3R - 377

REPORTS

DATE:

JAN 2001

3R-377

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

January 19, 2001

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

Re: BP Amoco (formerly Amoco Production Company)
Groundwater Monitoring Report
Cooper GC # 1E, Unit J, Sec. 15, T29N, R11W, NMPM
San Juan County, New Mexico

Dear Mr. Olson:

BP Amoco has retained Blagg Engineering, Inc. to conduct environmental monitoring and reclamation of groundwater at the Cooper GC # 1E currently operated by Cross Timbers Oil Company (CTOC). CTOC acquired the well site in January, 1998, however, BP Amoco has and is currently accepting the environmental obligation associated with the soil and groundwater contamination.

After the initial pit closure cleanup effort in October/November, 1993, an air sparge system was utilized in aggressively remediating on-site hydrocarbon contamination in groundwater. The system was designed to treat soils and groundwater that could not be accessed or reclamated by other practical methods. An extension of the air sparge system was conducted in September, 2000 to address a rise in the local water table.

If you have any questions concerning this document, please contact either myself or Jeffrey C. Blagg at the address or phone number listed above. Thank you for your cooperation and assistance.

Respectfully submitted:
Blagg Engineering, Inc.

Nelson J. Velez
Staff Geologist

cc: Mr. Denny Foust, Environmental Geologist, NMOCD District III Office, Aztec, NM
Mr. Buddy Shaw, Environmental Coordinator, BP Amoco, Farmington, NM (without document)
Ms. Nina Hutton, Environmental & Safety Manager, CTOC, Ft. Worth, TX
Mr. Terry Matthews, Regional Manager, CTOC, Farmington, NM

NJV/njv

COOP-1E.CVL

BP AMOCO
Cooper GC #1E
Nw/4 Se/4 Sec. 15, T29N, R11W

Pit Closure Dates:	**Oct.-Nov., 1993 & Aug.-Sept., 1997**
Monitor Well Installation Dates:	**Apr. 26-29, 1996, Sept. 19, 1996, Mar. 30-Apr. 1, 1998**
Air Sparge Installation Dates:	**Mar. 31-Apr. 3, 1998 & Sept. 12, 2000**

Pit Closures & Background:

Pit closure was conducted by BP Amoco's (**BP**) contractor Paul & Sons, Inc. (**P&S**) in **October, 1993** (*refer to pit closure information section*). *The excavated area encompassed approximately* 30 feet by 70 feet in dimension within the fenced portion of the well pad at its southern perimeter. The soil excavated was removed and transported to BP's Cooper GC # 1 well site located at Unit B, Section 15, T29N, R11W, NMPM, San Juan County, NM. Groundwater was encountered during the soil excavation at approximately twenty (20) feet below grade. The exposed groundwater within the pit area was sampled and tested by Envirotech, Inc. on **November 1, 1993** for benzene, toluene, ethylbenzene, and total xylenes (**BTEX**) per US EPA method 8020. It was documented that the exposed groundwater in the pit excavation was pumped on **November 2, 1993** and upon review of the groundwater lab results, a resampling of the pit water was conducted on **November 5, 1993**. The BTEX results of the two (2) groundwater sampling events are as follows;

Date	11/1/93	11/5/93	NMWQCC standards
Sample ID	12B @ 20 ft.	13B @ 20 ft.	
benzene (ppb)	***12,900***	***8,200***	***10***
toluene (ppb)	***6,200***	***16,400***	***750***
ethylbenzene (ppb)	720	373	***750***
xylenes (ppb)	***5,430***	***6,580***	***620***

Note: ppb = parts per billion, NMWQCC = New Mexico Water Quality Control Commission.

Afterwards, the excavation was backfilled and a monitor well (MW #1) was installed by P&S on an **undisclosed date in 1994** (Figure 1). After six (6) sampling events from MW #1 dating between **October, 1994 & December, 1995** (refer to summary table for results), an apparent air sparge system was installed by P&S between **December, 1995 & March, 1996**. Specifications of the system are unknown. All that can be disclosed of the system is that three (3) air sparge points were installed; one near the south end of the dehydrator tank pit, one adjacent to the production tank on its north side, and MW #1 converted as the last point. As a result of the modification to MW #1, it was apparent that it was unusable for groundwater sampling.

In **April, 1996**, Blagg Engineering, Inc. (**BEI**) installed four (4) groundwater monitor wells (MW #'s 2, 3, 4 , & 5) using a truck mounted drill rig (see Figure 1 for locations). MW #4 was positioned as to replace MW #1. Boring logs and monitor well completion schematics can be reviewed under the *Boring Logs & MW Details* tab headings respectively. The initial sampling event for these monitor wells conducted in **June, 1996**. Upon review of the lab results, BP's groundwater plan called for down gradient delineation and placing MW #'s 3, 4, & 5 on an annual sampling schedule. Sampling of MW #2 was terminated as all BTEX constituents tested at non detectable levels.

In **September, 1996**, BEI conducted down gradient test holes and installed monitor wells (MW's 6, 7, 8, & 9) off-site (Figure 2). BTEX results from these test holes and monitor wells can be reviewed in the table below as well as on Figure 3.

Sample ID	Date	benzene (ppb)	toluene (ppb)	ethyl-benzene (ppb)	total xylenes (ppb)
TH #1	9/19/96	***1,200***	1.03	4.52	49.0
TH #2	9/19/96	0.99	0.24	ND	0.45
TH #3 / MW #6	9/19/96	0.92	0.91	0.49	2.15
TH #4 / MW #7	9/23/96	***3,550***	***2,100***	319	***2,126***
TH #5 / MW #8	9/23/96	0.56	1.71	4.79	11.95
TH #6 / MW #9	9/23/96	***14.0***	1.05	ND	ND
NMWQCC standards		***10.0***	***750***	***750***	***620***

Note: ppb = parts per billion, TH = test hole, MW = monitor well, NMWQCC = New Mexico Water Quality Control Commission.

Boring logs for test holes 1 through 3 (designated TH-1 to TH-3) are included within the *Boring Logs* tab heading. The other test holes or installed monitor wells were not documented; however, based on their proximities to other test holes or monitor wells that were logged, it can be postulated that the lithology are somewhat similar in comparison.

Commencing at the end of **July, 1997**, BP selected to conduct further on-site soil and groundwater remediation by means of excavation (Figure 5). Upon completion of the excavated areas, grab soil samples were collected from the excavation sidewalls at various intervals from the relative ground surface on **August 6, 1997**. Recovered soil samples were field screened for volatile hydrocarbon vapors with an organic vapor meter (**OVM**) applying the Headspace Field Method (New Mexico Oil Conservation Division (**NMOCD**) Surface Impoundment Closure Guidelines, February, 1993). The soil sample with the highest OVM reading was collected in laboratory supplied four (4) ounce glass jar with teflon seal and submitted to a qualified laboratory for total petroleum hydrocarbons (**TPH**) analysis per US EPA method 8015.

The sample was stored in a cooler with blue ice pack(s) and hand delivered on the same day as sampled. The OVM results and TPH analysis can be reviewed on Figure 5. The laboratory report, quality assurance/quality control (QA/QC), and Chain-of-Custody Record are presented within the *Soil Lab Reports* tab heading.

The excavated areas were measured at approximately 135 feet in width by 162 feet in length by 25 in depth and 47 feet in width by 66 feet in length by 25 feet in depth. The total cubic yardage excavated is estimated between 15,000 to 20,000. Approximately two thirds (2/3) of the excavated soil was considered clean overburden (no apparent discoloration observed or hydrocarbon odor detected physically) which was eventually placed back into the bottom portion of the excavations (10,000 to 13,333 cubic yards). The contaminated soil portion (5,000 to 6,667 cubic yards) was temporarily stockpiled north of the well head during the remediation effort. A rock crusher, utilizing its conveyor belt as an aerator was transported on location. The contaminated soil was handled several times applying the aeration process prior to sampling. OVM (grab) and/or lab TPH (grab and composite) samples were collected from the stockpile prior to and after the aeration remediation was completed (see Figure 5 for summary results). After receiving the laboratory analyses, the remediated soil was placed back into the excavated areas above the apparent clean overburden soil previously mentioned.

In addition to the soil remediation, P&S personnel installed four (4) each two (2) inch diameter PVC groundwater monitor wells off-site and south/down gradient of the remediation effort (Figure 3). These wells, labels TH A through TH D, were sampled on **August 22, 1997** by BEI. BTEX results can be reviewed in the table below as well as on Figure 3.

Sample ID	Date	benzene (ppb)	toluene (ppb)	ethyl-benzene (ppb)	total xylenes (ppb)
TH A	8/22/97	ND	0.4	1.1	13.4
TH B	8/22/97	ND	11.3	11.1	18.6
TH C	8/22/97	***92.8***	ND	ND	79.1
TH D	8/22/97	***10.3***	2.4	ND	11.5
NMWQCC standards		***10.0***	***750***	***750***	***620***

Note: ppb = parts per billion, TH = test hole, MW = monitor well, NMWQCC = New Mexico Water Quality Control Commission.

It is important to note that during the sampling of these wells, physical detection of apparent PVC primer and glue was evident. Afterwards, it was later confirmed by the personnel who installed the wells that primer and glue were indeed used at the PVC screen and casing connections. Based on this fact, BEI does not view the samples as viable and the data may not be valid.

In **September, 1997**, the well site's surface equipment was relocated and presently appears as in Figure 4.

As evident in Figure 5, a buried concrete ditch split the excavation areas previously mentioned. Contaminated soil below the ditch could not practically be removed or remediation by excavation, therefore as an alternative, an air sparge system was developed and installed by BEI to address the remaining contamination in soil and groundwater.

Reclamation System:

The present air sparge reclamation system (Figure 6 & 7) was installed in two separate events. The initial event was installed by BEI using a CME drill rig in **March-April, 1998** to address the groundwater at the measured depths during that period. As time progressed, the groundwater surface rose dramatically, creating a situation that rendered the air sparge system unproductive due to insufficient air pressure from the air injection blowers to overcome the total head within each air sparge point. This lead to a sparge system revision, which was conducted in **September, 2000** using BEI's truck mount drill rig. Two (2) additional air sparge points, designated *AS-12 & AS-13*, were installed at shallower depths (*refer to Air Sparge Schematic tab heading*) to address the higher groundwater surface. BEI installed gate valves (Figure 8) to direct the air flow to either the shallower or deeper seated air sparge points to address changes in groundwater level. Periodic inspection of the groundwater level would dictate which air sparge points to utilize.

It should be noted that during the July/August, 1997 remedial effort, P&S installed an air sparge/vacuum extraction system in the southwest portion of the southern most excavation perimeter. Although no specifications of the system are present, the following outline highlights the intent.

1. Horizontal borings were advanced using a water pump to drive four (4) inch piping into the southwest sidewall of the southern excavation. Penetration lengths ranged from twenty five (25) to forty (40) feet.
2. The borings, total number unknown, were advanced within the water table [estimated at twenty five (25) feet below grade] and above [estimated at twenty (20) feet].
3. Perforated four (4) inch pipe (similar to sewer/leach line piping) was utilized for both the air sparge and vacuum extraction systems.

Between April, 1998 and May, 1999, the compressor used for the reclamation was alternated every three (3) months between P&S and BEI installed systems due to incompatible air flow movement in the vertical (BEI) and horizontal (P&S) piping. BEI's air sparge system below the concrete ditch has been exclusively used since May, 1999.

Groundwater Monitor Well Sampling Procedures:

Groundwater samples were collected from site monitor wells following US EPA: SW-846 protocol. The samples were collected using new disposable bailers and placed in new laboratory supplied forty (40) milliliter glass vials with teflon septa caps. Samples were analyzed BTEX per US EPA Method 8021. Additional groundwater was collected and placed in laboratory supplied 500 ml plastic containers and analyzed for general water quality per US EPA Method 600/4-79-020.

The samples were preserved cool (BTEX samples also preserved with mercuric chloride or hydrochloric acid) and hand delivered to a qualified laboratory for testing. Waste generated during monitor well sampling and development was disposed of utilizing the separator tank pit located on the well site.

Groundwater Quality & Flow Direction Information:

Sampling of the groundwater monitor wells at the site has been ongoing since October, 1994. A summary of laboratory analytical results is included within the tables on the following pages and laboratory data reports are included in *MW Data with Lab Reports* tab heading. Analytical data indicates that groundwater impact in excess of NMWQCC standards has been identified in three (3) monitor wells (MW #3R, MW #7 & MW #9). Of the three (3) monitor wells, MW #3R (which replaced MW #3) is the only well being sampled on a continuous basis. Water quality in MW #3R has shown variable values of BTEX over time. These trends will be further evaluated from periodic monitoring after the addition/modification to the air sparge system in September, 2000. MW #'s 7 & 9 have only been sampled on one occasion in September, 1996. All other monitor wells listed within the proceeding tables have either established sampling termination based on BP's NMOCD approved groundwater plan or removed during the July/August, 1997 soil excavation activity.

Groundwater contour maps of relative water table elevations for sample events with sufficient data is included within the *GW Contour Maps* tab heading. The general flow direction tends to be either due south or in the southwest direction with the latter being predominant.

Summary

Contaminated soil and groundwater at the site that could not be accessed by excavation below the buried concrete ditch is presently being remediated with BEI's active air sparge system. Operation of the air sparge system is on-going as is groundwater monitoring from MW #3R.

AMOCO GROUNDWATER MONITOR WELL LABORATORY RESULTS

SUBMITTED BY BLAGG ENGINEERING, INC.

COOPER GC # 1E - SEPARATOR PIT
UNIT J, SEC. 15, T29N, R11W

REVISED DATE: JANUARY 3, 2001

FILENAME: (CO-4Q-00.WK4) NJV

								BTEX EPA METHOD 8021 (ppb)			
SAMPLE DATE	MONITOR WELL #	D.T.W. (ft)	T.D. (ft)	TDS mg/L	COND. (umhos/cm)	pH	PRODUCT (ft)	Benzene	Toluene	Ethyl Benzene	Total Xylene
03-Oct-94	MW #1	22.04	27.30		2,400	7.3		2032	940	282	2595
15-Dec-94		23.45			2,400	7.0		2010	268	337	1749
10-Mar-95		27.21			2,600	6.9		1860	32	147	326
12-Jun-95		26.74			2,600	6.8		1082	1300	156	1678
08-Sep-95		22.07			1,700	7.0		661	786	606	1748
05-Dec-95		24.46			2,100	6.7		8130	1250	638	4035
March 96	Remediation System Installed - Well Not Usable										
07-Jun-96	MW #2	21.16	30.00	1110	900	7.3		ND	ND	ND	ND
09-Apr-98	MW #2R	22.67	26.00	586		6.6		2.4	9.9	2.7	16.2
07-Jun-96	MW #3	22.22	30.00	2090	200	6.9		2290	5410	1460	16010
27-Jun-97		26.19	30.00		2,100	7.4		14.3	29.6	97.9	498
09-Apr-98	MW #3R	25.59	34.03	7780		7.1		43.3	222	8.3	134.6
30-May-98		25.48			5,900	7.2		110	81.3	1.5	24.2
29-Sep-98		21.16			2,900	7.2		895	587	165	919
18-Dec-98		22.04			6,000	7.6		301	44.2	49.9	169.6
18-Feb-99		23.62			4,300	7.3		329	125	94.8	258.5
26-May-99		21.37			1,200	6.9		628	733	106	393
23-Aug-99		18.33			1,100	7.0		270	33.7	85.4	289
06-Dec-99		17.82			1,200	7.1		103	410	98.5	1005
24-Feb-00		21.62			2,500	7.6		290	790	130	1420
15-May-00		20.49			6,600	7.2		140	110	8.3	640
28-Nov-00		15.56			900	7.6		220	880	74	1010
07-Jun-96	MW #4	24.15	30.00	323	800	6.8		2900	18220	937	13920
27-Jun-97		27.73	30.00		1,200	7.3		1215	71.7	1620.0	5726.0
07-Jun-96	MW #5	19.81	23.77	595	1,100	6.8		9940	24260	962	10250
27-Jun-97		22.70	23.68	595	1,300	7.5		1720	635	72.8	965
30-May-98	MW #5R	30.03	31.00		2,500	7.3		1.1	1.1	1.0	2.0
29-Sep-98		22.04			3,200	7.0		4.7	2.3	ND	29.2
18-Dec-98		22.34			4,250	7.1		9.1	1.4	0.8	4.5
18-Feb-99		23.92			2,400	6.9		3.0	1.8	0.5	4.7
26-May-99		20.37			1,200	7.4		20.3	22.7	2.1	30.8
23-Aug-99		17.93			1,600	7.0		1.0	2.4	0.2	11.3
06-Dec-99		17.05			1,800	7.0		5.4	ND	ND	50.9
24-Feb-00		21.66			1,000	7.6		ND	ND	ND	ND
15-May-00		20.30			1,200	7.2		ND	ND	ND	ND

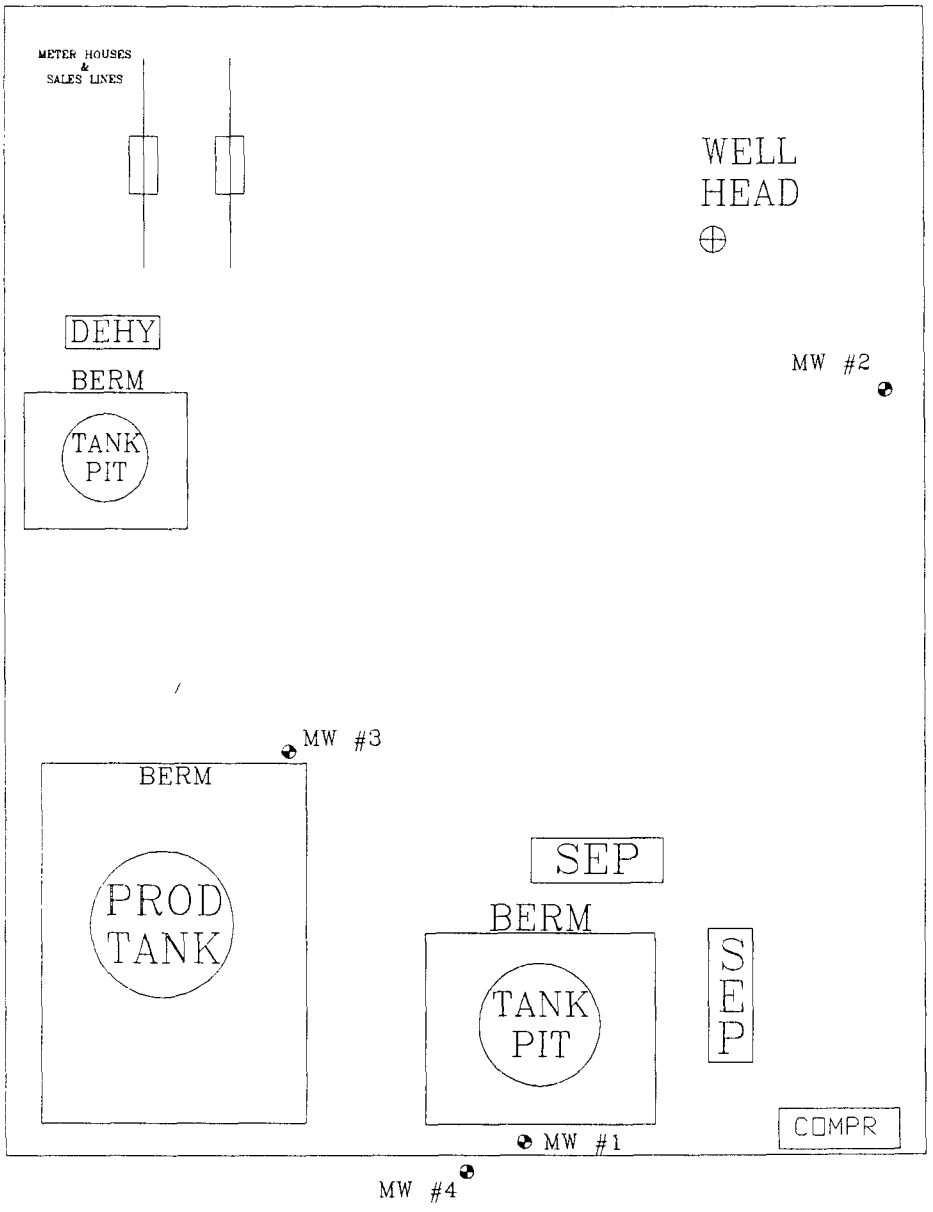
GENERAL WATER QUALITY
AMOCO PRODUCTION COMPANY
COOPER GC # 1E
SAMPLE DATE : JUNE 7, 1996

