



OIL CONS. DIV DIST. 3  
APR 19 2017

## **Federal 18 #1T Remediation System 2017 1st Quarter Report**

**Submitted By:**

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**Submitted to:**

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**March 2017**

*CS*

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## **Introduction**

The purpose of this report is to summarize the current on-site activities involving venting gas and producing water from a former coal bed methane gas well at the Federal 18 #1T. The casing of this well has been modified to vent gas and purge water from the Ojo Alamo Formation. The setup and initial installation of this system is detailed in a report submitted to Brandon Powell, New Mexico Oil Conservation Division (OCD), in November 2010. This quarterly report details operations for the quarter.

## **History**

The vacuum system at the Federal 18 #1T is being operated as part of an on going effort between the OCD and XTO Energy, Inc. (XTO) to vent gas from the Nacimiento formation just above the Ojo Alamo Formation. Gas was recently found in the Nacimiento formation, which could have come from several contributing sources. The Federal 1 #18 (30-045-09466), located in Section 10 of Township 30N, Range 13W and approximately 2,600' to the south-west of water well SJ-01737, was plugged in 1988 by Southern Union Oil Company. This well only had an initial surface casing of 200' when it was drilled in 1959. Section 18 also has one (1) additional well plugged by XTO Energy, Inc. in 2010. Section 19 of Township 30N, Range 12W has two (2) historically plugged wells. Approximately 4,400' to the south of water well SJ-01737, the Dansby #2 (30-045-09402) was plugged by Don Trader, Inc. in 1954 with a total depth of 1980' and a surface casing of only 100', and the second was a well plugged by Amoco Production in 1988. There are also three (3) additional wells plugged by Texacoma in 1997 in Section 19. There are additionally numerous oil and gas wells being operated by local exploration and production companies in the area. In Section 18, there are three (3) wells being operated by XTO Energy, Inc., and two (2) wells being operated by ConocoPhillips as Burlington Resources. In Section 19, there are nine (9) wells being operated by XTO Energy, Inc. In Section 7, there are seven (7) wells being operated by XTO Energy, Inc, and four (4) wells being operated by Robert L. Bayless Producers, LLC. Furthermore, there is naturally occurring gas in the formation according to statements from local water well drillers, and a casing leak was discovered at the New Mexico Federal N #3E well site, (located in Unit D, Section 18, Township 30N, Range 12W, San Juan County, New Mexico). This leak was identified as a result of discovery of gas in a local water well (SJ 1737) in April 2010. Bradenhead pressures were observed at several XTO wells in the area. The New Mexico Federal N #3E, the New Mexico Federal N #3F and the New Mexico Federal N #3 all had bradenhead pressure tests performed. The bradenhead pressure from the New Mexico Federal N #3E was 17 psi, indicating a leak in the casing. The casing leak was repaired, and the New Mexico Federal N #3E was put back into operation. In agreement with the OCD, a nearby gas well scheduled to be plugged, Federal 18 #1T, was modified to act as a venting well by setting a plug at approximately 513 feet. Perforations were made in the casing at 437 feet and 457 feet in order to assess the groundwater and vent gas from the Nacimiento.

On September 24, 2010, a swab rig was used to determine if the well would produce water using the perforations. The swab rig recovered approximately 2 barrels of water, indicating that the perforations would produce water. A sample collected during the swab returned results above

Water Quality Control Commission (WQCC) standards for benzene, total xylenes, and total chlorides; see attached ***Federal 18 #1T Water Results Table***. Due to the low pH and high chlorides, it was inferred that the acid used to dissolve cement during perforation activities may have infiltrated the aquifer, causing the increased levels shown in the sampling results. XTO recommended pumping the aquifer until sampling results were below the WQCC standards for BTEX and chlorides.

A pump was installed in the Federal 18 #1T on November 9, 2010 at approximately 485 feet. During the pump installation, the water level was checked using a Keck ET Long water level indicator. The static water level was found to be approximately 402.20 feet. The pump was initially set to operate four (4) times a day for 15 minutes, purging approximately 260 gallons per day. During swab and pump installation activities, no gas was found flowing from the well.

