3R - 134

2010 AGWMR

MAR 2011

2010 ANNUAL GROUNDWATER REPORT

Valdez A #1E

3RP-134

Unit G, Section 24, Township 29N, Range 11W
San Juan County, New Mexico

PREPARED FOR:

Mr. Glenn Von Gonten
New Mexico Oil Conservation Division
1220 South St. Francis Street
Santa Fe, New Mexico 87505
(505) 476-3488

March 2011

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Appendices

VALDEZ A #1E
3RP-134

SITE DETAILS

LEGALS - TWN: 29N **RNG:** 11W **SEC:** 24 **UNIT:** G
OCD HAZARD RANKING: 40 **LAND TYPE:** FEE
LATITUDE: 36.71186 **LONGITUDE:** 107.94220

INTRODUCTION

XTO Energy Inc. (XTO) acquired the Valdez A #1E well site from Amoco Production Company (Amoco) in January 1998. This is a gas producing well in the Dakota Sandstone and Otero Chacra formations and is currently active. The San Juan River flows in a west/southwest direction approximately 1000 feet from the location. A topographic map is presented as ***Figure 1***.

HISTORY

Tenneco Oil Company (Tenneco) was the original owner/operator of this well site. In September of 1987, the New Mexico Oil Conservation Division (OCD) augered four (4) 10½'-18' deep exploratory borings at the well site. The borings uncovered groundwater contamination in the vicinity of the produced water tank and the separator. A letter documenting the OCD findings is included as ***Attachment 1***. Tenneco was required by OCD to install a series of monitoring wells in an effort to define the contamination plume and to monitor concentration levels of contaminants. Tenneco installed six (6) monitoring wells (MW-1-6) in June of 1988. Completion Diagrams and Borehole Logs are presented in ***Figure 3-8***. The monitoring wells were sampled in July of 1988 with the exception of monitoring well MW-4 which was discovered damaged. Groundwater from monitoring well MW-6 revealed BTEX concentrations in excess of New Mexico Water Quality Control Commission (WQCC) standards. Monitoring well MW-4 was repaired in August of 1988 and all wells were sampled. Laboratory results revealed elevated BTEX concentrations in groundwater from monitoring wells MW-4 and MW-6. Tenneco submitted a groundwater report to the OCD in September of 1988 documenting activities and laboratory results.

Amoco acquired the location in January of 1989. Based on historical lab data it is assumed that additional monitoring wells, MW-7, MW-8, MW-9 and MW-10 were installed in the first quarter of 1992, and that Amoco re-initiated groundwater monitoring. In January of 1996 Amoco submitted a written request to the OCD to discontinue groundwater monitoring at the site. This request is included as ***Attachment 2***. Based on data collected since 1988, Amoco proposed that the impacted plume was stable, and that there was no risk to human health and the environment, making continued groundwater monitoring unnecessary. Since WQCC standards had not been met within the plume area, the request was denied by the OCD in March of 1996.

XTO submitted a groundwater report to the OCD in February of 1999 to include data and activities for the years 1996 through 1998. Since their initial installation, groundwater results for monitoring wells MW-1, MW-3 and MW-9 had been below WQCC standards for BTEX. Groundwater results from monitoring wells MW-4, MW-5 and MW-10 returned

elevated concentrations of BTEX for one (1) sampling event, but below the WQCC standards for several sampling events thereafter. Groundwater results from monitoring wells MW-6, MW-7 and MW-8 consistently revealed BTEX concentrations exceeding WQCC standards, although there were significant decreases in concentrations during that time period. Monitoring well MW-2 has remained dry since 1993. In June 1998, 0.88 feet of free phase product was documented in monitoring well MW-7. At that time XTO recommended continued sampling of groundwater from monitoring wells MW-6, MW-7, MW-8, MW-9 and MW-10 to track natural degradation and to confirm that free product was not migrating. Monitoring well MW-8 was damaged during the last quarter of 1998. Monitoring well MW-9 sampled below WQCC standards and non-detect in 1999 through 2001 and sampling was discontinued. Monitoring well MW-10 sampled non-detect from 1993 through 1999 and sampling was discontinued in 1999.

In April 2002 monitoring wells MW-2, MW-3 and MW-5 were plugged and abandoned per surface owner's (FEE) request and OCD approval.

The 2005 annual groundwater report was submitted to the OCD in January of 2006, proposing annual sampling of groundwater monitoring wells MW-6 and MW-7 until natural degradation reduced hydrocarbon impacts to below closure standards.

The 2006 annual groundwater report was submitted to the OCD in February of 2007, proposing continued annual sampling of groundwater monitoring wells MW-6 and MW-7 until natural degradation reduced hydrocarbon impacts to below the WQCC standards.

The 2007 annual groundwater report was submitted to the OCD in February of 2008 proposing semi-annual sampling at monitoring wells MW-6 and MW-7 for BTEX constituents.

The 2008 annual groundwater report was submitted to the OCD in April of 2009 proposing the addition of chemical oxygenate to monitoring wells MW-6 and MW-7, with a change in frequency from semi-annual sampling to quarterly sampling.

The 2009 annual groundwater report was submitted to Mr. Glenn von Gonten with the OCD in March of 2010 recommending continuing addition of chemical oxygenate to monitoring well MW-7 to enhance bioremediation in the groundwater aquifer. Quarterly sampling of monitoring wells MW-6 and MW-7 were also recommended to monitor the BTEX levels in the aquifer at this location.

A summary of water level data and laboratory results from historical and current groundwater monitoring is presented in ***Table 1*** and ***Table 2*** prepared by LT Environmental. Copies of the laboratory data sheets and associated quality assurance/quality control data for 2010 are presented as ***Attachment 3***.

METHODOLOGY

Quarterly groundwater samples were collected from monitoring wells MW-6 and MW-7 in 2010 and submitted for laboratory analysis of BTEX via USEPA Method 8021B. The quarterly sampling of this site did not begin until the second quarter due to a change in the sampling frequency. The first quarter groundwater monitoring was not conducted, but quarterly monitoring began in the second quarter of 2010.

Water Level Measurements
Static groundwater level monitoring includes recording depth to groundwater measurements with a Keck oil/water interface probe. The interface probe is decontaminated with Alconox™ soap and rinsed with de-ionized water prior to each measurement. These data are recorded as Depth to Water (DTW) and Total Depth (TD) in feet on Table 1.

Groundwater Sampling
Prior to sampling groundwater, depth to groundwater and total depth of wells is measured with a Keck oil/water interface probe. Presence of any free-phase crude oil is also investigated using the interface probe. The interface probe is decontaminated with Alconox™ soap and rinsed with de-ionized water prior to each measurement. The volume of water in the wells is calculated, and a minimum of three (3) casing volumes of water is purged from each well using a disposable bailer or a permanent decontaminated PVC bailer. As water is extracted, pH, electric conductivity and temperature are monitored. Wells are purged until these properties stabilize, indicating that the purge water is representative of aquifer conditions. Stabilization is defined as three (3) consecutive stable readings for each water property (±0.4 units for pH, ±10 percent for electric conductivity and ±2° C for temperature). All purge water is disposed of into tanks on site.

Once each monitoring well is properly purged, groundwater samples are collected by filling at least two (2) 40-millititer (ml) glass vials. The pre-cleaned and pre-preserved (with hydrochloric acid or mercuric chloride) vials are filled and capped with no air inside to prevent degradation of the sample. Samples are labeled with the date and time of collection, well designation, project name, collector's name and parameters to be analyzed. They are immediately sealed and packed on ice. The samples are shipped to Hall Environmental Analysis Laboratory (HEAL) in Albuquerque, New Mexico in a sealed cooler via bus before designated holding times expire. Beginning in September of 2010, groundwater samples were shipped to Environmental Science Corporation (ESC) in a sealed cooler with ice to Mt. Juliet, Tennessee via Fed-Ex overnight. Proper chain-of-custody (COC) procedures are followed with logs documenting the date and time sampled, sample number, type of sample, sampler's name, preservative used, analyses required and sampler's signature. Field notes from the quarterly monitoring are included for your reference as ***Attachment 4***.

Groundwater Contour Maps
Top of casing well elevations were surveyed using a surveyor's level; and groundwater elevations obtained from monitoring wells during site visits were used to draft groundwater contour maps. Contours were inferred based on groundwater elevations obtained and observation of physical characteristics at the site (topography, proximity to irrigation ditches, etc.).

RESULTS

Laboratory results from monitoring well MW-6 indicate that BTEX levels have been below the WQCC standards since December of 2009. Results from monitoring well MW-7 show elevated levels of benzene still remain at 22 ppb (parts per billion). In December of 2010, total xylene levels dropped below the WQCC standards of 620 ppb, to 420 ppb. Benzene

levels have decreased significantly when compared to levels obtained in December of 2008 (100 ppb). Since December of 2008, total xylene levels have decreased from 3,600 ppb to 420 ppb in December of 2010. All laboratory analytical results are included in ***Table 4***, and laboratory reports from 2010 are included in ***Attachment 3***.

Field data collected during site monitoring activities indicate a groundwater gradient that trends toward the southwest at approximately 0.0118 feet per foot, in the general direction of the San Juan River. ***Figure 2*** illustrates the estimated groundwater gradient for 2010.

CONCLUSIONS

The laboratory results from 2010 indicate that the BTEX constituents have degraded significantly when compared to levels from December of 2008. Natural hydrocarbon mineralization appears to be working to degrade the BTEX constituents remaining in the groundwater.

RECOMMENDATIONS

XTO proposes the addition of chemical oxygenate in monitoring well MW-7 to enhance biodegradation of the hydrocarbon in groundwater. In addition, XTO will begin quarterly sampling of groundwater for BTEX concentrations in monitoring wells MW-6 and MW-7 until WQCC standards have been met for four (4) consecutive quarters. Monitoring well MW-6 will meet the four (4) consecutive quarter criteria if it returns results below the WQCC standards in the first quarter of 2011. Should monitoring well MW-6 return results below the WQCC standards in the first quarter of 2011, sampling will not continue for this monitoring well.

Following OCD approval for closure, all monitoring well locations will be abandoned in accordance with the monitoring well abandonment plan.

TABLE 3

GROUNDWATER LEVELS AND ELEVATIONS
VALDEZ A #1E
XTO ENERGY, INC.

Well ID	Date	Depth to Water (feet) (BTOC)	Groundwater Elevation (feet relative to site)
MW-1	7/1/1988	NM	NM
MW-1	8/31/1988	NM	NM
MW-1	3/5/1992	NM	NM
MW-1	2/23/1993	13.59	88.97
MW-1	6/7/1993	12.92	89.64
MW-1	9/8/1993	12.06	90.50
MW-1	3/9/1994	14.20	88.36
MW-1	6/24/1994	12.39	90.17
MW-1	9/23/1994	11.35	91.21
MW-1	12/9/1994	12.35	90.21
MW-1	3/13/1995	13.71	88.85
MW-1	6/3/2008	12.95	89.61
MW-1	12/7/2009	12.37	90.19
MW-1	6/21/2010	13.23	89.33
MW-1	9/15/2010	12.14	90.42
MW-1	12/13/2010	12.89	89.67
MW-3	7/1/1988	NM	NM
MW-3	8/31/1988	NM	NM
MW-3	3/5/1992	NM	NM
MW-3	2/23/1993	14.02	87.04
MW-3	6/7/1993	13.66	87.40
MW-3	9/8/1993	13.16	87.90
MW-3	3/9/1994	14.54	86.52
MW-3	6/24/1994	12.95	88.11
MW-3	9/23/1994	12.24	88.82
MW-3	12/9/1994	12.94	88.12
MW-3	3/13/1995	13.88	87.18
MW-3	6/3/2008	13.21	87.85
MW-3	12/7/2009	12.78	88.28
MW-3	6/21/2010	13.47	87.59
MW-3	9/15/2010	12.54	88.52

TABLE 3

GROUNDWATER LEVELS AND ELEVATIONS
VALDEZ A #1E
XTO ENERGY, INC.

