCS	1203371988	LCS	0	0	1	0
HASL-300:AM-241	RAD	MB	1203371986	MB	1	0	0	0
HASL-300:ISOPU	RAD	CAMO-15-102558	379019003	FD	2	0	0	0
HASL-300:ISOPU	RAD	CAMO-15-102580	1203371990	DUP	2	0	0	0
HASL-300:ISOPU	RAD	CAMO-15-102580	379019001	REG	2	0	0	0
HASL-300:ISOPU	RAD	CAMO-15-102581	379019005	REG	2	0	0	0
HASL-300:ISOPU	RAD	LCS	1203371991	LCS	0	0	1	0
HASL-300:ISOPU	RAD	MB	1203371989	MB	2	0	0	0
HASL-300:ISOU	RAD	CAMO-15-102558	379019003	FD	3	0	0	0
HASL-300:ISOU	RAD	CAMO-15-102580	1203371995	DUP	3	0	0	0
HASL-300:ISOU	RAD	CAMO-15-102580	379019001	REG	3	0	0	0
HASL-300:ISOU	RAD	CAMO-15-102581	379019005	REG	3	0	0	0
HASL-300:ISOU	RAD	LCS	1203371996	LCS	0	0	1	0
HASL-300:ISOU	RAD	MB	1203371994	MB	3	0	0	0
SM:A2340B	INORGANIC	CAMO-15-102559	379019004	FD	1	0	0	0
SM:A2340B	INORGANIC	CAMO-15-102604	379019002	REG	1	0	0	0
SM:A2340B	INORGANIC	CAMO-15-102605	379019006	REG	1	0	0	0
SM:A2340B	INORGANIC	CAMO-15-102608	379019008	REG	1	0	0	0
SM:A2340B	INORGANIC	CAMO-15-102609	379019010	REG	1	0	0	0
SW-846:6010C	INORGANIC	CAMO-15-102559	379019004	FD	17	0	0	0
SW-846:6010C	INORGANIC	CAMO-15-102604	379019002	REG	17	0	0	0
SW-846:6010C	INORGANIC	CAMO-15-102605	379019006	REG	17	0	0	0
SW-846:6010C	INORGANIC	CAMO-15-102608	379019008	REG	17	0	0	0
SW-846:6010C	INORGANIC	CAMO-15-102609	379019010	REG	17	0	0	0
SW-846:6010C	INORGANIC	CASA-15-102647	1203371768	DUP	17	0	0	0
SW-846:6010C	INORGANIC	CASA-15-102647	1203371769	MS	0	0	17	0
SW-846:6010C	INORGANIC	LCS	1203371767	LCS	0	0	17	0
SW-846:6010C	INORGANIC	MB	1203371766	MB	17	0	0	0
SW-846:6020	INORGANIC	CAMO-15-102559	379019004	FD	11	0	0	0
SW-846:6020	INORGANIC	CAMO-15-102604	379019002	REG	11	0	0	0
SW-846:6020	INORGANIC	CAMO-15-102605	379019006	REG	11	0	0	0
SW-846:6020	INORGANIC	CAMO-15-102608	379019008	REG	11	0	0	0
SW-846:6020	INORGANIC	CAMO-15-102609	379019010	REG	11	0	0	0

DATA VALIDATION REPORT

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
SW-846:6020	INORGANIC	CASA-15-102647	1203371802	DUP	11	0	0	0
SW-846:6020	INORGANIC	CASA-15-102647	1203371803	MS	0	0	11	0
SW-846:6020	INORGANIC	LCS	1203371801	LCS	0	0	11	0
SW-846:6020	INORGANIC	MB	1203371800	MB	11	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	CAMO-15-102559	1203374487	MS	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	CAMO-15-102559	1203374488	MSD	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	CAMO-15-102559	379019004	FD	1	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	CAMO-15-102604	379019002	REG	1	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	CAMO-15-102605	379019006	REG	1	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	CAMO-15-102608	379019008	REG	1	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	CAMO-15-102609	379019010	REG	1	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	LCS	1203374486	LCS	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	MB	1203374485	MB	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAMO-15-102558	379019003	FD	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAMO-15-102573	1203373636	DUP	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAMO-15-102580	379019001	REG	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAMO-15-102581	379019005	REG	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAMO-15-102584	379019007	REG	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAMO-15-102585	379019009	REG	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	LCS	1203373634	LCS	0	0	1	0
SW-846:9060	GENERAL CHEMISTRY	MB	1203373633	MB	1	0	0	0

3. Are any analytes missing?

No.

4. Were any holding times exceeded?

No.

5. Any contaminants in blanks?

DATA VALIDATION REPORT

Blank FS ID	Blank Lab Sample	Blank Type	Analytical Method	Sample	Parameter Name	Blank Lab Result	Lab Qualifier	Blank Lab Units	Blank Lab Detection Limit
MB	1203371800	METHOD BLANK	SW-846:6020	W	Arsenic	3.12	J	ug/L	5.00
MB	1203371800	METHOD BLANK	SW-846:6020	W	Molybdenum	.227	J	ug/L	0.500

Field Sample ID	Blank Lab	Blank Type	Analytical Method	Parameter Name	Blank Lab Result	Blank Lab Units	Lab Result	Lab Qualifier	Lab Detection Limit	Detect Flag	Detect to Nondetect Factor	Detect to Estimated Factor	Use Factors
CAMO-15-102604	1203371800	METHOD BLANK	SW-846:6020	Arsenic	3.12	ug/L	1.77	J	5.00	Y	5	100	Y
CAMO-15-102604	1203371800	METHOD BLANK	SW-846:6020	Molybdenum	.227	ug/L	1.15		0.500	Y	5	100	Y
CAMO-15-102559	1203371800	METHOD BLANK	SW-846:6020	Molybdenum	.227	ug/L	1.13		0.500	Y	5	100	Y
CAMO-15-102605	1203371800	METHOD BLANK	SW-846:6020	Molybdenum	.227	ug/L	.947		0.500	Y	5	100	Y
CAMO-15-102608	1203371800	METHOD BLANK	SW-846:6020	Molybdenum	.227	ug/L	.865		0.500	Y	5	100	Y
CAMO-15-102609	1203371800	METHOD BLANK	SW-846:6020	Molybdenum	.227	ug/L	.775		0.500	Y	5	100	Y

6. Any surrogate recoveries outside the control limits?

No.

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

Field Sample ID	MS Lab Sample ID	MSD Lab Sample ID	Analytical Method	Parameter Name	Analysis Lot ID	Analysis Date	Sample Matrix	MS Spike Recovery	MSD Spike Recovery	MS Upper Limit	MS Lower Limit	MS Reject Limit	RPD	RPD Limit
CASA-15-102633	1203372232		EPA:351.2	Total Kjeldahl Nitrogen	1499651	08-13-2015	W	61		110	90	10		

DATA VALIDATION REPORT

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

No.

9. Any Field Duplicate RPDs outside the desired limits?

No.

10. Any Lab Duplicate RPDs outside the desired limits?

No.

11. Any required reporting limits exceeded?

No.

12. Additional Validator's Comments.

13. Display Flagged Data.

Location ID	COC Number	Field Sample ID	Sample Purpose	Analysis Type Code	Analytical Suite	Analytical Method	Parameter Name	Lab Qualifier	Validation Qualifier	Validation Reason Codes	Detect Flag	Lab Result	Lab Units	Report Result	Report Units	Report MDA	Report Uncertainty	Lab Matrix	Sample Date	Percent	Analysis Lot ID	Validation Status Code	Use Flag
R-33 S1	2015-2084	CAMO-15-102558	FD	INIT	RAD	HASL-300:AM-241	Americium-241	U	U	R5	N	-0.0356	pCi/L	-0.0356	pCi/L	0.0507	0.00436	W	08/06/2015	1499559	VAL	Y	
R-33 S1	2015-2084	CAMO-15-102558	FD	INIT	RAD	EPA:901.1	Cesium-137	U	U	R5	N	.696	pCi/L	.696	pCi/L	5.91	1.57	W	08/06/2015	1499679	VAL	Y	
R-33 S1	2015-2084	CAMO-15-102558	FD	INIT	RAD	EPA:901.1	Cobalt-60	U	U	R5	N	1.59	pCi/L	1.59	pCi/L	6.76	1.58	W	08/06/2015	1499679	VAL	Y	
R-33 S1	2015-2084	CAMO-15-102558	FD	INIT	RAD	EPA:900	Gross alpha	U	U	R5	N	.166	pCi/L	.166	pCi/L	2.83	0.719	W	08/06/2015	1501030	VAL	Y	
R-33 S1	2015-2084	CAMO-15-102558	FD	INIT	RAD	EPA:900	Gross beta	U	U	R5	N	2.61	pCi/L	2.61	pCi/L	2.71	0.914	W	08/06/2015	1504918	VAL	Y	
R-33 S1	2015-2084	CAMO-15-102558	FD	INIT	RAD	EPA:901.1	Neptunium-237	U	U	R5	N	4.15	pCi/L	4.15	pCi/L	11.5	3.09	W	08/06/2015	1499679	VAL	Y	
R-33 S1	2015-2084	CAMO-15-102558	FD	INIT	RAD	HASL-300:ISOPU	Plutonium-238	U	U	R5	N	.000000000	pCi/L	.0000000006	pCi/L	0.0332	0.0049	W	08/06/2015	1499560	VAL	Y	
R-33 S1	2015-2084	CAMO-15-102558	FD	INIT	RAD	HASL-300:ISOPU	Plutonium-239/240	U	U	R5	N	.000000001	pCi/L	.0000000016	pCi/L	0.0443	0.00693	W	08/06/2015	1499560	VAL	Y	
R-33 S1	2015-2084	CAMO-15-102558	FD	INIT	RAD	EPA:901.1	Potassium-40	U	U	R5	N	-10.4	pCi/L	-10.4	pCi/L	77.2	19.9	W	08/06/2015	1499679	VAL	Y	
R-33 S1	2015-2084	CAMO-15-102558	FD	INIT	RAD	EPA:901.1	Sodium-22	U	U	R5	N	-1.69	pCi/L	-1.69	pCi/L	5.30	1.56	W	08/06/2015	1499679	VAL	Y	
R-33 S1	2015-2084	CAMO-15-102558	FD	INIT	RAD	EPA:905.0	Strontium-90	U	U	R5	N	-.17	pCi/L	-.17	pCi/L	0.439	0.118	W	08/06/2015	1501028	VAL	Y	

DATA VALIDATION REPORT

Location ID	COC Number	Field Sample ID	Sample Purpose	Analysis Type Code	Analytical Suite	Analytical Method	Parameter Name	Lab Qualifier	Validation Qualifier	Validation Reason Codes	Detect Flag	Lab Result	Lab Units	Report Result	Report Units	Report MDA	Report Uncertainty	Lab Matrix	Sample Date	Percent	Analysis Lot ID	Validation Status Code	Use Flag
R-33 S1	2015-2084	CAMO-15-102558	FD	INIT	RAD	HASL-300:ISOU	Uranium-235/236	J	U	R5	N	0435	pCi/L	0435	pCi/L	0.0577	0.0118	W	08/06/2015		1499562	VAL	Y
R-33 S1	2015-2084	CAMO-15-102559	FD	INIT	INORGANIC	SW-846:6020	Molybdenum	J	U	4	N	1.13	ug/L	1.13	ug/L			W	08/06/2015		1499480	VAL	Y
R-33 S1	2015-2084	CAMO-15-102580	REG	INIT	RAD	HASL-300:AM-241	Americium-241	J	U	R5	N	0101	pCi/L	0101	pCi/L	0.0574	0.00534	W	08/06/2015		1499559	VAL	Y
R-33 S1	2015-2084	CAMO-15-102580	REG	INIT	RAD	EPA:901.1	Cesium-137	J	U	R5	N	845	pCi/L	845	pCi/L	8.47	1.76	W	08/06/2015		1499679	VAL	Y
R-33 S1	2015-2084	CAMO-15-102580	REG	INIT	RAD	EPA:901.1	Cobalt-60	J	U	R5	N	1.61	pCi/L	1.61	pCi/L	5.49	1.21	W	08/06/2015		1499679	VAL	Y
R-33 S1	2015-2084	CAMO-15-102580	REG	INIT	RAD	EPA:900	Gross alpha	J	U	R5	N	708	pCi/L	708	pCi/L	3.00	0.822	W	08/06/2015		1501030	VAL	Y
R-33 S1	2015-2084	CAMO-15-102580	REG	INIT	RAD	EPA:900	Gross beta	J	U	R5	N	1.78	pCi/L	1.78	pCi/L	2.80	0.879	W	08/06/2015		1504918	VAL	Y
R-33 S1	2015-2084	CAMO-15-102580	REG	INIT	RAD	EPA:901.1	Neptunium-237	J	U	R5	N	-2.29	pCi/L	-2.29	pCi/L	10.3	3.00	W	08/06/2015		1499679	VAL	Y
R-33 S1	2015-2084	CAMO-15-102580	REG	INIT	RAD	HASL-300:ISOPU	Plutonium-238	J	U	R5	N	-0.0801	pCi/L	-0.0801	pCi/L	0.0333	0.00491	W	08/06/2015		1499560	VAL	Y
R-33 S1	2015-2084	CAMO-15-102580	REG	INIT	RAD	HASL-300:ISOPU	Plutonium-239/240	J	U	R5	N	-0.0601	pCi/L	-0.0601	pCi/L	0.0443	0.00448	W	08/06/2015		1499560	VAL	Y
R-33 S1	2015-2084	CAMO-15-102580	REG	INIT	RAD	EPA:901.1	Potassium-40	J	U	R5	N	-8.24	pCi/L	-8.24	pCi/L	68.3	18.2	W	08/06/2015		1499679	VAL	Y
R-33 S1	2015-2084	CAMO-15-102580	REG	INIT	RAD	EPA:901.1	Sodium-22	J	U	R5	N	298	pCi/L	298	pCi/L	5.70	1.44	W	08/06/2015		1499679	VAL	Y
R-33 S1	2015-2084	CAMO-15-102580	REG	INIT	RAD	EPA:905.0	Strontium-90	J	U	R5	N	-1.86	pCi/L	-1.86	pCi/L	0.475	0.128	W	08/06/2015		1501028	VAL	Y
R-33 S2	2015-2084	CAMO-15-102581	REG	INIT	RAD	HASL-300:AM-241	Americium-241	J	U	R5	N	0.000000013	pCi/L	0.000000013	pCi/L	0.0557	0.00619	W	08/06/2015		1499559	VAL	Y
R-33 S2	2015-2084	CAMO-15-102581	REG	INIT	RAD	EPA:901.1	Cesium-137	J	U	R5	N	-1.06	pCi/L	-1.06	pCi/L	4.94	1.44	W	08/06/2015		1499679	VAL	Y
R-33 S2	2015-2084	CAMO-15-102581	REG	INIT	RAD	EPA:901.1	Cobalt-60	J	U	R5	N	595	pCi/L	595	pCi/L	5.03	1.40	W	08/06/2015		1499679	VAL	Y
R-33 S2	2015-2084	CAMO-15-102581	REG	INIT	RAD	EPA:900	Gross alpha	J	U	R5	N	-919	pCi/L	-919	pCi/L	2.96	0.710	W	08/06/2015		1501030	VAL	Y
R-33 S2	2015-2084	CAMO-15-102581	REG	INIT	RAD	EPA:901.1	Neptunium-237	J	U	R5	N	-2.44	pCi/L	-2.44	pCi/L	9.70	2.94	W	08/06/2015		1499679	VAL	Y
R-33 S2	2015-2084	CAMO-15-102581	REG	INIT	RAD	HASL-300:ISOPU	Plutonium-238	J	U	R5	N	-0.0039	pCi/L	-0.0039	pCi/L	0.0324	0.00552	W	08/06/2015		1499560	VAL	Y
R-33 S2	2015-2084	CAMO-15-102581	REG	INIT	RAD	HASL-300:ISOPU	Plutonium-239/240	J	U	R5	N	-0.00195	pCi/L	-0.00195	pCi/L	0.0431	0.00436	W	08/06/2015		1499560	VAL	Y
R-33 S2	2015-2084	CAMO-15-102581	REG	INIT	RAD	EPA:901.1	Potassium-40	J	U	R5	N	17.6	pCi/L	17.6	pCi/L	45.9	18.1	W	08/06/2015		1499679	VAL	Y
R-33 S2	2015-2084	CAMO-15-102581	REG	INIT	RAD	EPA:901.1	Sodium-22	J	U	R5	N	0258	pCi/L	0258	pCi/L	5.16	1.37	W	08/06/2015		1499679	VAL	Y
R-33 S2	2015-2084	CAMO-15-102581	REG	INIT	RAD	EPA:905.0	Strontium-90	J	U	R5	N	-0.584	pCi/L	-0.584	pCi/L	0.484	0.133	W	08/06/2015		1501028	VAL	Y
R-33 S2	2015-2084	CAMO-15-102581	REG	INIT	RAD	HASL-300:ISOU	Uranium-235/236	J	U	R5	N	0494	pCi/L	0494	pCi/L	0.0537	0.0115	W	08/06/2015		1499562	VAL	Y
R-33 S1	2015-2084	CAMO-15-102604	REG	INIT	INORGANIC	SW-846:6020	Arsenic	J	U	4	N	1.77	ug/L	1.77	ug/L			W	08/06/2015		1499480	VAL	Y
R-33 S1	2015-2084	CAMO-15-102604	REG	INIT	INORGANIC	SW-846:6020	Molybdenum	J	U	4a	Y	1.15	ug/L	1.15	ug/L			W	08/06/2015		1499480	VAL	Y
R-33 S2	2015-2084	CAMO-15-102605	REG	INIT	INORGANIC	SW-846:6020	Molybdenum	J	U	4	N	947	ug/L	947	ug/L			W	08/06/2015		1499480	VAL	Y
R-44 S1	2015-2084	CAMO-15-102608	REG	INIT	INORGANIC	SW-846:6020	Molybdenum	J	U	4	N	865	ug/L	865	ug/L			W	08/06/2015		1499480	VAL	Y
R-44 S2	2015-2084	CAMO-15-102609	REG	INIT	INORGANIC	SW-846:6020	Molybdenum	J	U	4	N	775	ug/L	775	ug/L			W	08/06/2015		1499480	VAL	Y

Reason Code

Description

DATA VALIDATION REPORT

<u>Reason Code</u>	<u>Description</u>
I4	the sample result is =<5x the concentration of related analyte in the method blank.
I4a	The affected analytes are considered estimated and biased high because this analyte was identified in the method blank but was >5x
J_LAB	The analytical laboratory qualified the detected result as estimated (J) because the result was less the PQL but greater than the MDL
NQ	The analytical laboratory did not qualify the analyte as not detected and/or any other standard qualifire. The analyte is detected in the sample.
R5	Analyte is not detected because the amount reported is less than the MDC.
U_LAB	The analytical laboratory qualified the analyte as not detected.

