

3RP-124



Annual Groundwater
Remediation Reports
For Year 2009

March 2010



March 8, 2010

Mr. Glenn von Gonten
Hydrologist-Groundwater Remediation
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

RE: Annual Groundwater Remediation Reports

Dear Mr. von Gonten,

XTO Energy Inc. (XTO) herein submits our Annual Groundwater Remediation Reports for year ending 2009, in accordance with the New Mexico Oil Conservation Division (NMOCD) approved Groundwater Management Plan (GWMP). Enclosed are summary reports with analytical data, summary tables, site maps, topographic maps, potentiometric surface diagrams and recommendations/proposed actions for:

- Bruington Gas Com #1- 3RP106
- Federal Gas Com #H1- 3RP110
- McCoy GC D #1E- 3RP414
- OH Randel #7- 3RP386
- Rowland Gas Com #1- 3RP124
- Valdez A #1E- 3RP134

We have also enclosed an Annual Groundwater Report for three sites that meet the closure requirements outlined in the GWMP. XTO respectfully requests closure of:

- EJ Johnson C #1E- 3RP385
- Frost, Jack B #2- 3RP416
- PO Pipken #3E- 3RP409

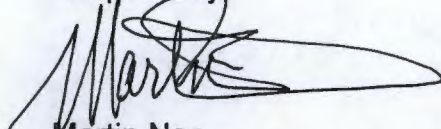
In previously submitted reports, eighteen sites met the closure requirements outlined in the GWMP. XTO has requested closure of these sites annually since 2006. The reports for the below listed sites are being submitted again for your review.

Mr. Glen VonGonten
XTO Annual Groundwater Reports
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- Abrams J #1- 3RP100
Closure Requested 01-2007
- Armenta Gas Com C #1E- 3RP394
Closure Requested 01-2006
- Baca Gas Com A #1A- 3RP104
Closure Requested 03-2008
- Bergin Gas Com #1E- 3RP105
Closure Requested 01-2006
- Carson Gas Com #1E- 3RP415
Closure Requested 04-2009
- Garcia Gas Com B #1- 3RP111
Closure Requested 03-2008
- Haney Gas Com B #1E- 3RP113
Closure Requested 03-2008
- Hare Gas Com B #1- 3RP413
Closure Requested 03-2008
- Hare Gas Com B #1E- 3RP384
Closure Requested 03-2008
- Hare Gas Com I #1- 3RP412
Closure Requested 03-2008
- Masden Gas Com #1E- 3RP120
Closure Requested 03-2008
- McDaniel Gas Com B #1E- 3RP121
Closure Requested 03-2008
- Romero Gas Com A #1- 3RP123
Closure Requested 01-2007
- Snyder Gas Com #1A- 3RP126
Closure Requested 04-2009
- State Gas Com BS #1- 3RP127
Closure Requested 01-2006
- Stedje Gas Com #1- 3RP128
Closure Requested 03-2008
- Sullivan Frame A #1E- 3RP130
Closure Requested 03-2008
- Sullivan Gas Com D #1- 3RP131
Closure Requested 04-2009

Thank you for your review of the reports. XTO looks forward to hearing from you regarding closure requests and proposed remedial actions. If you have any questions please do not hesitate to contact me at (505) 333-3100.

Respectfully



Martin Nee
EH & S Manager
San Juan Division

cc: Mr. Brandon Powell, Environmental, NMOCD District III Office, Aztec, NM
Ms. Ashley Ager, LT Environmental
File- San Juan Groundwater

Rowland Gas Com
1

XTO ENERGY INC.

ANNUAL GROUNDWATER REPORT

2009

ROWLAND GAS COM #1

3RP-124

**(P) SECTION 25 – T30N – R12W, NMPM
SAN JUAN COUNTY, NEW MEXICO**

PREPARED FOR:

MR. GLENN VON GONTEN

NEW MEXICO OIL CONSERVATION DIVISION

MARCH 2010

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Attachment 2:	2009 Laboratory Reports

2009 XTO GROUNDWATER REPORT

ROWLAND GAS COM #1 3RP-124

SITE DETAILS

LEGALS - TWN: 30N
OCD HAZARD RANKING: 20
LATITUDE: 36.77894

RNG: 12W

SEC: 25 UNIT: P
LAND TYPE: FEE
LONGITUDE: 108.04329

INTRODUCTION

XTO Energy Inc. (XTO) acquired the Rowland Gas Com #1 well site from Amoco Production Company (Amoco) in January 1998. This is a gas producing well in the Dakota Sandstone and is currently active. There is a nearby irrigation ditch to the immediate west of this location. A topographic map and site map are presented as Figures 1 and 2.

HISTORY

XTO learned that in August 1993 Amoco excavated and attempted to remediate an unlined production pit. During excavation groundwater was encountered at 13 feet below ground surface (Attachment 1). Monitoring wells MW-1, MW-2, MW-3, MW-4 and MW-5 were installed in May 1996. Completion Diagrams and Borehole Logs are presented as Figures 7-11 documenting drilling that occurred in 1996. Groundwater analytical results from monitoring wells MW-1, MW-2 and MW-3 were below laboratory equipment detection limits (0.2 ug/L) or below the New Mexico Water Quality Control Commission (WQCC) standards for benzene, toluene, ethyl benzene and total xylene (BTEX) and sampling was discontinued by Amoco in 1996 in accordance with the New Mexico Oil Conservation Division (OCD) approved Groundwater Management Plan. Groundwater from monitoring wells MW-4 and MW-5 revealed BTEX concentrations in excess of WQCC standards. It was presumed that monitoring well MW-5 was installed in a location within or immediately adjacent to an abandoned dehydrator unit with an associated pit. At that time possible downgradient migration had not been fully delineated. Installation of an additional monitoring well was recommended.

Monitoring well MW-6 was installed in June 1997 to further delineate possible down gradient migration of hydrocarbon impact. Completion Diagram and Borehole Log for the monitoring well installed on site in 1997 is presented in Figure 12. Initial groundwater sampling of monitoring well MW-6 revealed BTEX concentrations that were non-detect or below WQCC standards and sampling of monitoring well MW-6 was discontinued by Amoco.

During a site visit in 1998 after the XTO acquisition it was discovered that monitoring well MW-4 had been damaged during location equipment upgrades. Monitoring well MW-4 was replaced in June 1998 with monitoring well MW-4R. Monitoring well MW-4R was positioned closer to the production pit excavation. Completion Diagram and Borehole Log for the replacement monitoring well installed on site in 1998 is presented in Figure 13.

An annual groundwater report for years 1996-1998 was submitted to the OCD in February 1999. It was recommended that monitoring wells MW-4R and MW-5 be sampled on an

2009 XTO GROUNDWATER REPORT

annual basis until results indicate otherwise. It was also suggested that monitoring well MW-3 be re-sampled annually to verify no further migration from the production pit.

Monitoring wells MW-3 and MW-6 were sampled annually through 2000. BTEX constituents were not detected in these samples. Monitoring well MW-4R was sampled annually through 2002 with results consistently beneath detection levels for BTEX. Monitoring well MW-5 was sampled annually through 2005 and laboratory results reveal elevated levels of BTEX exceeding WQCC standards.

The 2005 annual groundwater report was submitted to the OCD in January 2006 requesting discontinued sampling for BTEX in all monitoring wells except monitoring well MW-5. Annual sampling was proposed in monitoring well MW-5 until results indicate otherwise.

The 2006 annual groundwater report was submitted to the OCD in February 2007 proposing continued annual sampling of monitoring well MW-5 until the BTEX concentrations in groundwater are below closure standards.

The 2007 annual groundwater report was submitted to the OCD in February 2008 proposing quarterly sampling of monitoring well MW-5 to monitor decreasing BTEX concentrations.

The 2008 annual groundwater report was submitted to the OCD in April 2009 proposing quarterly sampling of monitoring well MW-5 to monitor decreasing BTEX concentrations.

A summary of laboratory results from historical and current groundwater monitoring is presented as Table 1. A summary of general water quality data from 1999 is presented as Table 2. Copies of the laboratory data sheets and associated quality assurance/quality control data for 2009 are presented as Attachment 2.

METHODOLOGY

Quarterly groundwater samples were collected and submitted for laboratory analysis of BTEX in monitoring well MW-5 in 2009.

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 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

2009 XTO GROUNDWATER REPORT

water is representative of aquifer conditions. Stabilization is defined as three consecutive stable readings for each water property (± 0.4 units for pH, ± 10 percent for electric conductivity and $\pm 2^\circ$ 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 40-milliliter (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. 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.

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-5 indicate a slight fluctuation but confirm continued degradation of BTEX levels throughout the year. Benzene concentrations are still above WQCC standards while toluene, ethyl benzene and total xylenes are currently below standards. All laboratory analytical results are presented in Table 1. Laboratory reports are presented in Attachment 2.

Field data collected during site monitoring activities indicate a groundwater gradient that is likely influenced by a nearby irrigation ditch located immediately west of the location. In March and December 2009, when the irrigation ditch is dry, the groundwater gradient trends to the west. In June and September 2009, the groundwater direction is reversed due to the presence of water in the adjacent irrigation ditch. Figures 3-6 illustrate the estimated groundwater gradients during 2009.

CONCLUSIONS

Based on the laboratory results from 2009, degradation of BTEX is occurring and there is no further hydrocarbon impact either up gradient or down gradient of the source area.

RECOMMENDATIONS

Continued quarterly sampling of groundwater for BTEX constituents in monitoring well MW-5 until WQCC standards have been met for four consecutive quarters.