On November 11, 2010, a small vacuum pump was installed at the Federal 18 #1T to determine if gas could be vented. The discharge from the vacuum was checked using a MSA 4-Gas Monitor, which confirmed that methane, was being vented from the vacuum pump discharge. The vacuum pump operates at a discharge rate of three (3) standard cubic feet per minute (scfm), which is equivalent to approximately six (6) actual cubic feet per minute (acfm) based on elevation. This volume was calculated using the conversion factors provided by the vacuum pump manufacturer, Becker. The vacuum pump initially held a vacuum of approximately -12 inches of mercury on the casing of the Federal 18 #1T during operation. A portable generator placed on-site powered both the vacuum pump and the water pump.

The water pump was plumbed into the existing water lines on site, so that all water would pump into the 210-barrel water tank left on-site from production activities. Water piping above ground was wrapped with heat trace and insulation to prevent freezing.

The system was electrified on February 3, 2011 to prevent down time due to generator maintenance issues.

### **1st Quarter Activities**

During the 1st quarter of 2017, the system ran continuously with no down time. As of March 31, 2017, approximately 19,730.8 cubic feet (MCF) of gas has been vented from the Federal 18 #1T casing, with the system venting approximately 60.4 MCF per week during operation, while maintaining an average casing pressure of -10 inches of mercury on the Federal 18 #1T casing.

A total of 858,190 gallons of water have been removed from the Federal 18 #1T as of March 31, 2017. The attached ***Federal 18 #1T Water Results Table*** shows that that benzene concentrations have had a reduction in the quarter with one (1) sampling event (March 31, 2017) returning results below the WQCC standard at 9.61 ppb. Chloride levels have remained constant through the quarter, remaining steady at 14.4 ppm. pH values remained constant in the quarter, returning results of 7.28. TDS continues to be above WQCC standards at 2300 ppm, but background levels (1,400 ppm) in water well SJ 1737 are historically above WQCC standards as well.

The pressure at well SJ 1737 was checked over the course of the quarter. The pressure was checked by shutting in the casing for a minimum of one (1) week prior to reading the pressure gauge. The pressure readings are outlined in the attached *Well SJ 1731 Casing Pressures Table*. The pressure remained fairly constant over the course of the quarter. The casing pressure in the water well SJ 1737 has shown an overall decrease from 9 oz. in January of 2011 to .5 oz. April 7, 2017. An overall decreasing trend has existed in the water well casing since 2011.

**Recommendations**

Groundwater samples will continue to be collected quarterly to monitor the benzene concentration in this well. Chlorides, pH, TDS and EC remained constant over the 1st quarter, and are very close to the background levels obtained in water well 1737. XTO proposes the continued operation of the vacuum pump and water pump at the Federal 18 #1T. Groundwater samples will continue to be collected on a quarterly basis until benzene levels remain below the WQCC standards for four (4) consecutive quarters. An alternative sampling schedule may be recommended at that time. Gas analysis samples will be collected in the 2nd quarter of 2017 from the 1737 and Federal 18-1T.