PARAMETERS		MW # 2	MW # 3	MW # 4	MW # 5	Units
GENERAL	LAB pH	7.6	7.3	7.4	7.4	s. u.
	LAB CONDUCTIVITY (25 DEG. CELCIUS)	1,660	2,760	829	986	umhos cm
	TOTAL DISSOLVED SOLIDS (180 DEG. CELCIUS)	1,110	2,090	323	595	mg / L
	TOTAL DISSOLVED SOLIDS (CALCULATED)	1,010	1,920	319	588	mg / L
ANIONS	TOTAL ALKALINITY AS CaCO3	191	334	263	501	mg / L
	BICARBONATE ALKALINITY (AS CaCO3)	191	334	263	501	mg / L
	CARBONATE ALKALINITY (AS CaCO3)	NA	NA	NA	NA	mg / L
	HYDROXIDE ALKALINITY (AS CaCO3)	NA	NA	NA	NA	mg / L
	CHLORIDE	1.67	1.67	4.17	35.8	mg / L
	SULFATE	581	1,140	37.0	11.5	mg / L
	NITRATE + NITRITE – N	NA	NA	NA	NA	
	NITRATE – N	NA	NA	NA	NA	
	NITRITE – N	NA	NA	NA	NA	
CATIONS	TOTAL HARDNESS AS CaCO3	556	859	222	465	mg / L
	CALCIUM	202	308	72.9	158	mg / L
	MAGNESIUM	12.3	22.1	9.82	17.2	mg / L
	POTASSIUM	<5.0	<5.0	<5.0	<5.0	mg / L
	SODIUM	100	240	37.0	65.0	mg / L
DATA VALIDATION						ACCEPTANCE LEVEL
	CATION/ANION DIFFERENCE	1.46	4.94	0.51	3.60	+/– 5 %
	TDS (180):TDS (CALCULATED)	1.1	1.1	1.0	1.0	1.0 – 1.2

GENERAL WATER QUALITY
AMOCO PRODUCTION COMPANY
COOPER GC # 1E
SAMPLE DATE : APRIL 9, 1998

PARAMETERS	MW # 2R	MW # 3R	Units
LAB pH	6.58	7.13	s. u.
LAB CONDUCTIVITY @ 25 C	1,200	15,600	umhos / cm
TOTAL DISSOLVED SOLIDS @ 180 C	590	7,800	mg / L
TOTAL DISSOLVED SOLIDS (Calc)	586	7,780	mg / L
SODIUM ABSORPTION RATIO	0.0	26.0	ratio
TOTAL ALKALINITY AS CaCO3	235	346	mg / L
TOTAL HARDNESS AS CaCO3	464	1,156	mg / L
BICARBONATE as HCO3	235	346	mg / L
CARBONATE AS CO3	< 1	< 1	mg / L
HYDROXIDE AS OH	< 1	< 1	mg / L
NITRATE NITROGEN	0.1	21.1	mg / L
NITRITE NITROGEN	< 0.001	0.064	mg / L
CHLORIDE	46.9	23.1	mg / L
FLUORIDE	0.85	1.87	mg / L
PHOSPHATE	0.9	0.5	mg / L
SULFATE	202	5,035	mg / L
IRON	NA	NA	mg / L
CALCIUM	185	425	mg / L
MAGNESIUM	< 0.1	22.9	mg / L
POTASSIUM	5.03	10.1	mg / L
SODIUM	2.2	2,030	mg / L
CATION / ANION DIFFERENCE	0.01	0.04	%

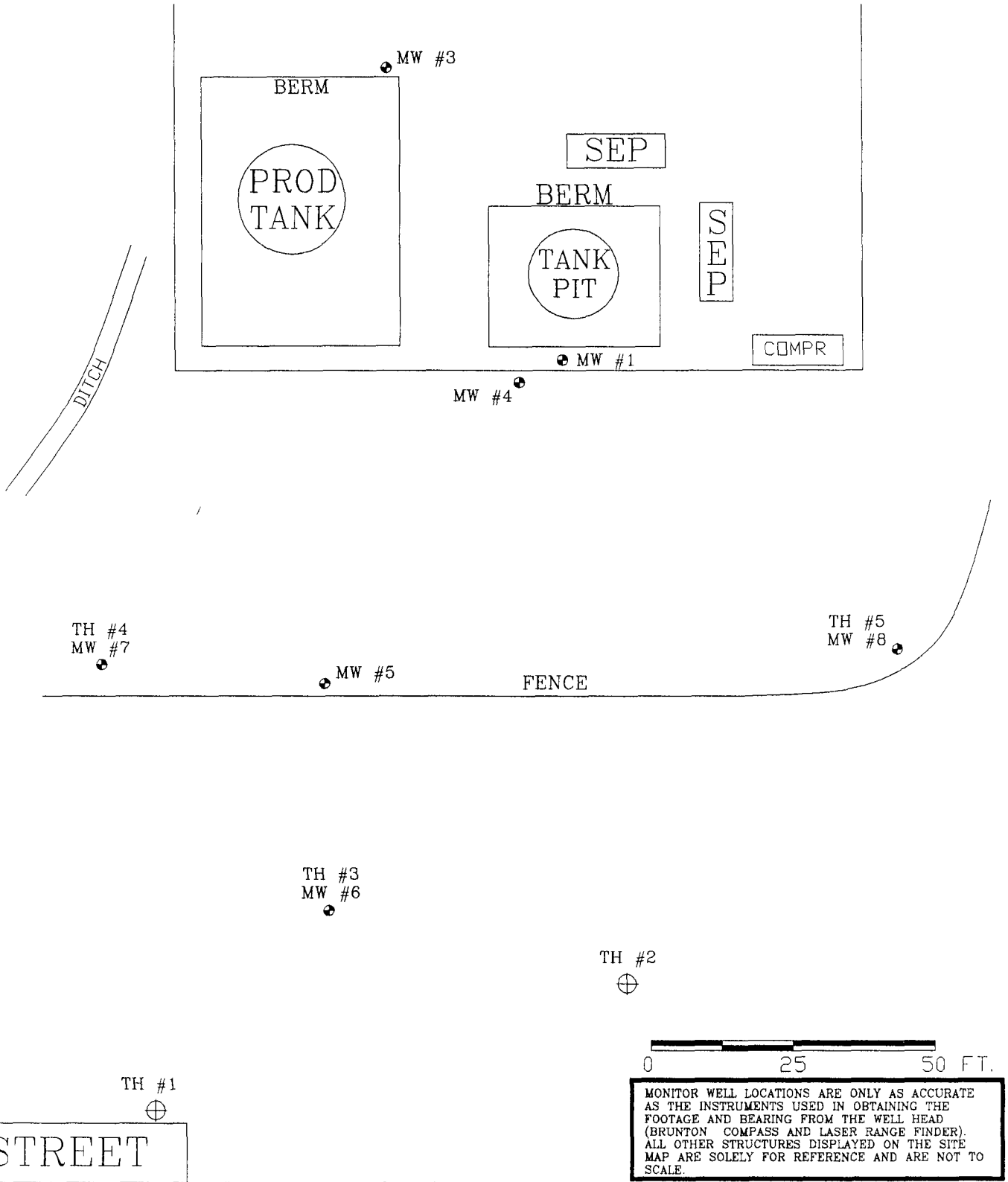
FIGURE 1
(prior to Aug. '97)



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

AMOCO PRODUCTION COMPANY COOPER GC 1E NW/4 SE/4 SEC. 15, T29N, R11W SAN JUAN COUNTY, NEW MEXICO	BLAGG ENGINEERING, INC. CONSULTING PETROLEUM / RECLAMATION SERVICES P.O. BOX 87 BLOOMFIELD, NEW MEXICO 87413 PHONE: (505) 632-1199	PROJECT: MW INSTALL. DRAWN BY: NJV FILENAME: 06-07-SM REVISED: 2/10/97 NJV	SITE MAP 6/96

FIGURE 2
(prior to Aug. '97)



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

AMOCO PRODUCTION COMPANY

COOPER GC 1E

NW/4 SE/4 SEC. 15, T29N, R11W

SAN JUAN COUNTY, NEW MEXICO

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

PROJECT: DELINEATION

DRAWN BY: NJV

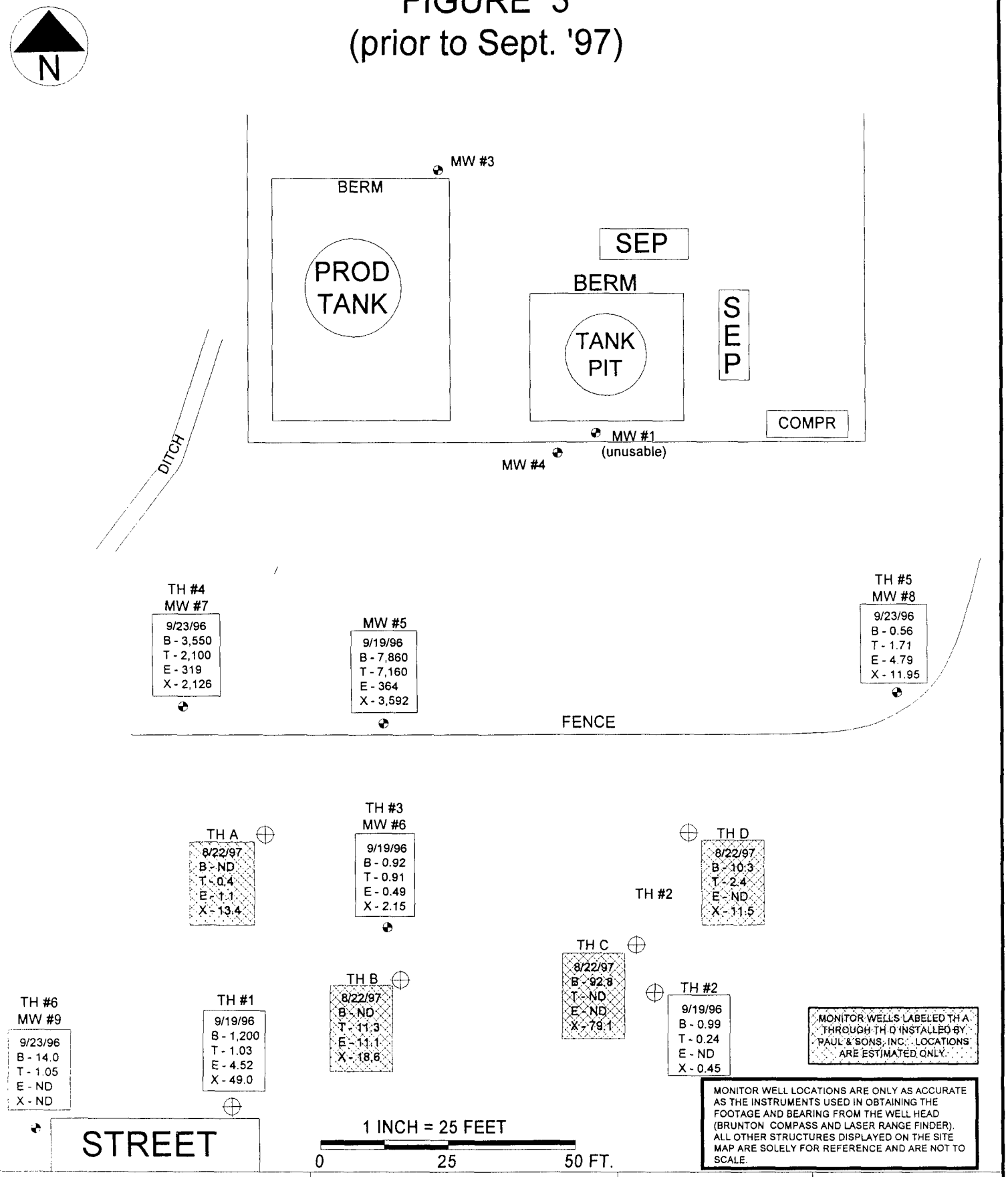
FILENAME: SOUTH-SM

REVISED: 1/10/98 NJV

SITE MAP

9/96

FIGURE 3
(prior to Sept. '97)



AMOCO PRODUCTION COMPANY

COOPER GC 1E

NW/4 SE/4 SEC. 15, T29N, R11W

SAN JUAN COUNTY, NEW MEXICO

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

PROJECT: DELINEATION

DRAWN BY: NJV

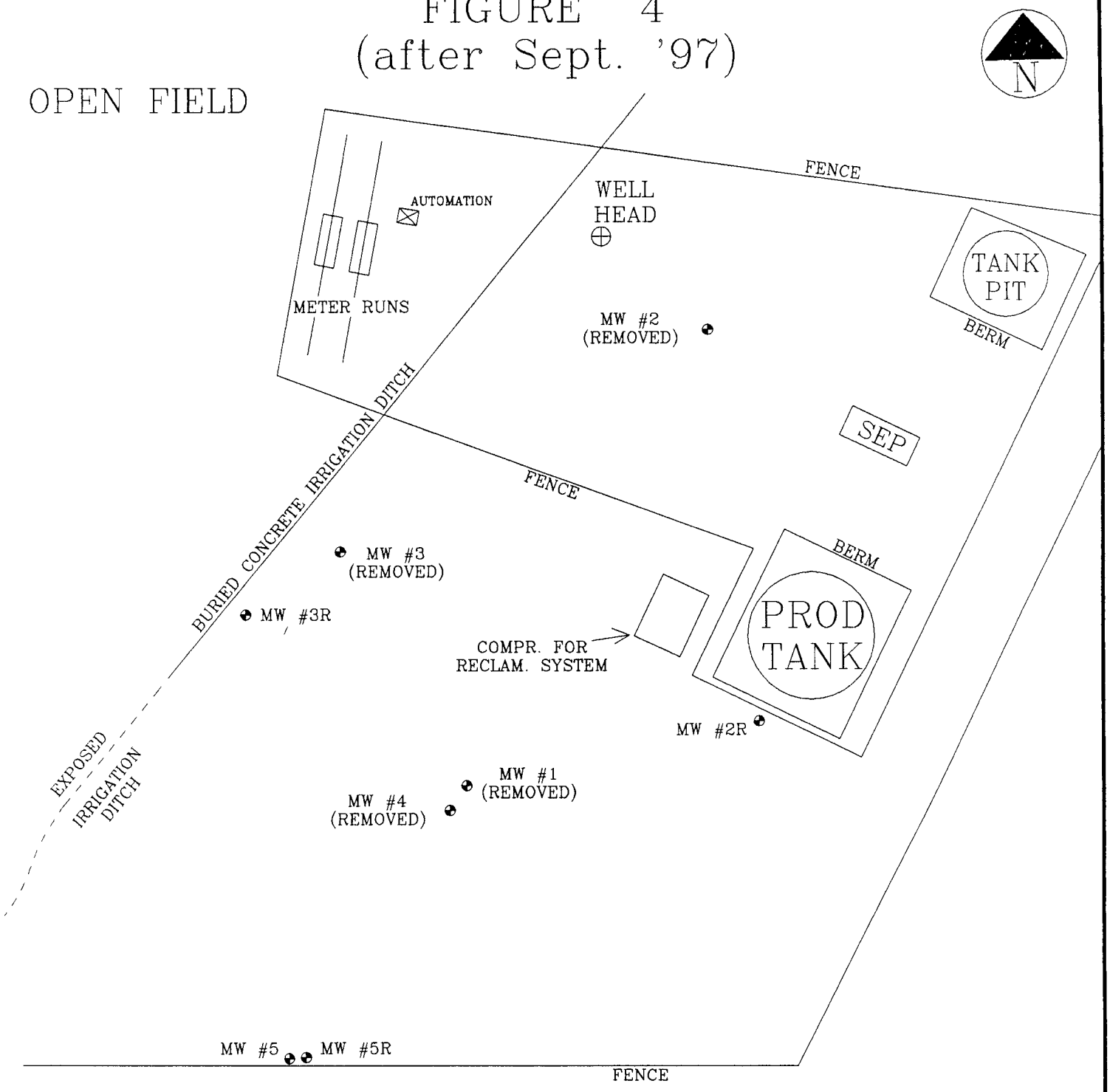
FILENAME: SOUT-BTEX

REVISED: 1/2/01 NJV

SITE MAP

8/97

FIGURE 4
(after Sept. '97)