Well ID	Date	Depth to Water (feet) (BTOC)	Groundwater Elevation (feet relative to site)
MW-3	12/13/2010	13.16	87.90
MW-6	7/1/1988	NM	NM
MW-6	8/31/1988	NM	NM
MW-6	3/5/1992	NM	NM
MW-6	2/23/1993	15.06	82.03
MW-6	6/7/1993	14.72	82.37
MW-6	9/8/1993	14.27	82.82
MW-6	12/2/1993	14.69	82.40
MW-6	3/9/1994	15.49	81.60
MW-6	6/24/1994	14.05	83.04
MW-6	9/23/1994	13.40	83.69
MW-6	12/9/1994	14.02	83.07
MW-6	1/10/1995	14.28	82.81
MW-6	2/9/1995	14.58	82.51
MW-6	3/13/1995	14.85	82.24
MW-6	4/10/1995	15.00	82.09
MW-6	6/19/1995	14.48	82.61
MW-6	8/7/1995	14.08	83.01
MW-6	9/12/1995	13.89	83.20
MW-6	10/10/1995	13.74	83.35
MW-6	11/15/1995	13.98	83.11
MW-6	12/7/1995	14.12	82.97
MW-6	3/7/1996	15.07	82.02
MW-6	6/18/1996	14.40	82.69
MW-6	6/17/1997	14.97	82.12
MW-6	6/12/1998	14.92	82.17
MW-6	9/25/1998	14.36	82.73
MW-6	5/26/1999	15.12	81.97
MW-6	6/26/2000	14.53	82.56
MW-6	5/15/2001	14.91	82.18
MW-6	6/25/2002	13.72	83.37

TABLE 3

GROUNDWATER LEVELS AND ELEVATIONS
VALDEZ A #1E
XTO ENERGY, INC.

Well ID	Date	Depth to Water (feet) (BTOC)	Groundwater Elevation (feet relative to site)
MW-6	5/20/2003	14.47	82.62
MW-6	6/19/2004	14.07	83.02
MW-6	9/27/2004	8.27	88.82
MW-6	6/29/2005	9.13	87.96
MW-6	6/28/2006	8.78	88.31
MW-6	6/15/2007	9.76	87.33
MW-6	12/20/2007	9.16	87.93
MW-6	6/3/2008	9.58	87.51
MW-6	12/4/2008	9.85	87.24
MW-6	6/10/2009	9.75	87.34
MW-6	12/7/2009	9.15	87.94
MW-6	6/21/2010	9.77	87.32
MW-6	9/15/2010	9.01	88.08
MW-6	12/13/2010	9.50	87.59
MW-7	3/5/1992	NM	NM
MW-7	2/23/1993	13.37	86.22
MW-7	6/7/1993	14.54	85.05
MW-7	9/8/1993	14.15	85.44
MW-7	12/2/1993	14.56	85.03
MW-7	3/9/1994	15.30	84.29
MW-7	6/24/1994	14.04	85.55
MW-7	9/23/1994	13.51	86.08
MW-7	12/9/1994	13.94	85.65
MW-7	1/10/1995	14.23	85.36
MW-7	2/9/1995	14.50	85.09
MW-7	3/13/1995	14.73	84.86
MW-7	4/10/1995	14.87	84.72
MW-7	6/19/1995	14.39	85.20
MW-7	8/7/1995	14.04	85.55
MW-7	9/12/1995	13.85	85.74
MW-7	10/10/1995	13.73	85.86

TABLE 3

GROUNDWATER LEVELS AND ELEVATIONS
VALDEZ A #1E
XTO ENERGY, INC.

Well ID	Date	Depth to Water (feet) (BTOC)	Groundwater Elevation (feet relative to site)
MW-7	11/15/1995	13.94	85.65
MW-7	12/7/1995	14.05	85.54
MW-7	3/7/1996	14.94	84.65
MW-7	6/18/1996	14.34	85.25
MW-7	6/17/1997	14.83	84.76
MW-7	6/12/1998	14.83	84.76
MW-7	9/25/1998	NM	NM
MW-7	5/26/1999	NM	NM
MW-7	8/25/1999	NM	NM
MW-7	11/30/1999	NM	NM
MW-7	6/26/2000	14.46	85.13
MW-7	5/15/2001	14.87	84.72
MW-7	6/25/2002	13.72	85.87
MW-7	5/20/2003	14.43	85.16
MW-7	6/19/2004	13.97	85.62
MW-7	6/29/2005	13.81	85.78
MW-7	6/28/2006	13.37	86.22
MW-7	6/15/2007	15.00	84.59
MW-7	12/20/2007	13.65	85.94
MW-7	6/3/2008	14.03	85.56
MW-7	12/4/2008	13.46	86.13
MW-7	6/10/2009	14.20	85.39
MW-7	12/7/2009	13.61	85.98
MW-7	6/21/2010	14.19	85.40
MW-7	9/15/2010	13.76	85.83
MW-7	12/13/2010	13.98	85.61

Notes:
NM = Not Measured
BTOC = Below Top of Casing

TABLE 4

GROUNDWATER RESULTS
VALDEZ A #1E
XTO ENERGY, INC.

Well ID	Date	Benzene (ug/l)	Toluene (ug/l)	Ethylbenzene (ug/l)	Total Xylenes (ug/l)
NMWQCC Groundwater Standard		**10**	**750**	**750**	**620**
MW-1	7/1/1988	ND	ND	ND	ND
MW-1	8/31/1988	ND	ND	ND	ND
MW-1	3/5/1992	ND	ND	ND	ND
MW-1	2/23/1993	ND	ND	ND	ND
MW-1	6/7/1993	ND	0.5	ND	1
MW-1	9/8/1993	ND	ND	ND	ND
MW-1	3/9/1994	ND	ND	ND	ND
MW-1	6/24/1994	ND	ND	ND	ND
MW-1	9/23/1994	0.9	0.2	ND	3.8
MW-1	12/9/1994	0.8	ND	ND	ND
MW-1	3/13/1995	ND	ND	ND	ND
MW-3	7/1/1988	ND	ND	ND	ND
MW-3	8/31/1988	ND	ND	ND	ND
MW-3	3/5/1992	3	6.9	0.3	7.8
MW-3	2/23/1993	ND	ND	ND	ND
MW-3	6/7/1993	ND	ND	ND	0.6
MW-3	9/8/1993	ND	0.6	ND	11.7
MW-3	3/9/1994	ND	ND	ND	ND
MW-3	6/24/1994	ND	ND	ND	ND
MW-3	9/23/1994	ND	ND	ND	ND
MW-3	12/9/1994	ND	ND	ND	ND
MW-3	3/13/1995	ND	ND	ND	ND
MW-6	7/1/1988	**1,500**	**3300**	550	**4,560**
MW-6	8/31/1988	**1,700**	**1600**	340	**1,300**
MW-6	3/5/1992	**65**	44.1	20.3	82.7
MW-6	2/23/1993	**2,090**	**7800**	578	**4,080**
MW-6	6/7/1993	**1,300**	444	293	**840**
MW-6	9/8/1993	**770**	**980**	174	**783**
MW-6	12/2/1993	**540**	**1140**	144	**867**
MW-6	3/9/1994	**580**	**1520**	130	**888**
MW-6	6/24/1994	**542**	**1923**	164	**1,172**
MW-6	9/23/1994	**484**	**1696**	170	**1,300**
MW-6	12/9/1994	**593**	**2242**	183	**1,707**
MW-6	1/10/1995	**450**	**1380**	153	**1,248**
MW-6	2/9/1995	**710**	**2160**	271	**2,297**
MW-6	3/13/1995	**19.8**	**2471**	289	**2,460**

TABLE 4

GROUNDWATER RESULTS
VALDEZ A #1E
XTO ENERGY, INC.

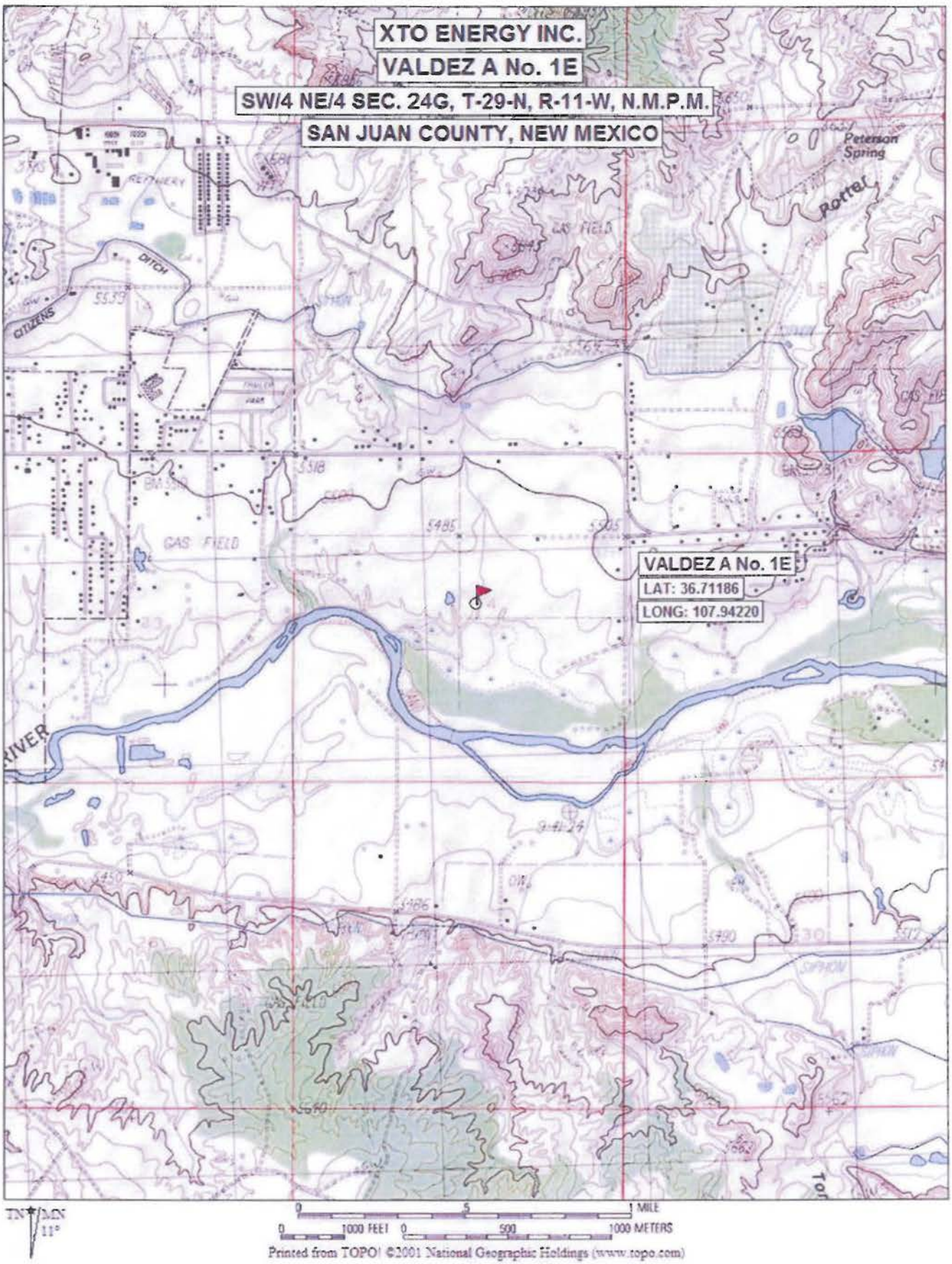
Well ID	Date	Benzene (ug/l)	Toluene (ug/l)	Ethylbenzene (ug/l)	Total Xylenes (ug/l)
NMWQCC Groundwater Standard		10	750	750	620
MW-6	4/10/1995	**525**	**1840**	222	**1,502**
MW-6	6/19/1995	**299.3**	**998.8**	114.5	**1,045.40**
MW-6	8/7/1995	**593**	**1650**	247	**2,111**
MW-6	9/12/1995	**412**	**1390**	259	**1,549**
MW-6	10/10/1995	**176**	**970**	191	**1,552**
MW-6	11/15/1995	**598**	**1370**	339	**2,819**
MW-6	12/7/1995	**599**	**1310**	304	**2,322**
MW-6	3/7/1996	**426**	467	234	**1,876**
MW-6	6/18/1996	**462**	773	305	**2,540**
MW-6	6/17/1997	**110**	19.6	37.6	288.9
MW-6	6/12/1998	**55.6**	25.2	45.9	296.1
MW-6	9/25/1998	**42.7**	17.7	68.3	**469**
MW-6	5/26/1999	**78.9**	22	51.6	273.9
MW-6	6/26/2000	**26**	2.5	100	**670**
MW-6	5/15/2001	**13**	0.5	74	490
MW-6	6/25/2002	**20**	ND	200	**1,740**
MW-6	5/20/2003	**14**	1.1	190	**1,400**
MW-6	6/19/2004	7.5	ND	79	530
MW-6	9/27/2004	8.4	ND	140	**1,100**
MW-6	6/29/2005	6.9	ND	150	**1,100**
MW-6	6/28/2006	6.7	ND	190	**790**
MW-6	6/15/2007	2.1	ND	76	470
MW-6	12/20/2007	2.9	ND	130	**750**
MW-6	6/3/2008	1.5	ND	88	**680**
MW-6	12/4/2008	1.6	3.6	98	**640**
MW-6	6/10/2009	1.6	1.4	140	**810**
MW-6	12/7/2009	< 1.0	< 1.0	7.2	29
MW-6	6/21/2010	< 1.0	< 1.0	1.5	3.7
MW-6	9/15/2010	< 0.5	< 5.0	< 0.5	1.6
MW-6	12/13/2010	0.6	<5.0	1.1	3.1
MW-7	3/5/1992	**1,160**	**1,110**	302	**1,972**
MW-7	2/23/1993	ND	1	ND	2
MW-7	6/7/1993	**640**	**2,270**	330	**2,430**
MW-7	9/8/1993	**820**	**1,660**	306	**1,780**
MW-7	12/2/1993	**319**	366	35.1	**242**
MW-7	3/9/1994	**103**	88	10.3	74
MW-7	6/24/1994	**569**	**2,090**	288	**3,094**