Logan Hixon  
EHS Coordinator  
XTO Energy, Inc.  
Western Division

# Federal 18 #1T Water Results

Date	Lab	Benzene (ppb)	Toluene (ppb)	Ethylbenzene (ppb)	Xylene (ppb)	Chlorides (ppm)	TDS (ppm)	EC (umhos/cm)	pH	Purge Water Volume
NA	NA	10	750	750	620	250	1000	NA	6 thru 9	NA
9/24/2010	ESC	<b>150</b>	BDL	76	<b>670</b>	NS	NS	NS	NS	NA
9/24/2010	ESC	<b>190</b>	170	24	210	<b>6800</b>	<b>13000</b>	18000	6.1	NA
9/24/2010	Etech	<b>143</b>	221	63.6	<b>950</b>	NS	NS	NS	NS	NA
9/24/2010	Etech	<b>320</b>	377	31.8	568	<b>7150</b>	<b>11100</b>	16000	<b>5.84</b>	NA
12/10/2011	Hall	NS	NS	NS	NS	<b>2800</b>	<b>7610</b>	8900	6.36	3032.5
1/5/2011	Hall	<b>67</b>	93	7.9	25	NS	NS	NS	NS	7,798
1/5/2011	ESC	<b>73</b>	99	10	39	<b>1600</b>	<b>4800</b>	6000	6.6	7,798
1/29/2011	ESC	<b>60</b>	93	10	33	<b>930</b>	NS	4900	6.4	10791.0
2/28/2011	ESC	<b>42</b>	60	6.1	20	<b>550</b>	<b>3400</b>	4000	6.7	14795.0
4/1/2011	ESC	<b>23</b>	27	1.8	6.8	<b>260</b>	<b>2700</b>	3100	6.8	31237.5
4/29/2011	ESC	<b>29</b>	28	2.4	7.3	140	<b>2600</b>	2900	6.9	50217.0
5/31/2011	ESC	<b>14</b>	19	1.4	4.9	89	<b>2500</b>	2800	6.7	76513.0
6/14/2011	ESC	<b>55</b>	81	2.8	15	73	<b>2500</b>	2700	6.7	88120.0
6/30/2011	ESC	<b>52</b>	67	2.6	12	61	<b>2500</b>	2700	6.9	101208.5
8/15/2011	ESC	<b>21</b>	25	1.2	5.8	44	<b>2500</b>	2600	6.8	140267.0
9/2/2011	ESC	<b>10</b>	12	0.64	3.2	41	<b>2500</b>	2600	7.2	155801.0
9/16/2011	ESC	9.6	11	0.64	3	38	<b>2400</b>	2500	7.2	168040.0
9/30/2011	ESC	7.2	8.7	0.64	2.5	35	<b>2500</b>	2600	7	180392.5
10/28/2011	ESC	5.1	BDL	1.8	2.7	31	<b>2300</b>	2600	6.9	205,220
11/30/2011	ESC	4	BDL	3.9	2	27	<b>2500</b>	2600	7.1	233,487.5
12/30/2011	ESC	3.4	BDL	BDL	2.9	27	<b>2500</b>	2500	7.5	261,390.5
4/3/2012	ESC	6	BDL	BDL	1.6	NS	NS	NS	NS	351,300
4/9/2012	ESC	NS	NS	NS	NS	19	<b>2400</b>	2400	7.4	NA
7/3/2012	ESC	5.3	BDL	BDL	BDL	16	<b>2300</b>	2400	7.4	NA
7/6/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	441,053
9/19/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	521,271
9/27/2012	ESC	6.2	BDL	BDL	BDL	15	<b>2300</b>	2500	7.1	NA
12/14/2012	NA	NS	NS	NS	NS	NS	NS	NS	NS	598,540
12/31/2012	Etech	<b>13.9</b>	1.1	ND	3.3	15.5	<b>2690</b>	2440	7.05	604,689
1/23/2013	ESC	<b>160</b>	190	BDL	26	15	<b>2400</b>	2500	8	PUMP SHUT OFF
2/22/2013	ESC	7.1	77	BDL	1.8	15	<b>2100</b>	2500	7.1	605,860
5/2/2013	ESC	9	6.9	BDL	BDL	15	<b>2400</b>	2600	7.5	612,601
8/19/2013	ESC	<b>20</b>	11	BDL	2.3	16	<b>2200</b>	2600	7.2	NA
9/23/2013	ESC	<b>13</b>	11	BDL	2.2	16	<b>2300</b>	2500	7.1	621,744
11/25/2013	ESC	4.6	5.2	BDL	BDL	15	<b>2200</b>	2700	7.7	631,430
2/4/2014	ESC									636,120
10/1/2015	ESC	<b>54.2</b>	57	1.37	9.77	21.3	<b>2260</b>	2640	6.98	639,410
10/20/2015	ESC	<b>42.3</b>	39.9	0.964	7.06	18.1	<b>2330</b>	1460	7.09	642,650
3/28/2016	ESC	<b>38</b>	34.1	0.835	4.82	21.6	<b>2230</b>	2570	6.86	650,850
6/14/2016	ESC	<b>78.3</b>	58.4	1.16	7.22	13.7	<b>2890</b>	2600	6.89	704,371
8/29/2016	ESC	<b>19</b>	BDL	BDL	2.18	14.8	<b>2410</b>	2590	7.02	763,261
11/18/2016	ESC	<b>13.2</b>	5.61	BDL	2.33	13.9	<b>2470</b>	2580	7.03	842,610
3/31/2017	ESC	9.61	7.87	BDL	BDL	14.4	<b>2300</b>	2570	7.28	858,190
11/5/2010	ESC	ND	5.2	ND	ND	15	<b>1400</b>	<b>2600</b>	<b>7.2</b>	NA

