

**3R - 131**

**ANNUAL  
MONITORING  
REPORT**

**01/2006**

3 R 131

**XTO ENERGY INC.**

**ANNUAL GROUNDWATER REMEDIATION REPORT**

**2005**

**SULLIVAN GC D #1  
(B) SECTION 26, T29N, R11W, NMPM  
SAN JUAN COUNTY, NEW MEXICO**

**PREPARED FOR:  
MR. GLENN VON GONTEN  
NEW MEXICO OIL CONSERVATION DIVISION**

**JANUARY 2006**

**PREPARED BY:  
BLAGG ENGINEERING, INC.**

**Consulting Petroleum / Reclamation Services  
P.O. Box 87  
Bloomfield, New Mexico 87413**

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**XTO ENERGY INC.**  
**Sullivan GC D # 1 - Blow & Separator Pits**  
**NW/4 NE/4 Sec. 26, T29N, R11W**

**Pit Closure Dates:**

5/5/94 (Separator Pit)  
6/8/94 (Blow Pit)

**Monitor Well Installation Dates:**

4/30/96 (MW 1, 2, 3 &4)  
5/3/00 (MW 1R, 2R &5)

**Monitor Well Sampling Dates:**

6/10/96, 6/27/97, 6/12/98, 5/27/99, 6/29/00, 8/30/00,  
12/5/00, 3/3/01, 5/16/01, 6/27/02, 6/27/03, 6/16/04,  
6/28/05

**Historical Information:**

- May/June 1994 - Evidence of groundwater impacts were discovered during remedial work to close blow and separator pits (Figure 1). Remediation of impacted soils and groundwater via excavation was immediately conducted. Well operated by Amoco Production Company.
- June 1996 – Monitor wells were installed to evaluate residual water quality.
- January 1998 - XTO Energy Inc. (XTO) acquires the Sullivan GC D #1 from Amoco Production Company
- January 1998 to Present – Continued quarterly/annual monitor well sampling and analysis to evaluate natural attenuation.

**Groundwater Monitor Well Sampling Procedures:**

Groundwater samples were collected from site monitor wells (MW) following US EPA: SW-846 protocol. Samples were collected using new disposable bailers and placed in laboratory supplied containers and stored in a cooler on ice. The samples were delivered to an accredited environmental laboratory according to chain-of-custody procedures. The samples were analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) per US EPA Method 8021B and general water chemistry per US EPA Method 600/4-79-020. Analytical results are summarized on Tables 1 and 2. Waste generated (groundwater) during monitor well sampling and development was placed in the produced water separator tank located on the well site.

**Water Quality and Gradient Information:**

The groundwater gradient at this site flows predominantly in a north direction, with a minor west component (Figures 2 - 5).

Monitor well sampling indicates limited hydrocarbon impact that appears to be in the area of MW 1R. Natural attenuation appears to be successful resulting in decreased hydrocarbon levels since June 2000 (Tables 1 and 2). Analytical data indicates dissolved hydrocarbons are in excess of NMWQCC closure standards. This well is located immediately down-gradient from the separator pit location. Background total dissolved solids (TDS) levels are high at this location, exceeding of 10,000 parts per million and alkali present throughout the ground surface.

**Summary:**

XTO proposes sampling of monitor well MW 1R semi-annually in 2006 to monitor the natural attenuation occurring at this site. The addition of nutrients or application of an oxidizer is also recommended for MW 1R. Once BTEX concentrations in MW 1R are below NMWQCC closure standards, quarterly sampling will be conducted.

# TABLE 1

## XTO ENERGY INC. GROUNDWATER LAB RESULTS

SUBMITTED BY BLAGG ENGINEERING, INC.

SULLIVAN GC D # 1 - BLOW & SEP. PITS  
UNIT B, SEC. 26, T29N, R11W

REVISED DATE: JANUARY 17, 2006

FILENAME: (SU-2Q-05.WK4) NJV

SAMPLE DATE	WELL NAME or No.	D.T.W. (ft)	T.D. (ft)	TDS (mg/L)	COND. umhos	pH	PRODUCT (ft)	BTEX EPA METHOD 8021B ( ppb )			
								Benzene	Toluene	Ethyl Benzene	Total Xylene
10-Jun-96	MW #1	7.69	10.00	38,300	10,500	7.5		298	90.6	29.8	417.5
27-Jun-97		7.81	10.00		12,900	7.3		675	208	342	645
12-Jun-98		7.31	10.00		13,200	7.2		131	8.8	0.4	8.6
27-May-99		6.79		9,800	19,600	7.6		345	17.9	13.1	87.3
29-Jun-00	MW #1R	7.85	15.00	6,820	7,300	7.4		570	76	51	303
16-May-01		7.31			7,270	7.4		180	1	3.5	52.9
27-Jun-02		7.78			11,300	7.55		67	ND	4.8	9.1
27-Jun-03		7.96			7,900	7.00		280	ND	10	16
16-Jun-04		7.73			8,800	7.02		400	ND	6.8	12
28-Jun-05		8.71			11,100	6.90		130	ND	7.4	6.4
10-Jun-96	MW #2	7.85	10.00	10,600	5,500	7.4		ND	ND	ND	ND
01-Jun-99		6.44		23,200	59,200	7.4		NA	NA	NA	NA
10-Jun-96	MW #3	8.48	10.00	5,310	3,600	6.9		ND	13	ND	2.52
26-May-99		6.57		6,300	12,650	7.2		NA	NA	NA	NA
10-Jun-96	MW #4	8.04	10.00	10,700	3,500	7.0		ND	ND	ND	9.24
26-May-99		6.97		6,320	12,660	7.4		NA	NA	NA	NA
29-Jun-00	MW #5	8.39	15.00	6,010	4,700	7.4		6.1	1.1	3.2	22.2
30-Aug-00		9.17			4,100	7.2		ND	0.6	1.5	1.8
05-Dec-00		8.28			4,400	7.5		ND	ND	ND	ND
03-Mar-01		7.48			4,100	7.4		ND	ND	ND	ND
NMWQCC GROUNDWATER STANDARDS								10	750	750	620

- NOTES :** 1) RESULTS IN BOLD RED TYPE INDICATE - EXCEEDING NMWQCC STANDARDS .  
2) RESULTS IN BOLD BLUE TYPE INDICATE - BELOW NMWQCC STANDARDS AFTER PROCEEDING RESULTS EXCEEDED .