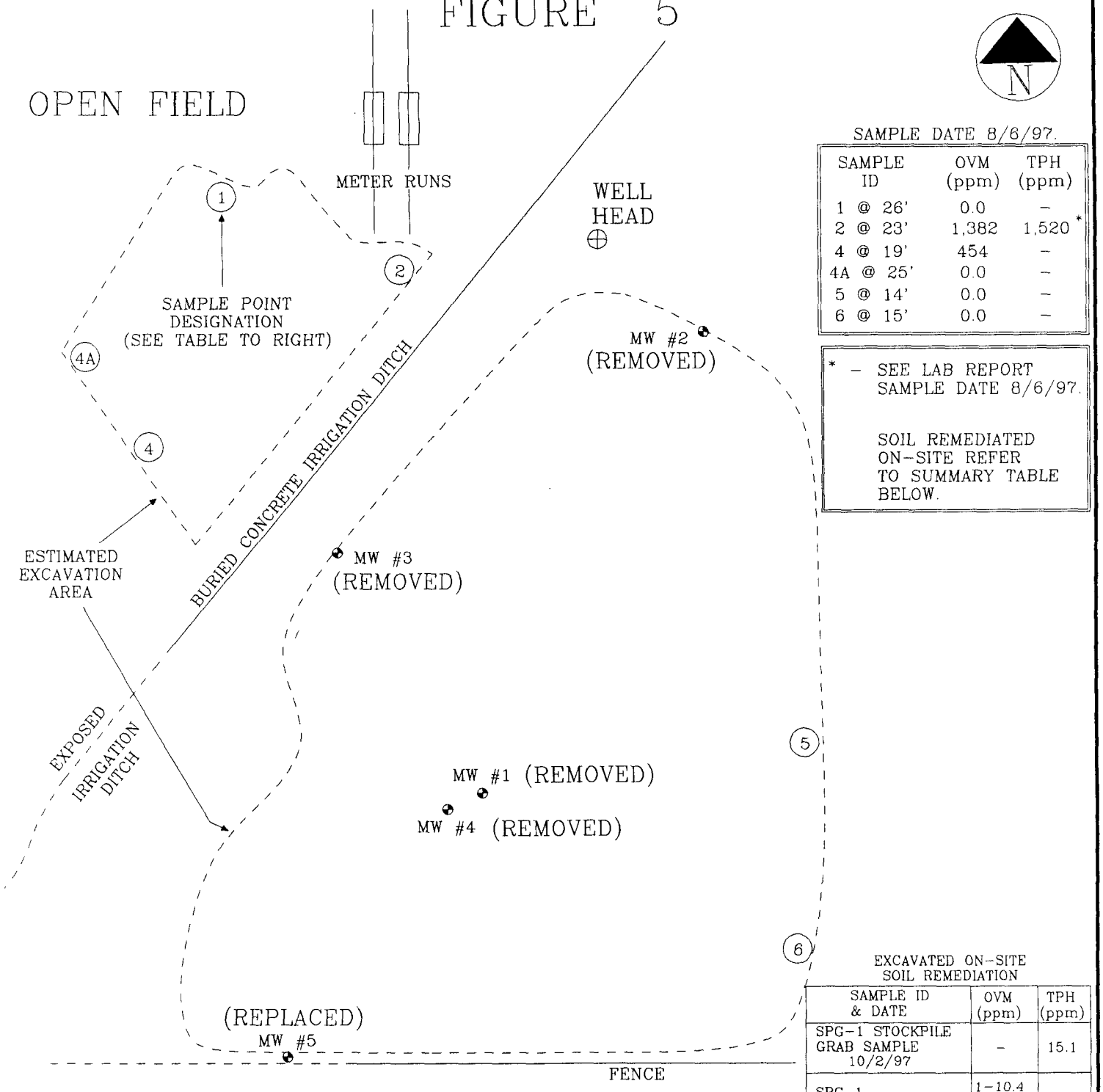
MONITOR WELL LOCATIONS ARE ONLY AS ACCURATE AS THE INSTRUMENTS USED IN OBTAINING THE FOOTAGE AND BEARING FROM THE WELL HEAD (BRUNTON COMPASS AND LASER RANGE FINDER). ALL OTHER STRUCTURES DISPLAYED ON THE SITE MAP ARE SOLELY FOR REFERENCE AND ARE NOT TO SCALE.

1 INCH = 30 FT.

0 30 60 FT.

AMOCO PRODUCTION COMPANY COOPER GC #1E NW/4 SE/4 SEC. 15, T29N, R11W SAN JUAN COUNTY, NEW MEXICO	BLAGG ENGINEERING, INC. CONSULTING PETROLEUM / RECLAMATION SERVICES P.O. BOX 87 BLOOMFIELD, NEW MEXICO 87413 PHONE: (505) 632-1199	PROJECT: REMED. PLAN DRAWN BY: NJV FILENAME: COOP-SM4 REVISED: 3/23/00 NJV	SITE MAP 4/98

FIGURE 5



SAMPLE DATE 8/6/97.

SAMPLE ID	OVM (ppm)	TPH (ppm)
1 @ 26'	0.0	–
2 @ 23'	1,382	1,520 *
4 @ 19'	454	–
4A @ 25'	0.0	–
5 @ 14'	0.0	–
6 @ 15'	0.0	–

* – SEE LAB REPORT SAMPLE DATE 8/6/97.

SOIL REMEDIATED ON-SITE REFER TO SUMMARY TABLE BELOW.

EXCAVATED ON-SITE SOIL REMEDIATION

SAMPLE ID & DATE	OVM (ppm)	TPH (ppm)
SPG-1 STOCKPILE GRAB SAMPLE 10/2/97	–	15.1
SPC-1 STOCKPILE 5 PT. COMPOSITE SAMPLE 10/2/97	1-10.4 2-6.9 3-11.9 4-53.8	13.8
SPG-2 STOCKPILE GRAB SAMPLES 10/7/97	1-70.4 2-18.4 3-11.9 4-53.8	78.1
STOCKPILE GRAB SAMPLES BEFORE REMED. EFFORT 9/15/97	1-691 2-1,015 3-1,078 4-1,046	–

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

NOTES : STOCKPILE OVM READINGS TAKEN @ INDIVIDUAL SAMPLE POINTS. TPH ANALYSIS PER US EPA METHOD 8015.

OVM = ORGANIC VAPOR METER.
TPH = TOTAL PETROLEUM HYDROCARBONS.
ppm = PARTS PER MILLION.

AMOCO PRODUCTION COMPANY

COOPER GC #1E

NW/4 SE/4 SEC. 15, T29N, R11W

SAN JUAN COUNTY, NEW MEXICO

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

PROJECT: REMED. PLAN
DRAWN BY: NJV
FILENAME: COOP-EX1
REVISED: 4/07/98 NJV

SEPT. '97 EXCAVATION MAP

4/98

BLAGG ENGINEERING, Inc.

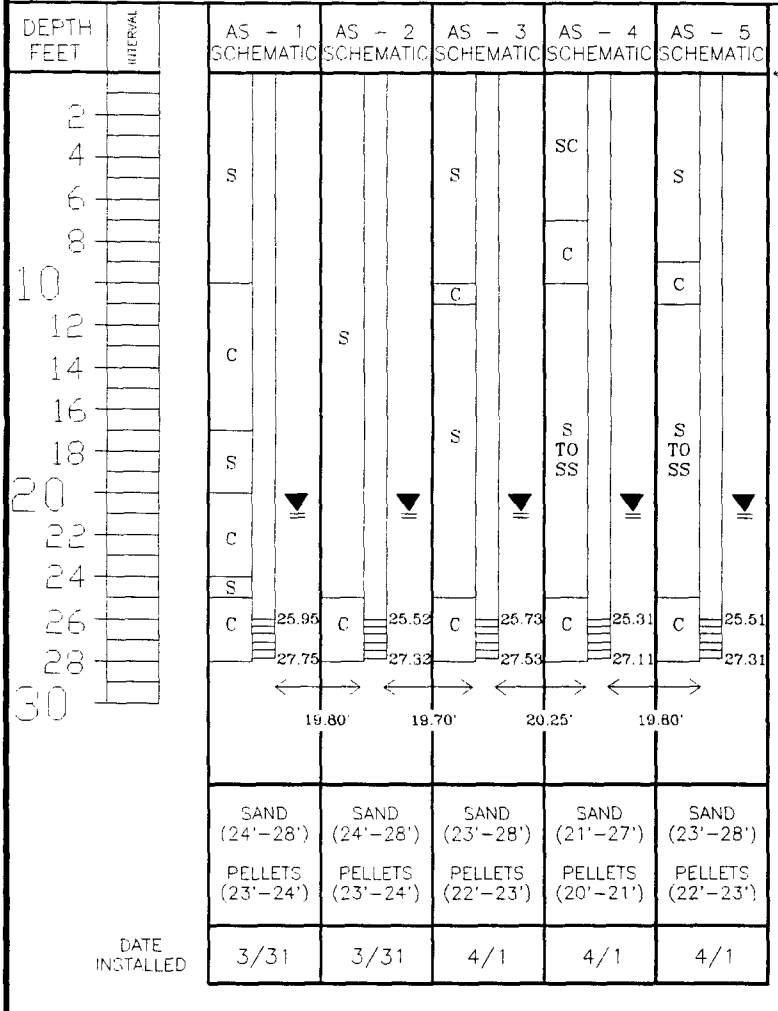
P.O. BOX 87
BLOOMFIELD, NM 87413
(505) 632-1199

AIR SPARGE SYSTEM BORE HOLE SCHEMATIC

PAGE #..... 1

LOCATION NAME:	COOPER GC # 1E
CLIENT:	CROSS TIMBERS OIL COMPANY
CONTRACTOR:	BLAGG ENGINEERING, INC. / ENVIROTECH, INC.
EQUIPMENT USED:	MOBILE DRILL RIG
BORING LOCATION:	SEE AIR SPARGING SITE SCHEMATIC.

DATE STARTED 3/31/98
DATE FINISHED 4/01/98
OPERATOR..... MC
PREPARED BY NJV



LEGEND

- AS-1 = AIR SPARGE POINT DESIGNATION.
- S = NON COHESIVE SAND.
- C = SLIGHTLY TO HIGHLY PLASTIC CLAY.
- SC = COHESIVE TO SLIGHTLY PLASTIC SILTY CLAY.
- SS = NON COHESIVE TO SLIGHTLY COHESIVE SILTY SAND.
- ▼ = INDICATES APPROX. WATER TABLE DEPTH.

DRAWING: 1E-AS-1	DATE: 3/22/00	DWN BY: NJV

BLAGG ENGINEERING, Inc.

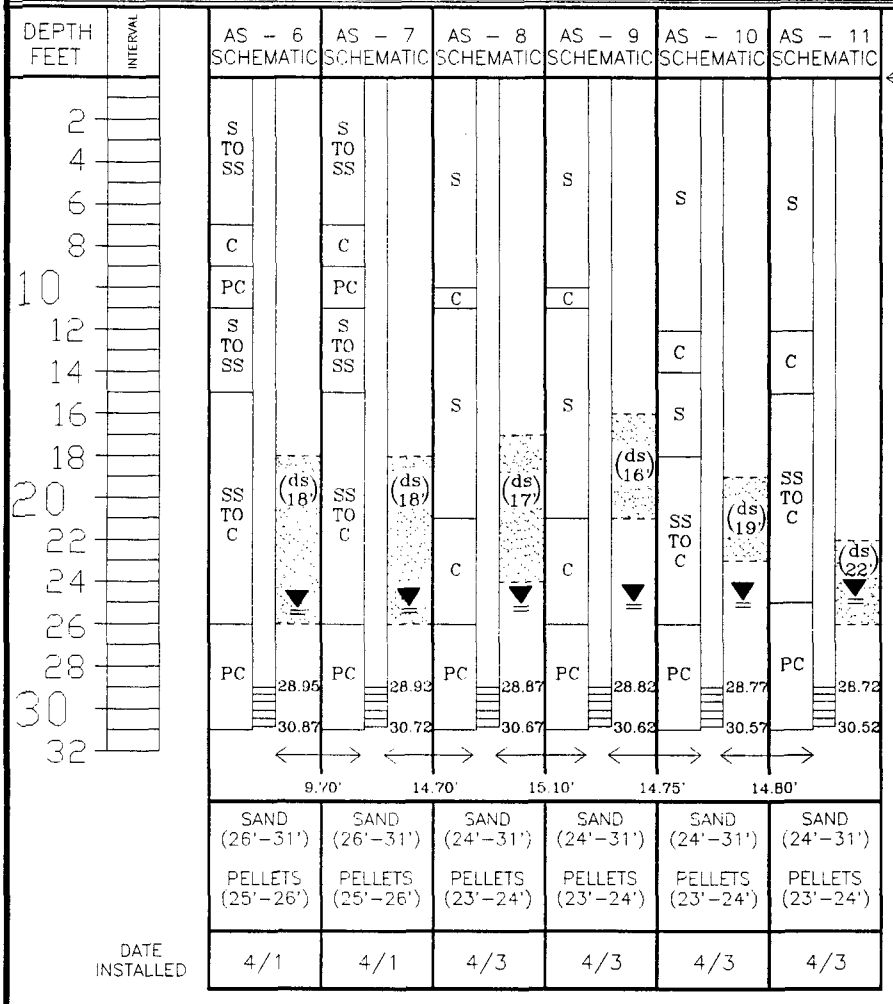
P.O. BOX 87
BLOOMFIELD, NM 87413
(505) 632-1199

AIR SPARGE SYSTEM BORE HOLE SCHEMATIC

PAGE #..... 1

LOCATION NAME:	COOPER GC # 1E
CLIENT:	CROSS TIMBERS OIL COMPANY
CONTRACTOR:	BLAGG ENGINEERING, INC. / ENVIROTECH, INC.
EQUIPMENT USED:	MOBILE DRILL RIG
BORING LOCATION:	SEE AIR SPARGING SITE SCHEMATIC.

DATE STARTED 3/31/98
DATE FINISHED 4/01/98
OPERATOR..... MC
PREPARED BY NJV



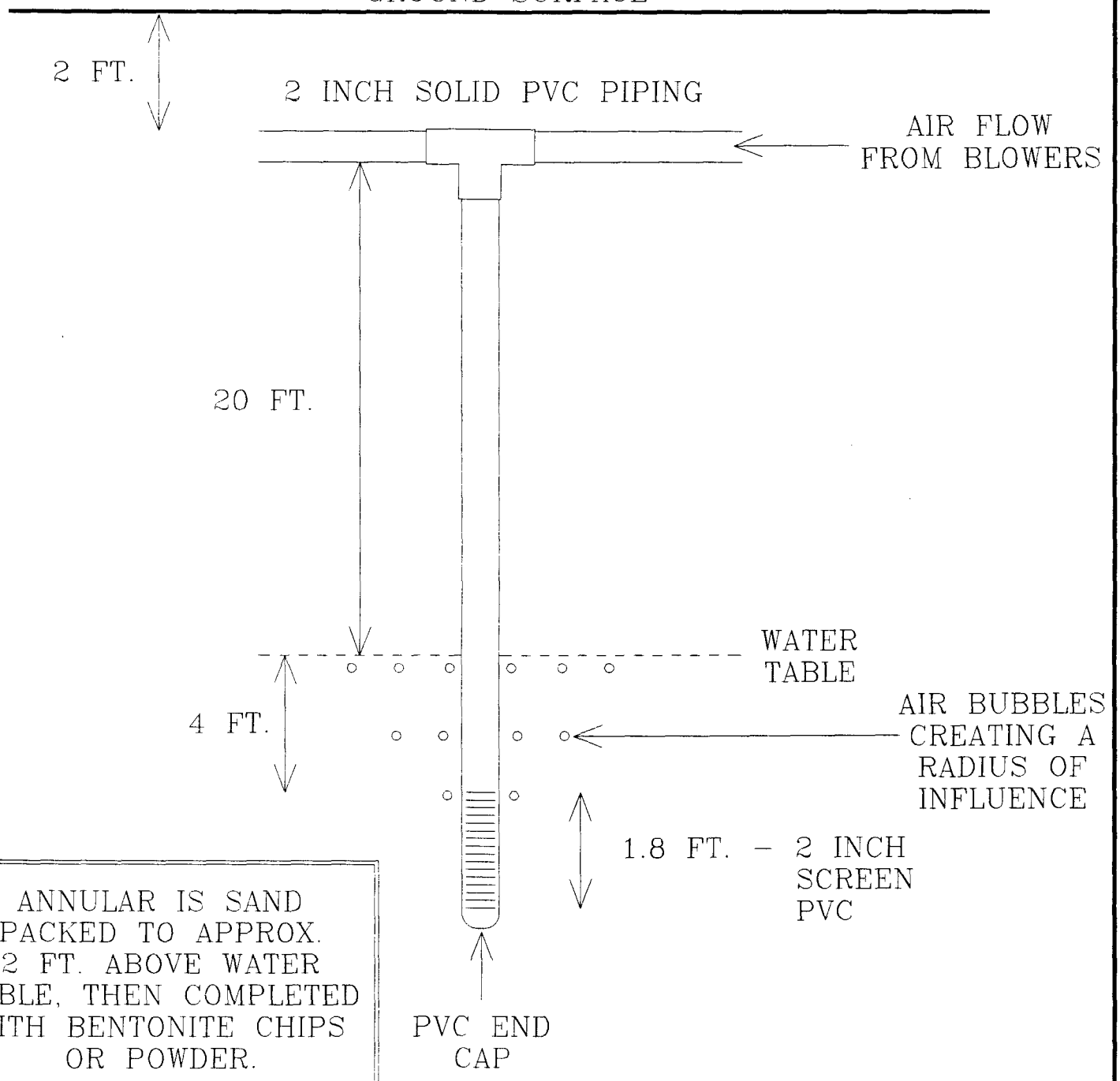
COLLECTED TPH & BTEX SAMPLES AT AS-8 (20') - OVM = 222 parts per million (ppm) TIME: 0810.

LEGEND

AS-1	= AIR SPARGE POINT DESIGNATION.
S	= NON COHESIVE SAND.
C	= SLIGHTLY TO HIGHLY PLASTIC CLAY.
SC	= COHESIVE TO SLIGHTLY PLASTIC SILTY CLAY.
SS	= NON COHESIVE TO SLIGHTLY COHESIVE SILTY SAND.
PC	= HIGHLY PLASTIC CLAY.
(ds 19')	= DISCOLORED SOIL WITH TOP INTERVAL STATED.
▼	- INDICATES APPROX. WATER TABLE DEPTH.