BDL = Below Detection Limits

NS = Not Sampled

Values in **BOLD** exceed WQCC Standards

Baseline Sample (Well SJ 1737)

WQCC Standards

# Federal 18 #1T Gas Vented

Date	SCFM	ACFM	Gas Vented Total (MCF)
1/6/2017	3	6	19006
1/13/2017	3	6	19066.4
1/20/2017	3	6	19126.8
1/27/2017	3	6	19187.2
2/3/2017	3	6	19247.6
2/10/2017	3	6	19308
2/17/2017	3	6	19368.4
2/24/2017	3	6	19428.8
3/3/2017	3	6	19489.2
3/10/2017	3	6	19549.6
3/17/2017	3	6	19610
3/24/2017	3	6	19670.4
3/31/2017	3	6	19730.8

### Well SJ 1737 Casing Pressures

Date	Casing Pressure (oz)	Average
3/24/2017	1	0.012
4/7/2017	0.5	0.036

**XTO Energy - San Juan Division**

Sample Delivery Group: L899824  
Samples Received: 04/01/2017  
Project Number:  
Description: Federal 18-1T

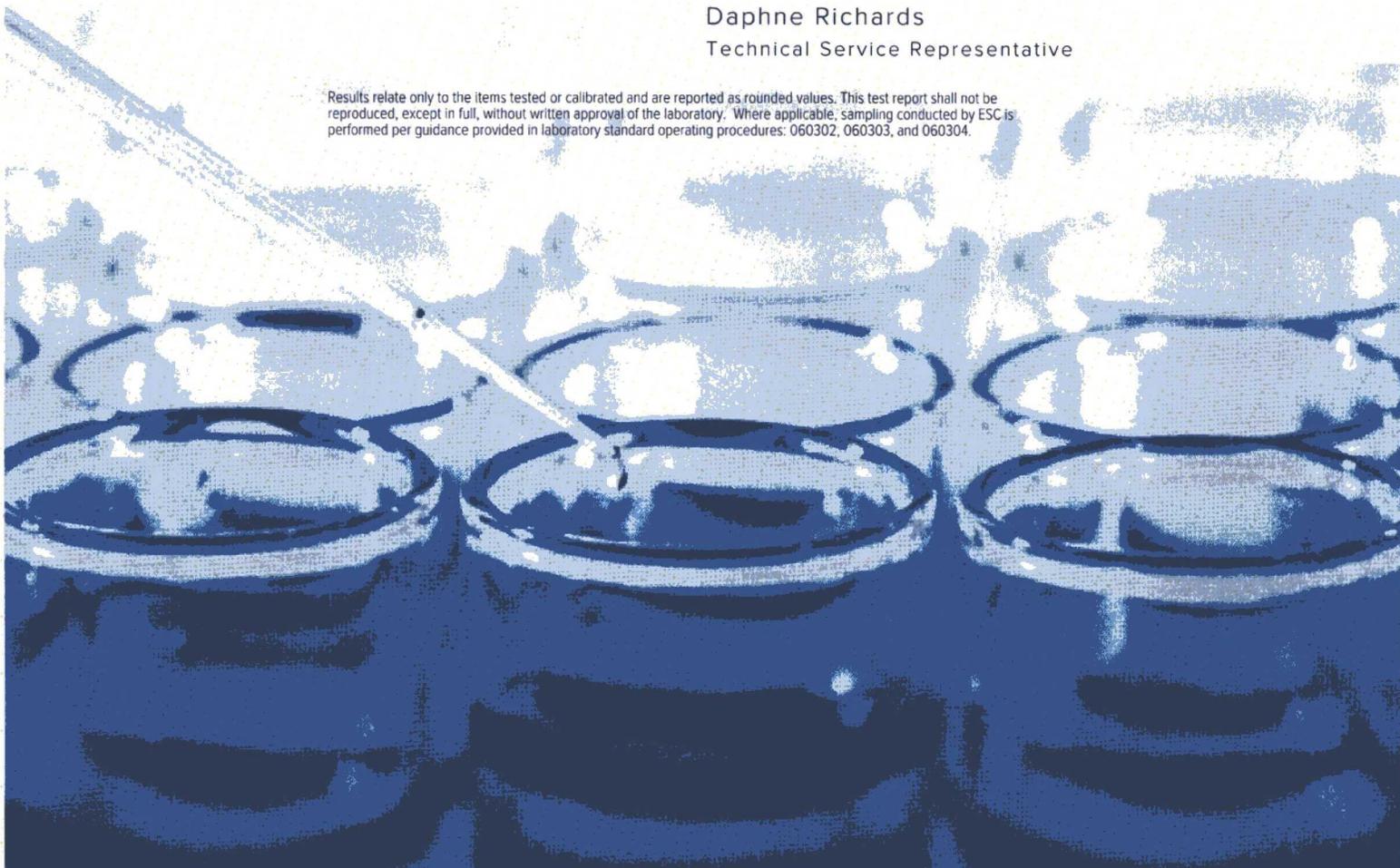
Report To: Logan Hixon  
382 County Road 3100  
Aztec, NM 87410