**TABLE 2**  
**GENERAL WATER QUALITY**  
**XTO ENERGY INC.**  
**SULLIVAN GC D # 1**

**SAMPLE DATES : MAY 26, 1999 & JUNE 29, 2000 ( MW # 5 )**

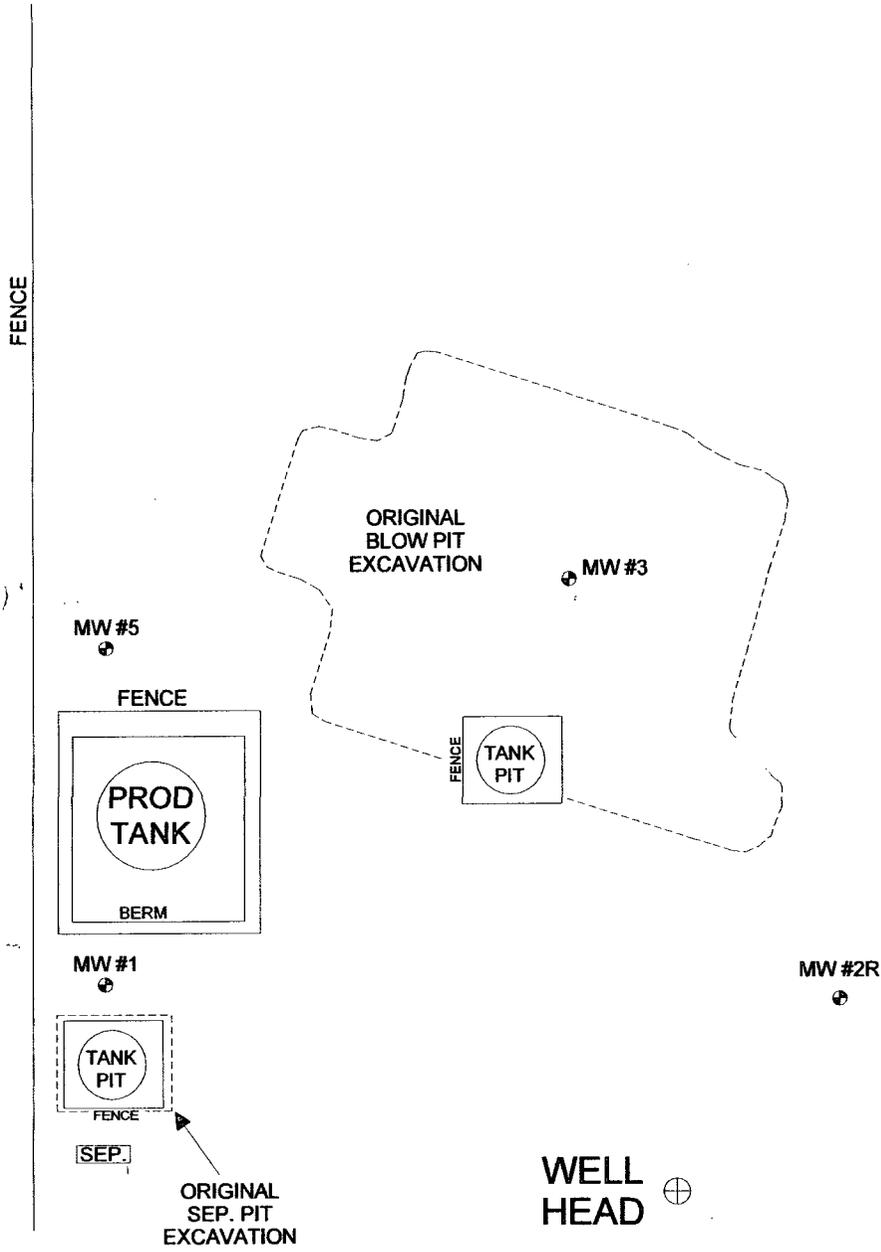
PARAMETERS	MW # 1R 05/26/99	MW # 2R 05/26/99	MW # 3 05/26/99	MW # 4 05/26/99	MW # 5 06/29/00	Units
LAB pH	7.60	7.41	7.16	7.40	7.29	s. u.
LAB CONDUCTIVITY @ 25 C	19,600	59,200	12,650	12,660	12,060	umhos / cm
TOTAL DISSOLVED SOLIDS @ 180 C	9,800	23,200	6,300	6,320	6,010	mg / L
TOTAL DISSOLVED SOLIDS (Calc)	9,764	22,121	6,285	6,230	5,970	mg / L
SODIUM ABSORPTION RATIO	26.2	73.9	21.7	23.6	15.9	ratio
TOTAL ALKALINITY AS CaCO3	1,484	485	444	592	422	mg / L
TOTAL HARDNESS AS CaCO3	1,720	1,495	1,040	904	1,400	mg / L
BICARBONATE as HCO3	1,484	485	444	592	422	mg / L
CARBONATE AS CO3	< 1	< 1	< 1	< 1	< 0.1	mg / L
HYDROXIDE AS OH	< 1	< 1	< 1	< 1	< 0.1	mg / L
NITRATE NITROGEN	2.2	0.6	0.7	0.3	1.1	mg / L
NITRITE NITROGEN	0.001	0.058	0.036	0.013	0.035	mg / L
CHLORIDE	88.0	170.0	68.0	120	23.4	mg / L
FLUORIDE	1.42	1.79	1.23	1.24	2.64	mg / L
PHOSPHATE	23.0	2.0	0.5	2.5	1.6	mg / L
SULFATE	5,600	14,550	3,930	3,720	3,850	mg / L
IRON	0.210	0.307	0.037	0.089	1.16	mg / L
CALCIUM	464	408	350	272	306	mg / L
MAGNESIUM	137	116	40.0	54.7	155	mg / L
POTASSIUM	52.5	8.0	15.0	70.0	3.4	mg / L
SODIUM	2,495	6,570	1,610	1,630	1,370	mg / L
CATION / ANION DIFFERENCE	0.05	0.02	0.07	0.09	0.27	%

NOTES: MW # 5 sample collected on June 29, 2000.

Chloride & TDS samples collected on June 29, 2000 ; results are as follows:

	TDS	CHLORIDE	
MW # 1R	6,820	9.1	mg / L
MW # 2R	4,730	20.5	mg / L

# FIGURE 1



MONITOR WELL LOCATIONS ARE ONLY AS ACCURATE AS THE INSTRUMENTS USED IN OBTAINING THE FOOTAGE AND BEARING FROM THE WELL HEAD (BRUNTON COMPASS AND LASER RANGE FINDER). ALL OTHER STRUCTURES DISPLAYED ON THE SITE MAP ARE SOLELY FOR REFERENCE AND ARE NOT TO SCALE.



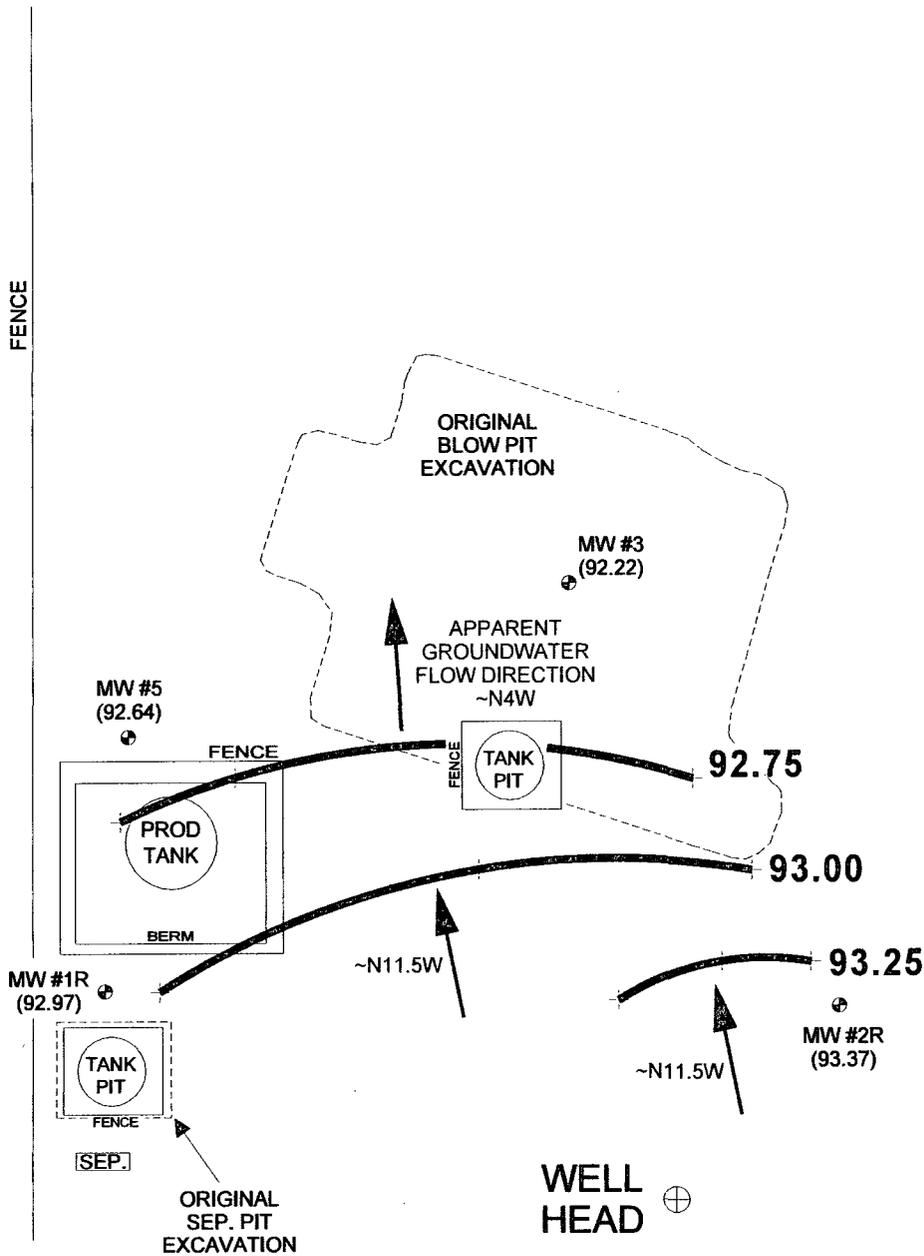
XTO ENERGY INC.  
SULLIVAN GC D #1  
NW/4 NE/4 SEC. 26, T29N, R11W, NMPM  
SAN JUAN COUNTY, NEW MEXICO