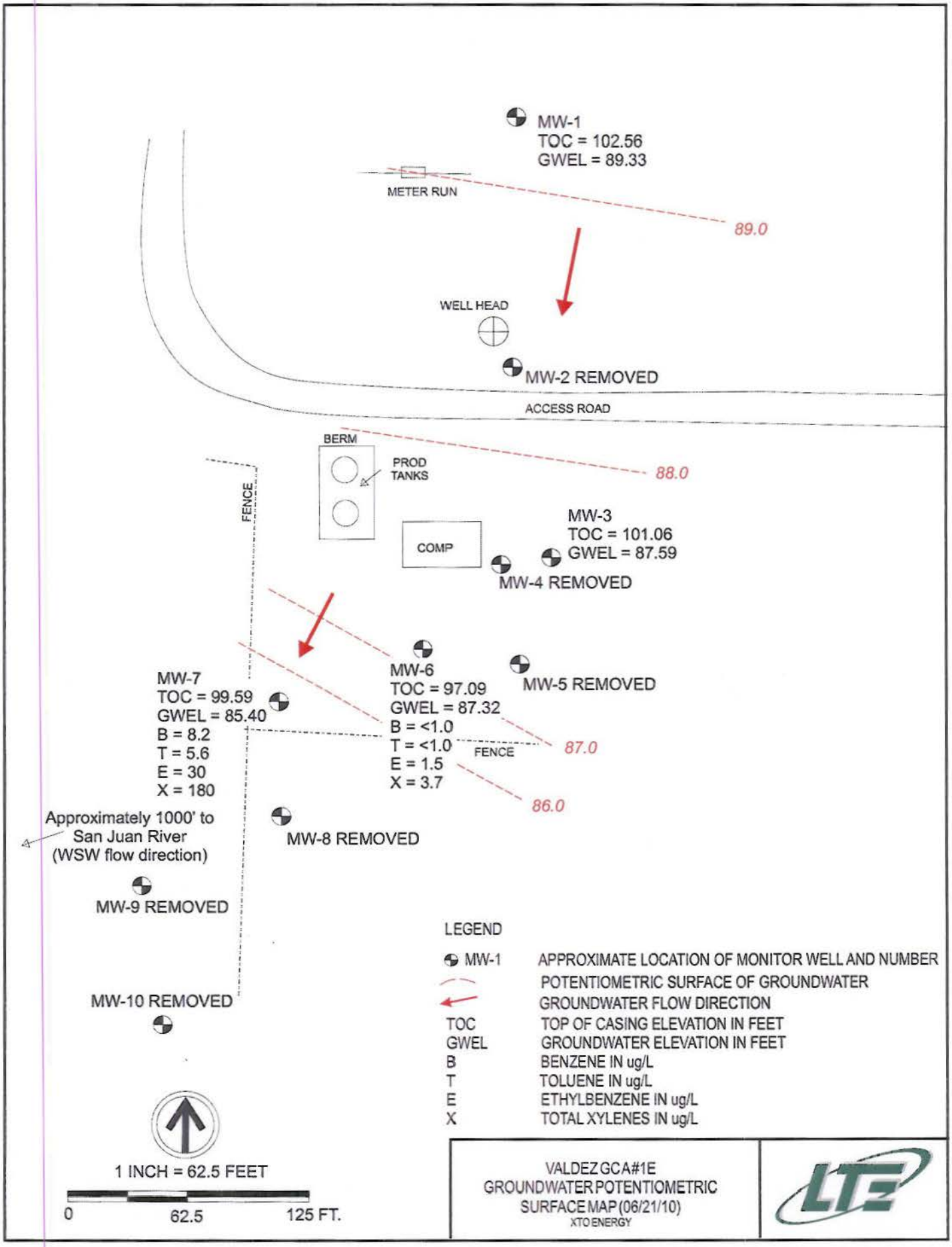
TABLE 4

GROUNDWATER RESULTS
VALDEZ A #1E
XTO ENERGY, INC.

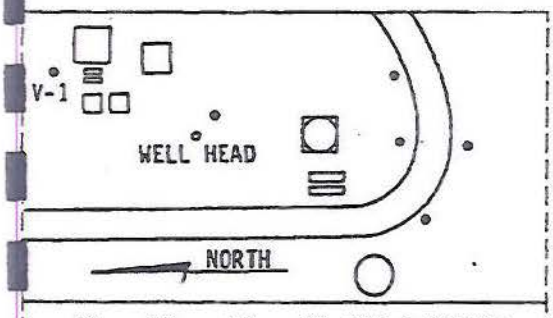
Well ID	Date	Benzene (ug/l)	Toluene (ug/l)	Ethylbenzene (ug/l)	Total Xylenes (ug/l)
NMWQCC Groundwater Standard		10	750	750	620
MW-7	9/23/1994	**627**	**1,805**	189	**1,755**
MW-7	12/9/1994	**707**	**1,220**	161	**1,342**
MW-7	1/10/1995	**298**	394	54.8	365.4
MW-7	2/9/1995	**465**	624	92	582
MW-7	3/13/1995	**997.8**	**813.2**	168.4	**1,015.9**
MW-7	4/10/1995	**648**	456	104	**623**
MW-7	6/19/1995	**366.7**	414.7	66.1	602.2
MW-7	8/7/1995	**869**	**1,000**	171	**1,431**
MW-7	9/12/1995	**1725**	**846**	141	**1,035**
MW-7	10/10/1995	**143**	**689**	93.6	**925**
MW-7	11/15/1995	**710**	**1,000**	178	**1,642**
MW-7	12/7/1995	**1,050**	**606**	167	**996**
MW-7	3/7/1996	**101**	10.3	8.69	42.27
MW-7	6/18/1996	**128**	65.5	11.5	175.3
MW-7	6/17/1997	**360**	16.3	16.5	127.5
MW-7	6/26/2000	**220**	63	94	**4,080**
MW-7	5/15/2001	**190**	ND	76	**880**
MW-7	6/25/2002	**92**	14	32	264
MW-7	5/20/2003	**99**	ND	40	230
MW-7	6/19/2004	**170**	4.1	120	**780**
MW-7	6/29/2005	**100**	14	68	470
MW-7	6/28/2006	**48**	14	69	580
MW-7	6/15/2007	**86**	ND	67	97
MW-7	12/20/2007	**310**	ND	220	**1,300**
MW-7	6/3/2008	**34**	ND	63	490
MW-7	12/4/2008	**100**	31	430	**3,600**
MW-7	6/10/2009	**43**	25	160	**1,100**
MW-7	12/7/2009	**62**	33	320	**2,400**
MW-7	6/21/2010	8.2	5.6	30	180
MW-7	9/15/2010	**36**	< 100	78	**660**
MW-7	12/13/2010	**22**	<5.0	60	420

Notes:
ND - not detected above the laboratory detection limit
ug/l - micrograms per liter
< - indicates the result was less than the laboratory detection limit
NMWQCC - New Mexico Water Quality Control Commission
BOLD values exceed the NMWQCC Standard




MW-1
TOC = 102.56
GWEL = 89.33
METER RUN
89.0
WELL HEAD
MW-2 REMOVED
ACCESS ROAD
BERM
PROD TANKS
88.0
FENCE
COMP
MW-3
TOC = 101.06
GWEL = 87.59
MW-4 REMOVED
MW-6
TOC = 97.09
GWEL = 87.32
B = <1.0
T = <1.0
E = 1.5
X = 3.7
MW-5 REMOVED
MW-7
TOC = 99.59
GWEL = 85.40
B = 8.2
T = 5.6
E = 30
X = 180
FENCE
87.0
86.0
Approximately 1000' to San Juan River (WSW flow direction)
MW-8 REMOVED
MW-9 REMOVED
MW-10 REMOVED
LEGEND
MW-1 APPROXIMATE LOCATION OF MONITOR WELL AND NUMBER
POTENTIOMETRIC SURFACE OF GROUNDWATER
GROUNDWATER FLOW DIRECTION
TOC TOP OF CASING ELEVATION IN FEET
GWEL GROUNDWATER ELEVATION IN FEET
B BENZENE IN ug/L
T TOLUENE IN ug/L
E ETHYLBENZENE IN ug/L
X TOTAL XYLENES IN ug/L
1 INCH = 62.5 FEET
0
62.5
125 FT.
VALDEZ GCA#1E
GROUNDWATER POTENTIOMETRIC SURFACE MAP (06/21/10)
XTO ENERGY
LTE

BOREHOLE LOG (SOIL)



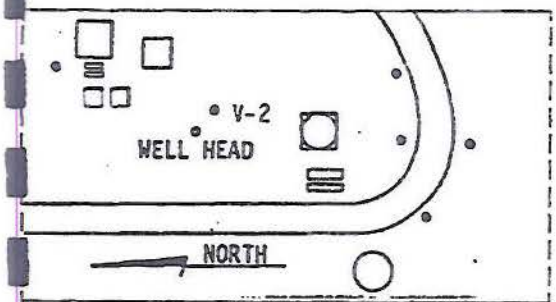
___1/4 ___1/4 ___1/4 ___1/4 S 24 T 29N R 11W

SITE ID: Valdez LOCATION ID: V-1
SITE COORDINATES (ft.): 2390 FNL, 2500 FEL
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
STATE: New Mexico COUNTY: San Juan
DRILLING METHOD: HSA
DRILLING CONTR.: Western Technologies
DATE STARTED: 7/01/88 DATE COMPLETED: 7/01/88
FIELD REP.: W.S. Dubyk, P. Linley
COMMENTS: _____

LOCATION DESCRIPTION: _____

DEPTH	LITH.	REC	SAM	RUN #	RUN FROM	RUN TO	SAMPLE REC.	SAMPLE TYPE	USCS	VISUAL CLASSIFICATION
0									CH	0'-13' Clay - moderate brown 5 YR 3/4, plastic, damp, no odor.
5									MH	13'-17' Silt - dark yellowish brown, 10 YR 4/2, with clay and minor sand grains.
10									GC	17'-20.5' Gravel - with clay and sand, poor cutting return. Water noted at 17'.
15										
20										
	T.D. 20.17'									
25										
30										

BOREHOLE LOG (SOIL)



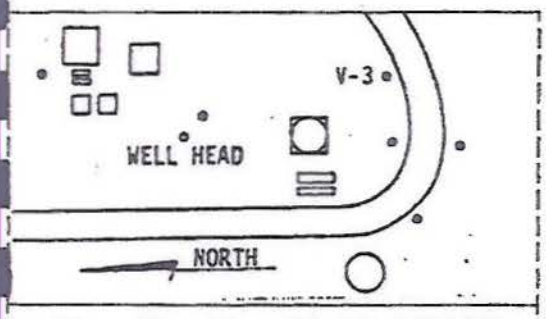
___1/4 ___1/4 ___1/4 ___1/4 S 24 T 29N R 11W

SITE ID: Valdez LOCATION ID: V-2
SITE COORDINATES (ft.): 2390 FNL, 2500 FEL
N ____ E ____
GROUND ELEVATION (ft. MSL): ____
STATE: New Mexico COUNTY: San Juan
DRILLING METHOD: HSA
DRILLING CONTR.: Western Technologies
DATE STARTED: 7/01/88 DATE COMPLETED: 7/01/88
FIELD REP.: W.S. Dubyk, P. Linley
COMMENTS: Cored.

