3R - 23

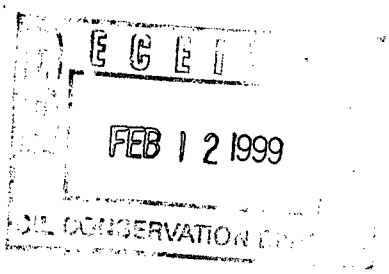
REPORTS

DATE:

Feb. 8, 1999

BLAGG ENGINEERING, INC.
P.O. Box 87, Bloomfield, New Mexico 87413
Phone: (505)632-1199 Fax: (505)632-3903

February 8, 1999



Mr. William C. Olson, Hydrologist
New Mexico Oil Conservation Division
Environmental Bureau
2040 S. Pacheco
Santa Fe, New Mexico 87505

Re: Annual Monitoring Report
Amoco Production Company
Gallegos Canyon Unit Com F #162, Sec. 36-T29N-R12W
San Juan County, New Mexico

Dear Mr. Olson:

Amoco Production Company has retained Blagg Engineering, Inc. to conduct environmental monitoring of groundwater reclamation at Gallegos Canyon Unit Com F Well No. 162 (Figure 1). Following are annual monitoring results as required by the New Mexico Oil Conservation Division (NMOCD), pursuant to reclamation plan approval by the NMOCD with letter dated January 27, 1994 and revised with an area wide plan submitted on October 22, 1996.

The air injection/vapor extraction system at the site has remained in continuous operation. This system is designed to treat soils and groundwater that could not be accessed by excavation or other methods. This system, in conjunction with enhanced microbial placement at the site, is effectively remediating hydrocarbon contamination at the site. However, as described below it is proposed to modify this system to accelerate cleanup of contaminated media.

Summary Laboratory Analytical Results

Groundwater monitor wells at the site were sampled in March, June, September and December, 1998. A summary of laboratory analytical results for these and previous sample events are included in Table 1 on the following page and laboratory data reports are included in Appendix B. Analytical data indicates that groundwater impacts in excess of NMWQCC standards has not migrated down gradient to monitor wells MW-9 or MW-10.

Monitor wells MW-2A and MW-7 previously contained free product. Quarterly monitoring results for 1998 indicate this product has dissipated and water quality test data shows stable to declining values for BTEX constituents. These trends will be further evaluated during future quarterly monitoring periods.

TABLE 1

Summary Laboratory Analytical Results
Amoco Production Company GCU Com "F" No. 162

Sample ID	Benzene ug/L	Toluene ug/L	Ethyl Benzene ug/L	Total Xylenes ug/L	Naptha-lene ug/L	Benzo(a) pyrene ug/L	Cations meq/L	Anions meq/L	As mg/L	Ba mg/L	Cd mg/L	Cr mg/L	Pb mg/L	Hg mg/L	Se mg/L	Ag mg/L
MW-2A																
9/22/97	7.7	84.3	16.2	161.7												
12/19/97	1.1	45.8	7.0	68.5												
2/23/98	0.6	8.3	ND	33.3												
6/2/98	35.8	48.8	34.3	98.8												
9/28/98	8.3	15.6	1.6	4.3												
12/17/98	13.2	3.2	2.4	10.0												
MW-3																
2/25/94	476	0.7	ND	1.9	ND	ND	15.80	15.49	ND	3.27	0.0001	ND	0.0034	ND	0.0011	ND
6/17/94	13.6	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9/27/94	20.9	3.4	0.9	10.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
12/7/94	241.5	101.1	12.7	223.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Abandon																
MW-4																
2/25/94	240	3.1	40.2	469	ND	ND	17.74	18.50	0.0022	5.09	0.0016	ND	0.0373	ND	0.0015	ND
6/17/94	273	2.2	34.7	113	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9/27/94	355	0.7	59.4	352	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
12/7/94	1694	7.6	241.3	1575	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
12/11/95	549	2.9	29.5	281.6												
3/7/96	143	3.9	13.0	79.3												
6/27/96	141	63.4	65.9	867												
9/6/96	188	54.6	142	1,387												
12/24/96	42.3	14.6	39.2	430												
3/20/97	ND	0.71	ND	14.05												
6/25/97	1.0	ND	11.8	270.9												
9/22/97	27.4	1.9	68.2	660												
12/19/97	ND	2.0	60.2	33.7												
2/23/98	21.5	3.3	31.6	348.3												
6/6/98	16.4	11.4	1.9	148.5												
9/28/98	1.7	2.3	15.5	160.1												
12/17/98	4.0	2.7	27.0	207.3												

MW-5																
2/25/94	ND	1.0	ND	2.2	ND	ND	34.59	33.50	0.0064	3.16	0.0034	ND	ND	ND	0.0037	ND
6/17/94	2.1	2.7	4.5	32.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9/27/94	1.3	0.5	1.0	5.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
12/7/94	0.8	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/8/95	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
6/12/95	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9/27/95	ND	ND	ND	ND												
12/11/95	ND	ND	ND	ND												
3/7/96	ND	ND	ND	ND												
6/27/96	ND	ND	ND	ND												
9/6/96	ND	ND	ND	ND												
12/24/96	ND	ND	ND	ND												
MW-6																
2/25/94	15.9	3.2	5.3	140	ND	ND	13.39	12.34	ND	2.68	0.0002	ND	ND	ND	0.0007	ND
6/17/94	15.3	1.9	2.6	98	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9/27/94	70.1	3.7	1.9	109	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
12/7/94	154.8	44.9	0.2	212.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/8/95	7.0	ND	ND	8.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
6/12/95	2.38	0.86	ND	12.6												
9/27/95	12.0	ND	ND	15.33												
12/11/95	31.0	29.1	11.4	175.3												
3/7/96	42.1	4.5	3.1	51.3												
6/27/96	1.53	1.83	ND	5.77												
9/6/96	1.64	ND	ND	84.7												
12/24/96	0.67	ND	ND	1.24												
3/20/97	ND	2.05	ND	7.72												
6/25/97	ND	2.9	1.7	21.0												
9/22/97	ND	0.6	0.6	11.6												
12/19/97	1.3	6.7	2.4	12.5												
2/23/98	0.2	1.0	1.8	5.6												
6/2/98	0.9	0.9	ND	3.8												
9/28/98	ND	ND	0.2	3.0												
12/17/98	ND	ND	0.3	1.9												
MW-7																
12/11/95	85.7	522	144	2,422												
3/7/96	95.0	421	226	4,075												
6/27/96	223	150	165	2,353												
9/6/96	142	104	132	1,728												
12/24/96	34.3	15.3	14.5	159.8												
6/25/97	174	12.5	44.8	637												
9/22/97	577	105	248	835												
12/19/97	330	9.4	81.9	600												
2/23/98	9.1	1.5	9.7	106.0												
6/2/98	50.8	113	81.4	466												
9/28/98	8.2	4.9	9.2	72.6												
12/17/98	32.6	54.0	38.1	234.8												