Entire Report Reviewed By:

*Daphne R Richards*

Daphne Richards  
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.



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# SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



18-1T TUBING L899824-01 GW

Collected by  
Logan Hixon

Collected date/time  
03/31/17 00:00

Received date/time  
04/01/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Gravimetric Analysis by Method 2540 C-2011	WG968104	1	04/07/17 10:01	04/07/17 10:39	MMF
Wet Chemistry by Method 9040C	WG967610	1	04/08/17 08:06	04/08/17 08:06	MA
Wet Chemistry by Method 9050A	WG966863	1	04/04/17 11:16	04/04/17 11:16	MAJ
Wet Chemistry by Method 9056A	WG967516	1	04/06/17 17:45	04/06/17 17:45	SAM
Volatile Organic Compounds (GC) by Method 8021B	WG967904	1	04/09/17 00:56	04/09/17 00:56	JAH

Cp

Tc

Cn

Sr

Qc

Gl

Al

Sc



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. 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.

Daphne Richards  
Technical Service Representative

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc



Collected date/time: 03/31/17 00:00

L899824

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
Dissolved Solids	2300		10.0	1	04/07/2017 10:39	WG968104

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn

Wet Chemistry by Method 9040C

Analyte	Result	Qualifier	Dilution	Analysis	Batch
pH	7.28	T8	1	04/08/2017 08:06	WG967610

Sample Narrative:

9040C L899824-01 WG967610: 7.28 at 12.3c

Wet Chemistry by Method 9050A

Analyte	Result	Qualifier	Dilution	Analysis	Batch
Specific Conductance	2570		1	04/04/2017 11:16	WG966863

- 5 Qc
- 7 Gl
- 8 Al
- 9 Sc

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
Chloride	14.4		1.00	1	04/06/2017 17:45	WG967516

Volatile Organic Compounds (GC) by Method 8021B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
Benzene	0.00961		0.000500	1	04/09/2017 00:56	WG967904
Toluene	0.00787		0.00100	1	04/09/2017 00:56	WG967904
Ethylbenzene	ND		0.000500	1	04/09/2017 00:56	WG967904
Total Xylene	ND		0.00150	1	04/09/2017 00:56	WG967904
(S) o,a,a-Trifluorotoluene(PID)	103		80.0-121		04/09/2017 00:56	WG967904

WG968104

Gravimetric Analysis by Method 2540 C-2011

QUALITY CONTROL SUMMARY

L899824-01

ONE LAB. NATIONWIDE.



Method Blank (MB)

(MB) R3209611-1 04/07/17 10:39

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Dissolved Solids	U		2.82	10.0

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

L899855-04 Original Sample (OS) • Duplicate (DUP)

(OS) L899855-04 04/07/17 10:39 • (DUP) R3209611-4 04/07/17 10:39

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Dissolved Solids	2760	2740	1	0.910		5

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

(LCS) R3209611-2 04/07/17 10:39 • (LCSD) R3209611-3 04/07/17 10:39

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Dissolved Solids	8800	8480	8540	96.4	97.0	85.0-115			0.705	5

7 Gl

8 Al

9 Sc

# WG967610

Wet Chemistry by Method 9040C

# QUALITY CONTROL SUMMARY

L899824-01

ONE LAB. NATIONWIDE.