LOCATION DESCRIPTION: ____

DEPTH	LITH.	REC	SAH	RUN #	RUN FROM	RUN TO	SAMPLE REC.	SAMPLE TYPE	USCS	VISUAL CLASSIFICATION
0				1	0'	3'	100%		CH	0'-3' Clay - silty, damp, pale brown 5 YR 5/2 plastic, no odor, fill material.
5				2	3'	8'	60%		SC	3'-8' Sand and Silt - clayey, poorly sorted, moderately rounded, very fine to coarse, yellowish gray damp, probably fill. Grayish Orange Pink 5 Y 7/2.
10				3	8'	13.5'	100%		CH	8'-13.5' Clay - slightly silty, plastic damp, no odor, caliche streaks in fracs. Dark yellowish brown 10 YR 4/2.
15				4	13.5'	18.5'	75%		CH	13.5'-18.5' Clay - as above. Gravel at 18.4', to 2" diameter, slightly rounded, in clay and sand matrix. No coring after 18.5'.
20	T.D. 21.5'			5	18.5'	21.5'	0%		GC	18.5'-21.5' Gravel - no recovery, very slow drilling.
25										
30										

BOREHOLE LOG (SOIL)



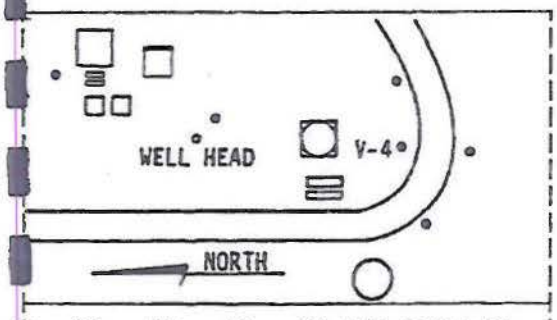
___1/4 ___1/4 ___1/4 ___1/4 S 24 T 29N R 11W

SITE ID: Valdez LOCATION ID: V-3
SITE COORDINATES (ft.): 2390 FNL, 2500 FEL
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
STATE: New Mexico COUNTY: San Juan
DRILLING METHOD: HSA
DRILLING CONTR.: Western Technologies
DATE STARTED: 6/30/88 DATE COMPLETED: 6/30/88
FIELD REP.: W.S. Dubyk, P. Linley
COMMENTS: _____

LOCATION DESCRIPTION: _____

DEPTH	LITH.	REC	SAM	RUN #	RUN FROM	RUN TO	SAMPLE REC.	SAMPLE TYPE	USCS	VISUAL CLASSIFICATION
0									ML	0'-8' Fill - very fine grained silty clay, no odor, light brown 5 YR 6/4.
5									CH	8'-18' Clay - silty, minor rounded quartz grains; plastic, cohesive, carbonate, damp, no odor caliche in fracs. Water at 18' medium brown, 5 YR 4/4.
10										
15									GC	18'-23' Gravel - no sample return difficult drilling.
20	TD 22.94'									
25										
30										

BOREHOLE LOG (SOIL)



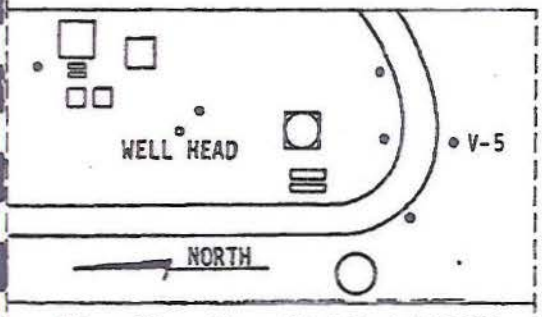
___1/4 ___1/4 ___1/4 ___1/4 S 24 T 29N R 11W

SITE ID: Valdez LOCATION ID: V-4
SITE COORDINATES (ft.): 2390 FNL, 2500 FEL
N ____ E ____
GROUND ELEVATION (ft. MSL): ____
STATE: New Mexico COUNTY: San Juan
DRILLING METHOD: HSA
DRILLING CONTR.: Western Technologies
DATE STARTED: 7/1/88 DATE COMPLETED: 7/1/88
FIELD REP.: W.S. Dubyk, P. Linley
COMMENTS: Cored with continuous sampler

LOCATION DESCRIPTION: ____

DEPTH	LITH.	REC	SAM	RUN #	RUN FROM	RUN TO	SAMPLE REC.	SAMPLE TYPE	USCS	VISUAL CLASSIFICATION
0				1	2'	7'	100%			0'-7' Fill - Clayey sand, no odor.
									CH	7'-13' Clay - Dusky, yellowish brown 10 YR 2/2, laminated, damp, plastic. Hydrocarbon string at 11', odor noted.
5				2	7'	12'	100%			
									CH	13'-17.5' Clay - as above, grades downward into sandy clay, medium yellowish brown, 10 YR 5/4.
10				3	12'	14'	50%			17.5'-18' Sand - with minor gravel moderately yellowish
									GC	brown 10 YR 5/4 moderately sorted, fine to coarse grained. Core to 18'.
15				4	14'	18'	100%		GC	18' Gravel - no sample, difficult drilling.
20										
	T.D. 23'									
25										
30										

BOREHOLE LOG (SOIL)



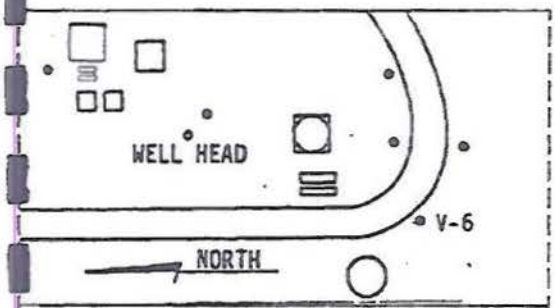
___1/4 ___1/4 ___1/4 ___1/4 S 24 T 29N R 11W

SITE ID: Valdez LOCATION ID: V-5
SITE COORDINATES (ft.): 2390 FNL, 2500 FEL
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
STATE: New Mexico COUNTY: San Juan
DRILLING METHOD: HSA
DRILLING CONTR.: Western Technologies
DATE STARTED: 6/30/88 DATE COMPLETED: 6/30/88
FIELD REP.: W.S. Dubyk, P. Linley
COMMENTS: _____

LOCATION DESCRIPTION: _____

DEPTH	LITH.	REC	SAM	RUN #	RUN FROM	RUN TO	SAMPLE REC.	SAMPLE TYPE	USCS	VISUAL CLASSIFICATION
0										0'-8' Fill - Silty clay, light brown 5 YR 5/6, no odor.
									CH	9'-13' Clay - Silty, laminated, dusky brown 5 YR 2/2 plastic, damp, no odor.
5										
									MH	13'-17.5' Silt - with clay and ~20% medium to coarse sand grains. Laminated, dusky brown 5 YR 2/2 damp, no odor, plastic.
10										
									GC	17'-23' Gravel - no sample return. H_2O at 17' noted at top of hole. Difficult drilling at 18'.
15										
20										
	T.D. 23'									
25										
30										

BOREHOLE LOG (SOIL)



1/4 1/4 1/4 1/4 S 24 T 29N R 11W

SITE ID: Valdez LOCATION ID: V-6
SITE COORDINATES (ft.): 2390 FNL, 2500 FEL
N E
GROUND ELEVATION (ft. MSL):
STATE: New Mexico COUNTY: San Juan
DRILLING METHOD: HSA
DRILLING CONTR.: Western Technologies
DATE STARTED: 6/29/88 DATE COMPLETED: 6/30/88
FIELD REP.: W.S. Dubyk, P. Linley
COMMENTS:

LOCATION DESCRIPTION:

DEPTH	LITH.	REC	SAN	RUN #	RUN FROM	RUN TO	SAMPLE REC.	SAMPLE TYPE	USCS	VISUAL CLASSIFICATION
0										0'-9' Fill - Silty clay, pale brown 5 YR 5/2, very fine grained.
									CH	9'-17' Clay - Silty, carbonate, lined fracs. medium brown 5 YR 4/4, odor at 12'.
5										
									GC	17'-18' Gravel - cobbles, difficult drilling.
10										
									CH	18'-20' Clay - grayish brown 5 YR 3/2; odor noted; plastic, wet.
15										
									GC	20'-20.5' Cobbles - gravel, no sample return. Very difficult drilling (refusal).
20	TD 20.81'									
25										
30										

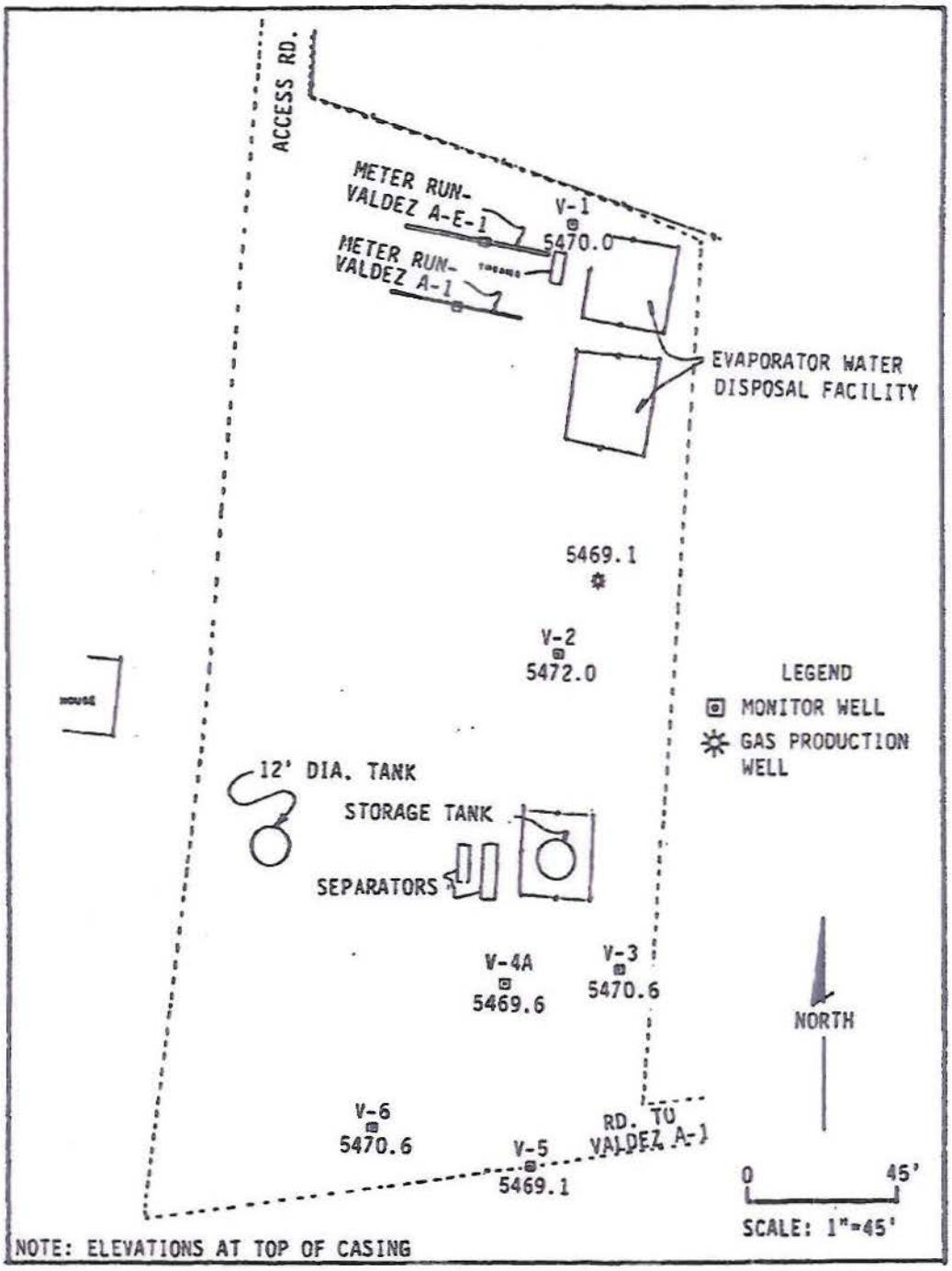


FIGURE 4-1

SITE MAP OF MONITOR WELL LOCATIONS AT VALDEZ A-1-E WELL SITE

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

June 6, 1988

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Martin W. Buys
Tenneco Oil Company
P. O. Box 3249
Englewood, Colorado 80155

RE: Ground Water Contamination Sites: Tenneco Valdez A1E
Tenneco Riddle F LS 3A

Dear Mr. Buys:

On September 17, 1987, the Oil Conservation Division (OCD) personnel augered four 10½'-18' holes at the Valdez A1E well site and discovered ground water contamination in the vicinity of the produced water tank and the separator. You have been sent laboratory analyses and a field map of the well site.

