Federal 18 #1T Remediation System
2013 3rd Quarter Report

Submitted By:
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505-333-3701

Submitted to:
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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 from July 1, 2013, through September 30, 2013.

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. Both the vacuum pump and the water pump were powered by a portable generator placed on-site.

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.

3rd Quarter Activities

During the 3rd quarter of 2013, the system ran continuously with no down time. As of September 27, 2013, approximately 8,738 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 621,744 gallons of water have been removed from the Federal 18 #1T as of September 27, 2013. The attached ***Federal 18 #1T Water Results Table*** shows that benzene concentrations have rebounded in the third quarter with two (2) separate sampling events returning results above the WQCC standard at 20 ppb (August 19) and 13 ppb (September 23) respectively. Chloride levels have remained constant through the 3rd quarter, remaining steady at 16 ppm. pH values remained constant in the 3rd quarter, returning results of 7.2 and 7.1 in the 3rd quarter of 2013. All BTEX constituents, except for benzene, as well as chlorides, remained below WQCC standards. TDS continues to be above WQCC standards at 2,200 ppm and 2,300 ppm, but background levels (1400 ppm) in water well SJ 1737 are historically above WQCC standards as well.

In August of 2013, gas samples were collected from the Federal 18 #1T casing, as well as the casing of water well 1737. The methane percentage in water well 1737 was 60.79%, compared to 80.66% in the Federal 18 #1T casing. In water well 1737, nitrogen percentages were 21.50% compared to 0.30% in the Federal 18 #1T. The other gas constituents were fairly consistent from the Federal 18 #1T casing to the casing of water well 1737.

The pressure at well SJ 1737 was checked over the course of the third quarter. The pressure was checked by shutting in the casing for a minimum of one week prior to reading the pressure gauge. The pressure readings and average barometric pressures are outlined in the attached ***Well SJ 1731 Casing Pressures Table***. The pressure did not seem to show a correlation to the barometric pressure or temperature, and remained fairly constant over the course of the third quarter. The casing pressure in the water well SJ 1737 has shown an overall decrease from 9 oz in January of 2011 to 2 oz in September of 2013. Three readings in a row were 0.5 ounces from July 6th through August 19th of 2013. 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 third quarter, and are very close to the background levels obtained in water well 1737. XTO proposes the continued operation of the vacuum pump at the Federal 18 #1T, but without the operation of the water pump, except to collect groundwater samples. 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. Should the groundwater samples return results above benzene standards in the 4th quarter of 2013, XTO will return the water pump to service in order to gauge the effectiveness of the water purging on the benzene levels throughout the first quarter of 2014.

Gas samples showed a difference in methane, oxygen and nitrogen percentages between water well 1737 and the Federal 18 #1T casing. XTO will collect quarterly gas samples from both the Federal 18 #1T and water well 1737 over the next year to assess the gas content in these wells as it might relate to pressure and the amount of gas vented to date. The next gas sample will be collected in the 4th quarter of 2013.

James McDaniel, CHMM #15676
EH&S Supervisor
XTO Energy, Inc.
Western Division

CERTIFIED HAZARDOUS MATERIALS MANAGER
JAMES P. McDANIEL
15676
CHMM
EXPIRES MAY 16, 2016

Federal 18 #1T Gas Vented

Date	SCFM	ACFM	Gas Vented Total (MCF)
11/24/2010	5	10	14.4
12/2/2010	3	6	89.13
12/3/2010	3	6	97.73
12/7/2010	3	6	123.53
12/9/2010	5	10	152.33
12/10/2010	3	6	160.93
12/13/2010	3	6	178.13
12/16/2011	4	8	212.69
12/17/2011	3.5	7	222.77
12/20/2011	3	6	248.57
	Irratic readings due to freezing temperature and down time due to generator failures		
2/9/2011	NA	NA	540.6
2/17/2011	3	6	601
2/24/2011	3	6	661.4
3/3/2011	3	6	721.8
3/10/2011	3	6	782.2
3/17/2011	3	6	842.6
3/24/2011	3	6	903
3/31/2011	3	6	963.4
4/7/2011	3	6	1023.8
4/14/2011	3	6	1084.2
4/21/2011	3	6	1144.6
4/28/2011	3	6	1205
5/5/2011	3	6	1265.4
5/12/2011	3	6	1325.8
5/19/2011	3	6	1386.2
5/26/2011	3	6	1446.6
6/2/2011	3	6	1507
6/9/2011	3	6	1567.4
6/16/2011	3	6	1627.8
6/23/2011	3	6	1688.2
6/30/2011	3	6	1748.6
7/7/2011	3	6	1792
7/14/2011	3	6	1852.4
7/21/2011	3	6	1912.8
7/28/2011	3	6	1973.2
8/5/2011	3	6	2033.6
8/12/2011	3	6	2094
8/19/2011	3	6	2154.4
8/26/2011	3	6	2214.8
9/2/2011	3	6	2275.2
9/9/2011	3	6	2335.6
9/16/2011	3	6	2396
9/23/2011	3	6	2456.4
9/30/2011	3	6	2516.8
10/7/2011	3	6	2577.2
10/14/2011	3	6	2637.6
10/21/2011	3	6	2698
10/28/2011	3	6	2758.4