## L899421-01 Original Sample (OS) • Duplicate (DUP)

(OS) L899421-01 04/08/17 08:06 • (DUP) WG967610-3 04/08/17 08:06

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
pH	7.92	7.90	1	0.253	<u>T8</u>	1

1 Cp

2 Tc

3 Ss

## L900366-01 Original Sample (OS) • Duplicate (DUP)

(OS) L900366-01 04/08/17 08:06 • (DUP) WG967610-4 04/08/17 08:06

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
pH	7.90	7.93	1	0.379	<u>T8</u>	1

4 Cn

5 Sr

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

(LCS) WG967610-1 04/08/17 08:06 • (LCSD) WG967610-2 04/08/17 08:06

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
pH	7.50	7.54	7.55	101	101	98.7-101			0.133	1

7 GI

8 AI

9 Sc

WG966863

Wet Chemistry by Method 9050A

QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE



L899824-01

Method Blank (MB)

(MB) WG966863-4 04/04/17 11:16

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Specific Conductance	umhos/cm		umhos/cm	umhos/cm
	2.43			

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

L899438-01 Original Sample (OS) • Duplicate (DUP)

(OS) L899438-01 04/04/17 11:16 • (DUP) WG966863-1 04/04/17 11:16

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Specific Conductance	umhos/cm	umhos/cm	%	%		%
	229	230	1	0.218		20

7 Gl

8 Al

9 Sc

L899898-01 Original Sample (OS) • Duplicate (DUP)

(OS) L899898-01 04/04/17 11:16 • (DUP) WG966863-5 04/04/17 11:16

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Specific Conductance	umhos/cm	umhos/cm	%	%		%
	516	514	1	0.388		20

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

(LCS) WG966863-2 04/04/17 11:16 • (LCSD) WG966863-3 04/04/17 11:16

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Specific Conductance	umhos/cm	umhos/cm	umhos/cm	%	%	%			%	%
	169	169	170	100	101	90.0-110			0.590	20



Method Blank (MB)

(MB) R3209046-1 04/06/17 07:01

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Chloride	U		0.0519	1.00

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

L899895-02 Original Sample (OS) • Duplicate (DUP)

(OS) L899895-02 04/06/17 11:50 • (DUP) R3209046-4 04/06/17 12:06

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Chloride	19.9	19.4	1	3		15

L900236-01 Original Sample (OS) • Duplicate (DUP)

(OS) L900236-01 04/06/17 16:59 • (DUP) R3209046-8 04/06/17 17:14

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Chloride	48.5	48.2	1	0		15

7 Gl

8 Al

9 Sc

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

(LCS) R3209046-2 04/06/17 07:17 • (LCSD) R3209046-3 04/06/17 07:32

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Chloride	40.0	39.4	39.4	99	99	80-120			0	15

L899895-05 Original Sample (OS) • Matrix Spike (MS)

(OS) L899895-05 04/06/17 13:23 • (MS) R3209046-5 04/06/17 13:38

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Chloride	50.0	43.5	92.5	98	1	80-120	

L899899-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L899899-01 04/06/17 15:42 • (MS) R3209046-6 04/06/17 15:57 • (MSD) R3209046-7 04/06/17 16:12

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Chloride	50.0	70.5	117	118	94	95	1	80-120	E	E	0	15



Method Blank (MB)

(MB) R3209388-5 04/08/17 12:40

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	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) 106				80.0-121

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

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

(LCS) R3209388-1 04/08/17 10:50 • (LCSD) R3209388-2 04/08/17 11:12

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	%	%	%			%	%
Benzene	0.0500	0.0492	0.0497	98.3	99.4	71.0-121			1.08	20
Toluene	0.0500	0.0515	0.0504	103	101	72.0-120			2.19	20
Ethylbenzene	0.0500	0.0529	0.0518	106	104	75.0-122			2.04	20
Total Xylene	0.150	0.162	0.158	108	105	74.0-124			2.57	20
(S) a,a,a-Trifluorotoluene(PID)				103	102	80.0-121				