14. Usable Result Count.

Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total Records
CAMO-15-102558	R-33 S1	FD	EPA:245.2	0	1
CAMO-15-102558	R-33 S1	FD	EPA:335.4	0	1
CAMO-15-102558	R-33 S1	FD	EPA:351.2	0	1
CAMO-15-102558	R-33 S1	FD	EPA:900	0	2
CAMO-15-102558	R-33 S1	FD	EPA:901.1	0	5
CAMO-15-102558	R-33 S1	FD	EPA:905.0	0	1
CAMO-15-102558	R-33 S1	FD	HASL-300:AM-241	0	1
CAMO-15-102558	R-33 S1	FD	HASL-300:ISOPU	0	2
CAMO-15-102558	R-33 S1	FD	HASL-300:ISOU	0	3
CAMO-15-102558	R-33 S1	FD	SW-846:9060	0	1
CAMO-15-102559	R-33 S1	FD	EPA:120.1	0	1
CAMO-15-102559	R-33 S1	FD	EPA:150.1	0	1
CAMO-15-102559	R-33 S1	FD	EPA:160.1	0	1
CAMO-15-102559	R-33 S1	FD	EPA:245.2	0	1
CAMO-15-102559	R-33 S1	FD	EPA:300.0	0	4
CAMO-15-102559	R-33 S1	FD	EPA:310.1	0	2
CAMO-15-102559	R-33 S1	FD	EPA:350.1	0	1
CAMO-15-102559	R-33 S1	FD	EPA:353.2	0	1
CAMO-15-102559	R-33 S1	FD	EPA:365.4	0	1
CAMO-15-102559	R-33 S1	FD	SM:A2340B	0	1
CAMO-15-102559	R-33 S1	FD	SW-846:6010C	0	17
CAMO-15-102559	R-33 S1	FD	SW-846:6020	0	11
CAMO-15-102559	R-33 S1	FD	SW-846:6850	0	1

DATA VALIDATION REPORT

Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total Records
CAMO-15-102580	R-33 S1	REG	EPA:245.2	0	1
CAMO-15-102580	R-33 S1	REG	EPA:335.4	0	1
CAMO-15-102580	R-33 S1	REG	EPA:351.2	0	1
CAMO-15-102580	R-33 S1	REG	EPA:900	0	2
CAMO-15-102580	R-33 S1	REG	EPA:901.1	0	5
CAMO-15-102580	R-33 S1	REG	EPA:905.0	0	1
CAMO-15-102580	R-33 S1	REG	HASL-300:AM-241	0	1
CAMO-15-102580	R-33 S1	REG	HASL-300:ISOPU	0	2
CAMO-15-102580	R-33 S1	REG	HASL-300:ISOU	0	3
CAMO-15-102580	R-33 S1	REG	SW-846:9060	0	1
CAMO-15-102581	R-33 S2	REG	EPA:245.2	0	1
CAMO-15-102581	R-33 S2	REG	EPA:335.4	0	1
CAMO-15-102581	R-33 S2	REG	EPA:351.2	0	1
CAMO-15-102581	R-33 S2	REG	EPA:900	0	2
CAMO-15-102581	R-33 S2	REG	EPA:901.1	0	5
CAMO-15-102581	R-33 S2	REG	EPA:905.0	0	1
CAMO-15-102581	R-33 S2	REG	HASL-300:AM-241	0	1
CAMO-15-102581	R-33 S2	REG	HASL-300:ISOPU	0	2
CAMO-15-102581	R-33 S2	REG	HASL-300:ISOU	0	3
CAMO-15-102581	R-33 S2	REG	SW-846:9060	0	1
CAMO-15-102584	R-44 S1	REG	EPA:245.2	0	1
CAMO-15-102584	R-44 S1	REG	EPA:335.4	0	1
CAMO-15-102584	R-44 S1	REG	EPA:351.2	0	1
CAMO-15-102584	R-44 S1	REG	SW-846:9060	0	1
CAMO-15-102585	R-44 S2	REG	EPA:245.2	0	1
CAMO-15-102585	R-44 S2	REG	EPA:335.4	0	1
CAMO-15-102585	R-44 S2	REG	EPA:351.2	0	1
CAMO-15-102585	R-44 S2	REG	SW-846:9060	0	1
CAMO-15-102604	R-33 S1	REG	EPA:120.1	0	1
CAMO-15-102604	R-33 S1	REG	EPA:150.1	0	1
CAMO-15-102604	R-33 S1	REG	EPA:160.1	0	1
CAMO-15-102604	R-33 S1	REG	EPA:245.2	0	1
CAMO-15-102604	R-33 S1	REG	EPA:300.0	0	4
CAMO-15-102604	R-33 S1	REG	EPA:310.1	0	2
CAMO-15-102604	R-33 S1	REG	EPA:350.1	0	1
CAMO-15-102604	R-33 S1	REG	EPA:353.2	0	1
CAMO-15-102604	R-33 S1	REG	EPA:365.4	0	1

DATA VALIDATION REPORT

Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total Records
CAMO-15-102604	R-33 S1	REG	SM:A2340B	0	1
CAMO-15-102604	R-33 S1	REG	SW-846:6010C	0	17
CAMO-15-102604	R-33 S1	REG	SW-846:6020	0	11
CAMO-15-102604	R-33 S1	REG	SW-846:6850	0	1
CAMO-15-102605	R-33 S2	REG	EPA:120.1	0	1
CAMO-15-102605	R-33 S2	REG	EPA:150.1	0	1
CAMO-15-102605	R-33 S2	REG	EPA:160.1	0	1
CAMO-15-102605	R-33 S2	REG	EPA:245.2	0	1
CAMO-15-102605	R-33 S2	REG	EPA:300.0	0	4
CAMO-15-102605	R-33 S2	REG	EPA:310.1	0	2
CAMO-15-102605	R-33 S2	REG	EPA:350.1	0	1
CAMO-15-102605	R-33 S2	REG	EPA:353.2	0	1
CAMO-15-102605	R-33 S2	REG	EPA:365.4	0	1
CAMO-15-102605	R-33 S2	REG	SM:A2340B	0	1
CAMO-15-102605	R-33 S2	REG	SW-846:6010C	0	17
CAMO-15-102605	R-33 S2	REG	SW-846:6020	0	11
CAMO-15-102605	R-33 S2	REG	SW-846:6850	0	1
CAMO-15-102608	R-44 S1	REG	EPA:120.1	0	1
CAMO-15-102608	R-44 S1	REG	EPA:150.1	0	1
CAMO-15-102608	R-44 S1	REG	EPA:160.1	0	1
CAMO-15-102608	R-44 S1	REG	EPA:245.2	0	1
CAMO-15-102608	R-44 S1	REG	EPA:300.0	0	4
CAMO-15-102608	R-44 S1	REG	EPA:310.1	0	2
CAMO-15-102608	R-44 S1	REG	EPA:350.1	0	1
CAMO-15-102608	R-44 S1	REG	EPA:353.2	0	1
CAMO-15-102608	R-44 S1	REG	EPA:365.4	0	1
CAMO-15-102608	R-44 S1	REG	SM:A2340B	0	1
CAMO-15-102608	R-44 S1	REG	SW-846:6010C	0	17
CAMO-15-102608	R-44 S1	REG	SW-846:6020	0	11
CAMO-15-102608	R-44 S1	REG	SW-846:6850	0	1
CAMO-15-102609	R-44 S2	REG	EPA:120.1	0	1
CAMO-15-102609	R-44 S2	REG	EPA:150.1	0	1
CAMO-15-102609	R-44 S2	REG	EPA:160.1	0	1
CAMO-15-102609	R-44 S2	REG	EPA:245.2	0	1
CAMO-15-102609	R-44 S2	REG	EPA:300.0	0	4
CAMO-15-102609	R-44 S2	REG	EPA:310.1	0	2
CAMO-15-102609	R-44 S2	REG	EPA:350.1	0	1

DATA VALIDATION REPORT

Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total Records
CAMO-15-102609	R-44 S2	REG	EPA:353.2	0	1
CAMO-15-102609	R-44 S2	REG	EPA:365.4	0	1
CAMO-15-102609	R-44 S2	REG	SM:A2340B	0	1
CAMO-15-102609	R-44 S2	REG	SW-846:6010C	0	17
CAMO-15-102609	R-44 S2	REG	SW-846:6020	0	11
CAMO-15-102609	R-44 S2	REG	SW-846:6850	0	1



September 03, 2015

gel.com

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

Re: LANL- WQH Water Samples
Work Order: 379019
SDG: 2015-2084

Dear Mr. Greene:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the following analytical results for the sample(s) we received on August 11, 2015, 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

Chain of Custody: 2015-2084
Enclosures



ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)
LANL- WQH Water Samples
Work Order #: 379019
SDG: 2015-2084

Table of Contents

Case Narrative.....	1
Chain of Custody and Supporting Documentation.....	5
Data Review Qualifier Flag Definition Sheet.....	11
Perchlorates by LCMSMS Analysis.....	14
Case Narrative.....	15
Sample Data Summary.....	21
Quality Control Summary.....	27
Quality Control Data.....	30
Metals Analysis.....	36
Case Narrative.....	37
Sample Data Summary.....	43
Quality Control Summary.....	64
General Chem Analysis.....	78
Case Narrative.....	79
Sample Data Summary.....	110
Quality Control Summary.....	126
Miscellaneous.....	132
Radiological Analysis.....	135
Sample Data Summary.....	151
Quality Control Data.....	158

Case Narrative

**Case Narrative for
ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)
LANL- WQH Water Samples
Workorder #: 379019
SDG # : 2015-2084**

September 03, 2015

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 August 11, 2015 for analysis. The samples were delivered with proper chain of custody documentation and signatures. The samples were screened according to GEL Standard Operating Procedure. All sample containers arrived without any visible signs of tampering or breakage. Containers were checked for pH, where appropriate, and matched the preservative as documented on the accompanying chain of custody. Shipping container temperature was within specification (0 - 6C). Shipping container temperatures were checked, documented, and within specifications. There are no additional comments concerning sample receipt.

Sample Identification The laboratory received the following samples:

<u>Laboratory ID</u>	<u>Client ID</u>
379019001	CAMO-15-102580
379019002	CAMO-15-102604
379019003	CAMO-15-102558
379019004	CAMO-15-102559
379019005	CAMO-15-102581
379019006	CAMO-15-102605
379019007	CAMO-15-102584
379019008	CAMO-15-102608
379019009	CAMO-15-102585
379019010	CAMO-15-102609

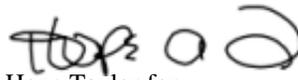
Case Narrative

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 03 September 2015

State	Certification
Alaska	UST-110
Arkansas	88-0651
CLIA	42D0904046
California	2940 Interim
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC000122013-10
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-12-00283, P330-12-00284
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC000122013-10
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA150001
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC000122013-10
Nebraska	NE-OS-26-13
Nevada	SC000122016-1
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
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-15-10
Utah NELAP	SC000122015-18
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

Chain of Custody and Supporting Documentation



SAMPLE RECEIPT & REVIEW FORM

Client: LANL		SDG/AR/COC/Work Order: 2015-2084	
Received By: Brielle Luthman		Date Received: 8/11/15 0845	
Suspected Hazard Information	Yes	No	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
COC/Samples marked as radioactive?		<input checked="" type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): ϕ
Classified Radioactive II or III by RSO?		<input checked="" type="checkbox"/>	If yes, Were swipes taken of sample containers < action levels?
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"/>			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>			Preservation Method: Ice bags <u>Blue ice</u> Dry ice None Other (describe) *all temperatures are recorded in Celsius
2a	Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>			Temperature Device Serial #: Secondary Temperature Device Serial # (If Applicable): <u>E5032015835</u>
3	Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>			
4	Sample containers intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5	Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>			Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6	Do Low Level Perchlorate samples (EPA 6850) have headspace as required?	<input checked="" type="checkbox"/>			Sample ID's and containers affected:
7	VOA vials free of headspace (defined as < 6mm bubble)?	<input checked="" type="checkbox"/>			Sample ID's and containers affected:
8	Are Encore containers present?			<input checked="" type="checkbox"/>	(If yes, immediately deliver to Volatiles laboratory)
9	Samples received within holding time?	<input checked="" type="checkbox"/>			ID's and tests affected:
10	Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>			Sample ID's and containers affected:
11	Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>			Sample ID's affected:
12	Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>			Sample ID's affected:
13	Are sample containers identifiable as GEL provided?			<input checked="" type="checkbox"/>	
14	COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			
15	Carrier and tracking number.				Circle Applicable: <u>FedEx Air</u> FedEx Ground UPS Field Services Courier Other 5908 1779 3028-2° 5908 1779 2970-1° 5908 1779 2960-22°

Comments (Use Continuation Form if needed):

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

SHIP DATE: 10AUG15
ACTWGT: 46.0 LB MAN
CAD: 0014176/CAFE2807

LOS ALAMOS, NM 87545
UNITED STATES US

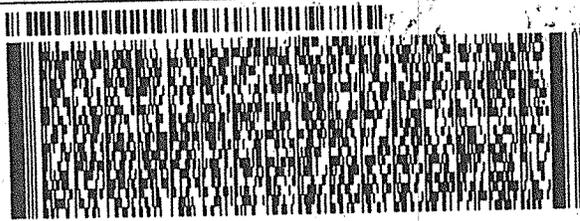
BILL SENDER

10 VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 566-8171
REF: MRSW12CHWCA0

521C1/FECA/6F03



FedEx
Express



J1412140/2001UV

2 of 2

MPS# 5908 1779 3028
0263

Mstr# 5908 1779 3017

0201

X7 CHSA

TUE - 11 AUG 10:30A
PRIORITY OVERNIGHT

2

29407
SC-US CHS

Part # 156149-434 RIT2 10/11



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

SHIP DATE: 10AUG15
ACTWGT: 50.0 LB MAN
CAD: 0014176/CAFE2807

LOS ALAMOS, NM 87545
UNITED STATES US

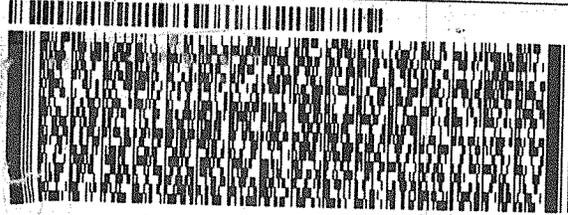
BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 666-8171

REF: MRSW12CHWCFO



FedEx
Express



521C1/FECA/6F03

J141214073081 BY

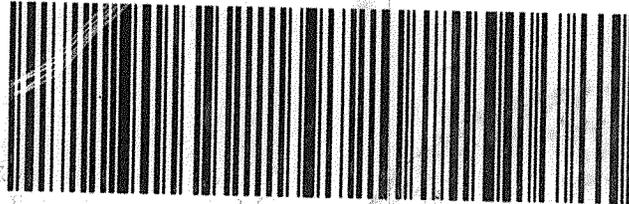
RW# 5908 1779 2970
201

TUE - 11 AUG 10:30A
PRIORITY OVERNIGHT

X7 CHSA

29407
SC-US CHS

Post # 155140-434 RIT2 10/11 %



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

SHIP DATE: 10AUG15
ACTWGT: 59.0 LB MAN
CAD: 0014176/CAFE2807

LOS ALAMOS, NM 87545
UNITED STATES US

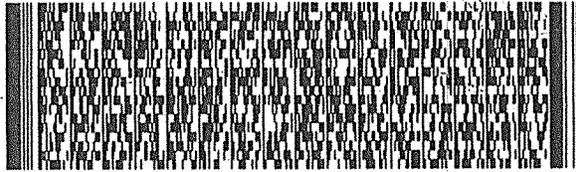
BILL SENDER

0 VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 566-8171

REF: MRGW04BAGWED



FedEx
Express



J141214073001uv

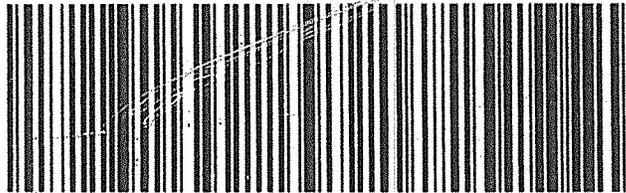
TRK# 5908 1779 2960
0201

TUE - 11 AUG 10:30A
PRIORITY OVERNIGHT

X7 CHSA 22°

29407
SC-US CHS

Part # 150148-434 RIT2 10/11



Data Review Qualifier Flag Definition Sheet

Data Review Qualifier Definitions

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

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

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

Perchlorates by LCMSMS Analysis

Case Narrative

**Perchlorates by LCMSMS
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2015-2084
Work Order #: 379019**

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: 1500488

Prep Batch Number: 1500487

Sample Analysis

Sample ID	Client ID
379019002	CAMO-15-102604
379019004	CAMO-15-102559
379019006	CAMO-15-102605
379019008	CAMO-15-102608
379019010	CAMO-15-102609
1203374489	Interference Check Sample (ICS)
1203374485	Method Blank (MB)
1203374486	Laboratory Control Sample (LCS)
1203374487	379019004(CAMO-15-102559) Matrix Spike (MS)
1203374488	379019004(CAMO-15-102559) 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# 12.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this SDG. Due to software constraints, all Initial Calibration Blanks must be designated as IPB001.

ICV Requirements

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

CCB Requirements

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

CCV Requirements

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

Low Level Standard (CRI) Requirements

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

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Interference Check Sample (ICS)

The ICS spike recoveries met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

QC Sample Designation

Client sample 379019004 (CAMO-15-102559) was chosen for matrix spike and matrix spike duplicate analysis.

Matrix Spike (MS) Recovery Statement

The MS recoveries were within the established acceptance limits.

MS/MSD Relative Percent Difference (RPD) Statement

The RPDs between the MS and MSD met the acceptance limits.

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

Sample 379019002 (CAMO-15-102604) was re-analyzed to confirm potential carryover from the previous sample analysis. The re-analysis data were reported. The 1203374486 (LCS) was re-analyzed due to non-conforming spike recoveries in the initial analysis. The re-analysis met acceptance criteria, and the 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

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

Method Comments

The samples in this SDG were not originally analyzed using EPA Method 314.0.

Additional Comments

The Perchlorate Isotope Ratio on the Form I may differ slightly from the ratio on the corresponding raw data due to rounding rules and/or significant figures or due to software limitations when there are manual integrations, dilutions or other factors. The ratio value of the Form I is the correct value. The retention time marker, Perchlorate-O (18), is added to all samples, instrument blanks, and standards prior to injection. It is used to verify the retention time of Perchlorate and Perchlorate-101 and to insure an accurate injection occurred. Due to various anions affecting the recovery of Perchlorate-O (18) and not Perchlorate and Perchlorate-101, the calibration curves of Perchlorate and Perchlorate-101 are 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 a Micromass Quattro Ultima Mass Spectrometer/Mass Spectrometer. It is designated as LCMSMS #2. It is fitted with an electrospray probe that is operated in the negative electrospray ionization mode for Perchlorate analysis. The laboratory may also utilize an Agilent 1100 liquid chromatography instrument for Perchlorate analysis. It is coupled with an Applied Biosystems 4000 Mass Spectrometer/Mass Spectrometer, designated as LCMSMS #3 or LCMSMS #4. It is also fitted with an electrospray probe that is operated in the negative electrospray ionization mode for Perchlorate analysis.

Electronic Packaging Comment

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

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

Chromatographic Columns

The LC-MS/MS Perchlorate analysis was performed on a Quatro Ultima LC/MS/MS.

Chromatographic separation of Perchlorate is accomplished through analysis on the following anion column:

Dionex: IonPac AG-16 2 x 50 mm.

Certification Statement

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

GEL LABORATORIES LLC

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

Qualifier Definition Report for

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

Client SDG: 2015-2084 GEL Work Order: 379019

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: 19 AUG 2015

Title: Group Leader

Sample Data Summary

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample No.

CAMO-15-102604Lab Code: GELDate Received: 11-AUG-15Instrument: LCMSMSGEL Job No (SDG): 2015-2084Method: SW846 6850 ModifiedGEL Sample ID: 379019002Matrix: WATERDate Filtered: 14-AUG-15Extraction Batch ID: 1500487Injection Volume (uL): 20Extraction Type: Filter/DAISample Volume/Weight: 10.0 mL

%Solids: .

Concentrated Extract Volume: 10.0

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.398	ug/L		1	15-AUG-15 13:48	per0815014a
	Perchlorate Isotope Ratio			3.06			1	15-AUG-15 13:48	per0815014a
14797-73-0	Perchlorate-101	.05	.2	0.413	ug/L		1	15-AUG-15 13:48	per0815014a
	Perchlorate-O(18)			0.491	ug/L		1	15-AUG-15 13:48	per0815014a

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

*Concentration =

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

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample No.

CAMO-15-102559Lab Code: GELDate Received: 11-AUG-15Instrument: LCMSMSGEL Job No (SDG): 2015-2084Method: SW846 6850 ModifiedGEL Sample ID: 379019004Matrix: WATERDate Filtered: 14-AUG-15Extraction Batch ID: 1500487Injection Volume (uL): 20Extraction Type: Filter/DAISample Volume/Weight: 10.0 mL

%Solids: .

Concentrated Extract Volume: 10.0

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.404	ug/L		1	14-AUG-15 22:51	per0814018a
	Perchlorate Isotope Ratio			3.18			1	14-AUG-15 22:51	per0814018a
14797-73-0	Perchlorate-101	.05	.2	0.393	ug/L		1	14-AUG-15 22:51	per0814018a
	Perchlorate-O(18)			0.479	ug/L		1	14-AUG-15 22:51	per0814018a

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

*Concentration =

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

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample No.

CAMO-15-102605Lab Code: GELDate Received: 11-AUG-15Instrument: LCMSMSGEL Job No (SDG): 2015-2084Method: SW846 6850 ModifiedGEL Sample ID: 379019006Matrix: WATERDate Filtered: 14-AUG-15Extraction Batch ID: 1500487Injection Volume (uL): 20Extraction Type: Filter/DAISample Volume/Weight: 10.0 mL

%Solids: .

Concentrated Extract Volume: 10.0

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.350	ug/L		1	14-AUG-15 23:30	per0814021a
	Perchlorate Isotope Ratio			3.08			1	14-AUG-15 23:30	per0814021a
14797-73-0	Perchlorate-101	.05	.2	0.351	ug/L		1	14-AUG-15 23:30	per0814021a
	Perchlorate-O(18)			0.468	ug/L		1	14-AUG-15 23:30	per0814021a

^ 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: 1500487Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAMO-15-102608Date Received: 11-AUG-15GEL Job No (SDG): 2015-2084GEL Sample ID: 379019008Date Filtered: 14-AUG-15Injection 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	0.435	ug/L		1	15-AUG-15 00:22	per0814025a
	Perchlorate Isotope Ratio			2.94			1	15-AUG-15 00:22	per0814025a
14797-73-0	Perchlorate-101	.05	.2	0.456	ug/L		1	15-AUG-15 00:22	per0814025a
	Perchlorate-O(18)			0.476	ug/L		1	15-AUG-15 00:22	per0814025a

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

*Concentration =

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

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample No.

CAMO-15-102609Lab Code: GELDate Received: 11-AUG-15Instrument: LCMSMSGEL Job No (SDG): 2015-2084Method: SW846 6850 ModifiedGEL Sample ID: 379019010Matrix: WATERDate Filtered: 14-AUG-15Extraction Batch ID: 1500487Injection Volume (uL): 20Extraction Type: Filter/DAISample Volume/Weight: 10.0 mL

%Solids: .