Federal 18 #1T Gas Vented

Date	SCFM	ACFM	Gas Vented Total (MCF)
11/4/2011	3	6	2818.8
11/11/2011	3	6	2879.2
11/18/2011	3	6	2939.6
11/25/2011	3	6	3000
12/2/2011	3	6	3060.4
12/9/2011	3	6	3120.8
12/16/2011	3	6	3181.2
12/23/2011	3	6	3241.6
12/30/2011	3	6	3302
1/6/2012	3	6	3362.4
1/13/2012	3	6	3422.8
1/20/2012	3	6	3483.2
1/27/2012	3	6	3543.6
2/3/2012	3	6	3604
2/10/2012	3	6	3664.4
2/17/2012	3	6	3724.8
2/24/2012	3	6	3785.2
3/2/2012	3	6	3845.6
3/9/2012	3	6	3906
3/16/2012	3	6	3966.4
3/23/2012	3	6	4026.8
3/30/2012	3	6	4087.2
4/6/2012	3	6	4147.6
4/13/2012	3	6	4208
4/20/2012	3	6	4268.4
4/27/2012	3	6	4328.8
5/4/2012	3	6	4389.2
5/11/2012	3	6	4449.6
5/18/2012	3	6	4510
5/25/2012	3	6	4570.4
6/1/2012	3	6	4630.8
6/8/2012	3	6	4691.2
6/15/2012	3	6	4751.6
6/22/2012	3	6	4812
6/29/2012	3	6	4872.4
7/6/2012	3	6	4932.8
7/13/2012	3	6	4993.2
7/20/2012	3	6	5053.6
7/27/2012	3	6	5114
8/3/2012	3	6	5174.4
8/10/2012	3	6	5234.8
8/17/2012	3	6	5295.2
8/24/2012	3	6	5355.6
8/31/2012	3	6	5416
9/7/2012	3	6	5476.4
9/14/2012	3	6	5536.8
9/21/2012	3	6	5597.2
9/28/2012	3	6	5657.6
10/5/2012	3	6	5718
10/12/2012	3	6	5778.4
10/19/2012	3	6	5838.8

Federal 18 #1T Gas Vented

Date	SCFM	ACFM	Gas Vented Total (MCF)
10/26/2012	3	6	5899.2
11/2/2012	3	6	5959.6
11/9/2012	3	6	6020
11/16/2012	3	6	6080.4
11/23/2012	3	6	6140.8
11/30/2012	3	6	6201.2
12/7/2012	3	6	6261.6
12/14/2012	3	6	6322
12/21/2012	3	6	6382.4
12/28/2012	3	6	6442.8
1/4/2013	3	6	6503.2
1/11/2013	3	6	6563.6
1/18/2013	3	6	6624
1/25/2013	3	6	6684.4
2/1/2013	3	6	6744.8
2/8/2013	3	6	6805.2
2/15/2013	3	6	6865.6
2/22/2013	3	6	6926
3/1/2013	3	6	6986.4
3/8/2013	3	6	7046.8
3/15/2013	3	6	7107.2
3/22/2013	3	6	7167.6
3/29/2013	3	6	7228
4/5/2013	3	6	7288.4
4/12/2013	3	6	7348.8
4/19/2013	3	6	7409.2
4/26/2013	3	6	7469.6
5/3/2013	3	6	7530
5/10/2013	3	6	7590.4
5/17/2013	3	6	7650.8
5/24/2013	3	6	7711.2
5/31/2013	3	6	7771.6
6/7/2013	3	6	7832
6/14/2013	3	6	7892.4
6/21/2013	3	6	7952.8
6/28/2013	3	6	8013.2
7/5/2013	3	6	8073.6
7/12/2013	3	6	8134
7/19/2013	3	6	8194.4
7/26/2013	3	6	8254.8
8/2/2013	3	6	8315.2
8/9/2013	3	6	8375.6
8/16/2013	3	6	8436
8/23/2013	3	6	8496.4
8/30/2013	3	6	8556.8
9/6/2013	0	0	8556.8
9/13/2013	3	6	8617.2
9/20/2013	3	6	8677.6
9/27/2013	3	6	8738

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	**150**	BDL	76	**670**	NS	NS	NS	NS	NA
9/24/2010	ESC	**190**	170	24	210	**6800**	**13000**	18000	6.1	NA
9/24/2010	Etech	**143**	221	63.6	**950**	NS	NS	NS	NS	NA
9/24/2010	Etech	**320**	377	31.8	568	**7150**	**11100**	16000	**5.84**	NA
12/10/2011	Hall	NS	NS	NS	NS	**2800**	**7610**	8900	6.36	3032.5
1/5/2011	Hall	**67**	93	7.9	25	NS	NS	NS	NS	7,798
1/5/2011	ESC	**73**	99	10	39	**1600**	**4800**	6000	6.6	7,798
1/29/2011	ESC	**60**	93	10	33	**930**	NS	4900	6.4	10791.0
2/28/2011	ESC	**42**	60	6.1	20	**550**	**3400**	4000	6.7	14795.0
4/1/2011	ESC	**23**	27	1.8	6.8	**260**	**2700**	3100	6.8	31237.5
4/29/2011	ESC	**29**	28	2.4	7.3	140	**2600**	2900	6.9	50217.0
5/31/2011	ESC	**14**	19	1.4	4.9	89	**2500**	2800	6.7	76513.0
6/14/2011	ESC	**55**	81	2.8	15	73	**2500**	2700	6.7	88120.0
6/30/2011	ESC	**52**	67	2.6	12	61	**2500**	2700	6.9	101208.5
8/15/2011	ESC	**21**	25	1.2	5.8	44	**2500**	2600	6.8	140267.0
9/2/2011	ESC	**10**	12	0.64	3.2	41	**2500**	2600	7.2	155801.0
9/16/2011	ESC	9.6	11	0.64	3	38	**2400**	2500	7.2	168040.0
9/30/2011	ESC	7.2	8.7	0.64	2.5	35	**2500**	2600	7	180392.5
10/28/2011	ESC	5.1	BDL	1.8	2.7	31	**2300**	2600	6.9	205,220
11/30/2011	ESC	4	BDL	3.9	2	27	**2500**	2600	7.1	233,487.5
12/30/2011	ESC	3.4	BDL	BDL	2.9	27	**2500**	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	**2400**	2400	7.4	NA
7/3/2012	ESC	5.3	BDL	BDL	BDL	16	**2300**	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	**2300**	2500	7.1	NA
12/14/2012	NA	NS	NS	NS	NS	NS	NS	NS	NS	598,540
12/31/2012	Etech	**13.9**	1.1	ND	3.3	15.5	**2690**	2440	7.05	604,689
1/23/2013	ESC	**160**	190	BDL	26	15	**2400**	2500	8	PUMP SHUT OFF
2/22/2013	ESC	7.1	77	BDL	1.8	15	**2100**	2500	7.1	605,860
5/2/2013	ESC	9	6.9	BDL	BDL	15	**2400**	2600	7.5	612,601
8/19/2013	ESC	**20**	11	BDL	2.3	16	**2200**	2600	7.2	NA