**BLAGG ENGINEERING, INC.**  
CONSULTING PETROLEUM / RECLAMATION SERVICES  
P.O. BOX 87  
BLOOMFIELD, NEW MEXICO 87413  
PHONE: (505) 866-4400

PROJECT: MW SAMPLING  
DRAWN BY: NJV  
FILENAME: 05-26-99-SM.SKF  
REVISED: 10/13/05 NJV

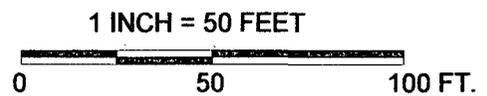
**SITE  
MAP**  
05/99

# FIGURE 2 (2nd 1/4, 2000)



Top of Well Elevation	
MW #1R	(100.82)
MW #2R	(100.43)
MW #3	(99.92)
MW #5	(101.03)
⊕ MW #1R	Groundwater Elevation as of 6/29/00.
(92.97)	

MONITOR WELL LOCATIONS ARE ONLY AS ACCURATE AS THE INSTRUMENTS USED IN OBTAINING THE FOOTAGE AND BEARING FROM THE WELL HEAD (BRUNTON COMPASS AND LASER RANGE FINDER). ALL OTHER STRUCTURES DISPLAYED ON THE SITE MAP ARE SOLELY FOR REFERENCE AND MAY NOT BE TO SCALE.



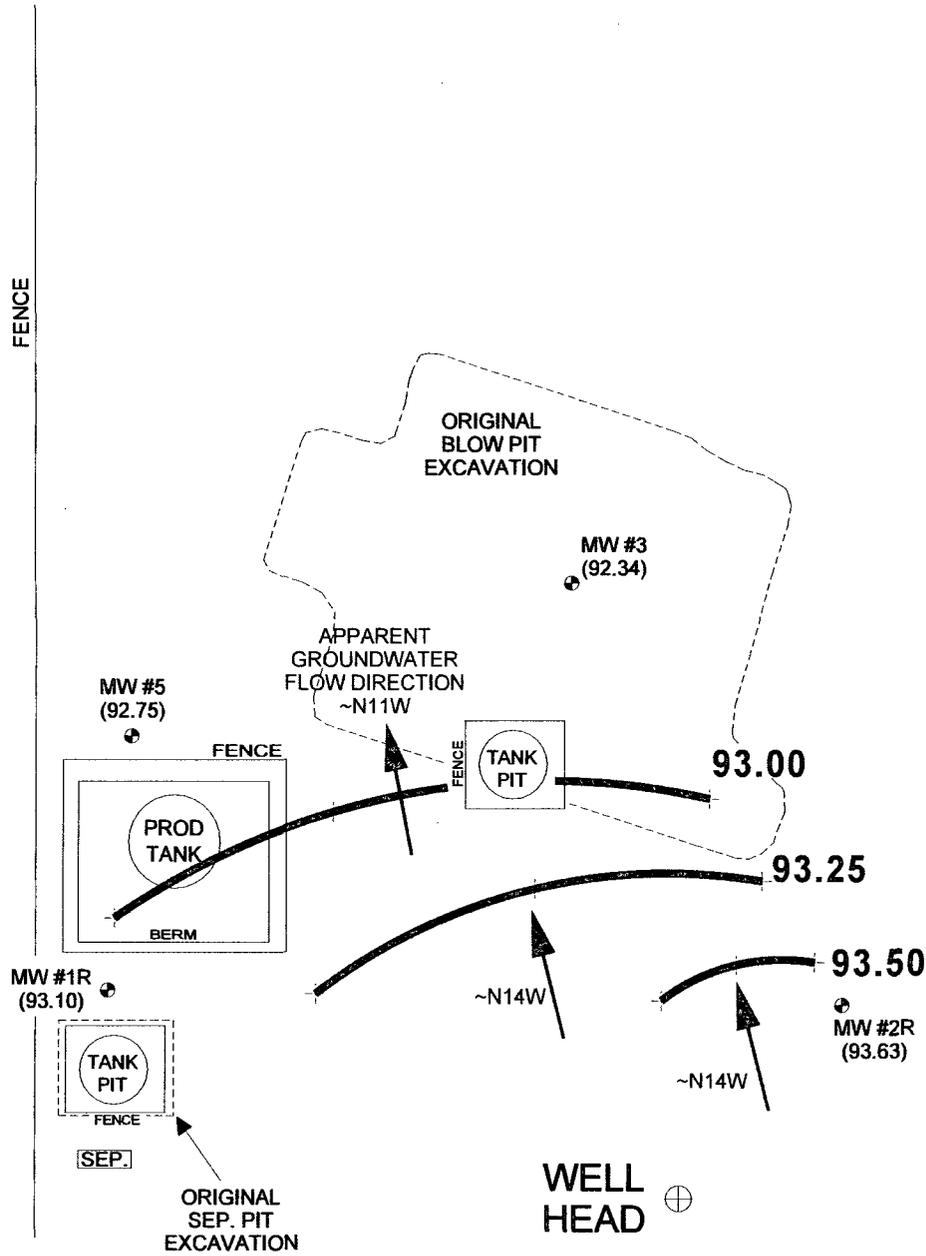
**XTO ENERGY INC.**  
SULLIVAN GC D #1  
NW/4 NE/4 SEC. 26, T29N, R11W, NMPM  
SAN JUAN COUNTY, NEW MEXICO

**BLAGG ENGINEERING, INC.**  
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P.O. BOX 87  
BLOOMFIELD, NEW MEXICO 87413  
PHONE: (505) 833-4400

PROJECT: MW SAMPLING  
DRAWN BY: NJV  
FILENAME: 06-29-00-GW.SKf  
REVISED: 10/14/05 NJV

**GROUNDWATER  
GRADIENT  
MAP  
06/00**

**FIGURE 3**  
**(4th 1/4, 2000)**



Top of Well Elevation	
MW #1R	(100.82)
MW #2R	(100.43)
MW #3	(99.92)
MW #5	(101.03)
⊕ MW #1R (93.10)	Groundwater Elevation as of 12/5/00.

