

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 5701 EVENT NAME: LA/Pueblo (General Surveillance) Q3 MY2014
Sampling Event_Pueblo

SAMPLE ID: CAPU-14-79418 WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		06/02/2014	FIELD MATRIX:	WG	
TIME COLLECTED (HH:MM):		1146	MEDIA:	UA	
PRS ID:			SAMPLE TECH CODE:	UA	
LOCATION ID: POI-4			FIELD PREP:	UF	
LOCATION TYPE:			FIELD QC TYPE:	FTB	
PORT: SINGLE COMPLETION			SAMPLE USAGE:	QC	

PRIORITY	ORDER	CONTAINER	# PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
MA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2 Na2S2O3 1 HCl 6/2/14	Y	MA
J	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2 HCL 1 6/2/14	Y	J

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

COLLECTED BY (PRINT)

RELINQUISHED BY (Printed Name) (Signature)	Date/Time 6/2/14 1250	RECEIVED BY (Printed Name) (Signature)	Date/Time 6/2/14 1250
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 05/30/2014

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 5701 EVENT NAME: LA/Pueblo (General Surveillance) Q3 MY2014
Sampling Event_Pueblo

SAMPLE ID: CAPU-14-79424 WORK ORDER:

	<u>AS PLANNED</u>	<u>AS COLLECTED</u>		<u>AS PLANNED</u>	<u>AS COLLECTED</u>
DATE COLLECTED (MM/DD/YYYY):		6/2/14	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1205	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	DC
LOCATION ID: TW-2Ar		↓	FIELD PREP:	UF	ok
LOCATION TYPE:		↓	FIELD QC TYPE:	FTB	↓
PORT: SINGLE COMPLETION		↓	SAMPLE USAGE:	QC	↓

PRIORITY	ORDER	CONTAINER	# PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	1 HCL ms 6/2/14	y	NA
NA	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	1 HCL ms 6/2/14	y	NA

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

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

COLLECTED BY (PRINT) D. Fellenz

RELINQUISHED BY (Printed Name) Maurice Shendo (Signature) <i>Maurice Shendo</i>	Date/Time 6/2/14 1345	RECEIVED BY (Printed Name) <i>AA. Montoya</i> (Signature) <i>AA. Montoya</i>	Date/Time 6/2/14 1345
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 05/30/2014

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 5701 **EVENT NAME:** LA/Pueblo (General Surveillance) Q3 MY2014
SAMPLE ID: CAPU-14-79426 **WORK ORDER:** NA
 Sampling Event_Pueblo

	<u>AS PLANNED</u>	<u>AS COLLECTED</u>		<u>AS PLANNED</u>	<u>AS COLLECTED</u>
DATE COLLECTED (MM/DD/YYYY):		06/02/2017	FIELD MATRIX:	WG	
TIME COLLECTED (HH:MM):		1146	MEDIA:	UA	
PRS ID:			SAMPLE TECH CODE:	UA	
LOCATION ID: PO1-4			FIELD PREP:	UF	
LOCATION TYPE: MON			FIELD QC TYPE: REG		
PORT: SINGLE COMPLETION			SAMPLE USAGE: INV		

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
MA	MSGP-Hg	1 LITER POLY	1	HNO3	Y	MA
	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	Na2S2O3		
	WSP-8310-PAH	1 LITER AMBER GLASS	2	ICE		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-GrossA/B	1 LITER POLY	1	HNO3		
	WSP-LL-8081A-HCB	1 LITER AMBER GLASS	2	ICE		
	WSP-LL-8151A-PCP	1 LITER AMBER GLASS	2	ICE		
	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-LL-8270C	1 LITER AMBER GLASS	1	ICE		
	WSP-RAD	1 GAL POLY	1	HNO3		

Analyses continued on next page

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 5701 EVENT NAME: LA/Pueblo (General Surveillance) Q3 MY2014
 Sampling Event_Pueblo
 SAMPLE ID: CAPU-14-79426 WORK ORDER: NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	Y	NA

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen 7.07 mg/L Flow (in gpm) 0.79 GPM Oxidation-Reduction Potential 92.2 mV
 pH 6.98 SU Specific Conductance 595 uS/cm Temperature 11.86 deg C
 Turbidity 15.3 NTU

COLLECTED BY (PRINT)

RELINQUISHED BY (Printed Name) (Signature)	Date/Time 6/2/14 1250	RECEIVED BY (Printed Name) (Signature)	Date/Time 6/2/14 1250
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 05/30/2014

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 5701 EVENT NAME: LA/Pueblo (General Surveillance) Q3 MY2014
 SAMPLE ID: CAPU-14-79432 WORK ORDER: NA
 Sampling Event_Pueblo

	<u>AS PLANNED</u>	<u>AS COLLECTED</u>		<u>AS PLANNED</u>	<u>AS COLLECTED</u>
DATE COLLECTED (MM/DD/YYYY):		6/2/14	FIELD MATRIX:	WG	o/c
TIME COLLECTED (HH:MM):		1205	MEDIA:	UA	✓
PRS ID:		o/c	SAMPLE TECH CODE:	UA	GSP
LOCATION ID: TW-2Ar		↓	FIELD PREP:	UF	o/c
LOCATION TYPE: MON		↓	FIELD QC TYPE: REG		↓
PORT: SINGLE COMPLETION		↓	SAMPLE USAGE: INV		↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	MSGP-Hg	1 LITER POLY	1	HNO3	y	NA
↓	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	Na2S2O3	↓	↓
↓	WSP-8310-PAH	1 LITER AMBER GLASS	2	ICE	↓	↓
↓	WSP-CN(T)	250 ML POLY	1	NAOH	↓	↓
↓	WSP-GrossA/B	1 LITER POLY	1	HNO3	↓	↓
↓	WSP-H-3	250 ML AMBER GLASS	1	ICE	↓	↓
↓	WSP-LL-8081A-HCB	1 LITER AMBER GLASS	2	ICE	↓	↓
↓	WSP-LL-8151A-PCP	1 LITER AMBER GLASS	2	ICE	↓	↓
↓	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL	↓	↓
↓	WSP-LL-8270C	1 LITER AMBER GLASS	1	ICE	↓	↓

Analyses continued on next page

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 5701 EVENT NAME: LA/Pueblo (General Surveillance) Q3 MY2014
Sampling Event_Pueblo
SAMPLE ID: CAPU-14-79432 WORK ORDER: NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-RAD	1 GAL POLY	1	HNO3	y	NA
NA	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	y	NA

SAMPLE COMMENTS: generator Running at About 40' away

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen 8.08 mg/L Flow (in gpm) 0.69 GPM Oxidation-Reduction Potential 92.3 mV
pH 6.77 SU Specific Conductance 387 uS/cm Temperature 14.74 deg C
Turbidity 1.6 NTU

COLLECTED BY (PRINT) D. Fellenz

RELINQUISHED BY (Printed Name) <u>Maurice Shuclo</u> (Signature) <u>[Signature]</u>	Date/Time <u>6/2/14</u> <u>1345</u>	RECEIVED BY (Printed Name) <u>M. Marty</u> (Signature) <u>[Signature]</u>	Date/Time <u>6/2/14</u> <u>1345</u>
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 05/30/2014

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 5701 EVENT NAME: LA/Pueblo (General Surveillance) Q3 MY2014
Sampling Event_Pueblo
SAMPLE ID: CAPU-14-79434 WORK ORDER: NA

	<u>AS PLANNED</u>	<u>AS COLLECTED</u>		<u>AS PLANNED</u>	<u>AS COLLECTED</u>
DATE COLLECTED (MM/DD/YYYY):		06/02/2014	FIELD MATRIX:	WG	
TIME COLLECTED (HH:MM):		1146	MEDIA:	UA	
PRS ID:			SAMPLE TECH CODE:	UA	RSP
LOCATION ID: POI-4			FIELD PREP:	F	
LOCATION TYPE: MON			FIELD QC TYPE: REG		
PORT: SINGLE COMPLETION			SAMPLE USAGE: INV		

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
ms	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	ms
↓	WSP-GENINORG+PerChlorate	1 LITER POLY	1	ICE	↓	↓
↓	WSP-NH3+NO3/NO2+PO4	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

COLLECTED BY (PRINT)

RELINQUISHED BY (Printed Name) (Signature)	Date/Time 6/2/14 1250	RECEIVED BY (Printed Name) (Signature)	Date/Time 6/2/14 1250
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 05/30/2014

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 5701 EVENT NAME: LA/Pueblo (General Surveillance) Q3 MY2014
 Sampling Event_Pueblo
 SAMPLE ID: CAPU-14-79440 WORK ORDER: NA

	<u>AS</u> <u>PLANNED</u>	<u>AS</u> <u>COLLECTED</u>		<u>AS</u> <u>PLANNED</u>	<u>AS</u> <u>COLLECTED</u>
DATE COLLECTED (MM/DD/YYYY):		6/2/14	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1205	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	6 SP
LOCATION ID: TW-2Ar		↓	FIELD PREP:	F	ok
LOCATION TYPE: MON		↓	FIELD QC TYPE: REG		↓
PORT: SINGLE COMPLETION		↓	SAMPLE USAGE: INV		↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	y	NA
NA	WSP-GENINORG+PerChlorate	1 LITER POLY	1	ICE	y	NA
NA	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	y	NA

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

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

COLLECTED BY (PRINT) D. Fellenz

RELINQUISHED BY (Printed Name) Maurice Shenclo (Signature) <i>Maurice Shenclo</i>	Date/Time 6/2/14 1345	RECEIVED BY <i>M. Marty</i> (Printed Name) (Signature) <i>M. Marty</i>	Date/Time 6/2/14 1345
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 05/30/2014

DATA VALIDATION REPORT

Chain Of Custody No. 2014-3481

1. Distribution Of Samples In EDD.

SDG	Analytical Method	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks
349927	EPA:120.1	2				
349927	EPA:150.1	2				
349927	EPA:160.1	2				
349927	EPA:245.2	4				
349927	EPA:300.0	2				
349927	EPA:310.1	2				
349927	EPA:335.4	2				
349927	EPA:350.1	2				
349927	EPA:351.2	2				
349927	EPA:353.2	2				
349927	EPA:365.4	2				
349927	EPA:900	2				
349927	EPA:901.1	2				
349927	EPA:905.0	2				
349927	EPA:906.0	1				
349927	HASL-300:AM-241	2				
349927	HASL-300:ISOPU	2				
349927	HASL-300:ISOU	2				
349927	SM:A2340B	2				
349927	SW-846:6010C	2				
349927	SW-846:6020	2				
349927	SW-846:6850	2				
349927	SW-846:8011	2		2		
349927	SW-846:8081B	2				
349927	SW-846:8151A	2				
349927	SW-846:8260B	2		2		
349927	SW-846:8270D	2				
349927	SW-846:8310	2				
349927	SW-846:9060	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
349927	EPA:120.1	1396796	1396796	2										1				1			
349927	EPA:150.1	1395344	1395344	2										1				1			
349927	EPA:160.1	1393467	1393467	2					1					1				2			
349927	EPA:245.2	1395633	1395630	4					1	1	1			1				1			
349927	EPA:300.0	1393647	1393647	2					1					1				1			
349927	EPA:310.1	1396176	1396176	2					1	1				1				1			
349927	EPA:335.4	1393083	1393082	2					1	1				1				1			
349927	EPA:350.1	1394289	1394288	2					1	1				1				1			
349927	EPA:351.2	1394292	1394290	2					1	2				1				2			
349927	EPA:353.2	1394285	1394285	2					1					1				2			
349927	EPA:365.4	1393136	1393134	2					1	1				1				1			
349927	EPA:900	1395947	1395947	2					1	1	1			1				1			
349927	EPA:901.1	1393240	1393240	2					1					1				1			
349927	EPA:905.0	1395946	1395946	2					1	1				1				1			
349927	EPA:906.0	1396341	1396341	1					1	1				1				1			
349927	HASL-300:AM-241	1393291	1393291	2					1					1				1			
349927	HASL-300:ISOPU	1397115	1397115	2					1					1				1			
349927	HASL-300:ISOU	1393293	1393293	2					1					1				1			
349927	SM:A2340B	1399077	1399077	2																	
349927	SW-846:6010C	1393409	1393408	2					1	1				1				1			
349927	SW-846:6020	1393385	1393384	2					1	1				1				1			
349927	SW-846:6850	1394191	1394190	2					1	1	1			1							
349927	SW-846:8011	1393557	1393555	2		2			1					1							
349927	SW-846:8081B	1394113	1394107	2					1	1				1	1						
349927	SW-846:8151A	1393369	1393368	2					1	1				1	1						
349927	SW-846:8260B	1395841	1395841	2		2			1					2							
349927	SW-846:8270D	1393338	1393337	2					1	1	1			1							
349927	SW-846:8310	1393336	1393334	2					1	1	1			1							
349927	SW-846:9060	1394347	1394347	2					1					1				3			

DATA VALIDATION REPORT

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	CAPU-14-79434	1203111406	DUP	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CAPU-14-79434	349927006	REG	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CAPU-14-79440	349927014	REG	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	LCS	1203111408	LCS	0	0	1	0
EPA:150.1	GENERAL CHEMISTRY	CAPU-14-79434	1203107683	DUP	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CAPU-14-79434	349927006	REG	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CAPU-14-79440	349927014	REG	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	LCS	1203107686	LCS	0	0	1	0
EPA:160.1	GENERAL CHEMISTRY	CAPU-14-79434	1203102764	DUP	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	CAPU-14-79434	349927006	REG	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	CAPU-14-79440	349927014	REG	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	LCS	1203102768	LCS	0	0	1	0
EPA:160.1	GENERAL CHEMISTRY	MB	1203102763	MB	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	WST09-14-79994	1203102765	DUP	1	0	0	0
EPA:245.2	INORGANIC	CAPU-14-79426	349927003	REG	1	0	0	0
EPA:245.2	INORGANIC	CAPU-14-79432	349927013	REG	1	0	0	0
EPA:245.2	INORGANIC	CAPU-14-79434	349927006	REG	1	0	0	0
EPA:245.2	INORGANIC	CAPU-14-79440	349927014	REG	1	0	0	0
EPA:245.2	INORGANIC	LCS	1203108391	LCS	0	0	1	0
EPA:245.2	INORGANIC	MB	1203108390	MB	1	0	0	0
EPA:245.2	INORGANIC	WTESR-14-78921	1203108392	DUP	1	0	0	0
EPA:245.2	INORGANIC	WTESR-14-78921	1203108393	MS	0	0	1	0
EPA:245.2	INORGANIC	WTESR-14-78921	1203108395	MSD	0	0	1	0
EPA:300.0	GENERAL CHEMISTRY	CAPU-14-79416	1203103275	DUP	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAPU-14-79434	349927006	REG	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAPU-14-79440	349927014	REG	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	LCS	1203103277	LCS	0	0	4	0
EPA:300.0	GENERAL CHEMISTRY	MB	1203103274	MB	4	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAPU-14-79434	1203109838	DUP	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAPU-14-79434	1203109841	MS	0	0	1	0
EPA:310.1	GENERAL CHEMISTRY	CAPU-14-79434	349927006	REG	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAPU-14-79440	349927014	REG	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	LCS	1203109844	LCS	0	0	1	0
EPA:310.1	GENERAL CHEMISTRY	MB	1203109836	MB	2	0	0	0
EPA:335.4	GENERAL CHEMISTRY	CAPU-14-79426	1203102692	DUP	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	CAPU-14-79426	1203102694	MS	0	0	1	0
EPA:335.4	GENERAL CHEMISTRY	CAPU-14-79426	349927003	REG	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	CAPU-14-79432	349927013	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:335.4	GENERAL CHEMISTRY	LCS	1203101683	LCS	0	0	1	0
EPA:335.4	GENERAL CHEMISTRY	MB	1203101678	MB	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAPU-14-79434	1203104846	DUP	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAPU-14-79434	1203104849	MS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	CAPU-14-79434	349927006	REG	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAPU-14-79440	349927014	REG	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	LCS	1203104851	LCS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	MB	1203104844	MB	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAPU-14-79426	349927003	REG	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAPU-14-79427	1203106955	DUP	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAPU-14-79427	1203106956	MS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	CAPU-14-79429	1203104858	DUP	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAPU-14-79429	1203104859	MS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	CAPU-14-79432	349927013	REG	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	LCS	1203104857	LCS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	MB	1203104856	MB	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAPU-14-79434	1203104835	DUP	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAPU-14-79434	349927006	REG	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAPU-14-79435	1203107052	DUP	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAPU-14-79440	349927014	REG	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	LCS	1203104840	LCS	0	0	1	0
EPA:353.2	GENERAL CHEMISTRY	MB	1203104833	MB	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAPU-14-79434	1203102905	DUP	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAPU-14-79434	1203102907	MS	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	CAPU-14-79434	349927006	REG	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAPU-14-79440	349927014	REG	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	LCS	1203101851	LCS	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	MB	1203101850	MB	1	0	0	0
EPA:900	RAD	BDW08-14-79467	1203109196	DUP	2	0	0	0
EPA:900	RAD	BDW08-14-79467	1203109197	MS	0	0	2	0
EPA:900	RAD	BDW08-14-79467	1203109198	MSD	0	0	2	0
EPA:900	RAD	CAPU-14-79426	349927003	REG	2	0	0	0
EPA:900	RAD	CAPU-14-79432	349927013	REG	2	0	0	0
EPA:900	RAD	LCS	1203109199	LCS	0	0	2	0
EPA:900	RAD	MB	1203109195	MB	2	0	0	0
EPA:901.1	RAD	CAPU-14-79426	1203102165	DUP	5	0	0	0
EPA:901.1	RAD	CAPU-14-79426	349927003	REG	5	0	0	0
EPA:901.1	RAD	CAPU-14-79432	349927013	REG	5	0	0	0
EPA:901.1	RAD	LCS	1203102166	LCS	0	0	3	0
EPA:901.1	RAD	MB	1203102164	MB	5	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:905.0	RAD	CAPU-14-79426	349927003	REG	1	0	0	0
EPA:905.0	RAD	CAPU-14-79427	1203109192	DUP	1	0	0	0
EPA:905.0	RAD	CAPU-14-79427	1203109193	MS	0	0	1	0
EPA:905.0	RAD	CAPU-14-79432	349927013	REG	1	0	0	0
EPA:905.0	RAD	LCS	1203109194	LCS	0	0	1	0
EPA:905.0	RAD	MB	1203109191	MB	1	0	0	0
EPA:906.0	RAD	CAPU-14-79432	349927013	REG	1	0	0	0
EPA:906.0	RAD	LCS	1203110251	LCS	0	0	1	0
EPA:906.0	RAD	MB	1203110248	MB	1	0	0	0
EPA:906.0	RAD	WSTMO-14-75612	1203110249	DUP	1	0	0	0
EPA:906.0	RAD	WSTMO-14-75612	1203110250	MS	0	0	1	0
HASL-300:AM-241	RAD	CAPU-14-79426	1203102287	DUP	1	0	0	0
HASL-300:AM-241	RAD	CAPU-14-79426	349927003	REG	1	0	0	0
HASL-300:AM-241	RAD	CAPU-14-79432	349927013	REG	1	0	0	0
HASL-300:AM-241	RAD	LCS	1203102288	LCS	0	0	1	0
HASL-300:AM-241	RAD	MB	1203102286	MB	1	0	0	0
HASL-300:ISOPU	RAD	CAPU-14-79426	349927003	REG	2	0	0	0
HASL-300:ISOPU	RAD	CAPU-14-79432	1203112120	DUP	2	0	0	0
HASL-300:ISOPU	RAD	CAPU-14-79432	349927013	REG	2	0	0	0
HASL-300:ISOPU	RAD	LCS	1203112121	LCS	0	0	1	0
HASL-300:ISOPU	RAD	MB	1203112119	MB	2	0	0	0
HASL-300:ISOU	RAD	CAPU-14-79426	1203102293	DUP	3	0	0	0
HASL-300:ISOU	RAD	CAPU-14-79426	349927003	REG	3	0	0	0
HASL-300:ISOU	RAD	CAPU-14-79432	349927013	REG	3	0	0	0
HASL-300:ISOU	RAD	LCS	1203102294	LCS	0	0	1	0
HASL-300:ISOU	RAD	MB	1203102292	MB	3	0	0	0
SM:A2340B	INORGANIC	CAPU-14-79434	349927006	REG	1	0	0	0
SM:A2340B	INORGANIC	CAPU-14-79440	349927014	REG	1	0	0	0
SW-846:6010C	INORGANIC	CAPU-14-79434	349927006	REG	17	0	0	0
SW-846:6010C	INORGANIC	CAPU-14-79440	349927014	REG	17	0	0	0
SW-846:6010C	INORGANIC	LCS	1203102590	LCS	0	0	17	0
SW-846:6010C	INORGANIC	MB	1203102589	MB	17	0	0	0
SW-846:6010C	INORGANIC	WST09-14-74376	1203102591	DUP	17	0	0	0
SW-846:6010C	INORGANIC	WST09-14-74376	1203102592	MS	0	0	17	0
SW-846:6020	INORGANIC	CAPU-14-79434	349927006	REG	11	0	0	0
SW-846:6020	INORGANIC	CAPU-14-79440	349927014	REG	11	0	0	0
SW-846:6020	INORGANIC	LCS	1203102547	LCS	0	0	11	0
SW-846:6020	INORGANIC	MB	1203102546	MB	11	0	0	0
SW-846:6020	INORGANIC	WST09-14-74376	1203102548	DUP	11	0	0	0
SW-846:6020	INORGANIC	WST09-14-74376	1203102549	MS	0	0	11	0

DATA VALIDATION REPORT

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
SW-846:6850	LCMS/MS PERCHLORATE	CAPU-14-79434	349927006	REG	1	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	CAPU-14-79436	1203104532	MS	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	CAPU-14-79436	1203104533	MSD	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	CAPU-14-79440	349927014	REG	1	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	LCS	1203104531	LCS	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	MB	1203104530	MB	1	0	0	0
SW-846:8011	VOC	CAPU-14-79418	349927007	FTB	2	1	0	0
SW-846:8011	VOC	CAPU-14-79424	349927015	FTB	2	1	0	0
SW-846:8011	VOC	CAPU-14-79426	349927001	REG	2	1	0	0
SW-846:8011	VOC	CAPU-14-79432	349927009	REG	2	1	0	0
SW-846:8011	VOC	LCS	1203103000	LCS	0	1	2	0
SW-846:8011	VOC	MB	1203102999	MB	2	1	0	0
SW-846:8081B	PESTPCB	CAPU-14-79426	349927004	REG	1	2	0	0
SW-846:8081B	PESTPCB	CAPU-14-79429	1203104376	MS	0	2	1	0
SW-846:8081B	PESTPCB	CAPU-14-79432	349927011	REG	1	2	0	0
SW-846:8081B	PESTPCB	LCS	1203104375	LCS	0	2	1	0
SW-846:8081B	PESTPCB	LCSD	1203104384	LCSD	0	2	1	0
SW-846:8081B	PESTPCB	MB	1203104374	MB	1	2	0	0
SW-846:8151A	HERB	CAPU-14-79426	1203102521	MS	0	1	1	0
SW-846:8151A	HERB	CAPU-14-79426	349927005	REG	1	1	0	0
SW-846:8151A	HERB	CAPU-14-79432	349927012	REG	1	1	0	0
SW-846:8151A	HERB	LCS	1203102520	LCS	0	1	1	0
SW-846:8151A	HERB	LCSD	1203102523	LCSD	0	1	1	0
SW-846:8151A	HERB	MB	1203102519	MB	1	1	0	0
SW-846:8260B	VOC	CAPU-14-79418	349927008	FTB	78	3	0	0
SW-846:8260B	VOC	CAPU-14-79424	349927016	FTB	78	3	0	0
SW-846:8260B	VOC	CAPU-14-79426	349927003	REG	78	3	0	0
SW-846:8260B	VOC	CAPU-14-79432	349927013	REG	78	3	0	0
SW-846:8260B	VOC	LCS	1203108906	LCS	0	3	68	0
SW-846:8260B	VOC	LCS	1203108907	LCS	0	3	10	0
SW-846:8260B	VOC	MB	1203108901	MB	78	3	0	0
SW-846:8270D	SVOC	CAPU-14-79426	349927003	REG	60	6	0	0
SW-846:8270D	SVOC	CAPU-14-79432	349927013	REG	60	6	0	0
SW-846:8270D	SVOC	LCS	1203102431	LCS	0	6	56	0
SW-846:8270D	SVOC	MB	1203102430	MB	60	6	0	0
SW-846:8270D	SVOC	WST09-14-74376	1203102432	MS	0	6	56	0
SW-846:8270D	SVOC	WST09-14-74376	1203102433	MSD	0	6	56	0
SW-846:8310	SVOC	CAPU-14-79426	1203102421	MS	0	1	18	0
SW-846:8310	SVOC	CAPU-14-79426	1203102422	MSD	0	1	18	0
SW-846:8310	SVOC	CAPU-14-79426	349927002	REG	18	1	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-846:8310	SVOC	CAPU-14-79432	349927010	REG	18	1	0	0
SW-846:8310	SVOC	LCS	1203102420	LCS	0	1	18	0
SW-846:8310	SVOC	MB	1203102419	MB	18	1	0	0
SW-846:9060	GENERAL CHEMISTRY	CAPU-14-79415	1203105823	DUP	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAPU-14-79426	349927003	REG	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAPU-14-79427	1203105822	DUP	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAPU-14-79432	349927013	REG	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	LCS	1203105826	LCS	0	0	1	0
SW-846:9060	GENERAL CHEMISTRY	MB	1203105820	MB	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	VS-R28-V2-79984	1203112489	DUP	1	0	0	0

3. Are any analytes missing?

No.

4. Were any holding times exceeded?

No.

5. Any contaminants in blanks?

Blank FS ID	Blank Lab Sample	Blank Type	Analytical Method	Sample	Parameter Name	Blank Lab Result	Lab Qualifier	Blank Lab Units	Blank Lab Detection Limit
MB	1203101850	METHOD BLANK	EPA:365.4	W	Total Phosphate as Phosphorus	0.0361	J	mg/L	0.050
MB	1203104856	METHOD BLANK	EPA:351.2	W	Total Kjeldahl Nitrogen	0.0621	J	mg/L	0.100

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
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DATA VALIDATION REPORT

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
CAPU-14-79426	1203104856	METHOD BLANK	EPA:351.2	Total Kjeldahl Nitrogen	0.0621	mg/L	0.204		0.100	Y	5	100	Y
CAPU-14-79432	1203104856	METHOD BLANK	EPA:351.2	Total Kjeldahl Nitrogen	0.0621	mg/L	0.128		0.100	Y	5	100	Y
CAPU-14-79434	1203101850	METHOD BLANK	EPA:365.4	Total Phosphate as Phosphorus	0.0361	mg/L	1.08		0.050	Y	5	100	Y
CAPU-14-79440	1203101850	METHOD BLANK	EPA:365.4	Total Phosphate as Phosphorus	0.0361	mg/L	0.0535		0.050	Y	5	100	Y

6. Any surrogate recoveries outside the control limits?

Field Sample ID	Lab Sample ID	Analytical Method	Parameter Name	Analysis Lot ID	Analysis Date	Spike Recovery	Upper Limit	Lower Limit	Rejection Limit
CAPU-14-79418	349927007	SW-846:8011	Bromofluorobenzene[4-]	1393557	06-06-2014	151	135	73	10
CAPU-14-79424	349927015	SW-846:8011	Bromofluorobenzene[4-]	1393557	06-06-2014	150	135	73	10
CAPU-14-79432	349927011	SW-846:8081B	PCB-209	1394113	06-10-2014	127	124	41	

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

No.

8. Any LCS/LCSD or BS/BSR 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.

DATA VALIDATION REPORT

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	Paramter Name	Lab Qualifier	Validation Qualifier	Validation Reason Codes	Detect Flag	Lab Result	Lab Units	Report Result	Report Units	Report MDA	Report Uncertainty	Lab Matrix	Sample Date	Percent	Analysis Lot ID	Validation Status Code	Use Flag
POI-4	2014-3481	CAPU-14-79426	REG	INIT	RAD		HASL-300:AM-241	Americium-241	U	U	R5	N	-0.0252	pCi/L	-0.0252	pCi/L	0.0437	0.0104	W	06/02/2014		1393291	VAL	Y
POI-4	2014-3481	CAPU-14-79426	REG	INIT	RAD		EPA:901.1	Cesium-137	U	U	R5	N	1.74	pCi/L	1.74	pCi/L	5.92	1.52	W	06/02/2014		1393240	VAL	Y
POI-4	2014-3481	CAPU-14-79426	REG	INIT	RAD		EPA:901.1	Cobalt-60	U	U	R5	N	1.89	pCi/L	1.89	pCi/L	5.63	1.55	W	06/02/2014		1393240	VAL	Y
POI-4	2014-3481	CAPU-14-79426	REG	INIT	RAD		EPA:900	Gross alpha	U	U	R5	N	-.54	pCi/L	-.54	pCi/L	2.77	0.767	W	06/02/2014		1395947	VAL	Y
POI-4	2014-3481	CAPU-14-79426	REG	INIT	RAD		EPA:901.1	Neptunium-237	U	U	R5	N	-.906	pCi/L	-.906	pCi/L	9.44	2.74	W	06/02/2014		1393240	VAL	Y
POI-4	2014-3481	CAPU-14-79426	REG	INIT	RAD		HASL-300:ISOPU	Plutonium-238	U	U	R5	N	.0054	pCi/L	.0054	pCi/L	0.0641	0.0132	W	06/02/2014		1397115	VAL	Y
POI-4	2014-3481	CAPU-14-79426	REG	INIT	RAD		HASL-300:ISOPU	Plutonium-239/240	U	U	R5	N	.0172	pCi/L	.0172	pCi/L	0.106	0.013	W	06/02/2014		1397115	VAL	Y
POI-4	2014-3481	CAPU-14-79426	REG	INIT	RAD		EPA:901.1	Potassium-40	U	U	R5	N	17.4	pCi/L	17.4	pCi/L	53.3	21.6	W	06/02/2014		1393240	VAL	Y
POI-4	2014-3481	CAPU-14-79426	REG	INIT	RAD		EPA:901.1	Sodium-22	U	U	R5	N	.213	pCi/L	.213	pCi/L	5.50	1.68	W	06/02/2014		1393240	VAL	Y
POI-4	2014-3481	CAPU-14-79426	REG	INIT	RAD		EPA:905.0	Strontium-90	U	U	R5	N	.0817	pCi/L	.0817	pCi/L	0.438	0.121	W	06/02/2014		1395946	VAL	Y
POI-4	2014-3481	CAPU-14-79426	REG	INIT	GENERAL CHEMISTRY		EPA:351.2	Total Kjeldahl Nitrogen		U	I4	N	0.204	mg/L	0.204	mg/L			W	06/02/2014		1394292	VAL	Y
TW-2Ar	2014-3481	CAPU-14-79432	REG	INIT	RAD		HASL-300:AM-241	Americium-241	U	U	R5	N	.0000000003	pCi/L	.00000000032	pCi/L	0.034	0.00393	W	06/02/2014		1393291	VAL	Y
TW-2Ar	2014-3481	CAPU-14-79432	REG	INIT	RAD		EPA:901.1	Cesium-137	U	U	R5	N	.466	pCi/L	.466	pCi/L	6.48	1.77	W	06/02/2014		1393240	VAL	Y
TW-2Ar	2014-3481	CAPU-14-79432	REG	INIT	RAD		EPA:901.1	Cobalt-60	U	U	R5	N	.306	pCi/L	.306	pCi/L	7.56	1.99	W	06/02/2014		1393240	VAL	Y
TW-2Ar	2014-3481	CAPU-14-79432	REG	INIT	RAD		EPA:900	Gross alpha	U	U	R5	N	.45	pCi/L	.45	pCi/L	3.00	0.791	W	06/02/2014		1395947	VAL	Y
TW-2Ar	2014-3481	CAPU-14-79432	REG	INIT	RAD		EPA:901.1	Neptunium-237	U	U	R5	N	.5	pCi/L	.5	pCi/L	11.5	2.93	W	06/02/2014		1393240	VAL	Y
TW-2Ar	2014-3481	CAPU-14-79432	REG	INIT	RAD		HASL-300:ISOPU	Plutonium-238	U	U	R5	N	-.00279	pCi/L	-.00279	pCi/L	0.0308	0.0122	W	06/02/2014		1397115	VAL	Y
TW-2Ar	2014-3481	CAPU-14-79432	REG	INIT	RAD		HASL-300:ISOPU	Plutonium-239/240	U	U	R5	N	.0139	pCi/L	.0139	pCi/L	0.0508	0.0128	W	06/02/2014		1397115	VAL	Y
TW-2Ar	2014-3481	CAPU-14-79432	REG	INIT	RAD		EPA:901.1	Potassium-40	U	U	R5	N	20.4	pCi/L	20.4	pCi/L	53.8	20.7	W	06/02/2014		1393240	VAL	Y
TW-2Ar	2014-3481	CAPU-14-79432	REG	INIT	RAD		EPA:901.1	Sodium-22	U	U	R5	N	-1.75	pCi/L	-1.75	pCi/L	5.77	2.10	W	06/02/2014		1393240	VAL	Y
TW-2Ar	2014-3481	CAPU-14-79432	REG	INIT	RAD		EPA:905.0	Strontium-90	U	U	R5	N	.149	pCi/L	.149	pCi/L	0.485	0.141	W	06/02/2014		1395946	VAL	Y
TW-2Ar	2014-3481	CAPU-14-79432	REG	INIT	GENERAL CHEMISTRY		EPA:351.2	Total Kjeldahl Nitrogen		U	I4	N	0.128	mg/L	0.128	mg/L			W	06/02/2014		1394292	VAL	Y
TW-2Ar	2014-3481	CAPU-14-79432	REG	INIT	RAD		HASL-300:ISOU	Uranium-235/236	U	U	R5	N	.017	pCi/L	.017	pCi/L	0.0597	0.0123	W	06/02/2014		1393293	VAL	Y
POI-4	2014-3481	CAPU-14-79434	REG	INIT	GENERAL CHEMISTRY		EPA:365.4	Total Phosphate as Phosphorus		U	I4a	Y	1.08	mg/L	1.08	mg/L			W	06/02/2014		1393136	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
TW-2Ar	2014-3481	CAPU-14-79440	REG	INIT	GENERAL CHEMISTRY	EPA:365.4	Total Phosphate as Phosphorus	U	I4	N	0.0535	mg/L	0.0535	mg/L				W	06/02/2014	1393136	VAL	Y	

Reason Code

Description

I4	the sample result is =<5x the concentration of related analyte in the method blank.
I4a	The affected analytes are considered estimated and biased high because this analyte was identified in the method blank but was >5x
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
CAPU-14-79418	POI-4	FTB	SW-846:8011	0	2
CAPU-14-79418	POI-4	FTB	SW-846:8260B	0	78
CAPU-14-79424	TW-2Ar	FTB	SW-846:8011	0	2
CAPU-14-79424	TW-2Ar	FTB	SW-846:8260B	0	78
CAPU-14-79426	POI-4	REG	EPA:245.2	0	1
CAPU-14-79426	POI-4	REG	EPA:335.4	0	1
CAPU-14-79426	POI-4	REG	EPA:351.2	0	1
CAPU-14-79426	POI-4	REG	EPA:900	0	2
CAPU-14-79426	POI-4	REG	EPA:901.1	0	5
CAPU-14-79426	POI-4	REG	EPA:905.0	0	1
CAPU-14-79426	POI-4	REG	HASL-300:AM-241	0	1
CAPU-14-79426	POI-4	REG	HASL-300:ISOPU	0	2
CAPU-14-79426	POI-4	REG	HASL-300:ISOU	0	3
CAPU-14-79426	POI-4	REG	SW-846:8011	0	2
CAPU-14-79426	POI-4	REG	SW-846:8081B	0	1
CAPU-14-79426	POI-4	REG	SW-846:8151A	0	1
CAPU-14-79426	POI-4	REG	SW-846:8260B	0	78

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Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total Records
CAPU-14-79426	POI-4	REG	SW-846:8270D	0	60
CAPU-14-79426	POI-4	REG	SW-846:8310	0	18
CAPU-14-79426	POI-4	REG	SW-846:9060	0	1
CAPU-14-79432	TW-2Ar	REG	EPA:245.2	0	1
CAPU-14-79432	TW-2Ar	REG	EPA:335.4	0	1
CAPU-14-79432	TW-2Ar	REG	EPA:351.2	0	1
CAPU-14-79432	TW-2Ar	REG	EPA:900	0	2
CAPU-14-79432	TW-2Ar	REG	EPA:901.1	0	5
CAPU-14-79432	TW-2Ar	REG	EPA:905.0	0	1
CAPU-14-79432	TW-2Ar	REG	EPA:906.0	0	1
CAPU-14-79432	TW-2Ar	REG	HASL-300:AM-241	0	1
CAPU-14-79432	TW-2Ar	REG	HASL-300:ISOPU	0	2
CAPU-14-79432	TW-2Ar	REG	HASL-300:ISOU	0	3
CAPU-14-79432	TW-2Ar	REG	SW-846:8011	0	2
CAPU-14-79432	TW-2Ar	REG	SW-846:8081B	0	1
CAPU-14-79432	TW-2Ar	REG	SW-846:8151A	0	1
CAPU-14-79432	TW-2Ar	REG	SW-846:8260B	0	78
CAPU-14-79432	TW-2Ar	REG	SW-846:8270D	0	60
CAPU-14-79432	TW-2Ar	REG	SW-846:8310	0	18
CAPU-14-79432	TW-2Ar	REG	SW-846:9060	0	1
CAPU-14-79434	POI-4	REG	EPA:120.1	0	1
CAPU-14-79434	POI-4	REG	EPA:150.1	0	1
CAPU-14-79434	POI-4	REG	EPA:160.1	0	1
CAPU-14-79434	POI-4	REG	EPA:245.2	0	1
CAPU-14-79434	POI-4	REG	EPA:300.0	0	4
CAPU-14-79434	POI-4	REG	EPA:310.1	0	2
CAPU-14-79434	POI-4	REG	EPA:350.1	0	1
CAPU-14-79434	POI-4	REG	EPA:353.2	0	1
CAPU-14-79434	POI-4	REG	EPA:365.4	0	1
CAPU-14-79434	POI-4	REG	SM:A2340B	0	1
CAPU-14-79434	POI-4	REG	SW-846:6010C	0	17
CAPU-14-79434	POI-4	REG	SW-846:6020	0	11
CAPU-14-79434	POI-4	REG	SW-846:6850	0	1
CAPU-14-79440	TW-2Ar	REG	EPA:120.1	0	1
CAPU-14-79440	TW-2Ar	REG	EPA:150.1	0	1
CAPU-14-79440	TW-2Ar	REG	EPA:160.1	0	1
CAPU-14-79440	TW-2Ar	REG	EPA:245.2	0	1

DATA VALIDATION REPORT

Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total Records
CAPU-14-79440	TW-2Ar	REG	EPA:300.0	0	4
CAPU-14-79440	TW-2Ar	REG	EPA:310.1	0	2
CAPU-14-79440	TW-2Ar	REG	EPA:350.1	0	1
CAPU-14-79440	TW-2Ar	REG	EPA:353.2	0	1
CAPU-14-79440	TW-2Ar	REG	EPA:365.4	0	1
CAPU-14-79440	TW-2Ar	REG	SM:A2340B	0	1
CAPU-14-79440	TW-2Ar	REG	SW-846:6010C	0	17
CAPU-14-79440	TW-2Ar	REG	SW-846:6020	0	11
CAPU-14-79440	TW-2Ar	REG	SW-846:6850	0	1



July 01, 2014

www.gel.com

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

Re: LANL-WQH Groundwater Samples
Work Order: 349927
SDG: 2014-3481

Dear Mr. Greene:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the following analytical results for the sample(s) we received on June 04, 2014, and analyzed for GC Semivolatile Herbicide, GC Semivolatile Pesticide, GC/MS Semivolatile, GC/MS Volatile, General Chemistry, HPLC Polynuclear Aromatic Hydrocarbon, Metals, Perchlorates by LCMSMS and Radiochemistry. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

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

Sincerely,

Hope Taylor for
Valerie Davis
Project Manager

Purchase Order: 63641-10
Chain of Custody: 2014-3481
Enclosures



ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)
LANL-WQH Groundwater Samples
Work Order #: 349927
SDG: 2014-3481

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Case Narrative

**Case Narrative for
ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)
LANL-WQH Groundwater Samples
Workorder #: 349927
SDG # : 2014-3481**

July 01, 2014

Laboratory Identification:

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

Summary

Sample receipt The samples arrived at GEL Laboratories LLC, Charleston, South Carolina on June 04, 2014 for analysis. Please see attached email for discrepancies. The samples were screened according to GEL Standard Operating Procedure. All sample containers arrived without any visible signs of tampering or breakage. 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>
349927001	CAPU-14-79426
349927002	CAPU-14-79426
349927003	CAPU-14-79426
349927004	CAPU-14-79426
349927005	CAPU-14-79426
349927006	CAPU-14-79434
349927007	CAPU-14-79418
349927008	CAPU-14-79418
349927009	CAPU-14-79432
349927010	CAPU-14-79432
349927011	CAPU-14-79432
349927012	CAPU-14-79432
349927013	CAPU-14-79432
349927014	CAPU-14-79440
349927015	CAPU-14-79424
349927016	CAPU-14-79424

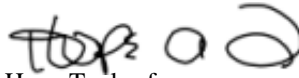
Case Narrative

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: GC Semivolatile Herbicide, GC Semivolatile Pesticide, GC/MS Semivolatile, GC/MS Volatile, General Chemistry, HPLC Polynuclear Aromatic Hydrocarbon, 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 01 July 2014

State	Certification
Alaska	UST-110
Arkansas	88-0651
CLIA	42D0904046
California NELAP	01151CA
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	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA130005
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC000122013-10
Nebraska	NE-OS-26-13
Nevada	SC000122014-1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
Oklahoma	9904
Pennsylvania NELAP	68-00485
Plant Material Permit	PDEP-12-00260
South Carolina Chemistry	10120001
South Carolina GVL	23611001
South Carolina Radiochemi	10120002
Tennessee	TN 02934
Texas NELAP	T104704235-14-9
Utah NELAP	SC000122014-12
Vermont	VT87156
Virginia NELAP	460202
Washington	C780-12
Wisconsin	999887790

Chain of Custody and Supporting Documentation

SAMPLE RECEIPT & REVIEW FORM

Client: <u>LANL</u>		SDG/AR/COC/Work Order: <u>2014-3481</u>	
Received By: <u>P. Dent</u>		Date Received: <u>060414</u>	
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):
Classified Radioactive II or III by RSO?		<input checked="" type="checkbox"/>	If yes, Were swipes taken of sample containers < action levels? <u>0cpm</u>
COC/Samples marked containing PCBs?		<input checked="" type="checkbox"/>	
Package, COC, and/or Samples marked as beryllium or asbestos containing?		<input checked="" type="checkbox"/>	If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.
Shipped as a DOT Hazardous?		<input checked="" type="checkbox"/>	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?		<input checked="" type="checkbox"/>	

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>			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) <u>3.4</u> *all temperatures are recorded in Celsius
2a Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>			Temperature Device Serial #: <u>130462966</u> Secondary Temperature Device Serial # (if applicable):
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 VOA vials free of headspace (defined as < 6mm bubble)?	<input checked="" type="checkbox"/>			Sample ID's and containers affected:
7 Are Encore containers present?			<input checked="" type="checkbox"/>	(If yes, immediately deliver to Volatiles laboratory)
8 Samples received within holding time?	<input checked="" type="checkbox"/>			ID's and tests affected:
9 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>			Sample ID's and containers affected:
10 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>			Sample ID's affected:
11 Number of containers received match number indicated on COC?			<input checked="" type="checkbox"/>	Sample ID's affected: <u>CAPU-14-78424 Lab rec'd (1) 8011-208</u> <u>#(1) 82606 each chain indicates (2) each</u>
12 Are sample containers identifiable as GEL provided?	<input checked="" type="checkbox"/>			
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			
14 Carrier and tracking number.				Circle Applicable: FedEx Air FedEx Ground UPS Field Services Courier Other <u>5908 1777 1160-3</u> <u>↓ ↓ 1159-3</u> <u>1137-4</u> <u>1148-4</u> <u>1126-4</u>

Comments (Use Continuation Form if needed):

Re: Sample issue

Subject: Re: Sample issue
From: Pat Dent <Pat.Dent@gel.com>
Date: 6/4/2014 4:52 PM
To: "Keith R. Greene" <kgreene@lanl.gov>
CC: team.davis, LANL@amrad.com, npatel@lanl.gov

All preserved containers for RN#2014-3483 was received with ph between 3 and 4.