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

Table 1

XTO ENERGY INC. GROUNDWATER LAB RESULTS

ROWLAND GC #1- PROD. TANK & SEP. PITS
UNIT P, SEC. 25, T30N, R12W

Sample Date	Monitor Well No.	DTW (ft)	TD (ft)	Product (ft)	BTEX EPA Method 801 (PPB)			
					Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylene (ug/L)
14-Jun-96	MW #1	16.11	25.00		ND	ND	ND	ND
14-Jun-96	MW #2	15.44	20.00		ND	1.19	ND	3.41
26-May-99		15.30			NA	NA	NA	NA
14-Jun-96	MW #3	14.39	20.00		ND	ND	ND	ND
26-May-99		15.29			ND	NA	NA	NA
30-Jun-00		15.51			ND	ND	ND	ND
28-Jun-06		13.81			NO RECOVERY			
14-Jun-96	MW #4	13.72	19.00		94.3	2.71	ND	106.4
24-Jun-97		14.02	19.00		44.7	0.5	0.4	3
26-Jun-98	MW #4R	11.52	19.09		13.4	ND	ND	0.6
26-May-99		11.28			16.4	0.9	2.1	72.2
30-Jun-00		11.69			ND	ND	ND	ND
16-May-01		13.07			ND	ND	ND	ND
25-Sep-01		11.81			ND	ND	ND	ND
19-Dec-01		12.66			ND	ND	ND	ND
19-Feb-02		13.97			ND	ND	ND	ND
28-Jun-06		9.87	19.00		NO RECOVERY			
14-Jun-96	MW #5	10.40	16.90		25.4	732	953	9,070
24-Jun-97		10.27	15.00		58.8	2.5	2.8	6,290
26-Jun-98		10.34	15.00		1,270	89	41.4	3,200
26-May-99		10.03			174	129	252	990
30-Jun-00		10.78			38	6.4	750	6,390
16-May-01		12.52			49	34	700	4,480
26-Jun-02		10.87			84	ND	630	3,460
30-Jun-03		10.96			51	ND	420	2,600
21-Jun-04		9.85			39	19	490	1,200
27-Jun-05		9.32			18	44	420	1,900
28-Jun-06		9.35	15.23		60	ND	360	1,500
15-Jun-07		8.51	15.23		55	ND	240	620
26-Dec-07		10.17	15.23		ND	ND	ND	ND
12-Mar-08		11.26	15.23		28	3.6	88	290
02-Jun-08		8.38	15.23		61	4.6	300	890
22-Sep-08		7.65	15.23		10	ND	97	260
05-Dec-08		10.30	15.23		32	4.8	170	410
02-Mar-09		12.14	15.23		180	7.8	480	1,400
10-Jun-09		8.80	15.23		120	ND	240	590
15-Sep-09		8.94	15.23		32	ND	160	380
10-Dec-09		10.92	15.23		45	ND	58	110
24-Jun-97	MW #6	15.55	25.00		ND	0.6	0.5	5.4
26-May-99		15.79			NA	NA	NA	NA
30-Jun-00		15.90			ND	ND	ND	ND
28-Jun-06		13.59			NO RECOVERY			
NMWQCC GROUNDWATER STANDARDS					10	750	750	620

Table 2

XTO ENERGY INC. GROUNDWATER LAB RESULTS

ROWLAND GC #1- PROD. TANK & SEP. PITS UNIT P, SEC. 25, T30N, R12W
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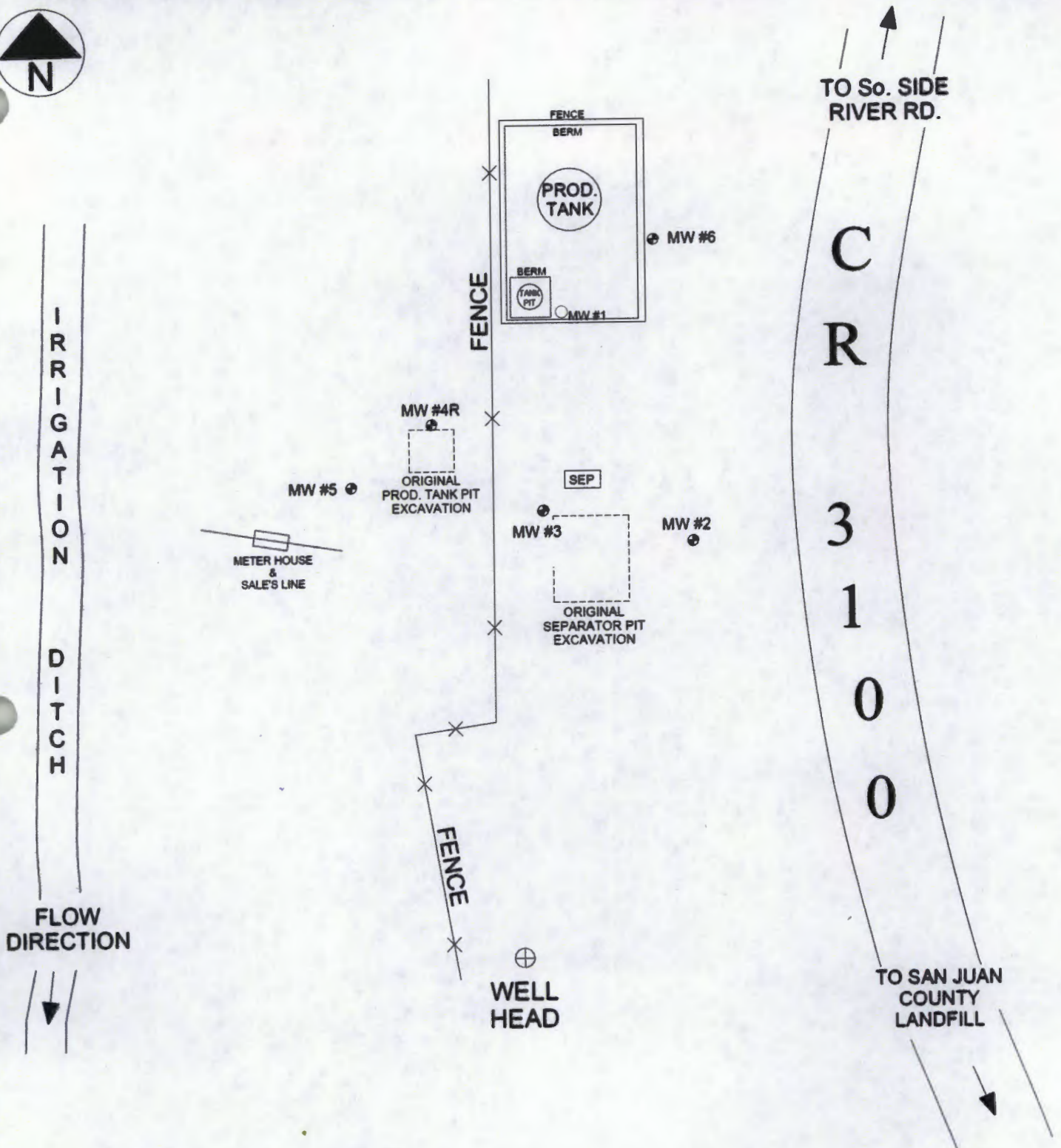
Sample Date: May 26, 1999

PARAMETERS	MW #2	MW #3	MW #4R	MW #5	MW #6	UNITS
LAB Ph	7.35	7.11	7.06	7.52	7.67	s.u.
LAB CONDUCTIVITY @ 25 C	18,500	3,200	2,250	2,050	20,420	umhos/cm
TOTAL DISSOLVED SOLIDS @ 180 C	9,200	1,550	1,110	1,016	10,200	mg/L
TOTAL DISSOLVED SOLIDS (Calc)	9,111	1,480	1,076	1,010	10,026	mg/L
SODIUM ABSORPTION RATIO	34.8	5.3	2.7	0.2	30.6	ratio
TOTAL ALKALINITY AS CaCO3	536	496	576	880	352	mg/L
TOTAL HARDNESS AS CaCO3	1,048	560	584	872	1,456	mg/L
BICARBONATE AS HCO3	536	496	576	880	352	mg/L
CARBONATE AS CO3	< 1	< 1	< 1	< 1	< 1	mg/L
HYDROXIDE AS OH	< 1	< 1	< 1	< 1	< 1	mg/L
NITRATE NITROGEN	190	6.6	0.4	0.3	220	mg/L
NITRITE NITROGEN	0.214	0.083	0.027	0.016	0.94	mg/L
CHLORIDE	644	188	160	112	560	mg/L
FLUORIDE	1.43	0.48	0.67	0.36	1.54	mg/L
PHOSPHATE	0.5	0.7	0.1	2	0.4	mg/L
SULFATE	4,980	490	200	21	5,800	mg/L
IRON	0.001	0.017	0.003	0.519	0.012	mg/L
CALCIUM	298	160	179	285	477	mg/L
MAGNESIUM	74.2	9.1	33.2	39.1	64.5	mg/L
POTASSIUM	7.5	4.0	3.0	1.1	7.5	mg/L
SODIUM	2,590	290	150	15	2,680	mg/L
CATION/ANION DIFFERENCE	0.03	0.54	0.56	0.02	0.07	%

Figure 1



Figure 2



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.

ONE INCH = 50 FEET
0 50 100 FT.

XTO ENERGY INC.