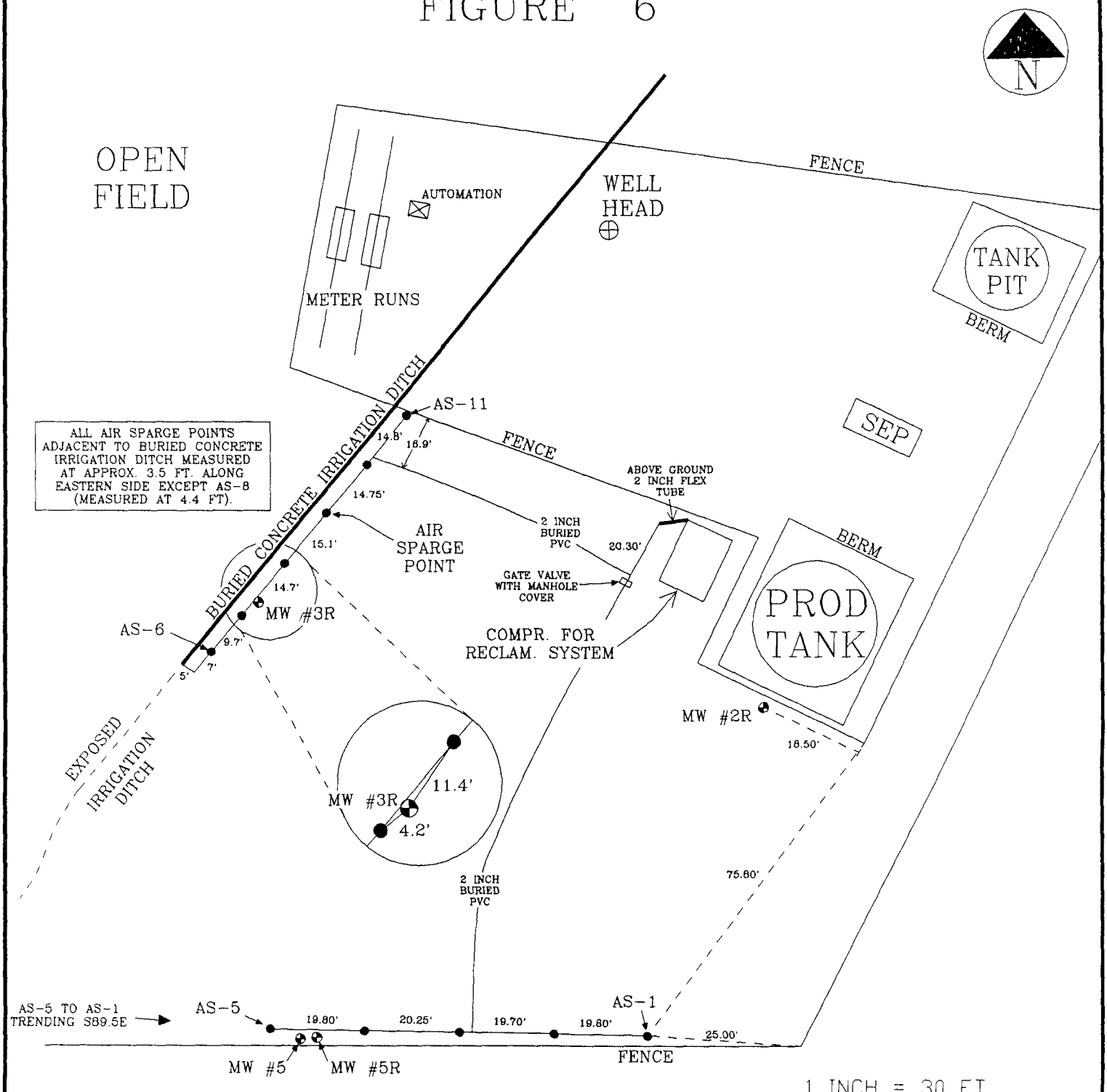
DRAWING: 1E-AS-2 | DATE: 3/22/00 | DWN BY: NJV

SIMPLISTIC AIR SPARGE POINT CONSTRUCTION



AMOCO PRODUCTION COMPANY COOPER GC # 1E NW/4 SE/4 SEC. 15, T29N, R11W SAN JUAN COUNTY, NEW MEXICO	BLAGG ENGINEERING, INC. CONSULTING PETROLEUM / RECLAMATION SERVICES P.O. BOX 87 BLOOMFIELD, NEW MEXICO 87413 PHONE: (505) 632-1199	PROJECT: RECLAM. SYS. DRAWN BY: NJV FILENAME: ASP-TEMP DRAFTED: 3/22/00 NJV	AIR SPARGE POINT 3/00

FIGURE 6



AIR SPARGE POINT'S PERPENDICULAR DISTANCES FROM FENCE LINE				
AS-5	AS-4	AS-3	AS-2	AS-1
5.75'	6.70'	5.25'	4.00'	2.15'

MW #5	TO AS-5	= 6.20 FT.
MW #5	TO MW #5R	= 6.50 FT.
MW #5R	TO AS-5	= 12.00 FT.
MW #5R	TO AS-4	= 8.70 FT.

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

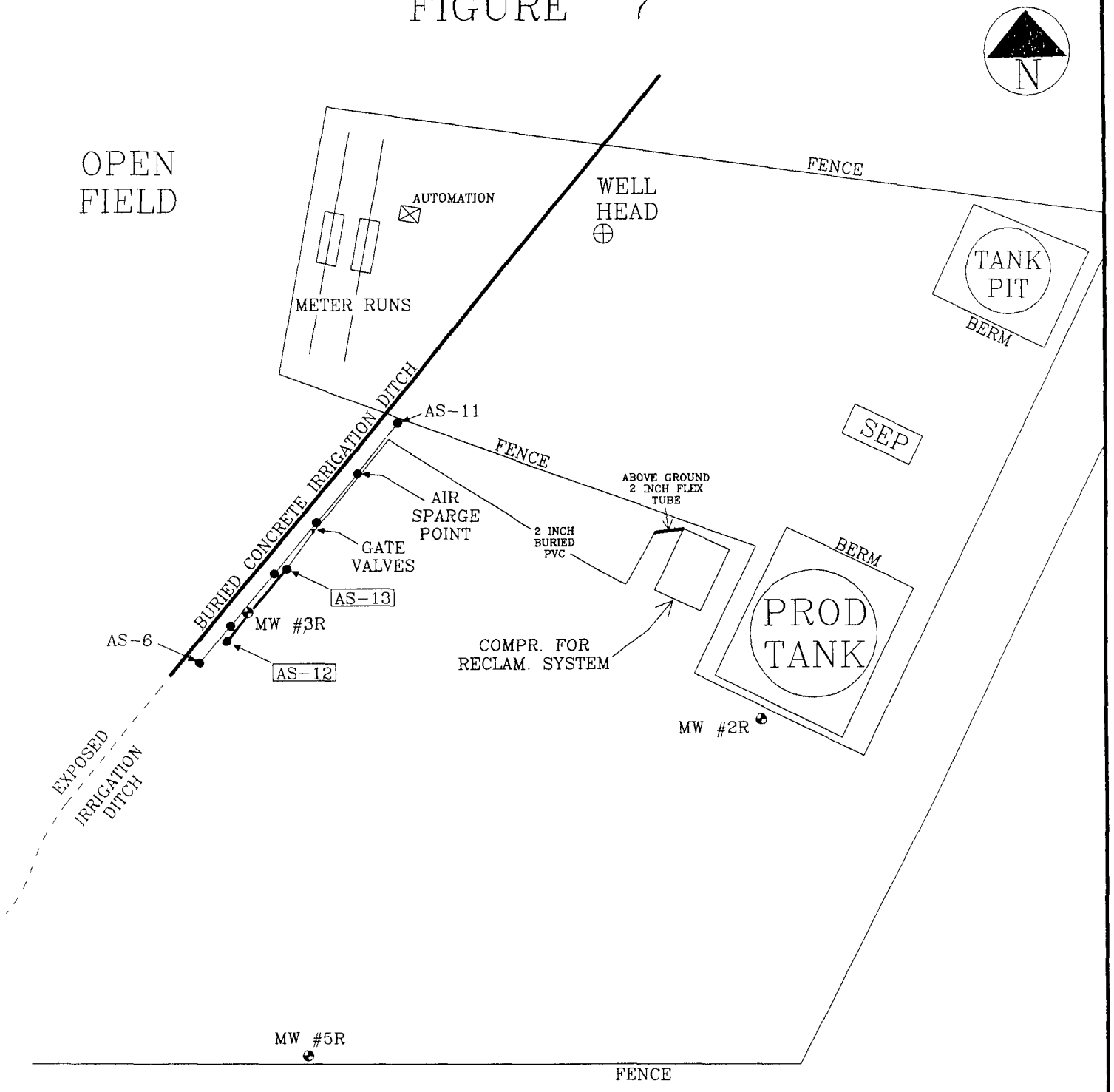
AMOCO PRODUCTION COMPANY
COOPER GC #1E
NW/4 SE/4 SEC. 15, T29N, R11W
SAN JUAN COUNTY, NEW MEXICO

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

PROJECT: REMED. PLAN
DRAWN BY: NJV
FILENAME: COOP-AS
REVISED: 4/07/98 NJV

AIR SPARGE SYSTEM AS BUILT
4/98

FIGURE 7



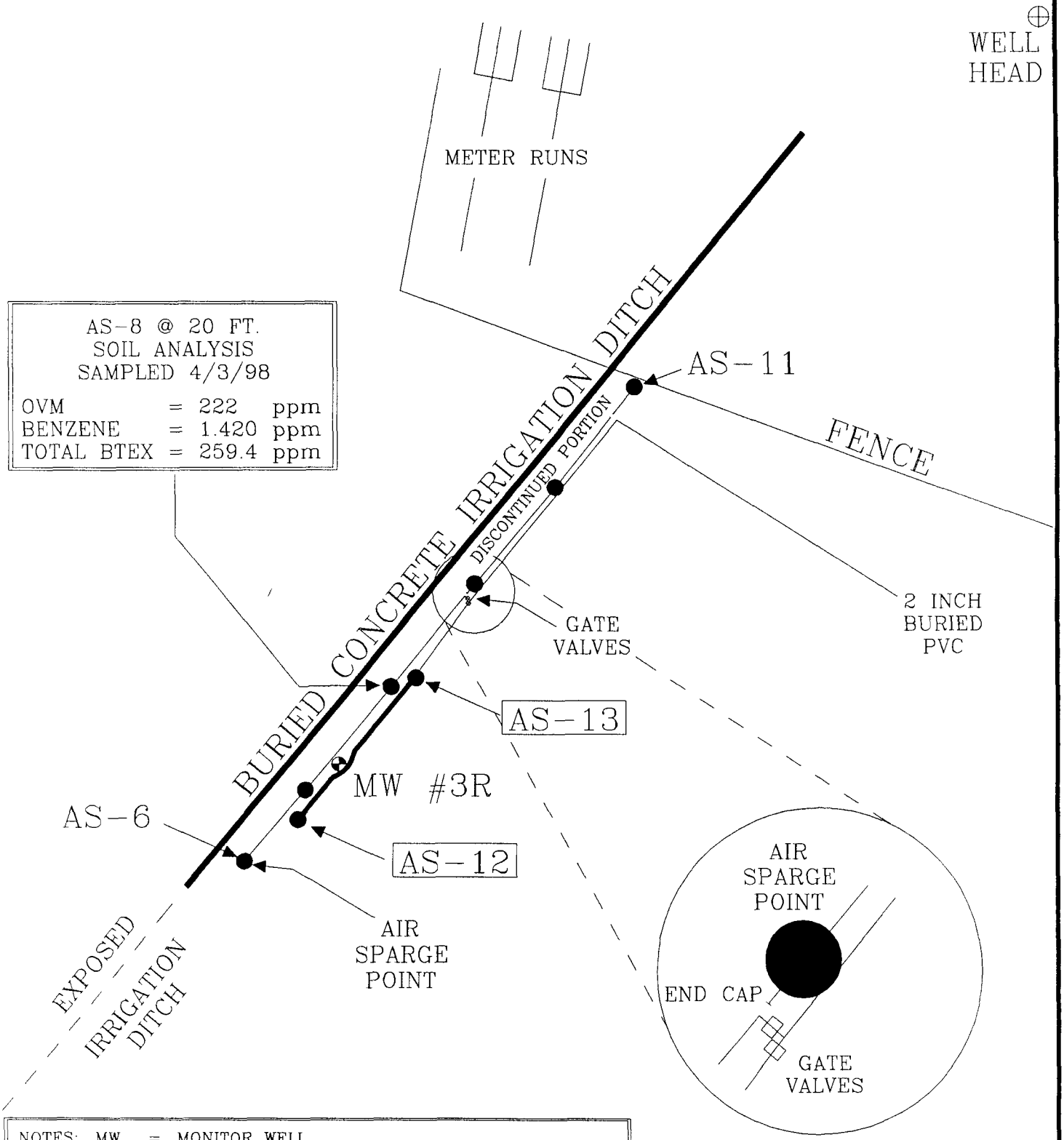
1 INCH = 30 FT.

0 30 60 FT.

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

AMOCO PRODUCTION COMPANY COOPER GC #1E NW/4 SE/4 SEC. 15, T29N, R11W SAN JUAN COUNTY, NEW MEXICO	BLAGG ENGINEERING, INC. CONSULTING PETROLEUM / RECLAMATION SERVICES P.O. BOX 87 BLOOMFIELD, NEW MEXICO 87413 PHONE: (505) 632-1199	PROJECT: REMED. PLAN DRAWN BY: NJV FILENAME: COOP-AS2 REVISED: 8/30/00 NJV	AIR SPARGE SYSTEM AS BUILT 8/00

FIGURE 8



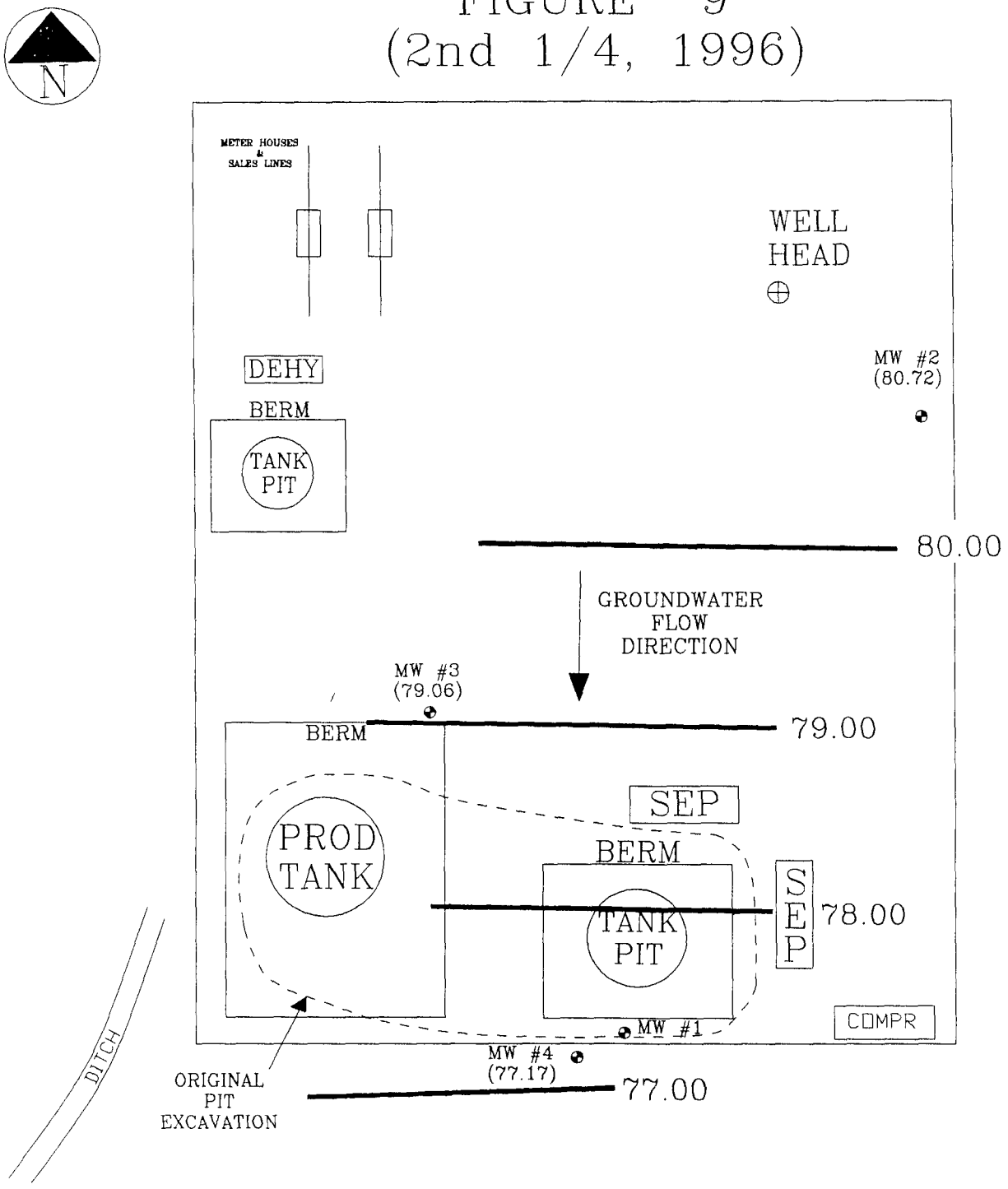
NOTES: MW = MONITOR WELL.
OVM = ORGANIC VAPOR METER.
TPH = TOTAL PETROLEUM HYDROCARBONS.
BTEX = BENZENE, TOLUENE, ETHYLBENZENE, & XYLENES.
ppm = PARTS PER MILLION.

1 INCH = 14.815 FT.

0 14.815 29.63 FT.

AMOCO PRODUCTION COMPANY COOPER GC #1E NW/4 SE/4 SEC. 15, T29N, R11W SAN JUAN COUNTY, NEW MEXICO	BLAGG ENGINEERING, INC. CONSULTING PETROLEUM / RECLAMATION SERVICES P.O. BOX 87 BLOOMFIELD, NEW MEXICO 87413 PHONE: (505) 632-1199	PROJECT: REMED. PLAN DRAWN BY: NJV FILENAME: COOP-AS3 REVISED: 8/30/00 NJV	AIR SPARGE SYSTEM CLOSE UP 8/00

FIGURE 9
(2nd 1/4, 1996)



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

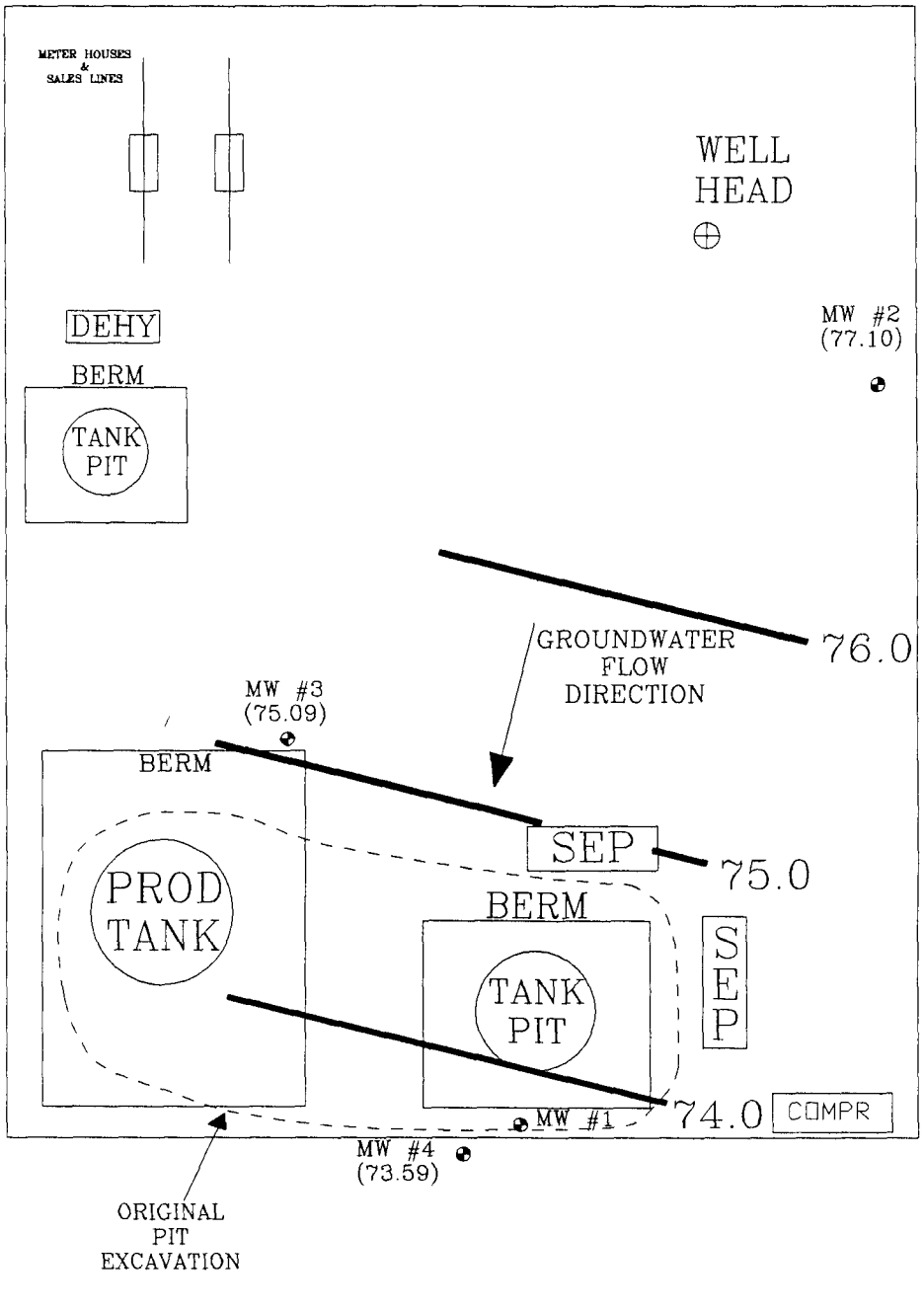
0 25 50 FT.

