

April 20, 2018

HRM Resources, LLC - Denver, CO

Sample Delivery Group: L985449
Samples Received: 04/13/2018
Project Number:
Description: NILE-SANDEN-EHN

Report To: Dave Nicholson
410 17th St., Ste. 1600
Denver, CO 80202

Entire Report Reviewed By:



Mark W. Beasley
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



Cp: Cover Page	1
Tc: Table of Contents	2
Ss: Sample Summary	3
Cn: Case Narrative	4
Sr: Sample Results	5
NILE-SANDEN-EHN-PW L985449-01	5
Qc: Quality Control Summary	7
Gravimetric Analysis by Method 2540 C-2011	7
Wet Chemistry by Method 2320 B-2011	8
Wet Chemistry by Method 4500P E-2011	9
Wet Chemistry by Method 9040C	10
Wet Chemistry by Method 9050A	11
Wet Chemistry by Method 9056A	12
Metals (ICPMS) by Method 6020	14
Volatile Organic Compounds (GC) by Method 8021B	16
Gl: Glossary of Terms	17
Al: Accreditations & Locations	18
Sc: Sample Chain of Custody	19



SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



NILE-SANDEN-EHN-PW L985449-01 GW

Collected by

Dave Nicholson

Collected date/time

04/11/18 09:00

Received date/time

04/13/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	¹ Cp
Gravimetric Analysis by Method 2540 C-2011	WG1098576	1	04/16/18 14:37	04/16/18 15:03	BS	² Tc
Wet Chemistry by Method 2320 B-2011	WG1097960	1	04/14/18 15:17	04/14/18 15:17	MCG	³ Ss
Wet Chemistry by Method 4500P E-2011	WG1097764	1	04/13/18 11:58	04/13/18 11:58	EEM	⁴ Cn
Wet Chemistry by Method 9040C	WG1098181	1	04/14/18 13:00	04/14/18 13:00	EEM	⁵ Sr
Wet Chemistry by Method 9050A	WG1098508	1	04/15/18 15:00	04/15/18 15:00	TH	⁶ Qc
Wet Chemistry by Method 9056A	WG1097798	1	04/14/18 04:50	04/14/18 04:50	MAJ	⁷ Gl
Wet Chemistry by Method 9056A	WG1097798	100	04/14/18 05:05	04/14/18 05:05	MAJ	⁸ Al
Metals (ICPMS) by Method 6020	WG1098023	1	04/13/18 16:28	04/14/18 16:17	WBD	⁹ Sc
Metals (ICPMS) by Method 6020	WG1098023	10	04/13/18 16:28	04/14/18 17:03	WBD	
Metals (ICPMS) by Method 6020	WG1098665	1	04/16/18 20:43	04/17/18 02:03	LD	
Volatile Organic Compounds (GC) by Method 8021B	WG1097880	100	04/14/18 10:26	04/14/18 10:26	ACG	

ACCOUNT:

HRM Resources, LLC - Denver, CO

PROJECT:

SDG:

L985449

DATE/TIME:

04/20/18 15:35

PAGE:

3 of 20



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Mark W. Beasley
Technical Service Representative

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	9580		10.0	1	04/16/2018 15:03	WG1098576

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	865		20.0	1	04/14/2018 15:17	WG1097960

Sample Narrative:

L985449-01 WG1097960: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate,Ortho	0.383	T8	0.0250	1	04/13/2018 11:58	WG1097764

Wet Chemistry by Method 9040C

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.50	T8	1	04/14/2018 13:00	WG1098181

Sample Narrative:

L985449-01 WG1098181: 7.5 at 20C

Wet Chemistry by Method 9050A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	15900		10.0	1	04/15/2018 15:00	WG1098508

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	36.1		1.00	1	04/14/2018 04:50	WG1097798
Chloride	5100		100	100	04/14/2018 05:05	WG1097798
Fluoride	0.700		0.100	1	04/14/2018 04:50	WG1097798
Nitrate as (N)	ND	Q	0.100	1	04/14/2018 04:50	WG1097798
Nitrite as (N)	ND	Q	0.100	1	04/14/2018 04:50	WG1097798
Sulfate	ND		5.00	1	04/14/2018 04:50	WG1097798