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

On 6/4/2014 4:41 PM, Pat Dent wrote:

The following issues occurred today 06/04/14

RN#2014-3483

WST09-14-74376, 79994 both for SVOA lab received 2-containers each instead of 3-as indicated on chain of custody.

RN#2014-3481

CAPU-14-79418, 79424 the lab received 1-container each for 8011-EDB, 8260b instead of 2-each, as indicated on chain of custody.

Thanks!!

ORIGIN ID: SAFA (505) 665-9966
KEITH GREENE
LOS ALAMOS NATL LAB
TRAO BLDG 1237 DPU 03
LOS ALAMOS, NM 87545
UNITED STATES US

SHIP DATE: 03 JUN 14
ACTWT: 29.0 LB MAN
CAD: 0014176/CAFE2704

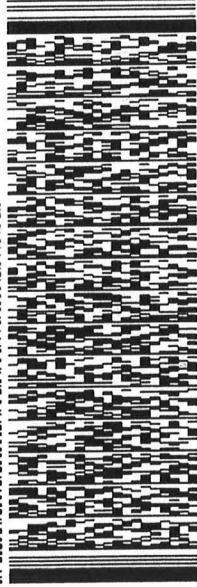
BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 566-8171

REF: XU4001020100



FedEx
Express



J13111305220126

WED - 04 JUN 10:30A
PRIORITY OVERNIGHT

2 of 2

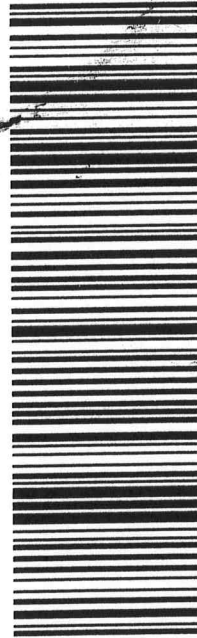
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Mstr# 5908 1777 1159

0201

XX CHSA

29407
SC-US CHS



Part # 156148-434 R/R2 40/11 36

518C3/A26D/6F03

ORIGIN ID:SAFA (505) 665-9966
KEITH GREENE
LOS ALAMOS NATL LAB.
TA00 BLDG 1237 DPU 03
LOS ALAMOS, NM 87545
UNITED STATES US

SHIP DATE: 03JUN14
ACTWGT: 52.0 LB MAN
CAD: 0014176/CAFE2704

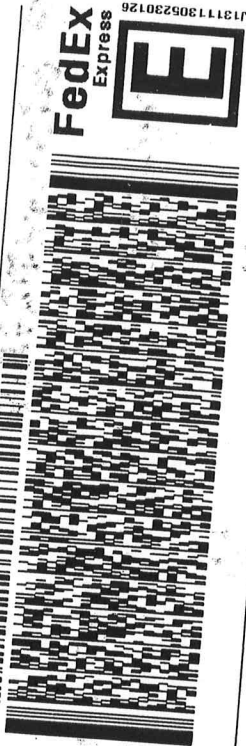
BILL SENDER

TO VALERIE DAVIS

GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407
(843) 566-8171
REF: XU4001020100

518C3/A26D/6F03



1 of 2
TRK# 5908 1777 1159
MASTER

WED - 04 JUN 10:30A
PRIORITY OVERNIGHT

XX CHSA

29407
SC-US CHS



Part # 150148-434 R1T2 10/11 30

ORIGIN ID:SAFA (505) 665-9966
KEITH GREENE
LOS ALAMOS NATL LAB.
TA00 BLDG 1237 DPU 03
LOS ALAMOS, NM 87545
UNITED STATES US

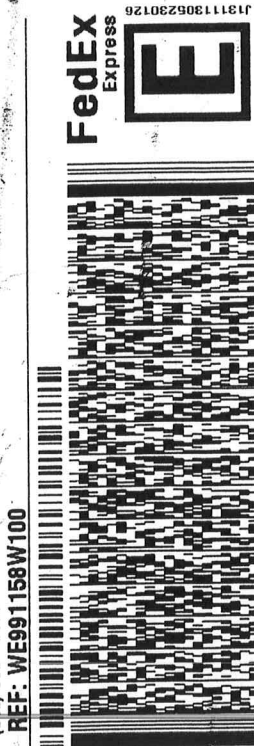
SHIP DATE: 03JUN14
ACTWGT: 49.0 LB MAN
CAD: 0014176/CAFE2704

BILL SENDER

TO VALERIE DAVIS

GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407
(843) 566-8171
REF: WE991158W100



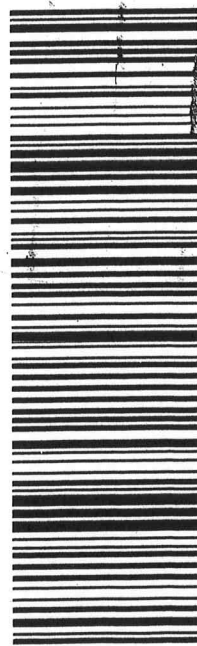
2 of 2

MPS# 5908 1777 1137
0263
Mstr# 5908 1777 1126

WED - 04 JUN 10:30A
PRIORITY OVERNIGHT

XX CHSA

29407
SC-US CHS



Part # 150148-434 R1T2 10/11 30

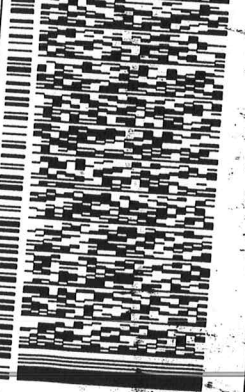
ORIGIN ID: SAFA (505) 665-9966
KEITH GREENE
LOS ALAMOS NATL LAB.
TA00 BLDG 1237 DPU 03
LOS ALAMOS, NM 87545
UNITED STATES US

SHIP DATE: 03JUN14
ACTWGT: 60.0 LB MAN
CAD: 0014176/CAFE2704

BILL SENDER

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

CHARLESTON SC 29407
(843) 566-8171
REF: WE991158W100



FedEx Express
J13111306230126

1 of 2
TRK# 5908 1777 1126
MASTER ##
WED - 04 JUN 10:30A
PRIORITY OVERNIGHT

XX CHSA

29407
SC-US CHS



Part # 156148-434 R1T2 10/11 80

ORIGIN ID: SAFA (505) 665-9966
KEITH GREENE
LOS ALAMOS NATL LAB
TA00 BLDG 1237 DPU 03
LOS ALAMOS, NM 87545
UNITED STATES US

SHIP DATE: 03JUN14
ACTWGT: 46.0 LB MAN
CAD: 0014176/CAFE2704

BILL SENDER

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

CHARLESTON SC 29407
(843) 566-8171
REF: WE991158W100



FedEx Express
J13111306230126

TRK# 5908 1777 1148
WED - 04 JUN 10:30A
PRIORITY OVERNIGHT

XX CHSA

29407
SC-US CHS



Part # 156148-434 R1T2 10/11 80

S18C3/A26D/6F03

HC

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.

Volatile Analysis

Case Narrative

**ChemStation Case Narrative
ARS International, LLC (ARSL)
SDG 2014-3481**

Method/Analysis Information

Procedure: Volatile Organic Compounds (VOC) by Gas Chromatograph/Mass Spectrometer

Analytical Method: SW846 8260B DOE-AL

Analytical Batch Number: 1395841

Sample Analysis

The following client and quality control samples were analyzed to complete this SDG using the methods referenced in the Analysis Information section:

Sample ID	Client ID
349927003	CAPU-14-79426
349927008	CAPU-14-79418
349927013	CAPU-14-79432
349927016	CAPU-14-79424
1203108901	Method Blank (MB)
1203108902	349927003(CAPU-14-79426) Post Spike (PS)
1203108903	349927003(CAPU-14-79426) Post Spike (PS)
1203108904	349927003(CAPU-14-79426) Post Spike Duplicate (PSD)
1203108905	349927003(CAPU-14-79426) Post Spike Duplicate (PSD)
1203108906	Laboratory Control Sample (LCS)
1203108907	Laboratory Control Sample (LCS)

NOTE: For volatile organic analyses the matrix spike designations may be indicated as "PS" or "PSD". The "PS" designation (post spike) indicates that the matrix was fortified prior to analysis but after applying any prep factors, such as a dilution. The laboratory considers the MS/MSD and PS/PSD designations interchangeable.

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-038 REV# 21.

Raw data reports are processed and reviewed by the analyst using the Chemstation software package. False positives have been removed from the quantitation reports per standard operating procedures (SOP) section 19.1.2. False positive analytes are designated on the quantitation report with a 'd' qualifier.

Calibration Information

A complete list of the initial calibration data files with the correct dates and times of analysis are shown in the Calibration History report located in the Standard Data section of the data package.

The surrogate compounds were calibrated using a minimum five-point calibration curve. The surrogates were added by the auto sampler at a concentration of 50 ug/L or 20 ug/L for low level analyses. GEL Laboratories LLC will not have surrogate recoveries reported for Dibromofluoromethane. This is due to increased regulations for this analyte and an industry shortage.

Initial Calibration

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

Continuing Calibration Verification Requirements

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

Quality Control (QC) Information

Blank (MB) Statement

The blank analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

Surrogate recoveries in all client and quality control samples were within the acceptance limits.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

QC Sample Designation

Sample 349927003 (CAPU-14-79426) was designated for spike analysis.

Matrix Spike (PS) Recovery Statement

The spike 1203108902 (CAPU-14-79426) recoveries were not all within the acceptance limits. See the Data Exception Report in the miscellaneous section of the data package.

Matrix Spike Duplicate (PSD) Recovery Statement

The spike duplicate 1203108904 (CAPU-14-79426) recoveries were not all within the acceptance limits. See the Data Exception Report in the miscellaneous section of the data package.

Relative Percent Difference (RPD) Statement

The RPDs between the matrix spike pair met the acceptance limits.

Internal Standard (ISTD) Acceptance

The internal standard responses in all client and quality control samples met the required acceptance criteria.

Technical Information

Holding Time Specifications

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

Sample Preservation and Integrity

All samples met the sample preservation and integrity requirements.

Sample Dilutions/Methanol Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

Re-analyses were not required for samples in this SDG.

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

The following DER was generated for this SDG: 1305165.

Manual Integrations

Data files associated with the initial calibration, continuing calibration check, and samples did not require manual integrations.

TIC Comment

Tentatively identified compounds (TIC) were requested for this sample delivery group/work order. Please note that non-requested target analytes that are reported on the quantitation reports will be present on the Form I. These detected analytes are included in the calibrated method and as a result will be reported on the Sample Data Summary (Form I) or Certificate of Analysis (C of A). TIC data are included on the Sample Data Summary (Form I).

Additional Comments

Additional comments were not required for this SDG.

Residual Chlorine

Residual Chlorine was not detected in any of the samples in this SDG.

System Configuration

The Volatile-GC/MS analysis was performed on the following instrument configuration:

Instrument ID	Instrument	System Configuration	Column ID	Column Description	P & T Trap
VOAA.I	Agilent 7890/5975 GC/MS w/ OI Eclipse/Archon Autosampler	HP7890A/HP5975C	DB-624	J&W, 60m x 0.25mm x 1.4um	Trap 10

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all 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: 2014-3481 GEL Work Order: 349927

The Qualifiers in this report are defined as follows:

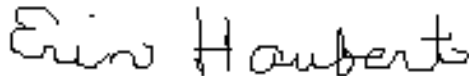
- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- DL Indicates that sample is diluted.
- RA Indicates that sample is re-analyzed without re-extraction.
-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

Review/Validation

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

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

Signature:



Name: Erin Haubert

Date: 01 JUL 2014

Title: Data Validator

Sample Data Summary

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2014-3481

Lab Sample ID: 349927003

Date Collected: 06/02/2014 11:46

Date Received: 06/04/2014 08:55

Matrix: W

Client: ARSL004

Project: ESHL00714

Client ID: CAPU-14-79426

Method: SW846 8260B DOE-AL

SOP Ref: GL-OA-E-038

Batch ID: 1395841

Inst: VOAA.I

Dilution: 1

Run Date: 06/13/2014 20:19

Analyst: JEB

Purge Vol: 5 mL

Prep Date: 06/13/2014 20:19

Data File: 061314\AJ519.D

Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/L	2.00	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.200	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	3.00	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.00	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00
74-83-9	Bromomethane	U	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	5.00	ug/L	1.50	5.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2014-3481

Lab Sample ID: 349927003

Date Collected: 06/02/2014 11:46

Date Received: 06/04/2014 08:55

Matrix: W

Client: ARSL004

Project: ESHL00714

Client ID: CAPU-14-79426

Method: SW846 8260B DOE-AL

SOP Ref: GL-OA-E-038

Batch ID: 1395841

Inst: VOAA.I

Dilution: 1

Run Date: 06/13/2014 20:19

Analyst: JEB

Purge Vol: 5 mL

Prep Date: 06/13/2014 20:19

Data File: 061314\AJ519.D

Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
56-23-5	Carbon tetrachloride	U	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	U	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.00	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	3.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.400	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	1.50	5.00
108-05-4	Vinyl acetate	U	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	U	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	1.00	ug/L	0.300	1.00
1634-04-4	tert-Butyl methyl ether	U	1.00	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene	U	1.00	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2014-3481

Lab Sample ID: 349927003

Date Collected: 06/02/2014 11:46

Date Received: 06/04/2014 08:55

Matrix: W

Client: ARSL004

Project: ESHL00714

Client ID: CAPU-14-79426

Method: SW846 8260B DOE-AL

SOP Ref: GL-OA-E-038

Batch ID: 1395841

Inst: VOAA.I

Dilution: 1

Run Date: 06/13/2014 20:19

Analyst: JEB

Purge Vol: 5 mL

Prep Date: 06/13/2014 20:19

Column: DB-624

Data File: 061314\AJ519.D

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
156-60-5	trans-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	52.2	50.0	ug/L	104 (78%-124%)
Bromofluorobenzene	51.2	50.0	ug/L	102 (80%-120%)
Toluene-d8	51.2	50.0	ug/L	102 (80%-120%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
No Tentatively Identified Compounds Found				ug/L		

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2014-3481

Lab Sample ID: 349927008

Date Collected: 06/02/2014 11:46

Date Received: 06/04/2014 08:55

Matrix: W

Client: ARSL004

Project: ESHL00714

Client ID: CAPU-14-79418

Batch ID: 1395841

Method: SW846 8260B DOE-AL

SOP Ref: GL-OA-E-038

Run Date: 06/13/2014 20:43

Inst: VOAA.I

Dilution: 1

Prep Date: 06/13/2014 20:43

Analyst: JEB

Purge Vol: 5 mL

Data File: 061314\AJ520.D

Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/L	2.00	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.200	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	3.00	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.00	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00
74-83-9	Bromomethane	U	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	5.00	ug/L	1.50	5.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2014-3481

Lab Sample ID: 349927008

Date Collected: 06/02/2014 11:46

Date Received: 06/04/2014 08:55

Matrix: W

Client: ARSL004

Project: ESHL00714

Client ID: CAPU-14-79418

Batch ID: 1395841

Method: SW846 8260B DOE-AL

SOP Ref: GL-OA-E-038

Run Date: 06/13/2014 20:43

Inst: VOAA.I

Dilution: 1

Prep Date: 06/13/2014 20:43

Analyst: JEB

Purge Vol: 5 mL

Data File: 061314\AJ520.D

Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
56-23-5	Carbon tetrachloride	U	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	U	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.00	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	3.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.400	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	1.50	5.00
108-05-4	Vinyl acetate	U	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	U	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	1.00	ug/L	0.300	1.00
1634-04-4	tert-Butyl methyl ether	U	1.00	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene	U	1.00	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2014-3481

Lab Sample ID: 349927008

Date Collected: 06/02/2014 11:46

Date Received: 06/04/2014 08:55

Matrix: W

Client: ARSL004

Project: ESHL00714

Client ID: CAPU-14-79418

Method: SW846 8260B DOE-AL

SOP Ref: GL-OA-E-038

Batch ID: 1395841

Inst: VOAA.I

Dilution: 1

Run Date: 06/13/2014 20:43

Analyst: JEB

Purge Vol: 5 mL

Prep Date: 06/13/2014 20:43

Data File: 061314\AJ520.D

Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
156-60-5	trans-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	51.9	50.0	ug/L	104 (78%-124%)
Bromofluorobenzene	51.3	50.0	ug/L	103 (80%-120%)
Toluene-d8	50.9	50.0	ug/L	102 (80%-120%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
No Tentatively Identified Compounds Found				ug/L		

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2014-3481

Lab Sample ID: 349927013

Date Collected: 06/02/2014 12:05

Date Received: 06/04/2014 08:55

Matrix: W

Client: ARSL004

Project: ESHL00714

Client ID: CAPU-14-79432

Method: SW846 8260B DOE-AL

SOP Ref: GL-OA-E-038

Batch ID: 1395841

Inst: VOAA.I

Dilution: 1

Run Date: 06/13/2014 21:08

Analyst: JEB

Purge Vol: 5 mL

Prep Date: 06/13/2014 21:08

Data File: 061314\AJ521.D

Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/L	2.00	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.200	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	3.00	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.00	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00
74-83-9	Bromomethane	U	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	5.00	ug/L	1.50	5.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2014-3481

Lab Sample ID: 349927013

Date Collected: 06/02/2014 12:05

Date Received: 06/04/2014 08:55

Matrix: W

Client: ARSL004

Project: ESHL00714

Client ID: CAPU-14-79432

Method: SW846 8260B DOE-AL

SOP Ref: GL-OA-E-038

Batch ID: 1395841

Inst: VOAA.I

Dilution: 1

Run Date: 06/13/2014 21:08

Analyst: JEB

Purge Vol: 5 mL

Prep Date: 06/13/2014 21:08

Data File: 061314\AJ521.D

Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
56-23-5	Carbon tetrachloride	U	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	U	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.00	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	3.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.400	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	1.50	5.00
108-05-4	Vinyl acetate	U	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	U	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	1.00	ug/L	0.300	1.00
1634-04-4	tert-Butyl methyl ether	U	1.00	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene	U	1.00	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2014-3481

Lab Sample ID: 349927013

Date Collected: 06/02/2014 12:05

Date Received: 06/04/2014 08:55

Matrix: W

Client: ARSL004

Project: ESHL00714

Client ID: CAPU-14-79432

Method: SW846 8260B DOE-AL

SOP Ref: GL-OA-E-038

Batch ID: 1395841

Inst: VOAA.I

Dilution: 1

Run Date: 06/13/2014 21:08

Analyst: JEB

Purge Vol: 5 mL

Prep Date: 06/13/2014 21:08

Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
156-60-5	trans-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	52.1	50.0	ug/L	104 (78%-124%)
Bromofluorobenzene	51.4	50.0	ug/L	103 (80%-120%)
Toluene-d8	51.5	50.0	ug/L	103 (80%-120%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
No Tentatively Identified Compounds Found				ug/L		

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2014-3481

Lab Sample ID: 349927016

Date Collected: 06/02/2014 12:05

Date Received: 06/04/2014 08:55

Matrix: W

Client ID: CAPU-14-79424

Batch ID: 1395841

Run Date: 06/13/2014 21:32

Prep Date: 06/13/2014 21:32

Data File: 061314\AJ522.D

Client: ARSL004

Method: SW846 8260B DOE-AL

Inst: VOAA.I

Analyst: JEB

Project: ESHL00714

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/L	2.00	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.200	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	3.00	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.00	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00
74-83-9	Bromomethane	U	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	5.00	ug/L	1.50	5.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2014-3481
Lab Sample ID: 349927016

Date Collected: 06/02/2014 12:05
Date Received: 06/04/2014 08:55

Matrix: W

Client ID: CAPU-14-79424

Client: ARSL004

Project: ESHL00714

Batch ID: 1395841

Method: SW846 8260B DOE-AL

SOP Ref: GL-OA-E-038

Run Date: 06/13/2014 21:32

Inst: VOAA.I

Dilution: 1

Prep Date: 06/13/2014 21:32

Analyst: JEB

Purge Vol: 5 mL

Data File: 061314\AJ522.D

Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
56-23-5	Carbon tetrachloride	U	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	U	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.00	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	3.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.400	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	1.50	5.00
108-05-4	Vinyl acetate	U	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	U	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	1.00	ug/L	0.300	1.00
1634-04-4	tert-Butyl methyl ether	U	1.00	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene	U	1.00	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2014-3481
Lab Sample ID: 349927016

Date Collected: 06/02/2014 12:05
Date Received: 06/04/2014 08:55

Matrix: W

Client ID: CAPU-14-79424

Client: ARSL004
Method: SW846 8260B DOE-AL

Project: ESHL00714
SOP Ref: GL-OA-E-038

Batch ID: 1395841

Inst: VOAA.I

Dilution: 1

Run Date: 06/13/2014 21:32

Analyst: JEB

Purge Vol: 5 mL

Prep Date: 06/13/2014 21:32

Data File: 061314\AJ522.D

Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
156-60-5	trans-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	52.0	50.0	ug/L 104	(78%-124%)
Bromofluorobenzene	51.8	50.0	ug/L 104	(80%-120%)
Toluene-d8	50.8	50.0	ug/L 102	(80%-120%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
No Tentatively Identified Compounds Found				ug/L		

Quality Control Summary

Volatile
Surrogate Recovery Report

Page 1 of 1

SDG Number: 2014-3481**Matrix Type: LIQUID**

Sample ID	Client ID	DCED4 %REC	TOL %REC	BFB %REC
1203108906	LCS for batch 1395841	93	93	96
1203108907	LCS for batch 1395841	101	100	101
1203108901	MB for batch 1395841	92	100	99
349927003	CAPU-14-79426	104	102	102
349927008	CAPU-14-79418	104	102	103
349927013	CAPU-14-79432	104	103	103
349927016	CAPU-14-79424	104	102	104
1203108902	CAPU-14-79426PS	103	102	101
1203108904	CAPU-14-79426PSD	104	103	103
1203108903	CAPU-14-79426PS	103	101	102
1203108905	CAPU-14-79426PSD	103	102	103

Surrogate**Acceptance Limits**

DCED4	= 1,2-Dichloroethane-d4	(78%-124%)
TOL	= Toluene-d8	(80%-120%)
BFB	= Bromofluorobenzene	(80%-120%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 8

SDG Number: 2014-3481

Sample Type: Post Spike

Client ID: CAPU-14-79426PS

Matrix: W

Lab Sample ID 1203108902

Instrument: VOAA.I

Analysis Date: 06/13/2014 22:21

Dilution: 1

Analyst: JEB

Purge Vol: 5 mL

Batch ID: 1395841

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
179601-23-1	PS m,p-Xylenes	100	0.00 U	77.0	77	72-120
75-05-8	PS Acetonitrile	1250	0.00 U	906	72	61-135
67-64-1	PS Acetone	250	0.00 U	97.8	39	29-144
74-88-4	PS Iodomethane	250	0.00 U	182	73	73-120
75-15-0	PS Carbon disulfide	250	0.00 U	186	74 *	79-138
108-05-4	PS Vinyl acetate	250	0.00 U	212	85	60-136
78-93-3	PS 2-Butanone	250	0.00 U	131	52	38-136
108-10-1	PS 4-Methyl-2-pentanone	250	0.00 U	185	74	70-132
591-78-6	PS 2-Hexanone	250	0.00 U	146	59	48-137
75-71-8	PS Dichlorodifluoromethane	50.0	0.00 U	33.7	67	51-133
74-87-3	PS Chloromethane	50.0	0.00 U	36.9	74	54-135
75-01-4	PS Vinyl chloride	50.0	0.00 U	41.1	82	52-129
74-83-9	PS Bromomethane	50.0	0.00 U	34.0	68	67-128
75-00-3	PS Chloroethane	50.0	0.00 U	41.4	83	69-120
75-69-4	PS Trichlorofluoromethane	50.0	0.00 U	45.7	91	66-126
60-29-7	PS Ethyl ether	50.0	0.00 U	42.0	84	69-120
75-35-4	PS 1,1-Dichloroethylene	50.0	0.00 U	35.0	70 *	74-130
75-09-2	PS Methylene chloride	50.0	0.00 U	33.2	66 *	73-120
1634-04-4	PS tert-Butyl methyl ether	50.0	0.00 U	38.8	78	71-124
156-60-5	PS trans-1,2-Dichloroethylene	50.0	0.00 U	36.9	74 *	75-124
75-34-3	PS 1,1-Dichloroethane	50.0	0.00 U	37.7	75 *	76-122
156-59-2	PS cis-1,2-Dichloroethylene	50.0	0.00 U	37.9	76 *	77-121

Volatile
Quality Control Summary
Spike Recovery Report

Page 2 of 8

SDG Number: 2014-3481

Sample Type: Post Spike

Client ID: CAPU-14-79426PS

Matrix: W

Lab Sample ID 1203108902

Instrument: VOAA.I

Analysis Date: 06/13/2014 22:21

Dilution: 1

Analyst: JEB

Purge Vol: 5 mL

Batch ID: 1395841

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
594-20-7	PS 2,2-Dichloropropane	50.0	0.00 U	40.3	81	72-129
74-97-5	PS Bromochloromethane	50.0	0.00 U	39.0	78	78-122
67-66-3	PS Chloroform	50.0	0.00 U	39.7	79	75-123
71-55-6	PS 1,1,1-Trichloroethane	50.0	0.00 U	42.2	84	76-129
563-58-6	PS 1,1-Dichloropropene	50.0	0.00 U	37.7	75 *	76-125
56-23-5	PS Carbon tetrachloride	50.0	0.00 U	43.2	86	76-132
107-06-2	PS 1,2-Dichloroethane	50.0	0.00 U	39.0	78	68-128
71-43-2	PS Benzene	50.0	0.00 U	37.1	74 *	75-120
79-01-6	PS Trichloroethylene	50.0	0.00 U	38.1	76	75-125
78-87-5	PS 1,2-Dichloropropane	50.0	0.00 U	37.7	75	75-120
74-95-3	PS Dibromomethane	50.0	0.00 U	39.1	78	77-122
75-27-4	PS Bromodichloromethane	50.0	0.00 U	42.3	85	76-129
10061-01-5	PS cis-1,3-Dichloropropylene	50.0	0.00 U	40.6	81	75-127
108-88-3	PS Toluene	50.0	0.00 U	38.3	77	72-120
10061-02-6	PS trans-1,3-Dichloropropylene	50.0	0.00 U	42.5	85	73-123
79-00-5	PS 1,1,2-Trichloroethane	50.0	0.00 U	39.6	79	77-120
142-28-9	PS 1,3-Dichloropropane	50.0	0.00 U	39.1	78	73-120
127-18-4	PS Tetrachloroethylene	50.0	0.00 U	39.3	79	67-124
124-48-1	PS Dibromochloromethane	50.0	0.00 U	46.6	93	70-130
108-90-7	PS Chlorobenzene	50.0	0.00 U	38.3	77	74-120
100-41-4	PS Ethylbenzene	50.0	0.00 U	39.1	78	72-120
95-47-6	PS o-Xylene	50.0	0.00 U	39.7	79	72-120

Volatile
Quality Control Summary
Spike Recovery Report

Page 3 of 8

SDG Number: 2014-3481

Sample Type: Post Spike

Client ID: CAPU-14-79426PS

Matrix: W

Lab Sample ID 1203108902

Instrument: VOAA.I

Analysis Date: 06/13/2014 22:21

Dilution: 1

Analyst: JEB

Purge Vol: 5 mL

Batch ID: 1395841

CAS No	Parmname		Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
100-42-5	PS	Styrene	50.0	0.00	U	41.2	82	74-124
75-25-2	PS	Bromoform	50.0	0.00	U	46.5	93	61-135
98-82-8	PS	Isopropylbenzene	50.0	0.00	U	40.0	80	71-124
79-34-5	PS	1,1,2,2-Tetrachloroethane	50.0	0.00	U	40.6	81	74-124
96-18-4	PS	1,2,3-Trichloropropane	50.0	0.00	U	40.2	80	71-125
108-86-1	PS	Bromobenzene	50.0	0.00	U	39.0	78	72-120
103-65-1	PS	n-Propylbenzene	50.0	0.00	U	37.9	76	69-121
108-67-8	PS	1,3,5-Trimethylbenzene	50.0	0.00	U	40.2	80	71-123
95-49-8	PS	2-Chlorotoluene	50.0	0.00	U	38.8	78	71-120
106-43-4	PS	4-Chlorotoluene	50.0	0.00	U	39.0	78	70-120
98-06-6	PS	tert-Butylbenzene	50.0	0.00	U	40.9	82	72-124
95-63-6	PS	1,2,4-Trimethylbenzene	50.0	0.00	U	38.2	76	71-122
135-98-8	PS	sec-Butylbenzene	50.0	0.00	U	40.2	80	71-124
99-87-6	PS	4-Isopropyltoluene	50.0	0.00	U	40.0	80	70-124
541-73-1	PS	1,3-Dichlorobenzene	50.0	0.00	U	38.8	78	70-120
106-46-7	PS	1,4-Dichlorobenzene	50.0	0.00	U	37.8	76	70-120
104-51-8	PS	n-Butylbenzene	50.0	0.00	U	39.3	79	69-125
87-68-3	PS	Hexachlorobutadiene	50.0	0.00	U	41.5	83	60-129
91-20-3	PS	Naphthalene	50.0	0.00	U	40.0	80	58-134
87-61-6	PS	1,2,3-Trichlorobenzene	50.0	0.00	U	39.6	79	52-132
120-82-1	PS	1,2,4-Trichlorobenzene	50.0	0.00	U	38.9	78	59-126
630-20-6	PS	1,1,1,2-Tetrachloroethane	50.0	0.00	U	43.7	87	78-128

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2014-3481

Sample Type: Post Spike

Client ID: CAPU-14-79426PS

Matrix: W

Lab Sample ID 1203108902

Instrument: VOAA.I

Analysis Date: 06/13/2014 22:21

Dilution: 1

Analyst: JEB

Purge Vol: 5 mL

Batch ID: 1395841

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
95-50-1	PS 1,2-Dichlorobenzene	50.0	0.00 U	39.3	79	72-120
71-36-3	PS n-Butyl alcohol	5000	0.00 U	3960	79	64-138

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2014-3481

Sample Type: Post Spike Duplicate

Client ID: CAPU-14-79426PSD

Matrix: W

Lab Sample ID 1203108904

Instrument: VOAA.I

Analysis Date: 06/13/2014 22:45

Dilution: 1

Analyst: JEB

Purge Vol: 5 mL

Batch ID: 1395841

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
179601-23-1	PSD m,p-Xylenes	100	0.00 U	76.5	77	72-120	1	0-20
75-05-8	PSD Acetonitrile	1250	0.00 U	891	71	61-135	2	0-20
67-64-1	PSD Acetone	250	0.00 U	98.3	39	29-144	0	0-20
74-88-4	PSD Iodomethane	250	0.00 U	181	73	73-120	0	0-20
75-15-0	PSD Carbon disulfide	250	0.00 U	182	73 *	79-138	2	0-20
108-05-4	PSD Vinyl acetate	250	0.00 U	215	86	60-136	1	0-20
78-93-3	PSD 2-Butanone	250	0.00 U	131	52	38-136	0	0-20
108-10-1	PSD 4-Methyl-2-pentanone	250	0.00 U	187	75	70-132	1	0-20
591-78-6	PSD 2-Hexanone	250	0.00 U	148	59	48-137	1	0-20
75-71-8	PSD Dichlorodifluoromethane	50.0	0.00 U	32.5	65	51-133	4	0-20
74-87-3	PSD Chloromethane	50.0	0.00 U	36.3	73	54-135	2	0-20
75-01-4	PSD Vinyl chloride	50.0	0.00 U	39.9	80	52-129	3	0-20
74-83-9	PSD Bromomethane	50.0	0.00 U	34.0	68	67-128	0	0-20
75-00-3	PSD Chloroethane	50.0	0.00 U	40.9	82	69-120	1	0-20
75-69-4	PSD Trichlorofluoromethane	50.0	0.00 U	45.3	91	66-126	1	0-20
60-29-7	PSD Ethyl ether	50.0	0.00 U	43.0	86	69-120	2	0-20
75-35-4	PSD 1,1-Dichloroethylene	50.0	0.00 U	34.5	69 *	74-130	1	0-20
75-09-2	PSD Methylene chloride	50.0	0.00 U	33.3	67 *	73-120	0	0-20
1634-04-4	PSD tert-Butyl methyl ether	50.0	0.00 U	38.8	78	71-124	0	0-20
156-60-5	PSD trans-1,2-Dichloroethylene	50.0	0.00 U	36.7	73 *	75-124	0	0-20
75-34-3	PSD 1,1-Dichloroethane	50.0	0.00 U	37.5	75 *	76-122	0	0-20
156-59-2	PSD cis-1,2-Dichloroethylene	50.0	0.00 U	37.8	76 *	77-121	0	0-20

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2014-3481

Sample Type: Post Spike Duplicate

Client ID: CAPU-14-79426PSD

Matrix: W

Lab Sample ID 1203108904

Instrument: VOAA.I

Analysis Date: 06/13/2014 22:45

Dilution: 1

Analyst: JEB

Purge Vol: 5 mL

Batch ID: 1395841

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
594-20-7	PSD 2,2-Dichloropropane	50.0	0.00 U	39.9	80	72-129	1	0-20
74-97-5	PSD Bromochloromethane	50.0	0.00 U	39.5	79	78-122	1	0-20
67-66-3	PSD Chloroform	50.0	0.00 U	39.4	79	75-123	1	0-20
71-55-6	PSD 1,1,1-Trichloroethane	50.0	0.00 U	41.3	83	76-129	2	0-20
563-58-6	PSD 1,1-Dichloropropene	50.0	0.00 U	37.0	74 *	76-125	2	0-20
56-23-5	PSD Carbon tetrachloride	50.0	0.00 U	42.4	85	76-132	2	0-20
107-06-2	PSD 1,2-Dichloroethane	50.0	0.00 U	39.1	78	68-128	0	0-20
71-43-2	PSD Benzene	50.0	0.00 U	36.7	73 *	75-120	1	0-20
79-01-6	PSD Trichloroethylene	50.0	0.00 U	37.6	75	75-125	2	0-20
78-87-5	PSD 1,2-Dichloropropane	50.0	0.00 U	37.6	75	75-120	0	0-20
74-95-3	PSD Dibromomethane	50.0	0.00 U	39.4	79	77-122	1	0-20
75-27-4	PSD Bromodichloromethane	50.0	0.00 U	42.6	85	76-129	1	0-20
10061-01-5	PSD cis-1,3-Dichloropropylene	50.0	0.00 U	40.6	81	75-127	0	0-20
108-88-3	PSD Toluene	50.0	0.00 U	37.9	76	72-120	1	0-20
10061-02-6	PSD trans-1,3-Dichloropropylene	50.0	0.00 U	43.1	86	73-123	2	0-20
79-00-5	PSD 1,1,2-Trichloroethane	50.0	0.00 U	39.7	79	77-120	0	0-20
142-28-9	PSD 1,3-Dichloropropane	50.0	0.00 U	39.2	78	73-120	0	0-20
127-18-4	PSD Tetrachloroethylene	50.0	0.00 U	38.7	77	67-124	2	0-20
124-48-1	PSD Dibromochloromethane	50.0	0.00 U	47.2	94	70-130	1	0-20
108-90-7	PSD Chlorobenzene	50.0	0.00 U	38.1	76	74-120	1	0-20
100-41-4	PSD Ethylbenzene	50.0	0.00 U	38.5	77	72-120	1	0-20
95-47-6	PSD o-Xylene	50.0	0.00 U	39.7	79	72-120	0	0-20

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2014-3481

Sample Type: Post Spike Duplicate

Client ID: CAPU-14-79426PSD

Matrix: W

Lab Sample ID 1203108904

Instrument: VOAA.I

Analysis Date: 06/13/2014 22:45

Dilution: 1

Analyst: JEB

Purge Vol: 5 mL

Batch ID: 1395841

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
100-42-5	PSD Styrene	50.0	0.00 U	40.9	82	74-124	1	0-20
75-25-2	PSD Bromoform	50.0	0.00 U	47.5	95	61-135	2	0-20
98-82-8	PSD Isopropylbenzene	50.0	0.00 U	39.4	79	71-124	2	0-20
79-34-5	PSD 1,1,2,2-Tetrachloroethane	50.0	0.00 U	41.3	83	74-124	2	0-20
96-18-4	PSD 1,2,3-Trichloropropane	50.0	0.00 U	40.4	81	71-125	0	0-20
108-86-1	PSD Bromobenzene	50.0	0.00 U	39.2	78	72-120	0	0-20
103-65-1	PSD n-Propylbenzene	50.0	0.00 U	37.4	75	69-121	1	0-20
108-67-8	PSD 1,3,5-Trimethylbenzene	50.0	0.00 U	39.5	79	71-123	2	0-20
95-49-8	PSD 2-Chlorotoluene	50.0	0.00 U	38.5	77	71-120	1	0-20
106-43-4	PSD 4-Chlorotoluene	50.0	0.00 U	38.8	78	70-120	0	0-20
98-06-6	PSD tert-Butylbenzene	50.0	0.00 U	39.8	80	72-124	3	0-20
95-63-6	PSD 1,2,4-Trimethylbenzene	50.0	0.00 U	37.7	75	71-122	1	0-20
135-98-8	PSD sec-Butylbenzene	50.0	0.00 U	39.2	78	71-124	2	0-20
99-87-6	PSD 4-Isopropyltoluene	50.0	0.00 U	39.1	78	70-124	2	0-20
541-73-1	PSD 1,3-Dichlorobenzene	50.0	0.00 U	38.8	78	70-120	0	0-20
106-46-7	PSD 1,4-Dichlorobenzene	50.0	0.00 U	37.7	75	70-120	0	0-20
104-51-8	PSD n-Butylbenzene	50.0	0.00 U	38.2	76	69-125	3	0-20
87-68-3	PSD Hexachlorobutadiene	50.0	0.00 U	40.4	81	60-129	3	0-20
91-20-3	PSD Naphthalene	50.0	0.00 U	40.2	80	58-134	0	0-20
87-61-6	PSD 1,2,3-Trichlorobenzene	50.0	0.00 U	39.8	80	52-132	0	0-20
120-82-1	PSD 1,2,4-Trichlorobenzene	50.0	0.00 U	38.4	77	59-126	1	0-20
630-20-6	PSD 1,1,1,2-Tetrachloroethane	50.0	0.00 U	44.3	89	78-128	1	0-20

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2014-3481

Sample Type: Post Spike Duplicate

Client ID: CAPU-14-79426PSD

Matrix: W

Lab Sample ID 1203108904

Instrument: VOAA.I

Analysis Date: 06/13/2014 22:45

Dilution: 1

Analyst: JEB

Purge Vol: 5 mL

Batch ID: 1395841

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
95-50-1	PSD 1,2-Dichlorobenzene	50.0	0.00 U	39.3	79	72-120	0	0-20
71-36-3	PSD n-Butyl alcohol	5000	0.00 U	4050	81	64-138	2	0-20

Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 2

SDG Number: 2014-3481

Sample Type: Post Spike

Client ID: CAPU-14-79426PS

Matrix: W

Lab Sample ID 1203108903

Instrument: VOAA.I

Analysis Date: 06/13/2014 23:10

Dilution: 1

Analyst: JEB

Purge Vol: 5 mL

Batch ID: 1395841

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
107-02-8	PS Acrolein	250	0.00 U	218	87	57-131
76-13-1	PS Trichlorotrifluoroethane	250	0.00 U	221	88	76-133
107-05-1	PS Allyl chloride	250	0.00 U	222	89	65-130
107-13-1	PS Acrylonitrile	250	0.00 U	230	92	70-128
107-12-0	PS Propionitrile	250	0.00 U	245	98	68-131
126-98-7	PS Methacrylonitrile	250	0.00 U	248	99	64-129
80-62-6	PS Methyl methacrylate	250	0.00 U	252	101	76-120
97-63-2	PS Ethyl methacrylate	250	0.00 U	248	99	72-122
78-83-1	PS Isobutyl alcohol	2500	0.00 U	2330	93	72-134
126-99-8	PS 2-Chloro-1,3-butadiene	50.0	0.00 U	49.3	99	46-140

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2014-3481

Sample Type: Post Spike Duplicate

Client ID: CAPU-14-79426PSD

Matrix: W

Lab Sample ID 1203108905

Instrument: VOAA.I

Analysis Date: 06/13/2014 23:34

Dilution: 1

Analyst: JEB

Purge Vol: 5 mL

Batch ID: 1395841

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
107-02-8	PSD Acrolein	250	0.00 U	210	84	57-131	3	0-20
76-13-1	PSD Trichlorotrifluoroethane	250	0.00 U	220	88	76-133	0	0-20
107-05-1	PSD Allyl chloride	250	0.00 U	215	86	65-130	3	0-20
107-13-1	PSD Acrylonitrile	250	0.00 U	225	90	70-128	2	0-20
107-12-0	PSD Propionitrile	250	0.00 U	239	96	68-131	2	0-20
126-98-7	PSD Methacrylonitrile	250	0.00 U	242	97	64-129	3	0-20
80-62-6	PSD Methyl methacrylate	250	0.00 U	242	97	76-120	4	0-20
97-63-2	PSD Ethyl methacrylate	250	0.00 U	234	93	72-122	6	0-20
78-83-1	PSD Isobutyl alcohol	2500	0.00 U	2270	91	72-134	3	0-20
126-99-8	PSD 2-Chloro-1,3-butadiene	50.0	0.00 U	47.3	95	46-140	4	0-20

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2014-3481

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1395841

Matrix: WATER

Lab Sample ID 1203108906

Instrument: VOAA.I

Analysis Date: 06/13/2014 13:40

Dilution: 1

Analyst: JEB

Purge Vol: 5 mL

Batch ID: 1395841

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
179601-23-1	LCS m,p-Xylenes	100	0.0	105	105	80-120
75-05-8	LCS Acetonitrile	1250	0.0	1210	97	63-131
67-64-1	LCS Acetone	250	0.0	224	89	50-149
74-88-4	LCS Iodomethane	250	0.0	256	102	75-120
75-15-0	LCS Carbon disulfide	250	0.0	267	107	80-136
108-05-4	LCS Vinyl acetate	250	0.0	284	113	78-130
78-93-3	LCS 2-Butanone	250	0.0	217	87	57-148
108-10-1	LCS 4-Methyl-2-pentanone	250	0.0	269	108	75-130
591-78-6	LCS 2-Hexanone	250	0.0	258	103	64-149
75-71-8	LCS Dichlorodifluoromethane	50.0	0.0	53.6	107	58-129
74-87-3	LCS Chloromethane	50.0	0.0	50.7	101	59-131
75-01-4	LCS Vinyl chloride	50.0	0.0	53.0	106	59-127
74-83-9	LCS Bromomethane	50.0	0.0	52.4	105	70-125
75-00-3	LCS Chloroethane	50.0	0.0	52.0	104	73-120
75-69-4	LCS Trichlorofluoromethane	50.0	0.0	55.2	110	73-123
60-29-7	LCS Ethyl ether	50.0	0.0	48.6	97	73-120
75-35-4	LCS 1,1-Dichloroethylene	50.0	0.0	52.2	104	80-128
75-09-2	LCS Methylene chloride	50.0	0.0	44.8	90	75-120
1634-04-4	LCS tert-Butyl methyl ether	50.0	0.0	49.4	99	74-122
156-60-5	LCS trans-1,2-Dichloroethylene	50.0	0.0	50.9	102	80-121
75-34-3	LCS 1,1-Dichloroethane	50.0	0.0	50.1	100	79-120
156-59-2	LCS cis-1,2-Dichloroethylene	50.0	0.0	50.3	101	79-120