On October 27, 1987, the OCD augered five 13'-16' holes at the Riddle F LS #3A well site and discovered ground water contamination in the vicinity of the dehydrator and tank drain pit. Copies of the laboratory analysis of fluids found in Auger Hole #2 and a field map locating the auger holes in relation to the well site are enclosed.

Because ground water contamination has been found at these well sites, Tenneco is required to install a series of monitor wells at the sites to define the contamination plume and to monitor contaminant concentration levels. At this time remedial action is not being required. The need for such action will be reevaluated after review of information and data collected at these sites.

OCD staff will be available the week of June 27 to supervise installation of the monitor wells and to split samples of fluids found in the wells. Monitor well installation requirements have been discussed with you by phone.

If you have any questions, please contact me at (505) 827-5812 or Jami Bailey at (505) 827-5884.

Sincerely,

David G. Boyer
Environmental Bureau Chief

DGB:JB:sl

Enclosure

cc: OCD - Aztec

NEW MEXICO ENERGY, MINERALS
& NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
2040 South Pacheco Street
Santa Fe, New Mexico 87505
(505) 827-7131

March 12, 1996

CERTIFIED MAIL
RETURN RECEIPT NO. Z-765-962-549

Mr. B.D. Shaw
Amoco Production Company
200 Amoco Court
Farmington, New Mexico 87401

RE: GROUND WATER CONTAMINATION
VALDEZ A#1E

Dear Mr. Shaw:

The New Mexico Oil Conservation Division (OCD) has completed a review of Amoco Production Company's (Amoco) JANUARY 8, 1996 "REDUCTION OF GROUNDWATER MONITORING REQUIREMENTS FOR AMOCO WELL SITE VALDEZ A-1-E". This document contains Amoco's request to cease ground water monitoring related to contamination from a former unlined production pit at the Valdez A#1E well site.

According to New Mexico Water Quality Control Commission (WQCC) regulations, a responsible party is required to remediate and monitor contaminated ground water until WQCC standards have been achieved. While the data shows that the contaminated ground water plume has decreased in size, ground water within the plume is still approximately 65 times WQCC ground water standards. Since WQCC standards have not been met, the OCD cannot approve a proposal to cease remedial actions and ground water monitoring. Therefore, the above referenced request is denied.

The OCD would like to point out to Amoco that according to WQCC regulation 4103.F. and 4106 Amoco can voluntarily submit an "Abatement Plan" which could petition for approval of alternate abatement standards. The WQCC regulations are enclosed for your reference.

If you have any questions, please call me at (505) 827-7154.

Sincerely,

William C. Olson
Hydrogeologist
Environmental Bureau

cc: OCD Aztec District Office

Southern
Rockies
Business
Unit

January 8, 1996

San Juan Operations Center

Mr. William Olsen
New Mexico Oil Conservation Division
P.O. Box 2088
Santa Fe, NM 87504

RE: REDUCTION OF GROUNDWATER MONITORING REQUIREMENTS FOR AMOCO WELL SITE VALDEZ A-1-E

Dear Bill:

I have asked Geoscience Consultants, Ltd. (GCL) to evaluate the groundwater chemistry of the above-referenced site. The data, which have been collected from 1988 to 1996, are presented in the attached table, figure, and graphs. Amoco believes the data support our request to cease routine groundwater monitoring at this site. The justification and contingency plan presented below demonstrate that the plume is stable, natural biodegradation is occurring at this site, threats to human health and the environment do not exist, and installation of a remedy at this site would best be accomplished after plugging and abandonment of the on-site natural gas production well.

Trends in BTEX Concentrations

The attached concentration/time plots demonstrate the benzene, toluene, ethylbenzene, and xylenes (BTEX) concentrations outside the center of mass of the plume have remained low and below Water Quality Control Commission (WQCC) standards since 1992. Concentrations in wells inside the center of mass of the plume (MW-6, MW-7, MW-8, and MW-10) are remaining fairly constant or, in the case of well MW-10, have decreased (if the initial 1988 analysis is valid). Some "spikes" in BTEX concentrations may be due to sampling or analytical error.

No Plume Migration

The attached plume map clearly shows the plume has not migrated over time and, in fact, the plume has actually retracted slightly towards the center of mass. It is our understanding that no new water supply wells have been installed near the site and therefore the plume should not migrate from its present position. It appears to be essentially in a steady state, if not slowly retracting.

A solute transport model simulation conducted by RESPEC in 1992 is superimposed on the plume map. This model predicted the extent of contamination if retardation factors, such as bioremediation, did not occur. Clearly, plume conditions predicted by the model were never borne out by groundwater quality analyses conducted since 1992. Natural bioremediation of BTEX constituents is a well-documented process in the literature and is probably responsible for the static

plume observed at this site. Irrigation return water provides nutrients and oxygen to the system, and the petroleum hydrocarbons sorbed to the subsurface soils and dissolved in groundwater provide a carbon source. The rate of petroleum hydrocarbon transport from the source soils is completely offset by the metabolism of these hydrocarbons by indigenous microbes. Amoco strongly believes this process is operating effectively at this site, based upon the eight years of groundwater data.

Human Health and Environment Adequately Protected

The land use in the area is agricultural/pastureland, and we believe it will likely remain so for the lifetime of the gas production well. Provided current conditions do not change, the plume will remain stable or slowly degrade, and not impact a human or ecological receptor. If conditions change, Amoco will implement the contingency plan outlined below.

- If a domestic water well is installed within 200 feet (the length of the plume) of the edge of the plume, or if an irrigation well is installed within 400 feet of the edge of the plume, Amoco will commence semi-annual monitoring of MW-10 and any other monitoring well that lies between the plume's center of mass and the production well.

- If a spill of natural gas liquids occurs, Amoco will commence quarterly monitoring of MW-10 and the monitoring well nearest the spill location.

- If groundwater pumping or spillage causes plume migration, as demonstrated by monitoring, Amoco will commence active remediation of groundwater through a soil venting program and, if required, an air sparging program to arrest the plume and prevent more extensive degradation of groundwater quality.

- One year prior to plugging and abandonment of the natural gas production well, Amoco will collect one year of quarterly monitoring data from all monitoring wells. If contamination remains to the extent that WQCC standards would be exceeded at a place of reasonably foreseeable future use, as determined by the NMOCD, Amoco will install an appropriate groundwater remedy or institutional controls to ensure that all regulatory requirements are met.

Based upon the stability of the plume and the lack of risk it poses to human health and the environment, Amoco believes that continuation of groundwater monitoring is unnecessary. Amoco will commit to remediation of the plume or institutional controls to fully protect usable groundwater (1) if and when site conditions change, (2) the well is plugged, or (3) Amoco or any subsequent operator loses control of the site. Based on the above information, we urge you to approve this request to cease groundwater monitoring at this site.

If you have any questions on the information I have provided you, please feel free to give me a call.

Sincerely,
Amoco

Buddy Shaw

J:\AMOCO.LTR

cc: Roger Anderson, NMOCD
Randall Hicks, GCL

HALL
ENVIRONMENTAL
ANALYSIS
LABORATORY

COVER LETTER

Tuesday, July 06, 2010

Kim Champlin
XTO Energy
382 County Road 3100
Aztec, NM 87410

TEL: (505) 333-3100
FAX (505) 333-3280

RE: XTO Ground Water

Order No.: 1006791

Dear Kim Champlin:

Hall Environmental Analysis Laboratory, Inc. received 10 sample(s) on 6/23/2010 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. Below is a list of our accreditations. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites.

Reporting limits are determined by EPA methodology.

Please do not hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

Andy Freeman, Laboratory Manager

NM Lab # NM9425 NM0901
AZ license # AZ0682
ORELAP Lab # NM100001
Texas Lab# T104704424-08-TX

Hall Environmental Analysis Laboratory, Inc.

Date: *06-Jul-10*

CLIENT: XTO Energy
Project: XTO Ground Water
Lab Order: 1006791

Lab ID: 1006791-09 **Collection Date:** 6/21/2010 11:22:00 AM
Client Sample ID: Valdez A #1E MW-7 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	8.2	1.0		µg/L	1	7/2/2010 6:31:26 PM
Toluene	5.6	1.0		µg/L	1	7/2/2010 6:31:26 PM
Ethylbenzene	30	1.0		µg/L	1	7/2/2010 6:31:26 PM
Xylenes, Total	180	2.0		µg/L	1	7/2/2010 6:31:26 PM
Surr: 4-Bromofluorobenzene	119	65.9-130		%REC	1	7/2/2010 6:31:26 PM

Lab ID: 1006791-10 **Collection Date:** 6/21/2010 12:03:00 PM
Client Sample ID: Valdez A #1E MW-6 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	1.0		µg/L	1	7/1/2010 5:28:35 AM
Toluene	ND	1.0		µg/L	1	7/1/2010 5:28:35 AM
Ethylbenzene	1.5	1.0		µg/L	1	7/1/2010 5:28:35 AM
Xylenes, Total	3.7	2.0		µg/L	1	7/1/2010 5:28:35 AM
Surr: 4-Bromofluorobenzene	92.3	65.9-130		%REC	1	7/1/2010 5:28:35 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
NC	Non-Chlorinated	ND	Not Detected at the Reporting Limit
PQL	Practical Quantitation Limit	S	Spike recovery outside accepted recovery limits

QA/QC SUMMARY REPORT

Client: XTO Energy
Project: XTO Ground Water **Work Order:** 1006791

Analyte	Result	Units	PQL	SPK Va	SPK ref	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Method: EPA Method 8021B: Volatiles											
Sample ID: 1006791-01A MSD		*MSD*				Batch ID:	**R39586**	Analysis Date:		6/30/2010 6:52:51 PM	
Benzene	19.95	µg/L	1.0	20	0	99.8	85.9	113	2.28	27	
Toluene	19.54	µg/L	1.0	20	0.144	97.0	86.4	113	2.69	19	
Ethylbenzene	18.97	µg/L	1.0	20	0.184	93.9	83.5	118	3.03	10	
Xylenes, Total	58.62	µg/L	2.0	60	0	97.7	83.4	122	1.95	13	
Sample ID: 5ML RB		*MBLK*				Batch ID:	**R39586**	Analysis Date:		6/30/2010 9:12:34 AM	
Benzene	ND	µg/L	1.0								
Toluene	ND	µg/L	1.0								
Ethylbenzene	ND	µg/L	1.0								
Xylenes, Total	ND	µg/L	2.0								
Sample ID: 100NG BTEX CCV		*LCS*				Batch ID:	**R39586**	Analysis Date:		6/30/2010 11:46:22 AM	
Benzene	21.46	µg/L	1.0	20	0	107	87.9	121			
Toluene	20.86	µg/L	1.0	20	0	104	83	124			
Ethylbenzene	19.77	µg/L	1.0	20	0.156	98.1	81.7	122			
Xylenes, Total	60.70	µg/L	2.0	60	0	101	85.6	121			
Sample ID: 1006791-01A MS		*MS*				Batch ID:	**R39586**	Analysis Date:		6/30/2010 6:22:36 PM	
Benzene	20.41	µg/L	1.0	20	0	102	85.9	113			
Toluene	20.08	µg/L	1.0	20	0.144	99.7	86.4	113			
Ethylbenzene	19.56	µg/L	1.0	20	0.184	96.9	83.5	118			
Xylenes, Total	59.77	µg/L	2.0	60	0	99.6	83.4	122			

Qualifiers:

E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	NC	Non-Chlorinated
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Sample Receipt Checklist

Client Name **XTO ENERGY** Date Received: **6/23/2010**

Work Order Number **1006791** Received by: **ARS**

Checklist completed by: _____ 6/23/10 Sample ID labels checked by: TS

Signature Date Initials

Matrix: Carrier name: ~~Client drop-off~~ greyhound

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐	
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐	Not Shipped ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	N/A ☑	
Chain of custody present?	Yes ☑	No ☐		
Chain of custody signed when relinquished and received?	Yes ☑	No ☐		
Chain of custody agrees with sample labels?	Yes ☑	No ☐		
Samples in proper container/bottle?	Yes ☑	No ☐		
Sample containers intact?	Yes ☑	No ☐		
Sufficient sample volume for indicated test?	Yes ☑	No ☐		
All samples received within holding time?	Yes ☑	No ☐		Number of preserved bottles checked for pH:
Water - VOA vials have zero headspace? No VOA vials submitted ☐		Yes ☑	No ☐	
Water - Preservation labels on bottle and cap match?	Yes ☐	No ☐	N/A ☑	
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑	*<2 >12 unless noted below.*
Container/Temp Blank temperature?	**4.8°**	*<6° C Acceptable* If given sufficient time to cool.		