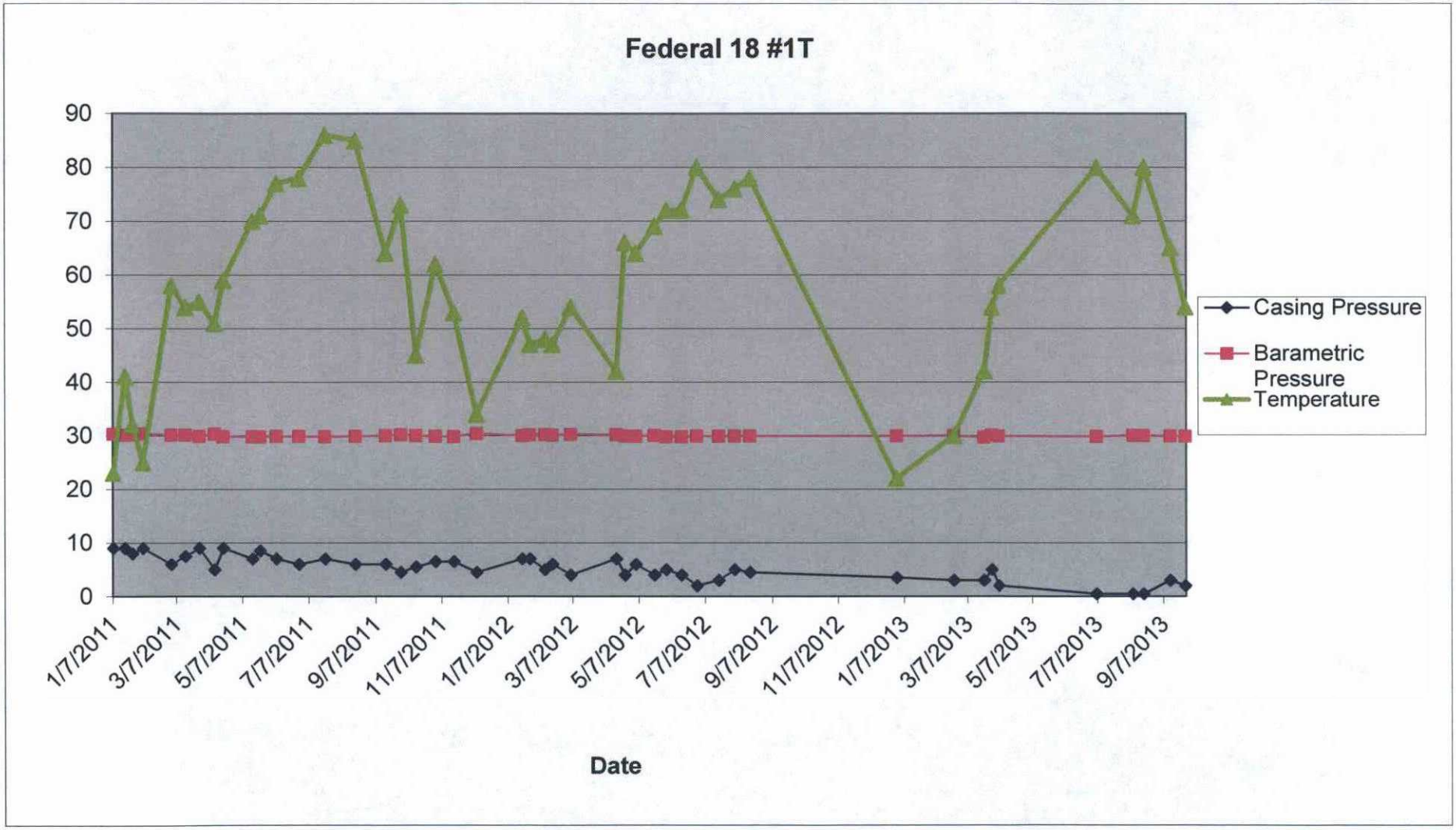
Federal 18 #1T Water Results

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
9/23/2013	ESC	**13**	11	BDL	2.2	16	**2300**	2500	7.1	621,744
11/5/2010	ESC	ND	5.2	ND	ND	15	**1400**	2600	7.2	NA