MONITOR WELL LOCATIONS ARE ONLY AS ACCURATE AS THE INSTRUMENTS USED IN OBTAINING THE FOOTAGE AND BEARING FROM THE WELL HEAD (BRUNTON COMPASS AND LASER RANGE FINDER). ALL OTHER STRUCTURES DISPLAYED ON THE SITE MAP ARE SOLELY FOR REFERENCE AND MAY NOT BE TO SCALE.



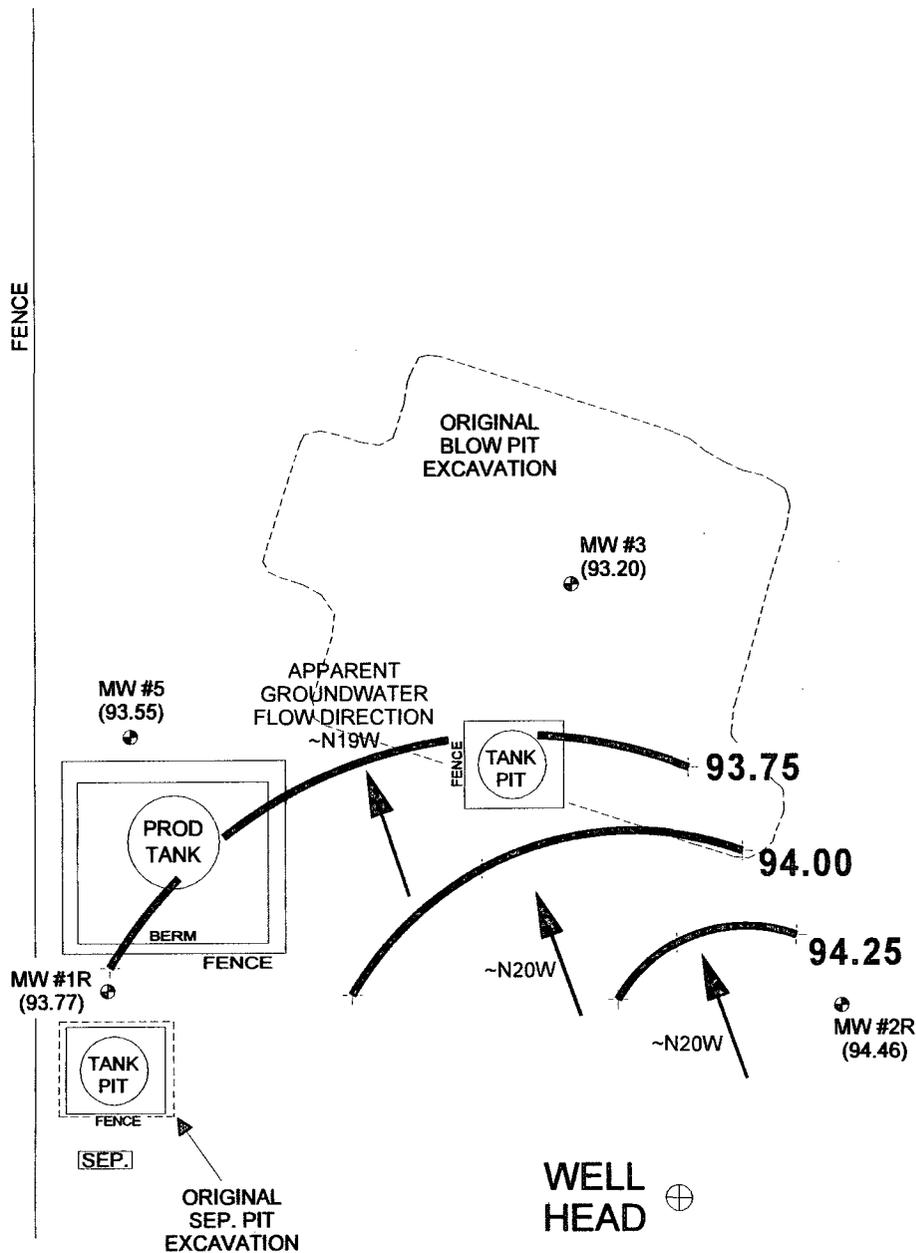
**XTO ENERGY INC.**  
SULLIVAN GC D #1  
NW/4 NE/4 SEC. 26, T29N, R11W, NMPM  
SAN JUAN COUNTY, NEW MEXICO

**BLAGG ENGINEERING, Inc.**  
CONSULTING PETROLEUM / RECLAMATION SERVICES  
P.O. BOX 87  
BLOOMFIELD, NEW MEXICO 87413  
PHONE: (505) 833-4100

PROJECT: MW SAMPLING  
DRAWN BY: NJV  
FILENAME: 12-05-00-GW.SKF  
REVISED: 10/14/05 NJV

**GROUNDWATER  
GRADIENT  
MAP**  
12/00

# FIGURE 4 (1st 1/4, 2001)



Top of Well Elevation	
MW #1R	(100.82)
MW #2R	(100.43)
MW #3	(99.92)
MW #5	(101.03)
⊕ MW #1R (93.77)	Groundwater Elevation as of 3/21/01.

MONITOR WELL LOCATIONS ARE ONLY AS ACCURATE AS THE INSTRUMENTS USED IN OBTAINING THE FOOTAGE AND BEARING FROM THE WELL HEAD (BRUNTON COMPASS AND LASER RANGE FINDER). ALL OTHER STRUCTURES DISPLAYED ON THE SITE MAP ARE SOLELY FOR REFERENCE AND MAY NOT BE TO SCALE.