Volatile
Quality Control Summary
Spike Recovery Report

Page 2 of 4

SDG Number: 2014-3481

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1395841

Matrix: WATER

Lab Sample ID 1203108906

Instrument: VOAA.I

Analysis Date: 06/13/2014 13:40

Dilution: 1

Analyst: JEB

Purge Vol: 5 mL

Batch ID: 1395841

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
594-20-7	LCS 2,2-Dichloropropane	50.0	0.0	58.6	117	79-130
74-97-5	LCS Bromochloromethane	50.0	0.0	50.7	101	80-121
67-66-3	LCS Chloroform	50.0	0.0	51.2	102	79-120
71-55-6	LCS 1,1,1-Trichloroethane	50.0	0.0	56.5	113	80-128
563-58-6	LCS 1,1-Dichloropropene	50.0	0.0	53.1	106	80-123
56-23-5	LCS Carbon tetrachloride	50.0	0.0	58.7	117	80-131
107-06-2	LCS 1,2-Dichloroethane	50.0	0.0	48.7	97	73-120
71-43-2	LCS Benzene	50.0	0.0	49.2	98	78-120
79-01-6	LCS Trichloroethylene	50.0	0.0	51.2	102	80-121
78-87-5	LCS 1,2-Dichloropropane	50.0	0.0	49.2	98	79-120
74-95-3	LCS Dibromomethane	50.0	0.0	50.3	101	80-120
75-27-4	LCS Bromodichloromethane	50.0	0.0	55.3	111	80-126
10061-01-5	LCS cis-1,3-Dichloropropylene	50.0	0.0	54.7	109	80-125
108-88-3	LCS Toluene	50.0	0.0	51.5	103	78-120
10061-02-6	LCS trans-1,3-Dichloropropylene	50.0	0.0	57.8	116	79-121
79-00-5	LCS 1,1,2-Trichloroethane	50.0	0.0	51.4	103	78-120
142-28-9	LCS 1,3-Dichloropropane	50.0	0.0	49.8	100	75-120
127-18-4	LCS Tetrachloroethylene	50.0	0.0	53.9	108	74-123
124-48-1	LCS Dibromochloromethane	50.0	0.0	50.8	102	73-129
108-90-7	LCS Chlorobenzene	50.0	0.0	51.4	103	79-120
100-41-4	LCS Ethylbenzene	50.0	0.0	53.0	106	79-120
95-47-6	LCS o-Xylene	50.0	0.0	52.7	105	80-123

Volatile
Quality Control Summary
Spike Recovery Report

Page 3 of 4

SDG Number: 2014-3481

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1395841

Matrix: WATER

Lab Sample ID 1203108906

Instrument: VOAA.I

Analysis Date: 06/13/2014 13:40

Dilution: 1

Analyst: JEB

Purge Vol: 5 mL

Batch ID: 1395841

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
100-42-5	LCS Styrene	50.0	0.0	56.3	113	80-121
75-25-2	LCS Bromoform	50.0	0.0	51.4	103	65-135
98-82-8	LCS Isopropylbenzene	50.0	0.0	57.0	114	79-121
79-34-5	LCS 1,1,2,2-Tetrachloroethane	50.0	0.0	54.4	109	76-123
96-18-4	LCS 1,2,3-Trichloropropane	50.0	0.0	54.6	109	76-120
108-86-1	LCS Bromobenzene	50.0	0.0	54.1	108	79-120
103-65-1	LCS n-Propylbenzene	50.0	0.0	56.9	114	80-123
108-67-8	LCS 1,3,5-Trimethylbenzene	50.0	0.0	56.8	114	80-120
95-49-8	LCS 2-Chlorotoluene	50.0	0.0	55.5	111	79-120
106-43-4	LCS 4-Chlorotoluene	50.0	0.0	55.3	111	79-120
98-06-6	LCS tert-Butylbenzene	50.0	0.0	57.2	114	79-122
95-63-6	LCS 1,2,4-Trimethylbenzene	50.0	0.0	56.0	112	80-120
135-98-8	LCS sec-Butylbenzene	50.0	0.0	57.6	115	80-121
99-87-6	LCS 4-Isopropyltoluene	50.0	0.0	58.6	117	80-121
541-73-1	LCS 1,3-Dichlorobenzene	50.0	0.0	55.0	110	76-120
106-46-7	LCS 1,4-Dichlorobenzene	50.0	0.0	53.9	108	78-120
104-51-8	LCS n-Butylbenzene	50.0	0.0	59.2	118	80-123
87-68-3	LCS Hexachlorobutadiene	50.0	0.0	60.0	120	71-128
91-20-3	LCS Naphthalene	50.0	0.0	55.3	111	64-132
87-61-6	LCS 1,2,3-Trichlorobenzene	50.0	0.0	55.9	112	61-132
120-82-1	LCS 1,2,4-Trichlorobenzene	50.0	0.0	57.6	115	66-130
630-20-6	LCS 1,1,1,2-Tetrachloroethane	50.0	0.0	57.0	114	80-125

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2014-3481

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1395841

Matrix: WATER

Lab Sample ID 1203108906

Instrument: VOAA.I

Analysis Date: 06/13/2014 13:40

Dilution: 1

Analyst: JEB

Purge Vol: 5 mL

Batch ID: 1395841

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
95-50-1	LCS 1,2-Dichlorobenzene	50.0	0.0	54.0	108	78-120
71-36-3	LCS n-Butyl alcohol	5000	0.0	5180	104	67-137

Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 1

SDG Number: 2014-3481

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1395841

Matrix: WATER

Lab Sample ID 1203108907

Instrument: VOAA.I

Analysis Date: 06/13/2014 15:24

Dilution: 1

Analyst: JEB

Purge Vol: 5 mL

Batch ID: 1395841

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
107-02-8	LCS Acrolein	250	0.0	238	95	65-126
76-13-1	LCS Trichlorotrifluoroethane	250	0.0	228	91	73-132
107-05-1	LCS Allyl chloride	250	0.0	228	91	67-127
107-13-1	LCS Acrylonitrile	250	0.0	231	92	74-122
107-12-0	LCS Propionitrile	250	0.0	246	99	73-124
126-98-7	LCS Methacrylonitrile	250	0.0	245	98	68-123
80-62-6	LCS Methyl methacrylate	250	0.0	252	101	79-120
97-63-2	LCS Ethyl methacrylate	250	0.0	248	99	77-120
78-83-1	LCS Isobutyl alcohol	2500	0.0	2390	95	72-133
126-99-8	LCS 2-Chloro-1,3-butadiene	50.0	0.0	51.0	102	57-142

Method Blank Summary

Page 1 of 1

SDG Number:	2014-3481	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1395841	Instrument ID:	VOAA.I	Data File:	061314\AJ509AR.D
Lab Sample ID:	1203108901	Prep Date:	06/13/2014 16:13	Analyzed:	06/13/14 16:13
Column:	DB-624				

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 1395841	1203108906	061314\AJ503AR.D	06/13/14	1340
02 LCS for batch 1395841	1203108907	061314\AJ507AR.D	06/13/14	1524
03 CAPU-14-79426	349927003	061314\AJ519.D	06/13/14	2019
04 CAPU-14-79418	349927008	061314\AJ520.D	06/13/14	2043
05 CAPU-14-79432	349927013	061314\AJ521.D	06/13/14	2108
06 CAPU-14-79424	349927016	061314\AJ522.D	06/13/14	2132
07 CAPU-14-79426PS	1203108902	061314\AJ524.D	06/13/14	2221
08 CAPU-14-79426PSD	1203108904	061314\AJ525.D	06/13/14	2245
09 CAPU-14-79426PS	1203108903	061314\AJ526.D	06/13/14	2310
10 CAPU-14-79426PSD	1203108905	061314\AJ527.D	06/13/14	2334

Quality Control Data

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2014-3481	Matrix: WATER
Lab Sample ID: 1203108901	
Client Sample: QC for batch 1395841	Client: ARSL004
Client ID: MB for batch 1395841	Method: SW846 8260B DOE-AL
Batch ID: 1395841	Project: QC
Run Date: 06/13/2014 16:13	SOP Ref: GL-OA-E-038
Prep Date: 06/13/2014 16:13	Dilution: 1
Data File: 061314\AJ509AR.D	Purge Vol: 5 mL
	Analyst: JEB
	Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/L	2.00	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	2.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00
74-83-9	Bromomethane	U	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	5.00	ug/L	1.50	5.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2014-3481	Matrix: WATER
Lab Sample ID: 1203108901	
Client Sample: QC for batch 1395841	Client: ARSL004
Client ID: MB for batch 1395841	Method: SW846 8260B DOE-AL
Batch ID: 1395841	Project: QC
Run Date: 06/13/2014 16:13	SOP Ref: GL-OA-E-038
Prep Date: 06/13/2014 16:13	Dilution: 1
Data File: 061314\AJ509AR.D	Purge Vol: 5 mL
	Analyst: JEB
	Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
56-23-5	Carbon tetrachloride	U	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	U	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	1.70	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.600	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	1.50	5.00
108-05-4	Vinyl acetate	U	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	U	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	1.00	ug/L	0.300	1.00
1634-04-4	tert-Butyl methyl ether	U	1.00	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene	U	1.00	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2014-3481	Matrix:	WATER
Lab Sample ID:	1203108901		
Client Sample:	QC for batch 1395841	Client:	ARSL004
Client ID:	MB for batch 1395841	Method:	SW846 8260B DOE-AL
Batch ID:	1395841	Inst:	VOAA.I
Run Date:	06/13/2014 16:13	Analyst:	JEB
Prep Date:	06/13/2014 16:13	Purge Vol:	5 mL
Data File:	061314\AJ509AR.D	Column:	DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
156-60-5	trans-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	46.1	50.0	ug/L	92.2	(78%-124%)
Bromofluorobenzene	49.6	50.0	ug/L	99.1	(80%-120%)
Toluene-d8	50.1	50.0	ug/L	100	(80%-120%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
No Tentatively Identified Compounds Found				ug/L		

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2014-3481	Date Collected:	06/02/2014 11:46	Matrix:	W
Lab Sample ID:	1203108902	Date Received:	06/04/2014 08:55		
Client Sample:	QC for batch 1395841	Client:	ARSL004	Project:	QC
Client ID:	CAPU-14-79426PS	Method:	SW846 8260B DOE-AL	SOP Ref:	GL-OA-E-038
Batch ID:	1395841	Inst:	VOAA.I	Dilution:	1
Run Date:	06/13/2014 22:21	Analyst:	JEB	Purge Vol:	5 mL
Prep Date:	06/13/2014 22:21				
Data File:	061314\AJ524.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		43.7	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		42.2	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		40.6	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		39.6	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		37.7	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		35.0	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		37.7	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		39.6	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		40.2	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		38.9	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		38.2	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		39.3	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		39.0	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		37.7	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		40.2	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		38.8	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		39.1	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		37.8	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		40.3	ug/L	0.300	1.00
78-93-3	2-Butanone		131	ug/L	2.00	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.200	1.00
95-49-8	2-Chlorotoluene		38.8	ug/L	0.300	1.00
591-78-6	2-Hexanone		146	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene		39.0	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		40.0	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		185	ug/L	1.50	5.00
67-64-1	Acetone		97.8	ug/L	3.00	10.0
75-05-8	Acetonitrile		906	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.00	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene		37.1	ug/L	0.300	1.00
108-86-1	Bromobenzene		39.0	ug/L	0.300	1.00
74-97-5	Bromochloromethane		39.0	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		42.3	ug/L	0.300	1.00
75-25-2	Bromoform		46.5	ug/L	0.300	1.00
74-83-9	Bromomethane		34.0	ug/L	0.300	1.00
75-15-0	Carbon disulfide		186	ug/L	1.50	5.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2014-3481	Date Collected: 06/02/2014 11:46	Matrix: W
Lab Sample ID: 1203108902	Date Received: 06/04/2014 08:55	
Client Sample: QC for batch 1395841	Client: ARSL004	Project: QC
Client ID: CAPU-14-79426PS	Method: SW846 8260B DOE-AL	SOP Ref: GL-OA-E-038
Batch ID: 1395841	Inst: VOAA.I	Dilution: 1
Run Date: 06/13/2014 22:21	Analyst: JEB	Purge Vol: 5 mL
Prep Date: 06/13/2014 22:21		
Data File: 061314\AJ524.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
56-23-5	Carbon tetrachloride		43.2	ug/L	0.300	1.00
108-90-7	Chlorobenzene		38.3	ug/L	0.300	1.00
75-00-3	Chloroethane		41.4	ug/L	0.300	1.00
67-66-3	Chloroform		39.7	ug/L	0.300	1.00
74-87-3	Chloromethane		36.9	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		46.6	ug/L	0.300	1.00
74-95-3	Dibromomethane		39.1	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		33.7	ug/L	0.300	1.00
60-29-7	Ethyl ether		42.0	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		39.1	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		41.5	ug/L	0.300	1.00
74-88-4	Iodomethane		182	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		40.0	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.00	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride		33.2	ug/L	3.00	10.0
91-20-3	Naphthalene		40.0	ug/L	0.400	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		41.2	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		39.3	ug/L	0.300	1.00
108-88-3	Toluene		38.3	ug/L	0.300	1.00
79-01-6	Trichloroethylene		38.1	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		45.7	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	1.50	5.00
108-05-4	Vinyl acetate		212	ug/L	1.50	5.00
75-01-4	Vinyl chloride		41.1	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		37.9	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		40.6	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		77.0	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		3960	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		39.3	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		37.9	ug/L	0.300	1.00
95-47-6	o-Xylene		39.7	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		40.2	ug/L	0.300	1.00
1634-04-4	tert-Butyl methyl ether		38.8	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		40.9	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2014-3481	Date Collected:	06/02/2014 11:46	Matrix:	W
Lab Sample ID:	1203108902	Date Received:	06/04/2014 08:55		
Client Sample:	QC for batch 1395841	Client:	ARSL004	Project:	QC
Client ID:	CAPU-14-79426PS	Method:	SW846 8260B DOE-AL	SOP Ref:	GL-OA-E-038
Batch ID:	1395841	Inst:	VOAA.I	Dilution:	1
Run Date:	06/13/2014 22:21	Analyst:	JEB	Purge Vol:	5 mL
Prep Date:	06/13/2014 22:21				
Data File:	061314\AJ524.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
156-60-5	trans-1,2-Dichloroethylene		36.9	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		42.5	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	51.6	50.0	ug/L	103	(78%-124%)
Bromofluorobenzene	50.6	50.0	ug/L	101	(80%-120%)
Toluene-d8	50.9	50.0	ug/L	102	(80%-120%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2014-3481	Date Collected: 06/02/2014 11:46	Matrix: W
Lab Sample ID: 1203108903	Date Received: 06/04/2014 08:55	
Client Sample: QC for batch 1395841	Client: ARSL004	Project: QC
Client ID: CAPU-14-79426PS	Method: SW846 8260B DOE-AL	SOP Ref: GL-OA-E-038
Batch ID: 1395841	Inst: VOAA.I	Dilution: 1
Run Date: 06/13/2014 23:10	Analyst: JEB	Purge Vol: 5 mL
Prep Date: 06/13/2014 23:10		
Data File: 061314\AJ526.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/L	2.00	5.00
126-99-8	2-Chloro-1,3-butadiene		49.3	ug/L	0.200	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	3.00	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein		218	ug/L	1.50	5.00
107-13-1	Acrylonitrile		230	ug/L	1.00	5.00
107-05-1	Allyl chloride		222	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00
74-83-9	Bromomethane	U	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	5.00	ug/L	1.50	5.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2014-3481	Date Collected:	06/02/2014 11:46	Matrix:	W
Lab Sample ID:	1203108903	Date Received:	06/04/2014 08:55		
Client Sample:	QC for batch 1395841	Client:	ARSL004	Project:	QC
Client ID:	CAPU-14-79426PS	Method:	SW846 8260B DOE-AL	SOP Ref:	GL-OA-E-038
Batch ID:	1395841	Inst:	VOAA.I	Dilution:	1
Run Date:	06/13/2014 23:10	Analyst:	JEB	Purge Vol:	5 mL
Prep Date:	06/13/2014 23:10				
Data File:	061314\AJ526.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
56-23-5	Carbon tetrachloride	U	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	U	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate		248	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol		2330	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		248	ug/L	1.00	5.00
80-62-6	Methyl methacrylate		252	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	3.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.400	1.00
107-12-0	Propionitrile		245	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane		221	ug/L	1.50	5.00
108-05-4	Vinyl acetate	U	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	U	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	1.00	ug/L	0.300	1.00
1634-04-4	tert-Butyl methyl ether	U	1.00	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene	U	1.00	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2014-3481	Date Collected:	06/02/2014 11:46	Matrix:	W
Lab Sample ID:	1203108903	Date Received:	06/04/2014 08:55		
Client Sample:	QC for batch 1395841	Client:	ARSL004	Project:	QC
Client ID:	CAPU-14-79426PS	Method:	SW846 8260B DOE-AL	SOP Ref:	GL-OA-E-038
Batch ID:	1395841	Inst:	VOAA.I	Dilution:	1
Run Date:	06/13/2014 23:10	Analyst:	JEB	Purge Vol:	5 mL
Prep Date:	06/13/2014 23:10				
Data File:	061314\AJ526.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
156-60-5	trans-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits	
1,2-Dichloroethane-d4	51.6	50.0	ug/L	103	(78%-124%)
Bromofluorobenzene	50.9	50.0	ug/L	102	(80%-120%)
Toluene-d8	50.6	50.0	ug/L	101	(80%-120%)

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2014-3481	Date Collected:	06/02/2014 11:46	Matrix:	W
Lab Sample ID:	1203108904	Date Received:	06/04/2014 08:55		
Client Sample:	QC for batch 1395841	Client:	ARSL004	Project:	QC
Client ID:	CAPU-14-79426PSD	Method:	SW846 8260B DOE-AL	SOP Ref:	GL-OA-E-038
Batch ID:	1395841	Inst:	VOAA.I	Dilution:	1
Run Date:	06/13/2014 22:45	Analyst:	JEB	Purge Vol:	5 mL
Prep Date:	06/13/2014 22:45				
Data File:	061314\AJ525.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		44.3	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		41.3	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		41.3	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		39.7	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		37.5	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		34.5	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		37.0	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		39.8	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		40.4	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		38.4	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		37.7	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		39.3	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		39.1	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		37.6	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		39.5	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		38.8	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		39.2	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		37.7	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		39.9	ug/L	0.300	1.00
78-93-3	2-Butanone		131	ug/L	2.00	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.200	1.00
95-49-8	2-Chlorotoluene		38.5	ug/L	0.300	1.00
591-78-6	2-Hexanone		148	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene		38.8	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		39.1	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		187	ug/L	1.50	5.00
67-64-1	Acetone		98.3	ug/L	3.00	10.0
75-05-8	Acetonitrile		891	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.00	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene		36.7	ug/L	0.300	1.00
108-86-1	Bromobenzene		39.2	ug/L	0.300	1.00
74-97-5	Bromochloromethane		39.5	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		42.6	ug/L	0.300	1.00
75-25-2	Bromoform		47.5	ug/L	0.300	1.00
74-83-9	Bromomethane		34.0	ug/L	0.300	1.00
75-15-0	Carbon disulfide		182	ug/L	1.50	5.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2014-3481	Date Collected: 06/02/2014 11:46	Matrix: W
Lab Sample ID: 1203108904	Date Received: 06/04/2014 08:55	
Client Sample: QC for batch 1395841	Client: ARSL004	Project: QC
Client ID: CAPU-14-79426PSD	Method: SW846 8260B DOE-AL	SOP Ref: GL-OA-E-038
Batch ID: 1395841	Inst: VOAA.I	Dilution: 1
Run Date: 06/13/2014 22:45	Analyst: JEB	Purge Vol: 5 mL
Prep Date: 06/13/2014 22:45		
Data File: 061314\AJ525.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
56-23-5	Carbon tetrachloride		42.4	ug/L	0.300	1.00
108-90-7	Chlorobenzene		38.1	ug/L	0.300	1.00
75-00-3	Chloroethane		40.9	ug/L	0.300	1.00
67-66-3	Chloroform		39.4	ug/L	0.300	1.00
74-87-3	Chloromethane		36.3	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		47.2	ug/L	0.300	1.00
74-95-3	Dibromomethane		39.4	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		32.5	ug/L	0.300	1.00
60-29-7	Ethyl ether		43.0	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		38.5	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		40.4	ug/L	0.300	1.00
74-88-4	Iodomethane		181	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		39.4	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.00	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride		33.3	ug/L	3.00	10.0
91-20-3	Naphthalene		40.2	ug/L	0.400	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		40.9	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		38.7	ug/L	0.300	1.00
108-88-3	Toluene		37.9	ug/L	0.300	1.00
79-01-6	Trichloroethylene		37.6	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		45.3	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	1.50	5.00
108-05-4	Vinyl acetate		215	ug/L	1.50	5.00
75-01-4	Vinyl chloride		39.9	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		37.8	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		40.6	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		76.5	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		4050	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		38.2	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		37.4	ug/L	0.300	1.00
95-47-6	o-Xylene		39.7	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		39.2	ug/L	0.300	1.00
1634-04-4	tert-Butyl methyl ether		38.8	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		39.8	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2014-3481	Date Collected:	06/02/2014 11:46	Matrix:	W
Lab Sample ID:	1203108904	Date Received:	06/04/2014 08:55		
Client Sample:	QC for batch 1395841	Client:	ARSL004	Project:	QC
Client ID:	CAPU-14-79426PSD	Method:	SW846 8260B DOE-AL	SOP Ref:	GL-OA-E-038
Batch ID:	1395841	Inst:	VOAA.I	Dilution:	1
Run Date:	06/13/2014 22:45	Analyst:	JEB	Purge Vol:	5 mL
Prep Date:	06/13/2014 22:45				
Data File:	061314\AJ525.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
156-60-5	trans-1,2-Dichloroethylene		36.7	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		43.1	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	52.2	50.0	ug/L	104	(78%-124%)
Bromofluorobenzene	51.4	50.0	ug/L	103	(80%-120%)
Toluene-d8	51.5	50.0	ug/L	103	(80%-120%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2014-3481	Date Collected: 06/02/2014 11:46	Matrix: W
Lab Sample ID: 1203108905	Date Received: 06/04/2014 08:55	
Client Sample: QC for batch 1395841	Client: ARSL004	Project: QC
Client ID: CAPU-14-79426PSD	Method: SW846 8260B DOE-AL	SOP Ref: GL-OA-E-038
Batch ID: 1395841	Inst: VOAA.I	Dilution: 1
Run Date: 06/13/2014 23:34	Analyst: JEB	Purge Vol: 5 mL
Prep Date: 06/13/2014 23:34		
Data File: 061314\AJ527.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/L	2.00	5.00
126-99-8	2-Chloro-1,3-butadiene		47.3	ug/L	0.200	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	3.00	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein		210	ug/L	1.50	5.00
107-13-1	Acrylonitrile		225	ug/L	1.00	5.00
107-05-1	Allyl chloride		215	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00
74-83-9	Bromomethane	U	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	5.00	ug/L	1.50	5.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2014-3481	Date Collected: 06/02/2014 11:46	Matrix: W
Lab Sample ID: 1203108905	Date Received: 06/04/2014 08:55	
Client Sample: QC for batch 1395841	Client: ARSL004	Project: QC
Client ID: CAPU-14-79426PSD	Method: SW846 8260B DOE-AL	SOP Ref: GL-OA-E-038
Batch ID: 1395841	Inst: VOAA.I	Dilution: 1
Run Date: 06/13/2014 23:34	Analyst: JEB	Purge Vol: 5 mL
Prep Date: 06/13/2014 23:34		
Data File: 061314\AJ527.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
56-23-5	Carbon tetrachloride	U	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	U	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate		234	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol		2270	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		242	ug/L	1.00	5.00
80-62-6	Methyl methacrylate		242	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	3.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.400	1.00
107-12-0	Propionitrile		239	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane		220	ug/L	1.50	5.00
108-05-4	Vinyl acetate	U	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	U	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	1.00	ug/L	0.300	1.00
1634-04-4	tert-Butyl methyl ether	U	1.00	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene	U	1.00	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2014-3481	Date Collected:	06/02/2014 11:46	Matrix:	W
Lab Sample ID:	1203108905	Date Received:	06/04/2014 08:55		
Client Sample:	QC for batch 1395841	Client:	ARSL004	Project:	QC
Client ID:	CAPU-14-79426PSD	Method:	SW846 8260B DOE-AL	SOP Ref:	GL-OA-E-038
Batch ID:	1395841	Inst:	VOAA.I	Dilution:	1
Run Date:	06/13/2014 23:34	Analyst:	JEB	Purge Vol:	5 mL
Prep Date:	06/13/2014 23:34				
Data File:	061314\AJ527.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
156-60-5	trans-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits	
1,2-Dichloroethane-d4	51.3	50.0	ug/L	103	(78%-124%)
Bromofluorobenzene	51.6	50.0	ug/L	103	(80%-120%)
Toluene-d8	50.8	50.0	ug/L	102	(80%-120%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2014-3481		Matrix:	WATER
Lab Sample ID: 1203108906			
Client Sample: QC for batch 1395841	Client: ARSL004	Project:	QC
Client ID: LCS for batch 1395841	Method: SW846 8260B DOE-AL	SOP Ref:	GL-OA-E-038
Batch ID: 1395841	Inst: VOAA.I	Dilution:	1
Run Date: 06/13/2014 13:40	Analyst: JEB	Purge Vol:	5 mL
Prep Date: 06/13/2014 13:40			
Data File: 061314\AJ503AR.D	Column: DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		57.0	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		56.5	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		54.4	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		51.4	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		50.1	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		52.2	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		53.1	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		55.9	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		54.6	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		57.6	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		56.0	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		54.0	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		48.7	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		49.2	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		56.8	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		55.0	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		49.8	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		53.9	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		58.6	ug/L	0.300	1.00
78-93-3	2-Butanone		217	ug/L	2.00	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene		55.5	ug/L	0.300	1.00
591-78-6	2-Hexanone		258	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene		55.3	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		58.6	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		269	ug/L	1.50	5.00
67-64-1	Acetone		224	ug/L	2.50	10.0
75-05-8	Acetonitrile		1210	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene		49.2	ug/L	0.300	1.00
108-86-1	Bromobenzene		54.1	ug/L	0.300	1.00
74-97-5	Bromochloromethane		50.7	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		55.3	ug/L	0.300	1.00
75-25-2	Bromoform		51.4	ug/L	0.300	1.00
74-83-9	Bromomethane		52.4	ug/L	0.300	1.00
75-15-0	Carbon disulfide		267	ug/L	1.50	5.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2014-3481		Matrix:	WATER
Lab Sample ID: 1203108906			
Client Sample: QC for batch 1395841	Client: ARSL004	Project:	QC
Client ID: LCS for batch 1395841	Method: SW846 8260B DOE-AL	SOP Ref:	GL-OA-E-038
Batch ID: 1395841	Inst: VOAA.I	Dilution:	1
Run Date: 06/13/2014 13:40	Analyst: JEB	Purge Vol:	5 mL
Prep Date: 06/13/2014 13:40			
Data File: 061314\AJ503AR.D	Column: DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
56-23-5	Carbon tetrachloride		58.7	ug/L	0.300	1.00
108-90-7	Chlorobenzene		51.4	ug/L	0.300	1.00
75-00-3	Chloroethane		52.0	ug/L	0.300	1.00
67-66-3	Chloroform		51.2	ug/L	0.300	1.00
74-87-3	Chloromethane		50.7	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		50.8	ug/L	0.300	1.00
74-95-3	Dibromomethane		50.3	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		53.6	ug/L	0.300	1.00
60-29-7	Ethyl ether		48.6	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		53.0	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		60.0	ug/L	0.300	1.00
74-88-4	Iodomethane		256	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		57.0	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride		44.8	ug/L	1.70	10.0
91-20-3	Naphthalene		55.3	ug/L	0.600	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		56.3	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		53.9	ug/L	0.300	1.00
108-88-3	Toluene		51.5	ug/L	0.300	1.00
79-01-6	Trichloroethylene		51.2	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		55.2	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	1.50	5.00
108-05-4	Vinyl acetate		284	ug/L	1.50	5.00
75-01-4	Vinyl chloride		53.0	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		50.3	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		54.7	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		105	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		5180	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		59.2	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		56.9	ug/L	0.300	1.00
95-47-6	o-Xylene		52.7	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		57.6	ug/L	0.300	1.00
1634-04-4	tert-Butyl methyl ether		49.4	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		57.2	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2014-3481	Matrix:	WATER
Lab Sample ID:	1203108906		
Client Sample:	QC for batch 1395841	Client:	ARSL004
Client ID:	LCS for batch 1395841	Method:	SW846 8260B DOE-AL
Batch ID:	1395841	Inst:	VOAA.I
Run Date:	06/13/2014 13:40	Analyst:	JEB
Prep Date:	06/13/2014 13:40		
Data File:	061314\AJ503AR.D	Column:	DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
156-60-5	trans-1,2-Dichloroethylene		50.9	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		57.8	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	46.6	50.0	93.2	(78%-124%)
Bromofluorobenzene	47.8	50.0	95.6	(80%-120%)
Toluene-d8	46.3	50.0	92.7	(80%-120%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2014-3481	Matrix: WATER
Lab Sample ID: 1203108907	
Client Sample: QC for batch 1395841	Client: ARSL004
Client ID: LCS for batch 1395841	Method: SW846 8260B DOE-AL
Batch ID: 1395841	Project: QC
Run Date: 06/13/2014 15:24	SOP Ref: GL-OA-E-038
Prep Date: 06/13/2014 15:24	Dilution: 1
Data File: 061314\AJ507AR.D	Purge Vol: 5 mL
	Analyst: JEB
	Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/L	2.00	5.00
126-99-8	2-Chloro-1,3-butadiene		51.0	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	2.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein		238	ug/L	1.50	5.00
107-13-1	Acrylonitrile		231	ug/L	1.50	5.00
107-05-1	Allyl chloride		228	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00
74-83-9	Bromomethane	U	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	5.00	ug/L	1.50	5.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2014-3481	Matrix: WATER
Lab Sample ID: 1203108907	
Client Sample: QC for batch 1395841	Client: ARSL004
Client ID: LCS for batch 1395841	Method: SW846 8260B DOE-AL
Batch ID: 1395841	Project: QC
Run Date: 06/13/2014 15:24	SOP Ref: GL-OA-E-038
Prep Date: 06/13/2014 15:24	Dilution: 1
Data File: 061314\AJ507AR.D	Purge Vol: 5 mL
	Analyst: JEB
	Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
56-23-5	Carbon tetrachloride	U	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	U	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate		248	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol		2390	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		245	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		252	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	1.70	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.600	1.00
107-12-0	Propionitrile		246	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane		228	ug/L	1.50	5.00
108-05-4	Vinyl acetate	U	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	U	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	1.00	ug/L	0.300	1.00
1634-04-4	tert-Butyl methyl ether	U	1.00	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene	U	1.00	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2014-3481	Matrix:	WATER
Lab Sample ID:	1203108907		
Client Sample:	QC for batch 1395841	Client:	ARSL004
Client ID:	LCS for batch 1395841	Method:	SW846 8260B DOE-AL
Batch ID:	1395841	Inst:	VOAA.I
Run Date:	06/13/2014 15:24	Analyst:	JEB
Prep Date:	06/13/2014 15:24	Purge Vol:	5 mL
Data File:	061314\AJ507AR.D	Column:	DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
156-60-5	trans-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	50.3	50.0	101	(78%-124%)
Bromofluorobenzene	50.3	50.0	101	(80%-120%)
Toluene-d8	49.9	50.0	99.9	(80%-120%)

Miscellaneous

DATA EXCEPTION REPORT

Mo.Day Yr. 17-JUN-14	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: VOA GC/MS	Test / Method: SW846 8260B DOE-AL	Matrix Type: Liquid	Client Code: ESHL
Batch ID: 1395841	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 349927(2014-3481),349932(2014-3483) Application Issues: Failed Recovery for MS/PS Failed Recovery for MSD/PSD			
Specification and Requirements Exception Description:		DER Disposition:	
The MS (1203108902) & MSD (1203108904) did not meet spike recovery limits for several analytes.		The spike and spike duplicate did not meet the acceptance limits. The results between the spike and spike duplicate were similar. Matrix interference has been demonstrated.	

Originator's Name:

John Bell, Jr. 17-JUN-14

Data Validator/Group Leader:

Kelle Bellamy 01-JUL-14

Semi-Volatile Analysis

Case Narrative

**Semi-Volatile Case Narrative
ARS International, LLC (ARSL)
SDG 2014-3481**

Method/Analysis Information

Procedure:	Analysis of Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry
Analytical Method:	SW846 3510C/8270D
Prep Method:	SW846 3510C
Analytical Batch Number:	1393338
Prep Batch Number:	1393337

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 3510C/8270D:

Sample ID	Client ID
349927003	CAPU-14-79426
349927013	CAPU-14-79432
1203102430	Method Blank (MB)
1203102431	Laboratory Control Sample (LCS)
1203102432	349932001(WST09-14-74376) Matrix Spike (MS)
1203102433	349932001(WST09-14-74376) 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-009 REV# 32.

Raw data reports are processed and reviewed by the analyst using the data analysis software package. False positives have been removed from the quantitation reports per standard operating procedures (SOP).

Calibration Information

A complete list of the initial calibration data files are shown in the Calibration History report located in the Standard Data section of the data package. The various calibration mixes may not be calibrated using all of the calibration levels. In addition, not all of the mixes are calibrated using the same levels.

Diphenylamine has now superseded N-Nitroso-diphenylamine on Quantitation Reports, Initial Calibration Reports, Calibration Check Standard Reports, etc. Previous versions of EPA Methodologies referenced N-Nitroso-diphenylamine. However, as stated in EPA Methodology, "N-Nitroso-diphenylamine decomposes in

the gas chromatographic inlet and cannot be separated from Diphenylamine." Studies of these two compounds at GEL, both independent of each other and together, showed that they not only co-elute, but also have similar mass spectra. N-Nitroso-diphenylamine and Diphenylamine will be reported as Diphenylamine on all reports and forms.

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG) in this batch. A second source initial calibration verification (ICV) was included in the standard section directly behind the initial calibration.

CCV Requirements

All Calibration Verification Standards (CCV) did not meet the acceptance criteria as outlined in Method 8270D. However, the method allows for a designated number of outliers dependent on the requested analyte list. This SDG satisfied the 8270D outlier acceptance criteria. Detected concentrations of these analytes should be considered as estimated.

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG in this batch met the acceptance criteria.

Surrogate Recoveries

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

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

QC Sample Designation

Sample 349932001 (WST09-14-74376) was selected for analysis as the matrix spike and matrix spike duplicate.

Matrix Spike (MS) Recovery Statement

The MS recoveries were within the established acceptance limits.

Matrix Spike Duplicate (MSD) Recovery Statement

The MSD recoveries were within the established acceptance limits.

MS/MSD Relative Percent Difference (RPD) Statement

The MS(1203102432)/MSD(1203102433) RPD value for Benzidine was 103%. The limit is 30%. Since Benzidine was individually within the acceptance limits for the MS and MSD, the non-conformance had no adverse impact on the data and the results have been reported.

Internal Standard (ISTD) Acceptance

The internal standard responses used to quantitate the requested target analytes were within the required acceptance criteria for the SDG associated samples in this batch.

Technical Information:

Holding Time Specifications

All samples in this SDG in this batch met the specified holding time. GEL assigns holding times based on the associated methodology that assigns the date and time from sample collection or 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. All reported compound mass spectra met the detection

specifications in the method.

Sample Dilutions

The samples in this SDG in this batch did not require dilutions.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG in this analytical batch unless confirmations or dilutions were required.

Miscellaneous Information:

Data Exception (DER) Documentation

The following DER was generated for this SDG: 1301994.

Manual Integrations

Some initial calibration standards, continuing calibration standards, and/or samples may require manual integrations due to software limitations. Manual integrations, if any, are included with the raw data.

TIC Comment

Tentatively identified compounds (TIC) may be requested for samples 1203102430 (MB), 349927003 (CAPU-14-79426) and 349927013 (CAPU-14-79432) in this delivery group/work order. Please note that non-requested calibrated analytes detected in a client sample may be reported on the Form 1/Certificate of Analysis as TICs. TIC data, if requested, are included on the Sample Data Summary (Form 1) and are also included with the sample raw data.

Additional Comments

The additional comments field is used to address special issues associated with each analysis, clarify method/contractual issues pertaining to the analysis, and to list any report documents generated as a result of sample analysis or review. The following additional comments were required:

Due to rounding differences in the calculation, the data reported in the Surrogate Recovery Report may differ slightly from the raw data. Due to software issue, the raw data may not correctly display the updated SPC limits. Please see Sample Data Summary Report and Surrogate Recovery Report for the correct surrogate acceptance limits.

Electronic Package Comment

The following package was generated using an electronic data processing program referred to as "virtual packaging". In an effort to increase quality and efficiency, the laboratory is developing systems to eventually 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 of each electronic package will indicate the reviewer name associated with the generation of the data and package. 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.

System Configuration

The Semi-Volatile-GC/MS analysis was performed on the following instrument configuration:

Instrument ID	Instrument	System Configuration	Column ID	Column Description
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MSD5.I	Agilent 6890/5973 GC/MS w/ 7683 Autosampler	HP6890/HP5973	DB-5MS	25m x 0.2mm, 0.33um (5% Phenylmethylpolysiloxane)
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Certification Statement

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

GEL LABORATORIES LLC

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

Qualifier Definition Report for

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

Client SDG: 2014-3481 GEL Work Order: 349927

The Qualifiers in this report are defined as follows:

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

Review/Validation

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

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

Signature: 

Name: Barbara Bailey

Date: 23 JUN 2014

Title: Data Validator

Sample Data Summary

**Semi-Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2014-3481

Lab Sample ID: 349927003

Date Collected: 06/02/2014 11:46

Date Received: 06/04/2014 08:55

Matrix: W

Client: ARSL004

Project: ESHL00714

Method: SW846 3510C/8270D

SOP Ref: GL-OA-E-009

Inst: MSD5.I

Dilution: 1

Batch ID: 1393338

Run Date: 06/05/2014 13:24

Analyst: RMB

Inj. Vol: 1 uL

Prep Date: 06/05/2014 06:20

Aliquot: 960 mL

Final Volume: 1 mL

Data File: s060514.b\s5F0506.D

Column: DB-5ms

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene	U	10.4	ug/L	3.13	10.4
120-82-1	1,2,4-Trichlorobenzene	U	10.4	ug/L	3.13	10.4
95-50-1	1,2-Dichlorobenzene	U	10.4	ug/L	3.13	10.4
122-66-7	Azobenzene	U	10.4	ug/L	3.13	10.4
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene	U	10.4	ug/L	3.13	10.4
106-46-7	1,4-Dichlorobenzene	U	10.4	ug/L	3.13	10.4
123-91-1	1,4-Dioxane	U	10.4	ug/L	3.13	10.4
58-90-2	2,3,4,6-Tetrachlorophenol	U	10.4	ug/L	3.13	10.4
95-95-4	2,4,5-Trichlorophenol	U	10.4	ug/L	3.13	10.4
88-06-2	2,4,6-Trichlorophenol	U	10.4	ug/L	3.13	10.4
120-83-2	2,4-Dichlorophenol	U	10.4	ug/L	3.13	10.4
105-67-9	2,4-Dimethylphenol	U	10.4	ug/L	3.13	10.4
51-28-5	2,4-Dinitrophenol	U	20.8	ug/L	5.21	20.8
121-14-2	2,4-Dinitrotoluene	U	10.4	ug/L	3.13	10.4
606-20-2	2,6-Dinitrotoluene	U	10.4	ug/L	3.13	10.4
91-58-7	2-Chloronaphthalene	U	1.04	ug/L	0.427	1.04
95-57-8	2-Chlorophenol	U	10.4	ug/L	3.13	10.4
534-52-1	2-Methyl-4,6-dinitrophenol	U	10.4	ug/L	3.13	10.4
88-75-5	2-Nitrophenol	U	10.4	ug/L	3.13	10.4
91-94-1	3,3'-Dichlorobenzidine	U	10.4	ug/L	3.13	10.4
101-55-3	4-Bromophenylphenylether	U	10.4	ug/L	3.13	10.4
59-50-7	Parachlorometa cresol	U	10.4	ug/L	3.13	10.4
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline	U	10.4	ug/L	3.44	10.4
7005-72-3	4-Chlorophenylphenylether	U	10.4	ug/L	3.13	10.4
100-02-7	4-Nitrophenol	U	10.4	ug/L	3.13	10.4
62-53-3	Aniline	U	10.4	ug/L	4.38	10.4
1912-24-9	Atrazine	U	10.4	ug/L	3.13	10.4
92-87-5	Benzidine	U	10.4	ug/L	4.06	10.4
65-85-0	Benzoic acid	U	20.8	ug/L	6.25	20.8
100-51-6	Benzyl alcohol	U	10.4	ug/L	3.13	10.4
85-68-7	Butylbenzylphthalate	U	10.4	ug/L	3.13	10.4
84-74-2	Di-n-butylphthalate	U	10.4	ug/L	3.13	10.4
117-84-0	Di-n-octylphthalate	U	10.4	ug/L	3.13	10.4
132-64-9	Dibenzofuran	U	10.4	ug/L	3.13	10.4
84-66-2	Diethylphthalate	U	10.4	ug/L	3.13	10.4
131-11-3	Dimethylphthalate	U	10.4	ug/L	3.13	10.4
88-85-7	Dinoseb	U	10.4	ug/L	3.13	10.4

**Semi-Volatile
Certificate of Analysis
Sample Summary**

Page 2 of 2

SDG Number: 2014-3481

Lab Sample ID: 349927003

Date Collected: 06/02/2014 11:46

Date Received: 06/04/2014 08:55

Matrix: W

Client: ARSL004

Project: ESHL00714

Client ID: CAPU-14-79426

Method: SW846 3510C/8270D

SOP Ref: GL-OA-E-009

Batch ID: 1393338

Inst: MSD5.I

Dilution: 1

Run Date: 06/05/2014 13:24

Analyst: RMB

Inj. Vol: 1 uL

Prep Date: 06/05/2014 06:20

Aliquot: 960 mL

Final Volume: 1 mL

Data File: s060514.b\s5F0506.D

Column: DB-5ms

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
122-39-4	Diphenylamine	U	10.4	ug/L	3.13	10.4
87-68-3	Hexachlorobutadiene	U	10.4	ug/L	3.13	10.4
77-47-4	Hexachlorocyclopentadiene	U	10.4	ug/L	3.13	10.4
67-72-1	Hexachloroethane	U	10.4	ug/L	3.13	10.4
78-59-1	Isophorone	U	10.4	ug/L	3.65	10.4
62-75-9	N-Methyl-N-nitrosomethylamine	U	10.4	ug/L	3.13	10.4
924-16-3	N-Nitrosodi-n-butylamine	U	10.4	ug/L	3.13	10.4
55-18-5	N-Nitrosodiethylamine	U	10.4	ug/L	3.13	10.4
621-64-7	N-Nitrosodi--n-propylamine	U	10.4	ug/L	3.13	10.4
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine	U	10.4	ug/L	3.13	10.4
98-95-3	Nitrobenzene	U	10.4	ug/L	3.13	10.4
608-93-5	Pentachlorobenzene	U	10.4	ug/L	3.13	10.4
108-95-2	Phenol	U	10.4	ug/L	3.13	10.4
110-86-1	Pyridine	U	10.4	ug/L	3.13	10.4
108-60-1	bis(2-Chloro-1-methylethyl)ether	U	10.4	ug/L	3.13	10.4
111-91-1	bis(2-Chloroethoxy)methane	U	10.4	ug/L	3.13	10.4
111-44-4	bis(2-Chloroethyl) ether	U	10.4	ug/L	3.13	10.4
117-81-7	bis(2-Ethylhexyl)phthalate	U	10.4	ug/L	3.13	10.4
65794-96-9	m,p-Cresols	U	10.4	ug/L	3.85	10.4
99-09-2	3-Nitroaniline	U	10.4	ug/L	3.13	10.4
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol	U	10.4	ug/L	3.13	10.4
88-74-4	2-Nitroaniline	U	10.4	ug/L	3.13	10.4
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline	U	10.4	ug/L	3.13	10.4
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	66.7	104	ug/L	64.0	(26%-129%)
2-Fluorobiphenyl	32.4	52.1	ug/L	62.2	(32%-102%)
2-Fluorophenol	40.8	104	ug/L	39.1	(10%-78%)
Nitrobenzene-d5	33.8	52.1	ug/L	65.0	(36%-125%)
Phenol-d5	26.3	104	ug/L	25.3	(10%-104%)
p-Terphenyl-d14	37.6	52.1	ug/L	72.3	(34%-135%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
No Tentatively Identified Compounds Found				ug/L		