ROWLAND GC #1

NE/4 NW/4 SEC. 26, T30N. R12W, NMPM

SAN JUAN COUNTY, NEW MEXICO

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 832-1189

PROJECT: MW SAMPLING

DRAWN BY: NJV

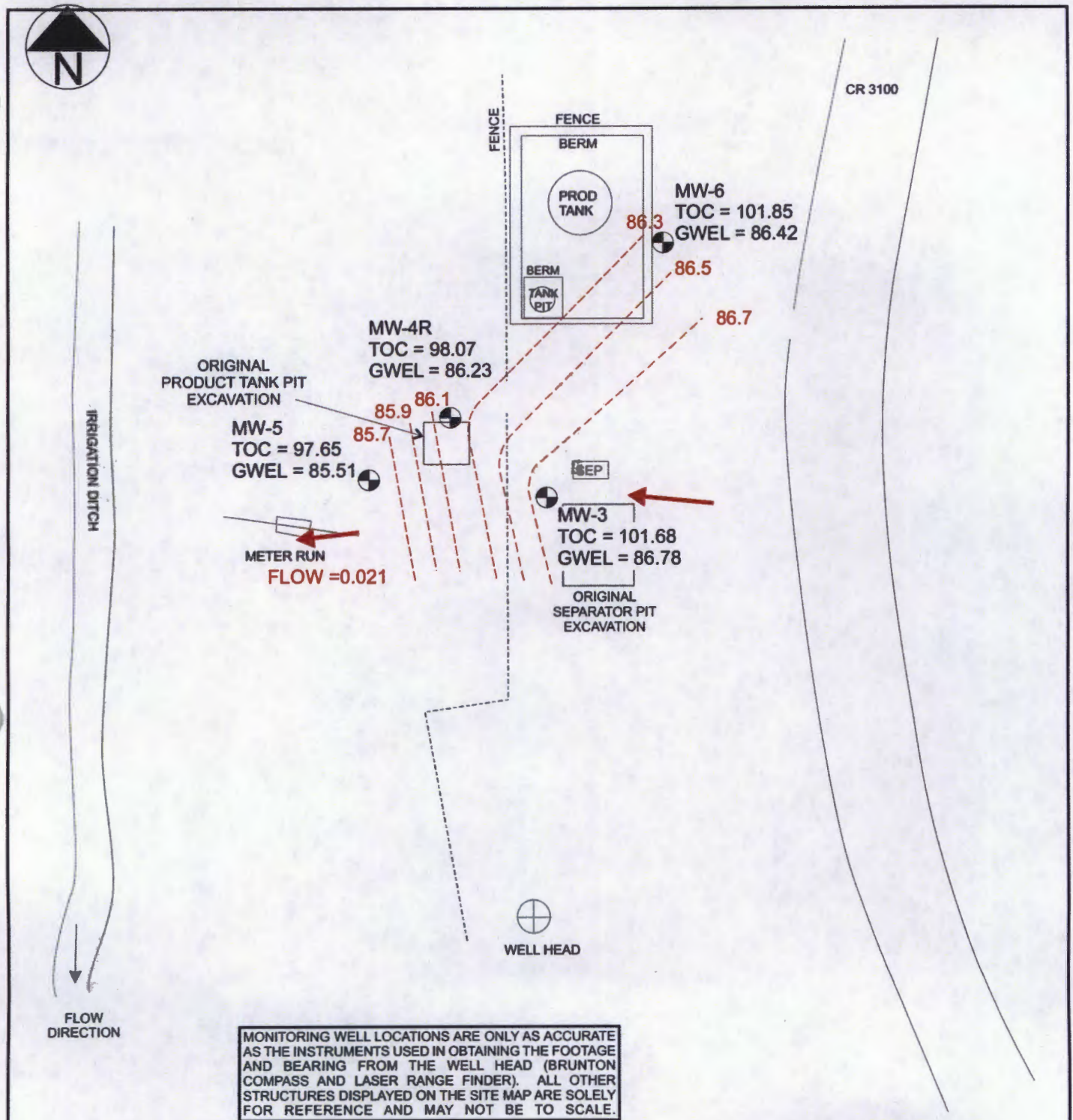
FILENAME: 05-26-99-SM.SKF

REVISED: 10/14/05 NJV

**SITE
MAP**

05/99

Figure 3



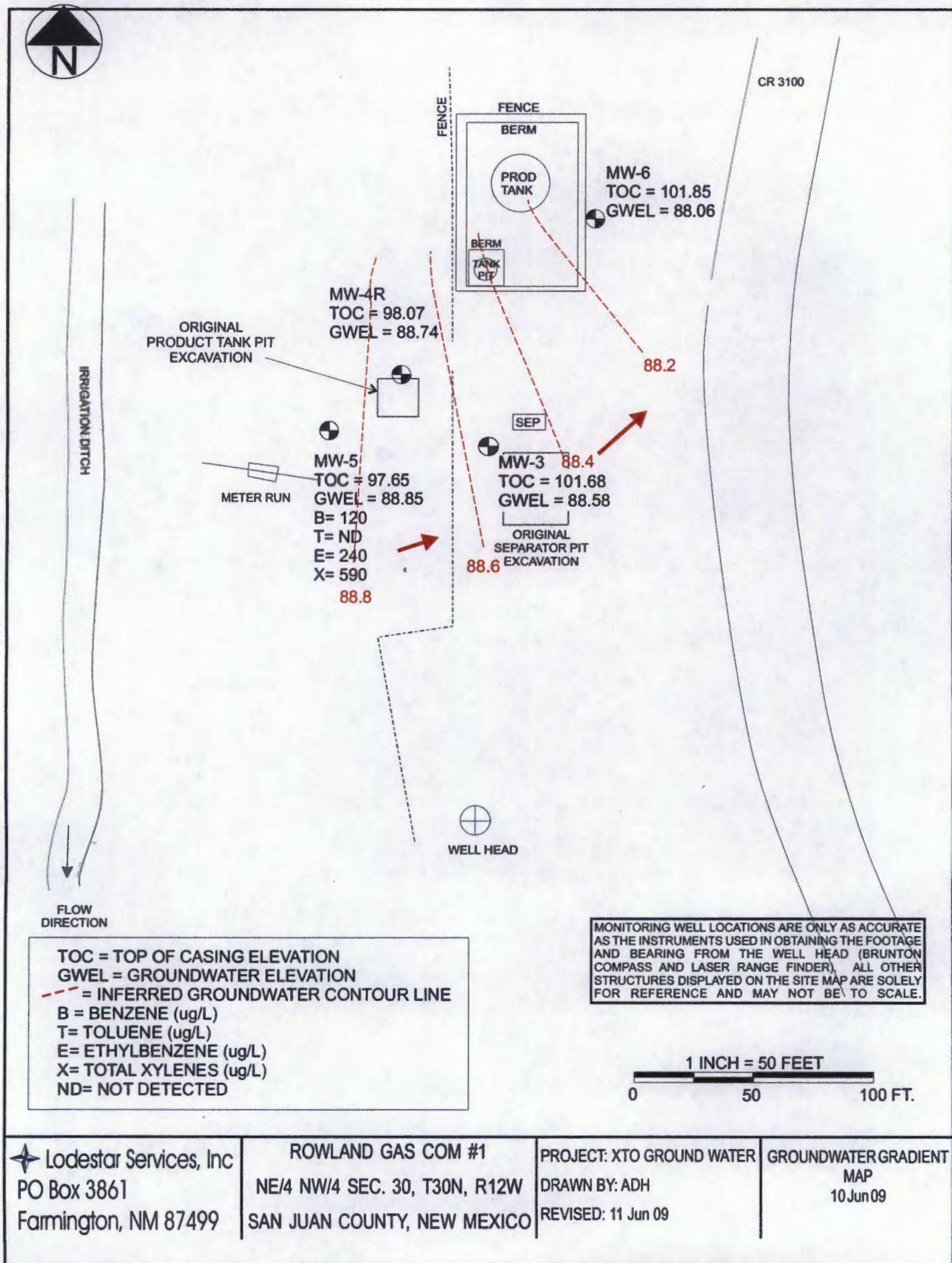
Lodestar Services, Inc
 PO Box 3861
 Farmington, NM 87499

ROWLAND GAS COM #1
 NE/4 NW/4 SEC. 30, T30N, R12W
 SAN JUAN COUNTY, NEW MEXICO

PROJECT: XTO GROUND WATER
 DRAWN BY: ADH
 REVISED: 04 Mar 09

GROUNDWATER GRADIENT
 MAP
 02 Mar 09

Figure 4



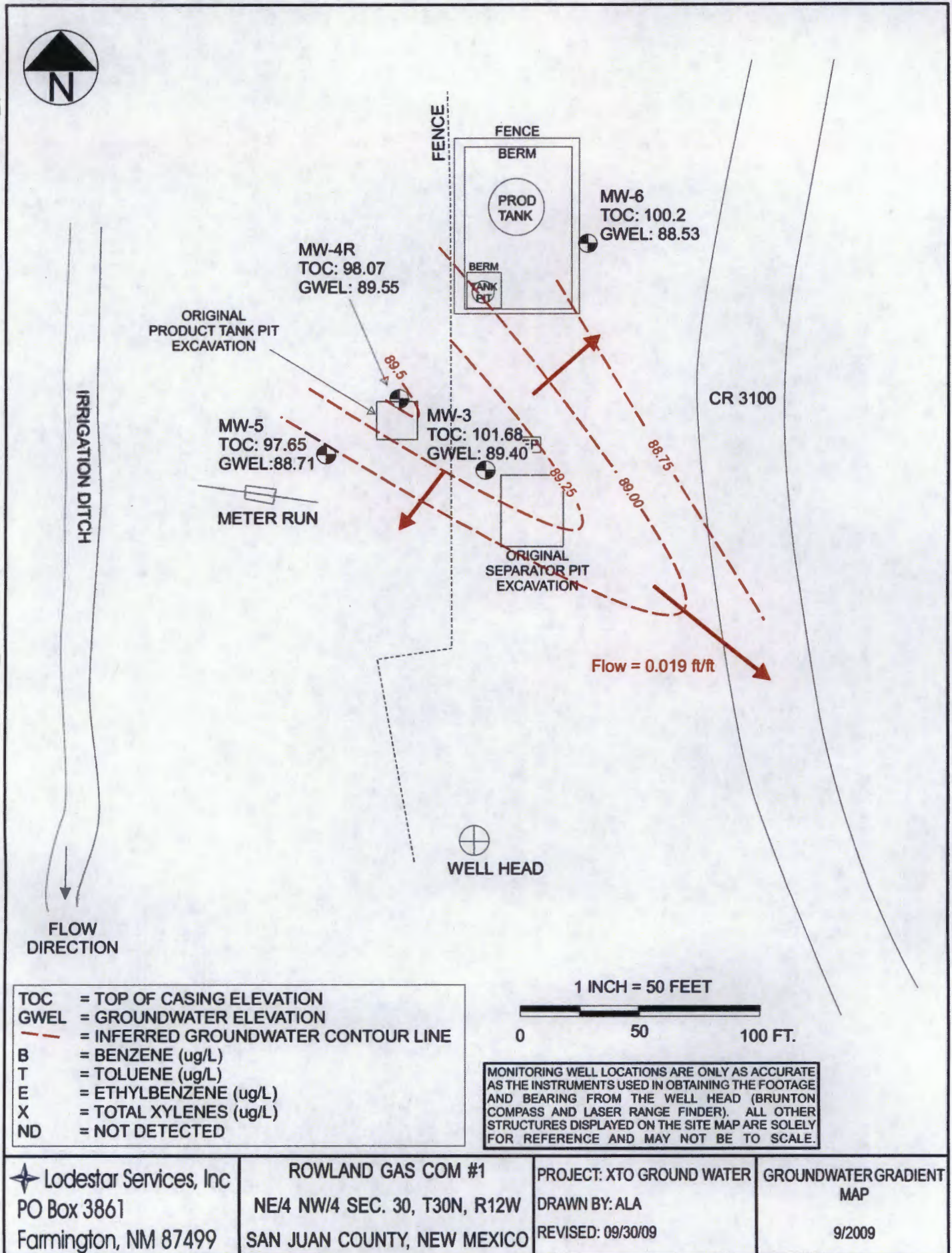
Lodestar Services, Inc
PO Box 3861
Farmington, NM 87499