COMMENTS:

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

Chain-of-Custody Record

Client: XTO Energy
Kim Champlin
Mailing Address: 382 CR 3100
Aztec NM 87410
Phone #: 505-333-3207
email or Fax#:
QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other
☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush
Project Name: XTO Ground Water
Project #:
Project Manager: Ashley Ager
Sampler: Devin Hanrmann
On Ice: ☒ Yes ☐ No
Sample Temperature: 4.8

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1001791	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (Method 418.1)	EDB (Method 504.1)	8310 (PNA or PAH)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	BTEX 8021				Air Bubbles (Y or N)
6/21/10	1313	Aq	Bruington GC #1, MW-1	3x 40mL	$HgCl_2$	1												X				N
6/21/10	1353	Aq	Bruington GC #1, MW-2	3x 40mL	$HgCl_2$	2												X				W
6/21/10	1508	Aq	Bruington GC #1 MW-3	3x 40mL	$HgCl_2$	3												X				N
6/21/10	1430	Aq	Bruington GC #1 MW-4	3x 40mL	$HgCl_2$	4												X				N
6/21/10	1541	Aq	Bruington GC #1 MW-5	3x 40mL	$HgCl_2$	5												X				N
6/21/10	1604	Aq	Bruington GC #1 MW-6	3x 40mL	$HgCl_2$	6												X				N
6/21/10	1630	Aq	Bruington GC #1 MW-7	3x 40ml	$HgCl_2$	7												X				N
6/21/10	1655	Aq	Bruington GC #1 MW-8	3x 40ml	$HgCl_2$	8												X				N
6/21/10	1122	Aq	Valdez A #1E MW-7	3x 40ml	$HgCl_2$	9												X				N
6/21/10	1203	Aq	Valdez A #1E MW-6	3x 40ml	$HgCl_2$	10												X				N

Date	Time	Relinquished by:	Received by:	Date	Time
6/22/10	2200		Ashley M Gallegos	6-23-10	10:05
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Please forward results to aager@itenv.com

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

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Tax I.D. 62-0814289

Est. 1970

Julie Linn
XTO Energy - San Juan Division
382 Road 3100
Aztec, NM 87410

Report Summary

Wednesday September 22, 2010

Report Number: L479176
Samples Received: 09/16/10
Client Project: XTO1002

Description: XTO Groundwater Valdez

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 - I-2327, CT - PH-0197, FL - E87487
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704, ND - R-140
NJ - TN002,NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032008A,
TX - T104704245, OK-9915

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.

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REPORT OF ANALYSIS

Julie Linn
XTO Energy - San Juan Division
382 Road 3100
Aztec, NM 87410

September 22, 2010

ESC Sample # : L479176-01

Site ID :

Project # : XTO1002

Date Received : September 16, 2010
Description : XTO Groundwater Valdez

Sample ID : MW-6

Collected By :
Collection Date : 09/15/10 11:20

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	BDL	0.00050	mg/l	8021B	09/21/10	1
Toluene	BDL	0.0050	mg/l	8021B	09/21/10	1
Ethylbenzene	BDL	0.00050	mg/l	8021B	09/21/10	1
Total Xylene	0.0016	0.0015	mg/l	8021B	09/21/10	1
Surrogate Recovery(%)						
a,a,a-Trifluorotoluene(PID)	101.		% Rec.	8021B	09/21/10	1

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

Reported: 09/22/10 09:05 Printed: 09/22/10 09:26

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REPORT OF ANALYSIS

Julie Linn
XTO Energy - San Juan Division
382 Road 3100
Aztec, NM 87410

September 22, 2010

ESC Sample # : L479176-02

Site ID :

Project # : XTO1002

Date Received : September 16, 2010
Description : XTO Groundwater Valdez

Sample ID : MW-7

Collected By : Brooke Herb
Collection Date : 09/15/10 10:45

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	0.036	0.010	mg/l	8021B	09/17/10	20
Toluene	BDL	0.10	mg/l	8021B	09/17/10	20
Ethylbenzene	0.078	0.010	mg/l	8021B	09/17/10	20
Total Xylene	0.66	0.030	mg/l	8021B	09/17/10	20
Surrogate Recovery(%)						
a,a,a-Trifluorotoluene(PID)	94.3		% Rec.	8021B	09/17/10	20

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

.
Reported: 09/22/10 09:05 Printed: 09/22/10 09:26

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REPORT OF ANALYSIS

Julie Linn
XTO Energy - San Juan Division
382 Road 3100
Aztec, NM 87410

September 22, 2010

ESC Sample # : L479176-03

Site ID :

Project # : XTO1002

Date Received : September 16, 2010
Description : XTO Groundwater Valdez

Sample ID : TRIPBLANK

Collected By : Brooke Herb
Collection Date : 09/15/10 00:00

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	BDL	0.00050	mg/l	8021B	09/17/10	1
Toluene	BDL	0.0050	mg/l	8021B	09/17/10	1
Ethylbenzene	BDL	0.00050	mg/l	8021B	09/17/10	1
Total Xylene	BDL	0.0015	mg/l	8021B	09/17/10	1
Surrogate Recovery(%)						
a,a,a-Trifluorotoluene(PID)	95.1		% Rec.	8021B	09/17/10	1

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

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Reported: 09/22/10 09:05 Printed: 09/22/10 09:26

Summary of Remarks For Samples Printed
09/22/10 at 09:26:13

TSR Signing Reports: 288
R5 - Desired TAT

report J's if above limits-B 0.01, T 0.75, E 0.75, X 0.62 mg/l

Sample: L479176-01 Account: XTORNM Received: 09/16/10 09:00 Due Date: 09/23/10 00:00 RPT Date: 09/22/10 09:05

Sample: L479176-02 Account: XTORNM Received: 09/16/10 09:00 Due Date: 09/23/10 00:00 RPT Date: 09/22/10 09:05

Sample: L479176-03 Account: XTORNM Received: 09/16/10 09:00 Due Date: 09/23/10 00:00 RPT Date: 09/22/10 09:05

Company Name/Address	Alternate Billing	Analysis/Container/Preservative	Chain of Custody Page___of___
XTO Energy, Inc. **382 County Road 3100** **Aztec, NM 87410**	XTORNM031810S Report to: Julie Linn E-mail to: jlinn@ltenv.com	8021B- BTEX/ 40ml Clr/ No Pres	Prepared by F099 **ENVIRONMENTAL Science corp** 12065 Lebanon Road Mt. Juliet TN 37122 Phone (615)758-5858 Phone (800) 767-5859 FAX (615)758-5859

Project Description: **XTO Groundwater-Valdez** | City/State Collected: Rowland

PHONE: 505-333-3701 FAX:	Client Project No. XTO1002	Lab Project #
Collected by: Brooke Herb	Site/Facility ID#	P.O.#
Collected by(signature): [signature] Packed on Ice N___Y_X_	**Rush?** (Lab MUST be Notified) _____Next Day.......100% _____Two Day..........50% _____Three Day.........25%	Date Results Needed Email?__No_X_Yes FAX?___No___Yes

CoCode (lab use only)
XTORNM
Template/Prelogin
Shipped Via: Fed Ex

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No of Cntrs	8021B- BTEX/ 40ml Clr/ No Pres							Remarks/contaminant	Sample # (lab only)
MW-6	Grab	GW	N/A	9-15-10	11:20	2	✓								L479176-01
MW-7	↓	GW	N/A	9-15-10	10:45	3	✓								02
Trip Blank	↓	AQ	N/A	9-15-10		1	✓								03

*Matrix: SS-Soil/Solid GW-Groundwater WW-Wastewater DW-Drinking Water OT- Other______ pH_______ Temp_______

Remarks: Flow_______ Other_______

Relinquished by:(Signature)	Date:	Time:	Received by:(Signature)	Samples returned via: FedEx_X_ UPS__Other__		Condition (lab use only)
[signature]	9/ /10			434198101066		OK
Relinquisher by:(Signature) [signature]	Date: 9/15/10	Time: 14:30	Received by: (Signature)	Temp: 3.7°C	Bottles Received: Cov	60CST
Relinquisher by:(Signature)	Date:	Time:	Received for lab by: (Signature) [signature]	Date: 9/16/10	Time: ~~0830~~ 0900	pH Checked: NCF:

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James McDaniel
XTO Energy - San Juan Division
382 Road 3100
Aztec, NM 87410

Report Summary

Thursday December 16, 2010

Report Number: L493534
Samples Received: 12/14/10
Client Project: XTO1002

Description: XTO GW Monitoring

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 - I-2327, CT - PH-0197, FL - E87487
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704, ND - R-140
NJ - TN002,NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032008A,
TX - T104704245, OK-9915

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

James McDaniel
XTO Energy - San Juan Division
382 Road 3100
Aztec, NM 87410

December 16, 2010

ESC Sample # : L493534-01

Date Received : December 14, 2010
Description : XTO GW Monitoring

Site ID : VALDEZ A 1E

Sample ID : VALDEZ MW-7

Project # : XTO1002

Collected By : Julie Linn
Collection Date : 12/13/10 12:11

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	0.022	0.00050	mg/l	8021B	12/15/10	1
Toluene	BDL	0.0050	mg/l	8021B	12/15/10	1
Ethylbenzene	0.060	0.00050	mg/l	8021B	12/15/10	1
Total Xylene	0.42	0.0015	mg/l	8021B	12/15/10	1
Surrogate Recovery(%)						
a,a,a-Trifluorotoluene(PID)	95.3		% Rec.	8021B	12/15/10	1

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

.
Reported: 12/16/10 16:54 Printed: 12/16/10 16:54

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REPORT OF ANALYSIS

James McDaniel
XTO Energy - San Juan Division
382 Road 3100
Aztec, NM 87410

December 16, 2010

ESC Sample # : L493534-02

Date Received : December 14, 2010
Description : XTO GW Monitoring

Site ID : VALDEZ A 1E

Sample ID : VALDEZ MW-6

Project # : XTO1002

Collected By : Julie Linn
Collection Date : 12/13/10 12:49

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	0.00060	0.00050	mg/l	8021B	12/14/10	1
Toluene	BDL	0.0050	mg/l	8021B	12/14/10	1
Ethylbenzene	0.0011	0.00050	mg/l	8021B	12/14/10	1
Total Xylene	0.0031	0.0015	mg/l	8021B	12/14/10	1
Surrogate Recovery(%)						
a,a,a-Trifluorotoluene(PID)	99.6		% Rec.	8021B	12/14/10	1