**Semi-Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2014-3481

Lab Sample ID: 349927013

Date Collected: 06/02/2014 12:05

Date Received: 06/04/2014 08:55

Matrix: W

Client: ARSL004

Project: ESHL00714

Method: SW846 3510C/8270D

SOP Ref: GL-OA-E-009

Inst: MSD5.I

Dilution: 1

Batch ID: 1393338

Run Date: 06/05/2014 13:55

Analyst: RMB

Inj. Vol: 1 uL

Prep Date: 06/05/2014 06:20

Aliquot: 980 mL

Final Volume: 1 mL

Data File: s060514.b\s5F0507.D

Column: DB-5ms

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene	U	10.2	ug/L	3.06	10.2
120-82-1	1,2,4-Trichlorobenzene	U	10.2	ug/L	3.06	10.2
95-50-1	1,2-Dichlorobenzene	U	10.2	ug/L	3.06	10.2
122-66-7	Azobenzene	U	10.2	ug/L	3.06	10.2
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene	U	10.2	ug/L	3.06	10.2
106-46-7	1,4-Dichlorobenzene	U	10.2	ug/L	3.06	10.2
123-91-1	1,4-Dioxane	U	10.2	ug/L	3.06	10.2
58-90-2	2,3,4,6-Tetrachlorophenol	U	10.2	ug/L	3.06	10.2
95-95-4	2,4,5-Trichlorophenol	U	10.2	ug/L	3.06	10.2
88-06-2	2,4,6-Trichlorophenol	U	10.2	ug/L	3.06	10.2
120-83-2	2,4-Dichlorophenol	U	10.2	ug/L	3.06	10.2
105-67-9	2,4-Dimethylphenol	U	10.2	ug/L	3.06	10.2
51-28-5	2,4-Dinitrophenol	U	20.4	ug/L	5.10	20.4
121-14-2	2,4-Dinitrotoluene	U	10.2	ug/L	3.06	10.2
606-20-2	2,6-Dinitrotoluene	U	10.2	ug/L	3.06	10.2
91-58-7	2-Chloronaphthalene	U	1.02	ug/L	0.418	1.02
95-57-8	2-Chlorophenol	U	10.2	ug/L	3.06	10.2
534-52-1	2-Methyl-4,6-dinitrophenol	U	10.2	ug/L	3.06	10.2
88-75-5	2-Nitrophenol	U	10.2	ug/L	3.06	10.2
91-94-1	3,3'-Dichlorobenzidine	U	10.2	ug/L	3.06	10.2
101-55-3	4-Bromophenylphenylether	U	10.2	ug/L	3.06	10.2
59-50-7	Parachlorometa cresol	U	10.2	ug/L	3.06	10.2
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline	U	10.2	ug/L	3.37	10.2
7005-72-3	4-Chlorophenylphenylether	U	10.2	ug/L	3.06	10.2
100-02-7	4-Nitrophenol	U	10.2	ug/L	3.06	10.2
62-53-3	Aniline	U	10.2	ug/L	4.29	10.2
1912-24-9	Atrazine	U	10.2	ug/L	3.06	10.2
92-87-5	Benzidine	U	10.2	ug/L	3.98	10.2
65-85-0	Benzoic acid	U	20.4	ug/L	6.12	20.4
100-51-6	Benzyl alcohol	U	10.2	ug/L	3.06	10.2
85-68-7	Butylbenzylphthalate	U	10.2	ug/L	3.06	10.2
84-74-2	Di-n-butylphthalate	U	10.2	ug/L	3.06	10.2
117-84-0	Di-n-octylphthalate	U	10.2	ug/L	3.06	10.2
132-64-9	Dibenzofuran	U	10.2	ug/L	3.06	10.2
84-66-2	Diethylphthalate	U	10.2	ug/L	3.06	10.2
131-11-3	Dimethylphthalate	U	10.2	ug/L	3.06	10.2
88-85-7	Dinoseb	U	10.2	ug/L	3.06	10.2

**Semi-Volatile
Certificate of Analysis
Sample Summary**

Page 2 of 2

SDG Number: 2014-3481

Lab Sample ID: 349927013

Date Collected: 06/02/2014 12:05

Date Received: 06/04/2014 08:55

Matrix: W

Client: ARSL004

Project: ESHL00714

Method: SW846 3510C/8270D

SOP Ref: GL-OA-E-009

Inst: MSD5.I

Dilution: 1

Batch ID: 1393338

Analyst: RMB

Inj. Vol: 1 uL

Run Date: 06/05/2014 13:55

Aliquot: 980 mL

Final Volume: 1 mL

Prep Date: 06/05/2014 06:20

Data File: s060514.b\s5F0507.D

Column: DB-5ms

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
122-39-4	Diphenylamine	U	10.2	ug/L	3.06	10.2
87-68-3	Hexachlorobutadiene	U	10.2	ug/L	3.06	10.2
77-47-4	Hexachlorocyclopentadiene	U	10.2	ug/L	3.06	10.2
67-72-1	Hexachloroethane	U	10.2	ug/L	3.06	10.2
78-59-1	Isophorone	U	10.2	ug/L	3.57	10.2
62-75-9	N-Methyl-N-nitrosomethylamine	U	10.2	ug/L	3.06	10.2
924-16-3	N-Nitrosodi-n-butylamine	U	10.2	ug/L	3.06	10.2
55-18-5	N-Nitrosodiethylamine	U	10.2	ug/L	3.06	10.2
621-64-7	N-Nitrosodi--n-propylamine	U	10.2	ug/L	3.06	10.2
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine	U	10.2	ug/L	3.06	10.2
98-95-3	Nitrobenzene	U	10.2	ug/L	3.06	10.2
608-93-5	Pentachlorobenzene	U	10.2	ug/L	3.06	10.2
108-95-2	Phenol	U	10.2	ug/L	3.06	10.2
110-86-1	Pyridine	U	10.2	ug/L	3.06	10.2
108-60-1	bis(2-Chloro-1-methylethyl)ether	U	10.2	ug/L	3.06	10.2
111-91-1	bis(2-Chloroethoxy)methane	U	10.2	ug/L	3.06	10.2
111-44-4	bis(2-Chloroethyl) ether	U	10.2	ug/L	3.06	10.2
117-81-7	bis(2-Ethylhexyl)phthalate	U	10.2	ug/L	3.06	10.2
65794-96-9	m,p-Cresols	U	10.2	ug/L	3.78	10.2
99-09-2	3-Nitroaniline	U	10.2	ug/L	3.06	10.2
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol	U	10.2	ug/L	3.06	10.2
88-74-4	2-Nitroaniline	U	10.2	ug/L	3.06	10.2
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline	U	10.2	ug/L	3.06	10.2
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
2,4,6-Tribromophenol	76.1	102	ug/L 74.5	(26%-129%)
2-Fluorobiphenyl	35.4	51.0	ug/L 69.4	(32%-102%)
2-Fluorophenol	45.7	102	ug/L 44.8	(10%-78%)
Nitrobenzene-d5	38.7	51.0	ug/L 75.9	(36%-125%)
Phenol-d5	29.8	102	ug/L 29.2	(10%-104%)
p-Terphenyl-d14	36.5	51.0	ug/L 71.5	(34%-135%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown	20.563	5.06	ug/L	0	J
	unknown	22.763	18	ug/L	0	J

Quality Control Summary

Semi-Volatile
Surrogate Recovery Report

Page 1 of 1

SDG Number: 2014-3481**Matrix Type: LIQUID**

Sample ID	Client ID	2FP %REC	PHL %REC	NBZ %REC	FBP %REC	TBP %REC	TPH %REC
1203102430	MB for batch 1393337	37	24	66	61	61	75
1203102431	LCS for batch 1393337	40	25	68	63	64	62
349927003	CAPU-14-79426	39	25	65	62	64	72
349927013	CAPU-14-79432	45	29	76	69	75	71
1203102432	WST09-14-74376MS	55	40	76	75	76	70
1203102433	WST09-14-74376MSD	57	45	75	74	79	82

Surrogate**Acceptance Limits**

2FP	= 2-Fluorophenol	(10%-78%)
PHL	= Phenol-d5	(10%-104%)
NBZ	= Nitrobenzene-d5	(36%-125%)
FBP	= 2-Fluorobiphenyl	(32%-102%)
TBP	= 2,4,6-Tribromophenol	(26%-129%)
TPH	= p-Terphenyl-d14	(34%-135%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 3

SDG Number: 2014-3481

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1393337

Matrix: WATER

Lab Sample ID 1203102431

Instrument: MSD5.I

Analysis Date: 06/05/2014 12:44

Dilution: 1

Analyst: RMB

Prep Batch ID:1393337

Inj. Vol: 1 uL

Batch ID: 1393338

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
62-75-9	LCS N-Methyl-N-nitrosomethylam	50.0	0.0	21.6	43	18-75
110-86-1	LCS Pyridine	50.0	0.0	28.8	58	11-88
62-53-3	LCS Aniline	50.0	0.0	39.4	79	35-107
108-95-2	LCS Phenol	50.0	0.0	13.9	28	13-77
111-44-4	LCS bis(2-Chloroethyl) ether	50.0	0.0	35.7	71	35-111
95-57-8	LCS 2-Chlorophenol	50.0	0.0	32.6	65	39-99
541-73-1	LCS 1,3-Dichlorobenzene	50.0	0.0	26.3	53	25-100
106-46-7	LCS 1,4-Dichlorobenzene	50.0	0.0	26.2	52	24-88
95-50-1	LCS 1,2-Dichlorobenzene	50.0	0.0	26.4	53	27-87
108-60-1	LCS bis(2-Chloro-1-methylethyl)et	50.0	0.0	34.3	69	23-120
100-51-6	LCS Benzyl alcohol	50.0	0.0	31.5	63	33-90
95-48-7	LCS o-Cresol	50.0	0.0	30.2	60	32-90
65794-96-9	LCS m,p-Cresols	50.0	0.0	31.0	62	28-100
621-64-7	LCS N-Nitrosodi--n-propylamine <i>N-Nitrosodipropylamine</i>	50.0	0.0	39.1	78	39-113
67-72-1	LCS Hexachloroethane	50.0	0.0	25.6	51	20-85
98-95-3	LCS Nitrobenzene	50.0	0.0	35.8	72	41-119
78-59-1	LCS Isophorone	50.0	0.0	39.0	78	49-133
88-75-5	LCS 2-Nitrophenol	50.0	0.0	33.4	67	42-111
105-67-9	LCS 2,4-Dimethylphenol	50.0	0.0	32.9	66	43-99
111-91-1	LCS bis(2-Chloroethoxy)methane	50.0	0.0	36.0	72	44-109
120-83-2	LCS 2,4-Dichlorophenol	50.0	0.0	33.7	67	45-106
65-85-0	LCS Benzoic acid	100	0.0	20.3	20	10-81

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 2 of 3

SDG Number: 2014-3481

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1393337

Matrix: WATER

Lab Sample ID 1203102431

Instrument: MSD5.I

Analysis Date: 06/05/2014 12:44

Dilution: 1

Analyst: RMB

Prep Batch ID: 1393337

Inj. Vol: 1 uL

Batch ID: 1393338

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
106-47-8	LCS 4-Chloroaniline	50.0	0.0	36.9	74	50-122
87-68-3	LCS Hexachlorobutadiene	50.0	0.0	24.9	50	19-92
59-50-7	LCS Parachlorometa cresol 4-Chloro-3-methylphenol	50.0	0.0	35.9	72	46-111
77-47-4	LCS Hexachlorocyclopentadiene	50.0	0.0	19.6	39	15-72
88-06-2	LCS 2,4,6-Trichlorophenol	50.0	0.0	33.2	66	41-109
95-95-4	LCS 2,4,5-Trichlorophenol	50.0	0.0	34.0	68	41-111
91-58-7	LCS 2-Chloronaphthalene	50.0	0.0	28.5	57	36-98
88-74-4	LCS 2-Nitroaniline o-Nitroaniline	50.0	0.0	36.6	73	44-117
99-09-2	LCS 3-Nitroaniline m-Nitroaniline	50.0	0.0	36.1	72	45-124
131-11-3	LCS Dimethylphthalate	50.0	0.0	37.8	76	53-112
606-20-2	LCS 2,6-Dinitrotoluene	50.0	0.0	35.5	71	52-117
121-14-2	LCS 2,4-Dinitrotoluene	50.0	0.0	35.7	71	45-124
51-28-5	LCS 2,4-Dinitrophenol	50.0	0.0	24.8	50	19-110
132-64-9	LCS Dibenzofuran	50.0	0.0	33.1	66	45-107
58-90-2	LCS 2,3,4,6-Tetrachlorophenol	50.0	0.0	34.5	69	45-120
84-66-2	LCS Diethylphthalate	50.0	0.0	38.8	78	51-116
100-02-7	LCS 4-Nitrophenol	50.0	0.0	11.4	23	16-77
7005-72-3	LCS 4-Chlorophenylphenylether	50.0	0.0	33.6	67	40-114
100-01-6	LCS 4-Nitroaniline p-Nitroaniline	50.0	0.0	37.4	75	38-133
534-52-1	LCS 2-Methyl-4,6-dinitrophenol	50.0	0.0	29.4	59	34-114
122-39-4	LCS Diphenylamine	50.0	0.0	31.9	64	47-111
122-66-7	LCS Azobenzene 1,2-Diphenylhydrazine	50.0	0.0	34.5	69	40-112

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 3 of 3

SDG Number: 2014-3481

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1393337

Matrix: WATER

Lab Sample ID 1203102431

Instrument: MSD5.I

Analysis Date: 06/05/2014 12:44

Dilution: 1

Analyst: RMB

Prep Batch ID: 1393337

Inj. Vol: 1 uL

Batch ID: 1393338

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
101-55-3	LCS 4-Bromophenylphenylether	50.0	0.0	34.4	69	41-113
84-74-2	LCS Di-n-butylphthalate	50.0	0.0	39.0	78	49-116
85-68-7	LCS Butylbenzylphthalate	50.0	0.0	33.7	67	40-122
117-81-7	LCS bis(2-Ethylhexyl)phthalate	50.0	0.0	34.8	70	37-124
117-84-0	LCS Di-n-octylphthalate	50.0	0.0	37.8	76	33-122
123-91-1	LCS 1,4-Dioxane	50.0	0.0	22.4	45	26-73
930-55-2	LCS N-Nitrosopyrrolidine	50.0	0.0	34.2	68	42-106
95-94-3	LCS 1,2,4,5-Tetrachlorobenzene	50.0	0.0	24.7	49	36-95
1912-24-9	LCS Atrazine	50.0	0.0	35.7	71	47-115
92-87-5	LCS Benzidine	100	0.0	43.3	43	10-124
91-94-1	LCS 3,3'-Dichlorobenzidine	50.0	0.0	31.6	63	31-113
120-82-1	LCS 1,2,4-Trichlorobenzene	50.0	0.0	26.8	54	26-92

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 6

SDG Number: 2014-3481

Sample Type: Matrix Spike

Client ID: WST09-14-74376MS

Matrix: W

Lab Sample ID 1203102432

Instrument: MSD5.I

Analysis Date: 06/05/2014 14:58

Dilution: 1

Analyst: RMB

Prep Batch ID: 1393337

Inj. Vol: 1 uL

Batch ID: 1393338

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
62-75-9	MS N-Methyl-N-nitrosomethylam	110	0.00 U	66.3	60	21-88
110-86-1	MS Pyridine	110	0.00 U	77.3	70	14-94
62-53-3	MS Aniline	110	0.00 U	91.1	83	24-109
108-95-2	MS Phenol	110	0.00 U	48.1	44	10-88
111-44-4	MS bis(2-Chloroethyl) ether	110	0.00 U	79.7	73	25-114
95-57-8	MS 2-Chlorophenol	110	0.00 U	75.5	69	31-103
541-73-1	MS 1,3-Dichlorobenzene	110	0.00 U	60.9	55	18-83
106-46-7	MS 1,4-Dichlorobenzene	110	0.00 U	62.0	56	20-86
95-50-1	MS 1,2-Dichlorobenzene	110	0.00 U	61.5	56	21-85
108-60-1	MS bis(2-Chloro-1-methylethyl)et	110	0.00 U	78.7	72	16-121
100-51-6	MS Benzyl alcohol	110	0.00 U	78.8	72	31-100
95-48-7	MS o-Cresol	110	0.00 U	73.8	67	26-97
65794-96-9	MS m,p-Cresols	110	0.00 U	79.4	72	24-110
621-64-7	MS N-Nitrosodi--n-propylamine <i>N-Nitrosodipropylamine</i>	110	0.00 U	81.4	74	29-116
67-72-1	MS Hexachloroethane	110	0.00 U	59.6	54	17-82
98-95-3	MS Nitrobenzene	110	0.00 U	86.8	79	32-126
78-59-1	MS Isophorone	110	0.00 U	89.2	81	36-139
88-75-5	MS 2-Nitrophenol	110	0.00 U	78.6	72	29-117
105-67-9	MS 2,4-Dimethylphenol	110	0.00 U	79.1	72	28-107
111-91-1	MS bis(2-Chloroethoxy)methane	110	0.00 U	84.2	77	34-112
120-83-2	MS 2,4-Dichlorophenol	110	0.00 U	78.9	72	34-111
65-85-0	MS Benzoic acid	220	0.00 U	97.0	44	10-105

Semi-Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2014-3481

Sample Type: Matrix Spike

Client ID: WST09-14-74376MS

Matrix: W

Lab Sample ID 1203102432

Instrument: MSD5.I

Analysis Date: 06/05/2014 14:58

Dilution: 1

Analyst: RMB

Prep Batch ID: 1393337

Inj. Vol: 1 uL

Batch ID: 1393338

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
106-47-8	MS	4-Chloroaniline	110	0.00	U	84.8	77	28-123
87-68-3	MS	Hexachlorobutadiene	110	0.00	U	62.9	57	11-97
59-50-7	MS	Parachlorometa cresol 4-Chloro-3-methylphenol	110	0.00	U	85.6	78	31-119
77-47-4	MS	Hexachlorocyclopentadiene	110	0.00	U	58.0	53	14-73
88-06-2	MS	2,4,6-Trichlorophenol	110	0.00	U	83.7	76	31-113
95-95-4	MS	2,4,5-Trichlorophenol	110	0.00	U	84.0	76	30-117
91-58-7	MS	2-Chloronaphthalene	110	0.00	U	75.1	68	30-97
88-74-4	MS	2-Nitroaniline o-Nitroaniline	110	0.00	U	86.9	79	28-122
99-09-2	MS	3-Nitroaniline m-Nitroaniline	110	0.00	U	84.7	77	29-125
131-11-3	MS	Dimethylphthalate	110	0.00	U	92.1	84	41-116
606-20-2	MS	2,6-Dinitrotoluene	110	0.00	U	86.6	79	40-123
121-14-2	MS	2,4-Dinitrotoluene	110	0.00	U	89.4	81	34-126
51-28-5	MS	2,4-Dinitrophenol	110	0.00	U	62.9	57	17-110
132-64-9	MS	Dibenzofuran	110	0.00	U	82.6	75	36-107
58-90-2	MS	2,3,4,6-Tetrachlorophenol	110	0.00	U	89.6	82	29-126
84-66-2	MS	Diethylphthalate	110	0.00	U	92.5	84	41-117
100-02-7	MS	4-Nitrophenol	110	0.00	U	45.9	42	16-71
7005-72-3	MS	4-Chlorophenylphenylether	110	0.00	U	83.3	76	30-112
100-01-6	MS	4-Nitroaniline p-Nitroaniline	110	0.00	U	92.6	84	25-133
534-52-1	MS	2-Methyl-4,6-dinitrophenol	110	0.00	U	78.9	72	22-118
122-39-4	MS	Diphenylamine	110	0.00	U	71.8	65	34-111
122-66-7	MS	Azobenzene 1,2-Diphenylhydrazine	110	0.00	U	81.7	74	30-112

Semi-Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2014-3481

Sample Type: Matrix Spike

Client ID: WST09-14-74376MS

Matrix: W

Lab Sample ID 1203102432

Instrument: MSD5.I

Analysis Date: 06/05/2014 14:58

Dilution: 1

Analyst: RMB

Prep Batch ID: 1393337

Inj. Vol: 1 uL

Batch ID: 1393338

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
101-55-3	MS 4-Bromophenylphenylether	110	0.00 U	82.2	75	32-111
84-74-2	MS Di-n-butylphthalate	110	0.00 U	97.4	89	35-118
85-68-7	MS Butylbenzylphthalate	110	0.00 U	84.2	77	29-121
117-81-7	MS bis(2-Ethylhexyl)phthalate	110	0.00 U	85.7	78	29-120
117-84-0	MS Di-n-octylphthalate	110	0.00 U	90.0	82	25-118
123-91-1	MS 1,4-Dioxane	110	0.00 U	65.3	59	26-88
930-55-2	MS N-Nitrosopyrrolidine	110	0.00 U	75.3	68	42-110
95-94-3	MS 1,2,4,5-Tetrachlorobenzene	110	0.00 U	66.2	60	29-96
1912-24-9	MS Atrazine	110	0.00 U	86.7	79	33-121
92-87-5	MS Benzidine	220	0.00 U	30.1	14	10-117
91-94-1	MS 3,3'-Dichlorobenzidine	110	0.00 U	72.9	66	22-111
120-82-1	MS 1,2,4-Trichlorobenzene	110	0.00 U	67.3	61	20-90

Semi-Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2014-3481

Sample Type: Matrix Spike Duplicate

Client ID: WST09-14-74376MSD

Matrix: W

Lab Sample ID 1203102433

Instrument: MSD5.I

Analysis Date: 06/05/2014 15:29

Dilution: 1

Analyst: RMB

Prep Batch ID: 1393337

Inj. Vol: 1 uL

Batch ID: 1393338

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
62-75-9	MSD N-Methyl-N-nitrosomethylam	110	0.00 U	69.0	63	21-88	4	0-30
110-86-1	MSD Pyridine	110	0.00 U	72.2	66	14-94	7	0-30
62-53-3	MSD Aniline	110	0.00 U	86.6	79	24-109	5	0-30
108-95-2	MSD Phenol	110	0.00 U	51.5	47	10-88	7	0-30
111-44-4	MSD bis(2-Chloroethyl) ether	110	0.00 U	82.5	75	25-114	3	0-30
95-57-8	MSD 2-Chlorophenol	110	0.00 U	78.1	71	31-103	3	0-30
541-73-1	MSD 1,3-Dichlorobenzene	110	0.00 U	62.8	57	18-83	3	0-30
106-46-7	MSD 1,4-Dichlorobenzene	110	0.00 U	62.7	57	20-86	1	0-30
95-50-1	MSD 1,2-Dichlorobenzene	110	0.00 U	64.2	58	21-85	4	0-30
108-60-1	MSD bis(2-Chloro-1-methylethyl)et	110	0.00 U	83.0	76	16-121	5	0-30
100-51-6	MSD Benzyl alcohol	110	0.00 U	79.7	73	31-100	1	0-30
95-48-7	MSD o-Cresol	110	0.00 U	78.9	72	26-97	7	0-30
65794-96-9	MSD m,p-Cresols	110	0.00 U	86.9	79	24-110	9	0-30
621-64-7	MSD N-Nitrosodi--n-propylamine <i>N-Nitrosodipropylamine</i>	110	0.00 U	86.9	79	29-116	7	0-30
67-72-1	MSD Hexachloroethane	110	0.00 U	62.1	57	17-82	4	0-30
98-95-3	MSD Nitrobenzene	110	0.00 U	88.7	81	32-126	2	0-30
78-59-1	MSD Isophorone	110	0.00 U	92.1	84	36-139	3	0-30
88-75-5	MSD 2-Nitrophenol	110	0.00 U	79.3	72	29-117	1	0-30
105-67-9	MSD 2,4-Dimethylphenol	110	0.00 U	82.0	75	28-107	4	0-30
111-91-1	MSD bis(2-Chloroethoxy)methane	110	0.00 U	86.7	79	34-112	3	0-30
120-83-2	MSD 2,4-Dichlorophenol	110	0.00 U	82.5	75	34-111	5	0-30
65-85-0	MSD Benzoic acid	220	0.00 U	119	54	10-105	20	0-30

Semi-Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2014-3481

Sample Type: Matrix Spike Duplicate

Client ID: WST09-14-74376MSD

Matrix: W

Lab Sample ID 1203102433

Instrument: MSD5.I

Analysis Date: 06/05/2014 15:29

Dilution: 1

Analyst: RMB

Prep Batch ID: 1393337

Inj. Vol: 1 uL

Batch ID: 1393338

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
106-47-8	MSD 4-Chloroaniline	110	0.00 U	86.3	79	28-123	2	0-30
87-68-3	MSD Hexachlorobutadiene	110	0.00 U	63.0	57	11-97	0	0-30
59-50-7	MSD Parachlorometa cresol 4-Chloro-3-methylphenol	110	0.00 U	92.8	84	31-119	8	0-30
77-47-4	MSD Hexachlorocyclopentadiene	110	0.00 U	52.5	48	14-73	10	0-30
88-06-2	MSD 2,4,6-Trichlorophenol	110	0.00 U	83.7	76	31-113	0	0-30
95-95-4	MSD 2,4,5-Trichlorophenol	110	0.00 U	85.3	78	30-117	1	0-30
91-58-7	MSD 2-Chloronaphthalene	110	0.00 U	70.6	64	30-97	6	0-30
88-74-4	MSD 2-Nitroaniline o-Nitroaniline	110	0.00 U	90.4	82	28-122	4	0-30
99-09-2	MSD 3-Nitroaniline m-Nitroaniline	110	0.00 U	88.9	81	29-125	5	0-30
131-11-3	MSD Dimethylphthalate	110	0.00 U	93.6	85	41-116	2	0-30
606-20-2	MSD 2,6-Dinitrotoluene	110	0.00 U	92.2	84	40-123	6	0-30
121-14-2	MSD 2,4-Dinitrotoluene	110	0.00 U	92.0	84	34-126	3	0-30
51-28-5	MSD 2,4-Dinitrophenol	110	0.00 U	79.2	72	17-110	23	0-30
132-64-9	MSD Dibenzofuran	110	0.00 U	81.5	74	36-107	1	0-30
58-90-2	MSD 2,3,4,6-Tetrachlorophenol	110	0.00 U	88.5	81	29-126	1	0-30
84-66-2	MSD Diethylphthalate	110	0.00 U	92.5	84	41-117	0	0-30
100-02-7	MSD 4-Nitrophenol	110	0.00 U	51.1	47	16-71	11	0-30
7005-72-3	MSD 4-Chlorophenylphenylether	110	0.00 U	82.9	75	30-112	0	0-30
100-01-6	MSD 4-Nitroaniline p-Nitroaniline	110	0.00 U	98.5	90	25-133	6	0-30
534-52-1	MSD 2-Methyl-4,6-dinitrophenol	110	0.00 U	82.4	75	22-118	4	0-30
122-39-4	MSD Diphenylamine	110	0.00 U	71.4	65	34-111	1	0-30
122-66-7	MSD Azobenzene 1,2-Diphenylhydrazine	110	0.00 U	82.4	75	30-112	1	0-30

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 6 of 6

SDG Number: 2014-3481

Sample Type: Matrix Spike Duplicate

Client ID: WST09-14-74376MSD

Matrix: W

Lab Sample ID 1203102433

Instrument: MSD5.I

Analysis Date: 06/05/2014 15:29

Dilution: 1

Analyst: RMB

Prep Batch ID: 1393337

Inj. Vol: 1 uL

Batch ID: 1393338

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
101-55-3	MSD 4-Bromophenylphenylether	110	0.00 U	80.5	73	32-111	2	0-30
84-74-2	MSD Di-n-butylphthalate	110	0.00 U	91.7	83	35-118	6	0-30
85-68-7	MSD Butylbenzylphthalate	110	0.00 U	89.2	81	29-121	6	0-30
117-81-7	MSD bis(2-Ethylhexyl)phthalate	110	0.00 U	86.5	79	29-120	1	0-30
117-84-0	MSD Di-n-octylphthalate	110	0.00 U	82.6	75	25-118	9	0-30
123-91-1	MSD 1,4-Dioxane	110	0.00 U	70.3	64	26-88	7	0-30
930-55-2	MSD N-Nitrosopyrrolidine	110	0.00 U	85.4	78	42-110	13	0-30
95-94-3	MSD 1,2,4,5-Tetrachlorobenzene	110	0.00 U	64.0	58	29-96	3	0-30
1912-24-9	MSD Atrazine	110	0.00 U	89.5	81	33-121	3	0-30
92-87-5	MSD Benzidine	220	0.00 U	93.8	43	10-117	103 *	0-30
91-94-1	MSD 3,3'-Dichlorobenzidine	110	0.00 U	70.0	64	22-111	4	0-30
120-82-1	MSD 1,2,4-Trichlorobenzene	110	0.00 U	64.9	59	20-90	4	0-30

Method Blank Summary

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SDG Number:	2014-3481	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1393337	Instrument ID:	MSD5.I	Data File:	s060514.b\s5F0504.D
Lab Sample ID:	1203102430	Prep Date:	06/05/2014 06:20	Analyzed:	06/05/14 12:13
Column:	DB-5ms				

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 1393337	1203102431	s060514.b\s5F0505.D	06/05/14	1244
02 CAPU-14-79426	349927003	s060514.b\s5F0506.D	06/05/14	1324
03 CAPU-14-79432	349927013	s060514.b\s5F0507.D	06/05/14	1355
04 WST09-14-74376MS	1203102432	s060514.b\s5F0509.D	06/05/14	1458
05 WST09-14-74376MSD	1203102433	s060514.b\s5F0510.D	06/05/14	1529

Quality Control Data

**Semi-Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2014-3481		Matrix:	WATER
Lab Sample ID: 1203102430			
Client Sample: QC for batch 1393337	Client: ARSL004	Project:	QC
Client ID: MB for batch 1393337	Method: SW846 3510C/8270D	SOP Ref:	GL-OA-E-009
Batch ID: 1393338	Inst: MSD5.I	Dilution:	1
Run Date: 06/05/2014 12:13	Analyst: RMB	Inj. Vol:	1 uL
Prep Date: 06/05/2014 06:20	Aliquot: 1000 mL	Final Volume:	1 mL
Data File: s060514.b\s5F0504.D	Column: DB-5ms		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene	U	10.0	ug/L	3.00	10.0
120-82-1	1,2,4-Trichlorobenzene	U	10.0	ug/L	3.00	10.0
95-50-1	1,2-Dichlorobenzene	U	10.0	ug/L	3.00	10.0
122-66-7	Azobenzene	U	10.0	ug/L	3.00	10.0
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene	U	10.0	ug/L	3.00	10.0
106-46-7	1,4-Dichlorobenzene	U	10.0	ug/L	3.00	10.0
123-91-1	1,4-Dioxane	U	10.0	ug/L	3.00	10.0
58-90-2	2,3,4,6-Tetrachlorophenol	U	10.0	ug/L	3.00	10.0
95-95-4	2,4,5-Trichlorophenol	U	10.0	ug/L	3.00	10.0
88-06-2	2,4,6-Trichlorophenol	U	10.0	ug/L	3.00	10.0
120-83-2	2,4-Dichlorophenol	U	10.0	ug/L	3.00	10.0
105-67-9	2,4-Dimethylphenol	U	10.0	ug/L	3.00	10.0
51-28-5	2,4-Dinitrophenol	U	20.0	ug/L	5.00	20.0
121-14-2	2,4-Dinitrotoluene	U	10.0	ug/L	3.00	10.0
606-20-2	2,6-Dinitrotoluene	U	10.0	ug/L	3.00	10.0
91-58-7	2-Chloronaphthalene	U	1.00	ug/L	0.410	1.00
95-57-8	2-Chlorophenol	U	10.0	ug/L	3.00	10.0
534-52-1	2-Methyl-4,6-dinitrophenol	U	10.0	ug/L	3.00	10.0
88-75-5	2-Nitrophenol	U	10.0	ug/L	3.00	10.0
91-94-1	3,3'-Dichlorobenzidine	U	10.0	ug/L	3.00	10.0
101-55-3	4-Bromophenylphenylether	U	10.0	ug/L	3.00	10.0
59-50-7	Parachlorometa cresol	U	10.0	ug/L	3.00	10.0
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline	U	10.0	ug/L	3.30	10.0
7005-72-3	4-Chlorophenylphenylether	U	10.0	ug/L	3.00	10.0
100-02-7	4-Nitrophenol	U	10.0	ug/L	3.00	10.0
62-53-3	Aniline	U	10.0	ug/L	4.20	10.0
1912-24-9	Atrazine	U	10.0	ug/L	3.00	10.0
92-87-5	Benzidine	U	10.0	ug/L	3.90	10.0
65-85-0	Benzoic acid	U	20.0	ug/L	6.00	20.0
100-51-6	Benzyl alcohol	U	10.0	ug/L	3.00	10.0
85-68-7	Butylbenzylphthalate	U	10.0	ug/L	3.00	10.0
84-74-2	Di-n-butylphthalate	U	10.0	ug/L	3.00	10.0
117-84-0	Di-n-octylphthalate	U	10.0	ug/L	3.00	10.0
132-64-9	Dibenzofuran	U	10.0	ug/L	3.00	10.0
84-66-2	Diethylphthalate	U	10.0	ug/L	3.00	10.0
131-11-3	Dimethylphthalate	U	10.0	ug/L	3.00	10.0
88-85-7	Dinoseb	U	10.0	ug/L	3.00	10.0

**Semi-Volatile
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Sample Summary**

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SDG Number: 2014-3481

Lab Sample ID: 1203102430

Client Sample: QC for batch 1393337

Client ID: MB for batch 1393337

Batch ID: 1393338

Run Date: 06/05/2014 12:13

Prep Date: 06/05/2014 06:20

Data File: s060514.b\s5F0504.D

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-009

Dilution: 1

Inj. Vol: 1 uL

Final Volume: 1 mL

Client: ARSL004

Method: SW846 3510C/8270D

Inst: MSD5.I

Analyst: RMB

Aliquot: 1000 mL

Column: DB-5ms

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
122-39-4	Diphenylamine	U	10.0	ug/L	3.00	10.0
87-68-3	Hexachlorobutadiene	U	10.0	ug/L	3.00	10.0
77-47-4	Hexachlorocyclopentadiene	U	10.0	ug/L	3.00	10.0
67-72-1	Hexachloroethane	U	10.0	ug/L	3.00	10.0
78-59-1	Isophorone	U	10.0	ug/L	3.50	10.0
62-75-9	N-Methyl-N-nitrosomethylamine	U	10.0	ug/L	3.00	10.0
924-16-3	N-Nitrosodi-n-butylamine	U	10.0	ug/L	3.00	10.0
55-18-5	N-Nitrosodiethylamine	U	10.0	ug/L	3.00	10.0
621-64-7	N-Nitrosodi--n-propylamine	U	10.0	ug/L	3.00	10.0
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine	U	10.0	ug/L	3.00	10.0
98-95-3	Nitrobenzene	U	10.0	ug/L	3.00	10.0
608-93-5	Pentachlorobenzene	U	10.0	ug/L	3.00	10.0
108-95-2	Phenol	U	10.0	ug/L	3.00	10.0
110-86-1	Pyridine	U	10.0	ug/L	3.00	10.0
108-60-1	bis(2-Chloro-1-methylethyl)ether	U	10.0	ug/L	3.00	10.0
111-91-1	bis(2-Chloroethoxy)methane	U	10.0	ug/L	3.00	10.0
111-44-4	bis(2-Chloroethyl) ether	U	10.0	ug/L	3.00	10.0
117-81-7	bis(2-Ethylhexyl)phthalate	U	10.0	ug/L	3.00	10.0
65794-96-9	m,p-Cresols	U	10.0	ug/L	3.70	10.0
99-09-2	3-Nitroaniline	U	10.0	ug/L	3.00	10.0
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol	U	10.0	ug/L	3.00	10.0
88-74-4	2-Nitroaniline	U	10.0	ug/L	3.00	10.0
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline	U	10.0	ug/L	3.00	10.0
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	61.0	100	ug/L	61.0	(26%-129%)
2-Fluorobiphenyl	30.7	50.0	ug/L	61.4	(32%-102%)
2-Fluorophenol	37.2	100	ug/L	37.2	(10%-78%)
Nitrobenzene-d5	32.9	50.0	ug/L	65.8	(36%-125%)
Phenol-d5	24.3	100	ug/L	24.3	(10%-104%)
p-Terphenyl-d14	37.4	50.0	ug/L	74.8	(34%-135%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown	20.182	7.67	ug/L	0	J

**Semi-Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2014-3481		Matrix: WATER
Lab Sample ID: 1203102431		
Client Sample: QC for batch 1393337	Client: ARSL004	Project: QC
Client ID: LCS for batch 1393337	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1393338	Inst: MSD5.I	Dilution: 1
Run Date: 06/05/2014 12:44	Analyst: RMB	Inj. Vol: 1 uL
Prep Date: 06/05/2014 06:20	Aliquot: 1000 mL	Final Volume: 1 mL
Data File: s060514.b\s5F0505.D	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene		24.7	ug/L	3.00	10.0
120-82-1	1,2,4-Trichlorobenzene		26.8	ug/L	3.00	10.0
95-50-1	1,2-Dichlorobenzene		26.4	ug/L	3.00	10.0
122-66-7	Azobenzene		34.5	ug/L	3.00	10.0
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene		26.3	ug/L	3.00	10.0
106-46-7	1,4-Dichlorobenzene		26.2	ug/L	3.00	10.0
123-91-1	1,4-Dioxane		22.4	ug/L	3.00	10.0
58-90-2	2,3,4,6-Tetrachlorophenol		34.5	ug/L	3.00	10.0
95-95-4	2,4,5-Trichlorophenol		34.0	ug/L	3.00	10.0
88-06-2	2,4,6-Trichlorophenol		33.2	ug/L	3.00	10.0
120-83-2	2,4-Dichlorophenol		33.7	ug/L	3.00	10.0
105-67-9	2,4-Dimethylphenol		32.9	ug/L	3.00	10.0
51-28-5	2,4-Dinitrophenol		24.8	ug/L	5.00	20.0
121-14-2	2,4-Dinitrotoluene		35.7	ug/L	3.00	10.0
606-20-2	2,6-Dinitrotoluene		35.5	ug/L	3.00	10.0
91-58-7	2-Chloronaphthalene		28.5	ug/L	0.410	1.00
95-57-8	2-Chlorophenol		32.6	ug/L	3.00	10.0
534-52-1	2-Methyl-4,6-dinitrophenol		29.4	ug/L	3.00	10.0
88-75-5	2-Nitrophenol		33.4	ug/L	3.00	10.0
91-94-1	3,3'-Dichlorobenzidine		31.6	ug/L	3.00	10.0
101-55-3	4-Bromophenylphenylether		34.4	ug/L	3.00	10.0
59-50-7	Parachlorometa cresol		35.9	ug/L	3.00	10.0
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline		36.9	ug/L	3.30	10.0
7005-72-3	4-Chlorophenylphenylether		33.6	ug/L	3.00	10.0
100-02-7	4-Nitrophenol		11.4	ug/L	3.00	10.0
62-53-3	Aniline		39.4	ug/L	4.20	10.0
1912-24-9	Atrazine		35.7	ug/L	3.00	10.0
92-87-5	Benzidine		43.3	ug/L	3.90	10.0
65-85-0	Benzoic acid		20.3	ug/L	6.00	20.0
100-51-6	Benzyl alcohol		31.5	ug/L	3.00	10.0
85-68-7	Butylbenzylphthalate		33.7	ug/L	3.00	10.0
84-74-2	Di-n-butylphthalate		39.0	ug/L	3.00	10.0
117-84-0	Di-n-octylphthalate		37.8	ug/L	3.00	10.0
132-64-9	Dibenzofuran		33.1	ug/L	3.00	10.0
84-66-2	Diethylphthalate		38.8	ug/L	3.00	10.0
131-11-3	Dimethylphthalate		37.8	ug/L	3.00	10.0
88-85-7	Dinoseb	U	10.0	ug/L	3.00	10.0

**Semi-Volatile
Certificate of Analysis
Sample Summary**

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SDG Number: 2014-3481

Lab Sample ID: 1203102431

Client Sample: QC for batch 1393337

Client ID: LCS for batch 1393337

Batch ID: 1393338

Run Date: 06/05/2014 12:44

Prep Date: 06/05/2014 06:20

Data File: s060514.b\s5F0505.D

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-009

Dilution: 1

Inj. Vol: 1 uL

Final Volume: 1 mL

Client: ARSL004
Method: SW846 3510C/8270D
Inst: MSD5.I
Analyst: RMB
Aliquot: 1000 mL
Column: DB-5ms

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
122-39-4	Diphenylamine		31.9	ug/L	3.00	10.0
87-68-3	Hexachlorobutadiene		24.9	ug/L	3.00	10.0
77-47-4	Hexachlorocyclopentadiene		19.6	ug/L	3.00	10.0
67-72-1	Hexachloroethane		25.6	ug/L	3.00	10.0
78-59-1	Isophorone		39.0	ug/L	3.50	10.0
62-75-9	N-Methyl-N-nitrosomethylamine		21.6	ug/L	3.00	10.0
924-16-3	N-Nitrosodi-n-butylamine	U	10.0	ug/L	3.00	10.0
55-18-5	N-Nitrosodiethylamine	U	10.0	ug/L	3.00	10.0
621-64-7	N-Nitrosodi--n-propylamine		39.1	ug/L	3.00	10.0
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine		34.2	ug/L	3.00	10.0
98-95-3	Nitrobenzene		35.8	ug/L	3.00	10.0
608-93-5	Pentachlorobenzene	U	10.0	ug/L	3.00	10.0
108-95-2	Phenol		13.9	ug/L	3.00	10.0
110-86-1	Pyridine		28.8	ug/L	3.00	10.0
108-60-1	bis(2-Chloro-1-methylethyl)ether		34.3	ug/L	3.00	10.0
111-91-1	bis(2-Chloroethoxy)methane		36.0	ug/L	3.00	10.0
111-44-4	bis(2-Chloroethyl) ether		35.7	ug/L	3.00	10.0
117-81-7	bis(2-Ethylhexyl)phthalate		34.8	ug/L	3.00	10.0
65794-96-9	m,p-Cresols		31.0	ug/L	3.70	10.0
99-09-2	3-Nitroaniline		36.1	ug/L	3.00	10.0
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol		30.2	ug/L	3.00	10.0
88-74-4	2-Nitroaniline		36.6	ug/L	3.00	10.0
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline		37.4	ug/L	3.00	10.0
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	64.1	100	ug/L	64.1	(26%-129%)
2-Fluorobiphenyl	31.7	50.0	ug/L	63.4	(32%-102%)
2-Fluorophenol	39.7	100	ug/L	39.7	(10%-78%)
Nitrobenzene-d5	34.1	50.0	ug/L	68.1	(36%-125%)
Phenol-d5	25.2	100	ug/L	25.2	(10%-104%)
p-Terphenyl-d14	31.1	50.0	ug/L	62.1	(34%-135%)