ROWLAND GAS COM #1
NE/4 NW/4 SEC. 30, T30N, R12W
SAN JUAN COUNTY, NEW MEXICO

PROJECT: XTO GROUND WATER
DRAWN BY: ADH
REVISED: 11 Jun 09

GROUNDWATER GRADIENT
MAP
10 Jun 09

Figure 5



Lodestar Services, Inc
PO Box 3861
Farmington, NM 87499

ROWLAND GAS COM #1
NE/4 NW/4 SEC. 30, T30N, R12W
SAN JUAN COUNTY, NEW MEXICO

PROJECT: XTO GROUND WATER
DRAWN BY: ALA
REVISED: 09/30/09

GROUNDWATER GRADIENT
MAP
9/2009

Figure 6

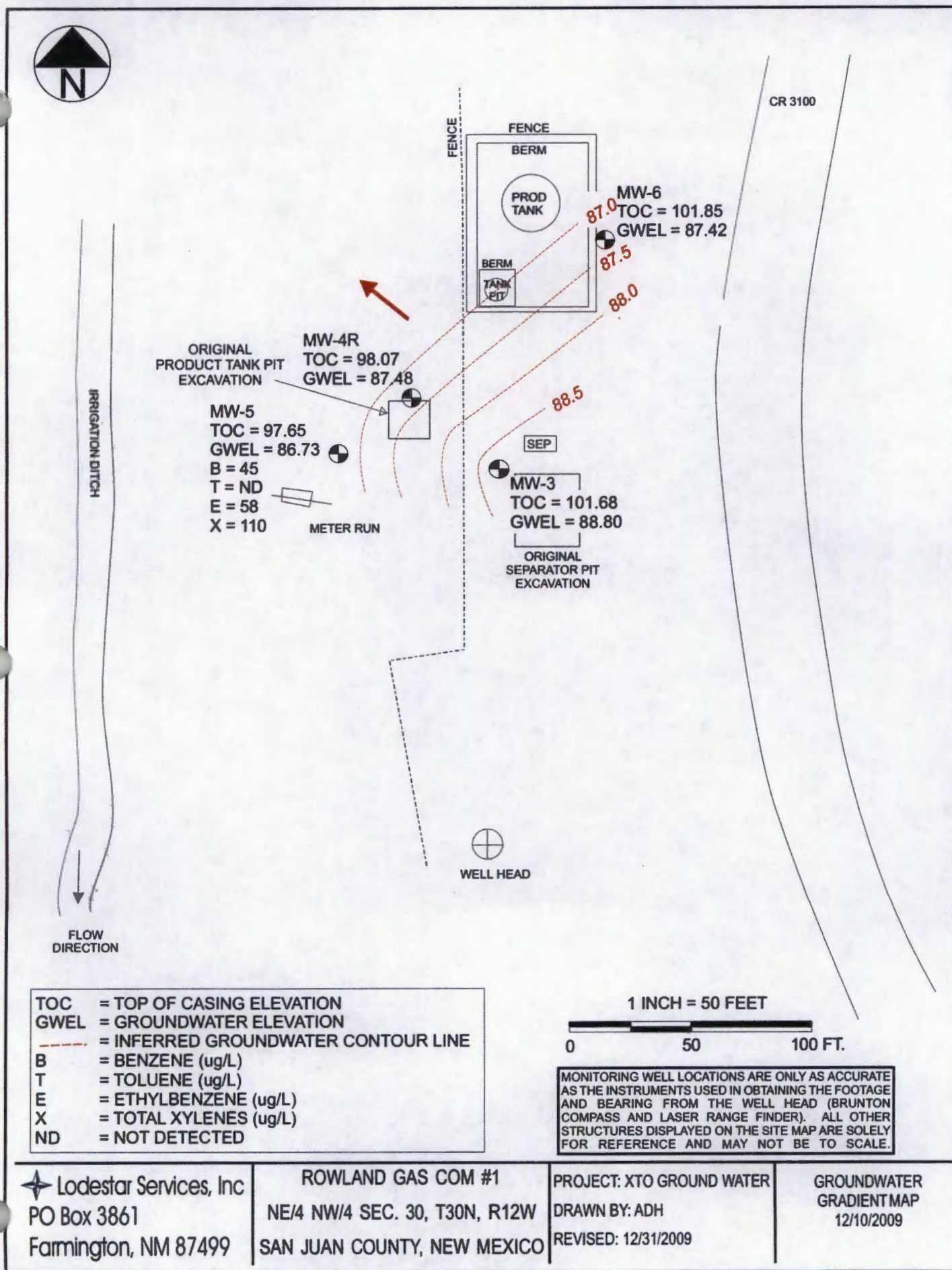


Figure 7

BLAGG ENGINEERING, Inc.

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

BORE / TEST HOLE REPORT

BORING #..... BH - 1
MW #..... 1
PAGE #..... 1
DATE STARTED 5/30/96
DATE FINISHED 6/03/96
OPERATOR..... JCB
PREPARED BY NJV

LOCATION NAME: ROWLAND GC # 1
CLIENT: AMOCO PRODUCTION COMPANY
CONTRACTOR: BLAGG ENGINEERING, INC.
EQUIPMENT USED: MOBILE DRILL RIG (EARTHPROBE)
BORING LOCATION: N18E, 201 FEET FROM WELL HEAD.

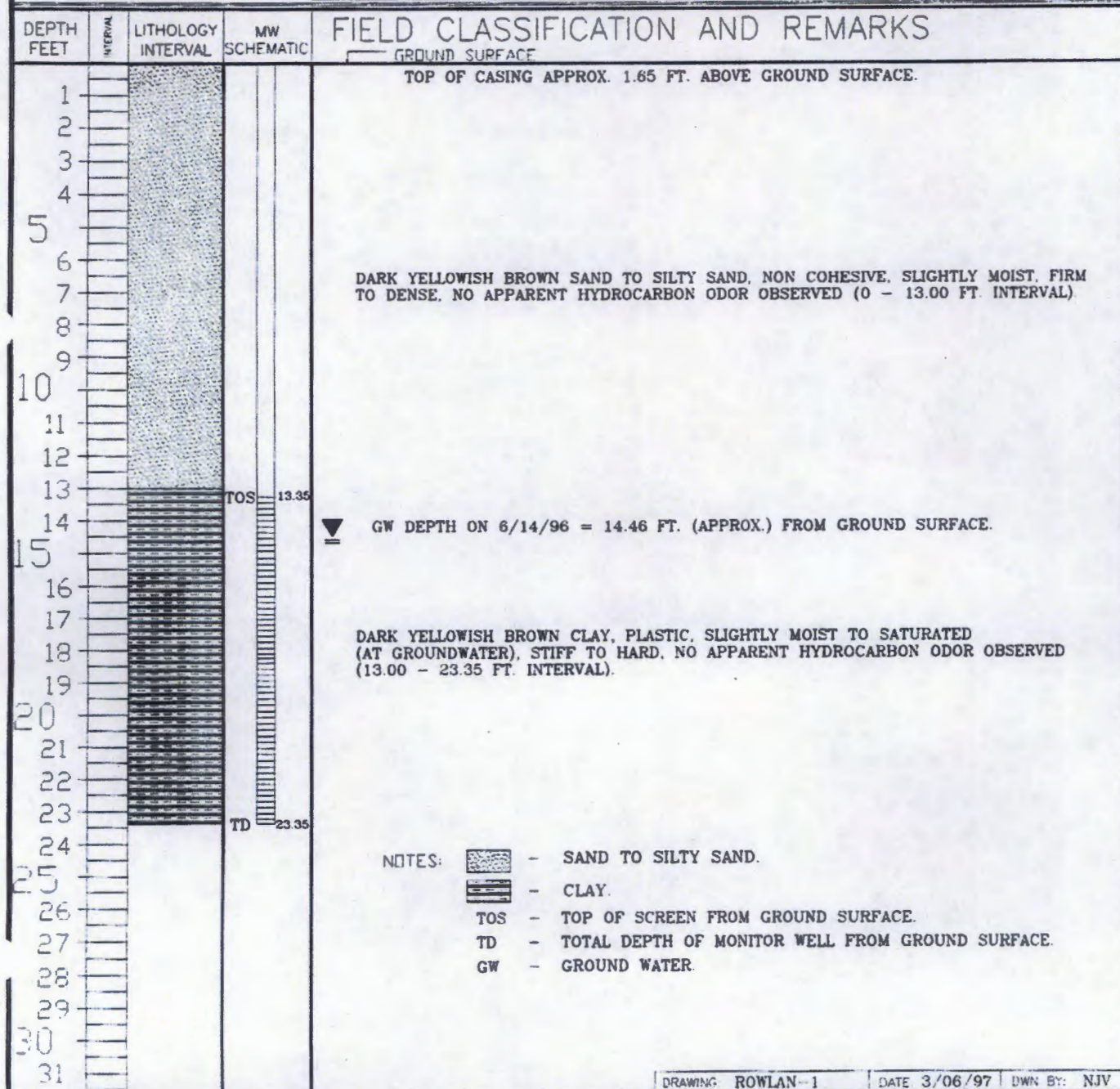


Figure 8

BLAGG ENGINEERING, Inc.

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

BORE / TEST HOLE REPORT

LOCATION NAME: ROWLAND GC # 1
CLIENT: AMOCO PRODUCTION COMPANY
CONTRACTOR: BLAGG ENGINEERING, INC.
EQUIPMENT USED: MOBILE DRILL RIG (EARTHPROBE)
BORING LOCATION: N23E, 156 FEET FROM WELL HEAD.

BORING #..... BH - 2
MW #..... 2
PAGE #..... 2
DATE STARTED 5/30/96
DATE FINISHED 6/03/96
OPERATOR..... JCB
PREPARED BY NJV

DEPTH
FEET

INTERVAL

LITHOLOGY
INTERVAL

MW
SCHEMATIC

FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROX. 1.90 FT. ABOVE GROUND SURFACE.

DARK YELLOWISH BROWN SAND TO SILTY SAND, NON COHESIVE, SLIGHTLY MOIST, FIRM TO DENSE, NO APPARENT HYDROCARBON ODOR OBSERVED (0.0 - 13.5 FT. INTERVAL).

GW DEPTH ON 6/14/96 = 13.54 FT. (APPROX.) FROM GROUND SURFACE.

DARK YELLOWISH BROWN CLAY, PLASTIC, SATURATED (AT GROUNDWATER), STIFF TO HARD, NO APPARENT HYDROCARBON ODOR OBSERVED (13.5 - 18.1 FT. INTERVAL).

NOTES:

 - SAND TO SILTY SAND.

 - CLAY.

TOS - TOP OF SCREEN FROM GROUND SURFACE.

TD - TOTAL DEPTH OF MONITOR WELL FROM GROUND SURFACE.

GW - GROUND WATER.