Concentrated Extract Volume: 10.0

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.358	ug/L		1	15-AUG-15 00:35	per0814026a
	Perchlorate Isotope Ratio			3.08			1	15-AUG-15 00:35	per0814026a
14797-73-0	Perchlorate-101	.05	.2	0.359	ug/L		1	15-AUG-15 00:35	per0814026a
	Perchlorate-O(18)			0.493	ug/L		1	15-AUG-15 00:35	per0814026a

^ 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): 2015-2084

Extract Batch Code: 1500487

Date Filtered: 14-AUG-15

Matrix: WATER

Sample ID: 1203374486

Analyte^	True	Found	Units	%Rec	Q	Control Limits
Perchlorate	0.200	.195	ug/L	97.5		85 - 115
Perchlorate Isotope Ratio		3.04				-
Perchlorate-101	0.200	.203	ug/L	102		85 - 115
Perchlorate-O(18)		.463	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 LaboratoriesLab Code: GELGEL Job No (SDG): 2015-2084Extract Batch Code: 1500487Date Extracted: 14-AUG-15GEL MS/PS ID: 1203374487Client ID: CAMO-15-102559GEL MSD/PSD ID: 1203374488QC Type: MS

Compound^	Spike Added	Sample Conc	Units	MS Conc	MS Rec #	MSD Conc	MSD Rec #	RPD #	RPD Limit	Recovery Limit
Perchlorate	0.200	0.404	ug/L	0.591	93.5	.566	81.2	4.27	30	75 - 125
Perchlorate Isotope Ratio	0	3.18		3.14		3		4.64		-
Perchlorate-101	0.200	0.393	ug/L	0.581	94.3	.584	95.4	.362	30	75 - 125
Perchlorate-O(18)	0	0.479	ug/L	0.480		.49		2.11		-

^ 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: 1500487Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

MBDate Received: 14-AUG-15GEL Job No (SDG): 2015-2084GEL Sample ID: 1203374485Date Filtered: 14-AUG-15Injection Volume (uL): 20

%Solids: .

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.200	ug/L	U	1	14-AUG-15 21:34	per0814012a
	Perchlorate Isotope Ratio						1	14-AUG-15 21:34	per0814012a
14797-73-0	Perchlorate-101	.05	.2	0.200	ug/L	U	1	14-AUG-15 21:34	per0814012a
	Perchlorate-O(18)			0.486	ug/L		1	14-AUG-15 21:34	per0814012a

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

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

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample No.

LCSLab Code: GELDate Received: 14-AUG-15Instrument: LCMSMSGEL Job No (SDG): 2015-2084Method: EPA 6850 ModifiedGEL Sample ID: 1203374486Matrix: WATERDate Filtered: 14-AUG-15Extraction Batch ID: 1500487Injection Volume (uL): 20Extraction Type: Filter/DAISample Volume/Weight: 10.0 mL

%Solids: .

Concentrated Extract Volume: 10.0

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.195	ug/L	J	1	15-AUG-15 13:21	per0815012a
	Perchlorate Isotope Ratio			3.04			1	15-AUG-15 13:21	per0815012a
14797-73-0	Perchlorate-101	.05	.2	0.203	ug/L		1	15-AUG-15 13:21	per0815012a
	Perchlorate-O(18)			0.463	ug/L		1	15-AUG-15 13:21	per0815012a

^ 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: 1500487Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

ICS

Date Received:

GEL Job No (SDG): 2015-2084GEL Sample ID: 1203374489Date Filtered: 14-AUG-15Injection 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	0.241	ug/L		1	14-AUG-15 22:00	per0814014a
	Perchlorate Isotope Ratio			3.09			1	14-AUG-15 22:00	per0814014a
14797-73-0	Perchlorate-101	.05	.2	0.241	ug/L		1	14-AUG-15 22:00	per0814014a
	Perchlorate-O(18)			0.514	ug/L		1	14-AUG-15 22:00	per0814014a

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

*Concentration =

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

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample No.

CAMO-15-102559MSLab Code: GELDate Received: 11-AUG-15Instrument: LCMSMSGEL Job No (SDG): 2015-2084Method: SW846 6850 ModifiedGEL Sample ID: 1203374487Matrix: WATERDate Filtered: 14-AUG-15Extraction Batch ID: 1500487Injection Volume (uL): 20Extraction Type: Filter/DAISample Volume/Weight: 10.0 mL

%Solids: .

Concentrated Extract Volume: 10.0

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.591	ug/L		1	14-AUG-15 23:04	per0814019a
	Perchlorate Isotope Ratio			3.14			1	14-AUG-15 23:04	per0814019a
14797-73-0	Perchlorate-101	.05	.2	0.581	ug/L		1	14-AUG-15 23:04	per0814019a
	Perchlorate-O(18)			0.480	ug/L		1	14-AUG-15 23:04	per0814019a

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

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

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: SW846 6850 ModifiedMatrix: WATERExtraction Batch ID: 1500487Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAMO-15-102559MSDDate Received: 11-AUG-15GEL Job No (SDG): 2015-2084GEL Sample ID: 1203374488Date Filtered: 14-AUG-15Injection 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	0.566	ug/L		1	14-AUG-15 23:17	per0814020a
	Perchlorate Isotope Ratio			3			1	14-AUG-15 23:17	per0814020a
14797-73-0	Perchlorate-101	.05	.2	0.584	ug/L		1	14-AUG-15 23:17	per0814020a
	Perchlorate-O(18)			0.490	ug/L		1	14-AUG-15 23:17	per0814020a

^ 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
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2015-2084
Work Order #: 379019

Sample ID	Client ID
379019001	CAMO-15-102580
379019002	CAMO-15-102604
379019003	CAMO-15-102558
379019004	CAMO-15-102559
379019005	CAMO-15-102581
379019006	CAMO-15-102605
379019007	CAMO-15-102584
379019008	CAMO-15-102608
379019009	CAMO-15-102585
379019010	CAMO-15-102609
1203371766	Method Blank (MB) ICP
1203371767	Laboratory Control Sample (LCS)
1203371770	379011002(CASA-15-102647L) Serial Dilution (SD)
1203371768	379011002(CASA-15-102647D) Sample Duplicate (DUP)
1203371769	379011002(CASA-15-102647S) Matrix Spike (MS)
1203371800	Method Blank (MB) ICP-MS
1203371801	Laboratory Control Sample (LCS)
1203371804	379011002(CASA-15-102647L) Serial Dilution (SD)
1203371802	379011002(CASA-15-102647D) Sample Duplicate (DUP)
1203371803	379011002(CASA-15-102647S) Matrix Spike (MS)
1203382647	Method Blank (MB) CVAA
1203382648	Laboratory Control Sample (LCS)
1203382653	379110004(WTESR-15-97804L) Serial Dilution (SD)
1203382649	379110004(WTESR-15-97804D) Sample Duplicate (DUP)
1203382651	379110004(WTESR-15-97804S) Matrix Spike (MS)

Sample Analysis

Method/Analysis Information

Analytical Batch:	1499471, 1499480, 1503572 and 1501953
Prep Batch :	1499470, 1499479 and 1503571
Standard Operating Procedures:	GL-MA-E-013 REV# 24, GL-MA-E-006 REV# 12, GL-MA-E-014 REV# 26, GL-MA-E-010 REV# 30 and GL-GC-E-107 REV# 9
Analytical Method:	SW846 3005A/6010C, SW846 3005A/6020A, 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 an ESI SC-FAST introduction, cyclonic spray chamber, and yttrium or scandium internal standard.

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

The Metals analysis - ICPMS was performed on a PerkinElmer NexION 300X ICPMS. The instrument is equipped with a ESI PFA-ST nebulizer, quadrupole mass spectrometer, dual mode electron multiplier detector, and Kinetic Energy Discrimination (KED) technology. Internal standards of scandium, germanium, indium, tantalum, and/or lutetium were utilized to cover the mass spectrum.

Calibration Information

Instrument Calibration

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

CRDL/PQL Requirements

The PQL standard recoveries for SW846 6010C met the control limits with the exception of sodium. Client sample concentrations were less than the MDL or greater than two times the PQL; therefore the data were not adversely affected. 379019002 (CAMO-15-102604), 379019004 (CAMO-15-102559), 379019006 (CAMO-15-102605), 379019008 (CAMO-15-102608) and 379019010 (CAMO-15-102609)-ICP.

ICSA/ICSAB Statement

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

Continuing Calibration Blanks (CCB) Requirements

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

Continuing Calibration Verification (CCV) Requirements

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

Quality Control (QC) Information

Method Blank (MB) Statement

The MBs analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Quality Control (QC) Sample Statement

The following samples were selected as the quality control (QC) samples for this SDG: 379011002 (CASA-15-102647)-ICP and ICP-MS and 379110004 (WTESR-15-97804)-CVAA.

Matrix Spike (MS/MSD) Recovery Statement

The percent recoveries (%R) obtained from the MS/MSD analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The matrix spike met the recommended quality control acceptance criteria for percent recoveries for all applicable analytes.

Duplicate Relative Percent Difference (RPD) Statement

The RPD obtained from the designated sample duplicate (DUP) is evaluated based on acceptance criteria of 20% when the sample is >5X the contract required reporting limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control of +/-RL is used to evaluate the DUP results. The relative percent differences (RPD) between the sample and its duplicate (DUP) were within acceptable limits for all applicable analytes.

Serial Dilution % Difference Statement

All applicable analytes in the serial dilution (SDILT) demonstrated acceptable correlation to its associated sample and met the established acceptance percent difference criteria.

Technical Information**Holding Time Specifications**

GEL assigns holding times based on the associated methodology. Holding time is measured by comparison of the date and time of sample collection to the date and time of sample preparation and analysis. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP.

Sample Dilutions

The samples in this SDG did not require dilutions.

Preparation Information

The samples in this SDG were not diluted and prepared according to the cited SOP.

Miscellaneous Information**Electronic Packaging Comment**

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

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

Data Exception (DER) Documentation

A data exception report was not required for this SDG.

Additional Comments

Total Hardness by Calculation is determined using the results of Total Calcium (Ca) and Total Magnesium (Mg) determined by ICP or ICP-MS.

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

Please refer to the Total Ca and Total Mg data to validate results appearing on the Hardness Summary sheet. Both results are in the Inorganic/metals section of the package. There is no Batch QC for calculated results, and

thus no QC Summary for the Hardness by Calculation Batch. The MDLs and PQLs are calculated using the higher of the two calculated values of Ca or Mg.

Certification Statement

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

GEL LABORATORIES LLC

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

Qualifier Definition Report for

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

Client SDG: 2015-2084 GEL Work Order: 379019

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.

Review/Validation

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

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

Signature:



Name: Nik-Cole Elmore

Date: 04 SEP 2015

Title: Data Validator

Sample Data Summary

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2015-2084

CONTRACT: ESHL00114

METHOD TYPE: EPA

SAMPLE ID:379019001

BASIS: As Received

DATE COLLECTED 06-AUG-15

CLIENT ID: CAMO-15-102580

LEVEL: Low

DATE RECEIVED 11-AUG-15

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	0.067	ug/L	U	0.067	0.2	0.2	1	AV	MTM1	08/27/15 15:18	082715W1-7	1503572

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
------------------	------------	-------------	------------------	-------	----------------	-------	------	---------

1503572	1503571	EPA 245.1/245.2 Prep	20	mL	20	mL	08/27/15	MTM1
---------	---------	----------------------	----	----	----	----	----------	------

***Analytical Methods:**

AV EPA 245.1/245.2

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2015-2084

CONTRACT: ESHL00114

METHOD TYPE: EPA

SAMPLE ID:379019002

BASIS: As Received

DATE COLLECTED 06-AUG-15

CLIENT ID: CAMO-15-102604

LEVEL: Low

DATE RECEIVED 11-AUG-15

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	0.067	ug/L	U	0.067	0.2	0.2	1	AV	MTM1	08/27/15 15:20	082715W1-7	1503572

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2015-2084

CONTRACT: ESHL00114

METHOD TYPE: SW846

SAMPLE ID: 379019002

BASIS: As Received

DATE COLLECTED 06-AUG-15

CLIENT ID: CAMO-15-102604

LEVEL: Low

DATE RECEIVED 11-AUG-15

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	68	ug/L	U	68	200	200	1	P	HSC	08/17/15 16:40	081715A-1	1499471
7440-36-0	Antimony	1	ug/L	U	1	3	3	1	MS	PRB	09/02/15 01:44	150901-6	1499480
7440-38-2	Arsenic	1.77	ug/L	J	1.7	5	5	1	MS	PRB	09/01/15 18:12	150901-2	1499480
7440-39-3	Barium	32.1	ug/L		1	5	5	1	P	HSC	08/17/15 16:40	081715A-1	1499471
7440-41-7	Beryllium	1	ug/L	U	1	5	5	1	P	HSC	08/17/15 16:40	081715A-1	1499471
7440-42-8	Boron	15	ug/L	U	15	50	50	1	P	HSC	08/17/15 16:40	081715A-1	1499471
7440-43-9	Cadmium	0.110	ug/L	U	0.11	1	1	1	MS	PRB	09/01/15 18:12	150901-2	1499480
7440-70-2	Calcium	11800	ug/L		50	200	200	1	P	HSC	08/17/15 16:40	081715A-1	1499471
7440-47-3	Chromium	4.89	ug/L	J	2	10	10	1	MS	PRB	09/01/15 18:12	150901-2	1499480
7440-48-4	Cobalt	1	ug/L	U	1	5	5	1	P	HSC	08/17/15 16:40	081715A-1	1499471
7440-50-8	Copper	3	ug/L	U	3	10	10	1	P	HSC	08/17/15 16:40	081715A-1	1499471
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	HSC	08/17/15 16:40	081715A-1	1499471
7439-92-1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	PRB	09/01/15 18:12	150901-2	1499480
7439-95-4	Magnesium	3970	ug/L		110	300	300	1	P	HSC	08/17/15 16:40	081715A-1	1499471
7439-96-5	Manganese	2	ug/L	U	2	10	10	1	P	HSC	08/17/15 16:40	081715A-1	1499471
7439-98-7	Molybdenum	1.15	ug/L		0.165	0.5	0.5	1	MS	PRB	09/02/15 01:44	150901-6	1499480
7440-02-0	Nickel	0.745	ug/L	J	0.5	2	2	1	MS	PRB	09/01/15 18:12	150901-2	1499480
7440-09-7	Potassium	1500	ug/L		50	150	150	1	P	HSC	08/17/15 16:40	081715A-1	1499471
7782-49-2	Selenium	1.5	ug/L	U	1.5	5	5	1	MS	PRB	09/01/15 18:12	150901-2	1499480
7631-86-9	Silica	74400	ug/L		53	213	213	1	P	HSC	08/17/15 16:40	081715A-1	1499471
7440-22-4	Silver	0.20	ug/L	U	0.2	1	1	1	MS	PRB	09/01/15 18:12	150901-2	1499480
7440-23-5	Sodium	11400	ug/L		100	300	300	1	P	HSC	08/17/15 16:40	081715A-1	1499471
7440-24-6	Strontium	46.8	ug/L		1	5	5	1	P	HSC	08/17/15 16:40	081715A-1	1499471
7440-28-0	Thallium	0.450	ug/L	U	0.45	2	2	1	MS	PRB	09/01/15 18:12	150901-2	1499480
7440-31-5	Tin	2.5	ug/L	U	2.5	10	10	1	P	HSC	08/17/15 16:40	081715A-1	1499471
7440-61-1	Uranium	0.759	ug/L		0.067	0.2	0.2	1	MS	PRB	09/02/15 01:44	150901-6	1499480
7440-62-2	Vanadium	5.36	ug/L		1	5	5	1	P	HSC	08/17/15 16:40	081715A-1	1499471
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	P	HSC	08/17/15 16:40	081715A-1	1499471

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2015-2084

CONTRACT: ESHL00114

METHOD TYPE:

SAMPLE ID:379019002

BASIS: As Received

DATE COLLECTED 06-AUG-15

CLIENT ID: CAMO-15-102604

LEVEL: Low

DATE RECEIVED 11-AUG-15

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	45.7	mg/L		0.453	1.24	1.24	1		JJ2	08/20/15 10:45		1501953

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1499471	1499470	SW846 3005A	50	mL	50	mL	08/11/15	JP1
1499480	1499479	SW846 3005A	50	mL	50	mL	08/11/15	JP1
1503572	1503571	EPA 245.1/245.2 Prep	20	mL	20	mL	08/27/15	MTM1

***Analytical Methods:**

P SW846 3005A/6010C
MS SW846 3005A/6020A
AV EPA 245.1/245.2

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2015-2084

CONTRACT: ESHL00114

METHOD TYPE: EPA

SAMPLE ID:379019003

BASIS: As Received

DATE COLLECTED 06-AUG-15

CLIENT ID: CAMO-15-102558

LEVEL: Low

DATE RECEIVED 11-AUG-15

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	0.067	ug/L	U	0.067	0.2	0.2	1	AV	MTM1	08/27/15 15:22	082715W1-7	1503572

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
------------------	------------	-------------	------------------	-------	----------------	-------	------	---------

1503572	1503571	EPA 245.1/245.2 Prep	20	mL	20	mL	08/27/15	MTM1
---------	---------	----------------------	----	----	----	----	----------	------

***Analytical Methods:**

AV EPA 245.1/245.2

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2015-2084

CONTRACT: ESHL00114

METHOD TYPE: EPA

SAMPLE ID:379019004

BASIS: As Received

DATE COLLECTED 06-AUG-15

CLIENT ID: CAMO-15-102559

LEVEL: Low

DATE RECEIVED 11-AUG-15

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	0.067	ug/L	U	0.067	0.2	0.2	1	AV	MTMI	08/27/15 15:24	082715W1-7	1503572

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2015-2084

CONTRACT: ESHL00114

METHOD TYPE: SW846

SAMPLE ID: 379019004

BASIS: As Received

DATE COLLECTED 06-AUG-15

CLIENT ID: CAMO-15-102559

LEVEL: Low

DATE RECEIVED 11-AUG-15

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	68	ug/L	U	68	200	200	1	P	HSC	08/17/15 16:44	081715A-1	1499471
7440-36-0	Antimony	1	ug/L	U	1	3	3	1	MS	PRB	09/02/15 01:46	150901-6	1499480
7440-38-2	Arsenic	1.7	ug/L	U	1.7	5	5	1	MS	PRB	09/01/15 18:15	150901-2	1499480
7440-39-3	Barium	30.5	ug/L		1	5	5	1	P	HSC	08/17/15 16:44	081715A-1	1499471
7440-41-7	Beryllium	1	ug/L	U	1	5	5	1	P	HSC	08/17/15 16:44	081715A-1	1499471
7440-42-8	Boron	15	ug/L	U	15	50	50	1	P	HSC	08/17/15 16:44	081715A-1	1499471
7440-43-9	Cadmium	0.110	ug/L	U	0.11	1	1	1	MS	PRB	09/01/15 18:15	150901-2	1499480
7440-70-2	Calcium	11400	ug/L		50	200	200	1	P	HSC	08/17/15 16:44	081715A-1	1499471
7440-47-3	Chromium	4.8	ug/L	J	2	10	10	1	MS	PRB	09/01/15 18:15	150901-2	1499480
7440-48-4	Cobalt	1	ug/L	U	1	5	5	1	P	HSC	08/17/15 16:44	081715A-1	1499471
7440-50-8	Copper	3	ug/L	U	3	10	10	1	P	HSC	08/17/15 16:44	081715A-1	1499471
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	HSC	08/17/15 16:44	081715A-1	1499471
7439-92-1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	PRB	09/01/15 18:15	150901-2	1499480
7439-95-4	Magnesium	3830	ug/L		110	300	300	1	P	HSC	08/17/15 16:44	081715A-1	1499471
7439-96-5	Manganese	2	ug/L	U	2	10	10	1	P	HSC	08/17/15 16:44	081715A-1	1499471
7439-98-7	Molybdenum	1.13	ug/L		0.165	0.5	0.5	1	MS	PRB	09/02/15 01:46	150901-6	1499480
7440-02-0	Nickel	0.754	ug/L	J	0.5	2	2	1	MS	PRB	09/01/15 18:15	150901-2	1499480
7440-09-7	Potassium	1410	ug/L		50	150	150	1	P	HSC	08/17/15 16:44	081715A-1	1499471
7782-49-2	Selenium	1.5	ug/L	U	1.5	5	5	1	MS	PRB	09/01/15 18:15	150901-2	1499480
7631-86-9	Silica	72100	ug/L		53	213	213	1	P	HSC	08/17/15 16:44	081715A-1	1499471
7440-22-4	Silver	0.20	ug/L	U	0.2	1	1	1	MS	PRB	09/01/15 18:15	150901-2	1499480
7440-23-5	Sodium	11200	ug/L		100	300	300	1	P	HSC	08/17/15 16:44	081715A-1	1499471
7440-24-6	Strontium	45.3	ug/L		1	5	5	1	P	HSC	08/17/15 16:44	081715A-1	1499471
7440-28-0	Thallium	0.450	ug/L	U	0.45	2	2	1	MS	PRB	09/01/15 18:15	150901-2	1499480
7440-31-5	Tin	2.5	ug/L	U	2.5	10	10	1	P	HSC	08/17/15 16:44	081715A-1	1499471
7440-61-1	Uranium	0.731	ug/L		0.067	0.2	0.2	1	MS	PRB	09/02/15 01:46	150901-6	1499480
7440-62-2	Vanadium	5.41	ug/L		1	5	5	1	P	HSC	08/17/15 16:44	081715A-1	1499471
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	P	HSC	08/17/15 16:44	081715A-1	1499471

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2015-2084

CONTRACT: ESHL00114

METHOD TYPE:

SAMPLE ID:379019004

BASIS: As Received

DATE COLLECTED 06-AUG-15

CLIENT ID: CAMO-15-102559

LEVEL: Low

DATE RECEIVED 11-AUG-15

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	44.3	mg/L		0.453	1.24	1.24	1		JJ2	08/20/15 10:45		1501953