1 INCH = 50 FEET



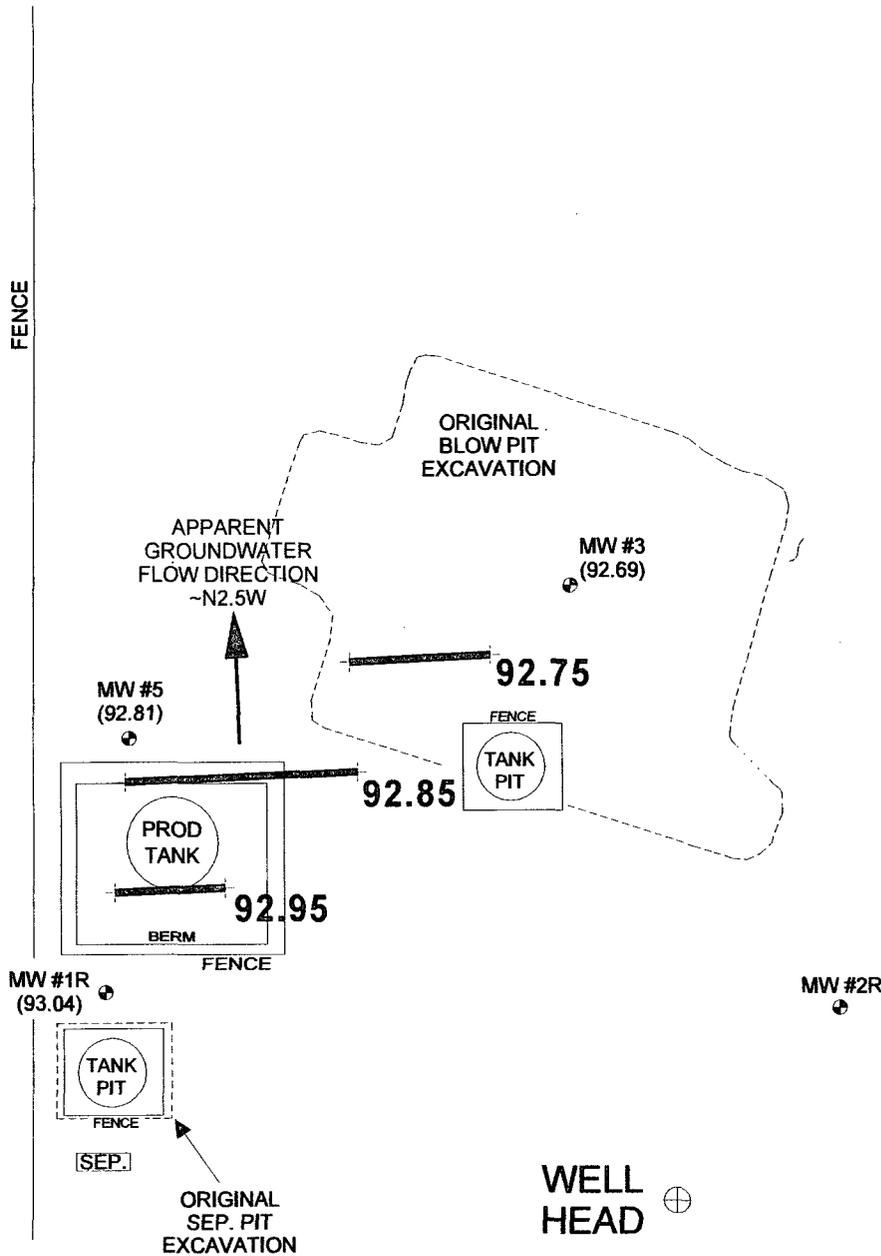
**XTO ENERGY INC.**  
SULLIVAN GC D #1  
NW/4 NE/4 SEC. 26, T29N, R11W, NMPM  
SAN JUAN COUNTY, NEW MEXICO

**BLAGG ENGINEERING, INC.**  
CONSULTING PETROLEUM / RECLAMATION SERVICES  
P.O. BOX 87  
BLOOMFIELD, NEW MEXICO 87413  
PHONE: (505) 833-4400

PROJECT: MW SAMPLING  
DRAWN BY: NJV  
FILENAME: 03-21-01-GW.SKf  
REVISED: 10/14/05 NJV

**GROUNDWATER  
GRADIENT  
MAP  
03/01**

# FIGURE 5 (2nd 1/4, 2002)



Top of Well Elevation	
MW #1R	(100.82)
MW #2R	(100.43)
MW #3	(99.92)
MW #5	(101.03)
⊕ MW #1R	Groundwater Elevation as of 6/27/02. (93.04)

MONITOR WELL LOCATIONS ARE ONLY AS ACCURATE AS THE INSTRUMENTS USED IN OBTAINING THE FOOTAGE AND BEARING FROM THE WELL HEAD (BRUNTON COMPASS AND LASER RANGE FINDER). ALL OTHER STRUCTURES DISPLAYED ON THE SITE MAP ARE SOLELY FOR REFERENCE AND MAY NOT BE TO SCALE.

1 INCH = 50 FEET



**XTO ENERGY INC.**  
SULLIVAN GC D #1  
NW/4 NE/4 SEC. 26, T29N, R11W, NMPM  
SAN JUAN COUNTY, NEW MEXICO

**BLAGG ENGINEERING, INC.**  
CONSULTING PETROLEUM / RECLAMATION SERVICES  
P.O. BOX 87  
BLOOMFIELD, NEW MEXICO 87413

PROJECT: MW SAMPLING  
DRAWN BY: NJV  
FILENAME: 06-27-02-GW.SKF  
REVISED: 10/14/05 NJV

**GROUNDWATER  
GRADIENT  
MAP**  
06/02

# FIGURE 6

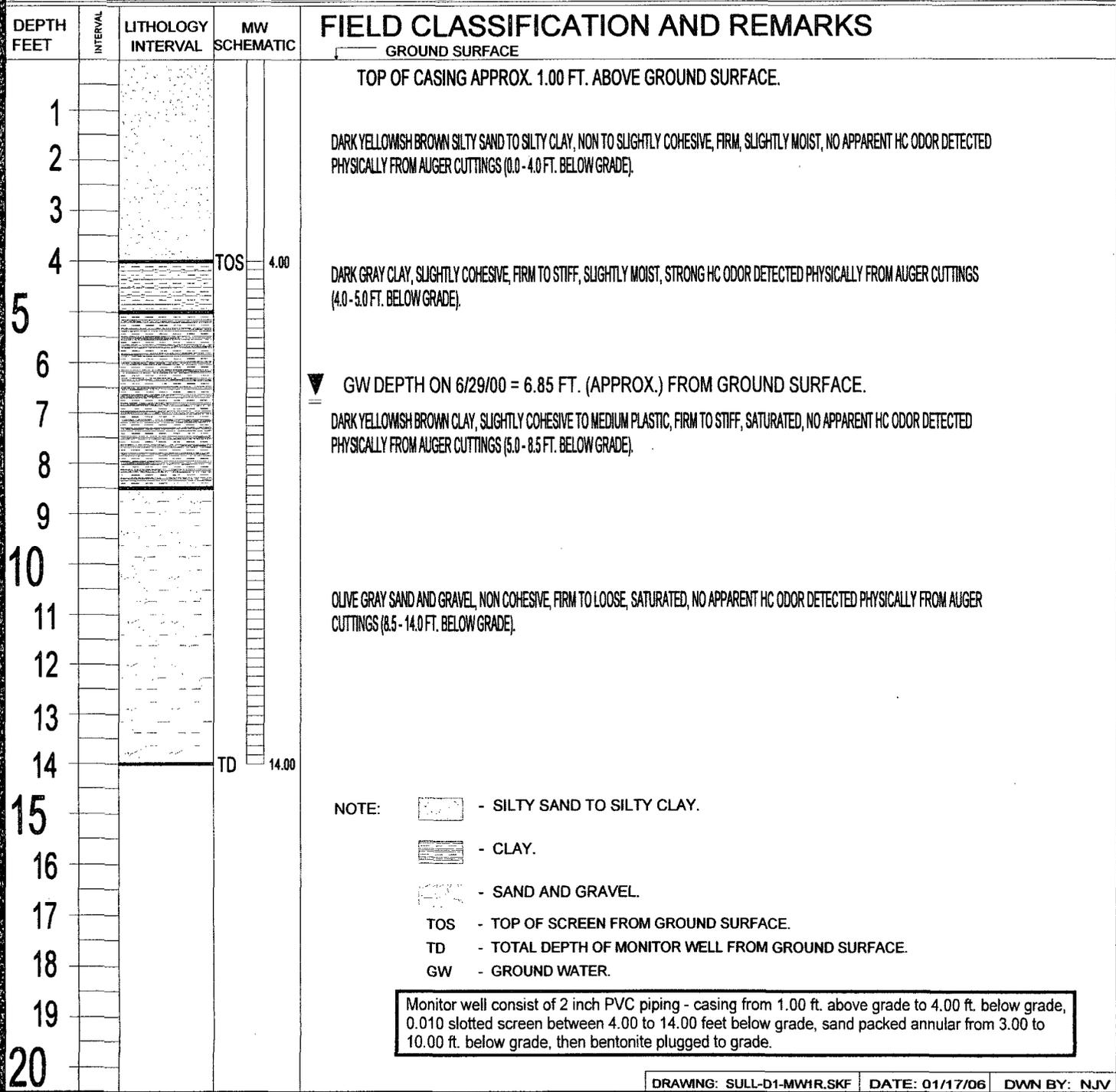
## BLAGG ENGINEERING, INC.