Figure 9

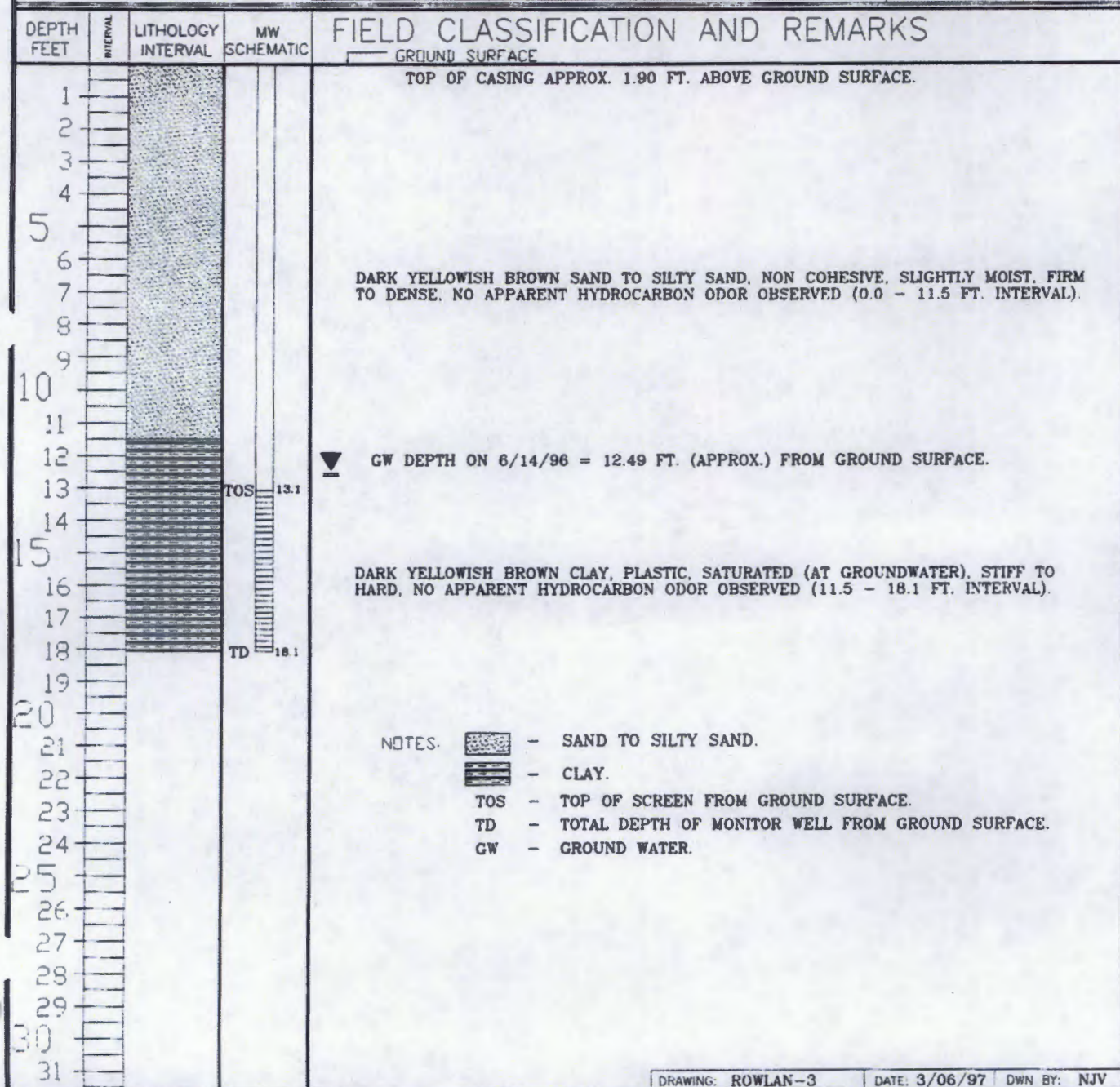
BLAGG ENGINEERING, Inc.

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

BORE / TEST HOLE REPORT

LOCATION NAME: ROWLAND GC # 1
CLIENT: AMOCO PRODUCTION COMPANY
CONTRACTOR: BLAGG ENGINEERING, INC.
EQUIPMENT USED: MOBILE DRILL RIG (EARTHPROBE)
BORING LOCATION: N5E, 156 FEET FROM WELL HEAD.

BORING #..... BH - 3
MW #..... 3
PAGE #..... 3
DATE STARTED 5/30/96
DATE FINISHED 6/03/96
OPERATOR..... JCB
PREPARED BY NJV



BLAGG ENGINEERING, Inc.

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

BORE / TEST HOLE REPORT

LOCATION NAME: ROWLAND GC # 1
CLIENT: AMOCO PRODUCTION COMPANY
CONTRACTOR: BLAGG ENGINEERING, INC.
EQUIPMENT USED: MOBILE DRILL RIG (EARTHPROBE)
BORING LOCATION: N5E, 156 FEET FROM WELL HEAD.

BORING #..... BH - 3
MW #..... 3
PAGE #..... 3A
DATE STARTED 5/30/96
DATE FINISHED 6/03/96
OPERATOR..... JCB
PREPARED BY NJV

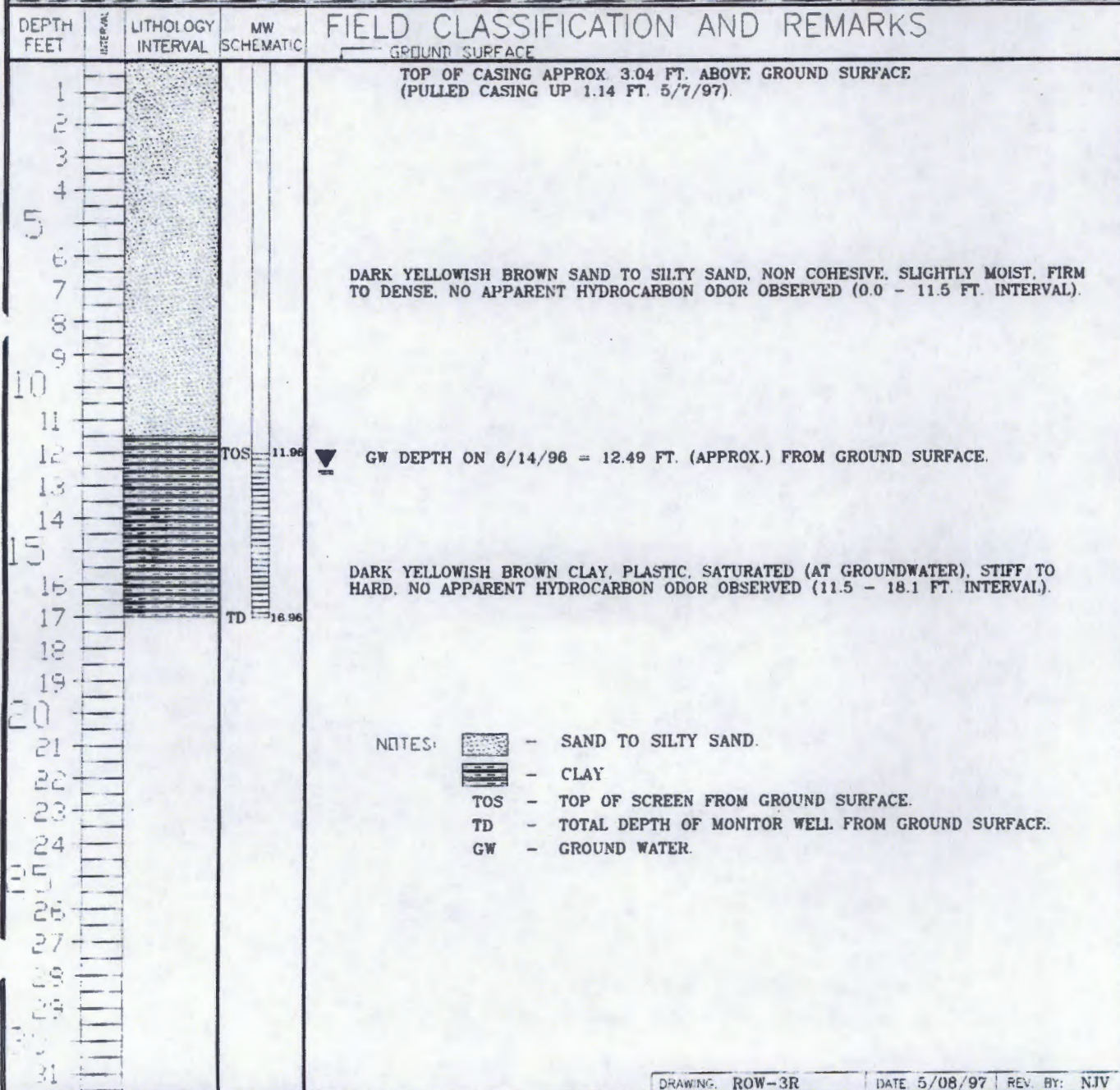


Figure 10

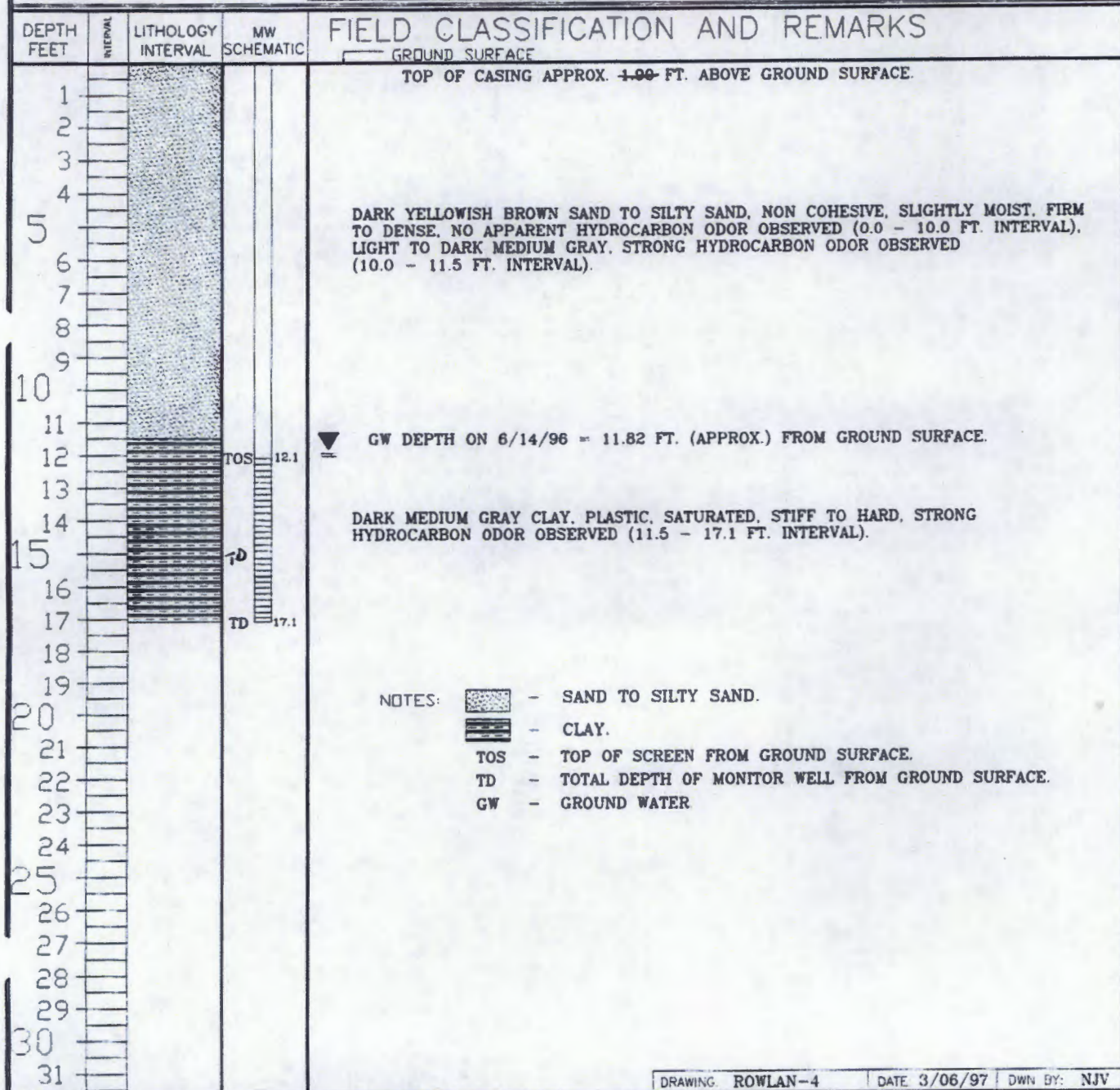
BLAGG ENGINEERING, Inc.