BDL = Below Detection Limits
NS = Not Sampled
Values in **BOLD** exceed WQCC Standards
Baseline Sample (Well SJ 1737)
WQCC Standards

Well SJ 1737 Casing Pressures

Date	Casing Pressure (oz)	Barometric Pressure (Inches of Mercury)	Temperature (F)
1/7/2011	9	30.3	23
1/18/2011	9	30.14	41
1/25/2011	8	30.22	32
2/4/2011	9	30.35	25
3/2/2011	6	30.13	58
3/15/2011	7.5	30.12	54
3/28/2011	9	29.88	55
4/11/2011	5	30.3	51
4/19/2011	9	29.83	59
5/16/2011	7	29.82	70
5/23/2011	8.5	29.78	71
6/7/2011	7	29.87	77
6/28/2011	6	29.87	78
7/22/2011	7	29.85	86
8/19/2011	6	29.9	85
9/16/2011	6	30.04	64
9/30/2011	4.5	30.2	73
10/14/2011	5.5	30.03	45
11/1/2011	6.5	29.9	62
11/18/2011	6.5	29.86	53
12/9/2011	4.5	30.41	34
1/20/2012	7	29.99	52
1/27/2012	7	30.12	47
2/10/2012	5	30.2	48
2/17/2012	6	30.08	47
3/5/2012	4	30.22	54
4/16/2012	7	30.19	42
4/24/2012	4	29.91	66
5/4/2012	6	29.91	64
5/21/2012	4	30.02	69
6/1/2012	5	29.81	72
6/15/2012	4	29.81	72
6/29/2012	2	29.92	80
7/19/2012	3	29.91	74
8/3/2012	5	29.93	76
8/17/2012	4.5	29.96	78
12/31/2012	3.5	29.92	22
2/22/2013	3	29.99	30
3/22/2013	3	29.71	42
3/29/2013	5	30.09	54
4/5/2013	2	29.89	58
7/6/2013	0.5	29.84	80
8/9/2013	0.5	30.02	71
8/19/2013	0.5	29.97	80
9/13/2013	3	29.96	65
9/27/2013	2	29.89	54


Federal 18 #1T
90
80
70
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7/7/2011
9/7/2011
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9/7/2013
Date
Casing Pressure
Barametric Pressure
Temperature

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Kurt Hoekstra
XTO Energy - San Juan Division
382 County Road 3100
Aztec, NM 87410

Report Summary

Wednesday August 28, 2013

Report Number: L652966
Samples Received: 08/20/13
Client Project:

Description:

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By: Daphne R Richards
Daphne Richards , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197, FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704/BIO041, ND - R-140. NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1, TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.
Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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Est. 1970

REPORT OF ANALYSIS

Kurt Hoekstra
XTO Energy - San Juan Division
382 County Road 3100
Aztec, NM 87410

August 28, 2013

ESC Sample # : L652966-01

Site ID : FEDERAL 18 #1T

Project # :

Date Received : August 20, 2013
Description :

Sample ID : FARLH-081913-1111

Collected By : Logan Hixon
Collection Date : 08/19/13 11:11

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chloride	16.	1.0	mg/l	9056	08/21/13	1
pH	7.2		su	9040C	08/26/13	1
Specific Conductance	2600		umhos/cm	9050A	08/27/13	1
Dissolved Solids	2200	10.	mg/l	2540 C-2011	08/23/13	1
Benzene	0.020	0.00050	mg/l	8021B	08/22/13	1
Toluene	0.011	0.0050	mg/l	8021B	08/22/13	1
Ethylbenzene	BDL	0.00050	mg/l	8021B	08/22/13	1
Total Xylene	0.0023	0.0015	mg/l	8021B	08/22/13	1
Surrogate Recovery(%)						
a,a,a-Trifluorotoluene(PID)	99.7		% Rec.	8021B	08/22/13	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:
The reported analytical results relate only to the sample submitted.

.
Reported: 08/28/13 10:36 Printed: 08/28/13 10:36
L652966-01 (PH) - 7.2@18.2c

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L652966-01	WG678684	SAMP	pH	R2791846	T8

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
T8	(ESC) - Additional method/sample information: Sample(s) received past/too close to holding time expiration.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods,it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.

Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Differrence.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromotography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.

TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Summary of Remarks For Samples Printed
08/28/13 at 10:36:46

TSR Signing Reports: 288
R5 - Desired TAT

Domestic Water Well Sampling-see L609759 Lobato for tests EDD's on ALL projects email James, Kurt and Logan all reports

Sample: L652966-01 Account: XTORNM Received: 08/20/13 09:00 Due Date: 08/27/13 00:00 RPT Date: 08/28/13 10:36

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Kurt Hoekstra
382 County Road 3100

Aztec, NM 87410

Quality Assurance Report
Level II

L652966

August 28, 2013

Laboratory Blank

Analyte	Result	Units	% Rec	Limit	Batch	Date Analyzed
Chloride	< 1	mg/l			WG678033	08/21/13 07:48
Benzene	< .0005	mg/l			WG678103	08/22/13 00:50
Ethylbenzene	< .0005	mg/l			WG678103	08/22/13 00:50
Toluene	< .005	mg/l			WG678103	08/22/13 00:50
Total Xylene	< .0015	mg/l			WG678103	08/22/13 00:50
a,a,a-Trifluorotoluene(PID)		% Rec.	101.0	55-122	WG678103	08/22/13 00:50
Dissolved Solids	< 10	mg/l			WG677944	08/23/13 08:31
Specific Conductance	1.70	umhos/cm			WG678873	08/27/13 18:17