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1499471	1499470	SW846 3005A	50	mL	50	mL	08/11/15	JP1
1499480	1499479	SW846 3005A	50	mL	50	mL	08/11/15	JP1
1503572	1503571	EPA 245.1/245.2 Prep	20	mL	20	mL	08/27/15	MTM1

***Analytical Methods:**

P SW846 3005A/6010C
MS SW846 3005A/6020A
AV EPA 245.1/245.2

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2015-2084

CONTRACT: ESHL00114

METHOD TYPE: EPA

SAMPLE ID:379019005

BASIS: As Received

DATE COLLECTED 06-AUG-15

CLIENT ID: CAMO-15-102581

LEVEL: Low

DATE RECEIVED 11-AUG-15

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	0.067	ug/L	U	0.067	0.2	0.2	1	AV	MTM1	08/27/15 15:25	082715W1-7	1503572

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
------------------	------------	-------------	------------------	-------	----------------	-------	------	---------

1503572	1503571	EPA 245.1/245.2 Prep	20	mL	20	mL	08/27/15	MTM1
---------	---------	----------------------	----	----	----	----	----------	------

***Analytical Methods:**

AV EPA 245.1/245.2

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2015-2084

CONTRACT: ESHL00114

METHOD TYPE: EPA

SAMPLE ID:379019006

BASIS: As Received

DATE COLLECTED 06-AUG-15

CLIENT ID: CAMO-15-102605

LEVEL: Low

DATE RECEIVED 11-AUG-15

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	0.067	ug/L	U	0.067	0.2	0.2	1	AV	MTMI	08/27/15 15:27	082715W1-7	1503572

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2015-2084

CONTRACT: ESHL00114

METHOD TYPE: SW846

SAMPLE ID: 379019006

BASIS: As Received

DATE COLLECTED 06-AUG-15

CLIENT ID: CAMO-15-102605

LEVEL: Low

DATE RECEIVED 11-AUG-15

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	68	ug/L	U	68	200	200	1	P	HSC	08/17/15 16:47	081715A-1	1499471
7440-36-0	Antimony	1	ug/L	U	1	3	3	1	MS	PRB	09/02/15 01:49	150901-6	1499480
7440-38-2	Arsenic	1.7	ug/L	U	1.7	5	5	1	MS	PRB	09/01/15 18:18	150901-2	1499480
7440-39-3	Barium	36.3	ug/L		1	5	5	1	P	HSC	08/17/15 16:47	081715A-1	1499471
7440-41-7	Beryllium	1	ug/L	U	1	5	5	1	P	HSC	08/17/15 16:47	081715A-1	1499471
7440-42-8	Boron	15	ug/L	U	15	50	50	1	P	HSC	08/17/15 16:47	081715A-1	1499471
7440-43-9	Cadmium	0.110	ug/L	U	0.11	1	1	1	MS	PRB	09/01/15 18:18	150901-2	1499480
7440-70-2	Calcium	11400	ug/L		50	200	200	1	P	HSC	08/17/15 16:47	081715A-1	1499471
7440-47-3	Chromium	5.52	ug/L	J	2	10	10	1	MS	PRB	09/01/15 18:18	150901-2	1499480
7440-48-4	Cobalt	1	ug/L	U	1	5	5	1	P	HSC	08/17/15 16:47	081715A-1	1499471
7440-50-8	Copper	3	ug/L	U	3	10	10	1	P	HSC	08/17/15 16:47	081715A-1	1499471
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	HSC	08/17/15 16:47	081715A-1	1499471
7439-92-1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	PRB	09/01/15 18:18	150901-2	1499480
7439-95-4	Magnesium	4320	ug/L		110	300	300	1	P	HSC	08/17/15 16:47	081715A-1	1499471
7439-96-5	Manganese	2	ug/L	U	2	10	10	1	P	HSC	08/17/15 16:47	081715A-1	1499471
7439-98-7	Molybdenum	0.947	ug/L		0.165	0.5	0.5	1	MS	PRB	09/02/15 01:49	150901-6	1499480
7440-02-0	Nickel	0.50	ug/L	U	0.5	2	2	1	MS	PRB	09/01/15 18:18	150901-2	1499480
7440-09-7	Potassium	2370	ug/L		50	150	150	1	P	HSC	08/17/15 16:47	081715A-1	1499471
7782-49-2	Selenium	1.5	ug/L	U	1.5	5	5	1	MS	PRB	09/01/15 18:18	150901-2	1499480
7631-86-9	Silica	80100	ug/L		53	213	213	1	P	HSC	08/17/15 16:47	081715A-1	1499471
7440-22-4	Silver	0.20	ug/L	U	0.2	1	1	1	MS	PRB	09/01/15 18:18	150901-2	1499480
7440-23-5	Sodium	11200	ug/L		100	300	300	1	P	HSC	08/17/15 16:47	081715A-1	1499471
7440-24-6	Strontium	46.5	ug/L		1	5	5	1	P	HSC	08/17/15 16:47	081715A-1	1499471
7440-28-0	Thallium	0.450	ug/L	U	0.45	2	2	1	MS	PRB	09/01/15 18:18	150901-2	1499480
7440-31-5	Tin	2.5	ug/L	U	2.5	10	10	1	P	HSC	08/17/15 16:47	081715A-1	1499471
7440-61-1	Uranium	0.815	ug/L		0.067	0.2	0.2	1	MS	PRB	09/02/15 01:49	150901-6	1499480
7440-62-2	Vanadium	5.37	ug/L		1	5	5	1	P	HSC	08/17/15 16:47	081715A-1	1499471
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	P	HSC	08/17/15 16:47	081715A-1	1499471

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2015-2084

CONTRACT: ESHL00114

METHOD TYPE:

SAMPLE ID: 379019006

BASIS: As Received

DATE COLLECTED 06-AUG-15

CLIENT ID: CAMO-15-102605

LEVEL: Low

DATE RECEIVED 11-AUG-15

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	46.3	mg/L		0.453	1.24	1.24	1		JJ2	08/20/15 10:45		1501953

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1499471	1499470	SW846 3005A	50	mL	50	mL	08/11/15	JP1
1499480	1499479	SW846 3005A	50	mL	50	mL	08/11/15	JP1
1503572	1503571	EPA 245.1/245.2 Prep	20	mL	20	mL	08/27/15	MTM1

***Analytical Methods:**

P SW846 3005A/6010C
MS SW846 3005A/6020A
AV EPA 245.1/245.2

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2015-2084

CONTRACT: ESHL00114

METHOD TYPE: EPA

SAMPLE ID:379019007

BASIS: As Received

DATE COLLECTED 06-AUG-15

CLIENT ID: CAMO-15-102584

LEVEL: Low

DATE RECEIVED 11-AUG-15

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	0.067	ug/L	U	0.067	0.2	0.2	1	AV	MTM1	08/27/15 15:29	082715W1-7	1503572

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
------------------	------------	-------------	------------------	-------	----------------	-------	------	---------

1503572	1503571	EPA 245.1/245.2 Prep	20	mL	20	mL	08/27/15	MTM1
---------	---------	----------------------	----	----	----	----	----------	------

***Analytical Methods:**

AV EPA 245.1/245.2

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2015-2084

CONTRACT: ESHL00114

METHOD TYPE: EPA

SAMPLE ID:379019008

BASIS: As Received

DATE COLLECTED 06-AUG-15

CLIENT ID: CAMO-15-102608

LEVEL: Low

DATE RECEIVED 11-AUG-15

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	0.067	ug/L	U	0.067	0.2	0.2	1	AV	MTMI	08/27/15 15:30	082715W1-7	1503572

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2015-2084

CONTRACT: ESHL00114

METHOD TYPE: SW846

SAMPLE ID: 379019008

BASIS: As Received

DATE COLLECTED 06-AUG-15

CLIENT ID: CAMO-15-102608

LEVEL: Low

DATE RECEIVED 11-AUG-15

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	68	ug/L	U	68	200	200	1	P	HSC	08/17/15 16:50	081715A-1	1499471
7440-36-0	Antimony	1	ug/L	U	1	3	3	1	MS	PRB	09/02/15 01:51	150901-6	1499480
7440-38-2	Arsenic	1.7	ug/L	U	1.7	5	5	1	MS	PRB	09/01/15 18:21	150901-2	1499480
7440-39-3	Barium	20.3	ug/L		1	5	5	1	P	HSC	08/17/15 16:50	081715A-1	1499471
7440-41-7	Beryllium	1	ug/L	U	1	5	5	1	P	HSC	08/17/15 16:50	081715A-1	1499471
7440-42-8	Boron	15	ug/L	U	15	50	50	1	P	HSC	08/17/15 16:50	081715A-1	1499471
7440-43-9	Cadmium	0.110	ug/L	U	0.11	1	1	1	MS	PRB	09/01/15 18:21	150901-2	1499480
7440-70-2	Calcium	12400	ug/L		50	200	200	1	P	HSC	08/17/15 16:50	081715A-1	1499471
7440-47-3	Chromium	15.6	ug/L		2	10	10	1	MS	PRB	09/01/15 18:21	150901-2	1499480
7440-48-4	Cobalt	1	ug/L	U	1	5	5	1	P	HSC	08/17/15 16:50	081715A-1	1499471
7440-50-8	Copper	3	ug/L	U	3	10	10	1	P	HSC	08/17/15 16:50	081715A-1	1499471
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	HSC	08/17/15 16:50	081715A-1	1499471
7439-92-1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	PRB	09/01/15 18:21	150901-2	1499480
7439-95-4	Magnesium	3530	ug/L		110	300	300	1	P	HSC	08/17/15 16:50	081715A-1	1499471
7439-96-5	Manganese	2	ug/L	U	2	10	10	1	P	HSC	08/17/15 16:50	081715A-1	1499471
7439-98-7	Molybdenum	0.865	ug/L		0.165	0.5	0.5	1	MS	PRB	09/02/15 01:51	150901-6	1499480
7440-02-0	Nickel	0.50	ug/L	U	0.5	2	2	1	MS	PRB	09/01/15 18:21	150901-2	1499480
7440-09-7	Potassium	1070	ug/L		50	150	150	1	P	HSC	08/17/15 16:50	081715A-1	1499471
7782-49-2	Selenium	1.5	ug/L	U	1.5	5	5	1	MS	PRB	09/01/15 18:21	150901-2	1499480
7631-86-9	Silica	65500	ug/L		53	213	213	1	P	HSC	08/17/15 16:50	081715A-1	1499471
7440-22-4	Silver	0.20	ug/L	U	0.2	1	1	1	MS	PRB	09/01/15 18:21	150901-2	1499480
7440-23-5	Sodium	8610	ug/L		100	300	300	1	P	HSC	08/17/15 16:50	081715A-1	1499471
7440-24-6	Strontium	49.5	ug/L		1	5	5	1	P	HSC	08/17/15 16:50	081715A-1	1499471
7440-28-0	Thallium	0.450	ug/L	U	0.45	2	2	1	MS	PRB	09/01/15 18:21	150901-2	1499480
7440-31-5	Tin	2.5	ug/L	U	2.5	10	10	1	P	HSC	08/17/15 16:50	081715A-1	1499471
7440-61-1	Uranium	0.375	ug/L		0.067	0.2	0.2	1	MS	PRB	09/02/15 01:51	150901-6	1499480
7440-62-2	Vanadium	4.6	ug/L	J	1	5	5	1	P	HSC	08/17/15 16:50	081715A-1	1499471
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	P	HSC	08/17/15 16:50	081715A-1	1499471

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2015-2084

CONTRACT: ESHL00114

METHOD TYPE:

SAMPLE ID:379019008

BASIS: As Received

DATE COLLECTED 06-AUG-15

CLIENT ID: CAMO-15-102608

LEVEL: Low

DATE RECEIVED 11-AUG-15

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	45.4	mg/L		0.453	1.24	1.24	1		JJ2	08/20/15 10:45		1501953

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1499471	1499470	SW846 3005A	50	mL	50	mL	08/11/15	JP1
1499480	1499479	SW846 3005A	50	mL	50	mL	08/11/15	JP1
1503572	1503571	EPA 245.1/245.2 Prep	20	mL	20	mL	08/27/15	MTM1

***Analytical Methods:**

P SW846 3005A/6010C
MS SW846 3005A/6020A
AV EPA 245.1/245.2

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2015-2084

CONTRACT: ESHL00114

METHOD TYPE: EPA

SAMPLE ID:379019009

BASIS: As Received

DATE COLLECTED 06-AUG-15

CLIENT ID: CAMO-15-102585

LEVEL: Low

DATE RECEIVED 11-AUG-15

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	0.067	ug/L	U	0.067	0.2	0.2	1	AV	MTM1	08/27/15 15:35	082715W1-7	1503572

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
------------------	------------	-------------	------------------	-------	----------------	-------	------	---------

1503572	1503571	EPA 245.1/245.2 Prep	20	mL	20	mL	08/27/15	MTM1
---------	---------	----------------------	----	----	----	----	----------	------

***Analytical Methods:**

AV EPA 245.1/245.2

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2015-2084

CONTRACT: ESHL00114

METHOD TYPE: EPA

SAMPLE ID:379019010

BASIS: As Received

DATE COLLECTED 06-AUG-15

CLIENT ID: CAMO-15-102609

LEVEL: Low

DATE RECEIVED 11-AUG-15

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	0.067	ug/L	U	0.067	0.2	0.2	1	AV	MTMI	08/27/15 15:37	082715W1-7	1503572

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2015-2084

CONTRACT: ESHL00114

METHOD TYPE: SW846

SAMPLE ID: 379019010

BASIS: As Received

DATE COLLECTED 06-AUG-15

CLIENT ID: CAMO-15-102609

LEVEL: Low

DATE RECEIVED 11-AUG-15

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	68	ug/L	U	68	200	200	1	P	HSC	08/17/15 16:53	081715A-1	1499471
7440-36-0	Antimony	1	ug/L	U	1	3	3	1	MS	PRB	09/02/15 01:53	150901-6	1499480
7440-38-2	Arsenic	1.7	ug/L	U	1.7	5	5	1	MS	PRB	09/01/15 18:24	150901-2	1499480
7440-39-3	Barium	22.1	ug/L		1	5	5	1	P	HSC	08/17/15 16:53	081715A-1	1499471
7440-41-7	Beryllium	1	ug/L	U	1	5	5	1	P	HSC	08/17/15 16:53	081715A-1	1499471
7440-42-8	Boron	15	ug/L	U	15	50	50	1	P	HSC	08/17/15 16:53	081715A-1	1499471
7440-43-9	Cadmium	0.110	ug/L	U	0.11	1	1	1	MS	PRB	09/01/15 18:24	150901-2	1499480
7440-70-2	Calcium	13100	ug/L		50	200	200	1	P	HSC	08/17/15 16:53	081715A-1	1499471
7440-47-3	Chromium	7.72	ug/L	J	2	10	10	1	MS	PRB	09/01/15 18:24	150901-2	1499480
7440-48-4	Cobalt	1	ug/L	U	1	5	5	1	P	HSC	08/17/15 16:53	081715A-1	1499471
7440-50-8	Copper	3	ug/L	U	3	10	10	1	P	HSC	08/17/15 16:53	081715A-1	1499471
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	HSC	08/17/15 16:53	081715A-1	1499471
7439-92-1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	PRB	09/01/15 18:24	150901-2	1499480
7439-95-4	Magnesium	4180	ug/L		110	300	300	1	P	HSC	08/17/15 16:53	081715A-1	1499471
7439-96-5	Manganese	2	ug/L	U	2	10	10	1	P	HSC	08/17/15 16:53	081715A-1	1499471
7439-98-7	Molybdenum	0.775	ug/L		0.165	0.5	0.5	1	MS	PRB	09/02/15 01:53	150901-6	1499480
7440-02-0	Nickel	0.50	ug/L	U	0.5	2	2	1	MS	PRB	09/01/15 18:24	150901-2	1499480
7440-09-7	Potassium	1250	ug/L		50	150	150	1	P	HSC	08/17/15 16:53	081715A-1	1499471
7782-49-2	Selenium	1.5	ug/L	U	1.5	5	5	1	MS	PRB	09/01/15 18:24	150901-2	1499480
7631-86-9	Silica	70400	ug/L		53	213	213	1	P	HSC	08/17/15 16:53	081715A-1	1499471
7440-22-4	Silver	0.20	ug/L	U	0.2	1	1	1	MS	PRB	09/01/15 18:24	150901-2	1499480
7440-23-5	Sodium	9520	ug/L		100	300	300	1	P	HSC	08/17/15 16:53	081715A-1	1499471
7440-24-6	Strontium	51.6	ug/L		1	5	5	1	P	HSC	08/17/15 16:53	081715A-1	1499471
7440-28-0	Thallium	0.450	ug/L	U	0.45	2	2	1	MS	PRB	09/01/15 18:24	150901-2	1499480
7440-31-5	Tin	2.5	ug/L	U	2.5	10	10	1	P	HSC	08/17/15 16:53	081715A-1	1499471
7440-61-1	Uranium	0.450	ug/L		0.067	0.2	0.2	1	MS	PRB	09/02/15 01:53	150901-6	1499480
7440-62-2	Vanadium	5.76	ug/L		1	5	5	1	P	HSC	08/17/15 16:53	081715A-1	1499471
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	P	HSC	08/17/15 16:53	081715A-1	1499471

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2015-2084

CONTRACT: ESHL00114

METHOD TYPE:

SAMPLE ID:379019010

BASIS: As Received

DATE COLLECTED 06-AUG-15

CLIENT ID: CAMO-15-102609

LEVEL: Low

DATE RECEIVED 11-AUG-15

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	50	mg/L		0.453	1.24	1.24	1		JJ2	08/20/15 10:45		1501953

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1499471	1499470	SW846 3005A	50	mL	50	mL	08/11/15	JP1
1499480	1499479	SW846 3005A	50	mL	50	mL	08/11/15	JP1
1503572	1503571	EPA 245.1/245.2 Prep	20	mL	20	mL	08/27/15	MTM1

***Analytical Methods:**

P SW846 3005A/6010C
MS SW846 3005A/6020A
AV EPA 245.1/245.2

Quality Control Summary

METALS
-3b-
PREPARATION BLANK SUMMARY

SDG NO. 2015-2084
Contract: ESHL00114
Matrix: W

<u>Sample ID</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Acceptance Window</u>	<u>Conc Qual</u>	<u>M*</u>	<u>MDL</u>	<u>RDL</u>
1203371766								
	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
1203371800								
	Antimony	1	ug/L	+/-3	U	MS	1	3
	Arsenic	3.12	ug/L	+/-5	J	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	0.227	ug/L	+/-0.5	J	MS	0.165	0.5
	Nickel	0.5	ug/L	+/-2	U	MS	0.5	2
	Selenium	1.5	ug/L	+/-5	U	MS	1.5	5
	Silver	0.2	ug/L	+/-1	U	MS	0.2	1
	Thallium	0.45	ug/L	+/-2	U	MS	0.45	2
	Uranium	0.067	ug/L	+/-0.2	U	MS	0.067	0.2
1203382647								
	Mercury	0.067	ug/L	+/-0.2	U	AV	0.067	0.2

*Analytical Methods:

P SW846 3005A/6010C
MS SW846 3005A/6020A
AV EPA 245.1/245.2

METALS

-5a-

Matrix Spike Summary

SDG NO. 2015-2084 Client ID: CASA-15-102647S

Contract: ESHL00114 Level: Low

Matrix: WATER % Solids:

Sample ID: 379011002 Spike ID: 1203371769

<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	5100		68	U	5000	102		P
Barium	ug/L	75-125	571		43.4		500	105		P
Beryllium	ug/L	75-125	530		1	U	500	106		P
Boron	ug/L	75-125	575		32.1	J	500	109		P
Calcium	ug/L		29000		24500		5000	90.8	N/A	P
Cobalt	ug/L	75-125	515		1	U	500	103		P
Copper	ug/L	75-125	544		3	U	500	109		P
Iron	ug/L	75-125	5340		30	U	5000	107		P
Magnesium	ug/L	75-125	12200		6920		5000	106		P
Manganese	ug/L	75-125	525		2	U	500	105		P
Potassium	ug/L	75-125	6680		1550		5000	102		P
Silica	ug/L		84400		75900		10700	79.7	N/A	P
Sodium	ug/L	75-125	16800		12300		5000	89.6		P
Strontium	ug/L	75-125	577		89.7		500	97.4		P
Tin	ug/L	75-125	543		2.73	J	500	108		P
Vanadium	ug/L	75-125	538		7.35		500	106		P
Zinc	ug/L	75-125	518		7.9	J	500	102		P

*Analytical Methods:

P SW846 3005A/6010C

METALS

-5a-

Matrix Spike Summary

SDG NO. 2015-2084 Client ID: CASA-15-102647S

Contract: ESHL00114 Level: Low

Matrix: WATER % Solids:

Sample ID: 379011002 Spike ID: 1203371803

<u>Analyte</u>	<u>Units</u>	<u>Acceptance Limit</u>	<u>Spiked Result</u>	<u>C</u>	<u>Sample Result</u>	<u>C</u>	<u>Spike Added</u>	<u>% Recovery</u>	<u>Qual</u>	<u>M*</u>
Antimony	ug/L	75-125	48.1		1	U	50	95.9		MS
Arsenic	ug/L	75-125	52.1		2.5	J	50	99.2		MS
Cadmium	ug/L	75-125	51		0.11	U	50	102		MS
Chromium	ug/L	75-125	71.5		20.8		50	101		MS
Lead	ug/L	75-125	45.4		0.5	U	50	90.6		MS
Molybdenum	ug/L	75-125	53.1		1.68		50	103		MS
Nickel	ug/L	75-125	50.1		0.5	U	50	99.5		MS
Selenium	ug/L	75-125	52.8		2.27	J	50	101		MS
Silver	ug/L	75-125	51.3		0.2	U	50	103		MS
Thallium	ug/L	75-125	43.9		0.45	U	50	87.7		MS
Uranium	ug/L	75-125	51.2		0.687		50	101		MS