MW-9																
2/25/94	ND	1.1	ND	1.4	ND	ND	13.73	13.47	ND	1.17	0.0011	ND	ND	ND	0.0012	ND
6/17/94	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9/27/94	0.8	0.4	0.6	3.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
12/7/94	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/8/95	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
6/12/95	ND	ND	ND	ND												
9/27/95	ND	ND	ND	ND												
12/4/95	ND	ND	ND	ND												
3/7/96	ND	ND	ND	ND												
6/27/96	ND	ND	ND	ND												
9/6/96	ND	ND	ND	ND												
12/24/96	ND	ND	ND	ND												
MW-10																
2/25/94	ND	0.7	ND	1.7	ND	ND	15.04	15.45	ND	2.64	0.0140	ND	0.0012	ND	0.0018	ND
6/17/94	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
9/27/94	0.8	0.3	0.2	3.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
12/7/94	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/8/95	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
6/12/95	ND	ND	ND	ND												
9/27/95	ND	ND	ND	ND												
12/4/95	ND	ND	ND	4.2												
3/7/96	ND	ND	ND	ND												
6/27/96	ND	ND	ND	ND												
9/6/96	ND	ND	ND	ND												
12/24/96	ND	ND	ND	ND												
3/20/97	ND	ND	ND	ND												
6/25/97	0.4	ND	ND	0.9												
9/22/97	ND	1.7	2.9	17.9												
12/19/97	1.6	0.2	0.9	6.0												
WQCC LIMITS	10	750	750	620	30	0.7	------	------	0.1	1.0	0.01	0.05	0.05	0.002	0.05	0.05

ug/L = micrograms per liter, equivalent to parts per billion (ppb) mg/L= milligrams per liter, equivalent to parts per million (ppm) ND=not detected NA=not analyzed

Water Table Elevations

Depth to groundwater measurements in each monitor well was measured during each quarterly sample event. Table 2 includes water depth measurements, surface casing relative elevations and groundwater elevations for the December 17, 1998 sample event. A contour map of relative water table elevations for this sample event is included as Figure 2.

TABLE 2

Relative Groundwater Elevations
Amoco Production Company GCU Com "F" No. 162
December 17, 1998

Monitor Well	Total Depth (feet)	Depth to Fluid (feet)	Relative Casing Elevation (feet)	Relative Groundwater Elevation (feet)
MW-1	Well	abandoned	during	excavation
MW-2A	23.3	21.85	100.16	78.31
MW-3	Well	abandoned	during	excavation
MW-4	24.1	21.45	98.87	77.42
MW-5	25.1	na	102.50	na
MW-6	26.7	20.68	98.68	78.00
MW-7	25.3	20.02	97.39	77.37
MW-8	Well	abandoned	during	excavation
MW-9	19.6	na	88.50	na
MW-10	16.3	na	90.25	na

na = water table elevation not measured

Current and Proposed Activities

Contaminated soil and groundwater at the GCU 162 site that could not be accessed by excavation is presently being remediated with the active air injection/vapor extraction system and through enhanced biodegradation. Operation of the air injection/vapor extraction system is on-going.

Expansion of the air injection/vapor extraction system in the area west of the fenced well site is presently planned. A schematic of proposed air injection points is included as Figure 3. The existing air injection/vacuum extraction system is presented in Figures 4 and 5. Results of the proposed system expansion will be discussed in the next annual report on the site.

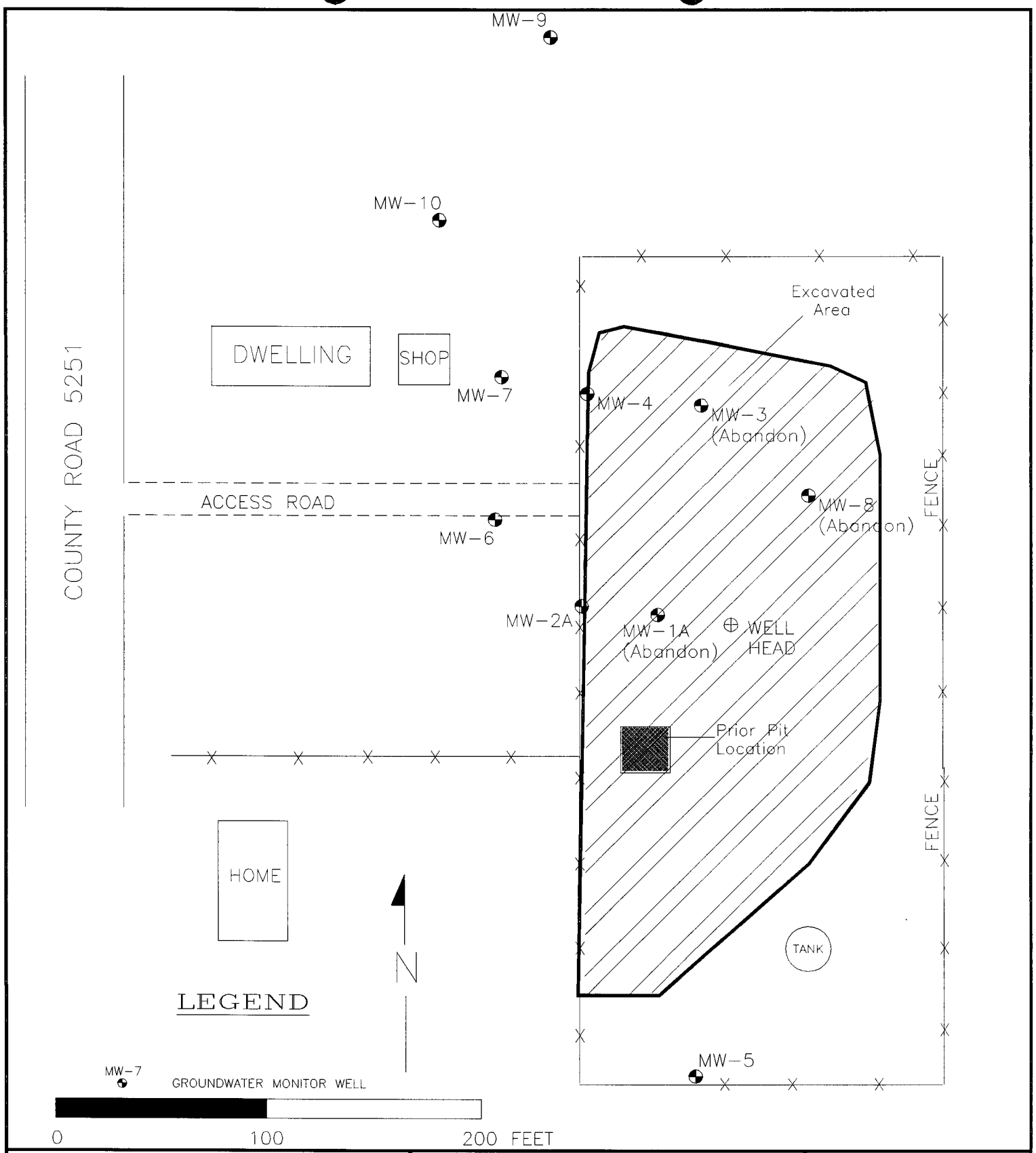
Summary

This report has been prepared by Blagg Engineering, Inc. on behalf of Amoco Production Company. Questions or comments may be directed to Jeff Blagg at (505)632-1199.