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Calcium,Dissolved	36.9		1.00	1	04/14/2018 16:17	WG1098023
Iron,Dissolved	ND		0.100	1	04/14/2018 16:17	WG1098023
Magnesium,Dissolved	7.11		1.00	1	04/14/2018 16:17	WG1098023
Manganese,Dissolved	0.0421		0.00500	1	04/17/2018 02:03	WG1098665
Potassium,Dissolved	16.7		1.00	1	04/14/2018 16:17	WG1098023
Selenium,Dissolved	ND		0.00200	1	04/14/2018 16:17	WG1098023
Sodium,Dissolved	3730		10.0	10	04/14/2018 17:03	WG1098023



Volatile Organic Compounds (GC) by Method 8021B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	5.43		0.0500	100	04/14/2018 10:26	WG1097880
Toluene	7.03		0.100	100	04/14/2018 10:26	WG1097880
Ethylbenzene	0.635		0.0500	100	04/14/2018 10:26	WG1097880
Total Xylene	3.23	J3	0.150	100	04/14/2018 10:26	WG1097880
(S) o,o,o-Trifluorotoluene(PID)	96.5		80.0-121		04/14/2018 10:26	WG1097880

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



Method Blank (MB)

(MB) R3302591-1 04/16/18 15:03

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Dissolved Solids	U		2.82	10.0

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3302591-2 04/16/18 15:03 • (LCSD) R3302591-3 04/16/18 15:03

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Dissolved Solids	8800	8620	8600	98.0	97.7	85.0-115			0.232	5

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc



L985009-02 Original Sample (OS) • Duplicate (DUP)

(OS) L985009-02 04/14/18 13:32 • (DUP) R3301912-1 04/14/18 13:40

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Alkalinity	157	158	1	0.716		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

L985406-02 Original Sample (OS) • Duplicate (DUP)

(OS) L985406-02 04/14/18 17:18 • (DUP) R3301912-6 04/14/18 17:26

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Alkalinity	95.0	95.5	1	0.495		20

Sample Narrative:

OS: Endpoint pH 4.5

DUP: Endpoint pH 4.5

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3301912-2 04/14/18 14:38 • (LCSD) R3301912-5 04/14/18 16:42

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	%	%	%			%	%
Alkalinity	100	110	104	110	104	85.0-115			5.11	20

Sample Narrative:

LCS: Endpoint pH 4.5

LCSD: Endpoint pH 4.5



Method Blank (MB)

(MB) R3301603-1 04/13/18 11:48

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Phosphate,Ortho	U		0.00900	0.0250

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

L985383-05 Original Sample (OS) • Duplicate (DUP)

(OS) L985383-05 04/13/18 11:55 • (DUP) R3301603-6 04/13/18 11:55

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphate,Ortho	ND	0.000	1	0.000		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3301603-2 04/13/18 11:48 • (LCSD) R3301603-3 04/13/18 11:48

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	%	%	%			%	%
Phosphate,Ortho	0.245	0.230	0.229	94.1	93.7	85.0-115			0.436	20

L985383-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L985383-01 04/13/18 11:52 • (MS) R3301603-4 04/13/18 11:52 • (MSD) R3301603-5 04/13/18 11:52

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Phosphate,Ortho	0.500	ND	0.505	0.511	101	102	1	80.0-120			1.18	20



L985054-01 Original Sample (OS) • Duplicate (DUP)

(OS) L985054-01 04/14/18 13:00 • (DUP) R3301891-3 04/14/18 13:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	6.53	6.51	1	0.307		1

Sample Narrative:

OS: 6.53 at 8.7C

DUP: 6.51 at 8.8C



L985703-01 Original Sample (OS) • Duplicate (DUP)

(OS) L985703-01 04/14/18 13:00 • (DUP) R3301891-4 04/14/18 13:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	11.9	11.8	1	0.0844		1

Sample Narrative:

OS: 11.85 at 14C

DUP: 11.84 at 14.3C

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3301891-1 04/14/18 13:00 • (LCSD) R3301891-2 04/14/18 13:00

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	su	su	su	%	%	%			%	%
pH	10.0	9.99	10.0	99.9	100	99.0-101			0.100	1

Sample Narrative:

LCS: 9.99 at 20.3C

LCSD: 10 at 20.3C



Method Blank (MB)

(MB) R3302006-1 04/15/18 15:00

Analyte	MB Result umhos/cm	MB Qualifier	MB MDL umhos/cm	MB RDL umhos/cm
Specific Conductance	U		10.0	10.0

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

L985415-01 Original Sample (OS) • Duplicate (DUP)