*Analytical Methods:

MS SW846 3005A/6020A

METALS

-5a-

Matrix Spike Summary

SDG NO. 2015-2084 Client ID: WTESR-15-97804S

Contract: ESHL00114 Level: Low

Matrix: STORM WATER % Solids:

Sample ID: 379110004 Spike ID: 1203382651

<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	2.22		0.067	U	2	109		AV

*Analytical Methods:

AV EPA 245.1/245.2

Metals
-6-
Duplicate Sample Summary

SDG No.: 2015-2084

Lab Code: GEL

Contract: ESHL00114

Client ID: CASA-15-102647D

Matrix: WATER

Level: Low

Sample ID: 379011002

Duplicate ID: 1203371768

Percent Solids for Dup: N/A

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M*
Aluminum	ug/L		68	U	145	J	200		P
Barium	ug/L	+/-20%	43.4		42.3		2.79		P
Beryllium	ug/L		1	U	1	U			P
Boron	ug/L	+/-50	32.1	J	30.8	J	4.09		P
Calcium	ug/L	+/-20%	24500		24100		1.44		P
Cobalt	ug/L		1	U	1	U			P
Copper	ug/L		3	U	3	U			P
Iron	ug/L		30	U	30	U			P
Magnesium	ug/L	+/-20%	6920		6810		1.54		P
Manganese	ug/L		2	U	2	U			P
Potassium	ug/L	+/-20%	1550		1540		1.04		P
Silica	ug/L	+/-20%	75900		74400		2.06		P
Sodium	ug/L	+/-20%	12300		12000		2.42		P
Strontium	ug/L	+/-20%	89.7		88.8		.974		P
Tin	ug/L	+/-10	2.73	J	2.76	J	.972		P
Vanadium	ug/L	+/-5	7.35		7.12		3.16		P
Zinc	ug/L	+/-10	7.9	J	10.8		31		P

*Analytical Methods:

P SW846 3005A/6010C

Metals
-6-
Duplicate Sample Summary

SDG No.: 2015-2084

Lab Code: GEL

Contract: ESHL00114

Client ID: CASA-15-102647D

Matrix: WATER

Level: Low

Sample ID: 379011002

Duplicate ID: 1203371802

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	+/-5	2.5 J		2.24 J		11.1		MS
Cadmium	ug/L		0.11 U		0.11 U				MS
Chromium	ug/L	+/-10	20.8		20.1		3.21		MS
Lead	ug/L		0.5 U		0.5 U				MS
Molybdenum	ug/L	+/- .5	1.68		1.5		11.2		MS
Nickel	ug/L		0.5 U		0.5 U				MS
Selenium	ug/L	+/-5	2.27 J		1.72 J		27.9		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	0.687		0.65		5.53		MS

***Analytical Methods:**

MS SW846 3005A/6020A

METALS

-7-

Laboratory Control Sample Summary

SDG NO. 2015-2084

Contract: ESHL00114

Aqueous LCS Source:OS2I

Solid LCS Source:

<u>Sample ID</u>	<u>Analyte</u>	<u>Units</u>	<u>True Value</u>	<u>Result</u>	<u>C</u>	<u>% Recovery</u>	<u>Acceptance Limit</u>	<u>M*</u>
1203371767								
	Aluminum	ug/L	5000	5070		101	80-120	P
	Barium	ug/L	500	525		105	80-120	P
	Beryllium	ug/L	500	521		104	80-120	P
	Boron	ug/L	500	530		106	80-120	P
	Calcium	ug/L	5000	5240		105	80-120	P
	Cobalt	ug/L	500	521		104	80-120	P
	Copper	ug/L	500	527		105	80-120	P
	Iron	ug/L	5000	5220		104	80-120	P
	Magnesium	ug/L	5000	5410		108	80-120	P
	Manganese	ug/L	500	526		105	80-120	P
	Potassium	ug/L	5000	5080		102	80-120	P
	Silica	ug/L	10700	10600		99.2	80-120	P
	Sodium	ug/L	5000	4900		98	80-120	P
	Strontium	ug/L	500	477		95.4	80-120	P
	Tin	ug/L	500	538		108	80-120	P
	Vanadium	ug/L	500	526		105	80-120	P
	Zinc	ug/L	500	508		102	80-120	P

*Analytical Methods:

P SW846 3005A/6010C

METALS

-7-

Laboratory Control Sample Summary

SDG NO. 2015-2084

Contract: ESHL00114

Aqueous LCS Source:O2Si

Solid LCS Source:

<u>Sample ID</u>	<u>Analyte</u>	<u>Units</u>	<u>True Value</u>	<u>Result</u>	<u>C</u>	<u>% Recovery</u>	<u>Acceptance Limit</u>	<u>M*</u>
1203371801	Lead	ug/L	50	48.2		96.4	80-120	MS
	Molybdenum	ug/L	50	51.2		102	80-120	MS
	Nickel	ug/L	50	51.6		103	80-120	MS
	Selenium	ug/L	50	54.7		109	80-120	MS
	Silver	ug/L	50	52.9		106	80-120	MS
	Thallium	ug/L	50	45.9		91.7	80-120	MS
	Uranium	ug/L	50	51.8		104	80-120	MS
	Antimony	ug/L	50	48.6		97.3	80-120	MS
	Arsenic	ug/L	50	53.2		106	80-120	MS
	Cadmium	ug/L	50	52		104	80-120	MS
	Chromium	ug/L	50	51.1		102	80-120	MS

*Analytical Methods:

MS SW846 3005A/6020A

METALS

-7-

Laboratory Control Sample Summary

SDG NO. 2015-2084

Contract: ESHL00114

Aqueous LCS Source:GEL

Solid LCS Source:

<u>Sample ID</u>	<u>Analyte</u>	<u>Units</u>	<u>True Value</u>	<u>Result</u>	<u>C</u>	<u>% Recovery</u>	<u>Acceptance Limit</u>	<u>M*</u>
1203382648	Mercury	ug/L	2	1.97		98.7	85-115	AV

*Analytical Methods:

AV EPA 245.1/245.2

METALS

-9-

Serial Dilution Sample Summary

SDG NO. 2015-2084 Client ID: CASA-15-102647L

Contract: ESHL00114

Matrix: LIQUID Level: Low

Sample ID: 379011002 Serial Dilution ID: 1203371770

<u>Analyte</u>	<u>Initial Value</u> ug/L	<u>C</u>	<u>Serial Value</u> ug/L	<u>C</u>	<u>% Difference</u>	<u>Qual</u>	<u>Acceptance Limit</u>	<u>M*</u>
Aluminum	68	U	340	U				P
Barium	43.4		43		1.11			P
Beryllium	1	U	5	U				P
Boron	32.1	J	75	U	100			P
Calcium	24500		24200		1.37		10	P
Cobalt	1	U	5	U				P
Copper	3	U	15	U				P
Iron	30	U	150	U				P
Magnesium	6920		6720		2.93		10	P
Manganese	2	U	10	U				P
Potassium	1550		1420		8.37			P
Silica	75900		75100		1.05		10	P
Sodium	12300		12000		1.92		10	P
Strontium	89.7		89.4		.313		10	P
Tin	2.73	J	12.5	U	100			P
Vanadium	7.35		6.97	J	5.16			P
Zinc	7.9	J	16.5	U	100			P

*Analytical Methods:

P SW846 3005A/6010C

METALS

-9-

Serial Dilution Sample Summary

SDG NO. 2015-2084 Client ID: CASA-15-102647L

Contract: ESHL00114

Matrix: LIQUID Level: Low

Sample ID: 379011002 Serial Dilution ID: 1203371804

<u>Analyte</u>	<u>Initial Value</u> ug/L	<u>C</u>	<u>Serial Value</u> ug/L	<u>C</u>	<u>% Difference</u>	<u>Qual</u>	<u>Acceptance Limit</u>	<u>M*</u>
Antimony	1	U	5	U				MS
Arsenic	2.5	J	8.5	U	100			MS
Cadmium	.11	U	.55	U				MS
Chromium	20.8		20.6	J	.952			MS
Lead	.5	U	2.5	U				MS
Molybdenum	1.68		1.94	J	15.6			MS
Nickel	.5	U	2.5	U				MS
Selenium	2.27	J	7.5	U	100			MS
Silver	.2	U	1	U				MS
Thallium	.45	U	2.25	U				MS
Uranium	.687		.575	J	16.3			MS

*Analytical Methods:

MS SW846 3005A/6020A

METALS

-9-

Serial Dilution Sample Summary

SDG NO. 2015-2084 Client ID: WTESR-15-97804L

Contract: ESHL00114

Matrix: LIQUID Level: Low

Sample ID: 379110004 Serial Dilution ID: 1203382653

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

*Analytical Methods:

AV EPA 245.1/245.2

General Chem Analysis

Case Narrative

**General Chemistry
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2015-2084
Work Order #: 379019**

Method/Analysis Information

Product: Carbon and Total Organic

Analytical Batch: 1500166

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
379019001	CAMO-15-102580
379019003	CAMO-15-102558
379019005	CAMO-15-102581
379019007	CAMO-15-102584
379019009	CAMO-15-102585
1203373633	Method Blank (MB)
1203373634	Laboratory Control Sample (LCS)
1203373636	378720001(CAMO-15-102573) Sample Duplicate (DUP)
1203373638	378720001(CAMO-15-102573) Post Spike (PS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-093 REV# 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 Carbon analysis was performed on a O-I Analytical 1030W Carbon Analyzer.

Initial Calibration

All initial calibration requirements have been met for this SDG.

Continuing Calibration Blanks

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

Calibration Verification Information (CCV)

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

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

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

Sample 378720001 (CAMO-15-102573) was selected for QC analysis.

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

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

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

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

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

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

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

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

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

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

Method/Analysis Information

Product: Cyanide and Total
Analytical Batch: 1498741 **Method:** WSP-CN(T)
Prep Batch : 1498740 **Method:** EPA 335.4

Sample Analysis

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

Sample ID	Client ID
379019001	CAMO-15-102580
379019003	CAMO-15-102558
379019005	CAMO-15-102581
379019007	CAMO-15-102584
379019009	CAMO-15-102585
1203369923	Method Blank (MB)
1203369924	Laboratory Control Sample (LCS)
1203371911	379019001(CAMO-15-102580) Sample Duplicate (DUP)
1203371912	379019001(CAMO-15-102580) Matrix Spike (MS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-095 REV# 17.

Preparation/Analytical Method Verification

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

Calibration Information

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

Initial Calibration

All initial calibration requirements have been met for this SDG.

Continuing Calibration Blanks

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

Calibration Verification Information (CCV)

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

Y Intercept Rule

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

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

Sample 379019001 (CAMO-15-102580) was selected for QC analysis.

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

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

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

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

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

Miscellaneous Information

Data Exception (DER) Documentation

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

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

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

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

Method/Analysis Information

Product: Ion Chromatography
Analytical Batch: 1500059 **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
379019002	CAMO-15-102604
379019004	CAMO-15-102559
379019006	CAMO-15-102605
379019008	CAMO-15-102608
379019010	CAMO-15-102609
1203373268	Method Blank (MB)
1203373269	Laboratory Control Sample (LCS)
1203373270	379011002(CASA-15-102647) Sample Duplicate (DUP)
1203373271	379011002(CASA-15-102647) Post Spike (PS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-086 REV# 24.

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

Sample 379011002 (CASA-15-102647) was selected for QC analysis.

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

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

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

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

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

Manual Integrations

Samples 1203373270 (CASA-15-102647DUP), 1203373271 (CASA-15-102647PS), 379019002 (CAMO-15-102604), 379019004 (CAMO-15-102559), 379019006 (CAMO-15-102605), 379019008 (CAMO-15-102608) and 379019010 (CAMO-15-102609) were manually integrated to correctly position the baseline as set in the calibration standards.

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

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

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

Method/Analysis Information

Product: Ammonia Nitrogen
Analytical Batch: 1499451 **Method:** NH3
Prep Batch : 1499449 **Method:** EPA 350.1 Prep

Sample Analysis

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

Sample ID	Client ID
379019002	CAMO-15-102604
379019004	CAMO-15-102559
379019006	CAMO-15-102605
379019008	CAMO-15-102608
379019010	CAMO-15-102609
1203371692	Method Blank (MB)
1203371693	Laboratory Control Sample (LCS)
1203371696	379011002(CASA-15-102647) Sample Duplicate (DUP)
1203371697	379011002(CASA-15-102647) Matrix Spike (MS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-106 REV# 9.

Preparation/Analytical Method Verification

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

Calibration Information

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

Initial Calibration

All initial calibration requirements have been met for this SDG.

Calibration Verification Information

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

Continuing Calibration Blanks

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

Calibration Verification Information (CCV)

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

Y Intercept Rule

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

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

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

Sample 379011002 (CASA-15-102647) was selected for QC analysis.

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

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

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

Sample1203371692 (MB) was re-analyzed due to instrument failure. The results from the reanalysis are reported.

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

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

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

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

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

Method/Analysis Information

Product: Total Kjeldahl Nitrogen
Analytical Batch: 1499653 **Method:** TKN
Prep Batch : 1499651 **Method:** EPA 351.2 Prep

Sample Analysis

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

Sample ID	Client ID
379019001	CAMO-15-102580
379019003	CAMO-15-102558
379019005	CAMO-15-102581
379019007	CAMO-15-102584
379019009	CAMO-15-102585
1203372229	Method Blank (MB)
1203372230	Laboratory Control Sample (LCS)
1203372231	379011001(CASA-15-102633) Sample Duplicate (DUP)
1203372232	379011001(CASA-15-102633) Matrix Spike (MS)

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

SOP Reference

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

Preparation/Analytical Method Verification

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

Calibration Information

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

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

Sample 379011001 (CASA-15-102633) was selected for QC analysis.

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

The matrix spike recovered outside of the established acceptance limits due to matrix interference.

Analyte	Sample	Value
Nitrogen, Total Kjeldahl	1203372232 (CASA-15-102633MS)	61* (90%-110%)

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

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

Sample Dilutions

The following samples in this sample group were diluted due to matrix interference. 1203372231 (CASA-15-102633DUP), 1203372232 (CASA-15-102633MS), 379019003 (CAMO-15-102558) and 379019005 (CAMO-15-102581).

Analyte	379019	
	003	005
Nitrogen, Total Kjeldahl	5X	5X

Sample Re-analysis

Samples 1203372231 (CASA-15-102633DUP), 1203372232 (CASA-15-102633MS), 379019003

(CAMO-15-102558), 379019005 (CAMO-15-102581) and 379019007 (CAMO-15-102584) were re-analyzed to verify the results.

Miscellaneous Information

Data Exception (DER) Documentation

A data exception report (DER) 1438618 was generated for sample 1203372232 (CASA-15-102633MS) in this SDG/batch.

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

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

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

Method/Analysis Information

Product: Nitrate Nitrite by Cadmium Reduction
Analytical Batch: 1499212 **Method:** NO3NO2

Sample Analysis

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

Sample ID	Client ID
379019002	CAMO-15-102604
379019004	CAMO-15-102559
379019006	CAMO-15-102605
379019008	CAMO-15-102608
379019010	CAMO-15-102609
1203371095	Method Blank (MB)
1203371096	Laboratory Control Sample (LCS)
1203372742	379011002(CASA-15-102647) Sample Duplicate (DUP)
1203372743	379011002(CASA-15-102647) Post Spike (PS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-128 REV# 8.

Preparation/Analytical Method Verification

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

Calibration Information

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

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

Sample 379011002 (CASA-15-102647) was selected for QC analysis.

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

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

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

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

Sample Dilutions

The following samples were diluted because target analyte concentrations exceeded the calibration range. 1203372742 (CASA-15-102647DUP) and 1203372743 (CASA-15-102647PS).

Sample Re-analysis

Samples 1203371095 (MB) and 1203371096 (LCS) were re-analyzed to verify the results.

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:	1499655	Method:	EPA 365.4 Phosphorus, Total in
Prep Batch :	1499654	Method:	EPA 365.4 Prep

Sample Analysis

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

Sample ID	Client ID
379019002	CAMO-15-102604
379019004	CAMO-15-102559
379019006	CAMO-15-102605
379019008	CAMO-15-102608
379019010	CAMO-15-102609
1203372233	Method Blank (MB)
1203372234	Laboratory Control Sample (LCS)
1203372235	379011002(CASA-15-102647) Sample Duplicate (DUP)
1203375689	379148002(CASA-15-102650) Sample Duplicate (DUP)
1203372236	379011002(CASA-15-102647) Matrix Spike (MS)
1203375690	379148002(CASA-15-102650) Matrix Spike (MS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-103 REV# 10.

Preparation/Analytical Method Verification

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

Calibration Information

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

Continuing Calibration Blanks

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

Calibration Verification Information (CCV)

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

acceptance limits.

Y Intercept Rule

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

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

Samples 379011002 (CASA-15-102647) and 379148002 (CASA-15-102650) were selected for QC analysis.

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

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

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

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

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

Miscellaneous Information

Data Exception (DER) Documentation

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

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

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

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

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

Method/Analysis Information

Product: Solids and Total Dissolved
Analytical Batch: 1499735 **Method:** TDS

Sample Analysis

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

Sample ID	Client ID
379019002	CAMO-15-102604
379019004	CAMO-15-102559
379019006	CAMO-15-102605
379019008	CAMO-15-102608
379019010	CAMO-15-102609
1203372377	Method Blank (MB)
1203372378	Laboratory Control Sample (LCS)
1203372379	379019002(CAMO-15-102604) Sample Duplicate (DUP)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-001 REV# 15.

Preparation/Analytical Method Verification

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

Calibration Information

The Solids analysis was performed on a Sartorius Balance BAL216. Solids lab

Initial Calibration

All initial calibration requirements have been met for this SDG.

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

Sample 379019002 (CAMO-15-102604) was selected for QC analysis.

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

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: Specific Conductivity
Analytical Batch: 1499837 **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
379019002	CAMO-15-102604
379019004	CAMO-15-102559
379019006	CAMO-15-102605
379019008	CAMO-15-102608
379019010	CAMO-15-102609
1203372695	Laboratory Control Sample (LCS)
1203372696	379011002(CASA-15-102647) 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 Titration and Ion analysis was performed on a ManSci PC-Titrate TitraSip System.

Initial Standardization

The titrant was properly standardized

Quality Control (QC) Information

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

Sample 379011002 (CASA-15-102647) was selected for QC analysis.

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

Miscellaneous Information

Data Exception (DER) Documentation

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

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

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

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

Method/Analysis Information

Product: pH
Analytical Batch: 1499835 **Method:** PH

Sample Analysis

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

Sample ID	Client ID
379019002	CAMO-15-102604
379019004	CAMO-15-102559
379019006	CAMO-15-102605
379019008	CAMO-15-102608
379019010	CAMO-15-102609
1203372686	Laboratory Control Sample (LCS)
1203372687	379011002(CASA-15-102647) Sample Duplicate (DUP)
1203372688	379019002(CAMO-15-102604) Sample Duplicate (DUP)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-008 REV# 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 Titration and Ion analysis was performed on a ManSci PC-Titrate Titrator System.

Initial Standardization

The titrant was properly standardized

Quality Control (QC) Information

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

Samples 379011002 (CASA-15-102647) and 379019002 (CAMO-15-102604) were selected for QC analysis.

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

Samples (See Below) were received by the laboratory outside of the method specified holding time. The data is qualified.

Sample	Analyte	Value
379019002 (CAMO-15-102604)		Received 11-AUG-15, out of holding 06-AUG-15
379019004 (CAMO-15-102559)		Received 11-AUG-15, out of holding 06-AUG-15
379019006 (CAMO-15-102605)		Received 11-AUG-15, out of holding 06-AUG-15
379019008 (CAMO-15-102608)		Received 11-AUG-15, out of holding 06-AUG-15
379019010 (CAMO-15-102609)		Received 11-AUG-15, out of holding 06-AUG-15

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

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

A data exception report (DER) 1440339 was generated for samples 379019002 (CAMO-15-102604), 379019004 (CAMO-15-102559), 379019006 (CAMO-15-102605), 379019008 (CAMO-15-102608) and 379019010 (CAMO-15-102609) in this SDG/batch.

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

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

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

Method/Analysis Information

Product: Alkalinity
Analytical Batch: 1499840 **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
379019002	CAMO-15-102604
379019004	CAMO-15-102559
379019006	CAMO-15-102605
379019008	CAMO-15-102608
379019010	CAMO-15-102609
1203372710	Method Blank (MB)
1203372712	Laboratory Control Sample (LCS)
1203372714	379011002(CASA-15-102647) Sample Duplicate (DUP)
1203372716	379011002(CASA-15-102647) 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# 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 Titration and Ion 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

Sample 379011002 (CASA-15-102647) was selected for QC analysis.