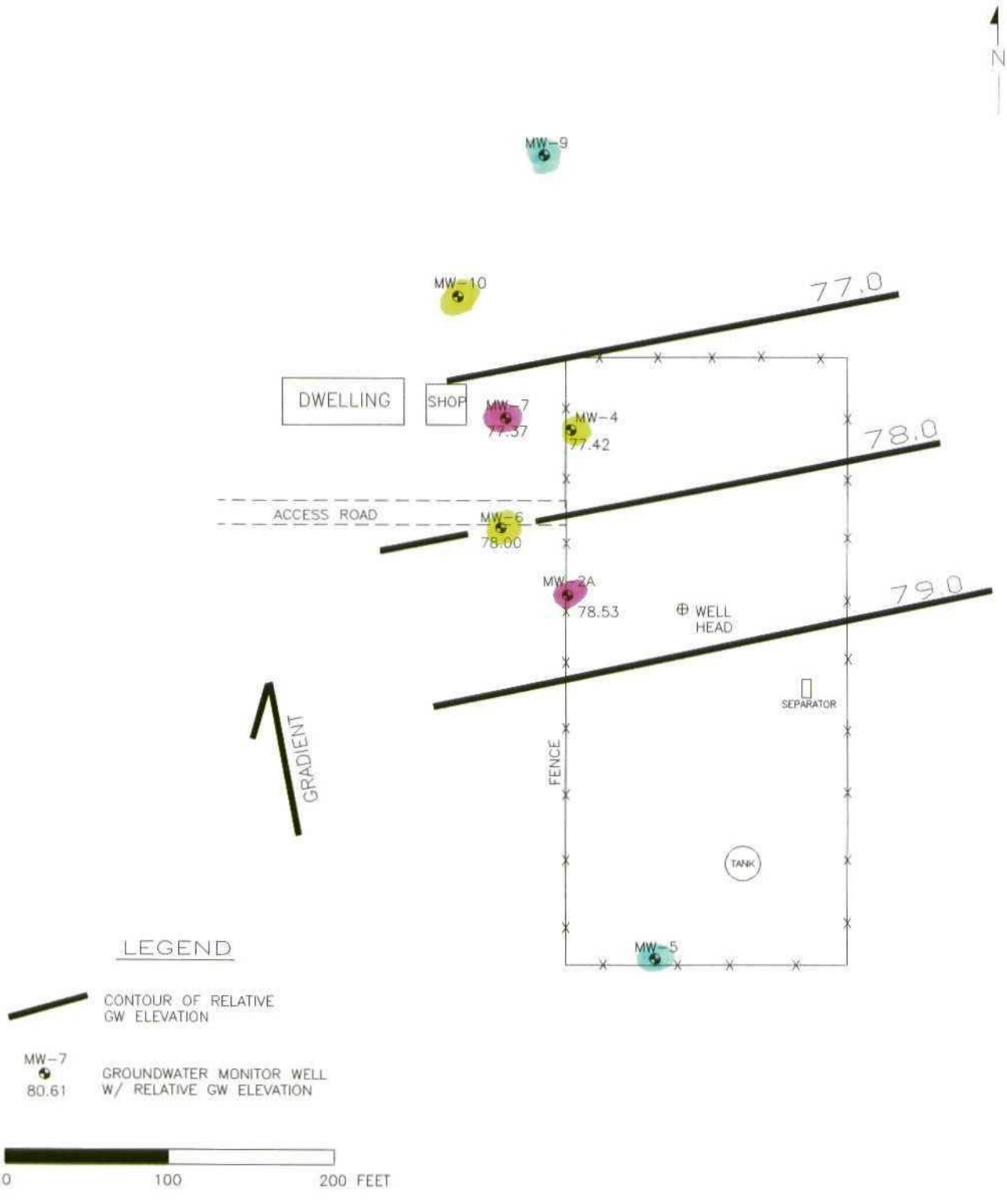
Respectfully submitted:
Blagg Engineering, Inc.

Jeffrey C. Blagg, P.E.
President

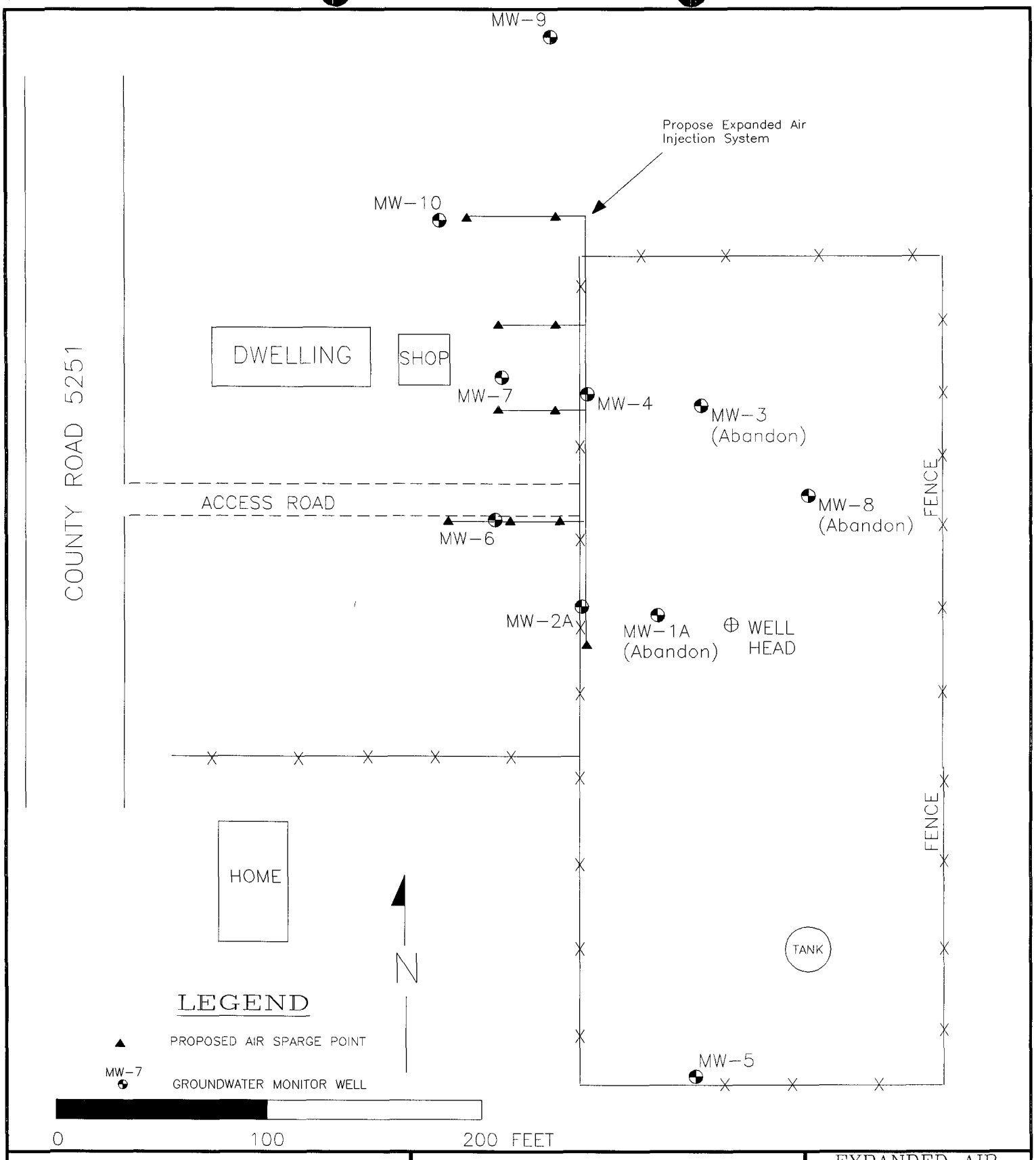
cc: Mr. Denny Foust, NMOCD
Mr. Buddy Shaw, Amoco Production Company



AMOCO PRODUCTION CO. GCU 162 WELL SITE SAN JUAN CO., NEW MEXICO Janaury 1999	BLAGG ENGINEERING, INC. CONSULTING PETROLEUM / RECLAMATION SERVICES P.O. BOX 87 BLOOMFIELD, NEW MEXICO 87413 PHONE: (505) 632-1199	SITE PLAN FIGURE 1 — DRWN BY: JCB 162REV — PROJ MGR: JCB