**Semi-Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2014-3481	Date Collected: 06/02/2014 10:29	Matrix: W
Lab Sample ID: 1203102432	Date Received: 06/04/2014 08:55	
Client Sample: QC for batch 1393337	Client: ARSL004	Project: QC
Client ID: WST09-14-74376MS	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1393338	Inst: MSD5.I	Dilution: 1
Run Date: 06/05/2014 14:58	Analyst: RMB	Inj. Vol: 1 uL
Prep Date: 06/05/2014 06:20	Aliquot: 455 mL	Final Volume: 1 mL
Data File: s060514.b\s5F0509.D	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene		66.2	ug/L	6.59	22.0
120-82-1	1,2,4-Trichlorobenzene		67.3	ug/L	6.59	22.0
95-50-1	1,2-Dichlorobenzene		61.5	ug/L	6.59	22.0
122-66-7	Azobenzene		81.7	ug/L	6.59	22.0
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene		60.9	ug/L	6.59	22.0
106-46-7	1,4-Dichlorobenzene		62.0	ug/L	6.59	22.0
123-91-1	1,4-Dioxane		65.3	ug/L	6.59	22.0
58-90-2	2,3,4,6-Tetrachlorophenol		89.6	ug/L	6.59	22.0
95-95-4	2,4,5-Trichlorophenol		84.0	ug/L	6.59	22.0
88-06-2	2,4,6-Trichlorophenol		83.7	ug/L	6.59	22.0
120-83-2	2,4-Dichlorophenol		78.9	ug/L	6.59	22.0
105-67-9	2,4-Dimethylphenol		79.1	ug/L	6.59	22.0
51-28-5	2,4-Dinitrophenol		62.9	ug/L	11.0	44.0
121-14-2	2,4-Dinitrotoluene		89.4	ug/L	6.59	22.0
606-20-2	2,6-Dinitrotoluene		86.6	ug/L	6.59	22.0
91-58-7	2-Chloronaphthalene		75.1	ug/L	0.901	2.20
95-57-8	2-Chlorophenol		75.5	ug/L	6.59	22.0
534-52-1	2-Methyl-4,6-dinitrophenol		78.9	ug/L	6.59	22.0
88-75-5	2-Nitrophenol		78.6	ug/L	6.59	22.0
91-94-1	3,3'-Dichlorobenzidine		72.9	ug/L	6.59	22.0
101-55-3	4-Bromophenylphenylether		82.2	ug/L	6.59	22.0
59-50-7	Parachlorometa cresol		85.6	ug/L	6.59	22.0
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline		84.8	ug/L	7.25	22.0
7005-72-3	4-Chlorophenylphenylether		83.3	ug/L	6.59	22.0
100-02-7	4-Nitrophenol		45.9	ug/L	6.59	22.0
62-53-3	Aniline		91.1	ug/L	9.23	22.0
1912-24-9	Atrazine		86.7	ug/L	6.59	22.0
92-87-5	Benzidine		30.1	ug/L	8.57	22.0
65-85-0	Benzoic acid		97.0	ug/L	13.2	44.0
100-51-6	Benzyl alcohol		78.8	ug/L	6.59	22.0
85-68-7	Butylbenzylphthalate		84.2	ug/L	6.59	22.0
84-74-2	Di-n-butylphthalate		97.4	ug/L	6.59	22.0
117-84-0	Di-n-octylphthalate		90.0	ug/L	6.59	22.0
132-64-9	Dibenzofuran		82.6	ug/L	6.59	22.0
84-66-2	Diethylphthalate		92.5	ug/L	6.59	22.0
131-11-3	Dimethylphthalate		92.1	ug/L	6.59	22.0
88-85-7	Dinoseb	U	22.0	ug/L	6.59	22.0

**Semi-Volatile
Certificate of Analysis
Sample Summary**

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SDG Number: 2014-3481	Date Collected: 06/02/2014 10:29	Matrix: W
Lab Sample ID: 1203102432	Date Received: 06/04/2014 08:55	
Client Sample: QC for batch 1393337	Client: ARSL004	Project: QC
Client ID: WST09-14-74376MS	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1393338	Inst: MSD5.I	Dilution: 1
Run Date: 06/05/2014 14:58	Analyst: RMB	Inj. Vol: 1 uL
Prep Date: 06/05/2014 06:20	Aliquot: 455 mL	Final Volume: 1 mL
Data File: s060514.b\s5F0509.D	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
122-39-4	Diphenylamine		71.8	ug/L	6.59	22.0
87-68-3	Hexachlorobutadiene		62.9	ug/L	6.59	22.0
77-47-4	Hexachlorocyclopentadiene		58.0	ug/L	6.59	22.0
67-72-1	Hexachloroethane		59.6	ug/L	6.59	22.0
78-59-1	Isophorone		89.2	ug/L	7.69	22.0
62-75-9	N-Methyl-N-nitrosomethylamine		66.3	ug/L	6.59	22.0
924-16-3	N-Nitrosodi-n-butylamine	U	22.0	ug/L	6.59	22.0
55-18-5	N-Nitrosodiethylamine	U	22.0	ug/L	6.59	22.0
621-64-7	N-Nitrosodi--n-propylamine		81.4	ug/L	6.59	22.0
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine		75.3	ug/L	6.59	22.0
98-95-3	Nitrobenzene		86.8	ug/L	6.59	22.0
608-93-5	Pentachlorobenzene	U	22.0	ug/L	6.59	22.0
108-95-2	Phenol		48.1	ug/L	6.59	22.0
110-86-1	Pyridine		77.3	ug/L	6.59	22.0
108-60-1	bis(2-Chloro-1-methylethyl)ether		78.7	ug/L	6.59	22.0
111-91-1	bis(2-Chloroethoxy)methane		84.2	ug/L	6.59	22.0
111-44-4	bis(2-Chloroethyl) ether		79.7	ug/L	6.59	22.0
117-81-7	bis(2-Ethylhexyl)phthalate		85.7	ug/L	6.59	22.0
65794-96-9	m,p-Cresols		79.4	ug/L	8.13	22.0
99-09-2	3-Nitroaniline		84.7	ug/L	6.59	22.0
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol		73.8	ug/L	6.59	22.0
88-74-4	2-Nitroaniline		86.9	ug/L	6.59	22.0
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline		92.6	ug/L	6.59	22.0
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
2,4,6-Tribromophenol	166	220	ug/L 75.7	(26%-129%)
2-Fluorobiphenyl	82.4	110	ug/L 75.0	(32%-102%)
2-Fluorophenol	121	220	ug/L 55.2	(10%-78%)
Nitrobenzene-d5	83.6	110	ug/L 76.1	(36%-125%)
Phenol-d5	88.9	220	ug/L 40.5	(10%-104%)
p-Terphenyl-d14	77.0	110	ug/L 70.0	(34%-135%)

**Semi-Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2014-3481	Date Collected: 06/02/2014 10:29	Matrix: W
Lab Sample ID: 1203102433	Date Received: 06/04/2014 08:55	
Client Sample: QC for batch 1393337	Client: ARSL004	Project: QC
Client ID: WST09-14-74376MSD	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1393338	Inst: MSD5.I	Dilution: 1
Run Date: 06/05/2014 15:29	Analyst: RMB	Inj. Vol: 1 uL
Prep Date: 06/05/2014 06:20	Aliquot: 455 mL	Final Volume: 1 mL
Data File: s060514.b\s5F0510.D	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene		64.0	ug/L	6.59	22.0
120-82-1	1,2,4-Trichlorobenzene		64.9	ug/L	6.59	22.0
95-50-1	1,2-Dichlorobenzene		64.2	ug/L	6.59	22.0
122-66-7	Azobenzene		82.4	ug/L	6.59	22.0
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene		62.8	ug/L	6.59	22.0
106-46-7	1,4-Dichlorobenzene		62.7	ug/L	6.59	22.0
123-91-1	1,4-Dioxane		70.3	ug/L	6.59	22.0
58-90-2	2,3,4,6-Tetrachlorophenol		88.5	ug/L	6.59	22.0
95-95-4	2,4,5-Trichlorophenol		85.3	ug/L	6.59	22.0
88-06-2	2,4,6-Trichlorophenol		83.7	ug/L	6.59	22.0
120-83-2	2,4-Dichlorophenol		82.5	ug/L	6.59	22.0
105-67-9	2,4-Dimethylphenol		82.0	ug/L	6.59	22.0
51-28-5	2,4-Dinitrophenol		79.2	ug/L	11.0	44.0
121-14-2	2,4-Dinitrotoluene		92.0	ug/L	6.59	22.0
606-20-2	2,6-Dinitrotoluene		92.2	ug/L	6.59	22.0
91-58-7	2-Chloronaphthalene		70.6	ug/L	0.901	2.20
95-57-8	2-Chlorophenol		78.1	ug/L	6.59	22.0
534-52-1	2-Methyl-4,6-dinitrophenol		82.4	ug/L	6.59	22.0
88-75-5	2-Nitrophenol		79.3	ug/L	6.59	22.0
91-94-1	3,3'-Dichlorobenzidine		70.0	ug/L	6.59	22.0
101-55-3	4-Bromophenylphenylether		80.5	ug/L	6.59	22.0
59-50-7	Parachlorometa cresol		92.8	ug/L	6.59	22.0
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline		86.3	ug/L	7.25	22.0
7005-72-3	4-Chlorophenylphenylether		82.9	ug/L	6.59	22.0
100-02-7	4-Nitrophenol		51.1	ug/L	6.59	22.0
62-53-3	Aniline		86.6	ug/L	9.23	22.0
1912-24-9	Atrazine		89.5	ug/L	6.59	22.0
92-87-5	Benzidine		93.8	ug/L	8.57	22.0
65-85-0	Benzoic acid		119	ug/L	13.2	44.0
100-51-6	Benzyl alcohol		79.7	ug/L	6.59	22.0
85-68-7	Butylbenzylphthalate		89.2	ug/L	6.59	22.0
84-74-2	Di-n-butylphthalate		91.7	ug/L	6.59	22.0
117-84-0	Di-n-octylphthalate		82.6	ug/L	6.59	22.0
132-64-9	Dibenzofuran		81.5	ug/L	6.59	22.0
84-66-2	Diethylphthalate		92.5	ug/L	6.59	22.0
131-11-3	Dimethylphthalate		93.6	ug/L	6.59	22.0
88-85-7	Dinoseb	U	22.0	ug/L	6.59	22.0

**Semi-Volatile
Certificate of Analysis
Sample Summary**

Page 2 of 2

SDG Number: 2014-3481	Date Collected: 06/02/2014 10:29	Matrix: W
Lab Sample ID: 1203102433	Date Received: 06/04/2014 08:55	
Client Sample: QC for batch 1393337	Client: ARSL004	Project: QC
Client ID: WST09-14-74376MSD	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1393338	Inst: MSD5.I	Dilution: 1
Run Date: 06/05/2014 15:29	Analyst: RMB	Inj. Vol: 1 uL
Prep Date: 06/05/2014 06:20	Aliquot: 455 mL	Final Volume: 1 mL
Data File: s060514.b\s5F0510.D	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
122-39-4	Diphenylamine		71.4	ug/L	6.59	22.0
87-68-3	Hexachlorobutadiene		63.0	ug/L	6.59	22.0
77-47-4	Hexachlorocyclopentadiene		52.5	ug/L	6.59	22.0
67-72-1	Hexachloroethane		62.1	ug/L	6.59	22.0
78-59-1	Isophorone		92.1	ug/L	7.69	22.0
62-75-9	N-Methyl-N-nitrosomethylamine		69.0	ug/L	6.59	22.0
924-16-3	N-Nitrosodi-n-butylamine	U	22.0	ug/L	6.59	22.0
55-18-5	N-Nitrosodiethylamine	U	22.0	ug/L	6.59	22.0
621-64-7	N-Nitrosodi--n-propylamine		86.9	ug/L	6.59	22.0
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine		85.4	ug/L	6.59	22.0
98-95-3	Nitrobenzene		88.7	ug/L	6.59	22.0
608-93-5	Pentachlorobenzene	U	22.0	ug/L	6.59	22.0
108-95-2	Phenol		51.5	ug/L	6.59	22.0
110-86-1	Pyridine		72.2	ug/L	6.59	22.0
108-60-1	bis(2-Chloro-1-methylethyl)ether		83.0	ug/L	6.59	22.0
111-91-1	bis(2-Chloroethoxy)methane		86.7	ug/L	6.59	22.0
111-44-4	bis(2-Chloroethyl) ether		82.5	ug/L	6.59	22.0
117-81-7	bis(2-Ethylhexyl)phthalate		86.5	ug/L	6.59	22.0
65794-96-9	m,p-Cresols		86.9	ug/L	8.13	22.0
99-09-2	3-Nitroaniline		88.9	ug/L	6.59	22.0
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol		78.9	ug/L	6.59	22.0
88-74-4	2-Nitroaniline		90.4	ug/L	6.59	22.0
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline		98.5	ug/L	6.59	22.0
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
2,4,6-Tribromophenol	173	220	ug/L 78.8	(26%-129%)
2-Fluorobiphenyl	81.2	110	ug/L 73.9	(32%-102%)
2-Fluorophenol	125	220	ug/L 57.0	(10%-78%)
Nitrobenzene-d5	82.7	110	ug/L 75.2	(36%-125%)
Phenol-d5	99.1	220	ug/L 45.1	(10%-104%)
p-Terphenyl-d14	89.8	110	ug/L 81.7	(34%-135%)

Miscellaneous

DATA EXCEPTION REPORT			
Mo.Day Yr. 09-JUN-14	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: SEMIOVA GC/MS	Test / Method: SW846 3510C/8270D	Matrix Type: Liquid	Client Code: ESHL
Batch ID: 1393338	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 349927(2014-3481),349932(2014-3483) Application Issues: Failed RPD for MS/MSD, or PS/PSD			
Specification and Requirements		DER Disposition:	
Exception Description:			
1. The MS(1203102432)/MSD(1203102433) RPD value for Benzidine was 103%. The limit is 30%.		1. Since Benzidine was individually within the acceptance limits for the MS and MSD, the non-conformance had no adverse impact on the data and the results have been reported.	

Originator's Name:

Richard Bomar 09-JUN-14

Data Validator/Group Leader:

Barbara Bailey 09-JUN-14

HPLC Polynuclear Aromatic Hydrocarbon Analysis

HPLC-PAH
ARS International, LLC (ARSL)
SDG 2014-3481

Method/Analysis Information

Procedure: **Polynuclear Aromatic Hydrocarbons**

Analytical Method: SW846 8310

Prep Method: SW846 3510C

Analytical Batch Number: 1393336

Prep Batch Number: 1393334

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 8310:

Sample ID	Client ID
349927002	CAPU-14-79426
349927010	CAPU-14-79432
1203102419	Method Blank (MB)
1203102420	Laboratory Control Sample (LCS)
1203102421	349927002(CAPU-14-79426) Matrix Spike (MS)
1203102422	349927002(CAPU-14-79426) 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-030 REV# 15.

Raw data reports are processed and reviewed by the analyst using the Target software package. False positives have been removed from the Target quantitation reports per standard operating procedures (SOP) section 18.0.

Calibration Information

Due to software limitations, the files displayed at the beginning of the Form 6 are only the last files uploaded for each individual level. A complete listing of all files used in the current ICAL are shown on the Calibration History that is included with each Level 4 or higher package. The last file by date in each level is the one currently uploaded for that level.

The linear equation used in Target and indicated on the initial calibration summary form is not a conventional linear equation (slope intercept formula) and does not match the equation found in SW-846 method 8000B. The x and y axes are inversed in Target, so that the instrument response is treated as the independent variable (x) and the concentration ratio is treated as the dependent variable (y). The equation used in Target to calculate sample results is adjusted to account for the linear equation inversion and reciprocal slope. The adjusted calculation has been independently verified to produce valid results.

Initial Calibration

All initial calibration requirements have been met for this SDG.

CCV Requirements

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

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All the surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

QC Sample Designation

The second bottle for sample 349927002 (CAPU-14-79426) in another SDG, was split into two equal aliquots to perform the matrix spike analyses for this batch. The spike and surrogate amount were adjusted accordingly.

Matrix Spike (MS) Recovery Statement

The MS recoveries were within the established acceptance limits.

Matrix Spike Duplicate (MSD) Recovery Statement

The MSD recoveries were within the established acceptance limits.

MS/MSD Relative Percent Difference (RPD) Statement

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

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 or 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

All samples in this batch were re-analyzed when all target analytes in the closing CCV standard shifted outside their respective retention time windows. The retention time shift was attributed to sample matrix interference. After performing instrument maintenance, the samples were re-analyzed.

Miscellaneous Information:

Data Exception (DER) Documentation

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

Manual Integrations

Some initial calibration standards, continuing calibration standards, and/or samples may have required manual integrations due to software limitations. Please see the raw data in the Miscellaneous Section.

Additional Comments

The Form 8 was used to indicate the sequence of the analysis only.

Electronic Package Comment

The following package was generated using an electronic data processing program referred to as "virtual packaging". In an effort to increase quality and efficiency, the laboratory is developing systems to eventually 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 of each electronic

package will indicate the analyst, reviewer, and report specialist names associated with the generation of the data and package. 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.

System Configuration

The laboratory utilizes a high performance liquid chromatography (HPLC) instrument configuration for Polynuclear Aromatic Hydrocarbons analyses. The chromatographic hardware system consists of a HP Model 1100 HPLC with programmable gradient pumping and a 100uL loop injector. The HPLC 1100 is coupled to a HP Model G1315A Diode Array UV detector which monitors absorbance at the following five wavelengths: 1) 224 nm; 2) 250 nm; 3) 270 nm; 4) 234 nm; 5) 300 nm. The HPLC 1100 is also coupled to a HP Model G1321A Fluorescence Detector in series which monitors the following varying excitations and emissions 1) EX 230 nm EM 330 nm; 2) EX 210 nm EM 314 nm; 3) EX 250 nm EM 368 nm; 4) EX 237 nm EM 440 nm; 5) EX 277 nm EM 376 nm; 6) EX 255 nm EM 420 nm; 7) EX 230 nm EM 453 nm. The Diode Array UV detector is used as the primary detector and the Fluorescence Detector is used as the confirmation detector. All results are reported from the primary Diode Array UV detector. The HPLC system is identified with a designation of HPLC C, or HPLC E in the raw data printouts.

Chromatographic Columns

Chromatographic separation of Polynuclear Aromatic Hydrocarbons is accomplished through analysis on the following reversed phase columns:

Phenomenex: Luna C18 (2), 100 A, 250 mm x 4.6 mm containing 5 um size particle.

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: 2014-3481 GEL Work Order: 349927


The Qualifiers in this report are defined as follows:

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

Review/Validation

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

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

Signature: 

Name: Patricia Steele

Date: 27 JUN 2014

Title: Data Validator

Roadmap for ARSL 2014-3481 HPLC_PAH

This roadmap was analyzed by cww on 06-21-2014, 07:03.

This roadmap was reviewed by ps on 06-26-2014, 17:05.

Sample

exclude	manual	datafile	smpid	injdate	injtime	sublist	clientid	dilution	batchid	comment
■	N	/chem/hplce.i/p060614.b/ph5f0627.d	349927002	07-JUN-2014	04:59	2014-3481.sub	CAPU-14-79426	1	1393336	Duse, needs re-analysis
□	N	/chem/hplce.i/p061214.b/ph5f1260.d	349927002	14-JUN-2014	01:50	2014-3481.sub	CAPU-14-79426	1	1393336	
■	N	/chem/hplce.i/p060614.b/ph5f0630.d	349927010	07-JUN-2014	07:06	2014-3481.sub	CAPU-14-79432	1	1393336	Duse, needs re-analysis
□	N	/chem/hplce.i/p061214.b/ph5f1263.d	349927010	14-JUN-2014	03:57	2014-3481.sub	CAPU-14-79432	1	1393336	

QC Sample

exclude	manual	datafile	smpid	sampletype	injdate	injtime	sublist	clientid	dilution	batchid	comment
□	N	/chem/hplce.i/p061214.b/ph5f1258A.d	1203102419	mb	14-JUN-2014	00:26	2014-3481.sub	PAHBLK01	1	1393336	
□	N	/chem/hplce.i/p061214.b/ph5f1259A.d	1203102420	lcs	14-JUN-2014	01:08	2014-3481.sub	PAHBLK01LCS	1	1393336	Pass
■	N	/chem/hplce.i/p060614.b/ph5f0628.d	1203102421	ms	07-JUN-2014	05:41	2014-3481.sub	CAPU-14-79426MS	1	1393336	Duse, needs re-analysis
□	N	/chem/hplce.i/p061214.b/ph5f1261.d	1203102421	ms	14-JUN-2014	02:33	2014-3481.sub	CAPU-14-79426MS	1	1393336	Pass (split-sample)
■	N	/chem/hplce.i/p060614.b/ph5f0629.d	1203102422	msd	07-JUN-2014	06:23	2014-3481.sub	CAPU-14-79426MSD	1	1393336	Duse, needs re-analysis
□	N	/chem/hplce.i/p061214.b/ph5f1262.d	1203102422	msd	14-JUN-2014	03:15	2014-3481.sub	CAPU-14-79426MSD	1	1393336	Pass (split-sample)

Sample Data Summary

PAH by HPLC
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: 2014-3481

Lab Sample ID: 349927002

Date Collected: 06/02/2014 11:46

Date Received: 06/04/2014 08:55

Matrix: W

Client ID: CAPU-14-79426

Batch ID: 1393336

Run Date: 06/14/2014 01:50

Prep Date: 06/05/2014 06:07

Data File: ph5f1260.d

Client: ARSL004

Method: SW846 8310

Inst: HPLCE.I

Analyst: CWW

Aliquot: 1000 mL

Column: C-18, DAD/FLD

Project: ESHL00714

SOP Ref: GL-OA-E-030

Dilution: 1

Inj. Vol: 20 uL

Final Volume: 1 mL

Level: LOW

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
90-12-0	1-Methylnaphthalene	U	0.500	ug/L	0.218	0.500
91-57-6	2-Methylnaphthalene	U	0.500	ug/L	0.150	0.500
83-32-9	Acenaphthene	U	0.500	ug/L	0.150	0.500
208-96-8	Acenaphthylene	U	0.500	ug/L	0.150	0.500
120-12-7	Anthracene	U	0.500	ug/L	0.150	0.500
56-55-3	Benzo(a)anthracene	U	0.050	ug/L	0.016	0.050
50-32-8	Benzo(a)pyrene	U	0.050	ug/L	0.016	0.050
205-99-2	Benzo(b)fluoranthene	U	0.050	ug/L	0.016	0.050
191-24-2	Benzo(ghi)perylene	U	0.050	ug/L	0.016	0.050
207-08-9	Benzo(k)fluoranthene	U	0.025	ug/L	0.008	0.025
218-01-9	Chrysene	U	0.050	ug/L	0.016	0.050
53-70-3	Dibenzo(a,h)anthracene	U	0.050	ug/L	0.016	0.050
206-44-0	Fluoranthene	U	0.050	ug/L	0.016	0.050
86-73-7	Fluorene	U	0.500	ug/L	0.150	0.500
193-39-5	Indeno(1,2,3-cd)pyrene	U	0.050	ug/L	0.016	0.050
91-20-3	Naphthalene	U	0.500	ug/L	0.150	0.500
85-01-8	Phenanthrene	U	0.500	ug/L	0.182	0.500
129-00-0	Pyrene	U	0.050	ug/L	0.016	0.050

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
Decafluorobiphenyl	124	250	49.5	(21%-96%)

PAH by HPLC
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: 2014-3481

Lab Sample ID: 349927010

Date Collected: 06/02/2014 12:05

Date Received: 06/04/2014 08:55

Matrix: W

Client: ARSL004

Project: ESHL00714

Method: SW846 8310

SOP Ref: GL-OA-E-030

Batch ID: 1393336

Inst: HPLCE.I

Dilution: 1

Run Date: 06/14/2014 03:57

Analyst: CWW

Inj. Vol: 20 uL

Prep Date: 06/05/2014 06:07

Aliquot: 960 mL

Final Volume: 1 mL

Data File: ph5f1263.d

Column: C-18, DAD/FLD

Level: LOW

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
90-12-0	1-Methylnaphthalene	U	0.521	ug/L	0.227	0.521
91-57-6	2-Methylnaphthalene	U	0.521	ug/L	0.156	0.521
83-32-9	Acenaphthene	U	0.521	ug/L	0.156	0.521
208-96-8	Acenaphthylene	U	0.521	ug/L	0.156	0.521
120-12-7	Anthracene	U	0.521	ug/L	0.156	0.521
56-55-3	Benzo(a)anthracene	U	0.0521	ug/L	0.0167	0.0521
50-32-8	Benzo(a)pyrene	U	0.0521	ug/L	0.0167	0.0521
205-99-2	Benzo(b)fluoranthene	U	0.0521	ug/L	0.0167	0.0521
191-24-2	Benzo(ghi)perylene	U	0.0521	ug/L	0.0167	0.0521
207-08-9	Benzo(k)fluoranthene	U	0.026	ug/L	0.00833	0.026
218-01-9	Chrysene	U	0.0521	ug/L	0.0167	0.0521
53-70-3	Dibenzo(a,h)anthracene	U	0.0521	ug/L	0.0167	0.0521
206-44-0	Fluoranthene	U	0.0521	ug/L	0.0167	0.0521
86-73-7	Fluorene	U	0.521	ug/L	0.156	0.521
193-39-5	Indeno(1,2,3-cd)pyrene	U	0.0521	ug/L	0.0167	0.0521
91-20-3	Naphthalene	U	0.521	ug/L	0.156	0.521
85-01-8	Phenanthrene	U	0.521	ug/L	0.190	0.521
129-00-0	Pyrene	U	0.0521	ug/L	0.0167	0.0521

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
Decafluorobiphenyl	171	260	ug/L 65.5	(21% -96%)

QC Summary

PAH by HPLC
Surrogate Recovery Report

Page 1 of 1

SDG Number: 2014-3481

Matrix Type: LIQUID

PACK Column (1) : C-18, DAD/FLD

Sample ID	Client ID	DFBF %REC
1203102419	MB for batch 1393334	60
1203102420	LCS for batch 1393334	50
349927002	CAPU-14-79426	50
1203102421	CAPU-14-79426MS	50
1203102422	CAPU-14-79426MSD	46
349927010	CAPU-14-79432	66

Surrogate

Acceptance Limits

DFBF = Decafluorobiphenyl

(21%-96%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

PAH by HPLC
Quality Control Summary
Spike Recovery Report

Page 1 of 1

SDG Number: 2014-3481

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1393334

Matrix: WATER

Lab Sample ID 1203102420

Instrument: HPLCE.I

Analysis Date: 06/14/2014 01:08

Dilution: 1

Analyst: CWW

Prep Batch ID:1393334

Inj. Vol: 20 uL

Batch ID: 1393336

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
91-20-3	LCS Naphthalene	50.0	0.0	32.4	65	54-108
91-57-6	LCS 2-Methylnaphthalene	50.0	0.0	37.2	74	50-91
90-12-0	LCS 1-Methylnaphthalene	50.0	0.0	34.9	70	55-96
208-96-8	LCS Acenaphthylene	50.0	0.0	37.2	74	52-100
83-32-9	LCS Acenaphthene	50.0	0.0	39.5	79	53-107
86-73-7	LCS Fluorene	50.0	0.0	40.9	82	62-130
85-01-8	LCS Phenanthrene	50.0	0.0	41.9	84	69-130
120-12-7	LCS Anthracene	50.0	0.0	43.7	87	70-130
206-44-0	LCS Fluoranthene	5.00	0.0	3.92	78	70-130
129-00-0	LCS Pyrene	5.00	0.0	4.20	84	70-130
56-55-3	LCS Benzo(a)anthracene	5.00	0.0	4.22	84	70-130
218-01-9	LCS Chrysene	5.00	0.0	4.28	86	70-130
205-99-2	LCS Benzo(b)fluoranthene	5.00	0.0	4.04	81	70-130
207-08-9	LCS Benzo(k)fluoranthene	2.50	0.0	2.17	87	70-130
50-32-8	LCS Benzo(a)pyrene	5.00	0.0	4.11	82	70-130
193-39-5	LCS Indeno(1,2,3-cd)pyrene	5.00	0.0	3.68	74	57-114
53-70-3	LCS Dibenzo(a,h)anthracene	5.00	0.0	2.22	44	30-118
191-24-2	LCS Benzo(ghi)perylene	5.00	0.0	2.50	50	42-115

PAH by HPLC
Quality Control Summary
Spike Recovery Report

Page 1 of 2

SDG Number: 2014-3481

Sample Type: Matrix Spike

Client ID: CAPU-14-79426MS

Matrix: W

Lab Sample ID 1203102421

Instrument: HPLCE.I

Analysis Date: 06/14/2014 02:33

Dilution: 1

Analyst: CWW

Prep Batch ID:1393334

Inj. Vol: 20 uL

Batch ID: 1393336

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
91-20-3	MS	Naphthalene	55.6	0.00	U	34.6	62	32-104
91-57-6	MS	2-Methylnaphthalene	55.6	0.00	U	39.7	71	56-130
90-12-0	MS	1-Methylnaphthalene	55.6	0.00	U	36.3	65	46-130
208-96-8	MS	Acenaphthylene	55.6	0.00	U	35.7	64	26-121
83-32-9	MS	Acenaphthene	55.6	0.00	U	38.2	69	27-118
86-73-7	MS	Fluorene	55.6	0.00	U	38.7	70	29-123
85-01-8	MS	Phenanthrene	55.6	0.00	U	39.8	72	35-126
120-12-7	MS	Anthracene	55.6	0.00	U	44.1	79	36-122
206-44-0	MS	Fluoranthene	5.56	0.00	U	3.84	69	32-134
129-00-0	MS	Pyrene	5.56	0.00	U	4.14	75	32-134
56-55-3	MS	Benzo(a)anthracene	5.56	0.00	U	4.19	75	35-129
218-01-9	MS	Chrysene	5.56	0.00	U	4.41	79	25-141
205-99-2	MS	Benzo(b)fluoranthene	5.56	0.00	U	3.97	72	29-133
207-08-9	MS	Benzo(k)fluoranthene	2.78	0.00	U	2.21	80	28-134
50-32-8	MS	Benzo(a)pyrene	5.56	0.00	U	4.05	73	25-135
193-39-5	MS	Indeno(1,2,3-cd)pyrene	5.56	0.00	U	4.00	72	25-135
53-70-3	MS	Dibenzo(a,h)anthracene	5.56	0.00	U	4.34	78	25-133
191-24-2	MS	Benzo(ghi)perylene	5.56	0.00	U	3.75	68	27-140

PAH by HPLC
Quality Control Summary
Spike Recovery Report

Page 2 of 2

SDG Number: 2014-3481

Sample Type: Matrix Spike Duplicate

Client ID: CAPU-14-79426MSD

Matrix: W

Lab Sample ID 1203102422

Instrument: HPLCE.I

Analysis Date: 06/14/2014 03:15

Dilution: 1

Analyst: CWW

Prep Batch ID:1393334

Inj. Vol: 20 uL

Batch ID: 1393336

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
91-20-3	MSD Naphthalene	55.6	0.00	U 33.6	60	32-104	3	0-20
91-57-6	MSD 2-Methylnaphthalene	55.6	0.00	U 38.0	68	56-130	4	0-20
90-12-0	MSD 1-Methylnaphthalene	55.6	0.00	U 35.2	63	46-130	3	0-20
208-96-8	MSD Acenaphthylene	55.6	0.00	U 34.7	63	26-121	3	0-20
83-32-9	MSD Acenaphthene	55.6	0.00	U 37.2	67	27-118	2	0-20
86-73-7	MSD Fluorene	55.6	0.00	U 36.9	67	29-123	5	0-20
85-01-8	MSD Phenanthrene	55.6	0.00	U 38.4	69	35-126	4	0-20
120-12-7	MSD Anthracene	55.6	0.00	U 41.4	74	36-122	6	0-20
206-44-0	MSD Fluoranthene	5.56	0.00	U 3.64	65	32-134	5	0-20
129-00-0	MSD Pyrene	5.56	0.00	U 3.94	71	32-134	5	0-20
56-55-3	MSD Benzo(a)anthracene	5.56	0.00	U 3.97	71	35-129	5	0-20
218-01-9	MSD Chrysene	5.56	0.00	U 4.05	73	25-141	9	0-20
205-99-2	MSD Benzo(b)fluoranthene	5.56	0.00	U 3.74	67	29-133	6	0-20
207-08-9	MSD Benzo(k)fluoranthene	2.78	0.00	U 2.06	74	28-134	7	0-20
50-32-8	MSD Benzo(a)pyrene	5.56	0.00	U 3.81	68	25-135	6	0-20
193-39-5	MSD Indeno(1,2,3-cd)pyrene	5.56	0.00	U 3.87	70	25-135	3	0-20
53-70-3	MSD Dibenzo(a,h)anthracene	5.56	0.00	U 4.10	74	25-133	6	0-20
191-24-2	MSD Benzo(ghi)perylene	5.56	0.00	U 3.56	64	27-140	5	0-20

Method Blank Summary

Page 1 of 1

SDG Number:	2014-3481	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1393334	Instrument ID:	HPLCE.I	Data File:	ph5f1258.d
Lab Sample ID:	1203102419	Prep Date:	06/05/2014 06:07	Analyzed:	06/14/14 00:26
Column:	C-18, DAD/FLD	Level:	LOW		

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 1393334	1203102420	ph5f1259.d	06/14/14	0108
02 CAPU-14-79426	349927002	ph5f1260.d	06/14/14	0150
03 CAPU-14-79426MS	1203102421	ph5f1261.d	06/14/14	0233
04 CAPU-14-79426MSD	1203102422	ph5f1262.d	06/14/14	0315
05 CAPU-14-79432	349927010	ph5f1263.d	06/14/14	0357

QC Data

PAH by HPLC
Certificate of Analysis
Sample Summary

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SDG Number: 2014-3481	Matrix: WATER
Lab Sample ID: 1203102419	
Client Sample: QC for batch 1393334	Client: ARSL004
Client ID: MB for batch 1393334	Method: SW846 8310
Batch ID: 1393336	Inst: HPLCE.I
Run Date: 06/14/2014 00:26	Analyst: CWW
Prep Date: 06/05/2014 06:07	Aliquot: 1000 mL
Data File: ph5f1258.d	Column: C-18, DAD/FLD
	Project: QC
	SOP Ref: GL-OA-E-030
	Dilution: 1
	Inj. Vol: 20 uL
	Final Volume: 1 mL
	Level: LOW

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
90-12-0	1-Methylnaphthalene	U	0.500	ug/L	0.218	0.500
91-57-6	2-Methylnaphthalene	U	0.500	ug/L	0.150	0.500
83-32-9	Acenaphthene	U	0.500	ug/L	0.150	0.500
208-96-8	Acenaphthylene	U	0.500	ug/L	0.150	0.500
120-12-7	Anthracene	U	0.500	ug/L	0.150	0.500
56-55-3	Benzo(a)anthracene	U	0.050	ug/L	0.016	0.050
50-32-8	Benzo(a)pyrene	U	0.050	ug/L	0.016	0.050
205-99-2	Benzo(b)fluoranthene	U	0.050	ug/L	0.016	0.050
191-24-2	Benzo(ghi)perylene	U	0.050	ug/L	0.016	0.050
207-08-9	Benzo(k)fluoranthene	U	0.025	ug/L	0.008	0.025
218-01-9	Chrysene	U	0.050	ug/L	0.016	0.050
53-70-3	Dibenzo(a,h)anthracene	U	0.050	ug/L	0.016	0.050
206-44-0	Fluoranthene	U	0.050	ug/L	0.016	0.050
86-73-7	Fluorene	U	0.500	ug/L	0.150	0.500
193-39-5	Indeno(1,2,3-cd)pyrene	U	0.050	ug/L	0.016	0.050
91-20-3	Naphthalene	U	0.500	ug/L	0.150	0.500
85-01-8	Phenanthrene	U	0.500	ug/L	0.182	0.500
129-00-0	Pyrene	U	0.050	ug/L	0.016	0.050

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
Decafluorobiphenyl	149	250	59.7	(21%-96%)

**PAH by HPLC
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number:	2014-3481	Matrix:	WATER
Lab Sample ID:	1203102420		
Client Sample:	QC for batch 1393334	Client:	ARSL004
Client ID:	LCS for batch 1393334	Method:	SW846 8310
Batch ID:	1393336	Inst:	HPLCE.I
Run Date:	06/14/2014 01:08	Analyst:	CWW
Prep Date:	06/05/2014 06:07	Aliquot:	1000 mL
Data File:	ph5f1259.d	Column:	C-18, DAD/FLD
		Project:	QC
		SOP Ref:	GL-OA-E-030
		Dilution:	1
		Inj. Vol:	20 uL
		Final Volume:	1 mL
		Level:	LOW

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
90-12-0	1-Methylnaphthalene		34.9	ug/L	0.218	0.500
91-57-6	2-Methylnaphthalene		37.2	ug/L	0.150	0.500
83-32-9	Acenaphthene		39.5	ug/L	0.150	0.500
208-96-8	Acenaphthylene		37.2	ug/L	0.150	0.500
120-12-7	Anthracene		43.7	ug/L	0.150	0.500
56-55-3	Benzo(a)anthracene		4.22	ug/L	0.016	0.050
50-32-8	Benzo(a)pyrene		4.11	ug/L	0.016	0.050
205-99-2	Benzo(b)fluoranthene		4.04	ug/L	0.016	0.050
191-24-2	Benzo(ghi)perylene		2.50	ug/L	0.016	0.050
207-08-9	Benzo(k)fluoranthene		2.17	ug/L	0.008	0.025
218-01-9	Chrysene		4.28	ug/L	0.016	0.050
53-70-3	Dibenzo(a,h)anthracene		2.22	ug/L	0.016	0.050
206-44-0	Fluoranthene		3.92	ug/L	0.016	0.050
86-73-7	Fluorene		40.9	ug/L	0.150	0.500
193-39-5	Indeno(1,2,3-cd)pyrene		3.68	ug/L	0.016	0.050
91-20-3	Naphthalene		32.4	ug/L	0.150	0.500
85-01-8	Phenanthrene		41.9	ug/L	0.182	0.500
129-00-0	Pyrene		4.20	ug/L	0.016	0.050

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
Decafluorobiphenyl	125	250	49.8	(21%-96%)

PAH by HPLC
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: 2014-3481	Date Collected: 06/02/2014 11:46	Matrix: W
Lab Sample ID: 1203102421	Date Received: 06/04/2014 08:55	
Client Sample: QC for batch 1393334	Client: ARSL004	Project: QC
Client ID: CAPU-14-79426MS	Method: SW846 8310	SOP Ref: GL-OA-E-030
Batch ID: 1393336	Inst: HPLCE.I	Dilution: 1
Run Date: 06/14/2014 02:33	Analyst: CWW	Inj. Vol: 20 uL
Prep Date: 06/05/2014 06:07	Aliquot: 450 mL	Final Volume: .5 mL
Data File: ph5f1261.d	Column: C-18, DAD/FLD	Level: LOW

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
90-12-0	1-Methylnaphthalene		36.3	ug/L	0.242	0.556
91-57-6	2-Methylnaphthalene		39.7	ug/L	0.167	0.556
83-32-9	Acenaphthene		38.2	ug/L	0.167	0.556
208-96-8	Acenaphthylene		35.7	ug/L	0.167	0.556
120-12-7	Anthracene		44.1	ug/L	0.167	0.556
56-55-3	Benzo(a)anthracene		4.19	ug/L	0.0178	0.0556
50-32-8	Benzo(a)pyrene		4.05	ug/L	0.0178	0.0556
205-99-2	Benzo(b)fluoranthene		3.97	ug/L	0.0178	0.0556
191-24-2	Benzo(ghi)perylene		3.75	ug/L	0.0178	0.0556
207-08-9	Benzo(k)fluoranthene		2.21	ug/L	0.00889	0.0278
218-01-9	Chrysene		4.41	ug/L	0.0178	0.0556
53-70-3	Dibenzo(a,h)anthracene		4.34	ug/L	0.0178	0.0556
206-44-0	Fluoranthene		3.84	ug/L	0.0178	0.0556
86-73-7	Fluorene		38.7	ug/L	0.167	0.556
193-39-5	Indeno(1,2,3-cd)pyrene		4.00	ug/L	0.0178	0.0556
91-20-3	Naphthalene		34.6	ug/L	0.167	0.556
85-01-8	Phenanthrene		39.8	ug/L	0.202	0.556
129-00-0	Pyrene		4.14	ug/L	0.0178	0.0556

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
Decafluorobiphenyl	140	278	50.3	(21% -96%)

**PAH by HPLC
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number:	2014-3481	Date Collected:	06/02/2014 11:46	Matrix:	W
Lab Sample ID:	1203102422	Date Received:	06/04/2014 08:55		
Client Sample:	QC for batch 1393334	Client:	ARSL004	Project:	QC
Client ID:	CAPU-14-79426MSD	Method:	SW846 8310	SOP Ref:	GL-OA-E-030
Batch ID:	1393336	Inst:	HPLCE.I	Dilution:	1
Run Date:	06/14/2014 03:15	Analyst:	CWW	Inj. Vol:	20 uL
Prep Date:	06/05/2014 06:07	Aliquot:	450 mL	Final Volume:	.5 mL
Data File:	ph5f1262.d	Column:	C-18, DAD/FLD	Level:	LOW

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
90-12-0	1-Methylnaphthalene		35.2	ug/L	0.242	0.556
91-57-6	2-Methylnaphthalene		38.0	ug/L	0.167	0.556
83-32-9	Acenaphthene		37.2	ug/L	0.167	0.556
208-96-8	Acenaphthylene		34.7	ug/L	0.167	0.556
120-12-7	Anthracene		41.4	ug/L	0.167	0.556
56-55-3	Benzo(a)anthracene		3.97	ug/L	0.0178	0.0556
50-32-8	Benzo(a)pyrene		3.81	ug/L	0.0178	0.0556
205-99-2	Benzo(b)fluoranthene		3.74	ug/L	0.0178	0.0556
191-24-2	Benzo(ghi)perylene		3.56	ug/L	0.0178	0.0556
207-08-9	Benzo(k)fluoranthene		2.06	ug/L	0.00889	0.0278
218-01-9	Chrysene		4.05	ug/L	0.0178	0.0556
53-70-3	Dibenzo(a,h)anthracene		4.10	ug/L	0.0178	0.0556
206-44-0	Fluoranthene		3.64	ug/L	0.0178	0.0556
86-73-7	Fluorene		36.9	ug/L	0.167	0.556
193-39-5	Indeno(1,2,3-cd)pyrene		3.87	ug/L	0.0178	0.0556
91-20-3	Naphthalene		33.6	ug/L	0.167	0.556
85-01-8	Phenanthrene		38.4	ug/L	0.202	0.556
129-00-0	Pyrene		3.94	ug/L	0.0178	0.0556

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
Decafluorobiphenyl	129	278	46.4	(21%-96%)

Perchlorates by LCMSMS Analysis

Case Narrative

**Perchlorate by LC-MS/MS
ARS International, LLC (ARSL)
SDG 2014-3481**

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: 1394191

Prep Batch Number: 1394190

Sample Analysis

Sample ID	Client ID
349927006	CAPU-14-79434
349927014	CAPU-14-79440
1203104534	Interference Check Sample (ICS)
1203104530	Method Blank (MB)
1203104531	Laboratory Control Sample (LCS)
1203104532	350053006(CAPU-14-79436) Matrix Spike (MS)
1203104533	350053006(CAPU-14-79436) 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# 11.

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

The initial calibration verification standard (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 350053006 (CAPU-14-79436) from SDG 2014-3494 was chosen for matrix spike and matrix spike duplicate analysis.

Matrix Spike (MS) Recovery Statement

The MS recoveries were within the established acceptance limits.

Matrix Spike Duplicate (MSD) Recovery Statement

The MSD recoveries were within the established acceptance limits.

MS/MSD Relative Percent Difference (RPD) Statement

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

Retention Time Standard Area Acceptance

The retention time standard areas were within the required acceptance criteria for all samples and QC.

Retention Time

During the analysis of Perchlorate by LC/MS/MS, retention time shifts are commonly observed. These retention time shifts, which are caused by fouling of the column by the sample matrices, are problematic when the retention time is used as one of the criterion for confirmation. To overcome this problem, a known amount of O(18) labeled Perchlorate was added to each sample as a retention time standard.

The presence of Perchlorate was confirmed by the relative retention time (RRT) of the Perchlorate peak and the O(18) standard. A RRT window of 0.98 to 1.02, as required by Method 332.0, has been used.

In addition to the isotopic ratio, the presence of Perchlorate in the samples associated with this data package have been confirmed using the relative retention criteria stated above, not the absolute retention time.

Technical Information

Holding Time Specifications

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

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

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

Miscellaneous Information

Data Exception (DER) Documentation

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

A data exception report (DER) was not generated for this SDG.

Manual Integrations

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

Method Comments

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

Additional Comments

The Perchlorate Isotope Ratio on the Form I may differ slightly from the ratio on the corresponding raw data due to rounding rules and/or significant figures or due to software limitations when there are manual integrations, dilutions or other factors. The ratio value of the Form I is the correct value.

The retention time marker, Perchlorate-O (18), is added to all samples, instrument blanks, and standards prior to injection. It is used to verify the retention time of Perchlorate and Perchlorate-101 and to insure an accurate injection occurred.

Due to various anions affecting the recovery of Perchlorate-O (18) and not Perchlorate and Perchlorate-101, the calibration curves of Perchlorate and Perchlorate-101 are not internally corrected for using Perchlorate-O (18). They are external calibrations.

Perchlorate Isotope Ratio

The Perchlorate isotope ratio met acceptance criteria for all samples and QC samples.

Please see the isotope ratio criteria in the Miscellaneous Section.