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

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

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

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

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

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

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

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

Certification Statement

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

GEL LABORATORIES LLC

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

Qualifier Definition Report for

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

Client SDG: 2015-2084 GEL Work Order: 379019

The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- H Analytical holding time was exceeded
- J Value is estimated
- U Analyte was analyzed for, but not detected above the MDL, MDA, 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: **Thomas Lewis**

Date: **03 SEP 2015**

Title: **Data Validator**

Sample Data Summary

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: September 3, 2015

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

Los Alamos, New Mexico 87545
 Contact: Mr. Keith Greene
 Project: LANL- WQH Water Samples

Client SDG: 2015-2084

Client Sample ID: CAMO-15-102580
 Sample ID: 379019001
 Matrix: W
 Collect Date: 06-AUG-15 13:34
 Receive Date: 11-AUG-15
 Collector: Client

Project: ESHL00114
 Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis											
SW 9060 Total Organic Carbon "As Received"											
Total Organic Carbon Average	U	ND	0.330	1.00	mg/L	1	TSM	08/15/15	0544	1500166	1
Flow Injection Analysis											
WSP-CN(T) "As Received"											
Cyanide, Total	U	ND	1.67	5.00	ug/L	1	AXH3	08/12/15	1027	1498741	2
Nutrient Analysis											
TKN "As Received"											
Nitrogen, Total Kjeldahl	U	ND	0.033	0.100	mg/L	1	KLP1	08/13/15	1244	1499653	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 335.4	EPA 335.4 Total Cyanide	AXH3	08/12/15	0845	1498740
EPA 351.2 Prep	EPA 351.2 Total Kjeldahl Nitrogen Prep	AXH3	08/13/15	1230	1499651

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 335.4	
3	EPA 351.2	

Notes:

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: September 3, 2015

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

Los Alamos, New Mexico 87545

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

Client SDG: 2015-2084

Client Sample ID: CAMO-15-102604
Sample ID: 379019002
Matrix: W
Collect Date: 06-AUG-15 13:34
Receive Date: 11-AUG-15
Collector: Client

Project: ESHL00114
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography											
EPA 300.0 Anions Liquid 28 day "As Received"											
Bromide	U	ND	0.067	0.200	mg/L	1	MXL2	08/13/15	0256	1500059	1
Chloride		2.29	0.067	0.200	mg/L	1					
Fluoride		0.218	0.033	0.100	mg/L	1					
Sulfate		3.32	0.133	0.400	mg/L	1					
Nutrient Analysis											
EPA 365.4 Phosphorus, Total in "As Received"											
Phosphorus, Total as P	J	0.0319	0.017	0.050	mg/L	1	KLP1	08/18/15	1338	1499655	2
NH3 "As Received"											
Nitrogen, Ammonia		0.0683	0.017	0.050	mg/L	1	KLP1	08/13/15	1447	1499451	3
NO3NO2 "As Received"											
Nitrogen, Nitrate/Nitrite		0.542	0.017	0.050	mg/L	1	AXH3	08/19/15	0904	1499212	4
Solids Analysis											
TDS "As Received"											
Total Dissolved Solids		151	3.40	14.3	mg/L		MXB3	08/12/15	0854	1499735	5
Titration and Ion Analysis											
EPA 310.1 Total Alkalinity "As Received"											
Alkalinity, Total as CaCO3		62.2	0.725	1.00	mg/L		PXO1	08/13/15	1439	1499840	6
Carbonate alkalinity (CaCO3)	U	ND	0.725	1.00	mg/L						
EPA120.1 Specific Conductivity "As Received"											
Conductivity		133	3.63	14.5	umhos/cm	1	PXO1	08/12/15	1310	1499837	7
PH "As Received"											
pH at Temp 23.1C	H	7.87	0.010	0.100	SU	1	PXO1	08/12/15	1432	1499835	8

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.1 Prep	EPA 350.1 Ammonia Nitrogen Prep	AXH3	08/13/15	1059	1499449
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	KLP1	08/17/15	1700	1499654

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: September 3, 2015

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

Los Alamos, New Mexico 87545
Contact: Mr. Keith Greene
Project: LANL- WQH Water Samples

Client SDG: 2015-2084

Client Sample ID: CAMO-15-102604
Sample ID: 379019002

Project: ESHL00114
Client ID: ARSL004

The following Analytical Methods were performed:

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

Notes:

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: September 3, 2015

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

Los Alamos, New Mexico 87545
Contact: Mr. Keith Greene
Project: LANL- WQH Water Samples

Client SDG: 2015-2084

Client Sample ID: CAMO-15-102558
Sample ID: 379019003
Matrix: W
Collect Date: 06-AUG-15 13:34
Receive Date: 11-AUG-15
Collector: Client

Project: ESHL00114
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis											
SW 9060 Total Organic Carbon "As Received"											
Total Organic Carbon Average	U	ND	0.330	1.00	mg/L	1	TSM	08/15/15	0625	1500166	1
Flow Injection Analysis											
WSP-CN(T) "As Received"											
Cyanide, Total	U	ND	1.67	5.00	ug/L	1	AXH3	08/12/15	1030	1498741	2
Nutrient Analysis											
TKN "As Received"											
Nitrogen, Total Kjeldahl	U	ND	0.165	0.500	mg/L	5	KLP1	08/13/15	1327	1499653	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 335.4	EPA 335.4 Total Cyanide	AXH3	08/12/15	0845	1498740
EPA 351.2 Prep	EPA 351.2 Total Kjeldahl Nitrogen Prep	AXH3	08/13/15	1230	1499651

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 335.4	
3	EPA 351.2	

Notes:

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: September 3, 2015

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

Los Alamos, New Mexico 87545

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

Client SDG: 2015-2084

Client Sample ID: CAMO-15-102559
Sample ID: 379019004
Matrix: W
Collect Date: 06-AUG-15 13:34
Receive Date: 11-AUG-15
Collector: Client

Project: ESHL00114
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography											
EPA 300.0 Anions Liquid 28 day "As Received"											
Bromide	U	ND	0.067	0.200	mg/L	1	MXL2	08/13/15	0328	1500059	1
Chloride		2.30	0.067	0.200	mg/L	1					
Fluoride		0.228	0.033	0.100	mg/L	1					
Sulfate		3.33	0.133	0.400	mg/L	1					
Nutrient Analysis											
EPA 365.4 Phosphorus, Total in "As Received"											
Phosphorus, Total as P	J	0.0241	0.017	0.050	mg/L	1	KLP1	08/18/15	1339	1499655	2
NH3 "As Received"											
Nitrogen, Ammonia	J	0.0447	0.017	0.050	mg/L	1	KLP1	08/13/15	1448	1499451	3
NO3NO2 "As Received"											
Nitrogen, Nitrate/Nitrite		0.553	0.017	0.050	mg/L	1	AXH3	08/19/15	0906	1499212	4
Solids Analysis											
TDS "As Received"											
Total Dissolved Solids		149	3.40	14.3	mg/L		MXB3	08/12/15	0854	1499735	5
Titration and Ion Analysis											
EPA 310.1 Total Alkalinity "As Received"											
Alkalinity, Total as CaCO3		62.2	0.725	1.00	mg/L		PXO1	08/13/15	1442	1499840	6
Carbonate alkalinity (CaCO3)	U	ND	0.725	1.00	mg/L						
EPA120.1 Specific Conductivity "As Received"											
Conductivity		134	3.63	14.5	umhos/cm	1	PXO1	08/12/15	1313	1499837	7
PH "As Received"											
pH at Temp 23.1C	H	7.87	0.010	0.100	SU	1	PXO1	08/12/15	1445	1499835	8

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.1 Prep	EPA 350.1 Ammonia Nitrogen Prep	AXH3	08/13/15	1059	1499449
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	KLP1	08/17/15	1700	1499654

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: September 3, 2015

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

Los Alamos, New Mexico 87545
Contact: Mr. Keith Greene
Project: LANL- WQH Water Samples

Client SDG: 2015-2084

Client Sample ID: CAMO-15-102559
Sample ID: 379019004

Project: ESHL00114
Client ID: ARSL004

The following Analytical Methods were performed:

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

Notes:

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: September 3, 2015

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

Los Alamos, New Mexico 87545
Contact: Mr. Keith Greene
Project: LANL- WQH Water Samples

Client SDG: 2015-2084

Client Sample ID: CAMO-15-102581
Sample ID: 379019005
Matrix: W
Collect Date: 06-AUG-15 15:00
Receive Date: 11-AUG-15
Collector: Client

Project: ESHL00114
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis											
SW 9060 Total Organic Carbon "As Received"											
Total Organic Carbon Average	U	ND	0.330	1.00	mg/L	1	TSM	08/15/15	0707	1500166	1
Flow Injection Analysis											
WSP-CN(T) "As Received"											
Cyanide, Total	U	ND	1.67	5.00	ug/L	1	AXH3	08/12/15	1031	1498741	2
Nutrient Analysis											
TKN "As Received"											
Nitrogen, Total Kjeldahl	U	ND	0.165	0.500	mg/L	5	KLP1	08/13/15	1324	1499653	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 335.4	EPA 335.4 Total Cyanide	AXH3	08/12/15	0845	1498740
EPA 351.2 Prep	EPA 351.2 Total Kjeldahl Nitrogen Prep	AXH3	08/13/15	1230	1499651

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 335.4	
3	EPA 351.2	

Notes:

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: September 3, 2015

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

Los Alamos, New Mexico 87545

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

Client SDG: 2015-2084

Client Sample ID: CAMO-15-102605
Sample ID: 379019006
Matrix: W
Collect Date: 06-AUG-15 15:00
Receive Date: 11-AUG-15
Collector: Client

Project: ESHL00114
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography											
EPA 300.0 Anions Liquid 28 day "As Received"											
Bromide	U	ND	0.067	0.200	mg/L	1	MXL2	08/13/15	0400	1500059	1
Chloride		2.00	0.067	0.200	mg/L	1					
Fluoride		0.195	0.033	0.100	mg/L	1					
Sulfate		2.30	0.133	0.400	mg/L	1					
Nutrient Analysis											
EPA 365.4 Phosphorus, Total in "As Received"											
Phosphorus, Total as P	J	0.0215	0.017	0.050	mg/L	1	KLP1	08/18/15	1340	1499655	2
NH3 "As Received"											
Nitrogen, Ammonia	J	0.032	0.017	0.050	mg/L	1	KLP1	08/13/15	1449	1499451	3
NO3NO2 "As Received"											
Nitrogen, Nitrate/Nitrite		0.356	0.017	0.050	mg/L	1	AXH3	08/19/15	0907	1499212	4
Solids Analysis											
TDS "As Received"											
Total Dissolved Solids		143	3.40	14.3	mg/L		MXB3	08/12/15	0854	1499735	5
Titration and Ion Analysis											
EPA 310.1 Total Alkalinity "As Received"											
Alkalinity, Total as CaCO3		63.2	0.725	1.00	mg/L		PXO1	08/13/15	1445	1499840	6
Carbonate alkalinity (CaCO3)	U	ND	0.725	1.00	mg/L						
EPA120.1 Specific Conductivity "As Received"											
Conductivity		131	3.63	14.5	umhos/cm	1	PXO1	08/12/15	1314	1499837	7
PH "As Received"											
pH at Temp 23.3C	H	7.94	0.010	0.100	SU	1	PXO1	08/12/15	1450	1499835	8

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.1 Prep	EPA 350.1 Ammonia Nitrogen Prep	AXH3	08/13/15	1059	1499449
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	KLP1	08/17/15	1700	1499654

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: September 3, 2015

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

Los Alamos, New Mexico 87545
Contact: Mr. Keith Greene
Project: LANL- WQH Water Samples

Client SDG: 2015-2084

Client Sample ID: CAMO-15-102605
Sample ID: 379019006

Project: ESHL00114
Client ID: ARSL004

The following Analytical Methods were performed:

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

Notes:

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: September 3, 2015

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

Los Alamos, New Mexico 87545
Contact: Mr. Keith Greene
Project: LANL- WQH Water Samples

Client SDG: 2015-2084

Client Sample ID: CAMO-15-102584
Sample ID: 379019007
Matrix: W
Collect Date: 06-AUG-15 11:21
Receive Date: 11-AUG-15
Collector: Client

Project: ESHL00114
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis											
SW 9060 Total Organic Carbon "As Received"											
Total Organic Carbon Average	U	ND	0.330	1.00	mg/L	1	TSM	08/15/15	0748	1500166	1
Flow Injection Analysis											
WSP-CN(T) "As Received"											
Cyanide, Total	U	ND	1.67	5.00	ug/L	1	AXH3	08/12/15	1032	1498741	2
Nutrient Analysis											
TKN "As Received"											
Nitrogen, Total Kjeldahl	U	ND	0.033	0.100	mg/L	1	KLP1	08/13/15	1309	1499653	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 335.4	EPA 335.4 Total Cyanide	AXH3	08/12/15	0845	1498740
EPA 351.2 Prep	EPA 351.2 Total Kjeldahl Nitrogen Prep	AXH3	08/13/15	1230	1499651

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 335.4	
3	EPA 351.2	

Notes:

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: September 3, 2015

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

Los Alamos, New Mexico 87545

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

Client SDG: 2015-2084

Client Sample ID: CAMO-15-102608
 Sample ID: 379019008
 Matrix: W
 Collect Date: 06-AUG-15 11:21
 Receive Date: 11-AUG-15
 Collector: Client

Project: ESHL00114
 Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography											
EPA 300.0 Anions Liquid 28 day "As Received"											
Bromide	U	ND	0.067	0.200	mg/L	1	MXL2	08/13/15	0432	1500059	1
Chloride		2.42	0.067	0.200	mg/L	1					
Fluoride		0.295	0.033	0.100	mg/L	1					
Sulfate		3.56	0.133	0.400	mg/L	1					
Nutrient Analysis											
EPA 365.4 Phosphorus, Total in "As Received"											
Phosphorus, Total as P		0.0913	0.017	0.050	mg/L	1	KLP1	08/18/15	1341	1499655	2
NH3 "As Received"											
Nitrogen, Ammonia		0.103	0.017	0.050	mg/L	1	KLP1	08/13/15	1449	1499451	3
NO3NO2 "As Received"											
Nitrogen, Nitrate/Nitrite		1.19	0.017	0.050	mg/L	1	AXH3	08/19/15	0913	1499212	4
Solids Analysis											
TDS "As Received"											
Total Dissolved Solids		136	3.40	14.3	mg/L		MXB3	08/12/15	0854	1499735	5
Titration and Ion Analysis											
EPA 310.1 Total Alkalinity "As Received"											
Alkalinity, Total as CaCO3		55.3	0.725	1.00	mg/L		PXO1	08/13/15	1448	1499840	6
Carbonate alkalinity (CaCO3)	U	ND	0.725	1.00	mg/L						
EPA120.1 Specific Conductivity "As Received"											
Conductivity		127	3.63	14.5	umhos/cm	1	PXO1	08/12/15	1315	1499837	7
PH "As Received"											
pH at Temp 23.3C	H	7.93	0.010	0.100	SU	1	PXO1	08/12/15	1454	1499835	8

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.1 Prep	EPA 350.1 Ammonia Nitrogen Prep	AXH3	08/13/15	1059	1499449
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	KLP1	08/17/15	1700	1499654

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: September 3, 2015

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

Los Alamos, New Mexico 87545
Contact: Mr. Keith Greene
Project: LANL- WQH Water Samples

Client SDG: 2015-2084

Client Sample ID: CAMO-15-102608
Sample ID: 379019008

Project: ESHL00114
Client ID: ARSL004

The following Analytical Methods were performed:

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

Notes:

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: September 3, 2015

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

Los Alamos, New Mexico 87545

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

Client SDG: 2015-2084

Client Sample ID: CAMO-15-102585
 Sample ID: 379019009
 Matrix: W
 Collect Date: 06-AUG-15 13:04
 Receive Date: 11-AUG-15
 Collector: Client

Project: ESHL00114
 Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis											
SW 9060 Total Organic Carbon "As Received"											
Total Organic Carbon Average	U	ND	0.330	1.00	mg/L	1	TSM	08/15/15	0829	1500166	1
Flow Injection Analysis											
WSP-CN(T) "As Received"											
Cyanide, Total	U	ND	1.67	5.00	ug/L	1	AXH3	08/12/15	1033	1498741	2
Nutrient Analysis											
TKN "As Received"											
Nitrogen, Total Kjeldahl	U	ND	0.033	0.100	mg/L	1	KLP1	08/13/15	1252	1499653	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 335.4	EPA 335.4 Total Cyanide	AXH3	08/12/15	0845	1498740
EPA 351.2 Prep	EPA 351.2 Total Kjeldahl Nitrogen Prep	AXH3	08/13/15	1230	1499651

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 335.4	
3	EPA 351.2	

Notes:

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: September 3, 2015

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

Los Alamos, New Mexico 87545

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

Client SDG: 2015-2084

Client Sample ID: CAMO-15-102609
Sample ID: 379019010
Matrix: W
Collect Date: 06-AUG-15 13:04
Receive Date: 11-AUG-15
Collector: Client

Project: ESHL00114
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography											
EPA 300.0 Anions Liquid 28 day "As Received"											
Bromide	U	ND	0.067	0.200	mg/L	1	MXL2	08/13/15	0608	1500059	1
Chloride		2.37	0.067	0.200	mg/L	1					
Fluoride		0.357	0.033	0.100	mg/L	1					
Sulfate		2.95	0.133	0.400	mg/L	1					
Nutrient Analysis											
EPA 365.4 Phosphorus, Total in "As Received"											
Phosphorus, Total as P	U	ND	0.017	0.050	mg/L	1	KLP1	08/18/15	1346	1499655	2
NH3 "As Received"											
Nitrogen, Ammonia	J	0.0267	0.017	0.050	mg/L	1	KLP1	08/13/15	1450	1499451	3
NO3NO2 "As Received"											
Nitrogen, Nitrate/Nitrite		0.769	0.017	0.050	mg/L	1	AXH3	08/19/15	0914	1499212	4
Solids Analysis											
TDS "As Received"											
Total Dissolved Solids		131	3.40	14.3	mg/L		MXB3	08/12/15	0854	1499735	5
Titration and Ion Analysis											
EPA 310.1 Total Alkalinity "As Received"											
Alkalinity, Total as CaCO3		61.2	0.725	1.00	mg/L		PXO1	08/13/15	1450	1499840	6
Carbonate alkalinity (CaCO3)	U	ND	0.725	1.00	mg/L						
EPA120.1 Specific Conductivity "As Received"											
Conductivity		134	3.63	14.5	umhos/cm	1	PXO1	08/12/15	1317	1499837	7
PH "As Received"											
pH at Temp 23.2C	H	7.97	0.010	0.100	SU	1	PXO1	08/12/15	1458	1499835	8

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.1 Prep	EPA 350.1 Ammonia Nitrogen Prep	AXH3	08/13/15	1059	1499449
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	KLP1	08/17/15	1700	1499654

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: September 3, 2015

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

Los Alamos, New Mexico 87545
Contact: Mr. Keith Greene
Project: LANL- WQH Water Samples

Client SDG: 2015-2084

Client Sample ID: CAMO-15-102609
Sample ID: 379019010

Project: ESHL00114
Client ID: ARSL004

The following Analytical Methods were performed:

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

Notes:

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: September 3, 2015

Page 1 of 5

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

Contact: Mr. Keith Greene

Workorder: 379019

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Carbon Analysis											
Batch	1500166										
QC1203373636	378720001	DUP									
Total Organic Carbon Average		1.01		1.00	mg/L	0.597 ^		(+/-1.00)	TSM	08/14/15	23:46
QC1203373634	LCS										
Total Organic Carbon Average	10.0			9.96	mg/L		99.6	(85%-115%)		08/14/15	22:10
QC1203373633	MB										
Total Organic Carbon Average			U	ND	mg/L					08/14/15	21:57
QC1203373638	378720001	PS									
Total Organic Carbon Average	10.0	1.01		11.6	mg/L		106	(65%-120%)		08/15/15	00:28
Flow Injection Analysis											
Batch	1498741										
QC1203371911	379019001	DUP									
Cyanide, Total		U	ND	U	ND	ug/L	N/A		AXH3	08/12/15	10:28
QC1203369924	LCS										
Cyanide, Total	50.0			52.8	ug/L		106	(90%-110%)		08/12/15	10:00
QC1203369923	MB										
Cyanide, Total			U	ND	ug/L					08/12/15	09:56
QC1203371912	379019001	MS									
Cyanide, Total	100	U	ND	109	ug/L		109	(90%-110%)		08/12/15	10:29
Ion Chromatography											
Batch	1500059										
QC1203373270	379011002	DUP									
Bromide		J	0.086	J	0.091	mg/L	5.65 ^	(+/-0.200)	MXL2	08/13/15	01:21
Chloride			5.15		5.13	mg/L	0.389	(0%-20%)			
Fluoride			0.387		0.389	mg/L	0.593 ^	(+/-0.100)			
Sulfate			13.1		13.1	mg/L	0.451	(0%-20%)			
QC1203373269	LCS										
Bromide	1.25			1.26	mg/L		100	(90%-110%)		08/13/15	00:17
Chloride	5.00			4.90	mg/L		98	(90%-110%)			