AMOCO PRODUCTION CO. GCU 162 WELL SITE SAN JUAN CO., NEW MEXICO December 1998	BLAGG ENGINEERING, INC. CONSULTING ENGINEERING SERVICES P.O. BOX 87 BLOOMFIELD, NEW MEXICO 87413 PHONE:(505)632-1199	GW SURFACE CONTOUR 12/17/98 FIGURE 2 — DRWN BY: JCB 162SITE6 — PROJ MANG: JCB



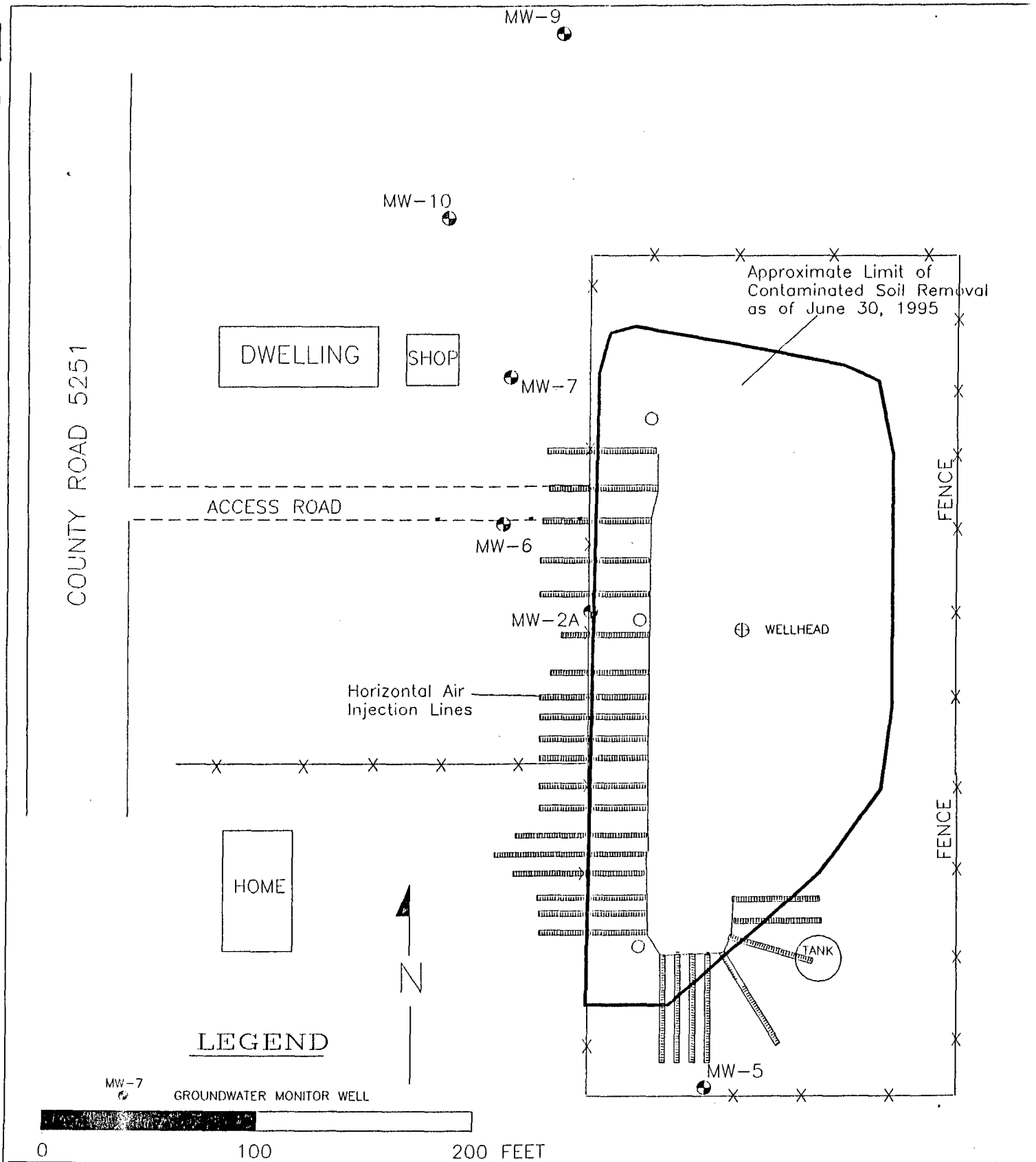
AMOCO PRODUCTION CO.
GCU 162 WELL SITE
SAN JUAN CO., NEW MEXICO

Janaury 1999

BLAGG ENGINEERING, INC.
CONSULTING PETROLEUM / RECLAMATION SERVICES
P.O. BOX 87
BLOOMFIELD, NEW MEXICO 87413
PHONE: (505) 632-1199

EXPANDED AIR INJECTION SYSTEM

FIGURE 3	DRWN. BY: JCB
162REV	PROJ. MGR: JCB



AMOCO PRODUCTION CO.
GCU 162 WELL SITE
SAN JUAN CO., NEW MEXICO

OCTOBER, 1995

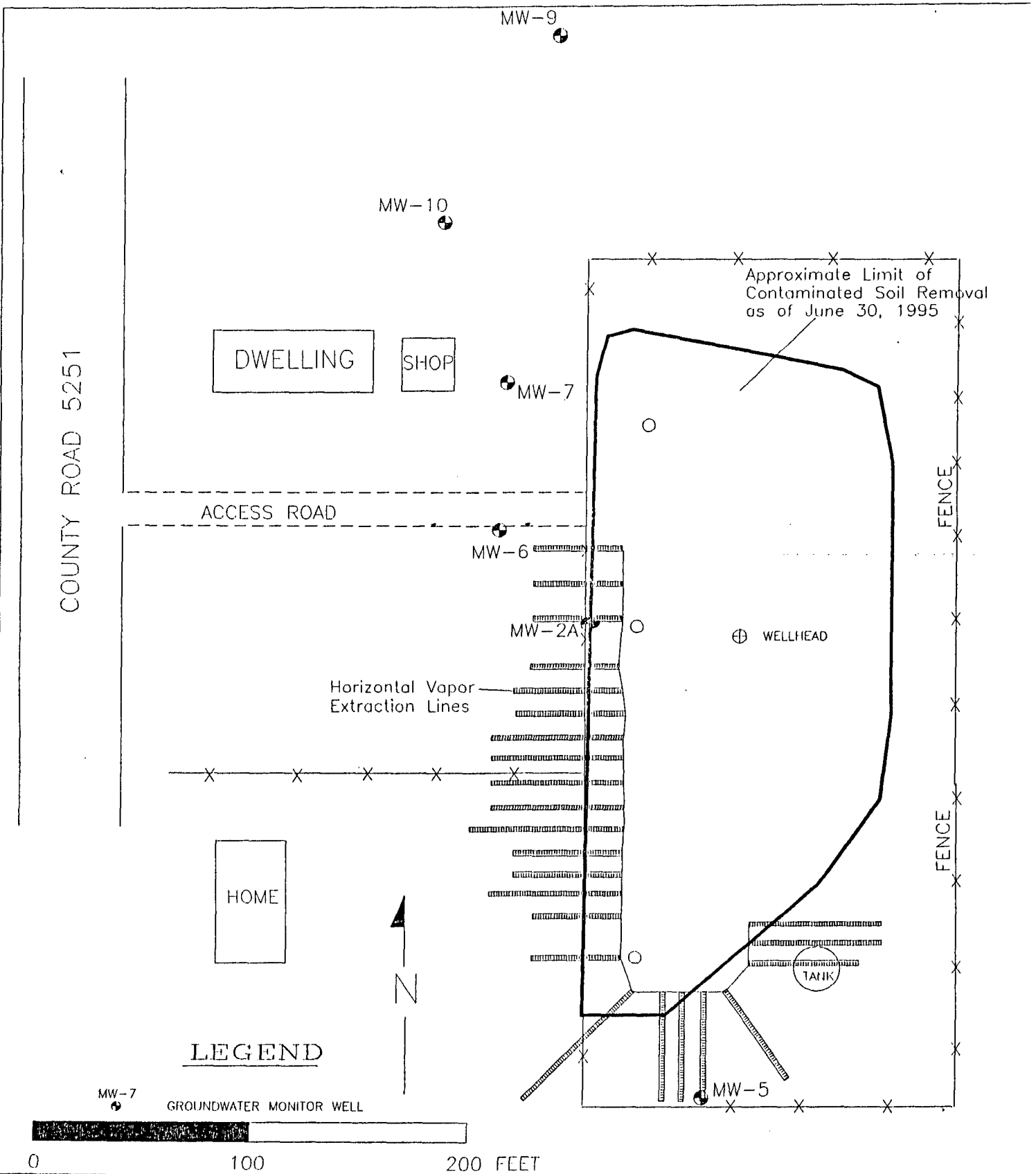
BLAGG ENGINEERING, INC.
CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87
BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