P.O. BOX 87  
BLOOMFIELD, NM 87413  
(505) 632-1199

# BORE / TEST HOLE REPORT

BORING #.....	BH - 7
MW#.....	1R
PAGE #.....	1
DATE STARTED	5/03/00
DATE FINISHED	5/03/00
OPERATOR.....	DE
PREPARED BY	NJV

CLIENT:	XTO ENERGY INC.
LOCATION NAME:	SULLIVAN GC D # 1 - BLOW PIT, UNIT B, SEC. 26, T29N, R11W
CONTRACTOR:	BLAGG ENGINEERING, INC. / ENVIROTECH, INC.
EQUIPMENT USED:	MOBILE DRILL RIG (CME 61)
BORING LOCATION:	159 FT., N70W FROM WELL HEAD.



# FIGURE 7

## BLAGG ENGINEERING, INC.

P.O. BOX 87  
BLOOMFIELD, NM 87413  
(505) 632-1199

# BORE / TEST HOLE REPORT

BORING #.....	BH - 5
MW #.....	2R
PAGE #.....	2
DATE STARTED	5/03/00
DATE FINISHED	5/03/00
OPERATOR.....	DE
PREPARED BY	NJV

CLIENT:	XTO ENERGY INC.
LOCATION NAME:	SULLIVAN GC D # 1 - BLOW PIT, UNIT B, SEC. 26, T29N, R11W
CONTRACTOR:	BLAGG ENGINEERING, INC. / ENVIROTECH, INC.
EQUIPMENT USED:	MOBILE DRILL RIG (CME 61)
BORING LOCATION:	66 FT., N40E FROM WELL HEAD.

DEPTH FEET	INTERVAL	LITHOLOGY INTERVAL	MW SCHEMATIC	FIELD CLASSIFICATION AND REMARKS
				<p style="text-align: center;">— GROUND SURFACE</p> <p>TOP OF CASING APPROX. 0.30 FT. ABOVE GROUND SURFACE.</p>
1				
2				
3				
4			TOS 3.50	
5				DARK YELLOWISH BROWN SILTY CLAY TO CLAY, NON COHESIVE TO SLIGHTLY COHESIVE, FIRM TO STIFF, SLIGHTLY MOIST TO SATURATED, NO APPARENT HC ODOR DETECTED PHYSICALLY FROM AUGER CUTTINGS (0.0 - 10.0 FT. BELOW GRADE).
6				
7				▼ GW DEPTH ON 6/29/00 = 6.76 FT. (APPROX.) FROM GROUND SURFACE.
8				
9				
10				
11				
12				OLIVE GRAY SAND AND GRAVEL, NON COHESIVE, FIRM TO LOOSE, SATURATED, NO APPARENT HC ODOR DETECTED PHYSICALLY FROM AUGER CUTTINGS (10.0 - 14.0 FT. BELOW GRADE).
13				
14			TD 13.50	
15				
16				
17				
18				
19				
20				

- NOTE:
- SILTY CLAY TO CLAY.
  - SAND AND GRAVEL.
  - TOS - TOP OF SCREEN FROM GROUND SURFACE.
  - TD - TOTAL DEPTH OF MONITOR WELL FROM GROUND SURFACE.
  - GW - GROUND WATER.

Monitor well consist of 2 inch PVC piping - casing from 0.30 ft. above grade to 3.50 ft. below grade, 0.010 slotted screen between 3.50 to 13.50 feet below grade, sand packed annular from 3.00 to 10.00 ft. below grade, then bentonite plugged to grade.

# FIGURE 8

## BLAGG ENGINEERING, INC.

P.O. BOX 87  
BLOOMFIELD, NM 87413  
(505) 632-1199

# BORE / TEST HOLE REPORT

BORING #.....	BH - 6
MW #.....	5
PAGE #.....	3
DATE STARTED	5/03/00
DATE FINISHED	5/03/00
OPERATOR.....	DE
PREPARED BY	NJV

CLIENT:	XTO ENERGY INC.
LOCATION NAME:	SULLIVAN GC D # 1 - BLOW PIT, UNIT B, SEC. 26, T29N, R11W
CONTRACTOR:	BLAGG ENGINEERING, INC. / ENVIROTECH, INC.
EQUIPMENT USED:	MOBILE DRILL RIG (CME 61)
BORING LOCATION:	187 FT., N50W FROM WELL HEAD.

DEPTH FEET	INTERVAL	LITHOLOGY INTERVAL	MW SCHEMATIC	FIELD CLASSIFICATION AND REMARKS
				GROUND SURFACE
				TOP OF CASING APPROX. 0.90 FT. ABOVE GROUND SURFACE.
1				DARK YELLOWISH BROWN SAND TO SILTY SAND, NON COHESIVE, FIRM, SLIGHTLY MOIST, NO APPARENT HC ODOR DETECTED PHYSICALLY FROM AUGER CUTTINGS (0.0 - 3.0 FT. BELOW GRADE).
2				
3				
4				
5			TOS 4.10	DARK GRAY SAND TO SILTY SAND, NON COHESIVE, FIRM, SLIGHTLY MOIST TO WET, STRONG HC ODOR DETECTED PHYSICALLY FROM AUGER CUTTINGS (3.0 - 7.0 FT. BELOW GRADE).
6				
7				▼ GW DEPTH ON 6/29/00 = 7.49 FT. (APPROX.) FROM GROUND SURFACE.
8				DARK YELLOWISH BROWN CLAY, SLIGHTLY COHESIVE TO MEDIUM PLASTIC, FIRM TO STIFF, SATURATED, NO APPARENT HC ODOR DETECTED PHYSICALLY FROM AUGER CUTTINGS (7.0 - 10.0 FT. BELOW GRADE).
9				
10				
11				
12				DARK GRAY SAND AND GRAVEL, NON COHESIVE, FIRM TO LOOSE, SATURATED, SLIGHT HC ODOR DETECTED PHYSICALLY FROM AUGER CUTTINGS (10.0 - 14.0 FT. BELOW GRADE).
13				
14			TD 14.10	
15				
16				
17				
18				
19				
20				

- NOTE:
- SILTY SAND TO SILTY CLAY.
  - CLAY.
  - SAND AND GRAVEL.
  - TOS - TOP OF SCREEN FROM GROUND SURFACE.
  - TD - TOTAL DEPTH OF MONITOR WELL FROM GROUND SURFACE.
  - GW - GROUND WATER.

Monitor well consist of 2 inch PVC piping - casing from 0.90 ft. above grade to 4.10 ft. below grade, 0.010 slotted screen between 4.10 to 14.10 feet below grade, sand packed annular from 2.50 to 11.00 ft. below grade, then bentonite plugged to grade.

**BLAGG ENGINEERING, INC.**  
**MONITOR WELL SAMPLING DATA**

CLIENT : CROSS TIMBERS OIL CO.

CHAIN-OF-CUSTODY # : 10609

7026

**SULLIVAN GC D #1 - BLOW & SEP. PITS**  
**UNIT B, SEC. 26, T29N, R11W**

LABORATORY (S) USED : ON - SITE TECH.

ENVIROTECH, INC.