Duplicate

Analyte	Units	Result	Duplicate	RPD	Limit	Ref Samp	Batch
Dissolved Solids	mg/l	2300	2250	4.13	5	L652966-01	WG677944
pH	su	7.40	7.30	0.954	1	L652820-01	WG678684
pH	su	7.90	8.00	1.13*	1	L653354-02	WG678684
Specific Conductance	umhos/cm	2600	2600	0.613	20	L652966-01	WG678873
Specific Conductance	umhos/cm	560.	560.	0.179	20	L653616-01	WG678873

Laboratory Control Sample

Analyte	Units	Known Val	Result	% Rec	Limit	Batch
Chloride	mg/l	40	40.5	101.	90-110	WG678033
Benzene	mg/l	.05	0.0500	100.	70-130	WG678103
Ethylbenzene	mg/l	.05	0.0526	105.	70-130	WG678103
Toluene	mg/l	.05	0.0551	110.	70-130	WG678103
Total Xylene	mg/l	.15	0.164	109.	70-130	WG678103
a,a,a-Trifluorotoluene(PID)				101.0	55-122	WG678103
Dissolved Solids	mg/l	8800	8900	101.	85-115	WG677944
pH	su	6.96	6.90	99.1	98.3-101.7	WG678684
Specific Conductance	umhos/cm	1140	1100	96.5	85-115	WG678873

Laboratory Control Sample Duplicate

Analyte	Units	Result	Ref	%Rec	Limit	RPD	Limit	Batch
Chloride	mg/l	40.5	40.5	101.	90-110	0	20	WG678033
Benzene	mg/l	0.0507	0.0500	101.	70-130	1.27	20	WG678103
Ethylbenzene	mg/l	0.0531	0.0526	106.	70-130	0.940	20	WG678103
Toluene	mg/l	0.0557	0.0551	111.	70-130	0.990	20	WG678103
Total Xylene	mg/l	0.165	0.164	110.	70-130	0.850	20	WG678103

* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

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Quality Assurance Report
Level II

L652966

August 28, 2013

Laboratory Control Sample Duplicate

Analyte	Units	Result	Ref	%Rec	Limit	RPD	Limit	Batch
a,a,a-Trifluorotoluene(PID)				101.0	55-122			
Dissolved Solids	mg/l	8880	8900	101.	85-115	0.225	5	WG677944
pH	su	6.90	6.90	99.0	98.3-101.7	0	20	WG678684
Specific Conductance	umhos/	1100	1100	96.0	85-115	0	20	WG678873

Matrix Spike

Analyte	Units	MS Res	Ref Res	TV	% Rec	Limit	Ref Samp	Batch
Chloride	mg/l	51.8	3.10	50	97.4	80-120	L652830-20	WG678033
Benzene	mg/l	0.0454	0.0000033	.05	90.8	57.2-131	L652924-29	WG678103
Ethylbenzene	mg/l	0.0476	0.0000227	.05	95.2	67.5-135	L652924-29	WG678103
Toluene	mg/l	0.0501	0.0000003	.05	100.	63.7-134	L652924-29	WG678103
Total Xylene	mg/l	0.149	0.0000606	.15	99.0	65.9-138	L652924-29	WG678103
a,a,a-Trifluorotoluene(PID)					100.0	55-122		WG678103

Matrix Spike Duplicate

Analyte	Units	MSD	Ref	%Rec	Limit	RPD	Limit	Ref Samp	Batch
Chloride	mg/l	53.9	51.8	102.	80-120	3.97	20	L652830-20	WG678033
Benzene	mg/l	0.0355	0.0454	70.9	57.2-131	24.7*	20	L652924-29	WG678103
Ethylbenzene	mg/l	0.0401	0.0476	80.1	67.5-135	17.3	20	L652924-29	WG678103
Toluene	mg/l	0.0416	0.0501	83.3	63.7-134	18.4	20	L652924-29	WG678103
Total Xylene	mg/l	0.127	0.149	84.8	65.9-138	15.4	20	L652924-29	WG678103
a,a,a-Trifluorotoluene(PID)				99.40	55-122				WG678103

Batch number /Run number / Sample number cross reference

WG678033: R2787690: L652966-01
WG678103: R2789229: L652966-01
WG677944: R2789342: L652966-01
WG678684: R2791846: L652966-01
WG678873: R2793666: L652966-01

* * Calculations are performed prior to rounding of reported values.
* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

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Quality Assurance Report
Level II

L652966

August 28, 2013

The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.

E231

XTO ENERGY
Western Division

Quote Number	Page 1 of 1
XTO Contact: L. Hixon	XTO Contact Phone #: 505 386 6016
Email Results to: Logan_Hixon@xtoenergy.com James_Arnold@xtoenergy.com	
Well Site/Location: Federal 18 #1T	API Number / Test Reason
Collected By: Logan Hixon	Samples on Ice (Y / N) / Turnaround: ___ Standard, ___ Next Day, ___ Two Day, ___ Three Day, ___ Std. 5 Bus. Days (by contract), Date Needed ___
Company: XTO	QA/QC Requested
Signature: Logan H	Gray Areas for Lab Use Only!