GEL LABORATORIES LLC

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

QC Summary

Workorder: 379019

Page 2 of 5

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1500059										
Fluoride	2.50			2.57	mg/L		103	(90%-110%)			
Sulfate	10.0			10.3	mg/L		103	(90%-110%)	MXL2	08/13/15	00:17
QC1203373268 MB											
Bromide			U	ND	mg/L					08/12/15	23:45
Chloride			U	ND	mg/L						
Fluoride			U	ND	mg/L						
Sulfate			U	ND	mg/L						
QC1203373271 379011002 PS											
Bromide	1.25	J	0.086	1.37	mg/L		103	(90%-110%)		08/13/15	01:53
Chloride	5.00		5.15	10.6	mg/L		108	(90%-110%)			
Fluoride	2.50		0.387	2.93	mg/L		102	(90%-110%)			
Sulfate	10.0		13.1	24.1	mg/L		110	(90%-110%)			
Nutrient Analysis											
Batch	1499212										
QC1203372742 379011002 DUP											
Nitrogen, Nitrate/Nitrite			5.65	5.55	mg/L	1.79		(0%-20%)	AXH3	08/19/15	09:02
QC1203371096 LCS											
Nitrogen, Nitrate/Nitrite	1.00			1.05	mg/L		105	(90%-110%)		08/19/15	08:26
QC1203371095 MB											
Nitrogen, Nitrate/Nitrite			U	ND	mg/L					08/19/15	08:25
QC1203372743 379011002 PS											
Nitrogen, Nitrate/Nitrite	1.00		1.13	2.13	mg/L		100	(90%-110%)		08/19/15	09:03
Batch 1499451											
QC1203371696 379011002 DUP											
Nitrogen, Ammonia		U	ND	J	0.0284	mg/L	200		KLP1	08/13/15	14:40
QC1203371693 LCS											
Nitrogen, Ammonia	1.00			1.10	mg/L		110	(90%-110%)		08/13/15	14:34
QC1203371692 MB											
Nitrogen, Ammonia			U	ND	mg/L					08/13/15	14:45

GEL LABORATORIES LLC

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

QC Summary

Workorder: 379019

Page 3 of 5

Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Nutrient Analysis											
Batch	1499451										
QC1203371697	379011002	MS									
Nitrogen, Ammonia	1.00	U	ND		1.10	mg/L	109	(90%-110%)	KLP1	08/13/15	14:41
Batch	1499653										
QC1203372231	379011001	DUP									
Nitrogen, Total Kjeldahl		U	ND	U	ND	mg/L	N/A		KLP1	08/13/15	13:25
QC1203372230	LCS										
Nitrogen, Total Kjeldahl	1.00				0.921	mg/L	92.1	(90%-110%)		08/13/15	12:40
QC1203372229	MB										
Nitrogen, Total Kjeldahl			U		ND	mg/L				08/13/15	12:39
QC1203372232	379011001	MS									
Nitrogen, Total Kjeldahl	1.00	U	ND		0.610	mg/L	61 *	(90%-110%)		08/13/15	13:22
Batch	1499655										
QC1203372235	379011002	DUP									
Phosphorus, Total as P			0.0553	U	ND	mg/L	146 ^	(+/-0.050)	KLP1	08/18/15	13:36
QC1203375689	379148002	DUP									
Phosphorus, Total as P		U	ND	U	ND	mg/L	N/A			08/18/15	14:01
QC1203372234	LCS										
Phosphorus, Total as P	1.00				1.09	mg/L	109	(83%-123%)		08/18/15	13:34
QC1203372233	MB										
Phosphorus, Total as P			U		ND	mg/L				08/18/15	13:33
QC1203372236	379011002	MS									
Phosphorus, Total as P	1.00		0.0553		1.27	mg/L	121	(59%-141%)		08/18/15	13:36
QC1203375690	379148002	MS									
Phosphorus, Total as P	1.00	U	ND		1.09	mg/L	109	(59%-141%)		08/18/15	14:02
Solids Analysis											
Batch	1499735										
QC1203372379	379019002	DUP									
Total Dissolved Solids			151		149	mg/L	2.84	(0%-5%)	MXB3	08/12/15	08:54
QC1203372378	LCS										
Total Dissolved Solids	300				301	mg/L	100	(95%-105%)		08/12/15	08:54
QC1203372377	MB										
Total Dissolved Solids			U		ND	mg/L				08/12/15	08:54
Titration and Ion Analysis											

GEL LABORATORIES LLC

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

QC Summary

Workorder: 379019

Page 4 of 5

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Titration and Ion Analysis											
Batch	1499835										
QC1203372687	379011002	DUP									
pH	H	8.05	H	8.04	SU	0.0542		(0%-5%)	PXO1	08/12/15	13:49
QC1203372688	379019002	DUP									
pH	H	7.87	H	7.90	SU	0.364		(0%-5%)		08/12/15	14:37
QC1203372686	LCS										
pH	7.00			7.01	SU		100	(99%-101%)		08/12/15	13:23
Batch	1499837										
QC1203372696	379011002	DUP									
Conductivity		213		215	umhos/cm	0.913		(0%-10%)	PXO1	08/12/15	13:08
QC1203372695	LCS										
Conductivity	1410			1400	umhos/cm		99.3	(95%-105%)		08/12/15	13:05
Batch	1499840										
QC1203372714	379011002	DUP									
Alkalinity, Total as CaCO3		70.7		70.7	mg/L	0		(0%-20%)	PXO1	08/13/15	14:31
Carbonate alkalinity (CaCO3)	U	ND	U	ND	mg/L	N/A					
QC1203372712	LCS										
Alkalinity, Total as CaCO3	50.0			51.3	mg/L		103	(90%-110%)		08/13/15	13:40
QC1203372710	MB										
Alkalinity, Total as CaCO3			U	ND	mg/L					08/13/15	13:40
Carbonate alkalinity (CaCO3)			U	ND	mg/L						
QC1203372716	379011002	MS									
Alkalinity, Total as CaCO3	50.0	70.7		121	mg/L		101	(80%-120%)		08/13/15	14:33

- Notes:**
- < Result is less than value reported
 - > Result is greater than value reported
 - B The target analyte was detected in the associated blank.
 - E General Chemistry--Concentration of the target analyte exceeds the instrument calibration range
 - H Analytical holding time was exceeded
 - J Value is estimated
 - N/A RPD or %Recovery limits do not apply.
 - N1 See case narrative

GEL LABORATORIES LLC

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

QC Summary

Workorder: 379019

Page 5 of 5

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
ND	Analyte concentration is not detected above the detection limit										
NJ	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier										
Q	One or more quality control criteria have not been met. Refer to the applicable narrative or DER.										
R	Per section 9.3.4.1 of Method 1664 Revision B, due to matrix spike recovery issues, this result may not be reported or used for regulatory compliance purposes.										
R	Sample results are rejected										
U	Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.										
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier										
Z	Paint Filter Test--Particulates passed through the filter, however no free liquids were observed.										
^	RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.										
d	5-day BOD--The 2:1 depletion requirement was not met for this sample										
e	5-day BOD--Test replicates show more than 30% difference between high and low values. The data is qualified per the method and can be used for reporting purposes										
h	Preparation or preservation holding time was exceeded										

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

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

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

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

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

Miscellaneous

DATA EXCEPTION REPORT

Mo.Day Yr. 13-AUG-15	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: LACHAT Flow Injection Analyzer	Test / Method: EPA 351.2, EPA 351.2 SC	Matrix Type: Liquid	Client Code: ESHL
Batch ID: 1499653	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 379011(2015-2090),379019(2015-2084),379146(2015-2126)			
Application Issues: Failed Recovery for MS/MSD, or PS/PSD			
Specification and Requirements Exception Description:		DER Disposition:	
<p>1. Failed Recovery for MS/MSD, or PS/PSD:</p> <p>QC 1203372232MS</p>		<p>1. The matrix spike recovered outside of the established acceptance limits due to matrix interference. Nitrogen, Total Kjeldahl 1203372232 (CASA-15-102633MS) [61* (90%-110%)].</p>	

Originator's Name:

Kristen Mizzell 13-AUG-15

Data Validator/Group Leader:

Aubrey Kingsbury 13-AUG-15

DATA EXCEPTION REPORT

Mo.Day Yr. 19-AUG-15	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: PC-Titrate TitraSip System	Test / Method: EPA 150.1	Matrix Type: Liquid	Client Code: ESHL
Batch ID: 1499835	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 379006(2015-2108),379010(2015-2089),379011(2015-2090),379012(2015-2087),379013(2015-2086),379017(2015-2088),379019(2015-2084),379136(2015-2127)			
Application Issues: Sample received out of holding			
Specification and Requirements Exception Description:		DER Disposition:	
<p>1. Sample received out of holding:</p> <p>379006 001,010</p> <p>379010 001</p> <p>379011 002,004</p> <p>379012 001,003,005,007</p> <p>379013 001</p> <p>379017 006</p> <p>379019 002,004,006,008,010</p> <p>379136 001,003,005</p>		<p>1. Samples (See Below) were received by the laboratory outside of the method specified holding time. The data is qualified.</p> <p>379006001 (WT_REF-15-102389) [See applicable report].</p> <p>379006010 (WT_REF-15-102390) [See applicable report].</p> <p>379010001 (Urban-15-102323) [See applicable report].</p> <p>379011002 (CASA-15-102647) [See applicable report].</p> <p>379011004 (CASA-15-102652) [See applicable report].</p> <p>379012001 (Urban-15-102320) [See applicable report].</p> <p>379012003 (Urban-15-102301) [See applicable report].</p> <p>379012005 (Urban-15-102315) [See applicable report].</p> <p>379012007 (Urban-15-102326) [See applicable report].</p> <p>379013001 (WTRON-15-99483) [See applicable report].</p> <p>379017006 (WTLAP-15-97588) [See applicable report].</p> <p>379019002 (CAMO-15-102604) [See applicable report].</p> <p>379019004 (CAMO-15-102559) [See applicable report].</p> <p>379019006 (CAMO-15-102605) [See applicable report].</p> <p>379019008 (CAMO-15-102608) [See applicable report].</p> <p>379019010 (CAMO-15-102609) [See applicable report].</p> <p>379136001 (Urban-15-102333) [See applicable report].</p> <p>379136003 (Urban-15-102325) [See applicable report].</p> <p>379136005 (Urban-15-102334) [See applicable report].</p>	

Originator's Name:

Patrick Orgel 19-AUG-15

Data Validator/Group Leader:

Elzbieta Szulc 03-SEP-15

Radiological Analysis

**Radiochemistry
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2015-2084
Work Order #: 379019**

Method/Analysis Information

Product: Alphaspec Am241 Liquid
Analytical Method: DOE EML HASL-300, Am-05-RC Modified
Analytical Batch Number: 1499559

Sample ID	Client ID
379019001	CAMO-15-102580
379019003	CAMO-15-102558
379019005	CAMO-15-102581
1203371986	Method Blank (MB)
1203371988	Laboratory Control Sample (LCS)
1203371987	379019001(CAMO-15-102580) 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-RAD-A-011 REV# 25.

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. The initial Calibration was performed in August 2015.

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 1203371986 (MB) and 1203371988 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 379019001 (CAMO-15-102580). The QC was from ARSL work order 379019.

QC Information

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

CSU

The blank result is less than 1.65 times the CSU.

Technical Information:

Holding Time

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

Sample Re-prep/Re-analysis

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

Recounts

None of the samples in this sample set were recounted.

Miscellaneous Information:

Data Exception (DER) Documentation

A data exception report (DER) 1444169 was generated for samples 1203371987 (CAMO-15-102580DUP), 379019001 (CAMO-15-102580) and 379019005 (CAMO-15-102581) in this SDG/batch. DER 1444169 was generated due to RDL less than MDA. 1. Samples 379019001, 379019005, 379215001, and 1203371987 did not meet the Am-241 detection limit due to the high standard deviation. 1. When a blank population is performed the MDC is greater than the RDL due to the high standard deviation. The samples were counted the maximum count time of 1000 minutes in order to achieve the lowest possible MDAs. Reporting results.

Manual Integration

No manual integrations were performed on data in this batch.

Sample-Specific MDA/MDC

The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments

The MDCs (and Lc if requested) 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: ISOPU

Analytical Method: DOE EML HASL-300, Pu-11-RC Modified

Analytical Batch Number: 1499560

Sample ID	Client ID
379019001	CAMO-15-102580
379019003	CAMO-15-102558
379019005	CAMO-15-102581
1203371989	Method Blank (MB)
1203371991	Laboratory Control Sample (LCS)
1203371990	379019001(CAMO-15-102580) 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-RAD-A-011 REV# 25.

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. The initial Calibration was performed in August 2015.

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 1203371989 (MB) and 1203371991 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 379019001 (CAMO-15-102580). The QC was from ARSL work order 379019.

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.

Recounts

None of the samples in this sample set were recounted.

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.

Sample-Specific MDA/MDC

The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments

The MDCs (and Lc if requested) 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:	IsoU
Analytical Method:	DOE EML HASL-300, U-02-RC Modified
Analytical Batch Number:	1499562

Sample ID	Client ID
379019001	CAMO-15-102580
379019003	CAMO-15-102558
379019005	CAMO-15-102581
1203371994	Method Blank (MB)
1203371996	Laboratory Control Sample (LCS)
1203371995	379019001(CAMO-15-102580) 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-RAD-A-011 REV# 25.

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. The initial Calibration was performed in August 2015.

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 1203371994 (MB) and 1203371996 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 379019001 (CAMO-15-102580). The QC was from ARSL work order 379019.

QC Information

All of the QC samples met the required acceptance limits.

CSU

The U-233/234, U-235/236, and U-238 blank results 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 prep or reanalysis.

Recounts

None of the samples in this sample set were recounted.

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.

Sample-Specific MDA/MDC

The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments

The MDCs (and Lc if requested) are calculated using a blank population.

Blank Decision Level

The U-233/234, U-235/236, and U-238 blank results are greater than the decision level but less than the MDC.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: Gammaspec

Analytical Method: EPA 901.1

Analytical Batch Number: 1499679

Sample ID	Client ID
379019001	CAMO-15-102580
379019003	CAMO-15-102558
379019005	CAMO-15-102581
1203372291	Method Blank (MB)
1203372293	Laboratory Control Sample (LCS)
1203372294	379019001(CAMO-15-102580) 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-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 2015, June 2015, October 2014 and September 2014.

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: 379019001 (CAMO-15-102580). The QC was from ARSL work order 379019.

QC Information

All of the QC samples met the required acceptance limits.

CSU

The blank 1203372291 (MB) I-131 and K-40 results 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.

Recounts

None of the samples in this sample set were recounted.

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.

Sample-Specific MDA/MDC

The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments

Additional comments were not required for this sample set.

Blank Decision Level

The blank 1203372291 (MB) I-131 and K-40 results 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/DOE RP501 Rev. 1 Modified
Analytical Batch Number: 1501028

Sample ID **Client ID**
379019001 CAMO-15-102580

379019003	CAMO-15-102558
379019005	CAMO-15-102581
1203375951	Method Blank (MB)
1203375954	Laboratory Control Sample (LCS)
1203375952	379019005(CAMO-15-102581) Sample Duplicate (DUP)
1203375953	379019005(CAMO-15-102581) 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-RAD-A-004 REV# 17.

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 1203375951 (MB) and 1203375954 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 379019005 (CAMO-15-102581). The QC was from ARSL work order 379019.

QC Information

All of the QC samples met the required acceptance limits.

CSU

The blank result is less than 1.65 times the CSU.

Technical Information:

Holding Time

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

Sample Re-prep/Re-analysis

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

Chemical Recoveries

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

Recounts

None of the samples in this sample set were recounted.

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.

Sample-Specific MDA/MDC

The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments

The matrix spike, 1203375953 (CAMO-15-102581MS), 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:	1501030

Sample ID	Client ID
379019001	CAMO-15-102580
379019003	CAMO-15-102558
379019005	CAMO-15-102581
1203375955	Method Blank (MB)
1203375959	Laboratory Control Sample (LCS)
1203375956	379019003(CAMO-15-102558) Sample Duplicate (DUP)
1203375957	379019003(CAMO-15-102558) Matrix Spike (MS)
1203375958	379019003(CAMO-15-102558) Matrix Spike Duplicate (MSD)

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# 18.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met. The initial Calibration was performed in October 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: 379019003 (CAMO-15-102558). The QC was from ARSL work order 379019.

QC Information

All of the QC samples met the required acceptance limits.

CSU

The blank result is less than 1.65 times the CSU.

Technical Information:**Holding Time**

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

Sample Re-prep/Re-analysis

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

Chemical Recoveries

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

Gross Alpha/Beta Preparation Information

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

Recounts

Sample 1203375956 (CAMO-15-102558DUP) was recounted due to high MDC. The recount is reported.

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

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

Sample-Specific MDA/MDC

The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments

The matrix spike and matrix spike duplicate, 1203375957 (CAMO-15-102558MS) and 1203375958

(CAMO-15-102558MSD), aliquots were reduced to conserve sample volume.

Blank Decision Level

The blank, 1203375955 (MB), result is greater than the decision level but less than the MDC.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: WSP-GrossA/B
Analytical Method: EPA 900.0/SW846 9310
Analytical Batch Number: 1504918

Sample ID	Client ID
379019001	CAMO-15-102580
379019003	CAMO-15-102558
379019005	CAMO-15-102581
1203386175	Method Blank (MB)
1203386179	Laboratory Control Sample (LCS)
1203386176	379019001(CAMO-15-102580) Sample Duplicate (DUP)
1203386177	379019001(CAMO-15-102580) Matrix Spike (MS)
1203386178	379019001(CAMO-15-102580) Matrix Spike Duplicate (MSD)

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# 18.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met. The initial Calibration was performed in October 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 1203386175 (MB) and 1203386179 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 379019001 (CAMO-15-102580). The QC was from ARSL work order 379019.

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

Samples were re-prepped for gross beta due to high relative percent difference/relative error ratio. The re-analysis is being reported.

Chemical Recoveries

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

Gross Alpha/Beta Preparation Information

None of the samples have been flamed.

Recounts

None of the samples in this sample set were recounted.

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.

Sample-Specific MDA/MDC

The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments

The matrix spike and matrix spike duplicate, 1203386177 (CAMO-15-102580MS) and 1203386178 (CAMO-15-102580MSD), aliquots were reduced to conserve sample volume.

Blank Decision Level

The blank result is less than the decision level.

Qualifier Information

Manual qualifiers were not required.

Certification Statement

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

GEL LABORATORIES LLC

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

Qualifier Definition Report for

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

Client SDG: 2015-2084 GEL Work Order: 379019

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: Kate Gellatly

Date: 04 SEP 2015

Title: Analyst I

DATA EXCEPTION REPORT

Mo.Day Yr. 31-AUG-15	Division: Radiochemistry	Quality Criteria: Specifications	Type: Process
Instrument Type: ALPHA SPECTROMETER	Test / Method: DOE EML HASL-300, Am-05-RC Modified	Matrix Type: Liquid	Client Code: ESHL
Batch ID: 1499559	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 379019(2015-2084),379215(2015-2138),379330(2015-2152)			
Application Issues: RDL less than MDA			
Specification and Requirements Exception Description:		DER Disposition:	
1. Samples 379019001, 379019005, 379215001, and 1203371987 did not meet the Am-241 detection limit due to the high standard deviation.		1. When a blank population is performed the MDC is greater than the RDL due to the high standard deviation. The samples were counted the maximum count time of 1000 minutes in order to achieve the lowest possible MDAs. Reporting results.	