Top of Well Elevation	
MW #2	(101.88)
MW #3	(101.28)
MW #4	(101.32)
MW #5	(95.22)

MW #2 (80.72) Groundwater Elevation as of 6/7/96.

AMOCO PRODUCTION COMPANY COOPER GC 1E NW/4 SE/4 SEC. 15, T29N, R11W SAN JUAN COUNTY, NEW MEXICO	BLAGG ENGINEERING, INC. CONSULTING PETROLEUM / RECLAMATION SERVICES P.O. BOX 87 BLOOMFIELD, NEW MEXICO 87413 PHONE: (505) 632-1199	PROJECT: MW SAMP. DRAWN BY: NJV FILENAME: 06-07-GW REVISED: 2/10/97 NJV	GROUNDWATER GRADIENT MAP 6/96

FIGURE 10
(2nd 1/4, 1997)



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

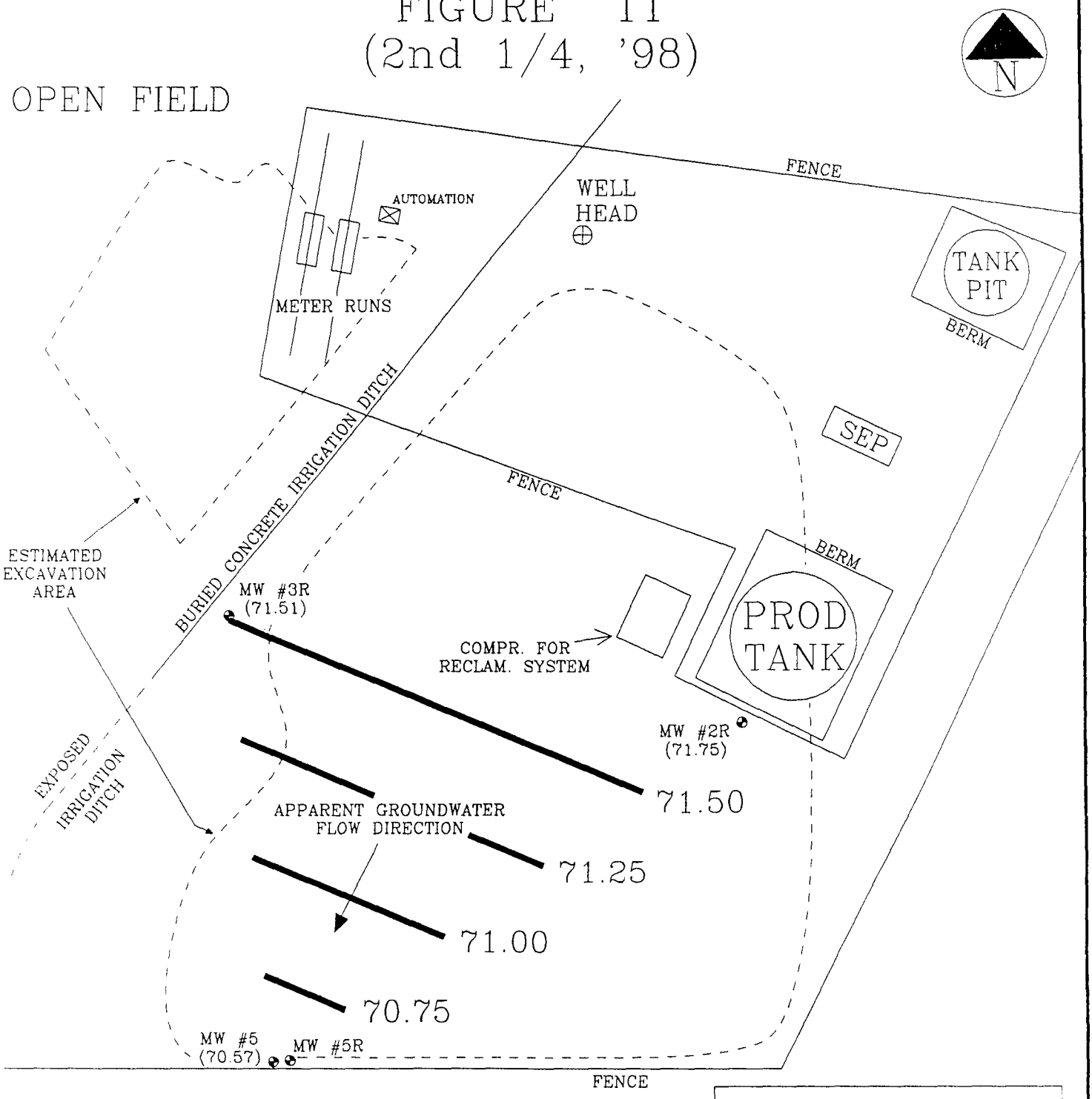
0 25 50 FT.

Top of Well Elevation	
MW #2	(101.88)
MW #3	(101.28)
MW #4	(101.32)
MW #5	(95.22)

MW #2 (77.10) Groundwater Elevation as of 6/27/97.

AMOCO PRODUCTION COMPANY COOPER GC 1E NW/4 SE/4 SEC. 15, T29N, R11W SAN JUAN COUNTY, NEW MEXICO	BLAGG ENGINEERING, INC. CONSULTING PETROLEUM / RECLAMATION SERVICES P.O. BOX 87 BLOOMFIELD, NEW MEXICO 87413 PHONE: (505) 632-1199	PROJECT: MW SAMP. DRAWN BY: NJV FILENAME: 06-27-GW REVISED: 1/10/98 NJV	GROUNDWATER GRADIENT MAP 6/97

FIGURE 11
(2nd 1/4, '98)



1 INCH = 30 FT.

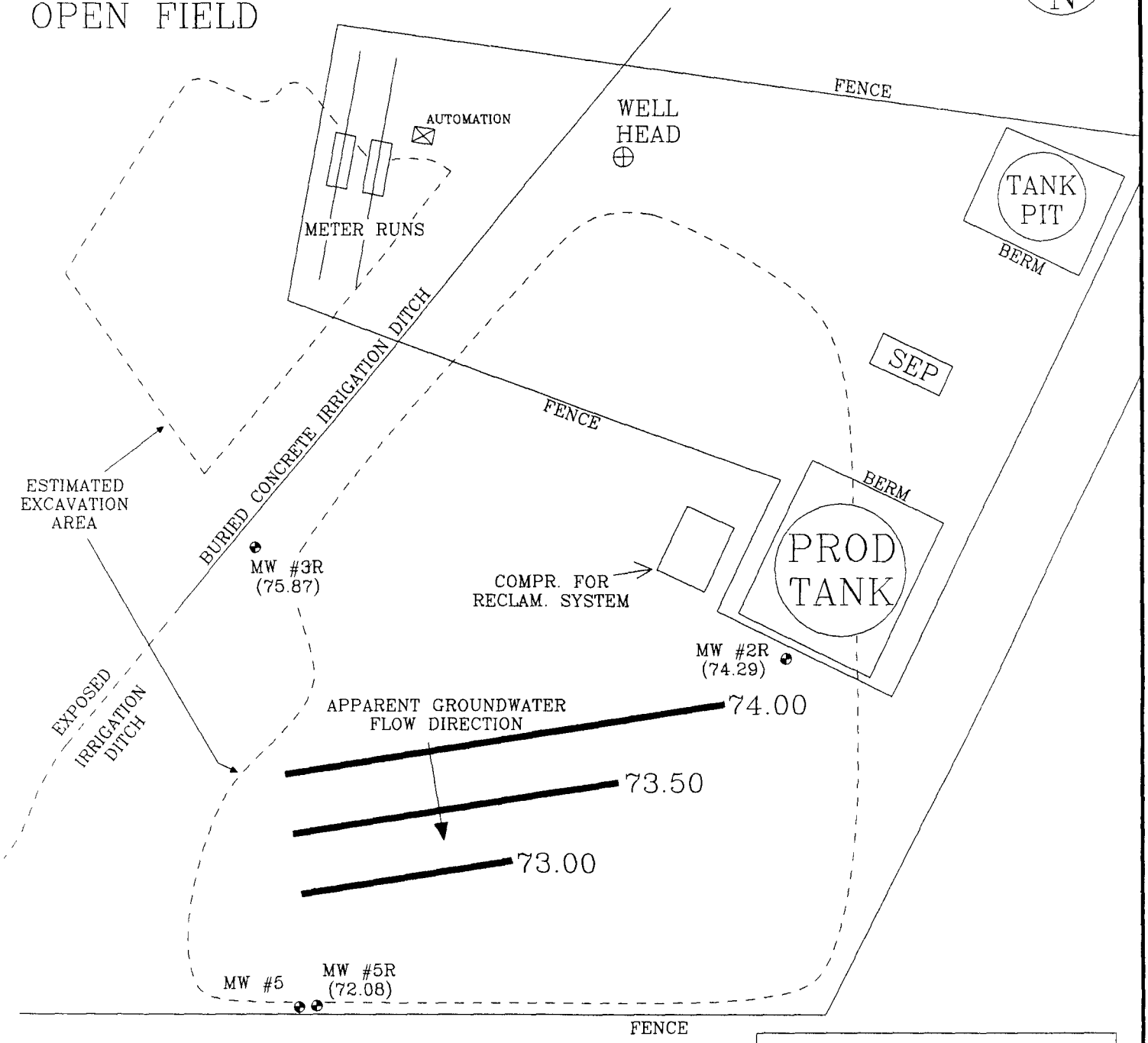
0 30 60 FT.

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

Top of Well Elevation	
MW #2R	(94.29)
MW #3R	(97.03)
MW #5	(94.00)
MW #5R	(94.12)
◕ MW #2R (71.75)	Groundwater Elevation as of 4/01/98.

AMOCO PRODUCTION COMPANY COOPER GC #1E NW/4 SE/4 SEC. 15, T29N, R11W SAN JUAN COUNTY, NEW MEXICO	BLAGG ENGINEERING, INC. CONSULTING PETROLEUM / RECLAMATION SERVICES P.O. BOX 87 BLOOMFIELD, NEW MEXICO 87413 PHONE: (505) 632-1199	PROJECT: 1/4ly SAMP. DRAWN BY: NJV FILENAME: 04-09-GW REVISED: 4/09/98 NJV	GROUNDWATER CONTOUR MAP 4/98

FIGURE 12
(3rd 1/4, 1998)



1 INCH = 30 FT.

0 30 60 FT.

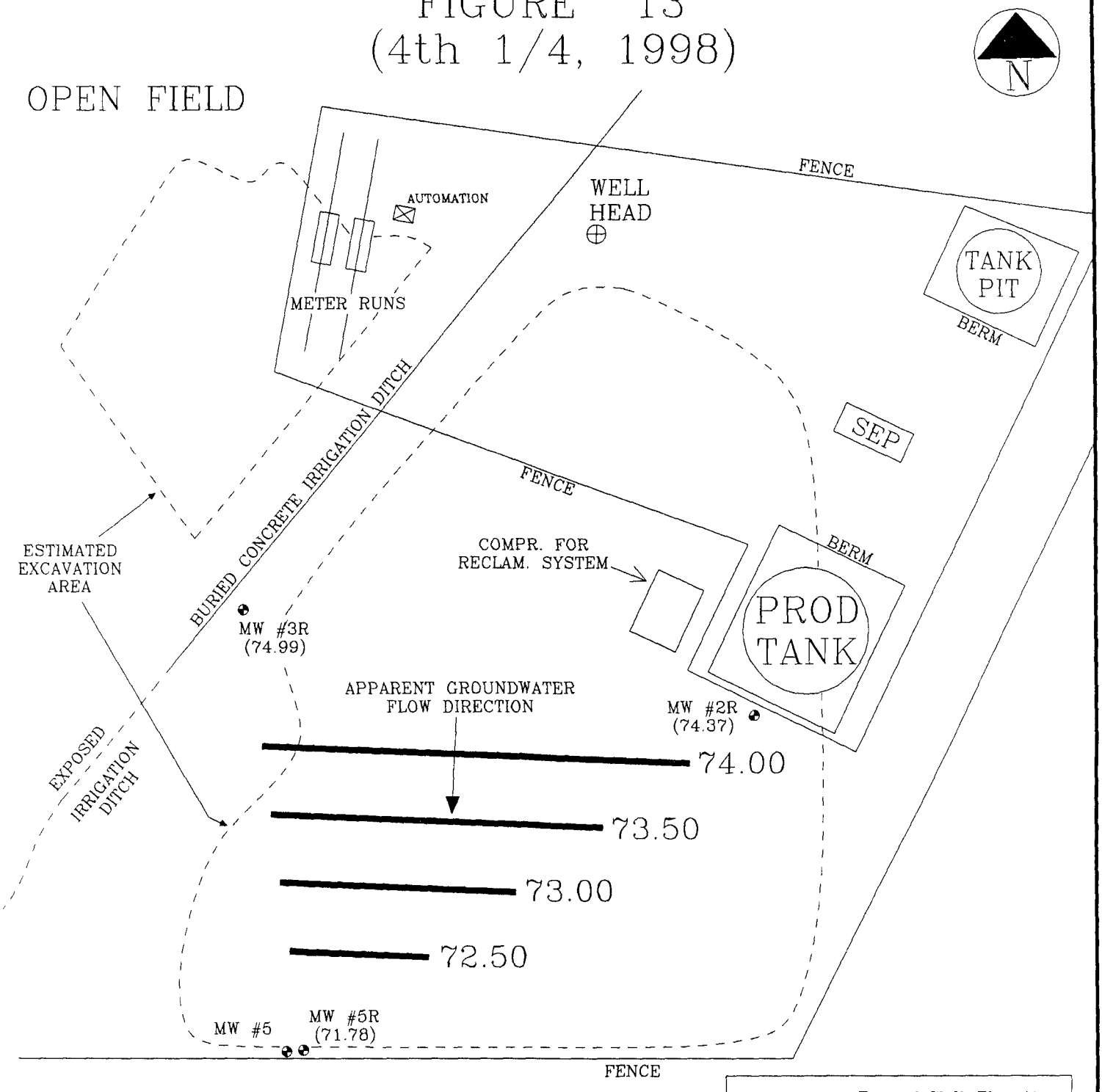
MONITOR WELL LOCATIONS ARE ONLY AS ACCURATE AS THE INSTRUMENTS USED IN OBTAINING THE FOOTAGE AND BEARING FROM THE WELL HEAD (BRUNTON COMPASS AND LASER RANGE FINDER). ALL OTHER STRUCTURES DISPLAYED ON THE SITE MAP ARE SOLELY FOR REFERENCE AND ARE NOT TO SCALE.

	Top of Well Elevation
MW #2R	(94.29)
MW #3R	(97.03)
MW #5	(94.00)
MW #5R	(94.12)

MW #2R (74.29) Groundwater Elevation as of 9/29/98.

AMOCO PRODUCTION COMPANY COOPER GC #1E NW/4 SE/4 SEC. 15, T29N, R11W SAN JUAN COUNTY, NEW MEXICO	BLAGG ENGINEERING, INC. CONSULTING PETROLEUM / RECLAMATION SERVICES P.O. BOX 87 BLOOMFIELD, NEW MEXICO 87413 PHONE: (505) 632-1199	PROJECT: MW SAMPLING DRAWN BY: NJV FILENAME: 09-29-GW REVISED: 9/29/98 NJV	GROUNDWATER CONTOUR MAP 9/98

FIGURE 13
(4th 1/4, 1998)



1 INCH = 30 FT.

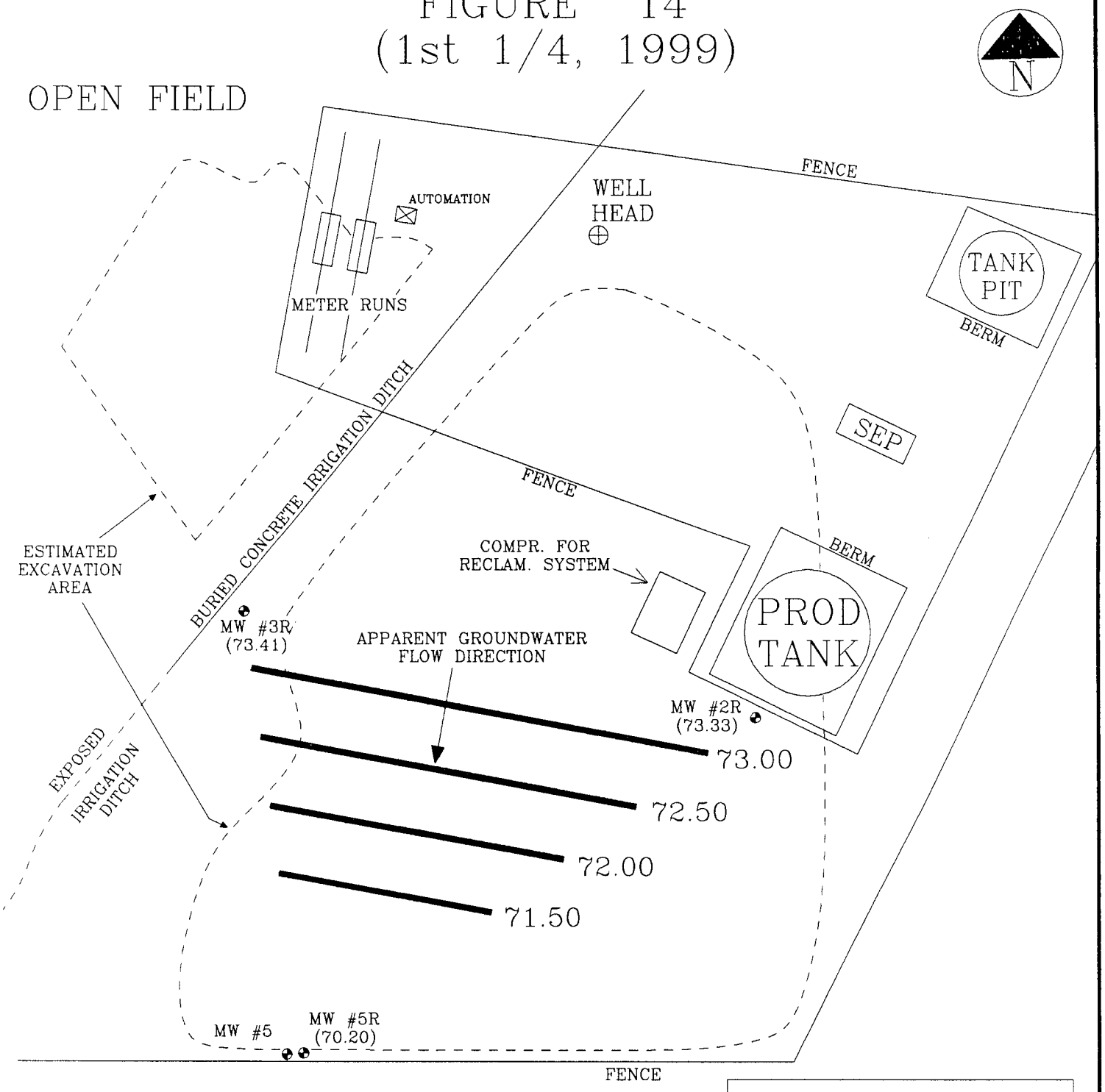
0 30 60 FT.