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

BORE / TEST HOLE REPORT

LOCATION NAME: ROWLAND GC # 1
CLIENT: AMOCO PRODUCTION COMPANY
CONTRACTOR: BLAGG ENGINEERING, INC.
EQUIPMENT USED: MOBILE DRILL RIG (EARTHPROBE)
BORING LOCATION: N1E, 216 FEET FROM WELL HEAD.

BORING #..... BH - 4
MW #..... 4
PAGE #..... 4
DATE STARTED 5/30/96
DATE FINISHED 6/03/96
OPERATOR..... JCB
PREPARED BY NJV



BLAGG ENGINEERING, Inc.

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

BORE / TEST HOLE REPORT

LOCATION NAME: ROWLAND GC # 1
CLIENT: AMOCO PRODUCTION COMPANY
CONTRACTOR: BLAGG ENGINEERING, INC.
EQUIPMENT USED: MOBILE DRILL RIG (EARTHPROBE)
BORING LOCATION: N1E. 216 FEET FROM WELL HEAD.

BORING #..... BH - 4
MW #..... 4
PAGE #..... 4A
DATE STARTED 5/30/96
DATE FINISHED 6/03/96
OPERATOR..... JCB
PREPARED BY NJV

DEPTH FEET	INTERVAL	LITHOLOGY INTERVAL	MW SCHEMATIC	FIELD CLASSIFICATION AND REMARKS
1				TOP OF CASING APPROX. 3.03 FT. ABOVE GROUND SURFACE (PULLED CASING UP 1.13 FT. 5/7/97).
2				
3				
4				
5				DARK YELLOWISH BROWN SAND TO SILTY SAND, NON COHESIVE, SLIGHTLY MOIST, FIRM TO DENSE, NO APPARENT HYDROCARBON ODOR OBSERVED (0.0 - 10.0 FT. INTERVAL). LIGHT TO DARK MEDIUM GRAY, STRONG HYDROCARBON ODOR OBSERVED (10.0 - 11.5 FT. INTERVAL).
6				
7				
8				
9				
10				
11				GW DEPTH ON 6/24/97 = 10.99 FT. (APPROX.) FROM GROUND SURFACE.
12				
13				DARK MEDIUM GRAY CLAY, PLASTIC, SATURATED, STIFF TO HARD, STRONG HYDROCARBON ODOR OBSERVED (11.5 - 17.1 FT. INTERVAL).
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				

NOTES:

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

Figure 11

BLAGG ENGINEERING, Inc.

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

BORE / TEST HOLE REPORT

LOCATION NAME: ROWLAND GC # 1
CLIENT: AMOCO PRODUCTION COMPANY
CONTRACTOR: BLAGG ENGINEERING, INC.
EQUIPMENT USED: MOBILE DRILL RIG (EARTHROBE)
BORING LOCATION: N20W, 171 FEET FROM WELL HEAD.

BORING #..... BH - 5
MW #..... 5
PAGE #..... 5
DATE STARTED 5/30/96
DATE FINISHED 6/03/96
OPERATOR..... JCB
PREPARED BY NJV

DEPTH
FEET

INTERVAL

LITHOLOGY
INTERVAL

MW
SCHEMATIC

FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING FLUSH WITH GROUND SURFACE (ADDED 1.95 FT. EXTENSION FOR SAMPLING PURPOSES).

DARK YELLOWISH BROWN SAND TO SILTY SAND, NON COHESIVE, SLIGHTLY MOIST, FIRM TO DENSE, NO APPARENT HYDROCARBON ODOR OBSERVED (0.0 - 8.0 FT. INTERVAL).
LIGHT TO DARK MEDIUM GRAY, STRONG HYDROCARBON ODOR OBSERVED (8.0 - 10.0 FT. INTERVAL).

▼ GW DEPTH ON 6/14/96 = 8.45 FT. (APPROX.) FROM GROUND SURFACE.

DARK MEDIUM GRAY CLAY, PLASTIC, SATURATED, STIFF TO HARD, STRONG HYDROCARBON ODOR OBSERVED (10.0 - 15.0 FT. INTERVAL).

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

BLAGG ENGINEERING, Inc.

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

BORE / TEST HOLE REPORT

LOCATION NAME: ROWLAND GC # 1
CLIENT: AMOCO PRODUCTION COMPANY
CONTRACTOR: BLAGG ENGINEERING, INC.
EQUIPMENT USED: MOBILE DRILL RIG (EARTHPROBE)
BORING LOCATION: N20W, 171 FEET FROM WELL HEAD.

BORING #..... BH - 5
MW #..... 5
PAGE #..... 5A
DATE STARTED 5/30/96
DATE FINISHED 6/03/96
OPERATOR..... JCB
PREPARED BY NJV

DEPTH FEET	LITHOLOGY INTERVAL	MW SCHEMATIC	FIELD CLASSIFICATION AND REMARKS
1			TOP OF CASING APPROX. 1.95 FT. ABOVE GROUND SURFACE (PULLED CASING UP 1.95 FT. 5/7/97).
2			
3			
4			DARK YELLOWISH BROWN SAND TO SILTY SAND. NON COHESIVE. SLIGHTLY MOIST. FIRM TO DENSE. NO APPARENT HYDROCARBON ODOR OBSERVED (0.0 - 8.0 FT. INTERVAL). LIGHT TO DARK MEDIUM GRAY. STRONG HYDROCARBON ODOR OBSERVED (8.0 - 10.0 FT. INTERVAL).
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
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29			
30			
31			

GROUND SURFACE

TOS 8.05

GW DEPTH ON 6/24/97 = 8.32 FT. (APPROX.) FROM GROUND SURFACE.

TD 13.05

DARK MEDIUM GRAY CLAY. PLASTIC. SATURATED. STIFF TO HARD. STRONG HYDROCARBON ODOR OBSERVED (10.0 - 15.0 FT. INTERVAL).

NOTES:

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

DRAWING: ROW-5R DATE 6/25/97 REV. BY: NJV

Figure 12

BLAGG ENGINEERING, Inc. P.O. BOX 87 BLOOMFIELD, NM 87413 (505) 632-1199			
BORE / TEST HOLE REPORT			BORING #..... BH - 6 MW #..... 6 PAGE #..... 6 DATE STARTED 6/17/97 DATE FINISHED 6/17/97 OPERATOR..... JCB PREPARED BY NJV
LOCATION NAME: CLIENT: CONTRACTOR: EQUIPMENT USED: BORING LOCATION:	ROWLAND GC # 1 AMOCO PRODUCTION COMPANY BLAGG ENGINEERING, INC. MOBILE DRILL RIG (EARTHPROBE) N10.5E, 258 FEET FROM WELL HEAD.		
DEPTH FEET	INTERVAL	LITHOLOGY INTERVAL	FIELD CLASSIFICATION AND REMARKS
			GROUND SURFACE TOP OF CASING APPROX. 2.85 FT. ABOVE GROUND SURFACE
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31			DARK YELLOWISH BROWN SAND TO SILTY SAND, NON COHESIVE TO SLIGHTLY PLASTIC, SLIGHTLY MOIST, FIRM TO DENSE. NO APPARENT HYDROCARBON ODOR OBSERVED (0.0 - 16.0 FT. INTERVAL).  GW DEPTH ON 6/24/97 = 12.70 FT. (APPROX.) FROM GROUND SURFACE. TOS 12.15 TD 22.15 LIGHT OLIVE GRAY CLAY, HIGHLY PLASTIC, SATURATED, STIFF TO HARD, NO APPARENT HYDROCARBON ODOR DETECTED (16.0 - 22.15 FT. INTERVAL)
NOTES:  - SAND TO SILTY SAND  - CLAY TOS - TOP OF SCREEN FROM GROUND SURFACE. TD - TOTAL DEPTH OF MONITOR WELL FROM GROUND SURFACE GW - GROUND WATER.			
DRAWING: ROWLAN-6 DATE 6/25/97 DWN BY: NJV			

Figure 13

BLAGG ENGINEERING, Inc.

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

BORE / TEST HOLE REPORT

LOCATION NAME: ROWLAND GC # 1
CLIENT: AMOCO PRODUCTION COMPANY
CONTRACTOR: BLAGG ENGINEERING, INC.
EQUIPMENT USED: MOBILE DRILL RIG (EARTHPROBE)
BORING LOCATION: N9.5W, 189 FEET FROM WELL HEAD.

BORING #..... BH - 4R
MW #..... 4R
PAGE #..... 4R
DATE STARTED 6/19/98
DATE FINISHED 6/19/98
OPERATOR..... JCB
PREPARED BY NJV

| DEPTH
FEET | INTERVAL | LITHOLOGY
INTERVAL | MW
SCHEMATIC | FIELD CLASSIFICATION AND REMARKS | |---------------|----------|-----------------------|-----------------|----------------------------------| |---------------|----------|-----------------------|-----------------|----------------------------------|

GROUND SURFACE

TOP OF CASING APPROX. 0.91 FT. ABOVE GROUND SURFACE.