Analysis

Sample ID	Sample Name	Media	Date	Time	Preservative	No. of Conts.	BTEX (8021)	Fe	Cl	TDS	Chlorides			Sample Number
FarLH-081913-1111	GW Sample	GW	081913	1111	Cool	2-VOA 1-500	X	X	X	X	X			L65296-01

Lab Information

Office Abbreviations
Farmington = FAR
Durango = DUR
Bakken = BAK
Raton = RAT
Piceance = PC
Roosevelt = RSV
La Barge = LB
Orangeville = OV

Media: Filter = F Soil = S Wastewater = WW Groundwater = GW Drinking Waster = DW Sludge = SG Surface Water = SW Air = A Drill Mud = DM Other = OT

	Date:	Time:		Number of Bottles	Sample Condition
Relinquished By: (Signature) Logan H	081913	13:30	Received By: (Signature)	5	
Relinquished By: (Signature)	Date:	Time:	Received By: (Signature)	Temperature: 3.1	Other Information
Relinquished By: (Signature)	Date:	Time:	Received for Lab by: (Signature)	Date: 8-20-13 / Time: 0900	

Comments: 5547 0240 3617

TA (OK)

* Sample ID will be the office and sampler-date-military time FARJM-MMDDYY-1200

PH < 2 JW

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Logan Hixon
XTO Energy - San Juan Division
382 County Road 3100
Aztec, NM 87410

Report Summary

Monday September 30, 2013

Report Number: L659225
Samples Received: 09/24/13
Client Project:

Description:

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By: Daphne R Richards

Daphne Richards , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197, FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704/BIO041, ND - R-140. NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1, TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.
Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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REPORT OF ANALYSIS

Logan Hixon
XTO Energy - San Juan Division
382 County Road 3100
Aztec, NM 87410

September 30, 2013

ESC Sample # : L659225-01

Date Received : September 24, 2013
Description :

Site ID :

Sample ID : FARCH-092313-1107

Project # :

Collected By : Logan Hixon
Collection Date : 09/23/13 11:07

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chloride	16.	1.0	mg/l	9056	09/28/13	1
pH	7.1		su	9040C	09/26/13	1
Specific Conductance	2500		umhos/cm	9050A	09/27/13	1
Dissolved Solids	2300	10.	mg/l	2540 C-2011	09/27/13	1
Benzene	0.013	0.00050	mg/l	8021B	09/28/13	1
Toluene	0.011	0.0050	mg/l	8021B	09/28/13	1
Ethylbenzene	BDL	0.00050	mg/l	8021B	09/28/13	1
Total Xylene	0.0022	0.0015	mg/l	8021B	09/28/13	1
Surrogate Recovery(%)						
a,a,a-Trifluorotoluene(PID)	98.9		% Rec.	8021B	09/28/13	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:
The reported analytical results relate only to the sample submitted.

.
Reported: 09/30/13 16:25 Printed: 09/30/13 16:25
L659225-01 (PH) - 7.1@20.1c

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L659225-01	WG683736	SAMP	pH	R2828201	T8

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
T8	(ESC) - Additional method/sample information: Sample(s) received past/too close to holding time expiration.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC.
Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods,it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

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Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromotography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.

TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Summary of Remarks For Samples Printed
09/30/13 at 16:25:44

TSR Signing Reports: 288
R5 - Desired TAT

Domestic Water Well Sampling-see L609759 Lobato for tests EDD's on ALL projects email James, Kurt and Logan all reports

Sample: L659225-01 Account: XTORNM Received: 09/24/13 09:30 Due Date: 10/01/13 00:00 RPT Date: 09/30/13 16:25

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Quality Assurance Report
Level II

L659225

September 30, 2013

Laboratory Blank

Analyte	Result	Units	% Rec	Limit	Batch	Date Analyzed
Dissolved Solids	< 10	mg/l			WG683756	09/27/13 15:16
Specific Conductance	1.30	umhos/cm			WG684050	09/27/13 17:57
Benzene	< .0005	mg/l			WG683739	09/28/13 13:55
Ethylbenzene	< .0005	mg/l			WG683739	09/28/13 13:55
Toluene	< .005	mg/l			WG683739	09/28/13 13:55
Total Xylene	< .0015	mg/l			WG683739	09/28/13 13:55
a,a,a-Trifluorotoluene(PID)		% Rec.	101.0	55-122	WG683739	09/28/13 13:55
Chloride	< 1	mg/l			WG684176	09/28/13 06:57

Duplicate

Analyte	Units	Result	Duplicate	RPD	Limit	Ref Samp	Batch
pH	su	8.90	8.90	0.337	1	L659184-01	WG683736
pH	su	7.90	7.80	1.15*	1	L659389-01	WG683736
Dissolved Solids	mg/l	2390	2280	4.93	5	L659225-01	WG683756
Specific Conductance	umhos/cm	920.	930.	0.756	20	L658673-01	WG684050
Specific Conductance	umhos/cm	2500	2500	0.0	20	L659225-01	WG684050
Chloride	mg/l	800.	800.	0.0	20	L659605-15	WG684176

Laboratory Control Sample

Analyte	Units	Known Val	Result	% Rec	Limit	Batch
pH	su	6.96	6.90	99.1	98.3-101.7	WG683736
Dissolved Solids	mg/l	8800	8590	97.6	85-115	WG683756
Specific Conductance	umhos/cm	878	890.	101.	85-115	WG684050
Benzene	mg/l	.05	0.0438	87.6	70-130	WG683739
Ethylbenzene	mg/l	.05	0.0465	93.1	70-130	WG683739
Toluene	mg/l	.05	0.0453	90.6	70-130	WG683739
Total Xylene	mg/l	.15	0.144	96.0	70-130	WG683739
a,a,a-Trifluorotoluene(PID)				100.0	55-122	WG683739
Chloride	mg/l	40	40.4	101.	90-110	WG684176