RECLAMATION PL/
AS-BUILT

FIGURE 4 AIR INJECTION	DRWN BY REO
162-AI	PROJ MGR JCB



AMOCO PRODUCTION CO.
GCU 162 WELL SITE
SAN JUAN CO., NEW MEXICO

OCTOBER, 1995

BLAGG ENGINEERING, INC.
CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87
BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

RECLAMATION PL/
AS-BUILT

FIGURE 5 VAPOR EXTRACTION	DRWN B REO
162-VE	PROJ MGR JCB

BLAGG ENGINEERING, INC.

MONITOR WELL SAMPLING DATA

CLIENT : AMOCO PRODUCTION CO.

CHAIN-OF-CUSTODY # : 5726

GCU COM F # 162
UNIT J, SEC. 36, T29N, R12W

LABORATORY (S) USED : ENVIROTECH, INC.

Date : February 23, 1998

SAMPLER : N J V

Filename : 02-23-98.WK3

PROJECT MANAGER : J C B

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)
2A			21.98	23.32	0950	6.9	1,400	0.75	–
4			21.52	24.09	0920	6.9	1,900	1.25	–
6			20.86	26.77	1025	7.0	2,000	3.00	–
7			20.13	25.30	1100	7.2	2,400	2.50	–
10			–	16.29	–	–	–	–	–

NOTES : Volume of water purged from well prior to sampling; V = pi X r2 X h X 7.48 gal./ft3) X 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 ".

MW #'s 2A – poor recovery . Collected BTEX samples for each MW listed above except MW # 10 which contained only 1.5 ft. of water (landowner's pet dogs apparently filled bottom 1.5 ft. with sand) .

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Blagg / AMOCO	Project #:	04034-10
Sample ID:	MW # 2A	Date Reported:	02-24-98
Chain of Custody:	5726	Date Sampled:	02-23-98
Laboratory Number:	C929	Date Received:	02-23-98
Sample Matrix:	Water	Date Analyzed:	02-24-98
Preservative:	HgCl2 & Cool	Analysis Requested:	btex-mtbe
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**0.6**	**1**	**0.2**
Toluene	**8.3**	**1**	**0.2**
Ethylbenzene	**ND**	**1**	**0.2**
p,m-Xylene	**26.3**	**1**	**0.2**
o-Xylene	**7.3**	**1**	**0.1**
Total BTEX	**42.5**		

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	**97 %**
	Bromofluorobenzene	**97 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **GCU COM F 162.**

Analyst

Review

5796 U.S. Highway 64-3014 • Farmington, NM 87401 • Tel 505 • 632 • 0615 • Fax 505 • 632 • 1865

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Blagg / AMOCO	Project #:	04034-10
Sample ID:	MW # 4	Date Reported:	02-24-98
Chain of Custody:	5726	Date Sampled:	02-23-98
Laboratory Number:	C928	Date Received:	02-23-98
Sample Matrix:	Water	Date Analyzed:	02-24-98
Preservative:	HgCl2 & Cool	Analysis Requested:	btex-mtbe
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**21.5**	**1**	**0.2**
Toluene	**3.3**	**1**	**0.2**
Ethylbenzene	**31.6**	**1**	**0.2**
p,m-Xylene	**297**	**1**	**0.2**
o-Xylene	**51.3**	**1**	**0.1**
Total BTEX	**404**		

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	**97 %**
	Bromofluorobenzene	**97 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **GCU COM F 162.**

Analyst

Review

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Blagg / AMOCO	Project #:	04034-10
Sample ID:	MW # 6	Date Reported:	02-24-98
Chain of Custody:	5726	Date Sampled:	02-23-98
Laboratory Number:	C927	Date Received:	02-23-98
Sample Matrix:	Water	Date Analyzed:	02-24-98
Preservative:	HgCl2 & Cool	Analysis Requested:	btex-mtbe
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**0.2**	**1**	**0.2**
Toluene	**1.0**	**1**	**0.2**
Ethylbenzene	**1.8**	**1**	**0.2**
p,m-Xylene	**3.7**	**1**	**0.2**
o-Xylene	**1.9**	**1**	**0.1**
Total BTEX	**8.6**		

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	**97 %**
	Bromofluorobenzene	**97 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **GCU COM F 162.**

Analyst

Review

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Blagg / AMOCO	Project #:	04034-10
Sample ID:	MW # 7	Date Reported:	02-24-98
Chain of Custody:	5726	Date Sampled:	02-23-98
Laboratory Number:	C926	Date Received:	02-23-98
Sample Matrix:	Water	Date Analyzed:	02-24-98
Preservative:	HgCl2 & Cool	Analysis Requested:	btex-mtbe
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**9.1**	**1**	**0.2**
Toluene	**1.5**	**1**	**0.2**
Ethylbenzene	**9.7**	**1**	**0.2**
p,m-Xylene	**77.7**	**1**	**0.2**
o-Xylene	**28.3**	**1**	**0.1**
Total BTEX	**126**		

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	**97 %**
	Bromofluorobenzene	**97 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **GCU COM F 162.**

Analyst

Review

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS
QUALITY ASSURANCE REPORT

Client:	N/A	Project #:	N/A
Sample ID:	02-24-BTEX QA/QC	Date Reported:	02-24-98
Laboratory Number:	C926	Date Sampled:	N/A
Sample Matrix:	Water	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	02-24-98
Condition:	N/A	Analysis:	BTEX

Calibration and Detection Limits (ug/L)	I-Cal RF:	C-Cal RF:	%Diff. Accept. Range 0 - 15%	Blank Conc	Detect. Limit
Benzene	1.3526E-04	1.4104E-04	4.28%	ND	0.2
Toluene	1.3966E-04	1.4473E-04	3.63%	ND	0.2
Ethylbenzene	1.5928E-04	1.6557E-04	3.95%	ND	0.2
p,m-Xylene	1.2169E-04	1.2545E-04	3.09%	ND	0.2
o-Xylene	1.6348E-04	1.7012E-04	4.06%	ND	0.1

Duplicate Conc. (ug/L)	Sample	Duplicate	%Diff.	Accept Limit
Benzene	9.1	8.9	2.6%	0 - 30%
Toluene	1.5	1.5	0.0%	0 - 30%
Ethylbenzene	9.7	9.4	2.6%	0 - 30%
p,m-Xylene	77.7	75.7	2.6%	0 - 30%
o-Xylene	28.3	27.6	2.6%	0 - 30%

Spike Conc. (ug/L)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Limits
Benzene	9.1	50.0	58.7	99.1%	39 - 150
Toluene	1.5	50.0	51.4	99.9%	46 - 148
Ethylbenzene	9.7	50.0	59.2	99.0%	32 - 160
p,m-Xylene	77.7	100	174	96.1%	46 - 148
o-Xylene	28.3	50.0	76.9	97.2%	46 - 148

ND - Parameter not detected at the stated detection limit.