System Configuration

The laboratory utilizes a Waters LC 2795 liquid chromatography instrument for Perchlorate analysis. It is coupled with either a Micromass Quattro Micro Mass Spectrometer/ Mass Spectrometer, or a Micromass Quattro Ultima Mass Spectrometer/ Mass Spectrometer. Each being designated as LCMSMS #1 and LCMSMS #2, respectively. It is fitted with an electrospray probe that is operated in the negative electrospray ionization mode for Perchlorate analysis.

The laboratory may also utilize an Agilent 1100 liquid chromatography instrument for Perchlorate analysis. It is coupled with an Applied Biosystems 4000 Mass Spectrometer/ Mass Spectrometer, designated as LCMSMS #3 or LCMSMS #4. It is also fitted with an electrospray probe that is operated in the negative electrospray ionization mode for Perchlorate analysis.

Electronic Packaging Comment

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

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

Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Chromatographic Columns

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

Dionex: IonPac AG-16 2 x 50 mm.

Certification Statement

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

GEL LABORATORIES LLC

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

Qualifier Definition Report for

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

Client SDG: 2014-3481 GEL Work Order: 349927

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: 13 JUN 2014

Title: Group Leader

Sample Data Summary

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: SW846 6850 ModifiedMatrix: WATERExtraction Batch ID: 1394190Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAPU-14-79434Date Received: 04-JUN-14GEL Job No (SDG): 2014-3481GEL Sample ID: 349927006Date Filtered: 07-JUN-14Injection 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	0.264	ug/L		1	11-JUN-14 15:32	per0611015a
	Perchlorate Isotope Ratio			2.88			1	11-JUN-14 15:32	per0611015a
14797-73-0	Perchlorate-101	.05	.2	0.267	ug/L		1	11-JUN-14 15:32	per0611015a
	Perchlorate-O(18)			0.496	ug/L		1	11-JUN-14 15:32	per0611015a

^ 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: 1394190Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAPU-14-79440Date Received: 04-JUN-14GEL Job No (SDG): 2014-3481GEL Sample ID: 349927014Date Filtered: 07-JUN-14Injection 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	0.469	ug/L		1	11-JUN-14 15:43	per0611016a
	Perchlorate Isotope Ratio			2.94			1	11-JUN-14 15:43	per0611016a
14797-73-0	Perchlorate-101	.05	.2	0.465	ug/L		1	11-JUN-14 15:43	per0611016a
	Perchlorate-O(18)			0.507	ug/L		1	11-JUN-14 15:43	per0611016a

^ 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): 2014-3481

Extract Batch Code: 1394190

Date Filtered: 07-JUN-14

Matrix: WATER

Sample ID: 1203104531

Analyte^	True	Found	Units	%Rec	Q	Control Limits
Perchlorate	0.200	.194	ug/L	97.0		85 - 115
Perchlorate Isotope Ratio		2.87				-
Perchlorate-101	0.200	.197	ug/L	98.5		85 - 115
Perchlorate-O(18)		.487	ug/L			-

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

Perchlorate Spike/Spike Duplicate Summary

Lab Name: General Engineering Laboratories

Lab Code: GEL

GEL Job No (SDG): 2014-3481

Extract Batch Code: 1394190

Date Extracted: 07-JUN-14

GEL MS/PS ID: 1203104532

Client ID: CAPU-14-79436

GEL MSD/PSD ID: 1203104533

QC Type: MS

Compound^	Spike Added	Sample Conc	Units	MS Conc	MS Rec #	MSD Conc	MSD Rec #	RPD #	RPD Limit	Recovery Limit
Perchlorate	0.200	0.358	ug/L	0.545	93.5	.541	91.9	.612	30	75 - 125
Perchlorate Isotope Ratio	0	2.90		2.95		2.92		1.33		-
Perchlorate-101	0.200	0.359	ug/L	0.537	88.9	.541	90.8	.716	30	75 - 125
Perchlorate-O(18)	0	0.471	ug/L	0.492		.491		.251		-

^ 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: 1394190Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

MBDate Received: 07-JUN-14GEL Job No (SDG): 2014-3481GEL Sample ID: 1203104530Date Filtered: 07-JUN-14Injection 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	11-JUN-14 14:57	per0611012a
	Perchlorate Isotope Ratio						1	11-JUN-14 14:57	per0611012a
14797-73-0	Perchlorate-101	.05	.2	0.200	ug/L	U	1	11-JUN-14 14:57	per0611012a
	Perchlorate-O(18)			0.482	ug/L		1	11-JUN-14 14:57	per0611012a

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

*Concentration =

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

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: EPA 6850 ModifiedMatrix: WATERExtraction Batch ID: 1394190Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

LCSDate Received: 07-JUN-14GEL Job No (SDG): 2014-3481GEL Sample ID: 1203104531Date Filtered: 07-JUN-14Injection 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	0.194	ug/L	J	1	11-JUN-14 15:09	per0611013a
	Perchlorate Isotope Ratio			2.87			1	11-JUN-14 15:09	per0611013a
14797-73-0	Perchlorate-101	.05	.2	0.197	ug/L	J	1	11-JUN-14 15:09	per0611013a
	Perchlorate-O(18)			0.487	ug/L		1	11-JUN-14 15:09	per0611013a

^ 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: 1394190Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

ICS

Date Received:

GEL Job No (SDG): 2014-3481GEL Sample ID: 1203104534Date Filtered: 07-JUN-14Injection 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	0.191	ug/L	J	1	11-JUN-14 15:20	per0611014a
	Perchlorate Isotope Ratio			2.96			1	11-JUN-14 15:20	per0611014a
14797-73-0	Perchlorate-101	.05	.2	0.188	ug/L	J	1	11-JUN-14 15:20	per0611014a
	Perchlorate-O(18)			0.487	ug/L		1	11-JUN-14 15:20	per0611014a

^ 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: 1394190Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAPU-14-79436MSDate Received: 05-JUN-14GEL Job No (SDG): 2014-3481GEL Sample ID: 1203104532Date Filtered: 07-JUN-14Injection 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	0.545	ug/L		1	11-JUN-14 16:06	per0611018a
	Perchlorate Isotope Ratio			2.95			1	11-JUN-14 16:06	per0611018a
14797-73-0	Perchlorate-101	.05	.2	0.537	ug/L		1	11-JUN-14 16:06	per0611018a
	Perchlorate-O(18)			0.492	ug/L		1	11-JUN-14 16:06	per0611018a

^ 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: 1394190Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAPU-14-79436MSDDate Received: 05-JUN-14GEL Job No (SDG): 2014-3481GEL Sample ID: 1203104533Date Filtered: 07-JUN-14Injection 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	0.541	ug/L		1	11-JUN-14 16:18	per0611019a
	Perchlorate Isotope Ratio			2.92			1	11-JUN-14 16:18	per0611019a
14797-73-0	Perchlorate-101	.05	.2	0.541	ug/L		1	11-JUN-14 16:18	per0611019a
	Perchlorate-O(18)			0.491	ug/L		1	11-JUN-14 16:18	per0611019a

^ 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 =

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

Pesticide Analysis

Case Narrative

Pesticide Case Narrative
ARS International, LLC (ARSL)
SDG 2014-3481

Method/Analysis Information

Procedure: Analysis of 1,2-Dibromoethane (EDB) and 1,2-Dibromo-3-Chloropropane (DBCP) in Water by GC/ECD Using Methods 504.1 or 8011

Analytical Method: SW846 8011

Prep Method: SW846 8011 PREP

Analytical Batch Number: 1393557

Prep Batch Number: 1393555

Sample Analysis

Sample ID	Client ID
349927001	CAPU-14-79426
349927007	CAPU-14-79418
349927009	CAPU-14-79432
349927015	CAPU-14-79424
1203102999	Method Blank (MB)
1203103000	Laboratory Control Sample (LCS)
1203103001	349975001(34662-001) Matrix Spike (MS)
1203103002	349975001(34662-001) 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-059 REV# 12.

Raw data reports are processed and reviewed by the analyst using ChemStation software. False positives have been removed from the ChemStation quantitation reports per standard operating procedures (SOP).

Calibration Information

A complete list of the initial calibration data files are shown in the Calibration History report located in the Standard Data section of the data package.

Initial Calibration

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

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (ICV or CCV) met the acceptance criteria. All analytes were within the established retention time windows for this method.

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

The MB analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

Surrogates recovered with a positive bias on one column only in samples 349927007 (CAPU-14-79418) and 349927015 (CAPU-14-79424). The other column passed recovery limits and there were no detects of target analytes in the samples. The data were reported.

Laboratory Control Sample (LCS) Recovery

The laboratory control sample (LCS) spike recoveries met the acceptance limits.

QC Sample Designation

Sample 349975001 (34662-001) was selected for the matrix spike and matrix spike duplicate analysis.

Matrix Spike (MS) Recovery Statement

The MS recoveries for this SDG were within the established acceptance limits.

Matrix Spike Duplicate (MSD) Recovery Statement

The MSD recoveries for this SDG were within the established acceptance limits.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD values between the MS and MSD were within the acceptance limits.

Technical Information:**Holding Time Specifications**

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

Sample preservation

Samples had a pH of 2. 349927007 (CAPU-14-79418) and 349927015 (CAPU-14-79424).

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP. All reported analyte detections in client and quality control samples were within the established retention time windows.

Sample Dilutions

The samples in this SDG in this analytical batch did not require dilutions.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG in this analytical batch unless confirmations or dilutions were required.

Miscellaneous Information:

Electronic Package Comment

This package was generated using an electronic data processing program referred to as "virtual packaging". In an effort to increase quality and efficiency, the laboratory is developing systems to eventually 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 Exception (DER) Documentation

The following DER was generated for this SDG: 1302340. 349927007 (CAPU-14-79418) and 349927015 (CAPU-14-79424).

Manual Integrations

Certain standards and samples may have required manual integration to correctly position the baseline as set in the calibration standard injections. If manual integration was performed, copies of all manual integration peak profiles are included in the raw data section of this pesticide fraction.

System Configuration

The 504.1/8011 analysis of EDB/DBCP was performed on the following instrument configuration:

Instrument ID	Instrument	System Configuration	Column ID	Column Description
ECD1A.I_1	Agilent 6890 Gas Chromatograph/Dual ECD w/ 7683 Autosampler	HP6890 Series ECD	Rtx-CLP I	30m x 0.25mm, 0.25um (Rtx-CLPesticide)
ECD1A.I_1	Agilent 6890 Gas Chromatograph/Dual ECD w/ 7683 Autosampler	HP6890 Series ECD	ZB-50-504/8011	30m x 0.53mm, 1.00um
ECD1A.I_2	Agilent 6890 Gas Chromatograph/Dual ECD w/ 7683 Autosampler	HP6890 Series ECD	Rtx-CLP II	30m x 0.25mm, 0.20um (Rtx-CLPesticide II)
ECD1A.I_2	Agilent 6890 Gas Chromatograph/Dual ECD w/ 7683 Autosampler	HP6890 Series ECD	ZB-XLB-504/8	30m x 0.53mm, 1.50um

Method/Analysis Information

Procedure:	Organochlorine Pesticides and Chlorinated Hydrocarbons
Analytical Method:	SW846 3535A/8081B

Prep Method: SW846 3535A

Analytical Batch Number: 1394113

Prep Batch Number: 1394107

Sample Analysis

Sample ID	Client ID
349927004	CAPU-14-79426
349927011	CAPU-14-79432
1203104374	Method Blank (MB)
1203104375	Laboratory Control Sample (LCS)
1203104376	350137004(CAPU-14-79429) Matrix Spike (MS)
1203104384	Laboratory Control Sample Duplicate (LCSD)

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-041 REV# 13.

Raw data reports are processed and reviewed by the analyst using ChemStation software. False positives have been removed from the ChemStation quantitation reports per standard operating procedures (SOP).

Calibration Information

A complete list of the initial calibration data files are shown in the Calibration History report located in the Standard Data section of the data package.

Initial Calibration

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

Continuing Calibration Verification (CCV) Requirements

All calibration verification standards (CVS, ICV, or CCV) requirements have not been met for this SDG. Several target analytes failed acceptance criteria with a positive bias on one analytical column in the standards bracketing the samples in this SDG. The positive bias for the analytical data is a result of instrument response increasing after the initial calibration. These target analytes were not detected above the PQL in the samples; therefore, the non-compliance has no adverse effects on the data.

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

One or both surrogates recovered with a positive bias in sample 349927011 (CAPU-14-79432). There were no detects of target analytes in the sample and the data were reported.

Laboratory Control Sample (LCS) Recovery

The laboratory control sample (LCS) spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery

The laboratory control sample duplicate (LCSD) spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

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

QC Sample Designation

Sample 350137004 (CAPU-14-79429) was selected for the matrix spike analysis.

Matrix Spike (MS) Recovery Statement

The MS recoveries for this SDG were within the established acceptance limits.

Technical Information:**Holding Time Specifications**

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

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP. All reported analyte detections in client and quality control samples were within the established retention time windows.

Sample Dilutions

The samples in this SDG in this analytical batch did not require dilutions.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG in this analytical batch unless confirmations or dilutions were required.

Florisil

Florisil clean-up was not performed on client and quality control samples in this batch.

Miscellaneous Information:**Electronic Package Comment**

This package was generated using an electronic data processing program referred to as "virtual packaging". In an effort to increase quality and efficiency, the laboratory is developing systems to eventually 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 Exception (DER) Documentation

The following DER was generated for this SDG: 1303137.

Manual Integrations

Certain standards and samples may have required manual integration to correctly position the baseline as set in the calibration standard injections. If manual integration was performed, copies of all manual integration peak profiles are included in the raw data section of this pesticide fraction.

Additional Comments

The additional comments field is used to address special issues associated with each analysis, clarify

method/contractual issues pertaining to the analysis, and to list any report documents generated as a result of sample analysis or review. The following additional comments required for this SDG:

System Configuration

The Semi-Volatiles-Pesticide analysis was performed on the following instrument configuration:

Instrument ID	Instrument	System Configuration	Column ID	Column Description
ECD7A.I_1	Agilent 6890 Gas Chromatograph/Dual ECD w/ 7673 Autosampler	HP6890 Series ECD	Rtx-CLP I	30m x 0.25mm, 0.25um (Rtx-CLPesticide I)
ECD7A.I_2	Agilent 6890 Gas Chromatograph/Dual ECD w/ 7673 Autosampler	HP6890 Series ECD	Rtx-CLP II	30m x 0.25mm, 0.20um (Rtx-CLPesticide II)

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: 2014-3481 GEL Work Order: 349927

The Qualifiers in this report are defined as follows:

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

Review/Validation

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

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

Signature:



Name: Cameron Bearden

Date: 17 JUN 2014

Title: Group Leader

Sample Data Summary

**Pesticide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 2014-3481

Lab Sample ID: 349927001

Date Collected: 06/02/2014 11:46

Date Received: 06/04/2014 08:55

Matrix: W

Client ID: CAPU-14-79426

Client: ARSL004

Project: ESHL00714

Batch ID: 1393557

Method: SW846 8011

SOP Ref: GL-OA-E-059

Run Date: 06/06/2014 15:09

Inst: ECD1A.I

Dilution: 1

Prep Date: 06/06/2014 14:45

Analyst: RXE1

Inj. Vol: 1 uL

Data File: 060614HE\E1f0609.D

Aliquot: 35.36 mL

Final Volume: 35 mL

Column: 1 ZB-50
2 ZB-XLB

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
96-12-8	1,2-Dibromo-3-chloropropane	U	0.0198	ug/L	0.00594	0.0198	1
106-93-4	1,2-Dibromoethane	U	0.0198	ug/L	0.00594	0.0198	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
Bromofluorobenzene		3.98	3.54	ug/L	112	(73%-135%)	

**Pesticide
Certificate of Analysis
Sample Summary**

SDG Number: 2014-3481
Lab Sample ID: 349927004

Client ID: CAPU-14-79426
Batch ID: 1394113
Run Date: 06/10/2014 16:05
Prep Date: 06/09/2014 12:45
Data File: 061014.B\7f1011.D
061014.B\7f1011.D

Date Collected: 06/02/2014 11:46
Date Received: 06/04/2014 08:55
Client: ARSL004
Method: SW846 3535A/8081B
Inst: ECD7A.I
Analyst: LOF
Aliquot: 980 mL
Column: 1 CLPesticides
2 CLPesticides2

Matrix: W
Project: ESHL00714
SOP Ref: GL-OA-E-041
Dilution: 1
Inj. Vol: 1 uL
Final Volume: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
118-74-1	Hexachlorobenzene	U	0.0204	ug/L	0.00638	0.0204	1

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
4cmx	0.875	1.02	ug/L	85.7	(36%-106%)
Decachlorobiphenyl	1.04	1.02	ug/L	102	(41%-124%)

**Pesticide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 2014-3481

Lab Sample ID: 349927007

Date Collected: 06/02/2014 11:46

Date Received: 06/04/2014 08:55

Matrix: W

Client: ARSL004

Project: ESHL00714

Method: SW846 8011

SOP Ref: GL-OA-E-059

Client ID: CAPU-14-79418

Batch ID: 1393557

Inst: ECD1A.I

Dilution: 1

Run Date: 06/06/2014 15:30

Analyst: RXE1

Inj. Vol: 1 uL

Prep Date: 06/06/2014 14:45

Aliquot: 35.28 mL

Final Volume: 35 mL

Data File: 060614HE\E1f0610.D

Column: 1 ZB-50

2 ZB-XLB

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
96-12-8	1,2-Dibromo-3-chloropropane	U	0.0198	ug/L	0.00595	0.0198	1
106-93-4	1,2-Dibromoethane	U	0.0198	ug/L	0.00595	0.0198	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
Bromofluorobenzene		5.34	3.54	ug/L	151	*	(73%-135%)

**Pesticide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 2014-3481

Lab Sample ID: 349927009

Date Collected: 06/02/2014 12:05

Date Received: 06/04/2014 08:55

Matrix: W

Client ID: CAPU-14-79432

Client: ARSL004

Project: ESHL00714

Batch ID: 1393557

Method: SW846 8011

SOP Ref: GL-OA-E-059

Run Date: 06/06/2014 15:51

Inst: ECD1A.I

Dilution: 1

Prep Date: 06/06/2014 14:45

Analyst: RXE1

Inj. Vol: 1 uL

Data File: 060614HE\E1f0611.D

Aliquot: 34.37 mL

Final Volume: 35 mL

060614HE\E1f0611.D

Column: 1 ZB-50
2 ZB-XLB

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
96-12-8	1,2-Dibromo-3-chloropropane	U	0.0204	ug/L	0.00611	0.0204	1
106-93-4	1,2-Dibromoethane	U	0.0204	ug/L	0.00611	0.0204	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
Bromofluorobenzene		4.21	3.64	ug/L	116	(73%-135%)	

**Pesticide
Certificate of Analysis
Sample Summary**

SDG Number: 2014-3481
Lab Sample ID: 349927011

Client ID: CAPU-14-79432
Batch ID: 1394113
Run Date: 06/10/2014 16:21
Prep Date: 06/09/2014 12:45
Data File: 061014.B\7f1012.D
061014.B\7f1012.D

Date Collected: 06/02/2014 12:05
Date Received: 06/04/2014 08:55
Client: ARSL004
Method: SW846 3535A/8081B
Inst: ECD7A.I
Analyst: LOF
Aliquot: 990 mL
Column: 1 CLPesticides
2 CLPesticides2

Matrix: W
Project: ESHL00714
SOP Ref: GL-OA-E-041
Dilution: 1
Inj. Vol: 1 uL
Final Volume: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
118-74-1	Hexachlorobenzene	U	0.0202	ug/L	0.00631	0.0202	1

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
4cmx	1.06	1.01	ug/L 105	(36%-106%)
Decachlorobiphenyl	1.28	1.01	ug/L 127 *	(41%-124%)

**Pesticide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 2014-3481

Lab Sample ID: 349927015

Date Collected: 06/02/2014 12:05

Date Received: 06/04/2014 08:55

Matrix: W

Client: ARSL004

Project: ESHL00714

Method: SW846 8011

SOP Ref: GL-OA-E-059

Batch ID: 1393557

Inst: ECD1A.I

Dilution: 1

Run Date: 06/06/2014 16:12

Analyst: RXE1

Inj. Vol: 1 uL

Prep Date: 06/06/2014 14:45

Aliquot: 35.49 mL

Final Volume: 35 mL

Data File: 060614HE\E1f0612.D

Column: 1 ZB-50

2 ZB-XLB

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
96-12-8	1,2-Dibromo-3-chloropropane	U	0.0197	ug/L	0.00592	0.0197	1
106-93-4	1,2-Dibromoethane	U	0.0197	ug/L	0.00592	0.0197	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
Bromofluorobenzene		5.28	3.52	ug/L	150	*	(73%-135%)

Quality Control Summary

Pesticide
Surrogate Recovery Report

Page 1 of 2

SDG Number: 2014-3481**Matrix Type: LIQUID**

Sample ID	Client ID	BFB 1 %REC #	BFB 2 %REC #
1203102999	MB for batch 1393555	112	98
1203103000	LCS for batch 1393555	113	107
349927001	CAPU-14-79426	112	98
349927007	CAPU-14-79418	120	151 *
349927009	CAPU-14-79432	116	99
349927015	CAPU-14-79424	124	150 *
1203103001	34662-001MS	116	111
1203103002	34662-001MSD	116	113

Surrogate**Acceptance Limits**

BFB = Bromofluorobenzene

(62%-131%)

BFB = Bromofluorobenzene

(73%-135%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Pesticide
Surrogate Recovery Report

Page 2 of 2

SDG Number: 2014-3481**Matrix Type: LIQUID**

Sample ID	Client ID	4CMX 1 %REC #	4CMX 2 %REC #	DCB 1 %REC #	DCB 2 %REC #
1203104374	MB for batch 1394107	86	79	106	102
1203104375	LCS for batch 1394107	87	84	116	113
1203104384	LCSD for batch 1394107	99	92	120	116
349927004	CAPU-14-79426	86	77	102	97
349927011	CAPU-14-79432	105	99	127 *	125 *
1203104376	CAPU-14-79429MS	87	82	112	109

Surrogate**Acceptance Limits**

4CMX = 4cmx

(36%-106%)

DCB = Decachlorobiphenyl

(41%-124%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Pesticide
Quality Control Summary
Spike Recovery Report

Page 1 of 1

SDG Number: 2014-3481

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1393555

Matrix: WATER

Lab Sample ID 1203103000

Instrument: ECD1A.I

Analysis Date: 06/06/2014 14:48

Dilution: 1

Analyst: RXE1

Prep Batch ID:1393555

Inj. Vol: 1 uL

Batch ID: 1393557

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
106-93-4	LCS 1,2-Dibromoethane	0.200	0.0	0.236	118	70-130
96-12-8	LCS 1,2-Dibromo-3-chloropropane	0.200	0.0	0.232	116	70-130

Pesticide
Quality Control Summary
Spike Recovery Report

Page 1 of 2

SDG Number: 2014-3481
Client ID: 34662-001MS
Lab Sample ID 1203103001
Instrument: ECD1A.I
Analyst: RXE1
Inj. Vol: 1 uL

Sample Type: Matrix Spike
Matrix: W
Analysis Date: 06/06/2014 17:37
Prep Batch ID:1393555
Batch ID: 1393557

Dilution: 1

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
96-12-8	MS 1,2-Dibromo-3-chloropropane	0.201	0.00 U	0.239	119	65-135
106-93-4	MS 1,2-Dibromoethane	0.201	0.0492	0.278	114	65-135

Pesticide
Quality Control Summary
Spike Recovery Report

Page 2 of 2

SDG Number: 2014-3481
Client ID: 34662-001MSD
Lab Sample ID 1203103002
Instrument: ECD1A.I
Analyst: RXE1
Inj. Vol: 1 uL

Sample Type: Matrix Spike Duplicate
Matrix: W
Analysis Date: 06/06/2014 17:58
Prep Batch ID:1393555
Batch ID: 1393557

Dilution: 1

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
96-12-8	MSD 1,2-Dibromo-3-chloropropane	0.203	0.00 U	0.241	119	65-135	1	0-20
106-93-4	MSD 1,2-Dibromoethane	0.203	0.0492	0.282	115	65-135	1	0-20

Pesticide
Quality Control Summary
Spike Recovery Report

Page 1 of 2

SDG Number: 2014-3481

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1394107

Matrix: WATER

Lab Sample ID 1203104375

Instrument: ECD7A.I

Analysis Date: 06/10/2014 15:33

Dilution: 1

Analyst: LOF

Prep Batch ID:1394107

Inj. Vol: 1 uL

Batch ID: 1394113

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
118-74-1	LCS Hexachlorobenzene	0.100	0.0	0.132	132	50-150

Pesticide
Quality Control Summary
Spike Recovery Report

Page 2 of 2

SDG Number: 2014-3481

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 1394107

Matrix: WATER

Lab Sample ID 1203104384

Instrument: ECD7A.I

Analysis Date: 06/10/2014 15:49

Dilution: 1

Analyst: LOF

Prep Batch ID: 1394107

Inj. Vol: 1 uL

Batch ID: 1394113

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
118-74-1	LCSD Hexachlorobenzene	0.100	0.0	0.114	114	50-150	15	0-30

Pesticide
Quality Control Summary
Spike Recovery Report

Page 1 of 1

SDG Number: 2014-3481

Sample Type: Matrix Spike

Client ID: CAPU-14-79429MS

Matrix: W

Lab Sample ID 1203104376

Instrument: ECD7A.I

Analysis Date: 06/10/2014 19:01

Dilution: 1

Analyst: LOF

Prep Batch ID:1394107

Inj. Vol: 1 uL

Batch ID: 1394113

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
118-74-1	MS Hexachlorobenzene	0.104	0.00 U	0.112	108	50-150

Method Blank Summary

Page 1 of 1

SDG Number:	2014-3481	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1393555	Instrument ID:	ECD1A.I_1	Data File:	060614HE\E1f0607.D
Lab Sample ID:	1203102999		ECD1A.I_2		060614HE\E1f0607.D
Column:	ZB-50	Prep Date:	06/06/2014 12:00	Analyzed:	06/06/14 14:27
	ZB-XLB				

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 1393555	1203103000	060614HE\E1f0608.D 060614HE\E1f0608.D	06/06/14	1448
02 CAPU-14-79426	349927001	060614HE\E1f0609.D 060614HE\E1f0609.D	06/06/14	1509
03 CAPU-14-79418	349927007	060614HE\E1f0610.D 060614HE\E1f0610.D	06/06/14	1530
04 CAPU-14-79432	349927009	060614HE\E1f0611.D 060614HE\E1f0611.D	06/06/14	1551
05 CAPU-14-79424	349927015	060614HE\E1f0612.D 060614HE\E1f0612.D	06/06/14	1612
06 34662-001MS	1203103001	060614HE\E1f0616.D 060614HE\E1f0616.D	06/06/14	1737
07 34662-001MSD	1203103002	060614HE\E1f0617.D 060614HE\E1f0617.D	06/06/14	1758

Method Blank Summary

Page 1 of 1

SDG Number:	2014-3481	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1394107	Instrument ID:	ECD7A.I_1	Data File:	061014.B\7f1008.D
Lab Sample ID:	1203104374		ECD7A.I_2		061014.B\7f1008.D
Column:	CLPesticides	Prep Date:	06/09/2014 12:45	Analyzed:	06/10/14 15:17
	CLPesticides2				

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 1394107	1203104375	061014.B\7f1009.D 061014.B\7f1009.D	06/10/14	1533
02 LCSD for batch 1394107	1203104384	061014.B\7f1010.D 061014.B\7f1010.D	06/10/14	1549
03 CAPU-14-79426	349927004	061014.B\7f1011.D 061014.B\7f1011.D	06/10/14	1605
04 CAPU-14-79432	349927011	061014.B\7f1012.D 061014.B\7f1012.D	06/10/14	1621
05 CAPU-14-79429MS	1203104376	061014.B\7f1022.D 061014.B\7f1022.D	06/10/14	1901

Quality Control Data

**Pesticide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 2014-3481
Lab Sample ID: 1203102999
Client Sample: QC for batch 1393555
Client ID: MB for batch 1393555
Batch ID: 1393557
Run Date: 06/06/2014 14:27
Prep Date: 06/06/2014 12:00
Data File: 060614HE\E1f0607.D
060614HE\E1f0607.D

Client: ARSL004
Method: SW846 8011
Inst: ECD1A.I
Analyst: RXE1
Aliquot: 35 mL
Column: 1 ZB-50
2 ZB-XLB

Matrix: WATER
Project: QC
SOP Ref: GL-OA-E-059
Dilution: 1
Inj. Vol: 1 uL
Final Volume: 35 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
96-12-8	1,2-Dibromo-3-chloropropane	U	0.020	ug/L	0.006	0.020	1
106-93-4	1,2-Dibromoethane	U	0.020	ug/L	0.006	0.020	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
Bromofluorobenzene		4.01	3.57	ug/L	112	(73%-135%)	

**Pesticide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number:	2014-3481	Matrix:	WATER
Lab Sample ID:	1203103000		
Client Sample:	QC for batch 1393555	Client:	ARSL004
Client ID:	LCS for batch 1393555	Method:	SW846 8011
Batch ID:	1393557	Inst:	ECD1A.I
Run Date:	06/06/2014 14:48	Analyst:	RXE1
Prep Date:	06/06/2014 12:00	Aliquot:	35 mL
Data File:	060614HE\E1f0608.D	Column:	1 ZB-50
	060614HE\E1f0608.D		2 ZB-XLB

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
96-12-8	1,2-Dibromo-3-chloropropane		0.232	ug/L	0.006	0.020	1
106-93-4	1,2-Dibromoethane		0.236	ug/L	0.006	0.020	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
Bromofluorobenzene		4.02	3.57	ug/L	113	(73%-135%)	

**Pesticide
Certificate of Analysis
Sample Summary**

SDG Number:	2014-3481	Date Collected:	06/02/2014 14:07	Matrix:	W
Lab Sample ID:	1203103001	Date Received:	06/04/2014 08:55		
Client Sample:	QC for batch 1393555	Client:	ARSL004	Project:	QC
Client ID:	34662-001MS	Method:	SW846 8011	SOP Ref:	GL-OA-E-059
Batch ID:	1393557	Inst:	ECD1A.I	Dilution:	1
Run Date:	06/06/2014 17:37	Analyst:	RXE1	Inj. Vol:	1 uL
Prep Date:	06/06/2014 14:45	Aliquot:	34.82 mL	Final Volume:	35 mL
Data File:	060614HE\E1f0616.D	Column:	1 ZB-50		
	060614HE\E1f0616.D		2 ZB-XLB		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
96-12-8	1,2-Dibromo-3-chloropropane		0.239	ug/L	0.00603	0.0201	1
106-93-4	1,2-Dibromoethane		0.278	ug/L	0.00603	0.0201	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
Bromofluorobenzene		4.18	3.59	ug/L	116	(62%-131%)	

**Pesticide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number:	2014-3481	Date Collected:	06/02/2014 14:07	Matrix:	W
Lab Sample ID:	1203103002	Date Received:	06/04/2014 08:55		
Client Sample:	QC for batch 1393555	Client:	ARSL004	Project:	QC
Client ID:	34662-001MSD	Method:	SW846 8011	SOP Ref:	GL-OA-E-059
Batch ID:	1393557	Inst:	ECD1A.I	Dilution:	1
Run Date:	06/06/2014 17:58	Analyst:	RXE1	Inj. Vol:	1 uL
Prep Date:	06/06/2014 14:45	Aliquot:	34.54 mL	Final Volume:	35 mL
Data File:	060614HE\E1f0617.D	Column:	1 ZB-50		
	060614HE\E1f0617.D		2 ZB-XLB		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
96-12-8	1,2-Dibromo-3-chloropropane		0.241	ug/L	0.00608	0.0203	1
106-93-4	1,2-Dibromoethane		0.282	ug/L	0.00608	0.0203	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
Bromofluorobenzene		4.20	3.62	ug/L	116	(62%-131%)	

**Pesticide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number:	2014-3481	Matrix:	WATER
Lab Sample ID:	1203104374		
Client Sample:	QC for batch 1394107	Client:	ARSL004
Client ID:	MB for batch 1394107	Method:	SW846 3535A/8081B
Batch ID:	1394113	Inst:	ECD7A.I
Run Date:	06/10/2014 15:17	Analyst:	LOF
Prep Date:	06/09/2014 12:45	Aliquot:	1000 mL
Data File:	061014.B\ef1008.D	Column:	1 CLPesticides
	061014.B\ef1008.D		2 CLPesticides2

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
118-74-1	Hexachlorobenzene	U	0.020	ug/L	0.00625	0.020	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
4cmx		0.861	1.00	ug/L	86.1	(36%-106%)	
Decachlorobiphenyl		1.06	1.00	ug/L	106	(41%-124%)	

**Pesticide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number:	2014-3481	Matrix:	WATER
Lab Sample ID:	1203104375		
Client Sample:	QC for batch 1394107	Client:	ARSL004
Client ID:	LCS for batch 1394107	Method:	SW846 3535A/8081B
Batch ID:	1394113	Inst:	ECD7A.I
Run Date:	06/10/2014 15:33	Analyst:	LOF
Prep Date:	06/09/2014 12:45	Aliquot:	1000 mL
Data File:	061014.B\ef1009.D	Column:	1 CLPesticides
	061014.B\ef1009.D		2 CLPesticides2

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
118-74-1	Hexachlorobenzene		0.132	ug/L	0.00625	0.020	1

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits	
4cmx	0.868	1.00	ug/L	86.8	(36%-106%)
Decachlorobiphenyl	1.16	1.00	ug/L	116	(41%-124%)

**Pesticide
Certificate of Analysis
Sample Summary**

SDG Number:	2014-3481	Date Collected:	06/04/2014 12:45	Matrix:	W
Lab Sample ID:	1203104376	Date Received:	06/06/2014 08:55		
Client Sample:	QC for batch 1394107	Client:	ARSL004	Project:	QC
Client ID:	CAPU-14-79429MS	Method:	SW846 3535A/8081B	SOP Ref:	GL-OA-E-041
Batch ID:	1394113	Inst:	ECD7A.I	Dilution:	1
Run Date:	06/10/2014 19:01	Analyst:	LOF	Inj. Vol:	1 uL
Prep Date:	06/09/2014 12:45	Aliquot:	960 mL	Final Volume:	5 mL
Data File:	061014.B\7f1022.D	Column:	1 CLPesticides		
	061014.B\7f1022.D		2 CLPesticides2		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
118-74-1	Hexachlorobenzene		0.112	ug/L	0.00651	0.0208	1

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits	
4cmx	0.909	1.04	ug/L	87.3	(36%-106%)
Decachlorobiphenyl	1.16	1.04	ug/L	112	(41%-124%)

**Pesticide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number:	2014-3481	Matrix:	WATER
Lab Sample ID:	1203104384		
Client Sample:	QC for batch 1394107	Client:	ARSL004
Client ID:	LCSD for batch 1394107	Method:	SW846 3535A/8081B
Batch ID:	1394113	Inst:	ECD7A.I
Run Date:	06/10/2014 15:49	Analyst:	LOF
Prep Date:	06/09/2014 12:45	Aliquot:	1000 mL
Data File:	061014.B\ef1010.D	Column:	1 CLPesticides
	061014.B\ef1010.D		2 CLPesticides2

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
118-74-1	Hexachlorobenzene		0.114	ug/L	0.00625	0.020	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
4cmx		0.990	1.00	ug/L	99.0	(36%-106%)	
Decachlorobiphenyl		1.20	1.00	ug/L	120	(41%-124%)	

Miscellaneous

DATA EXCEPTION REPORT			
Mo.Day Yr. 09-JUN-14	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: GC/ECD	Test / Method: EPA 504.1, SW846 8011	Matrix Type: Liquid	Client Code: BRKL, ESHL
Batch ID: 1393557	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 349927(2014-3481),349975(34662) Application Issues: Failed Yield for Surrogates			
Specification and Requirements		DER Disposition:	
Exception Description:			
1. Surrogates recovered outside of the acceptance limits in samples 349927007, 349927015 and 349975004.		1. Surrogates recovered with a positive bias on one column only in the samples. The other column passed recoveries, and there were no hits in the samples. The data are reported.	

Originator's Name:
Rebecca Enzor 09-JUN-14

Data Validator/Group Leader:
Cameron Bearden 10-JUN-14

DATA EXCEPTION REPORT

Mo.Day Yr. 11-JUN-14	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: GC/ECD	Test / Method: SW846 3535A/8081B	Matrix Type: Liquid	Client Code: ESHL
Batch ID: 1394113	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 349927(2014-3481) Application Issues: Failed Yield for Surrogates			
Specification and Requirements Exception Description:		DER Disposition:	
Sample 349927011 did not meet surrogate recovery acceptance limits with a positive bias.		The surrogate recovery was biased high and the target analyte was not detected in the sample.	

Originator's Name:

Lloyd O Fox 11-JUN-14

Data Validator/Group Leader:

Cameron Bearden 11-JUN-14

Herbicide Analysis

Case Narrative

**Herbicide Case Narrative
ARS International, LLC (ARSL)
SDG 2014-3481**

Method/Analysis Information

Procedure: Analysis of Chlorophenoxy Acid Herbicides by ECD
Analytical Method: SW846 8151A
Prep Method: SW846 8151A
Analytical Batch Number: 1393369
Prep Batch Number: 1393368

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 8151A:

Sample ID	Client ID
349927005	CAPU-14-79426
349927012	CAPU-14-79432
1203102519	Method Blank (MB)
1203102520	Laboratory Control Sample (LCS)
1203102521	349927005(CAPU-14-79426) Matrix Spike (MS)
1203102523	Laboratory Control Sample Duplicate (LCSD)

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-011 REV# 21.

Raw data reports are processed and reviewed by the analyst using ChemStation software package. False positives have been removed from the quantitation reports per standard operating procedures (SOP).

Calibration Information

Initial Calibration

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

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standards (ICV, CVS, or CCV) met the acceptance criteria. All analytes were within the established retention time windows for this method.

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery

The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation

Sample 349927005 (CAPU-14-79426) was selected for analysis as the matrix spike. A matrix spike duplicate was not extracted or analyzed with this batch. A LCSD was extracted and analyzed with the batch to measure precision and accuracy of the spike analytes.

Matrix Spike (MS) Recovery Statement

The MS recoveries for this SDG were within the established acceptance limits.

Matrix Spike Duplicate (MSD) Recovery Statement

There was no matrix spike duplicate extracted and analyzed with this batch, only a matrix spike. A LCSD was extracted and analyzed with the batch to measure precision and accuracy of the spike analytes.

MS/MSD Relative Percent Difference (RPD) Statement

There are no reportable MS/MSD RDP values since a MSD was not extracted and analyzed with this batch, only a matrix spike. A LCSD was extracted and analyzed with the batch to measure precision and accuracy of the spike analytes.

Technical Information

Holding Time Specifications

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

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP. All reported analyte detections in client and quality control samples were within the established retention time windows. Reported target analyte concentrations were confirmed on a dissimilar column.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG in this analytical batch unless confirmations or dilutions were required.

Miscellaneous Information

Electronic Package 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 of each electronic package will indicate the reviewer name associated with the generation of the data and package. 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.

Data Exception (DER) Documentation

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

Manual Integrations

Some initial calibration standards, continuing calibration standards, and/or samples may have required manual integration to correctly position the baseline as set in the calibration standard injections. If manual integration was performed, copies of all manual integration peak profiles are included in the raw data section of this Herbicide fraction.

Additional Comments

The additional comments field is used to address special issues associated with each analysis, clarify method/contractual issues pertaining to the analysis, and to list any report documents generated as a result of sample analysis or review. The following additional comments were required:

The higher results from either column have been chosen and reported in the data package for the client samples, MB and LCS. The data reported for the MS are from the same analytical column as the parent sample. The data reported for the LCSD are from the same analytical column as the LCS.

Due to rounding differences in the calculation between the forms, the data reported in the Sample Summary (form 1) and Spike Recovery Report (form 3) may differ slightly from the data reported in Identification Summary (form 10).

Due to software issue, the raw data may not correctly display the updated SPC limits. Please see Sample Data Summary Report and Surrogate Recovery Report for the correct surrogate acceptance limits.