(OS) L985415-01 04/15/18 15:00 • (DUP) R3302006-4 04/15/18 15:00

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	1450	1450	1	0.000		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3302006-2 04/15/18 15:00 • (LCSD) R3302006-3 04/15/18 15:00

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCSD Result umhos/cm	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Specific Conductance	877	867	867	98.9	98.9	85.0-115			0.000	20

Method Blank (MB)

(MB) R3301829-1 04/13/18 12:38

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Bromide	U		0.0790	1.00
Chloride	U		0.0519	1.00
Fluoride	U		0.00990	0.100
Nitrate	0.0293	J	0.0227	0.100
Nitrite	U		0.0277	0.100
Sulfate	U		0.0774	5.00

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L984989-08 Original Sample (OS) • Duplicate (DUP)

(OS) L984989-08 04/13/18 20:36 • (DUP) R3301829-4 04/13/18 20:51

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Bromide	ND	0.000	1	0.000		15
Chloride	37.3	37.5	1	0.641		15
Fluoride	ND	0.0549	1	0.000		15
Nitrate	0.793	0.831	1	4.67		15
Nitrite	ND	0.000	1	0.000		15
Sulfate	6.01	6.00	1	0.180		15

L985387-07 Original Sample (OS) • Duplicate (DUP)

(OS) L985387-07 04/14/18 01:29 • (DUP) R3301829-7 04/14/18 01:44

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Chloride	38.0	38.0	1	0.0300		15
Fluoride	0.323	0.318	1	1.50		15
Nitrate	0.620	0.619	1	0.210		15
Nitrite	ND	0.000	1	0.000		15
Sulfate	41.8	41.9	1	0.399		15

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3301829-2 04/13/18 12:53 • (LCSD) R3301829-3 04/13/18 13:09

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
Bromide	40.0	38.4	38.0	96.0	95.1	80.0-120			0.918	15
Chloride	40.0	39.5	39.5	98.6	98.7	80.0-120			0.0859	15



Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3301829-2 04/13/18 12:53 • (LCSD) R3301829-3 04/13/18 13:09

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
Fluoride	8.00	7.99	8.00	99.9	100	80.0-120			0.108	15
Nitrate	8.00	8.52	8.52	107	107	80.0-120			0.0106	15
Nitrite	8.00	7.91	7.94	98.9	99.2	80.0-120			0.323	15
Sulfate	40.0	41.0	40.6	102	101	80.0-120			0.935	15

L984989-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L984989-08 04/13/18 20:36 • (MS) R3301829-5 04/13/18 21:07 • (MSD) R3301829-6 04/13/18 21:22

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Bromide	50.0	ND	43.2	43.7	86.5	87.4	1	80.0-120			1.04	15
Chloride	50.0	37.3	86.4	87.2	98.2	99.8	1	80.0-120			0.874	15
Fluoride	5.00	ND	4.83	5.25	95.5	104	1	80.0-120			8.41	15
Nitrate	5.00	0.793	5.97	6.14	104	107	1	80.0-120			2.74	15
Nitrite	5.00	ND	5.09	5.16	102	103	1	80.0-120			1.40	15
Sulfate	50.0	6.01	55.0	54.8	97.9	97.6	1	80.0-120			0.324	15

L985387-07 Original Sample (OS) • Matrix Spike (MS)

(OS) L985387-07 04/14/18 01:29 • (MS) R3301829-8 04/14/18 02:00

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>
Chloride	50.0	38.0	88.0	100	1	80.0-120	
Fluoride	5.00	0.323	5.02	93.9	1	80.0-120	
Nitrate	5.00	0.620	5.83	104	1	80.0-120	
Nitrite	5.00	ND	5.03	101	1	80.0-120	
Sulfate	50.0	41.8	85.2	86.9	1	80.0-120	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Method Blank (MB)

(MB) R3301908-1 04/14/18 15:39

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Calcium,Dissolved	U		0.0460	1.00
Iron,Dissolved	0.0152	J	0.0150	0.100
Magnesium,Dissolved	U		0.100	1.00
Potassium,Dissolved	U		0.0370	1.00
Selenium,Dissolved	U		0.000380	0.00200
Sodium,Dissolved	U		0.110	1.00

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3301908-2 04/14/18 15:44 • (LCSD) R3301908-3 04/14/18 15:49