Originator's Name:

Melanie Aycock 31-AUG-15

Data Validator/Group Leader:

Jessica Davis 31-AUG-15

Sample Data Summary

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Los Alamos, New Mexico 87545

Report Date: September 4, 2015

Contact: Mr. Keith Greene

Project: LANL- WQH Water Samples

Client Sample ID: CAMO-15-102580
 Sample ID: 379019001
 Matrix: W
 Collect Date: 06-AUG-15
 Receive Date: 11-AUG-15
 Collector: Client

Project: ESHL00114
 Client ID: ARSL004

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
-----------	-----------	--------	-------------	-----	----	-----	----	-------	----	---------	------	------	-------	------

Rad Alpha Spec Analysis

Alphaspec Am241 Liquid "As Received"

Americium-241	U	0.0101	+/-0.00534	0.0574	0.026	+/-0.00535	0.050	pCi/L		JXD2	08/29/15	1217	1499559	1
---------------	---	--------	------------	--------	-------	------------	-------	-------	--	------	----------	------	---------	---

ISOPU "As Received"

Plutonium-238	U	-0.00801	+/-0.00491	0.0333	0.0139	+/-0.00491	0.050	pCi/L		JXD2	08/29/15	1435	1499560	2
Plutonium-239/240	U	-0.00601	+/-0.00448	0.0443	0.0194	+/-0.00448	0.050	pCi/L						

IsoU "As Received"

Uranium-234		0.503	+/-0.0302	0.0788	0.037	+/-0.0434	1.00	pCi/L		JXD2	08/29/15	1703	1499562	3
Uranium-235/236		0.0723	+/-0.013	0.0523	0.0232	+/-0.0137	1.00	pCi/L						
Uranium-238		0.319	+/-0.0243	0.0494	0.0223	+/-0.0313	0.500	pCi/L						

Rad Gamma Spec Analysis

Gammaspac "As Received"

Cesium-137	U	0.845	+/-1.76	6.47	2.94	+/-1.77	8.00	pCi/L		MJH1	08/19/15	0943	1499679	4
Cobalt-60	U	1.61	+/-1.21	5.49	2.32	+/-1.27	8.00	pCi/L						
Neptunium-237	U	-2.29	+/-3.00	10.3	4.77	+/-3.05	10.0	pCi/L						
Potassium-40	U	-8.24	+/-18.2	68.3	29.9	+/-18.3	10.0	pCi/L						
Sodium-22	U	0.298	+/-1.44	5.70	2.43	+/-1.44	10.0	pCi/L						

Rad Gas Flow Proportional Counting

GFPC, Sr90, liquid "As Received"

Strontium-90	U	-0.186	+/-0.128	0.475	0.222	+/-0.128	0.500	pCi/L		KSD1	08/31/15	0934	1501028	5
--------------	---	--------	----------	-------	-------	----------	-------	-------	--	------	----------	------	---------	---

WSP-GrossA/B "As Received"

Alpha	U	0.708	+/-0.822	3.00	1.20	+/-0.824	3.00	pCi/L		KXB2	09/01/15	0725	1501030	6
Beta	U	1.78	+/-0.879	2.80	1.23	+/-0.892	3.00	pCi/L		KXB2	09/02/15	1641	1504918	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/DOE RP501 Rev. 1 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"	1499559	90.1	(50%-105%)
Plutonium-242 Tracer	ISOPU "As Received"	1499560	81.2	(50%-105%)
Uranium-232 Tracer	IsoU "As Received"	1499562	95.4	(50%-105%)

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Los Alamos, New Mexico 87545

Report Date: September 4, 2015

Contact: Mr. Keith Greene

Project: LANL- WQH Water Samples

Client Sample ID: CAMO-15-102580

Project: ESHL00114

Sample ID: 379019001

Client ID: ARSL004

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"						1501028	76.5	(50%-105%)				

Notes:

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

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Los Alamos, New Mexico 87545

Report Date: September 4, 2015

Contact: Mr. Keith Greene

Project: LANL- WQH Water Samples

Client Sample ID: CAMO-15-102558

Project: ESHL00114

Sample ID: 379019003

Client ID: ARSL004

Matrix: W

Collect Date: 06-AUG-15

Receive Date: 11-AUG-15

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
<i>Alphaspec Am241 Liquid "As Received"</i>														
Americium-241	U	-0.00356	+/-0.00436	0.0507	0.0229	+/-0.00436	0.050	pCi/L		JXD2	08/29/15	1217	1499559	1
<i>ISOPU "As Received"</i>														
Plutonium-238	U	6.67E-10	+/-0.0049	0.0332	0.0139	+/-0.0049	0.050	pCi/L		JXD2	08/29/15	1435	1499560	2
Plutonium-239/240	U	1.67E-09	+/-0.00693	0.0443	0.0194	+/-0.00693	0.050	pCi/L						
<i>IsoU "As Received"</i>														
Uranium-234		0.526	+/-0.0327	0.087	0.0409	+/-0.0465	1.00	pCi/L		JXD2	08/29/15	1703	1499562	3
Uranium-235/236	U	0.0435	+/-0.0118	0.0577	0.0256	+/-0.0122	1.00	pCi/L						
Uranium-238		0.317	+/-0.0254	0.0545	0.0246	+/-0.0322	0.500	pCi/L						
Rad Gamma Spec Analysis														
<i>Gammaspex "As Received"</i>														
Cesium-137	U	0.696	+/-1.57	5.91	2.64	+/-1.58	8.00	pCi/L		MJH1	08/19/15	0947	1499679	4
Cobalt-60	U	1.59	+/-1.58	6.76	2.91	+/-1.63	8.00	pCi/L						
Neptunium-237	U	4.15	+/-3.09	11.5	5.35	+/-3.24	10.0	pCi/L						
Potassium-40	U	-10.4	+/-19.9	77.2	33.9	+/-20.1	10.0	pCi/L						
Sodium-22	U	-1.69	+/-1.56	5.30	2.19	+/-1.61	10.0	pCi/L						
Rad Gas Flow Proportional Counting														
<i>GFPC, Sr90, liquid "As Received"</i>														
Strontium-90	U	-0.17	+/-0.118	0.439	0.205	+/-0.118	0.500	pCi/L		KSD1	08/31/15	0934	1501028	5
<i>WSP-GrossA/B "As Received"</i>														
Alpha	U	0.166	+/-0.719	2.83	1.14	+/-0.719	3.00	pCi/L		KXB2	09/01/15	0752	1501030	6
Beta	U	2.61	+/-0.914	2.71	1.18	+/-0.943	3.00	pCi/L		KXB2	09/02/15	1642	1504918	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/DOE RP501 Rev. 1 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"	1499559	93.2	(50%-105%)
Plutonium-242 Tracer		ISOPU "As Received"	1499560	84.5	(50%-105%)
Uranium-232 Tracer		IsoU "As Received"	1499562	88.1	(50%-105%)
Strontium Carrier		GFPC, Sr90, liquid "As Received"	1501028	72.8	(50%-105%)

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Los Alamos, New Mexico 87545

Report Date: September 4, 2015

Contact: Mr. Keith Greene

Project: LANL- WQH Water Samples

Client Sample ID: CAMO-15-102558

Project: ESHL00114

Sample ID: 379019003

Client ID: ARSL004

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

Notes:

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

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Los Alamos, New Mexico 87545

Report Date: September 4, 2015

Contact: Mr. Keith Greene

Project: LANL- WQH Water Samples

Client Sample ID: CAMO-15-102581

Project: ESHL00114

Sample ID: 379019005

Client ID: ARSL004

Matrix: W

Collect Date: 06-AUG-15

Receive Date: 11-AUG-15

Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
<i>Alphaspec Am241 Liquid "As Received"</i>														
Americium-241	U	1.31E-09	+/-0.00619	0.0557	0.0252	+/-0.00619	0.050	pCi/L		JXD2	08/29/15	1217	1499559	1
<i>ISOPU "As Received"</i>														
Plutonium-238	U	-0.0039	+/-0.00552	0.0324	0.0136	+/-0.00552	0.050	pCi/L		JXD2	08/29/15	1435	1499560	2
Plutonium-239/240	U	-0.00195	+/-0.00436	0.0431	0.0189	+/-0.00436	0.050	pCi/L						
<i>IsoU "As Received"</i>														
Uranium-234		0.647	+/-0.0348	0.0809	0.038	+/-0.0533	1.00	pCi/L		JXD2	08/29/15	1703	1499562	3
Uranium-235/236	U	0.0494	+/-0.0115	0.0537	0.0238	+/-0.0119	1.00	pCi/L						
Uranium-238		0.325	+/-0.0246	0.0507	0.0229	+/-0.0319	0.500	pCi/L						
Rad Gamma Spec Analysis														
<i>Gammaspex "As Received"</i>														
Cesium-137	U	-1.06	+/-1.44	4.94	2.24	+/-1.46	8.00	pCi/L		MJH1	08/19/15	0947	1499679	4
Cobalt-60	U	0.595	+/-1.40	5.03	2.18	+/-1.41	8.00	pCi/L						
Neptunium-237	U	-2.44	+/-2.94	9.70	4.54	+/-3.00	10.0	pCi/L						
Potassium-40	U	17.6	+/-18.1	45.9	19.6	+/-18.1	10.0	pCi/L						
Sodium-22	U	0.0258	+/-1.37	5.16	2.25	+/-1.37	10.0	pCi/L						
Rad Gas Flow Proportional Counting														
<i>GFPC, Sr90, liquid "As Received"</i>														
Strontium-90	U	-0.0584	+/-0.133	0.484	0.224	+/-0.133	0.500	pCi/L		KSD1	08/31/15	0929	1501028	5
<i>WSP-GrossA/B "As Received"</i>														
Alpha	U	-0.919	+/-0.710	2.96	1.29	+/-0.710	3.00	pCi/L		KXB2	09/01/15	0801	1501030	6
Beta		3.85	+/-0.976	2.69	1.18	+/-1.03	3.00	pCi/L		KXB2	09/02/15	1642	1504918	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/DOE RP501 Rev. 1 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"	1499559	81.2	(50%-105%)
Plutonium-242 Tracer		ISOPU "As Received"	1499560	89.6	(50%-105%)
Uranium-232 Tracer		IsoU "As Received"	1499562	90.3	(50%-105%)
Strontium Carrier		GFPC, Sr90, liquid "As Received"	1501028	76.5	(50%-105%)

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Los Alamos, New Mexico 87545

Report Date: September 4, 2015

Contact: Mr. Keith Greene

Project: LANL- WQH Water Samples

Client Sample ID: CAMO-15-102581

Project: ESHL00114

Sample ID: 379019005

Client ID: ARSL004

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

Notes:

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

Quality Control Data

GEL LABORATORIES LLC

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

QC Summary

Report Date: September 4, 2015
Page 1 of 6

Client : Los Alamos National Laboratory
TA-03, SM271, Drop Pt. 02U, Rm111

Los Alamos, New Mexico

Contact: Mr. Keith Greene

Workorder: 379019

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Alpha Spec											
Batch	1499559										
QC1203371987	379019001	DUP									
Americium-241	U	0.0101	U	0.0346	pCi/L	0.668		(0-1)	JXD2	08/29/1512:16	
	Uncert:	+/-0.00534		+/-0.0129							
	TPU:	+/-0.00535		+/-0.013							
**Americium-243 Tracer	2.67	2.41		2.18	pCi/L		81.5	(50%-105%)			
	Uncert:	+/-0.0732		+/-0.0879							
	TPU:	+/-0.128		+/-0.146							
QC1203371988	LCS										
Americium-241	1.97			1.81	pCi/L		91.9	(80%-120%)	JXD2	08/29/1512:16	
	Uncert:			+/-0.0574							
	TPU:			+/-0.0932							
**Americium-243 Tracer	2.14			2.11	pCi/L		98.8	(50%-105%)			
	Uncert:			+/-0.0619							
	TPU:			+/-0.107							
QC1203371986	MB										
Americium-241			U	0.00691	pCi/L				JXD2	08/29/1512:17	
	Uncert:			+/-0.00459							
	TPU:			+/-0.00459							
**Americium-243 Tracer	2.14			2.05	pCi/L		95.8	(50%-105%)			
	Uncert:			+/-0.0541							
	TPU:			+/-0.0974							
Batch	1499560										
QC1203371990	379019001	DUP									
Plutonium-238	U	-0.00801	U	-0.00572	pCi/L	0.115		(0-1)	JXD2	08/29/1514:35	
	Uncert:	+/-0.00491		+/-0.00505							
	TPU:	+/-0.00491		+/-0.00505							
Plutonium-239/240	U	-0.00601	U	0.00572	pCi/L	0.543		(0-1)			
	Uncert:	+/-0.00448		+/-0.00632							
	TPU:	+/-0.00448		+/-0.00633							
**Plutonium-242 Tracer	2.48	2.01		2.04	pCi/L		82.5	(50%-105%)			
	Uncert:	+/-0.0708		+/-0.0689							
	TPU:	+/-0.122		+/-0.120							
QC1203371991	LCS										
Plutonium-238			U	0.0111	pCi/L			(80%-120%)	JXD2	08/29/1514:35	
	Uncert:			+/-0.00479							
	TPU:			+/-0.00481							
Plutonium-239/240	1.97			1.85	pCi/L		94	(80%-120%)			
	Uncert:			+/-0.0506							
	TPU:			+/-0.0875							
**Plutonium-242 Tracer	1.98			1.86	pCi/L		94.1	(50%-105%)			
	Uncert:			+/-0.0525							
	TPU:			+/-0.0927							

GEL LABORATORIES LLC

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

QC Summary

Workorder: 379019

Page 2 of 6

Parmname	NOM	Sample Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Alpha Spec										
Batch	1499560									
QC1203371989	MB									
Plutonium-238		U	0.00506	pCi/L				JXD2	08/29/1514:35	
		Uncert:	+/-0.00446							
		TPU:	+/-0.00447							
Plutonium-239/240		U	-0.00337	pCi/L						
		Uncert:	+/-0.00533							
		TPU:	+/-0.00533							
**Plutonium-242 Tracer	1.98		1.64	pCi/L		82.9	(50%-105%)			
		Uncert:	+/-0.0581							
		TPU:	+/-0.0992							
Batch	1499562									
QC1203371995	379019001 DUP									
Uranium-234			0.503	pCi/L	0.0772		(0-1)	JXD2	08/29/1517:03	
		Uncert:	+/-0.0302							
		TPU:	+/-0.0434							
Uranium-235/236			0.0723	pCi/L	0.211		(0-1)			
		Uncert:	+/-0.013							
		TPU:	+/-0.0137							
Uranium-238			0.319	pCi/L	0.171		(0-1)			
		Uncert:	+/-0.0243							
		TPU:	+/-0.0313							
**Uranium-232 Tracer	2.65		2.53	pCi/L		91.2	(50%-105%)			
		Uncert:	+/-0.069							
		TPU:	+/-0.178							
QC1203371996	LCS									
Uranium-234			2.77	pCi/L				JXD2	08/29/1517:03	
		Uncert:	+/-0.0652							
		TPU:	+/-0.185							
Uranium-235/236			0.201	pCi/L						
		Uncert:	+/-0.0197							
		TPU:	+/-0.0234							
Uranium-238	2.72		2.84	pCi/L		104	(80%-120%)			
		Uncert:	+/-0.066							
		TPU:	+/-0.190							
**Uranium-232 Tracer	2.12		1.89	pCi/L		89.1	(50%-105%)			
		Uncert:	+/-0.058							
		TPU:	+/-0.145							
QC1203371994	MB									
Uranium-234		U	0.0589	pCi/L				JXD2	08/29/1517:03	
		Uncert:	+/-0.0104							
		TPU:	+/-0.0111							
Uranium-235/236		U	0.0216	pCi/L						
		Uncert:	+/-0.00811							
		TPU:	+/-0.00822							
Uranium-238		U	0.0255	pCi/L						
		Uncert:	+/-0.00746							
		TPU:	+/-0.00763							

GEL LABORATORIES LLC

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

QC Summary

Workorder: 379019

Page 3 of 6

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Alpha Spec											
Batch	1499562										
**Uranium-232 Tracer	2.12			2.06	pCi/L		97.1	(50%-105%)			
	Uncert:			+/-0.0596							
	TPU:			+/-0.146							
Rad Gamma Spec											
Batch	1499679										
QC1203372294	379019001 DUP										
Cesium-137	U	0.845	U	2.22	pCi/L	0.199		(0-1)	MJH1	08/19/1511:54	
	Uncert:	+/-1.76		+/-1.61							
	TPU:	+/-1.77		+/-1.69							
Cobalt-60	U	1.61	U	-0.323	pCi/L	0.312		(0-1)			
	Uncert:	+/-1.21		+/-1.83							
	TPU:	+/-1.27		+/-1.83							
Neptunium-237	U	-2.29	U	-0.741	pCi/L	0.125		(0-1)			
	Uncert:	+/-3.00		+/-3.13							
	TPU:	+/-3.05		+/-3.14							
Potassium-40	U	-8.24	U	-19	pCi/L	0.147		(0-1)			
	Uncert:	+/-18.2		+/-17.9							
	TPU:	+/-18.3		+/-18.4							
Sodium-22	U	0.298	U	-1.21	pCi/L	0.266		(0-1)			
	Uncert:	+/-1.44		+/-1.36							
	TPU:	+/-1.44		+/-1.39							
QC1203372293	LCS										
Americium-241	34400			36000	pCi/L		104	(80%-120%)	MJH1	08/19/1511:10	
	Uncert:			+/-446							
	TPU:			+/-1380							
Cesium-137	13700			14200	pCi/L		104	(80%-120%)			
	Uncert:			+/-151							
	TPU:			+/-600							
Cobalt-60	15100			15600	pCi/L		103	(80%-120%)			
	Uncert:			+/-176							
	TPU:			+/-660							
Neptunium-237			U	-23.6	pCi/L						
	Uncert:			+/-65.9							
	TPU:			+/-66.1							
Potassium-40			U	288	pCi/L						
	Uncert:			+/-190							
	TPU:			+/-191							
Sodium-22			U	-6.44	pCi/L						
	Uncert:			+/-20.2							
	TPU:			+/-20.3							
QC1203372291	MB										
Cesium-137			U	-2.26	pCi/L				MJH1	08/19/1511:27	
	Uncert:			+/-1.57							
	TPU:			+/-1.66							
Cobalt-60			U	-2.34	pCi/L						
	Uncert:			+/-1.50							

GEL LABORATORIES LLC

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

QC Summary

Workorder: 379019

Page 4 of 6

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Gamma Spec											
Batch	1499679										
Neptunium-237											
		TPU:		+/-1.60							
			U	4.63	pCi/L						
		Uncert:		+/-2.83							
Potassium-40		TPU:		+/-3.03							
			U	42.1	pCi/L						
		Uncert:		+/-16.4							
Sodium-22		TPU:		+/-19.2							
			U	0.395	pCi/L						
		Uncert:		+/-1.10							
		TPU:		+/-1.10							
Rad Gas Flow											
Batch	1501028										
QC1203375952	379019005 DUP										
Strontium-90		U	-0.0584	U	-0.0706	pCi/L	0.0224	(0-1)	KSD1	08/31/1509:34	
		Uncert:	+/-0.133		+/-0.138						
		TPU:	+/-0.133		+/-0.138						
**Strontium Carrier	8.10		6.20		5.70	mg		70.4	(50%-105%)		
QC1203375954	LCS										
Strontium-90					25.0	pCi/L		115	(80%-120%)	KSD1	08/31/1509:29
		Uncert:			+/-0.629						
		TPU:			+/-2.22						
**Strontium Carrier	8.10				5.60	mg		69.1	(50%-105%)		
QC1203375951	MB										
Strontium-90				U	-0.0303	pCi/L				KSD1	08/31/1509:29
		Uncert:			+/-0.0966						
		TPU:			+/-0.0966						
**Strontium Carrier	8.10				6.20	mg		76.5	(50%-105%)		
QC1203375953	379019005 MS										
Strontium-90	218	U	-0.0584		231	pCi/L		106	(75%-125%)	KSD1	08/31/1509:29
		Uncert:	+/-0.133		+/-5.48						
		TPU:	+/-0.133		+/-20.1						
**Strontium Carrier	8.10		6.20		6.80	mg		84	(50%-105%)		
Batch	1501030										
QC1203375956	379019003 DUP										
Alpha		U	0.166	U	0.176	pCi/L	0.00314	(0-1)	KXB2	09/02/1508:42	
		Uncert:	+/-0.719		+/-0.756						
		TPU:	+/-0.719		+/-0.756						
QC1203375959	LCS										
Alpha	12.0				11.8	pCi/L		98.1	(80%-120%)	KXB2	08/31/1518:23
		Uncert:			+/-0.612						
		TPU:			+/-1.17						
QC1203375955	MB										
Alpha				U	0.134	pCi/L				KXB2	09/01/1508:01
		Uncert:			+/-0.101						
		TPU:			+/-0.102						

GEL LABORATORIES LLC

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

QC Summary

Workorder: 379019

Page 5 of 6

Parmname	NOM	Sample Qual	QC	Units	RER	REC%	Range	Anlst	Date Time
Rad Gas Flow									
Batch	1501030								
QC1203375957	379019003 MS								
Alpha	240	U	0.166	265	pCi/L	111	(75%-125%)	KXB2	08/31/1518:23
	Uncert:		+/-0.719	+/-13.6					
	TPU:		+/-0.719	+/-27.4					
QC1203375958	379019003 MSD								
Alpha	240	U	0.166	254	pCi/L	0.11	106	(0-1)	KXB2 08/31/1518:23
	Uncert:		+/-0.719	+/-13.3					
	TPU:		+/-0.719	+/-25.1					
Batch	1504918								
QC1203386176	379019001 DUP								
Beta		U	1.78	2.91	pCi/L	0.305		(0-1)	KXB2 09/02/1516:41
	Uncert:		+/-0.879	+/-0.923					
	TPU:		+/-0.892	+/-0.957					
QC1203386179	LCS								
Beta	43.5			51.4	pCi/L	118	(80%-120%)	KXB2	09/02/1516:41
	Uncert:			+/-0.992					
	TPU:			+/-4.35					
QC1203386175	MB								
Beta			U	0.149	pCi/L			KXB2	09/02/1516:42
	Uncert:			+/-0.117					
	TPU:			+/-0.118					
QC1203386177	379019001 MS								
Beta	870	U	1.78	984	pCi/L	113	(75%-125%)	KXB2	09/02/1516:41
	Uncert:		+/-0.879	+/-18.3					
	TPU:		+/-0.892	+/-83.2					
QC1203386178	379019001 MSD								
Beta	870	U	1.78	1040	pCi/L	0.152	119	(0-1)	KXB2 09/02/1516:41
	Uncert:		+/-0.879	+/-18.9					
	TPU:		+/-0.892	+/-87.5					

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
- < Result is less than value reported
- > Result is greater than value reported
- BD Results are either below the MDC or tracer recovery is low
- FA Failed analysis.
- H Analytical holding time was exceeded
- J Value is estimated
- K Analyte present. Reported value may be biased high. Actual value is expected to be lower.
- L Analyte present. Reported value may be biased low. Actual value is expected to be higher.
- M M if above MDC and less than LLD
- M REMP Result > MDC/CL and < RDL
- N/A RPD or %Recovery limits do not apply.

GEL LABORATORIES LLC

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

QC Summary

Workorder: 379019

Page 6 of 6

Parmname	NOM	Sample Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
N1		See case narrative								
ND		Analyte concentration is not detected above the detection limit								
NJ		Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier								
Q		One or more quality control criteria have not been met. Refer to the applicable narrative or DER.								
R		Sample results are rejected								
U		Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.								
UI		Gamma Spectroscopy--Uncertain identification								
UJ		Gamma Spectroscopy--Uncertain identification								
UL		Not considered detected. The associated number is the reported concentration, which may be inaccurate due to a low bias.								
X		Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier								
Y		Other specific qualifiers were required to properly define the results. Consult case narrative.								
^		RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.								
h		Preparation or preservation holding time was exceeded								

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

** 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.