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

Top of Well Elevation	
MW #2R	(94.29)
MW #3R	(97.03)
MW #5	(94.00)
MW #5R	(94.12)
◕ MW #2R (74.37)	Groundwater Elevation as of 12/18/98.

AMOCO PRODUCTION COMPANY COOPER GC #1E NW/4 SE/4 SEC. 15, T29N, R11W SAN JUAN COUNTY, NEW MEXICO	BLAGG ENGINEERING, INC. CONSULTING PETROLEUM / RECLAMATION SERVICES P.O. BOX 87 BLOOMFIELD, NEW MEXICO 87413 PHONE: (505) 632-1199	PROJECT: MW SAMPLING DRAWN BY: NJV FILENAME: 12-18-GW REVISED: 12/18/98 NJV	GROUNDWATER CONTOUR MAP 12/98

FIGURE 14
(1st 1/4, 1999)



1 INCH = 30 FT.

0 30 60 FT.

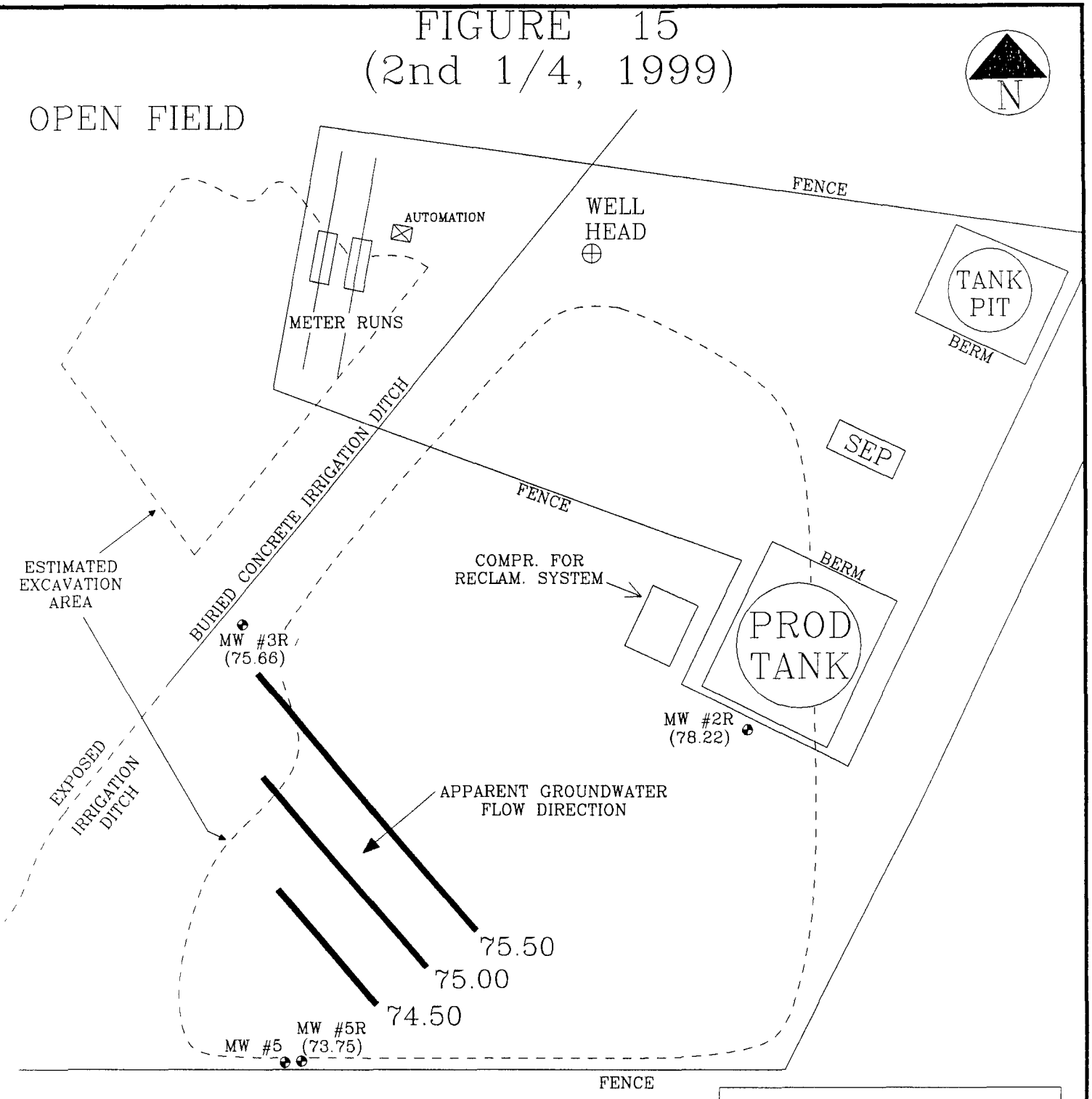
MONITOR WELL LOCATIONS ARE ONLY AS ACCURATE AS THE INSTRUMENTS USED IN OBTAINING THE FOOTAGE AND BEARING FROM THE WELL HEAD (BRUNTON COMPASS AND LASER RANGE FINDER). ALL OTHER STRUCTURES DISPLAYED ON THE SITE MAP ARE SOLELY FOR REFERENCE AND ARE NOT TO SCALE

	Top of Well Elevation
MW #2R	(94.29)
MW #3R	(97.03)
MW #5	(94.00)
MW #5R	(94.12)

MW #2R (73.33) Groundwater Elevation as of 2/18/99.

AMOCO PRODUCTION COMPANY COOPER GC #1E NW/4 SE/4 SEC. 15, T29N, R11W SAN JUAN COUNTY, NEW MEXICO	BLAGG ENGINEERING, INC. CONSULTING PETROLEUM / RECLAMATION SERVICES P.O. BOX 87 BLOOMFIELD, NEW MEXICO 87413 PHONE: (505) 632-1199	PROJECT: MW SAMPLING DRAWN BY: NJV FILENAME: 02-18-GW REVISED: 7/23/99 NJV	GROUNDWATER CONTOUR MAP 02/99

FIGURE 15
(2nd 1/4, 1999)



1 INCH = 30 FT.

0 30 60 FT.

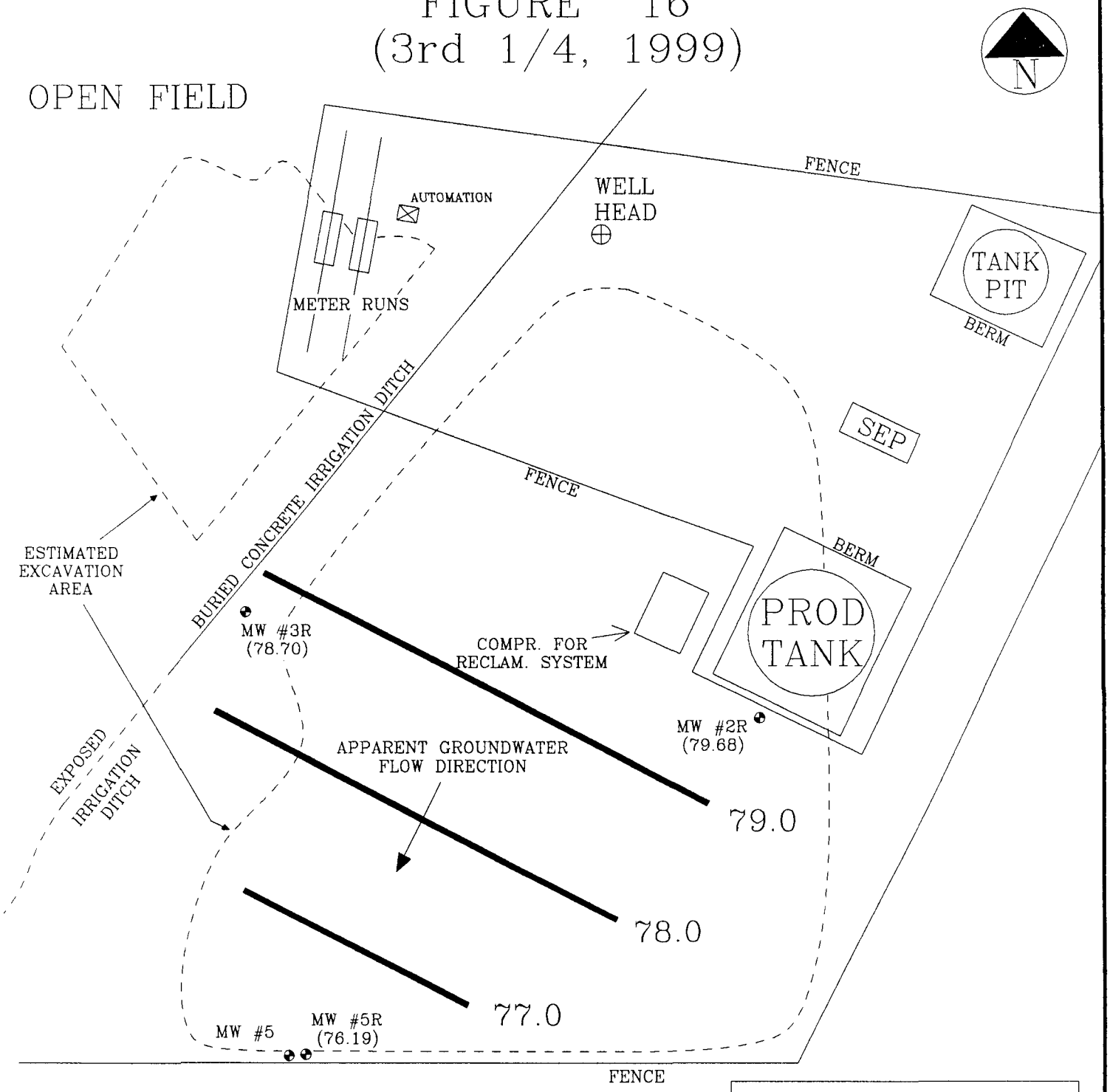
MONITOR WELL LOCATIONS ARE ONLY AS ACCURATE AS THE INSTRUMENTS USED IN OBTAINING THE FOOTAGE AND BEARING FROM THE WELL HEAD (BRUNTON COMPASS AND LASER RANGE FINDER). ALL OTHER STRUCTURES DISPLAYED ON THE SITE MAP ARE SOLELY FOR REFERENCE AND ARE NOT TO SCALE.

	Top of Well Elevation
MW #2R	(94.29)
MW #3R	(97.03)
MW #5	(94.00)
MW #5R	(94.12)

● MW #2R (78.22) Groundwater Elevation as of 5/27/99.

AMOCO PRODUCTION COMPANY COOPER GC #1E NW/4 SE/4 SEC. 15, T29N, R11W SAN JUAN COUNTY, NEW MEXICO	BLAGG ENGINEERING, INC. CONSULTING PETROLEUM / RECLAMATION SERVICES P.O. BOX 87 BLOOMFIELD, NEW MEXICO 87413 PHONE: (505) 632-1199	PROJECT: MW SAMPLING DRAWN BY: NJV FILENAME: 05-27-GW REVISED: 7/23/99 NJV	GROUNDWATER CONTOUR MAP 05/99

FIGURE 16
(3rd 1/4, 1999)



1 INCH = 30 FT.

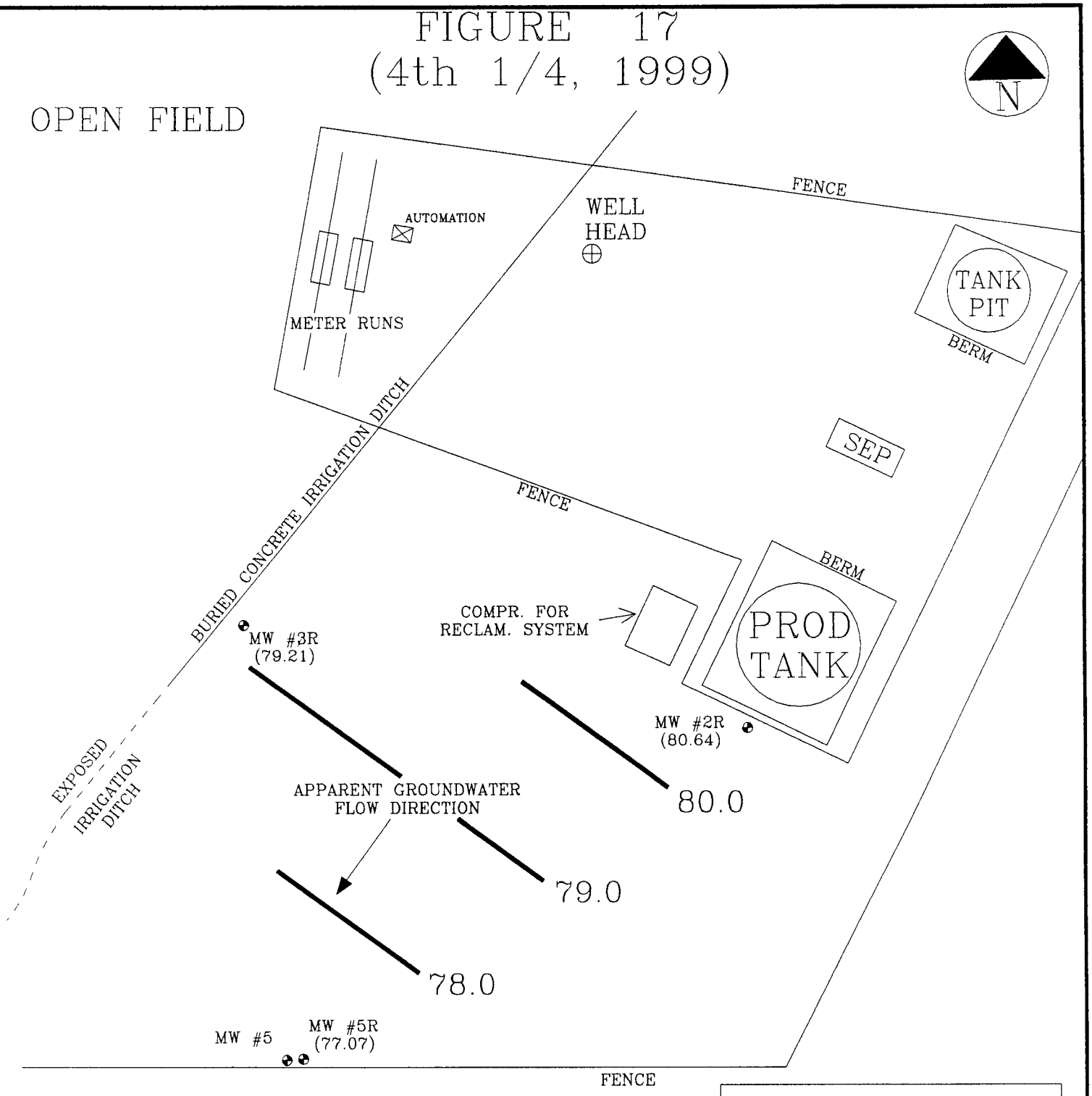
0 30 60 FT.

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

	Top of Well Elevation
MW #2R	(94.29)
MW #3R	(97.03)
MW #5	(94.00)
MW #5R	(94.12)
◕ MW #2R (79.68)	Groundwater Elevation as of 8/23/99.

AMOCO PRODUCTION COMPANY COOPER GC #1E NW/4 SE/4 SEC. 15, T29N, R11W SAN JUAN COUNTY, NEW MEXICO	BLAGG ENGINEERING, INC. CONSULTING PETROLEUM / RECLAMATION SERVICES P.O. BOX 87 BLOOMFIELD, NEW MEXICO 87413 PHONE: (505) 632-1199	PROJECT: MW SAMPLING DRAWN BY: NJV FILENAME: 08-23-GW REVISED: 8/31/99 NJV	GROUNDWATER CONTOUR MAP 8/99

FIGURE 17
(4th 1/4, 1999)



1 INCH = 30 FT.

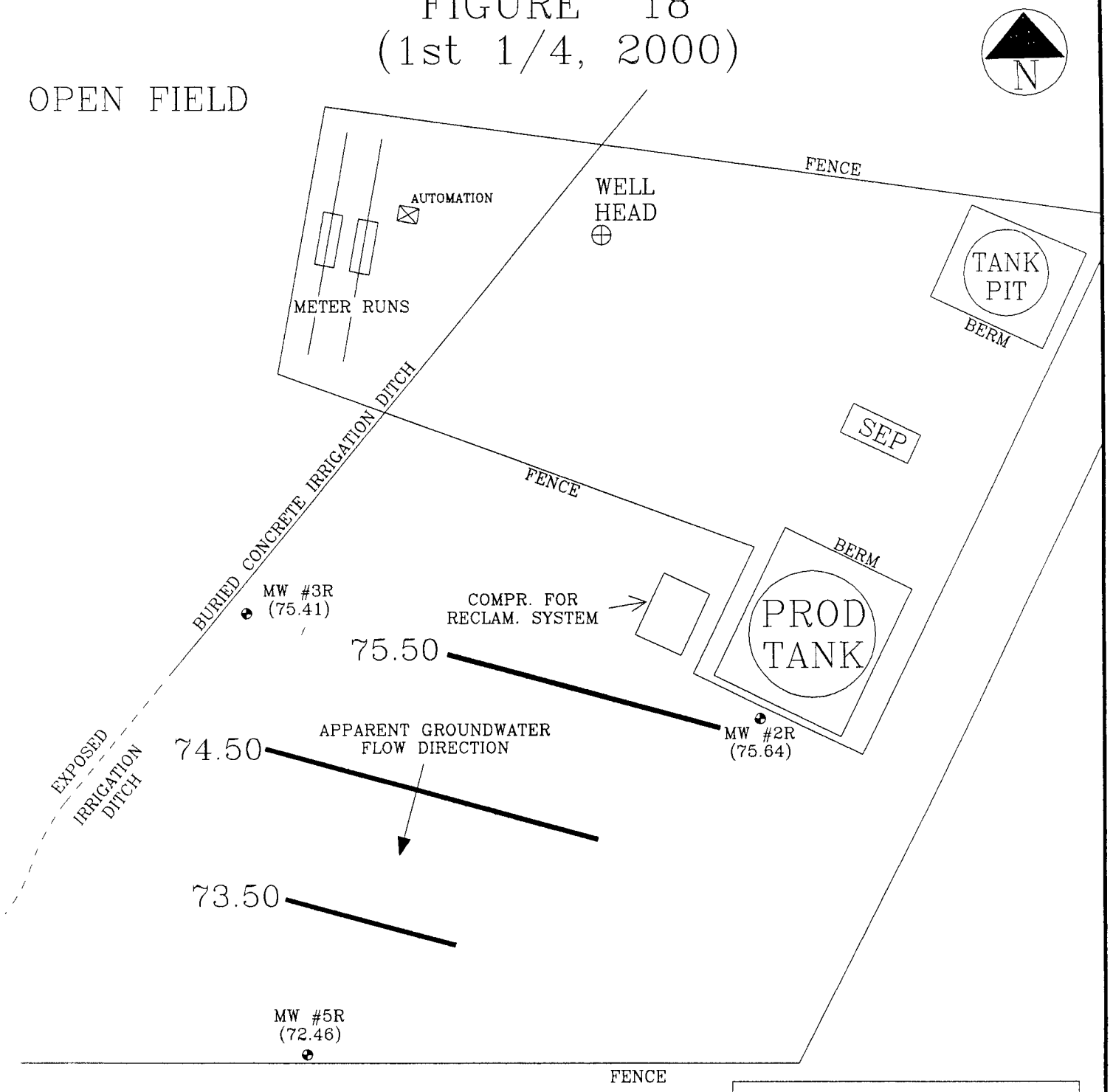
0 30 60 FT.