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Calcium,Dissolved	5.00	5.45	5.18	109	104	80.0-120			5.18	20
Iron,Dissolved	5.00	5.40	5.31	108	106	80.0-120			1.62	20
Magnesium,Dissolved	5.00	5.69	5.62	114	112	80.0-120			1.14	20
Potassium,Dissolved	5.00	5.54	5.33	111	107	80.0-120			3.78	20
Selenium,Dissolved	0.0500	0.0578	0.0562	116	112	80.0-120			2.70	20
Sodium,Dissolved	5.00	5.37	5.39	107	108	80.0-120			0.497	20

L982876-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L982876-01 04/14/18 15:54 • (MS) R3301908-5 04/14/18 16:03 • (MSD) R3301908-6 04/14/18 16:08

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Calcium,Dissolved	5.00	616	625	623	192	137	1	75.0-125	V	V	0.443	20
Potassium,Dissolved	5.00	1.53	6.98	6.94	109	108	1	75.0-125			0.637	20
Iron,Dissolved	5.00	0.0177	5.52	5.54	110	110	1	75.0-125			0.380	20
Magnesium,Dissolved	5.00	304	313	311	175	149	1	75.0-125	V	V	0.418	20
Selenium,Dissolved	0.0500	0.000797	0.0605	0.0596	119	118	1	75.0-125			1.42	20
Sodium,Dissolved	5.00	207	215	216	162	174	1	75.0-125	V	V	0.283	20



Method Blank (MB)

(MB) R3302308-1 04/17/18 01:21

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Manganese,Dissolved	U		0.000250	0.00500

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3302308-2 04/17/18 01:25 • (LCSD) R3302308-3 04/17/18 01:31

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Manganese,Dissolved	0.0500	0.0485	0.0485	97.0	96.9	80.0-120			0.0848	20

L985681-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L985681-02 04/17/18 01:35 • (MS) R3302308-5 04/17/18 01:44 • (MSD) R3302308-6 04/17/18 01:49

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Manganese,Dissolved	0.0500	0.0215	0.0713	0.0700	99.7	97.1	1	75.0-125			1.83	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3301948-5 04/14/18 05:13

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.000190	0.000500
Toluene	U		0.000412	0.00100
Ethylbenzene	U		0.000160	0.000500
Total Xylene	U		0.000510	0.00150
(S) a,a,a-Trifluorotoluene(PID)	98.2			80.0-121

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3301948-1 04/14/18 03:22 • (LCSD) R3301948-2 04/14/18 03:44

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.0500	0.0469	0.0395	93.9	79.1	71.0-121			17.1	20
Toluene	0.0500	0.0486	0.0405	97.1	81.1	72.0-120			18.0	20
Ethylbenzene	0.0500	0.0488	0.0406	97.5	81.1	75.0-122			18.3	20
Total Xylene	0.150	0.151	0.123	100	82.2	74.0-124		J3	19.9	20
(S) a,a,a-Trifluorotoluene(PID)				97.4	97.0	80.0-121				

L985445-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L985445-01 04/14/18 08:11 • (MS) R3301948-6 04/14/18 13:04 • (MSD) R3301948-7 04/14/18 13:26

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.0500	ND	0.0434	0.0489	86.3	97.2	1	29.0-146			11.9	20
Toluene	0.0500	ND	0.0446	0.0493	89.2	98.7	1	35.0-140			10.0	20
Ethylbenzene	0.0500	ND	0.0443	0.0495	88.6	98.9	1	39.0-143			11.0	20
Total Xylene	0.150	ND	0.136	0.151	90.6	101	1	42.0-142			10.4	20
(S) a,a,a-Trifluorotoluene(PID)					95.9	96.1		80.0-121				



Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
Q	Sample was prepared and/or analyzed past recommended holding time. Concentrations should be considered minimum values.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico ¹	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN2000002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	90010	South Carolina	84004
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana ¹	LA180010	Texas	T 104704245-17-14
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. ESC Lab Sciences performs all testing at our central laboratory.



ESC LAB SCIENCES Cooler Receipt Form

Client: <u>NIC GEDCO</u>	SDG#	<u>1985449</u>	
Cooler Received/Opened On: <u>4/13/18</u>	Temperature:	<u>3.7</u>	
Received By: <u>Kelly Mercer</u>			
Signature: <u>Kelly Mercer</u>			
Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	/		
COC Signed / Accurate?		/	
Bottles arrive intact?		/	
Correct bottles used?		/	
Sufficient volume sent?		/	
If Applicable			
VOA Zero headspace?		/	
Preservation Correct / Checked?			