System Configuration

The Semi-Volatiles-HERB analysis was performed on the following instrument configuration:

Instrument ID	Instrument	System Configuration	Column ID	Column Description
ECD6A.I_1	Agilent 6890 Gas Chromatograph/Dual ECD w/ 7683 Autosampler	HP6890 Series GC/ECD	Rtx-CLP I	30m x 0.32mm, 0.50um (Rtx-CLPesticide)
ECD6A.I_2	Agilent 6890 Gas Chromatograph/Dual ECD w/ 7683 Autosampler	HP6890 Series GC/ECD	Rtx-CLP II	30m x 0.32mm, 0.50um (Rtx-CLPesticide II)

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: 2014-3481 GEL Work Order: 349927

The Qualifiers in this report are defined as follows:

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

Review/Validation

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

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

Signature: 

Name: Barbara Bailey

Date: 13 JUN 2014

Title: Data Validator

Sample Data Summary

**Herbicide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 2014-3481
Lab Sample ID: 349927005

Client ID: CAPU-14-79426
Batch ID: 1393369
Run Date: 06/07/2014 01:59
Prep Date: 06/05/2014 06:03
Data File: 060614\E6f0632.D
060614\E6f0632.D

Date Collected: 06/02/2014 11:46
Date Received: 06/04/2014 08:55
Client: ARSL004
Method: SW846 8151A
Inst: ECD6A.I
Analyst: RXE1
Aliquot: 950 mL
Column: 1 CLP
2 CLP2

Matrix: W

Project: ESHL00714
SOP Ref: GL-OA-E-011
Dilution: 1
Inj. Vol: 1 uL
Final Volume: 10 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
87-86-5	Pentachlorophenol	U	0.263	ug/L	0.0526	0.263	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
2,4-Dichlorophenylacetic acid		5.51	5.26	ug/L	105	(43%-137%)	

**Herbicide
Certificate of Analysis
Sample Summary**

SDG Number: 2014-3481
Lab Sample ID: 349927012

Client ID: CAPU-14-79432
Batch ID: 1393369
Run Date: 06/07/2014 02:54
Prep Date: 06/05/2014 06:03
Data File: 060614\E6f0634.D
060614\E6f0634.D

Date Collected: 06/02/2014 12:05
Date Received: 06/04/2014 08:55
Client: ARSL004
Method: SW846 8151A
Inst: ECD6A.I
Analyst: RXE1
Aliquot: 940 mL
Column: 1 CLP
2 CLP2

Matrix: W

Project: ESHL00714
SOP Ref: GL-OA-E-011
Dilution: 1
Inj. Vol: 1 uL
Final Volume: 10 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
87-86-5	Pentachlorophenol	U	0.266	ug/L	0.0532	0.266	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
2,4-Dichlorophenylacetic acid		5.77	5.32	ug/L	109	(43%-137%)	

Quality Control Summary

Herbicide
Surrogate Recovery Report

Page 1 of 1

SDG Number: 2014-3481**Matrix Type: LIQUID**

Sample ID	Client ID	DCAA 1	DCAA 2
		%REC #	%REC #
1203102519	MB for batch 1393368	105	90
1203102520	LCS for batch 1393368	107	100
1203102523	LCSD for batch 1393368	106	100
349927005	CAPU-14-79426	105	94
1203102521	CAPU-14-79426MS	107	100
349927012	CAPU-14-79432	109	94

Surrogate**Acceptance Limits**

DCAA = 2,4-Dichlorophenylacetic acid

(43%-137%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Herbicide

Page 1 of 2

Quality Control Summary
Spike Recovery Report

SDG Number: 2014-3481

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1393368

Matrix: WATER

Lab Sample ID 1203102520

Instrument: ECD6A.I

Analysis Date: 06/07/2014 01:04

Dilution: 1

Analyst: RXE1

Prep Batch ID:1393368

Inj. Vol: 1 uL

Batch ID: 1393369

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
87-86-5	LCS Pentachlorophenol	2.00	0.0	1.99	99	55-113

Herbicide
Quality Control Summary
Spike Recovery Report

Page 2 of 2

SDG Number: 2014-3481

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 1393368

Matrix: WATER

Lab Sample ID 1203102523

Instrument: ECD6A.I

Analysis Date: 06/07/2014 01:31

Dilution: 1

Analyst: RXE1

Prep Batch ID:1393368

Inj. Vol: 1 uL

Batch ID: 1393369

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
87-86-5	LCSD Pentachlorophenol	2.00	0.0	1.99	99	55-113	0	0-30

Herbicide
Quality Control Summary
Spike Recovery Report

Page 1 of 1

SDG Number: 2014-3481

Sample Type: Matrix Spike

Client ID: CAPU-14-79426MS

Matrix: W

Lab Sample ID 1203102521

Instrument: ECD6A.I

Analysis Date: 06/07/2014 02:26

Dilution: 1

Analyst: RXE1

Prep Batch ID:1393368

Inj. Vol: 1 uL

Batch ID: 1393369

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
87-86-5	MS Pentachlorophenol	2.11	0.00 U	2.02	96	37-114

Method Blank Summary

Page 1 of 1

SDG Number:	2014-3481	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1393368	Instrument ID:	ECD6A.I_1	Data File:	060614\E6f0629.D
Lab Sample ID:	1203102519		ECD6A.I_2		060614\E6f0629.D
Column:	CLP	Prep Date:	06/05/2014 06:03	Analyzed:	06/07/14 00:36
	CLP2				

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 1393368	1203102520	060614\E6f0630.D 060614\E6f0630.D	06/07/14	0104
02 LCSD for batch 1393368	1203102523	060614\E6f0631.D 060614\E6f0631.D	06/07/14	0131
03 CAPU-14-79426	349927005	060614\E6f0632.D 060614\E6f0632.D	06/07/14	0159
04 CAPU-14-79426MS	1203102521	060614\E6f0633.D 060614\E6f0633.D	06/07/14	0226
05 CAPU-14-79432	349927012	060614\E6f0634.D 060614\E6f0634.D	06/07/14	0254

Quality Control Data

**Herbicide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 2014-3481
Lab Sample ID: 1203102519
Client Sample: QC for batch 1393368
Client ID: MB for batch 1393368
Batch ID: 1393369
Run Date: 06/07/2014 00:36
Prep Date: 06/05/2014 06:03
Data File: 060614\E6f0629.D
060614\E6f0629.D

Client: ARSL004
Method: SW846 8151A
Inst: ECD6A.I
Analyst: RXE1
Aliquot: 1000 mL
Column: 1 CLP
2 CLP2

Matrix: WATER
Project: QC
SOP Ref: GL-OA-E-011
Dilution: 1
Inj. Vol: 1 uL
Final Volume: 10 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
87-86-5	Pentachlorophenol	U	0.250	ug/L	0.050	0.250	1

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
2,4-Dichlorophenylacetic acid	5.27	5.00	105	(43%-137%)

**Herbicide
Certificate of Analysis
Sample Summary**

SDG Number:	2014-3481	Matrix:	WATER
Lab Sample ID:	1203102520		
Client Sample:	QC for batch 1393368	Project:	QC
Client ID:	LCS for batch 1393368	SOP Ref:	GL-OA-E-011
Batch ID:	1393369	Dilution:	1
Run Date:	06/07/2014 01:04	Inj. Vol:	1 uL
Prep Date:	06/05/2014 06:03	Final Volume:	10 mL
Data File:	060614\E6f0630.D		
	060614\E6f0630.D		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
87-86-5	Pentachlorophenol		1.99	ug/L	0.050	0.250	1

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
2,4-Dichlorophenylacetic acid	5.36	5.00	107	(43%-137%)

**Herbicide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number:	2014-3481	Date Collected:	06/02/2014 11:46	Matrix:	W
Lab Sample ID:	1203102521	Date Received:	06/04/2014 08:55		
Client Sample:	QC for batch 1393368	Client:	ARSL004	Project:	QC
Client ID:	CAPU-14-79426MS	Method:	SW846 8151A	SOP Ref:	GL-OA-E-011
Batch ID:	1393369	Inst:	ECD6A.I	Dilution:	1
Run Date:	06/07/2014 02:26	Analyst:	RXE1	Inj. Vol:	1 uL
Prep Date:	06/05/2014 06:03	Aliquot:	950 mL	Final Volume:	10 mL
Data File:	060614\E6f0633.D	Column:	1 CLP		
	060614\E6f0633.D		2 CLP2		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
87-86-5	Pentachlorophenol		2.02	ug/L	0.0526	0.263	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
2,4-Dichlorophenylacetic acid		5.61	5.26	ug/L	107	(43%-137%)	

**Herbicide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number:	2014-3481	Matrix:	WATER
Lab Sample ID:	1203102523		
Client Sample:	QC for batch 1393368	Project:	QC
Client ID:	LCSD for batch 1393368	SOP Ref:	GL-OA-E-011
Batch ID:	1393369	Dilution:	1
Run Date:	06/07/2014 01:31	Inj. Vol:	1 uL
Prep Date:	06/05/2014 06:03	Final Volume:	10 mL
Data File:	060614\E6f0631.D		
	060614\E6f0631.D		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
87-86-5	Pentachlorophenol		1.99	ug/L	0.050	0.250	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
2,4-Dichlorophenylacetic acid		5.29	5.00	ug/L	106	(43%-137%)	

Metals Analysis

Case Narrative

**Metals Fractional Narrative
ARS International, LLC (ARSL)
SDG 2014-3481**

Sample Analysis

Sample ID	Client ID
349927003	CAPU-14-79426
349927006	CAPU-14-79434
349927013	CAPU-14-79432
349927014	CAPU-14-79440
1203102589	Method Blank (MB) ICP
1203102590	Laboratory Control Sample (LCS)
1203102594	349932001(WST09-14-74376L) Serial Dilution (SD)
1203102591	349932001(WST09-14-74376D) Sample Duplicate (DUP)
1203102592	349932001(WST09-14-74376S) Matrix Spike (MS)
1203102546	Method Blank (MB) ICP-MS
1203102547	Laboratory Control Sample (LCS)
1203102550	349932001(WST09-14-74376L) Serial Dilution (SD)
1203102548	349932001(WST09-14-74376D) Sample Duplicate (DUP)
1203102549	349932001(WST09-14-74376S) Matrix Spike (MS)
1203108390	Method Blank (MB) CVAA
1203108391	Laboratory Control Sample (LCS)
1203108394	349759011(WTESR-14-78921L) Serial Dilution (SD)
1203108392	349759011(WTESR-14-78921D) Sample Duplicate (DUP)
1203108393	349759011(WTESR-14-78921S) Matrix Spike (MS)

Method/Analysis Information

Analytical Batch:	1393409, 1393385, 1395633 and 1399077
Prep Batch :	1393408, 1393384 and 1395630
Standard Operating Procedures:	GL-MA-E-013 REV# 22, GL-MA-E-006 REV# 10, GL-MA-E-014 REV# 25, GL-MA-E-010 REV# 27 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. Operating conditions for the ICP are set at a power level of 1500 watts. The instrument has a peristaltic pump flow rate of 0.4L/min, argon gas flows of 13 L/min and 0.2 L/min for the torch and auxiliary gases, and a flow setting of 0.65L/min for the nebulizer.

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

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

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

Calibration Information

Instrument Calibration

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

CRDL/PQL Requirements

The CRDL/PQL standard recoveries met the referenced advisory control limits.

ICSA/ICSAB Statement

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

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: 349932001 (WST09-14-74376)-ICP and ICP-MS and 349759011 (WTESR-14-78921)-CVAA.

Matrix Spike (MS) Recovery Statement

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

Duplicate Relative Percent Difference (RPD) Statement

The RPD obtained from the designated sample duplicate (DUP) is evaluated based on acceptance criteria of 20% when the sample is >5X the contract required 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. All applicable analytes met these requirements.

Serial Dilution % Difference Statement

The serial dilution is used to assess matrix suppression or enhancement. Raw element concentrations 25x the IDL/MDL for CVAA, 50X the IDL/MDL for ICP and 100X the IDL/MDL for ICP-MS analyses are applicable for serial dilution assessment. All applicable analytes met the established acceptance percent difference criteria.

Technical Information

Holding Time Specifications

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

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP.

Sample Dilutions

Dilutions are performed to minimize matrix interferences resulting from elevated mineral element concentrations present in solid samples and/or to bring over range target analyte concentrations into the linear calibration range of the instrument. Samples required dilutions for tin in order to minimize suppression due to matrix interferences. 349927006 (CAPU-14-79434) and 349927014 (CAPU-14-79440)-ICP.

Preparation Information

The samples in this SDG were prepared exactly according to the cited SOP.

Miscellaneous Information**Electronic Packaging Comment**

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

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

Data Exception (DER) Documentation

Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. Data exception reports were included behind the Case Narrative or in the Miscellaneous Data section of this data package. 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.

Hardness = 2.497 (Ca) + 4.118 (Mg)

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

Certification Statement

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

Review Validation:

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

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

Reviewer: Nick-Cole A. Elmore Date: 7.1.14

Sample Data Summary

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: 2014-3481 GEL Work Order: 349927

The Qualifiers in this report are defined as follows:

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

J Value is estimated

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

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

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

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

Reviewed by

Nick-Cole A. Elmore 7.1.14

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2014-3481**CONTRACT:** ESHL00714**METHOD TYPE:** EPA**SAMPLE ID:** 349927003 **BASIS:** As Received **DATE COLLECTED** 02-JUN-14**CLIENT ID:** CAPU-14-79426 **LEVEL:** Low **DATE RECEIVED** 04-JUN-14**MATRIX:** W **%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7439-97-6	Mercury	0.20	ug/L	U	0.067	0.2	0.2	1	AV	NOR1	06/18/14 15:29	061814W2-6	1395633

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1395633	1395630	EPA 245.1/245.2 Prep	20	mL	20	mL	06/17/14	AXS5

***Analytical Methods:**

AV EPA 245.1/245.2

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2014-3481**CONTRACT:** ESHL00714**METHOD TYPE:** EPA**SAMPLE ID:** 349927006**BASIS:** As Received**DATE COLLECTED** 02-JUN-14**CLIENT ID:** CAPU-14-79434**LEVEL:** Low**DATE RECEIVED** 04-JUN-14**MATRIX:** W**%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7439-97-6	Mercury	0.20	ug/L	U	0.067	0.2	0.2	1	AV	NOR1	06/18/14 15:31	061814W2-6	1395633

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2014-3481

CONTRACT: ESHL00714

METHOD TYPE: SW846

SAMPLE ID: 349927006

BASIS: As Received

DATE COLLECTED 02-JUN-14

CLIENT ID: CAPU-14-79434

LEVEL: Low

DATE RECEIVED 04-JUN-14

MATRIX: W

%SOLIDS: 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	200	ug/L	U	68	200	200	1	P	HSC	06/13/14 10:02	061314-1	1393409
7440-36-0	Antimony	3	ug/L	U	1	3	3	1	MS	BAJ	06/25/14 21:13	140625-4	1393385
7440-38-2	Arsenic	3.98	ug/L	J	1.7	5	5	1	MS	BAJ	06/25/14 21:13	140625-4	1393385
7440-39-3	Barium	109	ug/L		1	5	5	1	P	HSC	06/13/14 10:02	061314-1	1393409
7440-41-7	Beryllium	5	ug/L	U	1	5	5	1	P	HSC	06/13/14 10:02	061314-1	1393409
7440-42-8	Boron	234	ug/L		15	50	50	1	P	HSC	06/13/14 10:02	061314-1	1393409
7440-43-9	Cadmium	1	ug/L	U	0.11	1	1	1	MS	BAJ	06/25/14 21:13	140625-4	1393385
7440-70-2	Calcium	46200	ug/L		50	200	200	1	P	HSC	06/13/14 10:02	061314-1	1393409
7440-47-3	Chromium	10	ug/L	U	2	10	10	1	MS	BAJ	06/25/14 21:13	140625-4	1393385
7440-48-4	Cobalt	1.3	ug/L	J	1	5	5	1	P	HSC	06/13/14 10:02	061314-1	1393409
7440-50-8	Copper	10	ug/L	U	3	10	10	1	P	HSC	06/13/14 10:02	061314-1	1393409
7439-89-6	Iron	100	ug/L	U	30	100	100	1	P	HSC	06/13/14 10:02	061314-1	1393409
7439-92-1	Lead	2	ug/L	U	0.5	2	2	1	MS	BAJ	06/25/14 21:13	140625-4	1393385
7439-95-4	Magnesium	11900	ug/L		110	300	300	1	P	HSC	06/13/14 10:02	061314-1	1393409
7439-96-5	Manganese	10	ug/L	U	2	10	10	1	P	HSC	06/13/14 10:02	061314-1	1393409
7439-98-7	Molybdenum	1.49	ug/L		0.165	0.5	0.5	1	MS	BAJ	06/24/14 14:57	140624-5	1393385
7440-02-0	Nickel	9.66	ug/L		0.5	2	2	1	MS	BAJ	06/25/14 21:13	140625-4	1393385
7440-09-7	Potassium	8640	ug/L		50	150	150	1	P	HSC	06/13/14 10:02	061314-1	1393409
7782-49-2	Selenium	5	ug/L	U	1.5	5	5	1	MS	BAJ	06/25/14 21:13	140625-4	1393385
7631-86-9	Silica	55000	ug/L		53	213	213	1	P	HSC	06/13/14 10:02	061314-1	1393409
7440-22-4	Silver	1	ug/L	U	0.2	1	1	1	MS	BAJ	06/25/14 21:13	140625-4	1393385
7440-23-5	Sodium	43300	ug/L		100	300	300	1	P	HSC	06/13/14 10:02	061314-1	1393409
7440-24-6	Strontium	239	ug/L		1	5	5	1	P	HSC	06/13/14 10:02	061314-1	1393409
7440-28-0	Thallium	2	ug/L	U	0.45	2	2	1	MS	BAJ	06/25/14 21:13	140625-4	1393385
7440-31-5	Tin	200	ug/L	U	50	200	200	20	P	HSC	06/17/14 11:17	061714-3	1393409
7440-61-1	Uranium	2.89	ug/L		0.067	0.2	0.2	1	MS	BAJ	06/25/14 21:13	140625-4	1393385
7440-62-2	Vanadium	3.45	ug/L	J	1	5	5	1	P	HSC	06/13/14 10:02	061314-1	1393409
7440-66-6	Zinc	10	ug/L	U	3.3	10	10	1	P	HSC	06/13/14 10:02	061314-1	1393409

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2014-3481**CONTRACT:** ESHL00714**METHOD TYPE:****SAMPLE ID:** 349927006**BASIS:** As Received**DATE COLLECTED** 02-JUN-14**CLIENT ID:** CAPU-14-79434**LEVEL:** Low**DATE RECEIVED** 04-JUN-14**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	164	mg/L		0.453	1.24	1.24	1		JJ2	06/26/14 15:45		1399077

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1393385	1393384	SW846 3005A	50	mL	50	mL	06/10/14	JXM5
1393409	1393408	SW846 3005A	50	mL	50	mL	06/10/14	JXM5
1395633	1395630	EPA 245.1/245.2 Prep	20	mL	20	mL	06/17/14	AXS5

Analytical Methods:*P** SW846 3005A/6010C**MS** SW846 3005A/6020A**AV** EPA 245.1/245.2

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2014-3481**CONTRACT:** ESHL00714**METHOD TYPE:** EPA**SAMPLE ID:** 349927013**BASIS:** As Received**DATE COLLECTED** 02-JUN-14**CLIENT ID:** CAPU-14-79432**LEVEL:** Low**DATE RECEIVED** 04-JUN-14**MATRIX:** W**%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7439-97-6	Mercury	0.20	ug/L	U	0.067	0.2	0.2	1	AV	NOR1	06/18/14 15:33	061814W2-6	1395633

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1395633	1395630	EPA 245.1/245.2 Prep	20	mL	20	mL	06/17/14	AXS5

***Analytical Methods:**

AV EPA 245.1/245.2

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2014-3481**CONTRACT:** ESHL00714**METHOD TYPE:** EPA**SAMPLE ID:** 349927014**BASIS:** As Received**DATE COLLECTED** 02-JUN-14**CLIENT ID:** CAPU-14-79440**LEVEL:** Low**DATE RECEIVED** 04-JUN-14**MATRIX:** W**%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7439-97-6	Mercury	0.20	ug/L	U	0.067	0.2	0.2	1	AV	NOR1	06/18/14 15:38	061814W2-6	1395633

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2014-3481

CONTRACT: ESHL00714

METHOD TYPE: SW846

SAMPLE ID: 349927014

BASIS: As Received

DATE COLLECTED 02-JUN-14

CLIENT ID: CAPU-14-79440

LEVEL: Low

DATE RECEIVED 04-JUN-14

MATRIX: W

%SOLIDS: 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	200	ug/L	U	68	200	200	1	P	HSC	06/13/14 10:05	061314-1	1393409
7440-36-0	Antimony	3	ug/L	U	1	3	3	1	MS	BAJ	06/25/14 21:20	140625-4	1393385
7440-38-2	Arsenic	5	ug/L	U	1.7	5	5	1	MS	BAJ	06/25/14 21:20	140625-4	1393385
7440-39-3	Barium	65.5	ug/L		1	5	5	1	P	HSC	06/13/14 10:05	061314-1	1393409
7440-41-7	Beryllium	5	ug/L	U	1	5	5	1	P	HSC	06/13/14 10:05	061314-1	1393409
7440-42-8	Boron	156	ug/L		15	50	50	1	P	HSC	06/13/14 10:05	061314-1	1393409
7440-43-9	Cadmium	1	ug/L	U	0.11	1	1	1	MS	BAJ	06/25/14 21:20	140625-4	1393385
7440-70-2	Calcium	37400	ug/L		50	200	200	1	P	HSC	06/13/14 10:05	061314-1	1393409
7440-47-3	Chromium	10	ug/L	U	2	10	10	1	MS	BAJ	06/25/14 21:20	140625-4	1393385
7440-48-4	Cobalt	5	ug/L	U	1	5	5	1	P	HSC	06/13/14 10:05	061314-1	1393409
7440-50-8	Copper	10	ug/L	U	3	10	10	1	P	HSC	06/13/14 10:05	061314-1	1393409
7439-89-6	Iron	100	ug/L	U	30	100	100	1	P	HSC	06/13/14 10:05	061314-1	1393409
7439-92-1	Lead	2	ug/L	U	0.5	2	2	1	MS	BAJ	06/25/14 21:20	140625-4	1393385
7439-95-4	Magnesium	6830	ug/L		110	300	300	1	P	HSC	06/13/14 10:05	061314-1	1393409
7439-96-5	Manganese	10	ug/L	U	2	10	10	1	P	HSC	06/13/14 10:05	061314-1	1393409
7439-98-7	Molybdenum	0.427	ug/L	J	0.165	0.5	0.5	1	MS	BAJ	06/24/14 15:01	140624-5	1393385
7440-02-0	Nickel	5.08	ug/L		0.5	2	2	1	MS	BAJ	06/25/14 21:20	140625-4	1393385
7440-09-7	Potassium	2140	ug/L		50	150	150	1	P	HSC	06/13/14 10:05	061314-1	1393409
7782-49-2	Selenium	5	ug/L	U	1.5	5	5	1	MS	BAJ	06/25/14 21:20	140625-4	1393385
7631-86-9	Silica	69900	ug/L		53	213	213	1	P	HSC	06/13/14 10:05	061314-1	1393409
7440-22-4	Silver	1	ug/L	U	0.2	1	1	1	MS	BAJ	06/25/14 21:20	140625-4	1393385
7440-23-5	Sodium	21900	ug/L		100	300	300	1	P	HSC	06/13/14 10:05	061314-1	1393409
7440-24-6	Strontium	203	ug/L		1	5	5	1	P	HSC	06/13/14 10:05	061314-1	1393409
7440-28-0	Thallium	2	ug/L	U	0.45	2	2	1	MS	BAJ	06/25/14 21:20	140625-4	1393385
7440-31-5	Tin	100	ug/L	U	25	100	100	10	P	HSC	06/16/14 16:36	061614-2	1393409
7440-61-1	Uranium	0.336	ug/L		0.067	0.2	0.2	1	MS	BAJ	06/25/14 21:20	140625-4	1393385
7440-62-2	Vanadium	1.29	ug/L	J	1	5	5	1	P	HSC	06/13/14 10:05	061314-1	1393409
7440-66-6	Zinc	10	ug/L	U	3.3	10	10	1	P	HSC	06/13/14 10:05	061314-1	1393409

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2014-3481**CONTRACT:** ESHL00714**METHOD TYPE:****SAMPLE ID:** 349927014**BASIS:** As Received**DATE COLLECTED** 02-JUN-14**CLIENT ID:** CAPU-14-79440**LEVEL:** Low**DATE RECEIVED** 04-JUN-14**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	121	mg/L		0.453	1.24	1.24	1		JJ2	06/26/14 15:45		1399077

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1393385	1393384	SW846 3005A	50	mL	50	mL	06/10/14	JXM5
1393409	1393408	SW846 3005A	50	mL	50	mL	06/10/14	JXM5
1395633	1395630	EPA 245.1/245.2 Prep	20	mL	20	mL	06/17/14	AXS5

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. 2014-3481

Contract: ESHL00714

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>
1203102546	Antimony	1	ug/L	+/-3	U	MS	1	3
	Arsenic	1.7	ug/L	+/-5	U	MS	1.7	5
	Cadmium	0.11	ug/L	+/-1	U	MS	0.11	1
	Chromium	2	ug/L	+/-10	U	MS	2	10
	Lead	0.5	ug/L	+/-2	U	MS	0.5	2
	Molybdenum	0.165	ug/L	+/-0.5	U	MS	0.165	0.5
	Nickel	0.5	ug/L	+/-2	U	MS	0.5	2
	Selenium	1.5	ug/L	+/-5	U	MS	1.5	5
	Silver	0.2	ug/L	+/-1	U	MS	0.2	1
	Thallium	0.45	ug/L	+/-2	U	MS	0.45	2
	Uranium	0.067	ug/L	+/-0.2	U	MS	0.067	0.2
1203102589	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
1203108390	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. 2014-3481

Client ID: WST09-14-74376S

Contract: ESHL00114

Level: Low

Matrix: WATER

% Solids:

Sample ID: 349932001

Spike ID: 1203102549

<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	53.3		1	U	50	106		MS
Arsenic	ug/L	75-125	51.8		3.71	J	50	96.2		MS
Cadmium	ug/L	75-125	51.9		0.11	U	50	104		MS
Chromium	ug/L	75-125	51.9		2.51	J	50	98.9		MS
Lead	ug/L	75-125	52.6		1.06	J	50	103		MS
Molybdenum	ug/L	75-125	47.2		1.01		50	92.3		MS
Nickel	ug/L	75-125	49.5		0.5	U	50	98.2		MS
Selenium	ug/L	75-125	57.6		7.08		50	101		MS
Silver	ug/L	75-125	53.5		0.2	U	50	107		MS
Thallium	ug/L	75-125	48.7		0.45	U	50	97.4		MS
Uranium	ug/L	75-125	52		0.416		50	103		MS

*Analytical Methods:

MS SW846 3005A/6020A

METALS

-5a-

Matrix Spike Summary

SDG NO. 2014-3481

Client ID: WST09-14-74376S

Contract: ESHL00114

Level: Low

Matrix: WATER

% Solids:

Sample ID: 349932001

Spike ID: 1203102592

<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	4960		68	U	5000	98.2		P
Barium	ug/L	75-125	524		14.5		500	102		P
Beryllium	ug/L	75-125	518		1	U	500	104		P
Boron	ug/L	75-125	523		18.3	J	500	101		P
Calcium	ug/L	75-125	12000		6920		5000	101		P
Cobalt	ug/L	75-125	507		1	U	500	101		P
Copper	ug/L	75-125	565		41.8		500	105		P
Iron	ug/L	75-125	5210		43.9	J	5000	103		P
Magnesium	ug/L	75-125	8510		3230		5000	106		P
Manganese	ug/L	75-125	516		2	U	500	103		P
Potassium	ug/L	75-125	9390		4250		5000	103		P
Silica	ug/L		92300		80400		10700	111	N/A	P
Sodium	ug/L		29700		23800		5000	118	N/A	P
Strontium	ug/L	75-125	541		28.8		500	102		P
Tin	ug/L	75-125	474		12.5	U	500	94.8		P
Vanadium	ug/L	75-125	539		6.92		500	106		P
Zinc	ug/L	75-125	515		3.3	U	500	102		P

*Analytical Methods:

P SW846 3005A/6010C

METALS

-5a-

Matrix Spike Summary

SDG NO. 2014-3481 **Client ID:** WTESR-14-78921S**Contract:** ESHL00314 **Level:** Low**Matrix:** STORM WATER **% Solids:****Sample ID:** 349759011 **Spike ID:** 1203108393

<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	2.05		0.067	U	2	102		AV

*Analytical Methods:

AV EPA 245.1/245.2

Metals
-6-
Duplicate Sample Summary

SDG No.: 2014-3481

Lab Code: GEL

Contract: ESHL00714

Client ID: WST09-14-74376D

Matrix: WATER

Level: Low

Sample ID: 349932001

Duplicate ID: 1203102548

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	3.71 J		4.13 J		10.8		MS
Cadmium	ug/L		0.11 U		0.11 U				MS
Chromium	ug/L	+/-10	2.51 J		2.56 J		2.01		MS
Lead	ug/L	+/-2	1.06 J		1.05 J		.855		MS
Molybdenum	ug/L	+/-5	1.01		0.944		6.66		MS
Nickel	ug/L		0.5 U		0.5 U				MS
Selenium	ug/L	+/-5	7.08		7.1		.254		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	0.416		0.405		2.68		MS

*Analytical Methods:

MS SW846 3005A/6020A

Metals
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Duplicate Sample Summary

SDG No.: 2014-3481

Lab Code: GEL

Contract: ESHL00714

Client ID: WST09-14-74376D

Matrix: WATER

Level: Low

Sample ID: 349932001

Duplicate ID: 1203102591

Percent Solids for Dup: N/A

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M*
Aluminum	ug/L		68 U		68 U				P
Barium	ug/L	+/-5	14.5		14.3		1.06		P
Beryllium	ug/L		1 U		1 U				P
Boron	ug/L	+/-50	18.3 J		18.3 J		.284		P
Calcium	ug/L	+/-20%	6920		6940		.359		P
Cobalt	ug/L		1 U		1 U				P
Copper	ug/L	+/-10	41.8		41.8		.0215		P
Iron	ug/L	+/-100	43.9 J		33.3 J		27.5		P
Magnesium	ug/L	+/-20%	3230		3230		.105		P
Manganese	ug/L		2 U		2 U				P
Potassium	ug/L	+/-20%	4250		4240		.198		P
Silica	ug/L	+/-20%	80400		80400		.0348		P
Sodium	ug/L	+/-20%	23800		24300		1.84		P
Strontium	ug/L	+/-20%	28.8		28.7		.375		P
Tin	ug/L		12.5 U		12.5 U				P
Vanadium	ug/L	+/-5	6.92		7.16		3.43		P
Zinc	ug/L		3.3 U		3.3 U				P

*Analytical Methods:

P SW846 3005A/6010C

Metals
–6–
Duplicate Sample Summary

SDG No.: 2014–3481**Lab Code:** GEL**Contract:** ESHL00714**Client ID:** WTESR–14–78921D**Matrix:** STORM WATER**Level:** Low**Sample ID:** 349759011**Duplicate ID:** 1203108392**Percent Solids for Dup:** N/A

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M*
Mercury	ug/L		0.067	U	0.067	U			AV

***Analytical Methods:**

AV EPA 245.1/245.2

METALS

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Laboratory Control Sample Summary

SDG NO. 2014-3481

Contract: ESHL00714

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>
1203102547								
	Antimony	ug/L	50	53.1		106	80-120	MS
	Arsenic	ug/L	50	50.9		102	80-120	MS
	Cadmium	ug/L	50	53		106	80-120	MS
	Chromium	ug/L	50	52.4		105	80-120	MS
	Lead	ug/L	50	52.9		106	80-120	MS
	Molybdenum	ug/L	50	47.2		94.3	80-120	MS
	Nickel	ug/L	50	54.7		109	80-120	MS
	Selenium	ug/L	50	53.8		108	80-120	MS
	Silver	ug/L	50	55.3		111	80-120	MS
	Thallium	ug/L	50	49.6		99.2	80-120	MS
	Uranium	ug/L	50	51.2		102	80-120	MS

*Analytical Methods:

MS SW846 3005A/6020A

METALS

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Laboratory Control Sample Summary

SDG NO. 2014-3481

Contract: ESHL00714

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>
1203102590								
	Aluminum	ug/L	5000	4900		97.9	80-120	P
	Barium	ug/L	500	509		102	80-120	P
	Beryllium	ug/L	500	503		101	80-120	P
	Boron	ug/L	500	491		98.3	80-120	P
	Calcium	ug/L	5000	4960		99.3	80-120	P
	Cobalt	ug/L	500	504		101	80-120	P
	Copper	ug/L	500	502		100	80-120	P
	Iron	ug/L	5000	5060		101	80-120	P
	Magnesium	ug/L	5000	5160		103	80-120	P
	Manganese	ug/L	500	509		102	80-120	P
	Potassium	ug/L	5000	5040		101	80-120	P
	Silica	ug/L	10700	10400		97.2	80-120	P
	Sodium	ug/L	5000	4930		98.6	80-120	P
	Strontium	ug/L	500	503		101	80-120	P
	Tin	ug/L	500	490		98	80-120	P
	Vanadium	ug/L	500	527		105	80-120	P
	Zinc	ug/L	500	504		101	80-120	P

*Analytical Methods:

P SW846 3005A/6010C

METALS

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Laboratory Control Sample Summary

SDG NO. 2014-3481

Contract: ESHL00714

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>
1203108391	Mercury	ug/L	2	2.05		102	85-115	AV

*Analytical Methods:

AV EPA 245.1/245.2

METALS

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Serial Dilution Sample Summary

SDG NO. 2014-3481

Client ID: WST09-14-74376L

Contract: ESHL00714

Matrix: LIQUID

Level: Low

Sample ID: 349932001

Serial Dilution ID: 1203102550

<u>Analyte</u>	<u>Initial Value ug/L</u>	<u>C</u>	<u>Serial Value ug/L</u>	<u>C</u>	<u>% Difference</u>	<u>Qual</u>	<u>Acceptance Limit</u>	<u>M*</u>
Antimony	1	U	5	U				MS
Arsenic	3.71	J	8.5	U	100			MS
Cadmium	.11	U	.55	U				MS
Chromium	2.51	J	10	U	100			MS
Lead	1.06	J	2.5	U	100			MS
Molybdenum	1.01		1.02	J	1.09			MS
Nickel	.5	U	2.5	U				MS
Selenium	7.08		8.05	J	13.6			MS
Silver	.2	U	1	U				MS
Thallium	.45	U	2.25	U				MS
Uranium	.416		.42	J	.962			MS

*Analytical Methods:

MS SW846 3005A/6020A

METALS

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Serial Dilution Sample Summary

SDG NO. 2014-3481

Client ID: WST09-14-74376L

Contract: ESHL00714

Matrix: LIQUID

Level: Low

Sample ID: 349932001

Serial Dilution ID: 1203102594

<u>Analyte</u>	<u>Initial Value ug/L</u>	<u>C</u>	<u>Serial Value ug/L</u>	<u>C</u>	<u>% Difference</u>	<u>Qual</u>	<u>Acceptance Limit</u>	<u>M*</u>
Aluminum	68	U	340	U				P
Barium	14.5		15.1	J	4.56			P
Beryllium	1	U	5	U				P
Boron	18.3	J	75	U	100			P
Calcium	6920		7130		3.11		10	P
Cobalt	1	U	5	U				P
Copper	41.8		44.4	J	6.13			P
Iron	43.9	J	150	U	100			P
Magnesium	3230		3360		3.9			P
Manganese	2	U	10	U				P
Potassium	4250		4390		3.15		10	P
Silica	80400		82200		2.19		10	P
Sodium	23800		25700		7.75		10	P
Strontium	28.8		29.8		3.34			P
Tin	2.5	U	12.5	U				P
Vanadium	6.92		9.22	J	33.3			P
Zinc	3.3	U	16.5	U				P

*Analytical Methods:

P SW846 3005A/6010C

METALS

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Serial Dilution Sample Summary

SDG NO. 2014-3481 **Client ID:** WTESR-14-78921L**Contract:** ESHL00714**Matrix:** LIQUID **Level:** Low**Sample ID:** 349759011 **Serial Dilution ID:** 1203108394

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

*Analytical Methods:

AV EPA 245.1/245.2

General Chem Analysis

Case Narrative

**General Chemistry Narrative
ARS International, LLC (ARSL)
SDG 2014-3481**

Method/Analysis Information

Product: Carbon and Total Organic

Analytical Batch: 1394347

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
349927003	CAPU-14-79426
349927013	CAPU-14-79432
1203105820	Method Blank (MB)
1203105822	350260005(CAPU-14-79427) Sample Duplicate (DUP)
1203105823	350053030(CAPU-14-79415) Sample Duplicate (DUP)
1203105824	350260005(CAPU-14-79427) Post Spike (PS)
1203105825	350053030(CAPU-14-79415) Post Spike (PS)
1203105826	Laboratory Control Sample (LCS)
1203112489	350748001(VS-R28-V2-79984) Sample Duplicate (DUP)
1203112490	350748001(VS-R28-V2-79984) 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# 12.

Preparation/Analytical Method Verification

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

Calibration Information

The Carbon analysis was performed on a O-I Analytical Model 1010 Total Organic Carbon Analyzer.

Initial Calibration

All initial calibration requirements have been met for this SDG.

Continuing Calibration Blanks

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

Calibration Verification Information (CCV)

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

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

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following samples were selected for QC analysis: 350053030 (CAPU-14-79415), 350260005 (CAPU-14-79427) and 350748001 (VS-R28-V2-79984).

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

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

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

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

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

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

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

Additional Comments

A 15 mg/L Total Inorganic Carbon check standard is analyzed with each analytical run to prove that the instrument is

effectively sparging away the inorganic carbon.

Electronic Packaging Comment

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

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

Method/Analysis Information

Product: Cyanide and Total
Analytical Batch: 1393083 **Method:** WSP-CN(T)
Prep Batch : 1393082 **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
349927003	CAPU-14-79426
349927013	CAPU-14-79432
1203101678	Method Blank (MB)
1203101683	Laboratory Control Sample (LCS)
1203102692	349927003(CAPU-14-79426) Sample Duplicate (DUP)
1203102694	349927003(CAPU-14-79426) 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

The following sample was selected for QC analysis: 349927003 (CAPU-14-79426).

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: 1393647

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
349927006	CAPU-14-79434
349927014	CAPU-14-79440
1203103274	Method Blank (MB)
1203103275	350053033(CAPU-14-79416) Sample Duplicate (DUP)
1203103276	350053033(CAPU-14-79416) Post Spike (PS)
1203103277	Laboratory Control Sample (LCS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-086 REV# 22.

Preparation/Analytical Method Verification

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

Calibration Information

The Ion Chromatography analysis was performed on a Dionex ICS-3000 Ion Chromatograph.

Initial Calibration

All initial calibration requirements have been met for this SDG.

Continuing Calibration Blanks

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

Calibration Verification Information (CCV)

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

Y Intercept Rule

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

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

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 350053033 (CAPU-14-79416).

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

The spike recovery falls outside of the established acceptance limits due to matrix interference: 1203103276 (CAPU-14-79416).

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Dilutions

The following samples in this sample group were diluted due to high concentration: 349927006 (CAPU-14-79434) and 349927014 (CAPU-14-79440).

Sample Re-analysis

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

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

The following DER was generated for this SDG: 1303455, 1203103276 (CAPU-14-79416).

Manual Integrations

Manual integrations were not required for the samples in 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: Ammonia Nitrogen

Analytical Batch: 1394289 **Method:** EPA 350.1 Nitrogen and Ammonia L

Prep Batch : 1394288 **Method:** EEPA 350.2 Prep

Sample Analysis

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

Sample ID	Client ID
349927006	CAPU-14-79434
349927014	CAPU-14-79440
1203104844	Method Blank (MB)
1203104846	349927006(CAPU-14-79434) Sample Duplicate (DUP)
1203104849	349927006(CAPU-14-79434) Matrix Spike (MS)
1203104851	Laboratory Control Sample (LCS)

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

SOP Reference

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

Preparation/Analytical Method Verification

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

Calibration Information

The Nutrient analysis was performed on a Lachat QuickChem FIA+ 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

The following sample was selected for QC analysis: 349927006 (CAPU-14-79434).

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

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

Duplicate Relative Percent Difference (RPD) Statement

The values for the sample and duplicate are less than the Practical Quantitation Limit (PQL); therefore, the RPD is not applicable. 1203104846 (CAPU-14-79434).

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

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

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

The following sample was re-analyzed due to instrument failure. The results from the reanalysis are reported. 1203104844 (MB).

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:	1394292	Method:	Nitrogen and Total Kjeldahl (TKN)
Prep Batch :	1394290	Method:	EEPA 351.2 Prep

Sample Analysis

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

Sample ID	Client ID
349927003	CAPU-14-79426
349927013	CAPU-14-79432
1203104856	Method Blank (MB)
1203104857	Laboratory Control Sample (LCS)
1203104858	350137001(CAPU-14-79429) Sample Duplicate (DUP)
1203104859	350137001(CAPU-14-79429) Matrix Spike (MS)
1203106955	350260005(CAPU-14-79427) Sample Duplicate (DUP)
1203106956	350260005(CAPU-14-79427) 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

The following samples were selected for QC analysis: 350137001 (CAPU-14-79429) and 350260005 (CAPU-14-79427).

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 Relative Percent Difference (RPD) between the sample and duplicate falls outside of the established acceptance limits because of the heterogeneous matrix of the sample: 1203106955 (CAPU-14-79427). The values for the sample and duplicate are less than the Practical Quantitation Limit (PQL); therefore, the RPD is not applicable. 1203104858 (CAPU-14-79429).

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

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

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

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

The following DER was generated for this SDG: 1303181. 1203106955 (CAPU-14-79427).

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:	1394285	Method:	EPA 353.2 Nitrogen and Nitrate/Nitrite

Sample Analysis

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

Sample ID	Client ID
349927006	CAPU-14-79434
349927014	CAPU-14-79440
1203104833	Method Blank (MB)
1203104835	349927006(CAPU-14-79434) Sample Duplicate (DUP)
1203104838	349927006(CAPU-14-79434) Post Spike (PS)
1203104840	Laboratory Control Sample (LCS)
1203107052	350260006(CAPU-14-79435) Sample Duplicate (DUP)
1203107053	350260006(CAPU-14-79435) 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

The following samples were selected for QC analysis: 349927006 (CAPU-14-79434) and 350260006 (CAPU-14-79435).

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

The spike recovery falls outside of the GEL acceptance limits but within the client specified limits. 1203104838 (CAPU-14-79434).

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 high concentration: 1203104835 (CAPU-14-79434), 1203104838 (CAPU-14-79434), 349927006 (CAPU-14-79434) and 349927014 (CAPU-14-79440).

Sample Re-analysis

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

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

The following DER was generated for this SDG: 1303709. 1203104838 (CAPU-14-79434).

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:	1393136	Method:	EPA 365.4 Phosphorus and Total in
Prep Batch :	1393134	Method:	EEPA 365.4 Prep

Sample Analysis

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

Sample ID	Client ID
349927006	CAPU-14-79434
349927014	CAPU-14-79440
1203101850	Method Blank (MB)
1203101851	Laboratory Control Sample (LCS)
1203102905	349927006(CAPU-14-79434) Sample Duplicate (DUP)
1203102907	349927006(CAPU-14-79434) Matrix Spike (MS)

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

SOP Reference

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

Preparation/Analytical Method Verification

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

Calibration Information

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

Continuing Calibration Blanks

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

Calibration Verification Information (CCV)

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

Y Intercept Rule

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

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 349927006 (CAPU-14-79434).

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 following sample was re-analyzed due to instrument failure. The results from the reanalysis are reported. 1203101850 (MB).

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: 1393467

Method: EPA 160.1 Solids and Dissolved-F

Sample Analysis

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

Sample ID	Client ID
349927006	CAPU-14-79434
349927014	CAPU-14-79440
1203102763	Method Blank (MB)
1203102764	349927006(CAPU-14-79434) Sample Duplicate (DUP)
1203102765	349932002(WST09-14-79994) Sample Duplicate (DUP)
1203102768	Laboratory Control Sample (LCS)

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

SOP Reference

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

The following samples were selected for QC analysis: 349927006 (CAPU-14-79434) and 349932002 (WST09-14-79994).

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:

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Method/Analysis Information

Product: Specific Conductivity

Analytical Batch: 1396796

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
349927006	CAPU-14-79434
349927014	CAPU-14-79440
1203111406	349927006(CAPU-14-79434) Sample Duplicate (DUP)
1203111408	Laboratory Control Sample (LCS)

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

SOP Reference

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

Initial Standardization

The titrant was properly standardized

Quality Control (QC) Information

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

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

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

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

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

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Method/Analysis Information

Product: pH

Analytical Batch: 1395344 **Method:** EPA 150.1 pH

Sample Analysis

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

Sample ID	Client ID
349927006	CAPU-14-79434
349927014	CAPU-14-79440
1203107683	349927006(CAPU-14-79434) Sample Duplicate (DUP)
1203107686	Laboratory Control Sample (LCS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-008 REV# 21.

Preparation/Analytical Method Verification

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

Calibration Information

The Titration and Ion analysis was performed on a Thermo Orion Star A111. Immediates

Initial Standardization

The titrant was properly standardized

Quality Control (QC) Information

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

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

The following DER was generated for this SDG: 1304724, 1203107683 (CAPU-14-79434), 349927006 (CAPU-14-79434) and 349927014 (CAPU-14-79440).

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: 1396176 **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
349927006	CAPU-14-79434
349927014	CAPU-14-79440
1203109836	Method Blank (MB)
1203109838	349927006(CAPU-14-79434) Sample Duplicate (DUP)
1203109841	349927006(CAPU-14-79434) Matrix Spike (MS)
1203109844	Laboratory Control Sample (LCS)

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

SOP Reference

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

The following sample was selected for QC analysis: 349927006 (CAPU-14-79434).