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

	Top of Well Elevation
MW #2R	(94.29)
MW #3R	(97.03)
MW #5	(94.00)
MW #5R	(94.12)
◕ MW #2R (80.64)	Groundwater Elevation as of 12/6/99.

AMOCO PRODUCTION COMPANY COOPER GC #1E NW/4 SE/4 SEC. 15, T29N, R11W SAN JUAN COUNTY, NEW MEXICO	BLAGG ENGINEERING, INC. CONSULTING PETROLEUM / RECLAMATION SERVICES P.O. BOX 87 BLOOMFIELD, NEW MEXICO 87413 PHONE: (505) 632-1199	PROJECT: MW SAMPLING DRAWN BY: NJV FILENAME: 12-06-GW REVISED: 12/6/99 NJV	GROUNDWATER CONTOUR MAP 12/99

FIGURE 18
(1st 1/4, 2000)



1 INCH = 30 FT.

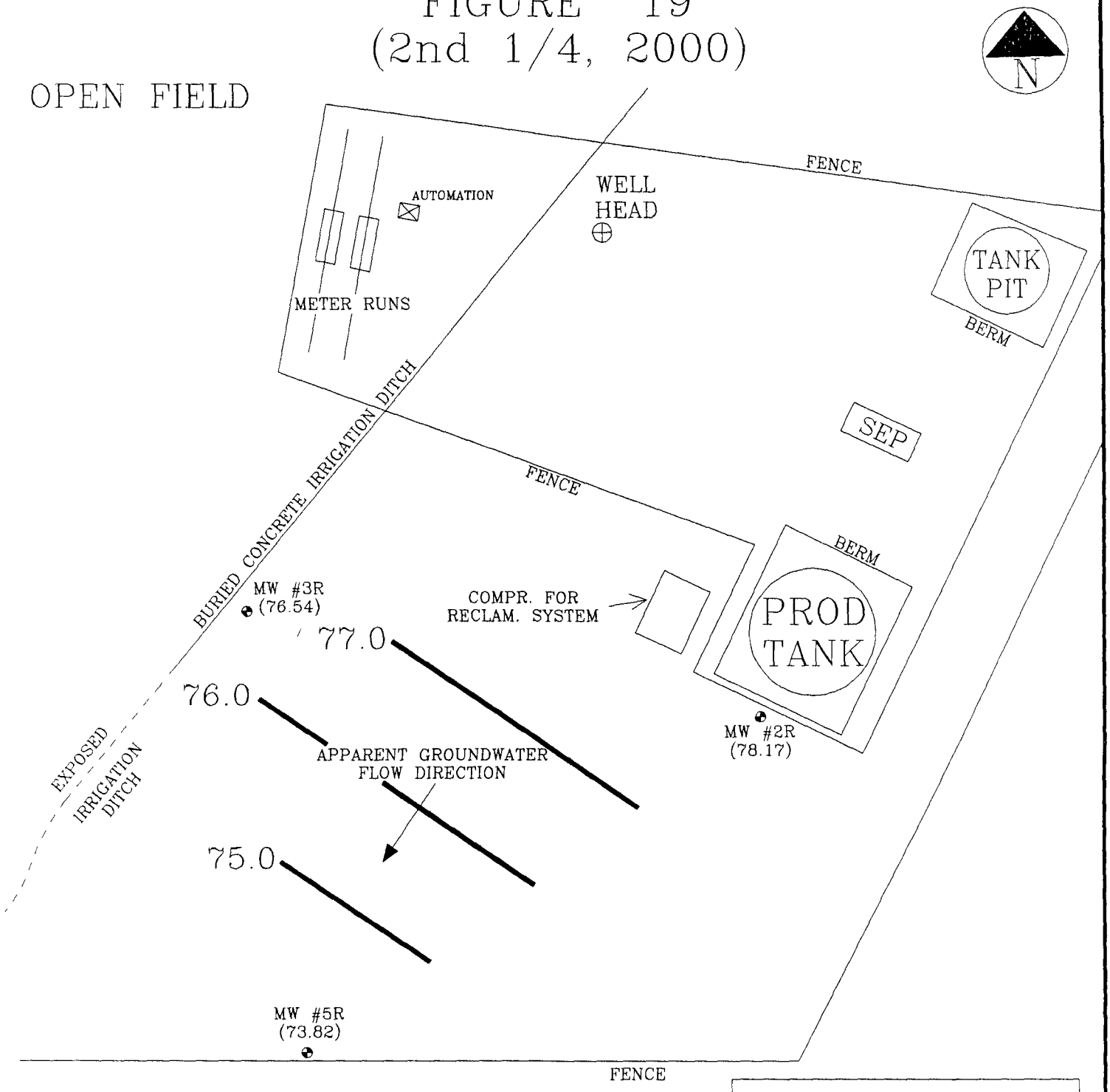
0 30 60 FT.

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

	Top of Well Elevation
MW #2R	(94.29)
MW #3R	(97.03)
MW #5	(94.00)
MW #5R	(94.12)
◒ MW #2R (75.64)	Groundwater Elevation as of 2/24/00

AMOCO PRODUCTION COMPANY COOPER GC #1E NW/4 SE/4 SEC. 15, T29N, R11W SAN JUAN COUNTY, NEW MEXICO	BLAGG ENGINEERING, INC. CONSULTING PETROLEUM / RECLAMATION SERVICES P.O. BOX 87 BLOOMFIELD, NEW MEXICO 87413 PHONE: (505) 632-1199	PROJECT: MW SAMPLING DRAWN BY: NJV FILENAME: 02-24-GW REVISED: 01/3/01 NJV	GROUNDWATER CONTOUR MAP 02/00

FIGURE 19
(2nd 1/4, 2000)



1 INCH = 30 FT.

0 30 60 FT.

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

	Top of Well Elevation
MW #2R	(94.29)
MW #3R	(97.03)
MW #5R	(94.12)

MW #2R (78.17) Groundwater Elevation as of 5/15/00.

AMOCO PRODUCTION COMPANY

COOPER GC #1E

NW/4 SE/4 SEC. 15, T29N, R11W

SAN JUAN COUNTY, NEW MEXICO

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

PROJECT: MW SAMPLING

DRAWN BY: NJV

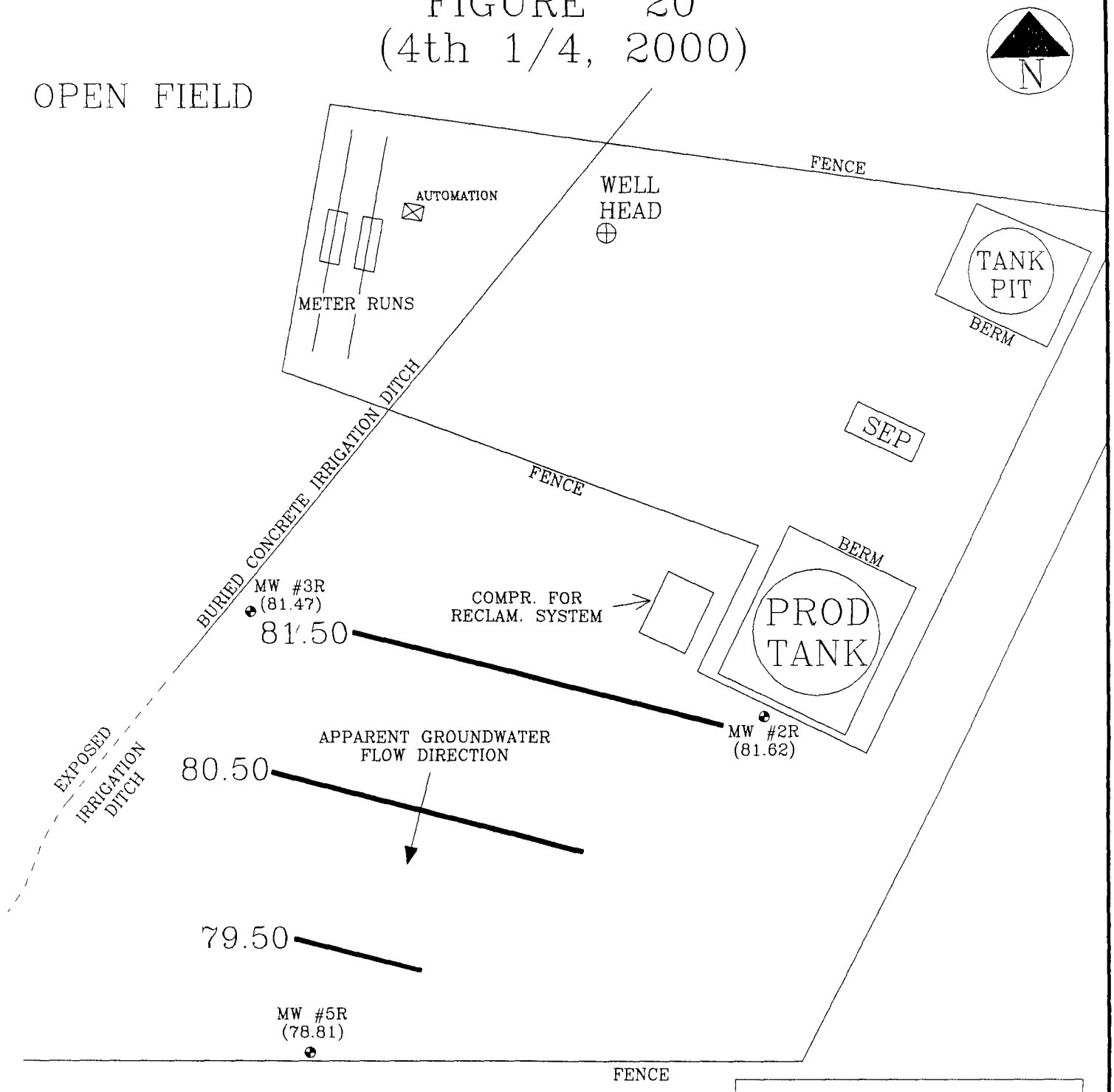
FILENAME: 05-15-GW

REVISED: 01/3/01 NJV

GROUNDWATER CONTOUR MAP

05/00

FIGURE 20
(4th 1/4, 2000)



1 INCH = 30 FT.

0 30 60 FT.

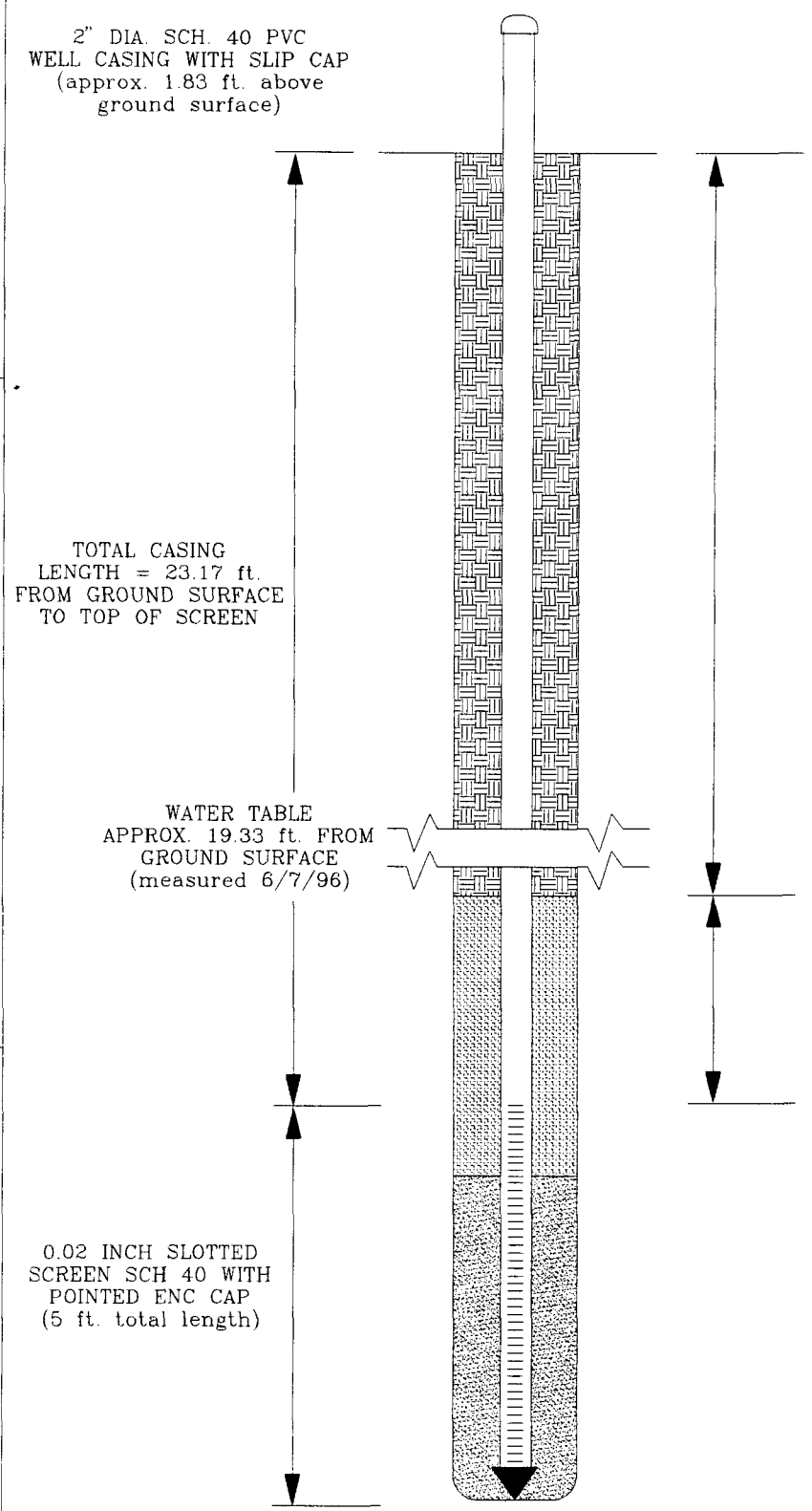
MONITOR WELL LOCATIONS ARE ONLY AS ACCURATE AS THE INSTRUMENTS USED IN OBTAINING THE FOOTAGE AND BEARING FROM THE WELL HEAD (BRUNTON COMPASS AND LASER RANGE FINDER). ALL OTHER STRUCTURES DISPLAYED ON THE SITE MAP ARE SOLELY FOR REFERENCE AND ARE NOT TO SCALE.

Top of Well Elevation	
MW #2R	(94.29)
MW #3R	(97.03)
MW #5R	(94.12)

MW #2R (81.62) Groundwater Elevation as of 11/28/00.