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

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Reported: 12/16/10 16:54 Printed: 12/16/10 16:54

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REPORT OF ANALYSIS

James McDaniel
XTO Energy - San Juan Division
382 Road 3100
Aztec, NM 87410

December 16, 2010

ESC Sample # : L493534-03

Date Received : December 14, 2010
Description : XTO GW Monitoring

Site ID : VALDEZ A 1E

Sample ID : TRIP BLANK

Project # : XTO1002

Collected By : Julie Linn
Collection Date : 12/13/10 16:00

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	BDL	0.00050	mg/l	8021B	12/15/10	1
Toluene	BDL	0.0050	mg/l	8021B	12/15/10	1
Ethylbenzene	BDL	0.00050	mg/l	8021B	12/15/10	1
Total Xylene	BDL	0.0015	mg/l	8021B	12/15/10	1
Surrogate Recovery(%)						
a,a,a-Trifluorotoluene(PID)	101.		% Rec.	8021B	12/15/10	1

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

.
Reported: 12/16/10 16:54 Printed: 12/16/10 16:54

Summary of Remarks For Samples Printed
12/16/10 at 16:54:16

TSR Signing Reports: 288
R5 - Desired TAT

Charge $10.00 Shipping Fee on every project-DV 12-14-10

Sample: L493534-01 Account: XTORNM Received: 12/14/10 09:00 Due Date: 12/21/10 00:00 RPT Date: 12/16/10 16:54

Sample: L493534-02 Account: XTORNM Received: 12/14/10 09:00 Due Date: 12/21/10 00:00 RPT Date: 12/16/10 16:54

Sample: L493534-03 Account: XTORNM Received: 12/14/10 09:00 Due Date: 12/21/10 00:00 RPT Date: 12/16/10 16:54

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XTO Energy - San Juan Division
James McDaniel
382 Road 3100

Aztec, NM 87410

Quality Assurance Report
Level II

L493534

December 16, 2010

Laboratory Blank

Analyte	Result	Units	% Rec	Limit	Batch	Date Analyzed
Benzene	< .0005	mg/l			WG513175	12/14/10 16:45
Ethylbenzene	< .0005	mg/l			WG513175	12/14/10 16:45
Toluene	< .005	mg/l			WG513175	12/14/10 16:45
Total Xylene	< .0015	mg/l			WG513175	12/14/10 16:45
a,a,a-Trifluorotoluene(PID)		% Rec.	99.44	55-122	WG513175	12/14/10 16:45
Benzene	< .0005	mg/l			WG513363	12/15/10 11:50
Ethylbenzene	< .0005	mg/l			WG513363	12/15/10 11:50
Toluene	< .005	mg/l			WG513363	12/15/10 11:50
Total Xylene	< .0015	mg/l			WG513363	12/15/10 11:50
a,a,a-Trifluorotoluene(PID)		% Rec.	101.2	55-122	WG513363	12/15/10 11:50

Laboratory Control Sample

Analyte	Units	Known Val	Result	% Rec	Limit	Batch
Benzene	mg/l	.05	0.0459	91.9	79-114	WG513175
Ethylbenzene	mg/l	.05	0.0478	95.6	80-116	WG513175
Toluene	mg/l	.05	0.0464	92.9	79-112	WG513175
Total Xylene	mg/l	.15	0.144	96.0	84-118	WG513175
a,a,a-Trifluorotoluene(PID)				98.06	55-122	WG513175
Benzene	mg/l	.05	0.0443	88.6	79-114	WG513363
Ethylbenzene	mg/l	.05	0.0479	95.8	80-116	WG513363
Toluene	mg/l	.05	0.0467	93.3	79-112	WG513363
Total Xylene	mg/l	.15	0.148	98.9	84-118	WG513363
a,a,a-Trifluorotoluene(PID)				99.08	55-122	WG513363

Laboratory Control Sample Duplicate

Analyte	Units	Result	Ref	%Rec	Limit	RPD	Limit	Batch
Benzene	mg/l	0.0479	0.0459	96.0	79-114	4.23	20	WG513175
Ethylbenzene	mg/l	0.0504	0.0478	101.	80-116	5.27	20	WG513175
Toluene	mg/l	0.0474	0.0464	95.0	79-112	2.09	20	WG513175
Total Xylene	mg/l	0.152	0.144	101.	84-118	5.23	20	WG513175
a,a,a-Trifluorotoluene(PID)				99.78	55-122			WG513175
Benzene	mg/l	0.0457	0.0443	91.0	79-114	3.13	20	WG513363
Ethylbenzene	mg/l	0.0482	0.0479	96.0	80-116	0.650	20	WG513363
Toluene	mg/l	0.0477	0.0467	95.0	79-112	2.28	20	WG513363
Total Xylene	mg/l	0.148	0.148	99.0	84-118	0.200	20	WG513363
a,a,a-Trifluorotoluene(PID)				98.65	55-122			WG513363

Matrix Spike

Analyte	Units	MS Res	Ref Res	TV	% Rec	Limit	Ref Samp	Batch
Benzene	mg/l	0.0461	0	.05	92.3	35-147	L493210-18	WG513175
Ethylbenzene	mg/l	0.0478	0	.05	95.6	39-141	L493210-18	WG513175
Toluene	mg/l	0.0465	0	.05	93.0	35-148	L493210-18	WG513175
Total Xylene	mg/l	0.143	0	.15	95.2	33-151	L493210-18	WG513175
a,a,a-Trifluorotoluene(PID)					98.89	55-122		WG513175
Benzene	mg/l	0.0682	0.0220	.05	92.5	35-147	L493534-01	WG513363
Ethylbenzene	mg/l	0.111	0.0600	.05	103.	39-141	L493534-01	WG513363
Toluene	mg/l	0.0473	0	.05	94.7	35-148	L493534-01	WG513363
Total Xylene	mg/l	0.584	0.420	.15	109.	33-151	L493534-01	WG513363

* 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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XTO Energy - San Juan Division
James McDaniel
382 Road 3100

Aztec, NM 87410

Quality Assurance Report
Level II

L493534

December 16, 2010

Analyte	Units	Matrix Spike MSD	Duplicate Ref	%Rec	Limit	RPD	Limit	Ref Samp	Batch
a,a,a-Trifluorotoluene(PID)				93.81	55-122				

Analyte	Units	Matrix Spike MSD	Duplicate Ref	%Rec	Limit	RPD	Limit	Ref Samp	Batch
Benzene	mg/l	0.0467	0.0461	93.4	35-147	1.16	20	L493210-18	WG513175
Ethylbenzene	mg/l	0.0488	0.0478	97.7	39-141	2.15	20	L493210-18	WG513175
Toluene	mg/l	0.0472	0.0465	94.4	35-148	1.52	20	L493210-18	WG513175
Total Xylene	mg/l	0.146	0.143	97.6	33-151	2.55	20	L493210-18	WG513175
a,a,a-Trifluorotoluene(PID)				100.3	55-122				WG513175
Benzene	mg/l	0.0670	0.0682	90.1	35-147	1.77	20	L493534-01	WG513363
Ethylbenzene	mg/l	0.109	0.111	98.7	39-141	1.86	20	L493534-01	WG513363
Toluene	mg/l	0.0464	0.0473	92.8	35-148	2.01	20	L493534-01	WG513363
Total Xylene	mg/l	0.574	0.584	103.	33-151	1.65	20	L493534-01	WG513363
a,a,a-Trifluorotoluene(PID)				94.10	55-122				WG513363

Batch number /Run number / Sample number cross reference

WG513175: R1505050: L493534-02
WG513363: R1505529: L493534-01 03

* * 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.'

ESC
L·A·B S·C·I·E·N·C·E·S
YOUR LAB OF CHOICE

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

XTO Energy - San Juan Division
James McDaniel
382 Road 3100

Aztec, NM 87410

Quality Assurance Report
Level II

L493534

December 16, 2010

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.

Company Name/Address

XTO Energy, Inc.
382 County Road 3100
Aztec, NM 87410

Alternate Billing: XTORNM031810S

Report to: Julie Linn, LTE
E-mail to: jlinn@ltenv.com

Project Description: XTO GW Monitoring
City/State Collected: Farmington, NM

PHONE: 505-333-3701
FAX:

Client Project No.: XTO 1002
Lab Project #:
Site/Facility ID#: Valdez A#1E
P.O.#:

Collected by: Julie Linn
Collected by(signature):
Packed on Ice N__ Y X

Rush? (Lab MUST be Notified)
____Next Day.....100%
____Two Day.....50%
____Three Day.....25%

Date Results Needed:
Email? __No_X__Yes
FAX? ___No __Yes

No of Cntrs

Analysis/Container/Preservative: BTEX 8021

Chain of Custody
Page___of___

b033

Prepared by:
ENVIRONMENTAL Science corp
12065 Lebanon Road
Mt. Juliet TN 37122
Phone (615)758-5858
Phone (800) 767-5859
FAX (615)758-5859

CoCode (lab use only)
XTORNM
Template/Prelogin

Shipped Via: Fed Ex

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No of Cntrs	BTEX 8021	Remarks/contaminant	Sample # (lab only)
Valdez MW-7	Grab	GW	N/A	12/13/10	1211	2	X		L493534-01
Valdez MW-6	↓	GW	↓		1249	2	X		02
Trip Blank	↓	AQ	↓	↓	~~1600~~ 1600	1	X		03

*Matrix: SS-Soil/Solid GW-Groundwater WW-Wastewater DW-Drinking Water OT- Other

pH_____ Temp_____

Remarks: 4341 9813 3289

Flow_____ Other_____

Relinquisher by:(Signature)	Date:	Time:	Received by:(Signature)	Samples returned via: FedEx_X_ UPS__Other__	Condition (lab use only)
Julie Linn	12/13/10	1600			
Relinquisher by:(Signature	Date	Time:	Received by: (Signature)	Temp: 3.4° / Bottles Received: 4	
Relinquisher by:(Signature	Date:	Time:	Received for lab by: (Signature)	Date: 12/14/10 / Time: 0900	pH Checked: NCF: ✓

COMPLIANCE / ENGINEERING / REMEDIATION

LT Environmental, Inc.
2243 Main Ave, Ste 3
Durango, Colorado 81301
T 970.385.1096

WATER LEVEL DATA

Project Name: San Juan Basin Groundwater
Project Manager: Ashley Ager
Client: XTO Energy, Inc.
Site Name: Valdez GC A #1E

Date: 6/21/2010

Well	Time	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed	Comments
MW-1		-	13.23	-	-	
MW-3		-	13.47	-	-	
MW-6		-	9.77	-	-	Sample BTEX
MW-7		-	14.19	-	-	Sample BTEX, install ORC socks

Comments

Signature: Ashley L. Ager

Date: 6/25/2010

Project Name: Groundwater | Location: Valdez A #1E | Well No: MW-6
Client: XTO | Date: 6/21/2010 | Time: 11:40
Project Manager: Ashley Ager | Sampler's Name: Devin Hencmann

Measuring Point: TOC | Depth to Water: 9.77 ft | Depth to Product: NA ft
Well Diameter: 2" | Total Depth: 14.76 ft | Product Thickness: NA ft
Water Column Height: 4.99 ft

Sampling Method: ☐ Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Other
☑ Bottom Valve Bailer ☐ Double Check Valve Bailer

Criteria: ☑ 3 to 5 Casing Volumes of Water Removal ☑ Stabilization of Indicator Parameters ☑ Other bail dry

Water Volume in Well			
Gal/ft x ft of water	Gallons	Ounces	Volume to be removed
4.99 x 0.16	102.1 x 3	0.798 x 128	306.5 oz

Time (military)	pH (su)	EC (ms)	Temp (°C)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. oz	Comments/Flow Rate
11:45	7.33	4.95	15.4				34	slightly cloudy/silty
	7.39	4.85	14.6				68	light brown, no odor/sheen
	7.38	5.01	14.5				102	less cloudy, lower turbidity
	7.27	4.97	14.5				136	less cloudy, lower turbidity
	7.39	5.05	13.7				170	less cloudy, lower turbidity
	7.41	4.97	13.9				204	less cloudy, lower turbidity
	7.41	5.00	13.7				238	less cloudy, lower turbidity
	7.42	4.85	13.9				272	clear
	7.42	4.82	13.8				300	clear, bailed dry
Final:	7.38	4.94	14.2				300	bailed dry

COMMENTS: Well bailed dry during purging.