7 GI

8 AI

9 Sc

L899799-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L899799-01 04/08/17 17:14 • (MS) R3209388-6 04/08/17 17:37 • (MSD) R3209388-7 04/08/17 17:58

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Benzene	0.0500	0.000333	0.0365	0.0381	72.4	75.6	1	29.0-146			4.31	20
Toluene	0.0500	U	0.0390	0.0405	77.9	80.9	1	35.0-140			3.75	20
Ethylbenzene	0.0500	U	0.0441	0.0457	88.2	91.4	1	39.0-143			3.51	20
Total Xylene	0.150	U	0.133	0.138	88.9	92.0	1	42.0-142			3.46	20
(S) a,a,a-Trifluorotoluene(PID)					103	103		80.0-121				



Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
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.
(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.
Rec.	Recovery.

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

Qualifier Description

E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
T8	Sample(s) received past/too close to holding time expiration.

<sup>8</sup>Al

<sup>9</sup>Sc

# ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE



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.

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>9</sup> Sc

## State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey-NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Connecticut	PH-0197	North Carolina <sup>1</sup>	DW21704
Florida	E87487	North Carolina <sup>2</sup>	41
Georgia	NELAP	North Dakota	R-140
Georgia <sup>1</sup>	923	Ohio-VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky <sup>1</sup>	90010	South Dakota	n/a
Kentucky <sup>2</sup>	16	Tennessee <sup>14</sup>	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas <sup>5</sup>	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

## Third Party & Federal Accreditations

A2LA - ISO 17025	1461.01	AIHA-LAP,LLC	100789
A2LA - ISO 17025 <sup>5</sup>	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA-Crypto	TN00003		

<sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>14</sup> Accreditation not applicable

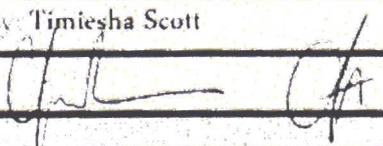
## Our Locations

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: <i>X70/ANM</i>	SDG#	<i>899824</i>		
Cooler Received/Opened On: <i>4/1/17</i>	Temperature:	<i>2.1</i>		
Received By: <i>Timiesha Scott</i>				
Signature: 				
Receipt Check List		NP	Yes	No
COC Seal Present / Intact?		<input checked="" type="checkbox"/>		
COC Signed / Accurate?			<input checked="" type="checkbox"/>	
Bottles arrive intact?			<input checked="" type="checkbox"/>	
Correct bottles used?			<input checked="" type="checkbox"/>	
Sufficient volume sent?			<input checked="" type="checkbox"/>	
If Applicable				
VOA Zero headspace?			<input checked="" type="checkbox"/>	
Preservation Correct / Checked?				

Andy Vann

## ESC Lab Sciences Non-Conformance Form

Login# L899824	Client: XTORNM	Date: 4/1/17	Evaluated by: Matt Shacklock
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**Non-Conformance (check applicable items)**

Sample Integrity	Chain of Custody Clarification	If Broken Container:
Parameter(s) past holding time	<input checked="" type="checkbox"/> Login Clarification Needed	
Improper temperature	Chain of custody is incomplete	Insufficient packing material around container
Improper container type	Please specify Metals requested	Insufficient packing material inside cooler
Improper preservation	Please specify TCEP requested	Improper handling by carrier (FedEx / UPS / Courier)
Insufficient sample volume	Received additional samples not listed on rec	Sample was frozen
Sample is biphasic	Sample ids on container do not match ids on cool	Container lid not intact
Vials received with headspace	Trip Blank not received	<b>If no Chain of Custody:</b>
Broken container	Client did not "X" analysis	Received by:
Broken container	Chain of custody is missing	Date/Time:
Sufficient sample remains		Temp / Cont. Rec / pH:
		Carrier:
		Tracking#:

**Login Comments:** Please clarify date collected, COC says 11/18 @ 1145

Client informed by:	Call	Email	<input checked="" type="checkbox"/> Voice Mail	Date: 4/1/17	Time: 14:41
TSR Initials: DV	Client Contact: JM				

**Login Instructions:**

Collect date: 3/31/17

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