* - Administrative Recovery Acceptance Range = 80% - 115%.

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.
Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **QA/QC for samples C926 - C930.**

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5726

CHAIN OF CUSTODY RECORD

Client/Project Name: BLAGG / AMOCO	Project Location: GCU com F 162
Sampler: (Signature) [signature]	Chain of Custody Tape No.

ANALYSIS/PARAMETERS

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	BTEX (8021)						Remarks
												ALL SAMPLES PRESERV COOL'd w/ HgCl2
~~MW #10~~	~~2/23/98~~	~~1130~~		~~WATER~~	~~2~~	~~✓~~	NV					
MW # 7	2/23/98	1100		WATER	2	✓						
MW # 6	2/23/98	1025		WATER	2	✓						
MW # 4	2/23/98	0920		WATER	2	✓						
MW # 2A	2/23/98	0950		WATER	2	✓						

Samples received cool & intact [initials]

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
[signature]	2/23/98	1314	[signature]	2-23-98	1314
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

ENVIROTECH INC.
5796 U.S. Highway 64-3014
Farmington, New Mexico 87401
(505) 632-0615

BLAGG ENGINEERING, INC.

MONITOR WELL SAMPLING DATA

CLIENT : AMOCO PRODUCTION CO.

CHAIN–OF–CUSTODY # : 6012

GCU COM F # 162
UNIT J, SEC. 36, T29N, R12W

LABORATORY (S) USED : ENVIROTECH, INC.

Date : June 2, 1998

SAMPLER : N J V

Filename : 06–02–98.WK3

PROJECT MANAGER : J C B

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)
2A	94.38	72.12	22.26	23.32	1245	7.0	1,400	0.50	–
4	95.91	74.13	21.78	24.09	1310	6.8	2,000	1.25	–
6	96.61	76.55	20.06	26.77	1345	7.4	2,200	3.25	–
7	95.62	75.30	20.32	25.30	1415	7.2	2,400	2.50	–
10	97.28	–	–	16.29	–	–	–	–	–

NOTES : Volume of water purged from well prior to sampling; V = pi X r2 X h X 7.48 gal./ft3) X 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 ".

MW #'s 2A – poor recovery . Collected BTEX samples for each MW listed above except MW # 10.

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Blagg / AMOCO	Project #:	04034-10
Sample ID:	MW #2A	Date Reported:	06-03-98
Chain of Custody:	6012	Date Sampled:	06-02-98
Laboratory Number:	D330	Date Received:	06-02-98
Sample Matrix:	Water	Date Analyzed:	06-03-98
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**35.8**	**1**	**0.2**
Toluene	**48.8**	**1**	**0.2**
Ethylbenzene	**34.3**	**1**	**0.2**
p,m-Xylene	**56.9**	**1**	**0.2**
o-Xylene	**41.9**	**1**	**0.1**
Total BTEX	**218**		

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	**95 %**
	Bromofluorobenzene	**95 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **GCU COM F #162.**

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Blagg / AMOCO	Project #:	04034-10
Sample ID:	MW #4	Date Reported:	06-03-98
Chain of Custody:	6012	Date Sampled:	06-02-98
Laboratory Number:	D331	Date Received:	06-02-98
Sample Matrix:	Water	Date Analyzed:	06-03-98
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**16.4**	**1**	**0.2**
Toluene	**11.4**	**1**	**0.2**
Ethylbenzene	**1.9**	**1**	**0.2**
p,m-Xylene	**113**	**1**	**0.2**
o-Xylene	**35.5**	**1**	**0.1**
Total BTEX	**178**		

ND - *Parameter not detected at the stated detection limit.*

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	**98 %**
	Bromofluorobenzene	**98 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **GCU COM F #162.**

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Blagg / AMOCO	Project #:	04034-10
Sample ID:	MW #6	Date Reported:	06-03-98
Chain of Custody:	6012	Date Sampled:	06-02-98
Laboratory Number:	D332	Date Received:	06-02-98
Sample Matrix:	Water	Date Analyzed:	06-03-98
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**0.9**	**1**	**0.2**
Toluene	**0.9**	**1**	**0.2**
Ethylbenzene	**ND**	**1**	**0.2**
p,m-Xylene	**2.9**	**1**	**0.2**
o-Xylene	**0.9**	**1**	**0.1**
Total BTEX	**5.6**		

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	**101 %**
	Bromofluorobenzene	**101 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **GCU COM F #162.**

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Blagg / AMOCO	Project #:	04034-10
Sample ID:	MW #7	Date Reported:	06-03-98
Chain of Custody:	6012	Date Sampled:	06-02-98
Laboratory Number:	D333	Date Received:	06-02-98
Sample Matrix:	Water	Date Analyzed:	06-03-98
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**50.8**	**1**	**0.2**
Toluene	**113**	**1**	**0.2**
Ethylbenzene	**81.4**	**1**	**0.2**
p,m-Xylene	**324**	**1**	**0.2**
o-Xylene	**142**	**1**	**0.1**
Total BTEX	**711**		

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	**100 %**
	Bromofluorobenzene	**100 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **GCU COM F #162.**

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS
QUALITY ASSURANCE REPORT

Client:	N/A	Project #:	N/A
Sample ID:	06-03-BTEX QA/QC	Date Reported:	06-03-98
Laboratory Number:	D326	Date Sampled:	N/A
Sample Matrix:	Water	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	06-03-98
Condition:	N/A	Analysis:	BTEX

Calibration and Detection Limits (ug/L)	I-Cal RF:	C-Cal RF:	%Diff. Accept. Range 0 - 15%	Blank Conc	Detect. Limit
Benzene	1.4863E-02	1.4878E-02	0.10%	ND	0.2
Toluene	2.2878E-02	2.2947E-02	0.30%	ND	0.2
Ethylbenzene	1.0578E-02	1.0663E-02	0.81%	ND	0.2
p,m-Xylene	8.4559E-03	8.5155E-03	0.70%	ND	0.2
o-Xylene	8.7385E-03	8.7912E-03	0.60%	ND	0.1
1,3,5-trimethylbenzene	6.2277E-03	6.2402E-03	0.20%	ND	0.2
1,2,4-trimethylbenzene	7.3319E-03	7.3687E-03	0.50%	ND	0.2

Duplicate Conc. (ug/L)	Sample	Duplicate	%Diff.	Accept Limit
Benzene	3.2	3.1	3.1%	0 - 30%
Toluene	5.9	5.8	1.7%	0 - 30%
Ethylbenzene	3.3	3.3	0.0%	0 - 30%
p,m-Xylene	3.0	3.0	0.0%	0 - 30%
o-Xylene	1.4	1.4	0.0%	0 - 30%

Spike Conc. (ug/L)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Limits
Benzene	3.2	50.0	53.0	100%	39 - 150
Toluene	5.9	50.0	55.6	99%	46 - 148
Ethylbenzene	3.3	50.0	53.1	100%	32 - 160
p,m-Xylene	3.0	100.0	103	100%	46 - 148
o-Xylene	1.4	50.0	51.3	100%	46 - 148

ND - Parameter not detected at the stated detection limit.