Date : June 29, 2000

SAMPLER : N J V

Filename : 06-29-00.WK4

PROJECT MANAGER : N J V

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	VOLUME PURGED (gal.)	FREE PRODUCT (ft)
1R	100.82	92.97	7.85	15.00	1330	7.4	7,300	3.50	-
2R	100.43	93.37	7.06	13.80	1235	7.3	4,000	3.50	-
3	99.92	92.22	7.70	10.00	-	-	-	-	-
4	UNABLE TO LOCATE - APPARENTLY DESTROYED								
5	101.03	92.64	8.39	15.00	1310	7.4	4,700	3.25	

NOTES : Volume of water purged from well prior to sampling:  $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3 \text{ (wellbores)}$ .  
 (i.e. 2" MW  $r = (1/12) \text{ ft}$ .  $h = 1 \text{ ft}$ .) (i.e. 4" MW  $r = (2/12) \text{ ft}$ .  $h = 1 \text{ ft}$ .)

Ideally a minimum of three (3) wellbore volumes:

1.25 " well diameter = 0.19 gallons per foot of water ( or 24 oz. ).

2 bails per foot - small teflon bailer.

3 bails per foot - 3 / 4 " teflon bailer.

2.00 " well diameter = 0.49 gallons per foot of water.

4.00 " well diameter = 1.95 gallons per foot of water.

Comments or note well diameter if not standard 2 "

Excellent recovery in MW #2R & #5. Poor recovery in MW # 1R. Collected BTEX samples from MW # 1R & 5. Collected TDS and chloride samples MW # 1R & 2R. Collected anion / cation sample from MW # 5 only.

**BLAGG ENGINEERING, INC.**  
**MONITOR WELL SAMPLING DATA**

CLIENT : CROSS TIMBERS OIL CO.

CHAIN-OF-CUSTODY # : 10767

**SULLIVAN GC D # 1 - BLOW & SEP. PITS**  
**UNIT B, SEC. 26, T29N, R11W**

LABORATORY (S) USED : ON - SITE TECH.

Date : August 30, 2000

SAMPLER : N J V

Filename : 08-30-00.WK4

PROJECT MANAGER : N J V

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	VOLUME PURGED (gal.)	FREE PRODUCT (ft)
1R	100.82	92.30	8.52	15.00	-	-	-	-	-
2R	100.43	92.63	7.80	13.80	-	-	-	-	-
3	99.92	91.43	8.49	10.00	-	-	-	-	-
4	UNABLE TO LOCATE - APPARENTLY DESTROYED								
5	101.03	91.86	9.17	15.00	0925	7.2	4,100	3.00	

NOTES : Volume of water purged from well prior to sampling:  $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3 \text{ (wellbores)}$   
 (i.e. 2" MW  $r = (1/12) \text{ ft. } h = 1 \text{ ft.}$ ) (i.e. 4" MW  $r = (2/12) \text{ ft. } h = 1 \text{ ft.}$ )

Ideally a minimum of three (3) wellbore volumes:

1.25 " well diameter = 0.19 gallons per foot of water ( or 24 oz. ).

2 bails per foot - small teflon bailer.

3 bails per foot - 3 / 4 " teflon bailer.

2.00 " well diameter = 0.49 gallons per foot of water.

4.00 " well diameter = 1.95 gallons per foot of water.

Comments or note well diameter if not standard 2 "

Excellent recovery in MW # 5 . Collected BTEX samples from MW # 5 only .

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# BLAGG ENGINEERING, INC.

## MONITOR WELL SAMPLING DATA

CLIENT : CROSS TIMBERS OIL CO.

CHAIN-OF-CUSTODY # : 10777

SULLIVAN GC D #1 - BLOW & SEP. PITS  
UNIT B, SEC. 26, T29N, R11W

LABORATORY (S) USED : ON - SITE TECH.

Date : December 5, 2000

SAMPLER : N J V

Filename : 12-05-00.WK4

PROJECT MANAGER : N J V

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	VOLUME PURGED (gal.)	FREE PRODUCT (ft)
1R	100.82	93.10	7.72	15.00	-	-	-	-	-
2R	100.43	93.63	6.80	13.80	-	-	-	-	-
3	99.92	92.34	7.58	10.00	-	-	-	-	-
4	UNABLE TO LOCATE - APPARENTLY DESTROYED								
5	101.03	92.75	8.28	15.00	1000	7.5	4,400	3.25	

NOTES : Volume of water purged from well prior to sampling:  $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3$  (wellbores).  
(i.e. 2" MW  $r = (1/12)$  ft.  $h = 1$  ft.) (i.e. 4" MW  $r = (2/12)$  ft.  $h = 1$  ft.)

Ideally a minimum of three (3) wellbore volumes:

1.25 " well diameter = 0.19 gallons per foot of water ( or 24 oz. ).

2 bails per foot - small teflon bailer.

3 bails per foot - 3 / 4 " teflon bailer.

2.00 " well diameter = 0.49 gallons per foot of water.

4.00 " well diameter = 1.95 gallons per foot of water.

Comments or note well diameter if not standard 2".

Excellent recovery in MW # 5 . Collected BTEX samples from MW # 5 only .

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**BLAGG ENGINEERING, INC.**  
**MONITOR WELL SAMPLING DATA**

CLIENT : CROSS TIMBERS OIL CO.

CHAIN-OF-CUSTODY # : 11044

**SULLIVAN GC D #1 - BLOW & SEP. PITS**  
**UNIT B, SEC. 26, T29N, R11W**

LABORATORY (S) USED : ON - SITE TECH.

Date : March 21, 2001

SAMPLER : N J V

Filename : 03-21-01.WK4

PROJECT MANAGER : N J V

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	VOLUME PURGED (gal.)	FREE PRODUCT (ft)
1R	100.82	93.77	7.05	15.00	-	-	-	-	-
2R	100.43	94.46	5.97	13.80	-	-	-	-	-
3	99.92	93.20	6.72	10.00	-	-	-	-	-
4	UNABLE TO LOCATE - APPARENTLY DESTROYED								
5	101.03	93.55	7.48	15.00	1420	7.42	4,100	3.75	-

NOTES : Volume of water purged from well prior to sampling:  $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3 \text{ (wellbores)}$   
 (i.e. 2" MW  $r = (1/12) \text{ ft}$ .  $h = 1 \text{ ft}$ .) (i.e. 4" MW  $r = (2/12) \text{ ft}$ .  $h = 1 \text{ ft}$ .)

Ideally a minimum of three (3) wellbore volumes:

1.25 " well diameter = 0.19 gallons per foot of water ( or 24 oz. ).

2 bails per foot - small teflon bailer.

3 bails per foot - 3 / 4 " teflon bailer.

2.00 " well diameter = 0.49 gallons per foot of water.

4.00 " well diameter = 1.95 gallons per foot of water.

Comments or note well diameter if not standard 2 "

Excellent recovery in MW # 5 . Collected BTEX samples from MW # 5 only .

**BLAGG ENGINEERING, INC.**  
**MONITOR WELL SAMPLING DATA**

CLIENT : CROSS TIMBERS OPER. CO.

CHAIN-OF-CUSTODY # : 11049

**SULLIVAN GC D #1 - BLOW & SEP. PITS**  
**UNIT B, SEC. 26, T29N, R11W**

LABORATORY (S) USED : ON - SITE TECH.