DARK YELLOWISH BROWN SAND TO SILTY SAND, NON COHESIVE, SLIGHTLY MOIST, FIRM TO DENSE, NO APPARENT HYDROCARBON ODOR DETECTED (0.0 - 10.5 FT. INTERVAL).

TOS 9.09

▼ GW DEPTH ON 6/26/98 = 10.61 FT. (APPROX.) FROM GROUND SURFACE.

DARK MEDIUM GRAY CLAY, PLASTIC, SATURATED, STIFF TO HARD. HYDROCARBON ODOR DETECTED (10.5 - 19.09 FT. INTERVAL).

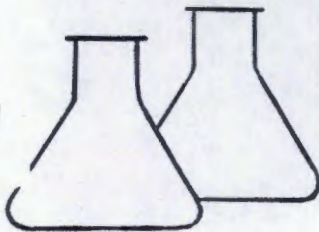
TD 19.09

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

DRAWING: ROW-4R

DATE: 6/22/98

DRN. BY: NJV



ENVIROTECH LABS

5796 US HIGHWAY 64-3014 • FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	5 @ GW (13')	Date Reported:	08-04-93
Laboratory Number:	5816	Date Sampled:	08-02-93
Sample Matrix:	Water	Date Received:	08-02-93
Preservative:	HgCl & Cool	Date Analyzed:	08-03-93
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	183	0.2
Toluene	1.1	0.4
Ethylbenzene	0.3	0.2
p,m-Xylene	2.1	0.4
o-Xylene	32.3	0.3

SURROGATE RECOVERIES:	Parameter	Percent-Recovery
	Trifluorotoluene	93 %
	Bromofluorobenzene	87 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: Roland GC #1 Production Pit C4923

Kevin L. Cramer
Analyst

Marie D. Young
Review

Hall Environmental Analysis Laboratory, Inc.

Date: 13-Mar-09

CLIENT: XTO Energy
 Lab Order: 0903056
 Project: Ground Water
 Lab ID: 0903056-05

Client Sample ID: Rowland GC1 MW-5
 Collection Date: 3/2/2009 3:32:00 PM
 Date Received: 3/4/2009
 Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: DAM
Benzene	180	20		µg/L	20	3/6/2009 12:08:31 AM
Toluene	7.8	5.0		µg/L	5	3/6/2009 6:13:34 PM
Ethylbenzene	480	20		µg/L	20	3/6/2009 12:08:31 AM
Xylenes, Total	1400	40		µg/L	20	3/6/2009 12:08:31 AM
Surr: 4-Bromofluorobenzene	97.7	65.9-130		%REC	20	3/6/2009 12:08:31 AM

Qualifiers:

- * Value exceeds Maximum Contaminant Level
- E Estimated value
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- S Spike recovery outside accepted recovery limits

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- MCL Maximum Contaminant Level
- RL Reporting Limit

QA/QC SUMMARY REPORT

Client: XTO Energy
Project: Ground Water

Work Order: 0903056

Analyte	Result	Units	PQL	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
---------	--------	-------	-----	------	----------	-----------	------	----------	------

Method: EPA Method 8021B: Volatiles

Sample ID: 0903056-13A MSD

MSD

Batch ID: R32670

Analysis Date:

3/5/2009 8:30:29 PM

Benzene	18.39	µg/L	1.0	92.0	85.9	113	1.99	27	
Toluene	18.68	µg/L	1.0	93.4	86.4	113	2.57	19	
Ethylbenzene	19.24	µg/L	1.0	96.2	83.5	118	3.14	10	
Xylenes, Total	58.70	µg/L	2.0	97.8	83.4	122	3.65	13	

Sample ID: 5ML RB

MBLK

Batch ID: R32670

Analysis Date:

3/5/2009 9:37:36 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 LCS

LCS

Batch ID: R32670

Analysis Date:

3/5/2009 9:00:58 PM

Benzene	17.20	µg/L	1.0	86.0	85.9	113			
Toluene	17.27	µg/L	1.0	86.4	86.4	113			S
Ethylbenzene	17.87	µg/L	1.0	89.3	83.5	118			
Xylenes, Total	54.36	µg/L	2.0	90.6	83.4	122			

Sample ID: 0903056-13A MS

MS

Batch ID: R32670

Analysis Date:

3/5/2009 8:00:04 PM

Benzene	18.76	µg/L	1.0	93.8	85.9	113			
Toluene	19.16	µg/L	1.0	95.8	86.4	113			
Ethylbenzene	19.86	µg/L	1.0	99.3	83.5	118			
Xylenes, Total	60.88	µg/L	2.0	101	83.4	122			

Method: SM 2540 C: Total Dissolved Solids

Sample ID: MB-18469

MBLK

Batch ID: 18469

Analysis Date:

3/10/2009

Total Dissolved Solids	ND	mg/L	20						
------------------------	----	------	----	--	--	--	--	--	--

Sample ID: LCS-18469

LCS

Batch ID: 18469

Analysis Date:

3/10/2009

Total Dissolved Solids	976.0	mg/L	20	97.6	80	120			
------------------------	-------	------	----	------	----	-----	--	--	--

Qualifiers:

E Estimated value

J Analyte detected below quantitation limits

R RPD outside accepted recovery limits

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

S Spike recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Sample Receipt Checklist

Client Name XTO ENERGY

Date Received:

3/4/2009

Work Order Number 0903056

Received by: ARS

Sample ID labels checked by:

TJ

Checklist completed by:

Signature

3/4/09

Date

Initials

Matrix:

Carrier name: 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 ☐

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 ☒

Container/Temp Blank temperature?

4°

<6° C Acceptable

If given sufficient time to cool.

COMMENTS:

Client contacted

Date contacted:

Person contacted

Contacted by:

Regarding:

Comments:

Per Ashley Neal #3 should be GC1A instead of GC1A. TS 3/4/09

Corrective Action

Hall Environmental Analysis Laboratory, Inc.

Date: 25-Jun-09

CLIENT: XTO Energy
Project: Ground Water

Lab Order: 0906245

Lab ID: 0906245-01

Collection Date: 6/10/2009 2:06:00 PM

Client Sample ID: ~~EJ Johnson C1E-MW-5R~~

Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	ND	1.0		µg/L	1	6/17/2009 8:45:43 PM
Toluene	ND	1.0		µg/L	1	6/17/2009 8:45:43 PM
Ethylbenzene	ND	1.0		µg/L	1	6/17/2009 8:45:43 PM
Xylenes, Total	ND	2.0		µg/L	1	6/17/2009 8:45:43 PM
Surr: 4-Bromofluorobenzene	85.1	65.9-130		%REC	1	6/17/2009 8:45:43 PM

Lab ID: 0906245-02

Collection Date: 6/10/2009 10:15:00 AM

Client Sample ID: Rowland GC1-MW-5

Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	120	5.0		µg/L	5	6/17/2009 11:50:00 PM
Toluene	ND	5.0		µg/L	5	6/17/2009 11:50:00 PM
Ethylbenzene	240	5.0		µg/L	5	6/17/2009 11:50:00 PM
Xylenes, Total	590	10		µg/L	5	6/17/2009 11:50:00 PM
Surr: 4-Bromofluorobenzene	110	65.9-130		%REC	5	6/17/2009 11:50:00 PM

Lab ID: 0906245-03

Collection Date: 6/10/2009 11:20:00 AM

Client Sample ID: ~~Valdez A1E-MW-7~~

Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	43	1.0		µg/L	1	6/18/2009 1:21:18 AM
Toluene	25	1.0		µg/L	1	6/18/2009 1:21:18 AM
Ethylbenzene	160	10		µg/L	10	6/18/2009 12:50:55 AM
Xylenes, Total	1100	20		µg/L	10	6/18/2009 12:50:55 AM
Surr: 4-Bromofluorobenzene	111	65.9-130		%REC	10	6/18/2009 12:50:55 AM

Lab ID: 0906245-04

Collection Date: 6/10/2009 1:10:00 PM

Client Sample ID: ~~Jack Frost B2-MW-4~~

Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	19	1.0		µg/L	1	6/18/2009 2:22:07 AM
Toluene	ND	1.0		µg/L	1	6/18/2009 2:22:07 AM
Ethylbenzene	1.2	1.0		µg/L	1	6/18/2009 2:22:07 AM
Xylenes, Total	ND	2.0		µg/L	1	6/18/2009 2:22:07 AM
Surr: 4-Bromofluorobenzene	93.2	65.9-130		%REC	1	6/18/2009 2:22:07 AM

Qualifiers:

- * Value exceeds Maximum Contaminant Level
- E Estimated value
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- S Spike recovery outside accepted recovery limits

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- MCL Maximum Contaminant Level
- RL Reporting Limit

QA/QC SUMMARY REPORT

Client: XTO Energy
Project: Ground Water

Work Order: 0906245

Analyte	Result	Units	PQL	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Method: EPA Method 8021B: Volatiles									
Sample ID: 0906245-01A MSD		MSD			Batch ID: R34138	Analysis Date: 6/17/2009 8:16:58 PM			
Benzene	22.37	µg/L	1.0	112	85.9	113	0.526	27	
Toluene	21.26	µg/L	1.0	106	86.4	113	1.97	19	
Ethylbenzene	20.74	µg/L	1.0	103	83.5	118	3.21	10	
Xylenes, Total	60.36	µg/L	2.0	101	83.4	122	4.04	13	
Sample ID: 5ML RB		MBLK			Batch ID: R34138	Analysis Date: 6/17/2009 9:34:54 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: R34138	Analysis Date: 6/17/2009 8:47:28 PM			
Benzene	21.71	µg/L	1.0	109	85.9	113			
Toluene	20.57	µg/L	1.0	103	86.4	113			
Ethylbenzene	20.04	µg/L	1.0	100	83.5	118			
Xylenes, Total	58.31	µg/L	2.0	97.2	83.4	122			
Sample ID: 0906245-01A MS		MS			Batch ID: R34138	Analysis Date: 6/17/2009 7:46:33 PM			
Benzene	22.49	µg/L	1.0	112	85.9	113			
Toluene	21.68	µg/L	1.0	108	86.4	113			
Ethylbenzene	21.42	µg/L	1.0	106	83.5	118			
Xylenes, Total	62.85	µg/L	2.0	105	83.4	122			

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

Sample Receipt Checklist

Client Name XTO ENERGY

Date Received:

6/12/2009

Work Order Number 0906245

Received by: ARS

Checklist completed by:

Signature

Sample ID labels checked by:

Initials

Matrix:

Carrier name: 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 ☐	
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 ☒

Number of preserved bottles checked for pH:

<2 >12 unless noted below.

Container/Temp Blank temperature?

1.6°

<6° C Acceptable

If given sufficient time to cool.