Laboratory Control Sample Duplicate

Analyte	Units	Result	Ref	%Rec	Limit	RPD	Limit	Batch
pH	su	6.90	6.90	99.0	98.3-101.7	0.0	20	WG683736
Dissolved Solids	mg/l	8530	8590	97.0	85-115	0.701	5	WG683756

* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

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Quality Assurance Report
Level II

L659225

September 30, 2013

Laboratory Control Sample Duplicate

Analyte	Units	Result	Ref	%Rec	Limit	RPD	Limit	Batch
Specific Conductance	umhos/	890.	890.	101.	85-115	0.0	20	WG684050
Benzene	mg/l	0.0409	0.0438	82.0	70-130	6.73	20	WG683739
Ethylbenzene	mg/l	0.0441	0.0465	88.0	70-130	5.35	20	WG683739
Toluene	mg/l	0.0429	0.0453	86.0	70-130	5.35	20	WG683739
Total Xylene	mg/l	0.138	0.144	92.0	70-130	4.28	20	WG683739
a,a,a-Trifluorotoluene(PID)				99.10	55-122			WG683739
Chloride	mg/l	40.4	40.4	101.	90-110	0.0	20	WG684176

Matrix Spike

Analyte	Units	MS Res	Ref Res	TV	% Rec	Limit	Ref Samp	Batch
Benzene	mg/l	0.0489	0.000568	.05	97.0	57.2-131	L659219-01	WG683739
Ethylbenzene	mg/l	0.0506	0.0000373	.05	100.	67.5-135	L659219-01	WG683739
Toluene	mg/l	0.0486	0.0000269	.05	97.0	63.7-134	L659219-01	WG683739
Total Xylene	mg/l	0.149	0.000196	.15	99.0	65.9-138	L659219-01	WG683739
a,a,a-Trifluorotoluene(PID)					99.70	55-122		WG683739
Chloride	mg/l	64.7	16.0	50	97.0	80-120	L659225-01	WG684176

Matrix Spike Duplicate

Analyte	Units	MSD	Ref	%Rec	Limit	RPD	Limit	Ref Samp	Batch
Benzene	mg/l	0.0439	0.0489	86.7	57.2-131	10.6	20	L659219-01	WG683739
Ethylbenzene	mg/l	0.0471	0.0506	94.1	67.5-135	7.22	20	L659219-01	WG683739
Toluene	mg/l	0.0458	0.0486	91.4	63.7-134	6.09	20	L659219-01	WG683739
Total Xylene	mg/l	0.142	0.149	94.2	65.9-138	5.25	20	L659219-01	WG683739
a,a,a-Trifluorotoluene(PID)				98.90	55-122				WG683739
Chloride	mg/l	64.0	64.7	96.0	80-120	1.09	20	L659225-01	WG684176

Batch number /Run number / Sample number cross reference

WG683736: R2828201: L659225-01
WG683756: R2829300: L659225-01
WG684050: R2830785: L659225-01
WG683739: R2830924: L659225-01
WG684176: R2831280: L659225-01

* * Calculations are performed prior to rounding of reported values.
* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

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Tax I.D. 62-0814289

Est. 1970

XTO Energy - San Juan Division
Logan Hixon
382 County Road 3100

Aztec, NM 87410

Quality Assurance Report
Level II

L659225

September 30, 2013

The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.

XTO ENERGY
Western Division

Quote Number	Page ___ of ___	
XTO Contact: Logan Hixon	XTO Contact Phone #: (505) 386-8018	
Email Results to: Logan_Hixon, James_mcdaniel		
Well Site/Location: Federal 18 #1T	API Number: 30-045-33864	Test Reason
Collected By: Logan Hixon	Samples on Ice (Y / N)	Turnaround: (X) Standard; ___ Next Day; ___ Two Day; ___ Three Day; ___ Std. 5 Bus. Days (by contract); Date Needed ___
Company: XTO	QA/QC Requested	
Signature: Logan Hix	Gray Areas for Lab Use Only!	

Analysis: BTEX (8021) X; EC X; CH X; TDS X; Chlorides X

Lab Information: B237

Office Abbreviations
Farmington = FAR
Durango = DUR
Bakken = BAK
Raton = RAT
Piceance = PC
Roosevelt = RSV
La Barge = LB
Orangeville = OV

Sample ID	Sample Name	Media	Date	Time	Preservative	No. of Conts.	Sample Number
FarLH-092313-1107	GW sample	GW	9-23	11:07	Cool	2-VOA	L65[illegible]-01

Media: Filter = F Soil = S Wastewater = WW Groundwater = GW Drinking Waster = DW Sludge = SG Surface Water = SW Air = A Drill Mud = DM Other = OT

Relinquished By: (Signature) Logan H	Date: 9-25-13	Time: 12:00	Received By: (Signature)	Number of Bottles	Sample Condition
Relinquished By: (Signature)	Date:	Time:	Received By: (Signature)	Temperature: 3.4°C	Other Information
Relinquished By: (Signature)	Date:	Time:	Received for Lab by: (Signature)	Date: 9/24/13 Time: 0930	5 ~~3~~

Comments: 3 OK

* Sample ID will be the office and sampler-date-military time FARJM-MMDDYY-1200

envirotech
Analytical Laboratory

Analytical Report

Report Summary

Client: XTO Energy Inc.