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.
Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **QA/QC for samples D326 - D333.**

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CHAIN OF CUSTODY RECORD

6012

Client / Project Name			Project Location		ANALYSIS / PARAMETERS		
BLAGG / AMOCO			GCU COM F #162				
Sampler: NJV			Client No. 04034-10				
Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	BTEX (8021)	Remarks
							ALL SAMPLES PRESERV. COOL & $HgCl_2$
MW #2A	6/2/98	1245	D330	WATER	2	✓	
MW #4	6/2/98	1310	D331	WATER	2	✓	
MW #6	6/2/98	1345	D332	WATER	2	✓	
MW #7	6/2/98	1415	D333	WATER	2	✓	

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
[signature]	6/2/98	1448	[signature]	6.2.98	1448
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

ENVIROTECH INC.

5796 U.S. Highway 64
Farmington, New Mexico 87401
(505) 632-0615

Sample Receipt	Y	N	N/A
Received Intact	✓		
Cool - Ice/Blue Ice	✓		

BLAGG ENGINEERING, INC.

MONITOR WELL SAMPLING DATA

CLIENT : AMOCO PRODUCTION CO.

CHAIN-OF-CUSTODY # : 6298

GCU COM F # 162
UNIT J, SEC. 36, T29N, R12W

LABORATORY (S) USED : ENVIROTECH, INC.

Date : September 28, 1998

SAMPLER : N J V

Filename : 09-28-98.WK3

PROJECT MANAGER : J C B

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)
2A	100.16	78.10	22.06	23.32	1510	7.3	1,800	0.75	-
4	98.87	77.19	21.68	24.09	1445	6.7	2,600	1.25	-
6	98.68	77.83	20.85	26.77	1345	7.3	3,200	3.00	-
7	97.39	77.21	20.18	25.30	1415	7.3	3,100	2.50	-
10			-	16.29	-	-	-	-	-

NOTES : Volume of water purged from well prior to sampling: V = pi X r2 X h X 7.48 gal./ft3) X 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 ".

MW #'s 2A - poor recovery . Collected BTEX samples for each MW listed above except MW # 10 .

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Blagg / AMOCO	Project #:	04034-10
Sample ID:	MW #2A	Date Reported:	09-29-98
Chain of Custody:	6298	Date Sampled:	09-28-98
Laboratory Number:	D988	Date Received:	09-28-98
Sample Matrix:	Water	Date Analyzed:	09-29-98
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**8.3**	**5**	**0.9**
Toluene	**15.6**	**5**	**0.8**
Ethylbenzene	**1.6**	**5**	**0.8**
p,m-Xylene	**2.1**	**5**	**1.1**
o-Xylene	**2.2**	**5**	**0.5**
Total BTEX	**29.8**		

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	**96 %**
	Bromofluorobenzene	**96 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **GCU Com F #162.**

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Blagg / AMOCO	Project #:	04034-10
Sample ID:	MW #4	Date Reported:	09-29-98
Chain of Custody:	6298	Date Sampled:	09-28-98
Laboratory Number:	D989	Date Received:	09-28-98
Sample Matrix:	Water	Date Analyzed:	09-29-98
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**1.7**	**1**	**0.2**
Toluene	**2.3**	**1**	**0.2**
Ethylbenzene	**15.5**	**1**	**0.2**
p,m-Xylene	**128**	**1**	**0.2**
o-Xylene	**32.1**	**1**	**0.1**
Total BTEX	**180**		

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	**99 %**
	Bromofluorobenzene	**99 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **GCU Com F #162.**

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Blagg / AMOCO	Project #:	04034-10
Sample ID:	MW #6	Date Reported:	09-29-98
Chain of Custody:	6298	Date Sampled:	09-28-98
Laboratory Number:	D990	Date Received:	09-28-98
Sample Matrix:	Water	Date Analyzed:	09-29-98
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**ND**	**1**	**0.2**
Toluene	**ND**	**1**	**0.2**
Ethylbenzene	**0.2**	**1**	**0.2**
p,m-Xylene	**2.4**	**1**	**0.2**
o-Xylene	**0.6**	**1**	**0.1**
Total BTEX	**3.2**		

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	**96 %**
	Bromofluorobenzene	**96 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **GCU Com F #162.**

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Blagg / AMOCO	Project #:	04034-10
Sample ID:	MW #7	Date Reported:	09-29-98
Chain of Custody:	6298	Date Sampled:	09-28-98
Laboratory Number:	D991	Date Received:	09-28-98
Sample Matrix:	Water	Date Analyzed:	09-29-98
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**8.2**	**1**	**0.2**
Toluene	**4.9**	**1**	**0.2**
Ethylbenzene	**9.2**	**1**	**0.2**
p,m-Xylene	**54.1**	**1**	**0.2**
o-Xylene	**18.6**	**1**	**0.1**
Total BTEX	**95.0**		

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	**98 %**
	Bromofluorobenzene	**98 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **GCU Com F #162.**

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS
QUALITY ASSURANCE REPORT

Client:	N/A	Project #:	N/A
Sample ID:	09-29-BTEX QA/QC	Date Reported:	09-29-98
Laboratory Number:	D992	Date Sampled:	N/A
Sample Matrix:	Water	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	09-29-98
Condition:	N/A	Analysis:	BTEX

Calibration and Detection Limits (ug/L)	I-Cal RF:	C-Cal RF:	%Diff. Accept. Range 0 - 15%	Blank Conc	Detect. Limit
Benzene	2.4349E-002	2.4428E-002	0.32%	ND	0.2
Toluene	1.1333E-002	1.1356E-002	0.20%	ND	0.2
Ethylbenzene	1.4295E-002	1.4355E-002	0.42%	ND	0.2
p,m-Xylene	1.1212E-002	1.1214E-002	0.02%	ND	0.2
o-Xylene	1.1772E-002	1.1807E-002	0.30%	ND	0.1

Duplicate Conc. (ug/L)	Sample	Duplicate	%Diff.	Accept Limit
Benzene	0.2	0.2	0.0%	0 - 30%
Toluene	ND	ND	0.0%	0 - 30%
Ethylbenzene	ND	ND	0.0%	0 - 30%
p,m-Xylene	0.3	0.3	0.0%	0 - 30%
o-Xylene	0.1	0.1	0.0%	0 - 30%

Spike Conc. (ug/L)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Limits
Benzene	0.2	50.0	50.2	100%	39 - 150
Toluene	ND	50.0	50.0	100%	46 - 148
Ethylbenzene	ND	50.0	50.1	100%	32 - 160
p,m-Xylene	0.3	100	100	100%	46 - 148
o-Xylene	0.1	50.0	50.1	100%	46 - 148

ND - Parameter not detected at the stated detection limit.

* - Administrative Limits set at 80 - 120%.