Instrumentation: ☑ pH Meter ☐ DO Monitor ☑ Conductivity Meter ☑ Temperature Meter ☐ Other

Water Disposal: On Site

Sample ID: MW-6 | Sample Time: 12:03

Analysis Requested: ☑ BTEX ☐ VOC ☐ Alkalinity ☐ TDS ☐ Cations ☐ Anions ☐ Nitrate ☐ Nitrite ☐ Metals
☐ Other

Trip Blank: TRIP BLANK | Duplicate Sample: NA

Project Name: Groundwater | Location: Valdez A #1E | Well No: MW-7
Client: XTO | Date: 6/21/2010 | Time: 11:00
Project Manager: Ashley Ager | Sampler's Name: Devin Hencmann

Measuring Point: TOC | Depth to Water: 14.19 ft | Depth to Product: NA ft
Well Diameter: 2" | Total Depth: 19.17 ft | Product Thickness: NA ft
Water Column Height: 4.98 ft

Sampling Method: ☐ Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Other
☑ Bottom Valve Bailer ☐ Double Check Valve Bailer

Criteria: ☑ 3 to 5 Casing Volumes of Water Removal ☑ Stabilization of Indicator Parameters ☑ Other bail dry

Water Volume in Well			
Gal/ft x ft of water	Gallons	Ounces	Volume to be removed
4.98 x 0.16	101.9 x 3	0.796 x 128	306.2 oz

Time (military)	pH (su)	EC (ms)	Temp (°C)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. oz	Comments/Flow Rate
11:10	7.18	2.75	14.7				34	Dark cloudy, sheen, H2O odor
	7.35	2.78	13.9				68	Dark cloudy, sheen, H2O odor
	7.37	2.73	13.5				102	Dark cloudy, sheen, H2O odor
	7.27	2.83	13.8				136	Dark cloudy, sheen, H2O odor
	7.30	2.83	13.9				170	Dark cloudy, sheen, H2O odor
	7.31	2.80	14.0				204	Dark cloudy, sheen, H2O odor
	7.26	2.85	13.9				238	Dark cloudy, sheen, H2O odor
	7.28	2.81	14.0				272	Dark cloudy, sheen, H2O odor
	7.34	2.80	13.9				295	Dark cloudy, sheen, H2O odor, bailed
Final:	7.30	2.80	14.0				306	

COMMENTS: Well bailed dry during purging. 6 ORC socks installed in MW-7

Instrumentation: ☑ pH Meter ☐ DO Monitor ☑ Conductivity Meter ☑ Temperature Meter ☐ Other

Water Disposal: On Site

Sample ID: MW-7 | Sample Time: 11:22

Analysis Requested: ☑ BTEX ☐ VOC ☐ Alkalinity ☐ TDS ☐ Cations ☐ Anions ☐ Nitrate ☐ Nitrite ☐ Metals
☐ Other

Trip Blank: TRIP BLANK | Duplicate Sample: NA

COMPLIANCE / ENGINEERING / REMEDIATION

LT Environmental, Inc.
2243 Main Avenue, Suite 3
Durango, Colorado 81301
T 970.385.1096 / F 970.385.1873

Project Name: Groundwater | Location: Valdez A #1E | Well No: MW-6
Client: XTO | Date: 9/15/2010 | Time: 10:55
Project Manager: Julie Linn, RG | Sampler's Name: Brooke Herb

Measuring Point: TOC | Depth to Water: 9.01 ft | Depth to Product: NA ft
Well Diameter: 2" | Total Depth: 14.75 ft | Product Thickness: NA ft
Water Column Height: 5.74 ft

Sampling Method: ☐ Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Other
☑ Bottom Valve Bailer ☐ Double Check Valve Bailer

Criteria: ☑ 3 to 5 Casing Volumes of Water Removal ☑ Stabilization of Indicator Parameters ☐ Other

Water Volume in Well			
Gal/ft x ft of water	Gallons	Ounces	Volume to be removed
5.74 x 0.16	.918 x 3	2.75 x 128	352.665 oz

Time (military)	pH (su)	EC (ms)	Temp (°C)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. oz	Comments/Flow Rate
10:59	7.12	4.17	16.1				32	Clear
	7.17	4.25	15.6				64	Slightly Silty, Light Brown, No odor
	7.22	4.20	16.2				96	Slightly Silty, Light Brown, No odor
	7.24	4.27	16.5				128	Slightly Silty, Light Brown, No odor
	7.21	4.18	16.1				160	Slightly Silty, Light Brown, No odor
	7.22	4.27	15.5				192	Slightly clearer
	7.21	4.10	16.0				224	No change
	7.20	4.17	16.0				256	No change
	7.2	4.05	16.0				288	No change
	7.23	4.07	15.7				320	No change
	7.22	4.02	15.5				352	No change
Final:	7.24	4.00	15.6				372	Bailing Down

COMMENTS: Sampled in 2 non-preserved VOA's

Instrumentation: ☑ pH Meter ☐ DO Monitor ☑ Conductivity Meter ☑ Temperature Meter ☐ Other

Water Disposal: On Site BGT

Sample ID: MW-6 | Sample Time: 11:20

Analysis Requested: ☑ BTEX ☐ VOC ☐ Alkalinity ☐ TDS ☐ Cations ☐ Anions ☐ Nitrate ☐ Nitrite ☐ Metals
☐ Other

Trip Blank: Yes | Duplicate Sample: No

COMPLIANCE / ENGINEERING / REMEDIATION

LT Environmental, Inc.
2243 Main Avenue, Suite 3
Durango, Colorado 81301
T 970.385.1096 / F 970.385.1373

Project Name: Groundwater | Location: Valdez A #1E | Well No: MW-7
Client: XTO | Date: 9/15/2010 | Time: 9:55
Project Manager: Julie Linn, RG | Sampler's Name: Brooke Herb

Measuring Point: TOC | Depth to Water: 13.76 ft | Depth to Product: NA ft
Well Diameter: 2" | Total Depth: 19.24 ft | Product Thickness: NA ft
Water Column Height: 5.48 ft

Sampling Method: ☐ Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Other
☑ Bottom Valve Bailer ☐ Double Check Valve Bailer

Criteria: ☑ 3 to 5 Casing Volumes of Water Removal ☑ Stabilization of Indicator Parameters ☐ Other

Water Volume in Well			
Gal/ft x ft of water	Gallons	Ounces	Volume to be removed
5.48 x 0.16	.876 x 3	2.63 x 128	336.691 oz

Time (military)	pH (su)	EC (ms)	Temp (°C)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. oz	Comments/Flow Rate
10:03	7.40	2.53	15.6				32	Slight HC Odor, Slightly Silty, light Brown
	7.41	2.74	14.7				64	Cloudy /Gray, HC Odor
	7.42	2.54	14.7				96	No change
	7.52	2.64	14.6				128	No change
	7.54	2.58	14.6				160	No change
	7.37	2.70	14.6				192	Darker grayish / Black
	7.46	2.60	14.5				224	No change
	7.38	2.70	14.5				256	No change
	7.39	2.69	14.4				288	No change
	7.35	2.71	14.3				320	No change
	7.32	2.70	14.4				352	No change
Final:	7.30	2.73	14.4				384	No Change

COMMENTS: Sampled in 3 non-preserved VOA's

Instrumentation: ☑ pH Meter ☐ DO Monitor ☑ Conductivity Meter ☑ Temperature Meter ☐ Other

Water Disposal: On Site BGT

Sample ID: MW-7 | Sample Time: 10:45

Analysis Requested: ☑ BTEX ☐ VOC ☐ Alkalinity ☐ TDS ☐ Cations ☐ Anions ☐ Nitrate ☐ Nitrite ☐ Metals
☐ Other

Trip Blank: TRIP BLANK | Duplicate Sample: NA

SAMPLING PURGE LOG

Project Name: XTO GW Monitoring | Location: Valdez | Well No: MW-6
Client: XTO Energy | Date: 12/13/2010 | Time: 12:28
Project Manager: Julie Linn | Sampler's Name: Julie Linn

Measuring Point: TOC | Depth to Water: 9.5 ft | Depth to Product: NA ft
Well Diameter: 2" | Total Depth: 14.75 ft | Product Thickness: NA ft
Water Column Height: 5.25 ft

Sampling Method: ☐ Submersible Pump ☑ Centrifugal Pump ☐ Peristaltic Pump ☐ Other _____
☑ Bottom Valve Bailer ☐ Double Check Valve Bailer

Criteria: ☑ 3 to 5 Casing Volumes of Water Removal ☑ Stabilization of Indicator Parameters ☐ Other _____

Water Volume in Well			
Gallons of water per foot	Feet of water in well	Gallons of water in well	3 casing volumes to be removed
0.1631	5.25	0.856275	2.57

Time (military)	pH (su)	EC (ms)	Temp (°C)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. Gallons	Comments/Flow Rate
12:33	6.89	3.07	13.7				0.25	Clear, no odor
12:35	7.08	3.20	13.8				0.5	slightly turbid, brown
12:37	7.11	3.13	13.8				0.75	no change
12:38	7.13	3.11	13.8				1	no change
12:40	7.13	3.02	13.7				1.25	increasing turbid - grey/tan
12:41	7.15	2.88	13.8				1.5	no change
12:43	7.15	2.97	13.8				2	no change
12:44	7.15	3.00	13.8				2.25	no change
12:45	7.16	3.00	13.8				2.5	no change
Final: 12:46	7.15	2.98	13.8				2.75	no change

COMMENTS:

Instrumentation: ☑ pH Meter ☐ DO Monitor ☑ Conductivity Meter ☑ Temperature Meter ☐ Other _____

Water Disposal: On site sump

Sample ID: Valdez MW-6 | Sample Time: 12:49

Analysis Requested: ☑ BTEX ☐ VOCs ☐ Alkalinity ☐ TDS ☐ Cations ☐ Anions ☐ Nitrate ☐ Nitrite ☐ Metals
☐ Other _____

Trip Blank: Yes | Duplicate Sample: No

SAMPLING PURGE LOG

Project Name: XTO GW Monitoring | Location: Valdez | Well No: MW-7
Client: XTO Energy | Date: 12/13/2010 | Time: 11:42
Project Manager: Julie Linn | Sampler's Name: Julie Linn

Measuring Point: TOC | Depth to Water: 13.98 ft | Depth to Product: NA ft
Well Diameter: 2" | Total Depth: 19.15 ft | Product Thickness: NA ft
Water Column Height: 5.17 ft

Sampling Method: ☐ Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Other
☑ Bottom Valve Bailer ☐ Double Check Valve Bailer

Criteria: ☑ 3 to 5 Casing Volumes of Water Removal ☑ Stabilization of Indicator Parameters ☐ Other

Water Volume in Well			
Gallons of water per foot	Feet of water in well	Gallons of water in well	3 casing volumes to be removed
0.1631	5.17	0.843227	2.53

Time (military)	pH (su)	EC (ms)	Temp (°C)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. Gallons	Comments/Flow Rate
11:47	7.04	2.21	15.1				0.25	Dark grey, odor, sheen
11:49	7.56	2.26	14.6				0.5	No Change
11:50	7.47	2.43	14.4				0.75	No Change
11:51	7.47	2.50	14.4				1	No Change
11:54	7.50	2.58	14.9				1.5	No Change
11:56	7.45	2.68	14.6				2	No Change
11:57	7.32	2.67	14.3				2.25	No Change
12:06	7.25	2.76	14.5				2.5	No Change
12:07	7.23	2.67	14.4				2.75	No Change
Final: 12:08	7.23	2.63	14.4				3	No Change

COMMENTS: Replace ORC socks in well after sample is collected.

Instrumentation: ☑ pH Meter ☐ DO Monitor ☑ Conductivity Meter ☑ Temperature Meter ☐ Other

Water Disposal: On site sump

Sample ID: Valdez - MW-7 | Sample Time: 12:11

Analysis Requested: ☑ BTEX ☐ VOCs ☐ Alkalinity ☐ TDS ☐ Cations ☐ Anions ☐ Nitrate ☐ Nitrite ☐ Metals
☐ Other

Trip Blank: Yes | Duplicate Sample: No