COMMENTS:

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

Hall Environmental Analysis Laboratory, Inc.

Date: 28-Sep-09

CLIENT: XTO Energy
Project: Ground Water

Lab Order: 0909312

Lab ID: 0909312-05

Collection Date: 9/15/2009 1:00:00 PM

Client Sample ID: ~~Bruington GC #1-MW-4~~

Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	ND	1.0		µg/L	1	9/25/2009 1:33:29 AM
Toluene	ND	1.0		µg/L	1	9/25/2009 1:33:29 AM
Ethylbenzene	ND	1.0		µg/L	1	9/25/2009 1:33:29 AM
Xylenes, Total	ND	2.0		µg/L	1	9/25/2009 1:33:29 AM
Surr: 4-Bromofluorobenzene	94.2	65.9-130		%REC	1	9/25/2009 1:33:29 AM

Lab ID: 0909312-06

Collection Date: 9/15/2009 1:22:00 PM

Client Sample ID: ~~Bruington GC #1-MW-2R~~

Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	18000	400		µg/L	400	9/25/2009 2:34:15 AM
Toluene	760	400		µg/L	400	9/25/2009 2:34:15 AM
Ethylbenzene	850	400		µg/L	400	9/25/2009 2:34:15 AM
Xylenes, Total	4400	800		µg/L	400	9/25/2009 2:34:15 AM
Surr: 4-Bromofluorobenzene	93.3	65.9-130		%REC	400	9/25/2009 2:34:15 AM

Lab ID: 0909312-07

Collection Date: 9/15/2009 3:55:00 PM

Client Sample ID: Rowland GC #1-MW-5

Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	32	5.0		µg/L	5	9/25/2009 3:04:31 AM
Toluene	ND	5.0		µg/L	5	9/25/2009 3:04:31 AM
Ethylbenzene	160	5.0		µg/L	5	9/25/2009 3:04:31 AM
Xylenes, Total	380	10		µg/L	5	9/25/2009 3:04:31 AM
Surr: 4-Bromofluorobenzene	93.5	65.9-130		%REC	5	9/25/2009 3:04:31 AM

Lab ID: 0909312-08

Collection Date: 9/15/2009 12:35:00 PM

Client Sample ID: ~~Bruington GC #1-MW-1R~~

Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	ND	1.0		µg/L	1	9/25/2009 3:34:51 AM
Toluene	ND	1.0		µg/L	1	9/25/2009 3:34:51 AM
Ethylbenzene	ND	1.0		µg/L	1	9/25/2009 3:34:51 AM
Xylenes, Total	ND	2.0		µg/L	1	9/25/2009 3:34:51 AM
Surr: 4-Bromofluorobenzene	99.8	65.9-130		%REC	1	9/25/2009 3:34:51 AM

Qualifiers:

- * Value exceeds Maximum Contaminant Level
- E Estimated value
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- S Spike recovery outside accepted recovery limits

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- MCL Maximum Contaminant Level
- RL Reporting Limit

QA/QC SUMMARY REPORT

Client: XTO Energy
Project: Ground Water

Work Order: 0909312

Analyte	Result	Units	PQL	SPK Vs	SPK ref	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Method: EPA Method 8021B: Volatiles											
Sample ID: 5ML RB		MBLK				Batch ID: R35456	Analysis Date: 9/24/2009 9:20:39 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: b 6		MBLK				Batch ID: R35469	Analysis Date: 9/26/2009 1:18:45 PM				
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: b 23		MBLK				Batch ID: R35469	Analysis Date: 9/26/2009 9:47:27 PM				
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 LCS		LCS				Batch ID: R35456	Analysis Date: 9/25/2009 5:36:05 AM				
Benzene	19.44	µg/L	1.0	20	0	97.2	85.9	113			
Toluene	18.86	µg/L	1.0	20	0	94.3	86.4	113			
Ethylbenzene	19.13	µg/L	1.0	20	0	95.7	83.5	118			
Xylenes, Total	56.77	µg/L	2.0	60	0	94.6	83.4	122			
Sample ID: 100NG BTEX LCS		LCS				Batch ID: R35469	Analysis Date: 9/26/2009 9:18:59 PM				
Benzene	21.42	µg/L	1.0	20	0	107	85.9	113			
Toluene	22.30	µg/L	1.0	20	0	111	86.4	113			
Ethylbenzene	21.64	µg/L	1.0	20	0	108	83.5	118			
Xylenes, Total	63.86	µg/L	2.0	60	0	106	83.4	122			
Sample ID: 100NG BTEX LCS-II		LCS				Batch ID: R35469	Analysis Date: 9/27/2009 8:54:42 AM				
Benzene	20.98	µg/L	1.0	20	0	105	85.9	113			
Toluene	21.30	µg/L	1.0	20	0.282	105	86.4	113			
Ethylbenzene	21.21	µg/L	1.0	20	0.122	105	83.5	118			
Xylenes, Total	62.15	µg/L	2.0	60	0	104	83.4	122			
Sample ID: 100NG BTEX LCSD		LCSD				Batch ID: R35456	Analysis Date: 9/25/2009 6:08:20 AM				
Benzene	17.48	µg/L	1.0	20	0	87.4	85.9	113	10.6	27	
Toluene	16.57	µg/L	1.0	20	0	82.9	86.4	113	12.9	19	S
Ethylbenzene	17.44	µg/L	1.0	20	0	87.2	83.5	118	9.23	10	
Xylenes, Total	53.18	µg/L	2.0	60	0	86.6	83.4	122	6.53	13	

Qualifiers:

E Estimated value
J Analyte detected below quantitation limits
R RPD outside accepted recovery limits

H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
S Spike recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Sample Receipt Checklist

Client Name **XTO ENERGY**

Date Received:

9/17/2009

Work Order Number **0908312**

Received by: **ARS**

Checklist completed by:

Signature

Sample ID labels checked by:

initials

[Signature]

9/17/09

Date

Matrix:

Carrier name: 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 ☐

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 ☒

Container/Temp Blank temperature?

5.4°

<6° C Acceptable

If given sufficient time to cool.

Number of preserved bottles checked for pH:

<2 >12 unless noted below.

COMMENTS:

Client contacted

Date contacted:

Person contacted

Contacted by:

Regarding:

Comments:

As per A.H., correct ID for 0909312-9 is MW-3R ^{as} 9/17

Corrective Action

Chain-of-Custody Record

Client: XTO Energy

Kim Chang

Mailing Address: 382 CR3100

Aztec, NM 87410

Phone #: 505-333-3207

email or Fax#:

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

Accreditation

☐ NELAP ☐ Other

☐ EDD (Type)

Date Time Matrix Sample Request ID

15 Sep 09 14:49 28 Brington GC#1-MW.8

15 Sep 09 14:04 28 Brington GC#1-MW.6

15 Sep 09 10:46 28 Johnston CTE-MW.5

15 Sep 09 14:54 28 Brington GC#1-MW.7

15 Sep 09 13:50 28 Brington GC#1-MW.4

15 Sep 09 13:22 28 Brington GC#1-MW.2R

15 Sep 09 15:55 28 Brington GC#1-MW.5

15 Sep 09 12:35 28 Brington GC#1-MW.1R

15 Sep 09 13:28 28 Brington GC#1-MW.3R

15 Sep 09 14:08 28 Brington GC#1-MW.5

Relinquished by: D. Wick

Date: 16 Sep 09 17:00

Relinquished by:

Date:

Turn-Around Time:

☐ Standard ☐ Rush

Project Name:

Gravimeter

Project #:

Project Manager:

Ashley Ayer

Sampler:

Container Type and #

Preservative Type

1

2

3

4

5

6

7

8

9

10

Date Time

Received by: [Signature]

Date: 10:00 9/17/09

Received by:

Date:

Remarks:

please cc results to

alac@edestarservices.com

adh@edestarservices.com

Analysis Request

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, NO₃, NO₂, PO₄, SO₄)

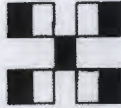
8081 Pesticides / 8082 PCB's

8260B (VOA)

8270 (Semi-VOA)

8021 875X

Air Bubbles (Y or N)



**HALL ENVIRONMENTAL
ANALYSIS LABORATORY**

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Hall Environmental Analysis Laboratory, Inc.

Date: 16-Dec-09

CLIENT: XTO Energy
Lab Order: 0912253
Project: Ground Water
Lab ID: 0912253-01

Client Sample ID: Rowland GC #1 MW-5
Collection Date: 12/10/2009 1:19:00 PM
Date Received: 12/11/2009
Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	45	5.0		µg/L	5	12/11/2009 4:30:46 PM
Toluene	ND	5.0		µg/L	5	12/11/2009 4:30:46 PM
Ethylbenzene	58	5.0		µg/L	5	12/11/2009 4:30:46 PM
Xylenes, Total	110	10		µg/L	5	12/11/2009 4:30:46 PM
Surr: 4-Bromofluorobenzene	102	65.9-130		%REC	5	12/11/2009 4:30:46 PM

Qualifiers:

- * Value exceeds Maximum Contaminant Level
- E Estimated value
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- S Spike recovery outside accepted recovery limits

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- MCL Maximum Contaminant Level
- RL Reporting Limit

QA/QC SUMMARY REPORT

Client: XTO Energy
Project: Ground Water

Work Order: 0912253

Analyte	Result	Units	PQL	SPK Va	SPK ref	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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Method: EPA Method 8021B: Volatiles

Sample ID: 5ML RB

MBLK

Batch ID: R36545 Analysis Date: 12/11/2009 9:26:11 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 LCS

LCS

Batch ID: R36545 Analysis Date: 12/11/2009 8:33:09 PM

Benzene	20.04	µg/L	1.0	20	0	100	85.9	113
Toluene	20.13	µg/L	1.0	20	0	101	86.4	113
Ethylbenzene	19.71	µg/L	1.0	20	0.066	98.2	83.5	118
Xylenes, Total	58.27	µg/L	2.0	60	0	97.1	83.4	122

Qualifiers:

E Estimated value
J Analyte detected below quantitation limits
R RPD outside accepted recovery limits

H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
S Spike recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Sample Receipt Checklist

Client Name **XTO ENERGY**

Date Received:

12/11/2009

Work Order Number **0912253**

Received by: **TLS**

Checklist completed by:

Signature

Date

Sample ID labels checked by:

Initials

Matrix:

Carrier name: 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 ☐

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 ☒

Container/Temp Blank temperature?

3.8°

<6° C Acceptable

If given sufficient time to cool.

Number of preserved
bottles checked for
pH:

<2 >12 unless noted
below.

COMMENTS:

Client contacted

Date contacted:

Person contacted

Contacted by:

Regarding:

Comments:

Corrective Action