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

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

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

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

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

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

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

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

Certification Statement

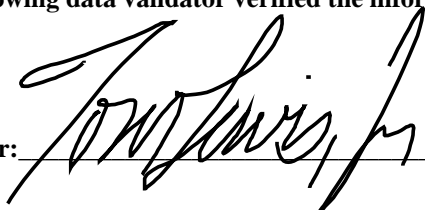
Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

Review Validation:

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

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

Reviewer:



Date:

01 July 14

Sample Data Summary

GEL LABORATORIES LLC

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

Certificate of Analysis Report for

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

Client SDG: 2014-3481 GEL Work Order: 349927

The Qualifiers in this report are defined as follows:

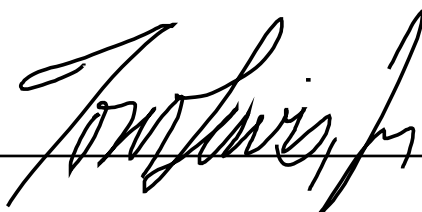
- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a Tracer compound
- ** Analyte is a surrogate compound
- H Analytical holding time was exceeded
- J Value is estimated
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma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

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

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

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

Reviewed by



GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: July 1, 2014

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 Groundwater Samples

Client SDG: 2014-3481

Client Sample ID: CAPU-14-79426
Sample ID: 349927003
Matrix: W
Collect Date: 02-JUN-14 11:46
Receive Date: 04-JUN-14
Collector: Client

Project: ESHL00714
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		1.41	0.330	1.00	mg/L	1	TSM	06/19/14	1918	1394347	1
Flow Injection Analysis											
WSP-CN(T) "As Received"											
Cyanide, Total	U	ND	1.67	5.00	ug/L	1	AXH3	06/09/14	1412	1393083	2
Nutrient Analysis											
Nitrogen, Total Kjeldahl (TKN) "As Received"											
Nitrogen, Total Kjeldahl		0.204	0.033	0.100	mg/L	1	KLP1	06/11/14	1255	1394292	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 335.4	EPA 335.4 Total Cyanide	AXH3	06/09/14	1004	1393082
EPA 351.2 Prep	EPA 351.2 Total Kjeldahl Nitrogen Prep	KLP1	06/10/14	1600	1394290

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: July 1, 2014

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 Groundwater Samples

Client SDG: 2014-3481

Client Sample ID: CAPU-14-79434
Sample ID: 349927006
Matrix: W
Collect Date: 02-JUN-14 11:46
Receive Date: 04-JUN-14
Collector: Client

Project: ESHL00714
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	J	0.155	0.067	0.200	mg/L	1	RXB5	06/10/14	2341	1393647	1
Fluoride		0.414	0.033	0.100	mg/L	1					
Chloride		49.9	0.670	2.00	mg/L	10	RXB5	06/11/14	1402	1393647	2
Sulfate		31.2	1.33	4.00	mg/L	10					
Nutrient Analysis											
EPA 350.1 Nitrogen, Ammonia L "As Received"											
Nitrogen, Ammonia	J	0.0363	0.017	0.050	mg/L	1	KLP1	06/10/14	1051	1394289	3
EPA 353.2 Nitrogen, Nitrate/Nitrite "As Received"											
Nitrogen, Nitrate/Nitrite		4.01	0.170	0.500	mg/L	10	KLP1	06/12/14	1041	1394285	4
EPA 365.4 Phosphorus, Total in "As Received"											
Phosphorus, Total as P		1.08	0.017	0.050	mg/L	1	KLP1	06/06/14	0929	1393136	5
Solids Analysis											
EPA 160.1 Solids, Dissolved-F "As Received"											
Total Dissolved Solids		366	3.40	14.3	mg/L		MXB3	06/05/14	1046	1393467	6
Titration and Ion Analysis											
EPA 150.1 pH "As Received"											
pH at Temp 21.5C	H	8.03	0.010	0.100	SU	1	PXO1	06/12/14	1946	1395344	7
EPA 310.1 Total Alkalinity "As Received"											
Alkalinity, Total as CaCO3		164	0.725	1.00	mg/L		PXO1	06/16/14	1610	1396176	8
Carbonate alkalinity (CaCO3)	U	ND	0.725	1.00	mg/L						
EPA120.1 Specific Conductivity "As Received"											
Conductivity		566	1.00	1.00	umhos/cm	1	EXM3	06/18/14	1356	1396796	9

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Prep	EPA 350.1 Ammonia Nitrogen Prep	KLP1	06/09/14	1502	1394288
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	KLP1	06/05/14	1700	1393134

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Certificate of Analysis

Report Date: July 1, 2014

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

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

Client SDG: 2014-3481

Client Sample ID: CAPU-14-79434
Sample ID: 349927006

Project: ESHL00714
Client ID: ARSL004

The following Analytical Methods were performed:

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

Notes:

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Certificate of Analysis

Report Date: July 1, 2014

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 Groundwater Samples

Client SDG: 2014-3481

Client Sample ID: CAPU-14-79432
Sample ID: 349927013
Matrix: W
Collect Date: 02-JUN-14 12:05
Receive Date: 04-JUN-14
Collector: Client

Project: ESHL00714
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		2.06	0.330	1.00	mg/L	1	TSM	06/19/14	1952	1394347	1
Flow Injection Analysis											
WSP-CN(T) "As Received"											
Cyanide, Total	U	ND	1.67	5.00	ug/L	1	AXH3	06/09/14	1419	1393083	2
Nutrient Analysis											
Nitrogen, Total Kjeldahl (TKN) "As Received"											
Nitrogen, Total Kjeldahl		0.128	0.033	0.100	mg/L	1	KLP1	06/11/14	1259	1394292	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 335.4	EPA 335.4 Total Cyanide	AXH3	06/09/14	1004	1393082
EPA 351.2 Prep	EPA 351.2 Total Kjeldahl Nitrogen Prep	KLP1	06/10/14	1600	1394290

The following Analytical Methods were performed:

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

Notes:

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Certificate of Analysis

Report Date: July 1, 2014

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 Groundwater Samples

Client SDG: 2014-3481

Client Sample ID: CAPU-14-79440
Sample ID: 349927014
Matrix: W
Collect Date: 02-JUN-14 12:05
Receive Date: 04-JUN-14
Collector: Client

Project: ESHL00714
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	RXB5	06/11/14	0011	1393647	1
Fluoride		0.288	0.033	0.100	mg/L	1					
Chloride		48.1	0.670	2.00	mg/L	10	RXB5	06/11/14	1602	1393647	2
Sulfate		25.7	1.33	4.00	mg/L	10					
Nutrient Analysis											
EPA 350.1 Nitrogen, Ammonia L "As Received"											
Nitrogen, Ammonia	U	ND	0.017	0.050	mg/L	1	KLP1	06/10/14	1057	1394289	3
EPA 353.2 Nitrogen, Nitrate/Nitrite "As Received"											
Nitrogen, Nitrate/Nitrite		3.18	0.170	0.500	mg/L	10	KLP1	06/12/14	1050	1394285	4
EPA 365.4 Phosphorus, Total in "As Received"											
Phosphorus, Total as P		0.0535	0.017	0.050	mg/L	1	KLP1	06/06/14	0931	1393136	5
Solids Analysis											
EPA 160.1 Solids, Dissolved-F "As Received"											
Total Dissolved Solids		297	3.40	14.3	mg/L		MXB3	06/05/14	1046	1393467	6
Titration and Ion Analysis											
EPA 150.1 pH "As Received"											
pH at Temp 21.4C	H	7.48	0.010	0.100	SU	1	PXO1	06/12/14	1952	1395344	7
EPA 310.1 Total Alkalinity "As Received"											
Alkalinity, Total as CaCO3		69.1	0.725	1.00	mg/L		PXO1	06/16/14	1623	1396176	8
Carbonate alkalinity (CaCO3)	U	ND	0.725	1.00	mg/L						
EPA120.1 Specific Conductivity "As Received"											
Conductivity		381	1.00	1.00	umhos/cm	1	EXM3	06/18/14	1357	1396796	9

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Prep	EPA 350.1 Ammonia Nitrogen Prep	KLP1	06/09/14	1502	1394288
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	KLP1	06/05/14	1700	1393134

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Certificate of Analysis

Report Date: July 1, 2014

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 Groundwater Samples

Client SDG: 2014-3481

Client Sample ID: CAPU-14-79440
Sample ID: 349927014

Project: ESHL00714
Client ID: ARSL004

The following Analytical Methods were performed:

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

Notes:

Quality Control Summary

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QC Summary

Report Date: July 1, 2014

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

Contact: Mr. Keith Greene

Workorder: 349927

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Carbon Analysis											
Batch	1394347										
QC1203105822	350260005	DUP									
Total Organic Carbon Average	U	ND	U	ND	mg/L	N/A			TSM	06/20/14	01:07
QC1203105823	350053030	DUP									
Total Organic Carbon Average	U	ND	U	ND	mg/L	N/A				06/19/14	22:40
QC1203112489	350748001	DUP									
Total Organic Carbon Average	J	0.439	J	0.426	mg/L	3.01	^	(+/-1.00)		06/20/14	04:59
QC1203105826	LCS										
Total Organic Carbon Average	10.0			9.92	mg/L			99.2	(85%-115%)	06/19/14	19:10
QC1203105820	MB										
Total Organic Carbon Average			U	ND	mg/L					06/19/14	19:01
QC1203105824	350260005	PS									
Total Organic Carbon Average	10.0	U	ND	10.5	mg/L			103	(65%-120%)	06/20/14	01:27
QC1203105825	350053030	PS									
Total Organic Carbon Average	10.0	U	ND	10.4	mg/L			102	(65%-120%)	06/19/14	23:00
QC1203112490	350748001	PS									
Total Organic Carbon Average	10.0	J	0.439	10.7	mg/L			103	(65%-120%)	06/20/14	05:19
Flow Injection Analysis											
Batch	1393083										
QC1203102692	349927003	DUP									
Cyanide, Total	U	ND	U	ND	ug/L	N/A			AXH3	06/09/14	14:17
QC1203101683	LCS										
Cyanide, Total	50.0			51.9	ug/L			104	(90%-110%)	06/09/14	13:46
QC1203101678	MB										
Cyanide, Total			U	ND	ug/L					06/09/14	13:45
QC1203102694	349927003	MS									
Cyanide, Total	100	U	ND	109	ug/L			109	(90%-110%)	06/09/14	14:18
Ion Chromatography											
Batch	1393647										
QC1203103275	350053033	DUP									
Bromide	U	ND	U	ND	mg/L	N/A			RXB5	06/11/14	02:40

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QC Summary

Workorder: 349927

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1393647										
Chloride		5.91		5.95	mg/L	0.720		(0%-20%)			
Fluoride		0.909		0.911	mg/L	0.209		(0%-20%)	RXB5	06/11/14	02:40
Sulfate		4.76		4.77	mg/L	0.0986		(0%-20%)			
QC1203103277 LCS											
Bromide	1.25			1.33	mg/L		106	(90%-110%)		06/10/14	23:11
Chloride	5.00			4.93	mg/L		98.6	(90%-110%)			
Fluoride	2.50			2.55	mg/L		102	(90%-110%)			
Sulfate	10.0			10.3	mg/L		103	(90%-110%)			
QC1203103274 MB											
Bromide			U	ND	mg/L					06/10/14	22:41
Chloride			U	ND	mg/L						
Fluoride			U	ND	mg/L						
Sulfate			U	ND	mg/L						
QC1203103276 350053033 PS											
Bromide	1.25	U	ND	1.42	mg/L		113 *	(90%-110%)		06/11/14	03:10
Chloride	5.00		5.91	11.8	mg/L		118 *	(90%-110%)			
Fluoride	2.50		0.909	3.57	mg/L		106	(90%-110%)			
Sulfate	10.0		4.76	15.7	mg/L		109	(90%-110%)			
Nutrient Analysis											
Batch	1393136										
QC1203102905 349927006 DUP											
Phosphorus, Total as P		1.08		1.08	mg/L	0.00		(0%-20%)	KLP1	06/06/14	09:30
QC1203101851 LCS											
Phosphorus, Total as P	1.00			1.15	mg/L		115	(79%-126%)		06/06/14	09:00
QC1203101850 MB											
Phosphorus, Total as P			J	0.0361	mg/L					06/06/14	09:11
QC1203102907 349927006 MS											
Phosphorus, Total as P	1.00	1.08		2.01	mg/L		93	(64%-134%)		06/06/14	09:30

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QC Summary

Workorder: 349927

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Nutrient Analysis											
Batch	1393136										
Batch	1394285										
QC1203104835	349927006	DUP									
Nitrogen, Nitrate/Nitrite		4.01		3.74	mg/L	6.97		(0%-20%)	KLP1	06/12/14	10:43
QC1203107052	350260006	DUP									
Nitrogen, Nitrate/Nitrite		0.478		0.480	mg/L	0.418		(0%-20%)		06/12/14	11:25
QC1203104840	LCS										
Nitrogen, Nitrate/Nitrite	1.00			1.00	mg/L		100	(90%-110%)		06/12/14	10:40
QC1203104833	MB										
Nitrogen, Nitrate/Nitrite			U	ND	mg/L					06/12/14	10:39
QC1203104838	349927006	PS									
Nitrogen, Nitrate/Nitrite	1.00	0.401		1.52	mg/L		112 *	(90%-110%)		06/12/14	10:44
QC1203107053	350260006	PS									
Nitrogen, Nitrate/Nitrite	1.00	0.478		1.44	mg/L		96.2	(90%-110%)		06/12/14	11:26
Batch	1394289										
QC1203104846	349927006	DUP									
Nitrogen, Ammonia	J	0.0363	U	ND	mg/L	200	^		KLP1	06/10/14	10:56
QC1203104851	LCS										
Nitrogen, Ammonia	1.00			0.982	mg/L		98.2	(90%-110%)		06/10/14	10:39
QC1203104844	MB										
Nitrogen, Ammonia			U	ND	mg/L					06/10/14	10:44
QC1203104849	349927006	MS									
Nitrogen, Ammonia	1.00	J	0.0363	0.955	mg/L		91.9	(90%-110%)		06/10/14	10:56
Batch	1394292										
QC1203104858	350137001	DUP									
Nitrogen, Total Kjeldahl	J	0.0605	J	0.0372	mg/L	47.7	^	(+/-0.100)	KLP1	06/11/14	13:06
QC1203106955	350260005	DUP									
Nitrogen, Total Kjeldahl		0.145	U	ND	mg/L	145 *	^	(+/-0.100)		06/11/14	13:13
QC1203104857	LCS										
Nitrogen, Total Kjeldahl	1.00			1.07	mg/L		107	(90%-110%)		06/11/14	12:54
QC1203104856	MB										
Nitrogen, Total Kjeldahl			J	0.0621	mg/L					06/11/14	12:53
QC1203104859	350137001	MS									

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QC Summary

Workorder: 349927

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Nutrient Analysis											
Batch	1394292										
Nitrogen, Total Kjeldahl	1.00	J	0.0605	1.06	mg/L		100	(90%-110%)	KLP1	06/11/14	13:07
QC1203106956 350260005 MS											
Nitrogen, Total Kjeldahl	1.00		0.145	1.16	mg/L		102	(90%-110%)		06/11/14	13:14
Solids Analysis											
Batch	1393467										
QC1203102764 349927006 DUP											
Total Dissolved Solids			366	370	mg/L	1.17		(0%-10%)	MXB3	06/05/14	10:46
QC1203102765 349932002 DUP											
Total Dissolved Solids			431	417	mg/L	3.37		(0%-10%)		06/05/14	10:46
QC1203102768 LCS											
Total Dissolved Solids	300			287	mg/L		95.7	(95%-105%)		06/05/14	10:46
QC1203102763 MB											
Total Dissolved Solids			U	ND	mg/L					06/05/14	10:46
Titration and Ion Analysis											
Batch	1395344										
QC1203107683 349927006 DUP											
pH		H	8.03	H	8.02	SU	0.125	(0%-10%)	PXO1	06/12/14	19:51
QC1203107686 LCS											
pH	7.00			7.01	SU		100	(99%-101%)		06/12/14	19:26
Batch	1396176										
QC1203109838 349927006 DUP											
Alkalinity, Total as CaCO3			164	163	mg/L	0.939		(0%-20%)	PXO1	06/16/14	16:17
Carbonate alkalinity (CaCO3)		U	ND	U	ND	mg/L	N/A				
QC1203109844 LCS											
Alkalinity, Total as CaCO3	50.0			50.6	mg/L		101	(90%-110%)		06/16/14	15:59
QC1203109836 MB											
Alkalinity, Total as CaCO3			U	ND	mg/L					06/16/14	15:59
Carbonate alkalinity (CaCO3)			U	ND	mg/L						
QC1203109841 349927006 MS											
Alkalinity, Total as CaCO3	50.0		164	213	mg/L		98.2	(80%-120%)		06/16/14	16:20
Batch	1396796										
QC1203111406 349927006 DUP											
				568				(0%-10%)			

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QC Summary

Workorder: 349927

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Titration and Ion Analysis											
Batch	1396796										
Conductivity		566			umhos/cm	0.353			EXM3	06/18/14	13:56
QC1203111408	LCS										
Conductivity	1410			1350	umhos/cm		95.5	(95%-105%)		06/18/14	13:54

Notes:

- < Result is less than value reported
- > Result is greater than value reported
- B The target analyte was detected in the associated blank.
- E General Chemistry--Concentration of the target analyte exceeds the instrument calibration range
- H Analytical holding time was exceeded
- J Value is estimated
- N/A RPD or %Recovery limits do not apply.
- N1 See case narrative
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
- R Per section 9.3.4.1 of Method 1664 Revision B, due to matrix spike recovery issues, this result may not be reported or used for regulatory compliance purposes.
- R Sample results are rejected
- 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. 11-JUN-14	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: 1394292	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 349927(2014-3481),350053(2014-3494),350137(2014-3500),350260(2014-3510) Application Issues: Failed RPD for DUP			
Specification and Requirements Exception Description:		DER Disposition:	
1. Failed RPD for DUP: QC 1203106955DUP		1. The Relative Percent Difference (RPD) between the sample and duplicate falls outside of the established acceptance limits because of the heterogeneous matrix of the sample.	

Originator's Name:
Kristen Parson 11-JUN-14

Data Validator/Group Leader:
Aubrey Kingsbury 11-JUN-14

DATA EXCEPTION REPORT			
Mo.Day Yr. 12-JUN-14	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: IC	Test / Method: EPA 300.0	Matrix Type: Liquid	Client Code: ESHL
Batch ID: 1393647	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 349927(2014-3481),350053(2014-3494),350137(2014-3500) Application Issues: Failed Recovery for MS/PS			
Specification and Requirements Exception Description:		DER Disposition:	
1. Failed Recovery for MS/PS: QC 1203103276PS		1. The spike recovery falls outside of the GEL acceptance limits for chloride and bromide but within the client specified limits.	

Originator's Name:
Rachael Bell 12-JUN-14

Data Validator/Group Leader:
Thomas Lewis 01-JUL-14

DATA EXCEPTION REPORT			
Mo.Day Yr. 12-JUN-14	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: LACHAT Flow Injection Analyzer	Test / Method: EPA 353.2	Matrix Type: Liquid	Client Code: ESHL
Batch ID: 1394285	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 349927(2014-3481),350053(2014-3494),350137(2014-3500),350260(2014-3510) Application Issues: Failed Recovery for MS/PS			
Specification and Requirements		DER Disposition:	
Exception Description: 1. Failed Recovery for MS/PS: QC 1203104838PS		1. The spike recovery falls outside of the GEL acceptance limits but within the client specified limits.	

Originator's Name:

Kristen Parson 12-JUN-14

Data Validator/Group Leader:

Elzbieta Szulc 12-JUN-14

[illegible]

Data Validator/Group Leader:
Elzbieta Szulc 17-JUN-14

Radiological Analysis

**Radiochemistry Case Narrative
ARS International, LLC (ARSL)
SDG 2014-3481
Work Order 349927**

Method/Analysis Information

Product: Alphaspec Am241 Liquid
Analytical Method: DOE EML HASL-300, Am-05-RC Modified
Analytical Batch Number: 1393291

Sample ID	Client ID
349927003	CAPU-14-79426
349927013	CAPU-14-79432
1203102286	Method Blank (MB)
1203102287	349927003(CAPU-14-79426) Sample Duplicate (DUP)
1203102288	Laboratory Control Sample (LCS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-011 REV# 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.

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 1203102286 (MB) and 1203102288 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 349927003 (CAPU-14-79426). The QC was from ARSL work order 349927.

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

Sample 1203102286 (MB) was recounted due to low carrier/tracer yield. The recount is reported.

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

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

Manual Integration

No manual integrations were performed on data in this batch.

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:	Alphaspec U, Liquid
Analytical Method:	DOE EML HASL-300, U-02-RC Modified
Analytical Batch Number:	1393293

Sample ID	Client ID
349927003	CAPU-14-79426
349927013	CAPU-14-79432
1203102292	Method Blank (MB)

1203102293 349927003(CAPU-14-79426) Sample Duplicate (DUP)
1203102294 Laboratory Control Sample (LCS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-011 REV# 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.

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 1203102292 (MB) and 1203102294 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 349927003 (CAPU-14-79426). The QC was from ARSL work order 349927.

QC Information

All of the QC samples met the required acceptance limits.

CSU

The U-233/234 and U-235/236 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 batch 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: Alphaspec Pu, Liquid
Analytical Method: DOE EML HASL-300, Pu-11-RC Modified
Analytical Batch Number: 1397115

Sample ID	Client ID
349927003	CAPU-14-79426
349927013	CAPU-14-79432
1203112119	Method Blank (MB)
1203112120	349927013(CAPU-14-79432) Sample Duplicate (DUP)
1203112121	Laboratory Control Sample (LCS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-011 REV# 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.

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 1203112119 (MB) and 1203112121 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 349927013 (CAPU-14-79432). The QC was from ARSL work order 349927.

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

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

Recounts

None of the samples in this batch 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. The following DER was generated for this SDG: DER 1308997 was generated due to RDL less than MDA and Failed Yield for Surrogates. 1. Sample 349927003 did not meet the Pu-238 and Pu-239/240 detection limits and sample 1203112120 did not meet the Pu-239/240 detection limit due to lower tracer yield recoveries and high standard deviation. 2. Sample 349927003 did not meet the client's tracer yield requirement. 1. The samples do have over 400 tracer counts and when a blank population is performed the MDC is greater than the RDL due to the high standard deviation. Reporting results. 2. The sample does meet GEL's standard yield requirement and has over 400 tracer counts. 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: **GammaSpec**

Analytical Method: EPA 901.1

Analytical Batch Number: 1393240

Sample ID	Client ID
349927003	CAPU-14-79426
349927013	CAPU-14-79432
1203102164	Method Blank (MB)
1203102165	349927003(CAPU-14-79426) Sample Duplicate (DUP)
1203102166	Laboratory Control Sample (LCS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-013 REV# 25.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met. The initial Calibrations were performed in August 2013, November 2013 and February 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: 349927003 (CAPU-14-79426). The QC was from ARSL work order 349927.

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 batch 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 result is less than the decision level.

Qualifier Information

Qualifier	Reason	Analyte	Sample	Client Sample
UI	Data rejected due to no valid peak.	Potassium-40	1203102165	CAPU-14-79426(349927003DUP)

Method/Analysis Information

Product:	GFPC, Sr90, liquid
Analytical Method:	EPA 905.0 Modified
Analytical Batch Number:	1395946

Sample ID	Client ID
349927003	CAPU-14-79426
349927013	CAPU-14-79432
1203109191	Method Blank (MB)
1203109192	350260005(CAPU-14-79427) Sample Duplicate (DUP)
1203109193	350260005(CAPU-14-79427) 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 1203109191 (MB) and 1203109194 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 350260005 (CAPU-14-79427). The QC was from ARSL work order 350260.

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

Sample 1203109192 (CAPU-14-79427) was recounted due to results more negative than the three sigma TPU. The second count is reported. Sample 349927003 (CAPU-14-79426) was recounted due to a suspected false positive. 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, 1203109193 (CAPU-14-79427), 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:	1395947

Sample ID	Client ID
349927003	CAPU-14-79426
349927013	CAPU-14-79432
1203109195	Method Blank (MB)
1203109196	350417001(BDW08-14-79467) Sample Duplicate (DUP)
1203109197	350417001(BDW08-14-79467) Matrix Spike (MS)
1203109198	350417001(BDW08-14-79467) Matrix Spike Duplicate (MSD)
1203109199	Laboratory Control Sample (LCS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-001 REV# 17.

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 1203109195 (MB) and 1203109199 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 350417001 (BDW08-14-79467). The QC was from ARSL work order 350417.

QC Information

All of the QC samples met the required acceptance limits.

CSU

The blank result is less than 1.65 times the CSU.

Technical Information:

Holding Time

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

Sample Re-prep/Re-analysis

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

Chemical Recoveries

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

Gross Alpha/Beta Preparation Information

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

Recounts

Sample 349927013 (CAPU-14-79432) was recounted due to results more negative than the three sigma TPU. The second count 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, 1203109197 (BDW08-14-79467) and 1203109198

(BDW08-14-79467), 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.

Method/Analysis Information

Product: WSP-H-3
Analytical Method: EPA 906.0 Modified
Analytical Batch Number: 1396341

Sample ID	Client ID
349927013	CAPU-14-79432
1203110248	Method Blank (MB)
1203110249	350600001(WSTMO-14-75612) Sample Duplicate (DUP)
1203110250	350600001(WSTMO-14-75612) Matrix Spike (MS)
1203110251	Laboratory Control Sample (LCS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-002 REV# 21.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met. The initial Calibration was performed in August 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: 350600001 (WSTMO-14-75612). The QC was from ARSL work order 350600.

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

Sample 349927013 (CAPU-14-79432) was recounted to verify sample result. The recount result is similar to the original result. Original result 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

Additional comments were not required for this sample set.

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: 2014-3481 GEL Work Order: 349927


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.
- UI Gamma Spectroscopy--Uncertain identification

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: Theresa Austin

Date: 01 JUL 2014

Title: Group Leader

DATA EXCEPTION REPORT

Mo.Day Yr. 26-JUN-14	Division: Radiochemistry	Quality Criteria: Specifications	Type: Process
Instrument Type: ALPHA SPECTROMETER	Test / Method: DOE EML HASL-300, Pu-11-RC Modified	Matrix Type: Liquid	Client Code: ESHL
Batch ID: 1397115	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 349927(2014-3481) Application Issues: RDL less than MDA Failed Yield for Surrogates			
Specification and Requirements Exception Description:		DER Disposition:	
1. Sample 349927003 did not meet the Pu-238 and Pu-239/240 detection limits and sample 1203112120 did not meet the Pu-239/240 detection limit due to lower tracer yield recoveries and high standard deviation. 2. Sample 349927003 did not meet the client's tracer yield requirement.		1. The samples do have over 400 tracer counts and when a blank population is performed the MDC is greater than the RDL due to the high standard deviation. Reporting results. 2. The sample does meet GEL's standard yield requirement and has over 400 tracer counts. Reporting results.	

Originator's Name:

Melanie Aycock 26-JUN-14

Data Validator/Group Leader:

Jessica Davis 27-JUN-14

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: July 1, 2014

Contact: Mr. Keith Greene

Project: LANL-WQH Groundwater Samples

Client Sample ID: CAPU-14-79426
Sample ID: 349927003
Matrix: W
Collect Date: 02-JUN-14
Receive Date: 04-JUN-14
Collector: Client

Project: ESHL00714
Client ID: ARSL004

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

Alphaspec Am241 Liquid "As Received"

Americium-241	U	-0.00252	+/-0.0104	0.0437	0.0184	+/-0.0104	0.050	pCi/L		MXS2	06/14/14	1303	1393291	1
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Alphaspec Pu, Liquid "As Received"

Plutonium-238	U	0.0054	+/-0.0132	0.0641	0.0243	+/-0.0132	0.050	pCi/L		MXS2	06/25/14	1517	1397115	2
Plutonium-239/240	U	0.0172	+/-0.013	0.106	0.0451	+/-0.013	0.050	pCi/L						

Alphaspec U, Liquid "As Received"

Uranium-234		1.38	+/-0.0604	0.0671	0.030	+/-0.108	1.00	pCi/L		MXS2	06/14/14	1256	1393293	3
Uranium-235/236		0.0769	+/-0.0181	0.0562	0.0238	+/-0.0188	1.00	pCi/L						
Uranium-238		1.02	+/-0.0519	0.0377	0.0153	+/-0.0837	0.500	pCi/L						

Rad Gamma Spec Analysis

Gammasspec "As Received"

Cesium-137	U	1.74	+/-1.52	5.92	2.67	+/-1.58	8.00	pCi/L		MJH1	06/13/14	0704	1393240	4
Cobalt-60	U	1.89	+/-1.55	6.63	2.88	+/-1.61	8.00	pCi/L						
Neptunium-237	U	-0.906	+/-2.74	9.44	4.36	+/-2.75	10.0	pCi/L						
Potassium-40	U	17.4	+/-21.6	63.3	27.3	+/-21.6	10.0	pCi/L						
Sodium-22	U	0.213	+/-1.68	6.50	2.83	+/-1.68	10.0	pCi/L						

Rad Gas Flow Proportional Counting

GFPC, Sr90, liquid "As Received"

Strontium-90	U	0.0817	+/-0.121	0.438	0.185	+/-0.121	0.500	pCi/L		KSD1	06/25/14	0926	1395946	5
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WSP-GrossA/B "As Received"

Beta		10.5	+/-0.685	1.87	0.913	+/-1.13	3.00	pCi/L		BXF1	06/22/14	1251	1395947	6
Alpha	U	-0.54	+/-0.767	2.77	1.30	+/-0.767	3.00	pCi/L		BXF1	06/25/14	1616	1395947	7

The following Analytical Methods were performed

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

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Americium-243 Tracer	Alphaspec Am241 Liquid "As Received"	1393291	76.2	(50%-105%)
Plutonium-242 Tracer	Alphaspec Pu, Liquid "As Received"	1397115	33.3 *	(50%-105%)
Uranium-232 Tracer	Alphaspec U, Liquid "As Received"	1393293	83.5	(50%-105%)

GEL LABORATORIES LLC

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Certificate of Analysis

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

Los Alamos, New Mexico 87545

Report Date: July 1, 2014

Contact: Mr. Keith Greene

Project: LANL-WQH Groundwater Samples

Client Sample ID: CAPU-14-79426

Project: ESHL00714

Sample ID: 349927003

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"							1395946	80.5	(50%-105%)			

Notes:

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

GEL LABORATORIES LLC

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Certificate of Analysis

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

Los Alamos, New Mexico 87545

Report Date: July 1, 2014

Contact: Mr. Keith Greene

Project: LANL-WQH Groundwater Samples

Client Sample ID: CAPU-14-79432

Sample ID: 349927013

Matrix: W

Collect Date: 02-JUN-14

Receive Date: 04-JUN-14

Collector: Client

Project: ESHL00714

Client ID: ARSL004

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	3.28E-10	+/-0.00393	0.034	0.0143	+/-0.00394	0.050	pCi/L		MXS2	06/14/14	1303	1393291	1
<i>Alphaspec Pu, Liquid "As Received"</i>														
Plutonium-238	U	-0.00279	+/-0.0122	0.0308	0.0116	+/-0.0122	0.050	pCi/L		MXS2	06/25/14	1517	1397115	2
Plutonium-239/240	U	0.0139	+/-0.0128	0.0508	0.0216	+/-0.0128	0.050	pCi/L						
<i>Alphaspec U, Liquid "As Received"</i>														
Uranium-234		0.198	+/-0.0249	0.0712	0.0319	+/-0.0281	1.00	pCi/L		MXS2	06/14/14	1256	1393293	3
Uranium-235/236	U	0.017	+/-0.0123	0.0597	0.0252	+/-0.0123	1.00	pCi/L						
Uranium-238		0.113	+/-0.0193	0.040	0.0163	+/-0.0206	0.500	pCi/L						
Rad Gamma Spec Analysis														
<i>Gammasspec "As Received"</i>														
Cesium-137	U	0.466	+/-1.77	6.48	2.91	+/-1.78	8.00	pCi/L		MJH1	06/13/14	0704	1393240	4
Cobalt-60	U	0.306	+/-1.99	7.56	3.28	+/-1.99	8.00	pCi/L						
Neptunium-237	U	5.00	+/-2.93	11.5	5.28	+/-3.16	10.0	pCi/L						
Potassium-40	U	20.4	+/-20.7	83.8	36.9	+/-21.3	10.0	pCi/L						
Sodium-22	U	-1.75	+/-2.10	6.77	2.90	+/-2.14	10.0	pCi/L						
Rad Gas Flow Proportional Counting														
<i>GFPC, Sr90, liquid "As Received"</i>														
Strontium-90	U	0.149	+/-0.141	0.485	0.214	+/-0.141	0.500	pCi/L		KSD1	06/24/14	0742	1395946	5
<i>WSP-GrossA/B "As Received"</i>														
Beta		2.32	+/-0.544	1.73	0.845	+/-0.578	3.00	pCi/L		BXF1	06/22/14	1307	1395947	6
Alpha	U	0.450	+/-0.791	3.00	1.19	+/-0.792	3.00	pCi/L		BXF1	06/26/14	0705	1395947	7
Rad Liquid Scintillation Analysis														
<i>WSP-H-3 "As Received"</i>														
Tritium		276	+/-61.9	173	77.8	+/-67.6	200	pCi/L		BYS1	06/20/14	1341	1396341	8

The following Analytical Methods were performed

Method	Description
1	DOE EML HASL-300, Am-05-RC Modified
2	DOE EML HASL-300, Pu-11-RC Modified
3	DOE EML HASL-300, U-02-RC Modified
4	EPA 901.1
5	EPA 905.0 Modified
6	EPA 900.0/SW846 9310
7	EPA 900.0/SW846 9310
8	EPA 906.0 Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Americium-243 Tracer	Alphaspec Am241 Liquid "As Received"	1393291	86.5	(50%-105%)

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Certificate of Analysis

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 Groundwater Samples

Client Sample ID: CAPU-14-79432
Sample ID: 349927013

Project: ESHL00714
Client ID: ARSL004

Report Date: July 1, 2014

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer Recovery		Test						Batch ID	Recovery%	Acceptable Limits				
Plutonium-242 Tracer		Alphaspec Pu, Liquid "As Received"						1397115	65.4	(50%-105%)				
Uranium-232 Tracer		Alphaspec U, Liquid "As Received"						1393293	79.1	(50%-105%)				
Strontium Carrier		GFPC, Sr90, liquid "As Received"						1395946	75.6	(50%-105%)				

Notes:

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

Quality Control Data

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QC Summary

Report Date: July 1, 2014

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

Los Alamos, New Mexico

Contact: Mr. Keith Greene

Workorder: 349927

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Alpha Spec											
Batch	1393291										
QC1203102287	349927003	DUP									
Americium-241		U	-0.00252	U	0.00673	pCi/L	0.259	(0-1)	MXS2	06/14/1413:03	
		Uncert:	+/-0.0104		+/-0.00744						
		TPU:	+/-0.0104		+/-0.00744						
**Americium-243 Tracer	2.73		2.08		2.34	pCi/L	85.8	(50%-105%)			
		Uncert:	+/-0.0829		+/-0.0779						
		TPU:	+/-0.140		+/-0.134						
QC1203102288	LCS										
Americium-241		1.41			1.41	pCi/L	100	(80%-120%)	MXS2	06/14/1413:03	
		Uncert:			+/-0.0492						
		TPU:			+/-0.0745						
**Americium-243 Tracer	2.19				1.75	pCi/L	80	(50%-105%)			
		Uncert:			+/-0.0608						
		TPU:			+/-0.106						
QC1203102286	MB										
Americium-241				U	0.00	pCi/L			MXS2	06/16/1416:03	
		Uncert:			+/-0.0071						
		TPU:			+/-0.00711						
**Americium-243 Tracer	2.19				1.73	pCi/L	79	(50%-105%)			
		Uncert:			+/-0.0697						
		TPU:			+/-0.116						
Batch	1393293										
QC1203102293	349927003	DUP									
Uranium-234			1.38		1.37	pCi/L	0.0328	(0-1)	MXS2	06/14/1412:56	
		Uncert:	+/-0.0604		+/-0.0574						
		TPU:	+/-0.108		+/-0.104						
Uranium-235/236			0.0769		0.0639	pCi/L	0.182	(0-1)			
		Uncert:	+/-0.0181		+/-0.0164						
		TPU:	+/-0.0188		+/-0.0169						
Uranium-238			1.02		0.851	pCi/L	0.545	(0-1)			
		Uncert:	+/-0.0519		+/-0.0451						
		TPU:	+/-0.0837		+/-0.0705						
**Uranium-232 Tracer	2.74		2.29		2.67	pCi/L	97.5	(50%-105%)			
		Uncert:	+/-0.0852		+/-0.0806						
		TPU:	+/-0.196		+/-0.192						
QC1203102294	LCS										
Uranium-234					2.83	pCi/L			MXS2	06/14/1412:56	
		Uncert:			+/-0.0843						
		TPU:			+/-0.204						
Uranium-235/236					0.148	pCi/L					
		Uncert:			+/-0.0224						
		TPU:			+/-0.0245						

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QC Summary

Workorder: 349927

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Parmname		NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Alpha Spec												
Batch	1393293											
Uranium-238		2.72			2.94	pCi/L		108	(80%-120%)			
		Uncert:			+/-0.0856							
		TPU:			+/-0.212							
**Uranium-232 Tracer		2.19			1.65	pCi/L		75.3	(50%-105%)			
		Uncert:			+/-0.0743							
		TPU:			+/-0.162							
QC1203102292	MB											
Uranium-234				U	0.0117	pCi/L				MXS2	06/14/14	12:56
		Uncert:			+/-0.00701							
		TPU:			+/-0.00705							
Uranium-235/236				U	0.0202	pCi/L						
		Uncert:			+/-0.00867							
		TPU:			+/-0.00877							
Uranium-238				U	0.00701	pCi/L						
		Uncert:			+/-0.00843							
		TPU:			+/-0.00844							
**Uranium-232 Tracer		2.19			1.65	pCi/L		75.3	(50%-105%)			
		Uncert:			+/-0.0719							
		TPU:			+/-0.160							
Batch	1397115											
QC1203112120	349927013	DUP										
Plutonium-238		U	-0.00279	U	0.00358	pCi/L	0.147		(0-1)	MXS2	06/25/14	15:17
		Uncert:	+/-0.0122		+/-0.00948							
		TPU:	+/-0.0122		+/-0.00948							
Plutonium-239/240		U	0.0139	U	0.00716	pCi/L	0.157		(0-1)			
		Uncert:	+/-0.0128		+/-0.00877							
		TPU:	+/-0.0128		+/-0.00878							
**Plutonium-242 Tracer		2.41	1.57		1.38	pCi/L		57.4	(50%-105%)			
		Uncert:	+/-0.0825		+/-0.0937							
		TPU:	+/-0.135		+/-0.149							
QC1203112121	LCS											
Plutonium-238				U	3.14E-10	pCi/L			(80%-120%)	MXS2	06/25/14	15:17
		Uncert:			+/-0.00377							
		TPU:			+/-0.00377							
Plutonium-239/240		1.97			2.01	pCi/L		102	(80%-120%)			
		Uncert:			+/-0.0617							
		TPU:			+/-0.105							
**Plutonium-242 Tracer		1.93			1.42	pCi/L		73.5	(50%-105%)			
		Uncert:			+/-0.0606							
		TPU:			+/-0.101							
QC1203112119	MB											
Plutonium-238				U	-0.00742	pCi/L				MXS2	06/25/14	15:17
		Uncert:			+/-0.00587							
		TPU:			+/-0.00587							
Plutonium-239/240				U	-0.00557	pCi/L						
		Uncert:			+/-0.00557							

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QC Summary

Workorder: 349927

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Parname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Alpha Spec											
Batch	1397115										
**Plutonium-242 Tracer	TPU:			+/-0.00557							
	1.93			1.45	pCi/L		75.6	(50%-105%)			
	Uncert:			+/-0.0601							
	TPU:			+/-0.101							
Rad Gamma Spec											
Batch	1393240										
QC1203102165	349927003	DUP									
Cesium-137	U	1.74	U	0.765	pCi/L	0.175		(0-1)	MJH1	06/13/1409:08	
	Uncert:	+/-1.52		+/-1.20							
	TPU:	+/-1.58		+/-1.21							
Cobalt-60	U	1.89	U	-0.468	pCi/L	0.357		(0-1)			
	Uncert:	+/-1.55		+/-1.69							
	TPU:	+/-1.61		+/-1.70							
Neptunium-237	U	-0.906	U	-2.12	pCi/L	0.113		(0-1)			
	Uncert:	+/-2.74		+/-2.54							
	TPU:	+/-2.75		+/-2.59							
Potassium-40	U	17.4	UI	38.0	pCi/L	0.250		(0-1)			
	Uncert:	+/-21.6		+/-19.6							
	TPU:	+/-21.6		+/-19.7							
Sodium-22	U	0.213	U	0.184	pCi/L	0.00446		(0-1)			
	Uncert:	+/-1.68		+/-1.62							
	TPU:	+/-1.68		+/-1.62							
QC1203102166	LCS										
Americium-241	34500			37500	pCi/L		109	(80%-120%)	MJH1	06/13/1407:30	
	Uncert:			+/-1150							
	TPU:			+/-2660							
Cesium-137	14100			14100	pCi/L		100	(80%-120%)			
	Uncert:			+/-180							
	TPU:			+/-637							
Cobalt-60	17700			18200	pCi/L		103	(80%-120%)			
	Uncert:			+/-235							
	TPU:			+/-783							
Neptunium-237			U	191	pCi/L						
	Uncert:			+/-86.2							
	TPU:			+/-97.1							
Potassium-40			U	-41.2	pCi/L						
	Uncert:			+/-158							
	TPU:			+/-158							
Sodium-22			U	36.9	pCi/L						
	Uncert:			+/-28.3							
	TPU:			+/-29.5							
QC1203102164	MB										
Cesium-137			U	1.32	pCi/L				MJH1	06/13/1407:31	
	Uncert:			+/-1.42							
	TPU:			+/-1.46							
Cobalt-60			U	0.440	pCi/L						

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QC Summary

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Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Gamma Spec											
Batch	1393240										
Neptunium-237	Uncert:			+/-1.51							
	TPU:			+/-1.51							
			U	-0.486	pCi/L						
	Uncert:			+/-2.34							
Potassium-40	TPU:			+/-2.34							
			U	4.62	pCi/L						
	Uncert:			+/-17.1							
	TPU:			+/-17.2							
Sodium-22			U	-1.23	pCi/L						
	Uncert:			+/-1.39							
	TPU:			+/-1.42							
Rad Gas Flow											
Batch	1395946										
QC1203109192	350260005	DUP									
Strontium-90		U	-0.0242	U	-0.166	pCi/L	0.341	(0-1)	KSD1	06/24/1417:14	
	Uncert:		+/-0.129		+/-0.0781						
	TPU:		+/-0.129		+/-0.0781						
	8.20		5.00		7.00	mg	85.4	(50%-105%)			
**Strontium Carrier											
QC1203109194	LCS										
Strontium-90					23.3	pCi/L	103	(80%-120%)	KSD1	06/24/1407:51	
	Uncert:				+/-0.647						
	TPU:				+/-1.97						
	8.20				7.10	mg	86.6	(50%-105%)			
**Strontium Carrier											
QC1203109191	MB										
Strontium-90				U	-0.14	pCi/L			KSD1	06/24/1407:50	
	Uncert:				+/-0.111						
	TPU:				+/-0.111						
	8.20				7.00	mg	85.4	(50%-105%)			
**Strontium Carrier											
QC1203109193	350260005	MS									
Strontium-90		453	U	-0.0242	470	pCi/L	104	(75%-125%)	KSD1	06/24/1407:51	
	Uncert:			+/-0.129	+/-12.7						
	TPU:			+/-0.129	+/-39.6						
	8.20		5.00		7.40	mg	90.2	(50%-105%)			
**Strontium Carrier											
Batch	1395947										
QC1203109196	350417001	DUP									
Alpha			13.1		12.9	pCi/L	0.0393	(0-1)	BXF1	06/25/1416:01	
	Uncert:		+/-0.924		+/-0.883						
	TPU:		+/-1.44		+/-1.41						
			7.83		6.14	pCi/L	0.467	(0-1)		06/22/1413:49	
Beta	Uncert:		+/-0.697		+/-0.653						
	TPU:		+/-0.977		+/-0.831						
QC1203109199	LCS										
Alpha		12.3			11.6	pCi/L	93.8	(80%-120%)	BXF1	06/25/1416:00	
	Uncert:				+/-0.655						
	TPU:				+/-1.18						

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QC Summary

Workorder: 349927

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Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Gas Flow											
Batch	1395947										
Beta	45.2			52.1	pCi/L		115	(80%-120%)			
	Uncert:			+/-0.936							
	TPU:			+/-4.42							
QC1203109195	MB										
Alpha			U	-0.059	pCi/L				BXF1	06/25/1416:01	
	Uncert:			+/-0.0301							
	TPU:			+/-0.0301							
Beta			U	-0.168	pCi/L					06/22/1413:53	
	Uncert:			+/-0.0709							
	TPU:			+/-0.0709							
QC1203109197	350417001	MS									
Alpha	165	13.1		190	pCi/L		108	(75%-125%)	BXF1	06/25/1416:00	
	Uncert:	+/-0.924		+/-11.9							
	TPU:	+/-1.44		+/-20.3							
Beta	603	7.83		707	pCi/L		116	(75%-125%)		06/22/1412:13	
	Uncert:	+/-0.697		+/-13.0							
	TPU:	+/-0.977		+/-60.2							
QC1203109198	350417001	MSD									
Alpha	165	13.1		196	pCi/L	0.0692	111	(0-1)	BXF1	06/25/1416:00	
	Uncert:	+/-0.924		+/-11.3							
	TPU:	+/-1.44		+/-20.0							
Beta	603	7.83		602	pCi/L	0.470	98.4	(0-1)		06/22/1412:13	
	Uncert:	+/-0.697		+/-12.1							
	TPU:	+/-0.977		+/-51.6							
Rad Liquid Scintillation											
Batch	1396341										
QC1203110249	350600001	DUP									
Tritium			U	53.1	pCi/L	0.180		(0-1)	BYS1	06/20/1417:11	
	Uncert:			+/-50.3							
	TPU:			+/-50.6							
QC1203110251	LCS										
Tritium	1780			1530	pCi/L		85.8	(80%-120%)	BYS1	06/20/1418:21	
	Uncert:			+/-183							
	TPU:			+/-237							
QC1203110248	MB										
Tritium			U	-23.1	pCi/L				BYS1	06/20/1416:19	
	Uncert:			+/-45.7							
	TPU:			+/-45.7							
QC1203110250	350600001	MS									
Tritium	1780	U	53.1	1660	pCi/L		92.9	(75%-125%)	BYS1	06/20/1418:04	
	Uncert:		+/-50.3	+/-191							
	TPU:		+/-50.6	+/-252							

Notes:

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

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QC Summary

Workorder: 349927

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