Chain Of Custody Number: 0017

Samples Received: 8/19/2013 12:00:00PM

Job Number: 98031-0528

Work Order: P308053

Project Name/Location: Federal 18 #1T

Entire Report Reviewed By: _____ Date: 8/19/13

Tim Cain, Laboratory Manager

5796 US Highway 64, Farmington, NM 87401 Ph (505) 632-0615 Fx (505) 632-1865
Three Springs • 65 Mercado Street, Suite 115, Durango, CO 81301 Ph (970) 259-0615 Fr (800) 362-1879
envirotech-inc.com
laboratory@envirotech-inc.com

envirotech
Analytical Laboratory

XTO Energy Inc.	Project Name:	Federal 18 #1T	
382 CR 3100	Project Number:	98031-0528	**Reported:**
Aztec NM, 87410	Project Manager:	James McDaniel	19-Aug-13 16:31

Analyical Report for Samples

Client Sample ID	Lab Sample ID	Matrix	Sampled	Received	Container
1737 Casing	P308053-01A	Gas	08/19/13	08/19/13	Gas Cylinder, 300 cc
18 #1T Casing	P308053-02A	Gas	08/19/13	08/19/13	Gas Cylinder, 300 cc

envirotech
Analytical Laboratory

GAS ANALYSIS

Client:	XTO Energy Inc	Project Number:	98031-0528
Sample ID.:	18 #1T Casing	Date Reported:	08/19/13
Laboratory Number:	P308053-02	Date Sampled:	08/19/13
Chain of Custody No.:	0017	Date Received:	08/19/13
Sample Matrix:	Gas	Date Analyzed:	08/19/13
Cylinder Number:	22		

Parameter	Concentration	Mol %
Carbon Dioxide	0.0074	%
Nitrogen	0.2979	%
Methane	80.6635	%
Ethane	9.7002	%
Propane	3.8022	%
Iso-Butane	0.5777	%
N-Butane	0.9876	%
Iso-Pentane	0.3470	%
N-Pentane	0.2980	%
Hexanes +	0.3753	%
Oxygen	2.9433	%
Total	100.0000	%

References: Gas Processors Association Standard 2286-95, ASTM Method D1945-03

Comments: **C1-C5 Gas analysis for Federal 18 #1T**

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envirotech-inc.com
laboratory@envirotech-inc.com

envirotech
Analytical Laboratory

GAS ANALYSIS

Client:	XTO Energy Inc	Project Number:	98031-0528
Sample ID.:	1737 Casing	Date Reported:	08/19/13
Laboratory Number:	P308053-01	Date Sampled:	08/19/13
Chain of Custody No.:	0017	Date Received:	08/19/13
Sample Matrix:	Gas	Date Analyzed:	08/19/13
Cylinder Number:	72		

Parameter	Concentration	Mol %
Carbon Dioxide	0.2202	%
Nitrogen	21.4994	%
Methane	60.7679	%
Ethane	6.0784	%
Propane	2.0947	%
Iso-Butane	0.3139	%
N-Butane	0.3140	%
Iso-Pentane	0.0878	%
N-Pentane	0.0464	%
Hexanes +	0.0528	%
Oxygen	8.5244	%
Total	100.0000	%

References: Gas Processors Association Standard 2286-95, ASTM Method D1945-03

Comments: **C1-C5 Gas analysis for Federal 18 #1T**

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XTO ENERGY
Western Division

Quote Number	Page 1 of 1	
XTO Contact: James McDaniel	XTO Contact Phone #: 505-333-3701	
Email Results to: james_mcdaniel@xtoenergy.com		
Well Site/Location: Federal 18 #1T	API Number: —	Test Reason: Routine
Collected By: James McDaniel	Samples on Ice: (Y) (N)	Turnaround: X Standard; ___ Next Day; ___ Two Day; ___ Three Day; ___ Std. 5 Bus. Days (by contract); Date Needed ___
Company: XTO	QA/QC Requested: Standard	
Signature:	Gray Areas for Lab Use Only!	

Lab Information: 98131-0528 Envirotech

Office Abbreviations
Farmington = FAR
Durango = DUR
Bakken = BAK
Raton = RAT
Piceance = PC
Roosevelt = RSV
La Barge = LB
Orangeville = OV

Sample ID	Sample Name	Media	Date	Time	Preservative	No. of Conts.	Analysis: Standard	Sample Number
FARJM-081913-1104	1737 Casing	A	8/19/13	1104	None	1	X	T38801053-01
FARJM-081913-1130	18#1T Casing	A	8/19/13	1130	None	1	X	T38801053-02

Media: Filter = F Soil = S Wastewater = WW Groundwater = GW Drinking Waster = DW Sludge = SG Surface Water = SW Air = A Drill Mud = DM Other = OT

Relinquished By: (Signature)	Date: 8/19/13	Time: 1200	Received By: (Signature)	Number of Bottles:	Sample Condition
Relinquished By: (Signature)	Date:	Time:	Received By: (Signature)	Temperature:	Other Information
Relinquished By: (Signature)	Date:	Time:	Received for Lab by: (Signature)	Date: 8/20/13 Time: 1200	

Comments

* Sample ID will be the office and sampler-date-military time FARJM-MMDDYY-1200