Date : May 16, 2001

SAMPLER : N J V

Filename : 05-16-01.WK4

PROJECT MANAGER : N J V

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	VOLUME PURGED (gal.)	FREE PRODUCT (ft)
1R	100.82	93.51	7.31	15.00	1345	7.40	2,700	3.75	-
2R	100.43	94.07	6.36	13.80	-	-	-	-	-
3	99.92	92.98	6.94	10.00	-	-	-	-	-
4	UNABLE TO LOCATE - APPARENTLY DESTROYED								
5	101.03	93.28	7.75	15.00	-	-	-	-	-

NOTES : Volume of water purged from well prior to sampling:  $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3$  (wellbores).  
 (i.e. 2" MW  $r = (1/12)$  ft.  $h = 1$  ft.) (i.e. 4" MW  $r = (2/12)$  ft.  $h = 1$  ft.)

Ideally a minimum of three (3) wellbore volumes:

1.25 " well diameter = 0.19 gallons per foot of water ( or 24 oz. ).

2 bails per foot - small teflon bailer.

3 bails per foot - 3 / 4 " teflon bailer.

2.00 " well diameter = 0.49 gallons per foot of water.

4.00 " well diameter = 1.95 gallons per foot of water.

Comments or note well diameter if not standard 2 "

Poor recovery in MW # 1R . Collected BTEX sample from MW # 1R only .

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**BLAGG ENGINEERING, INC.**  
**MONITOR WELL SAMPLING DATA**

CLIENT : XTO ENERGY, INC.

CHAIN-OF-CUSTODY # : 11995

**SULLIVAN GC D # 1 - BLOW & SEP. PITS**  
**UNIT B, SEC. 26, T29N, R11W**

LABORATORY (S) USED : ON - SITE TECH.

Date : June 27, 2002

SAMPLER : N J V

Filename : 06-27-02.WK4

PROJECT MANAGER : N J V

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	VOLUME PURGED (gal.)	FREE PRODUCT (ft)
1R	100.82	93.04	7.78	15.00	0635	7.55	11,300	1.75	-
3	99.92	92.69	7.23	10.00	-	-	-	-	-
4	UNABLE TO LOCATE - APPARENTLY DESTROYED								
5	101.03	92.81	8.22	15.00	-	-	-	-	-

NOTES : Volume of water purged from well prior to sampling:  $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3$  (wellbores).  
 (i.e. 2" MW  $r = (1/12)$  ft.  $h = 1$  ft.) (i.e. 4" MW  $r = (2/12)$  ft.  $h = 1$  ft.)

Ideally a minimum of three (3) wellbore volumes:

1.25 " well diameter = 0.19 gallons per foot of water ( or 24 oz. ).

2 bails per foot - small teflon bailer.

3 bails per foot - 3 / 4 " teflon bailer.

2.00 " well diameter = 0.49 gallons per foot of water.

4.00 " well diameter = 1.95 gallons per foot of water.

Comments or note well diameter if not standard 2 "

Poor / fair recovery in MW # 1R . Collected BTEX sample from MW # 1R only .

MW # 2 apparently destroyed during during of adjacent salt water disposal well on same well pad .

# BLAGG ENGINEERING, INC.

## MONITOR WELL DEVELOPMENT & / OR SAMPLING DATA

CLIENT : XTO ENERGY INC.

CHAIN-OF-CUSTODY # :           N / A          

SULLIVAN GC D # 1 - BLOW & SEP. PITS  
UNIT B, SEC. 26, T29N, R11W

LABORATORY (S) USED :           HALL ENVIRONMENTAL          

Date :           June 27, 2003          

SAMPLER :           N J V          

Filename :           06-27-03.WK4          

PROJECT MANAGER :           N J V          

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	TEMP. (celcius)	VOLUME PURGED (gal.)
1R	100.82	92.86	7.96	15.00	1055	7.00	7,900	22.1	1.75
3	UNABLE TO LOCATE - APPARENTLY DESTROYED								
5	101.03	92.65	8.38	15.00	-	-	-	-	-

INSTRUMENT CALIBRATIONS =	7.00	2,800
DATE & TIME =	06/27/03	06:45

NOTES : Volume of water purged from well prior to sampling:  $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3$  (wellbores).  
 (i.e. 2" MW  $r = (1/12)$  ft.  $h = 1$  ft.) (i.e. 4" MW  $r = (2/12)$  ft.  $h = 1$  ft.)

Ideally a minimum of three (3) wellbore volumes:

2.00" well diameter = 0.49 gallons per foot of water.

Comments or note well diameter if not standard 2"

Poor / fair recovery in MW # 1R. Collected BTEX sample from MW # 1R only.

No discoloration observed during purging. Purging terminated @ time 1036. Depth to water = 9.30 ft. prior to sample collection. MW # 3 apparently destroyed during clearing / reconstruction of well pad.

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# BLAGG ENGINEERING, INC.

## MONITOR WELL DEVELOPMENT & /OR SAMPLING DATA

CLIENT: XTO ENERGY INC.

CHAIN-OF-CUSTODY #: N / A

SULLIVAN GC D # 1 - BLOW & SEP. PITS  
UNIT B, SEC. 26, T29N, R11W

LABORATORY (S) USED: HALL ENVIRONMENTAL

Date: June 16, 2004

SAMPLER: N J V

Filename: 06-16-04.WK4

PROJECT MANAGER: N J V

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	TEMP. (celcius)	VOLUME PURGED (gal.)
1R	100.82	93.09	7.73	15.00	1140	7.02	8,800	20.7	1.50
3	UNABLE TO LOCATE - APPARENTLY DESTROYED								
5	101.03		-	15.00	-	-	-	-	-

INSTRUMENT CALIBRATIONS =	7.00	2,800
DATE & TIME =	06/16/04	1130

NOTES: Volume of water purged from well prior to sampling:  $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3$  (wellbores).  
 (i.e. 2" MW  $r = (1/12)$  ft.  $h = 1$  ft.) (i.e. 4" MW  $r = (2/12)$  ft.  $h = 1$  ft.)

Ideally a minimum of three (3) wellbore volumes:

2.00 " well diameter = 0.49 gallons per foot of water.

Comments or note well diameter if not standard 2".

Poor / fair recovery in MW # 1R. Collected BTEX sample from MW # 1R only.

No discoloration observed during purging. Purging terminated @ time 1130. Depth to water = 9.60 ft. prior to sample collection. MW # 3 apparently destroyed during clearing / reconstruction of well pad.

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# BLAGG ENGINEERING, INC.

## MONITOR WELL DEVELOPMENT & / OR SAMPLING DATA

CLIENT: XTO ENERGY INC.

CHAIN-OF-CUSTODY #: N / A

SULLIVAN GC D # 1 - BLOW & SEP. PITS  
UNIT B, SEC. 26, T29N, R11W

LABORATORY (S) USED: HALL ENVIRONMENTAL

Date: June 28, 2005

SAMPLER: N J V

Filename: 06-28-05.WK4

PROJECT MANAGER: N J V

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	TEMP. (celcius)	VOLUME PURGED (gal.)
1R	100.82	92.11	8.71	15.00	1405	6.90	11,100	22.2	1.50
3	UNABLE TO LOCATE - APPARENTLY DESTROYED								
5	101.03		-	15.00	-	-	-	-	-

INSTRUMENT CALIBRATIONS =	7.00	2,800
DATE & TIME =	06/28/05	1400

NOTES: Volume of water purged from well prior to sampling:  $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3 \text{ (wellbores)}$ .  
 (i.e. 2" MW  $r = (1/12) \text{ ft}$ .  $h = 1 \text{ ft}$ .) (i.e. 4" MW  $r = (2/12) \text{ ft}$ .  $h = 1 \text{ ft}$ .)

Ideally a minimum of three (3) wellbore volumes:

2.00" well diameter = 0.49 gallons per foot of water.

Comments or note well diameter if not standard 2".

Poor/fair recovery in MW # 1R. Collected BTEX sample from MW # 1R only.

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