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.
Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **QA/QC for samples D988 - D992.**

Analyst

Review

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CHAIN OF CUSTODY RECORD

6298

Client / Project Name	Project Location	ANALYSIS / PARAMETERS
BLAGG / Amoco	GCU com F #162	
Sampler: NJV	Client No. 04634-10	

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	BTEX (8021)						Remarks
MW #2A	9/28/98	1510	D988	WATER	2	✓						PRESERV. - COOL
MW #4	9/28/98	1445	D989	WATER	2	✓						PRESERV. - COOL
MW #6	9/28/98	1345	D990	WATER	2	✓						PRESERV. - COOL
MW #7	9/28/98	1415	D991	WATER	2	✓						PRESERV. - COOL

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Nelson Velez	9/28/98	1605	Harlan M Brown	9.28.98	16:05
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

Ref COC's 6298 - 6299

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Sample Receipt	Y	N	N/A
Received Intact	✓		
Cool - Ice/Blue Ice	✓		

BLAGG ENGINEERING, INC.

MONITOR WELL SAMPLING DATA

CLIENT : AMOCO PRODUCTION CO.

CHAIN-OF-CUSTODY # : 6427

GCU COM F # 162
UNIT J, SEC. 36, T29N, R12W

LABORATORY (S) USED : ENVIROTECH, INC.

Date : December 17, 1998

SAMPLER : N J V

Filename : 12-17-98.WK3

PROJECT MANAGER : J C B

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)
2A	100.16	78.31	21.85	23.32	1120	7.0	1,700	0.75	-
4	98.87	77.42	21.45	24.09	1045	7.0	2,100	1.50	-
6	98.68	78.00	20.68	26.77	1015	7.1	2,700	3.00	-
7	97.39	77.37	20.02	25.30	1150	7.3	2,800	2.75	-
10			-	16.29	-	-	-	-	-

NOTES : Volume of water purged from well prior to sampling: V = pi X r2 X h X 7.48 gal./ft3) X 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 ".

MW #'s 2A - poor recovery . Collected BTEX samples for each MW listed above except MW # 10 .

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Blagg / AMOCO	Project #:	04034-10
Sample ID:	MW # 2A	Date Reported:	12-18-98
Chain of Custody:	6427	Date Sampled:	12-17-98
Laboratory Number:	E373	Date Received:	12-17-98
Sample Matrix:	Water	Date Analyzed:	12-18-98
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**13.2**	**1**	**0.2**
Toluene	**3.2**	**1**	**0.2**
Ethylbenzene	**2.4**	**1**	**0.2**
p,m-Xylene	**4.8**	**1**	**0.2**
o-Xylene	**5.2**	**1**	**0.1**
Total BTEX	**28.8**		

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	**97 %**
	Bromofluorobenzene	**97 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **GCU Com F # 162.**

Analyst

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Blagg / AMOCO	Project #:	04034-10
Sample ID:	MW # 4	Date Reported:	12-18-98
Chain of Custody:	6427	Date Sampled:	12-17-98
Laboratory Number:	E374	Date Received:	12-17-98
Sample Matrix:	Water	Date Analyzed:	12-18-98
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**4.0**	**1**	**0.2**
Toluene	**2.7**	**1**	**0.2**
Ethylbenzene	**27.0**	**1**	**0.2**
p,m-Xylene	**158**	**1**	**0.2**
o-Xylene	**49.3**	**1**	**0.1**
Total BTEX	**241**		

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	**99 %**
	Bromofluorobenzene	**99 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **GCU Com F # 162.**

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Blagg / AMOCO	Project #:	04034-10
Sample ID:	MW # 6	Date Reported:	12-18-98
Chain of Custody:	6427	Date Sampled:	12-17-98
Laboratory Number:	E375	Date Received:	12-17-98
Sample Matrix:	Water	Date Analyzed:	12-18-98
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**ND**	**1**	**0.2**
Toluene	**ND**	**1**	**0.2**
Ethylbenzene	**0.3**	**1**	**0.2**
p,m-Xylene	**1.4**	**1**	**0.2**
o-Xylene	**0.5**	**1**	**0.1**
Total BTEX	**2.2**		

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	**96 %**
	Bromofluorobenzene	**96 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **GCU Com F # 162.**

Analyst

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Blagg / AMOCO	Project #:	04034-10
Sample ID:	MW # 7	Date Reported:	12-18-98
Chain of Custody:	6427	Date Sampled:	12-17-98
Laboratory Number:	E376	Date Received:	12-17-98
Sample Matrix:	Water	Date Analyzed:	12-18-98
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**32.6**	**1**	**0.2**
Toluene	**54.0**	**1**	**0.2**
Ethylbenzene	**38.1**	**1**	**0.2**
p,m-Xylene	**165**	**1**	**0.2**
o-Xylene	**69.8**	**1**	**0.1**
Total BTEX	**359**		

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	**99 %**
	Bromofluorobenzene	**99 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **GCU Com F # 162.**

Analyst

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS
QUALITY ASSURANCE REPORT

Client:	N/A	Project #:	N/A
Sample ID:	12-18-BTEX QA/QC	Date Reported:	12-18-98
Laboratory Number:	E373	Date Sampled:	N/A
Sample Matrix:	Water	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	12-18-98
Condition:	N/A	Analysis:	BTEX

Calibration and Detection Limits (ug/L)	I-Cal RF:	C-Cal RF:	%Diff. Accept. Range 0 - 15%	Blank Conc	Detect. Limit
Benzene	3.3006E-002	3.3112E-002	0.32%	ND	0.2
Toluene	1.3687E-002	1.3715E-002	0.20%	ND	0.2
Ethylbenzene	1.7638E-002	1.7712E-002	0.42%	ND	0.2
p,m-Xylene	1.5312E-002	1.5315E-002	0.02%	ND	0.2
o-Xylene	1.5548E-002	1.5595E-002	0.30%	ND	0.1

Duplicate Conc. (ug/L)	Sample	Duplicate	%Diff.	Accept Limit
Benzene	13.2	13.2	0.0%	0 - 30%
Toluene	3.2	3.3	3.0%	0 - 30%
Ethylbenzene	2.4	2.4	0.0%	0 - 30%
p,m-Xylene	4.8	5.0	4.0%	0 - 30%
o-Xylene	5.2	5.2	0.0%	0 - 30%

Spike Conc. (ug/L)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Limits
Benzene	13.2	50.0	62.8	99%	39 - 150
Toluene	3.2	50.0	53.1	100%	46 - 148
Ethylbenzene	2.4	50.0	52.3	100%	32 - 160
p,m-Xylene	4.3	100.0	104.6	100%	46 - 148
o-Xylene	5.2	50.0	55.0	100%	46 - 148

ND - Parameter not detected at the stated detection limit.

References:

Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **QA/QC for samples E373 - E379.**

Analyst

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CHAIN OF CUSTODY RECORD

6427

Client / Project Name	Project Location	ANALYSIS / PARAMETERS
BLAGG / AMOCO	GCU COM F #162	
Sampler: NJV	Client No. 04034-10	

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	BTEX (8021)						Remarks
MW # 2A	12/17/98	1120	E 373	WATER	2	✓						PRESERV. - HgCl2 & COOL
MW # 4	12/17/98	1045	E374	WATER	2	✓						"
MW # 6	12/17/98	1015	E375	WATER	2	✓						"
MW # 7	12/17/98	1150	E376	WATER	2	✓						"

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
[signature]	12/17/98	1410	[signature]	12.17.98	1410
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

Ref COC' 6427- 6429

ENVIROTECH INC.

5796 U.S. Highway 64
Farmington, New Mexico 87401
(505) 632-0615

Sample Receipt	Y	N	N/A
Received Intact	✓		
Cool - Ice/Blue Ice	✓		