AMOCO PRODUCTION COMPANY COOPER GC #1E NW/4 SE/4 SEC. 15, T29N, R11W SAN JUAN COUNTY, NEW MEXICO	BLAGG ENGINEERING, INC. CONSULTING PETROLEUM / RECLAMATION SERVICES P.O. BOX 87 BLOOMFIELD, NEW MEXICO 87413 PHONE: (505) 632-1199	PROJECT: MW SAMPLING DRAWN BY: NJV FILENAME: 11-28-GW REVISED: 01/3/01 NJV	GROUNDWATER CONTOUR MAP 11/00

MONITOR WELL #2



AMOCO PRODUCTION COMPANY

COOPER GC # 1E

MONITOR WELL CONSTRUCTION & COMPLETION

INSTALLED WITH MOBILE RIG

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

MONITOR WELL SCHEMATIC

DRAFTED BY: NJV

DATE: FEB. '97

FILENAME: MW-2

MONITOR WELL #2R

AMOCO PRODUCTION COMPANY

COOPER GC #1E

MONITOR WELL CONSTRUCTION & COMPLETION

INSTALLED WITH MOBILE RIG

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

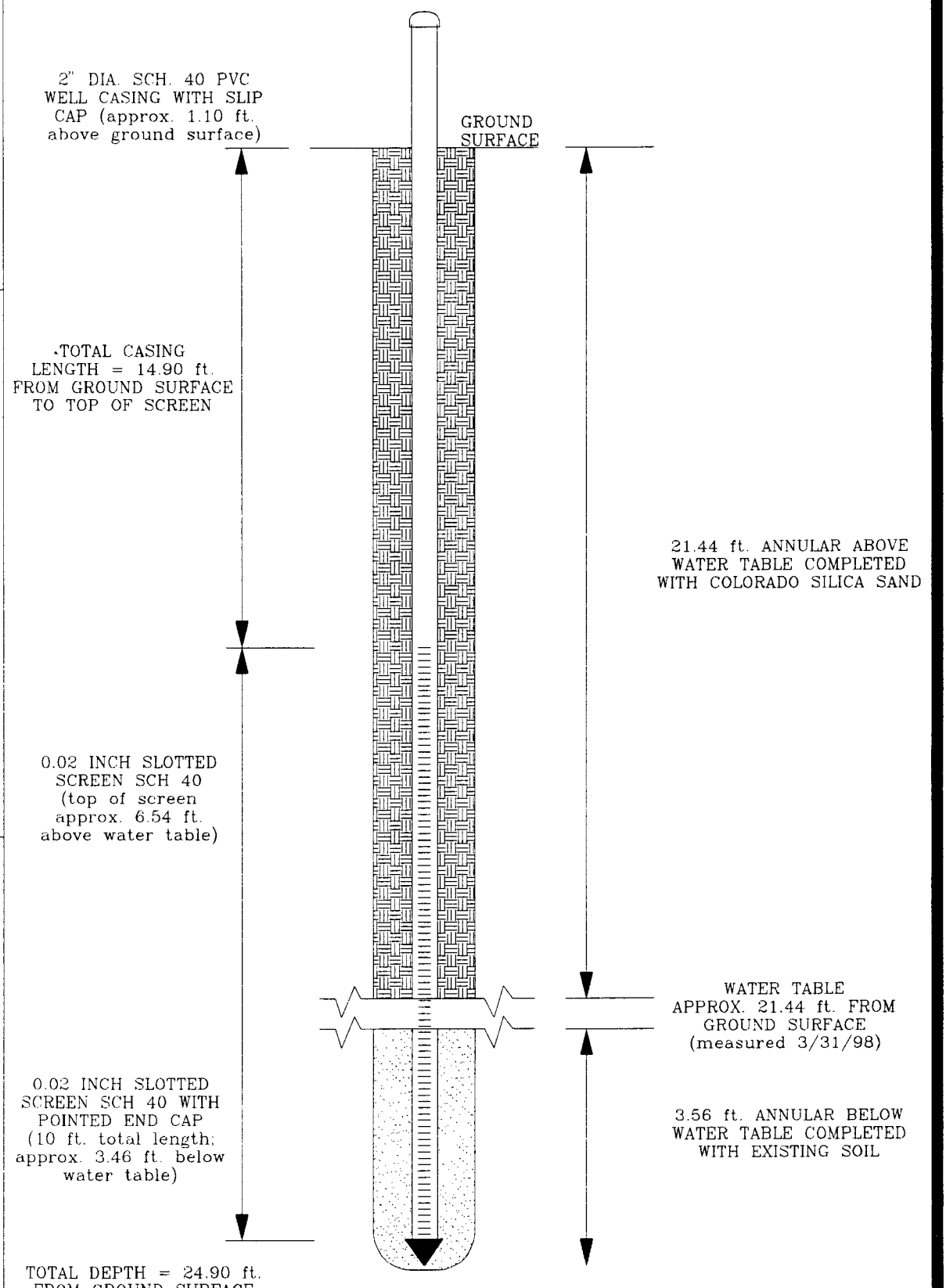
PHONE: (505) 632-1199

MONITOR WELL SCHEMATIC

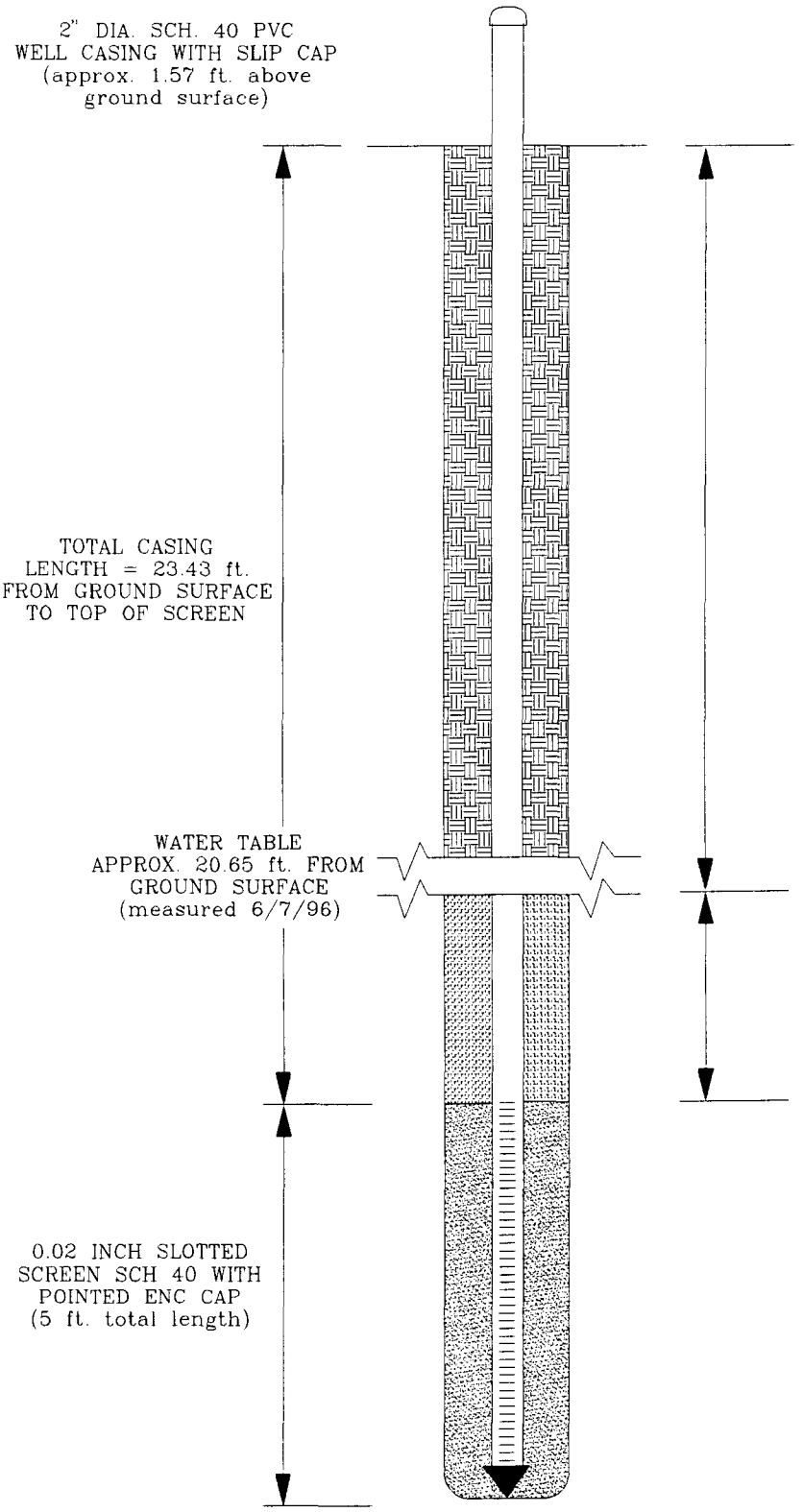
DRAFTED BY: NJV

INSTALL. DATE: MAR. '98

FILENAME: MW-2R



MONITOR WELL #3



AMOCO PRODUCTION COMPANY

COOPER GC # 1E

MONITOR WELL CONSTRUCTION & COMPLETION

INSTALLED WITH MOBILE RIG

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

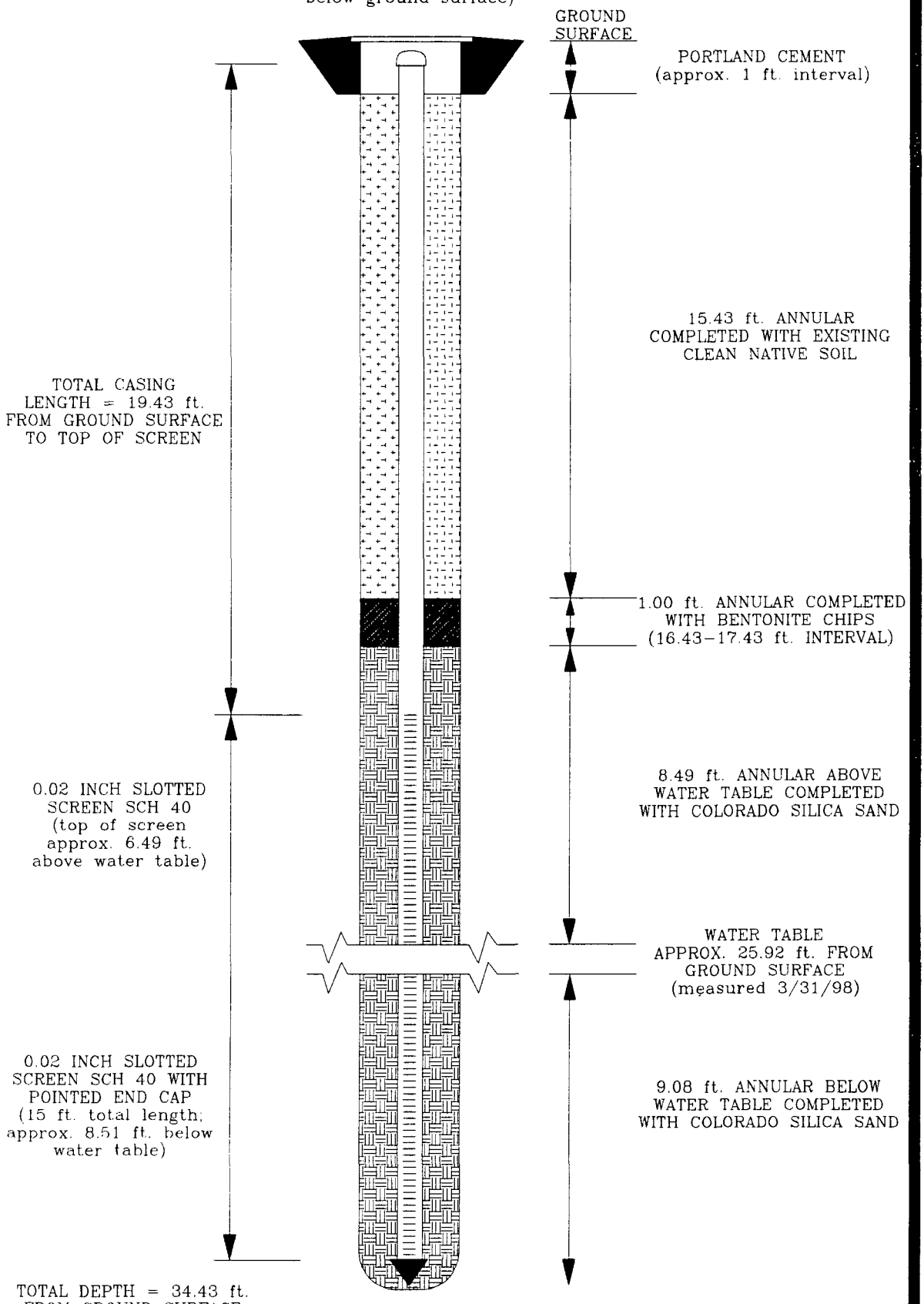
MONITOR WELL SCHEMATIC

DRAFTED BY: NJV

DATE: FEB. '97

FILENAME: MW-3

MONITOR WELL #3R



AMOCO PRODUCTION COMPANY

COOPER GC #1E

MONITOR WELL CONSTRUCTION & COMPLETION

INSTALLED WITH MOBILE RIG

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

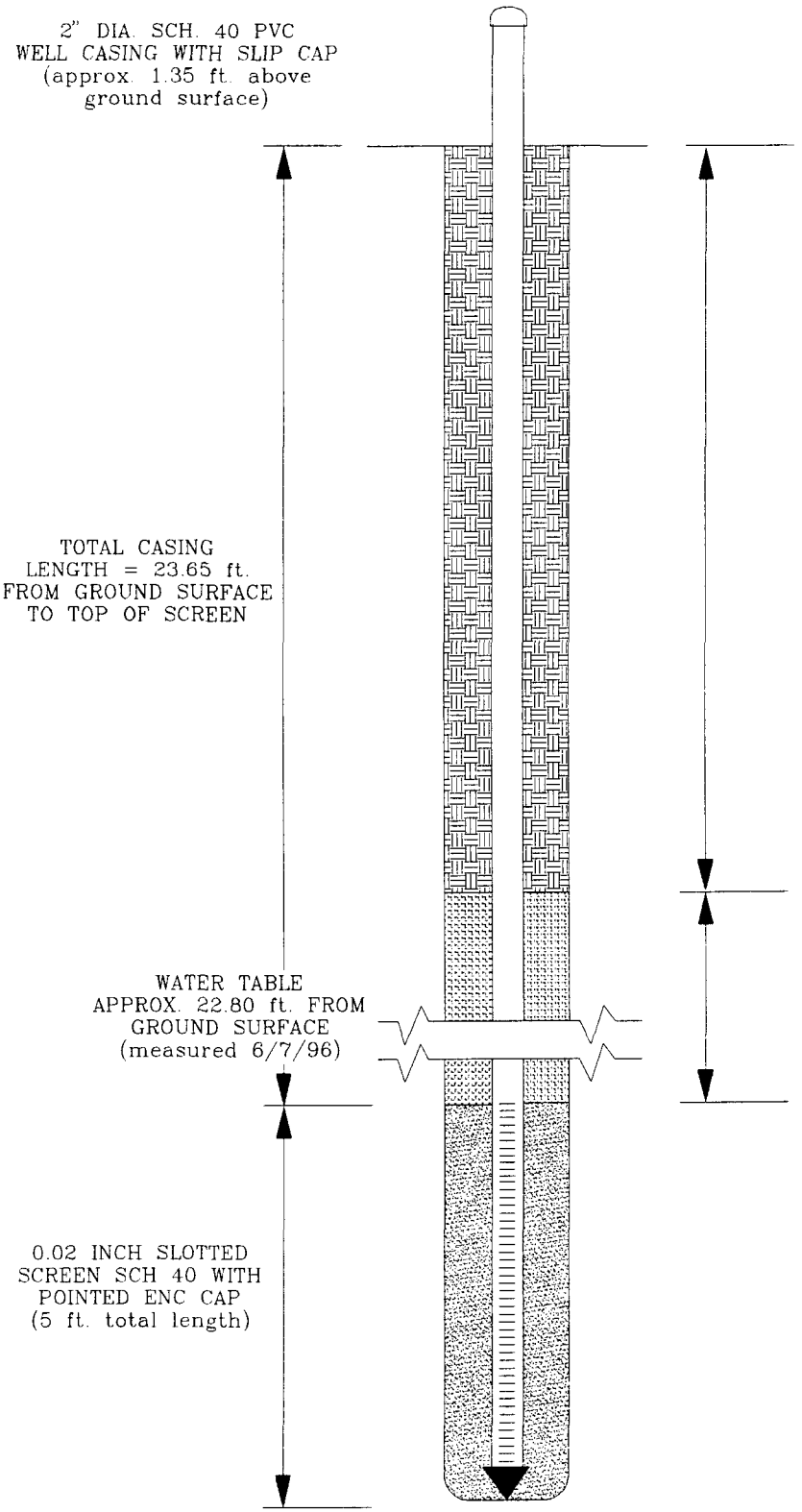
MONITOR WELL SCHEMATIC

DRAFTED BY: NJV

INSTALL. DATE: MAR. '98

FILENAME: MW-3R

MONITOR WELL #4



AMOCO PRODUCTION COMPANY

COOPER GC # 1E

MONITOR WELL CONSTRUCTION & COMPLETION

INSTALLED WITH MOBILE RIG

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

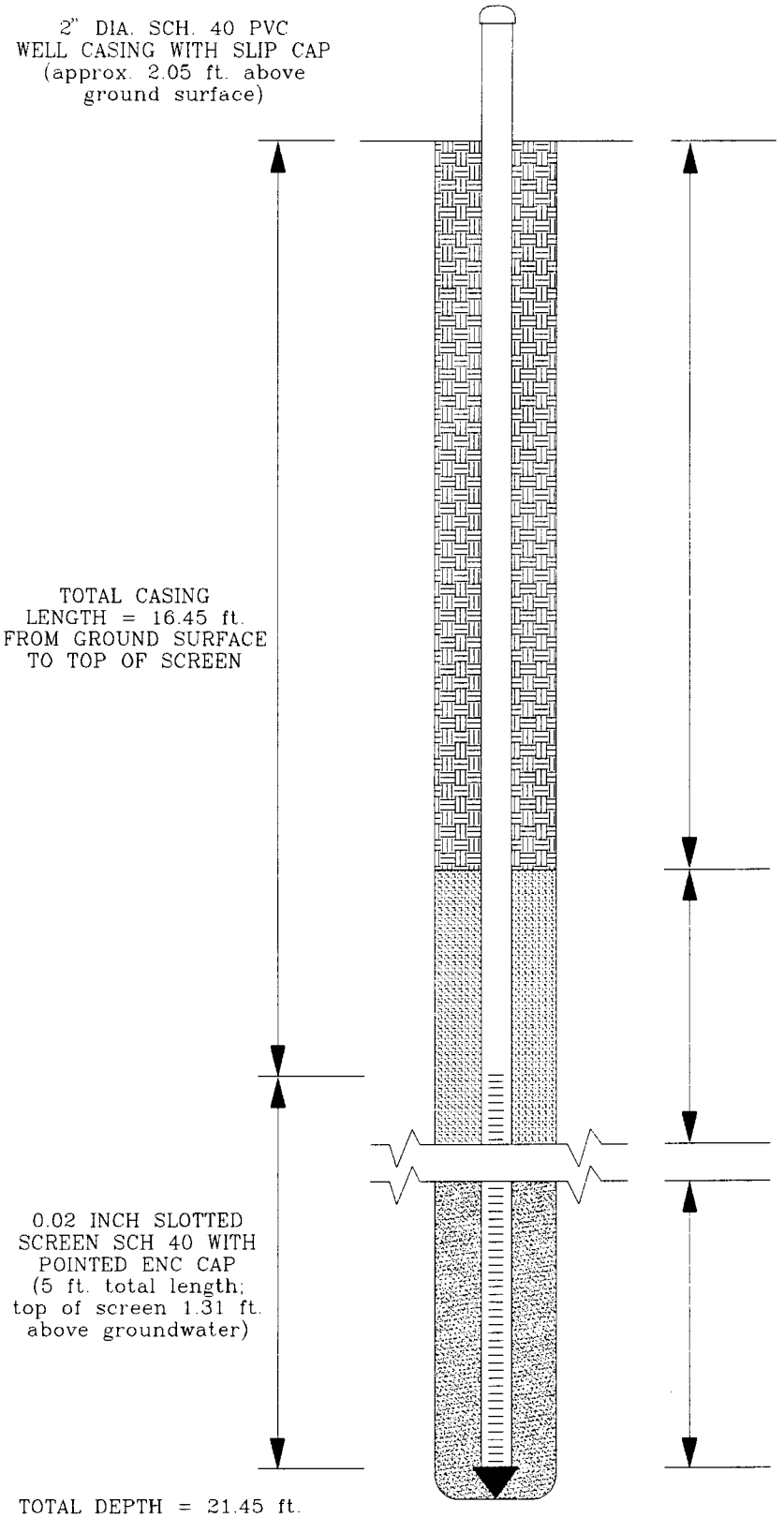
MONITOR WELL SCHEMATIC

DRAFTED BY: NJV

DATE: FEB. '97

FILENAME: MW-4

MONITOR WELL #5



AMOCO PRODUCTION COMPANY

COOPER GC # 1E

MONITOR WELL CONSTRUCTION & COMPLETION

INSTALLED WITH MOBILE RIG

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

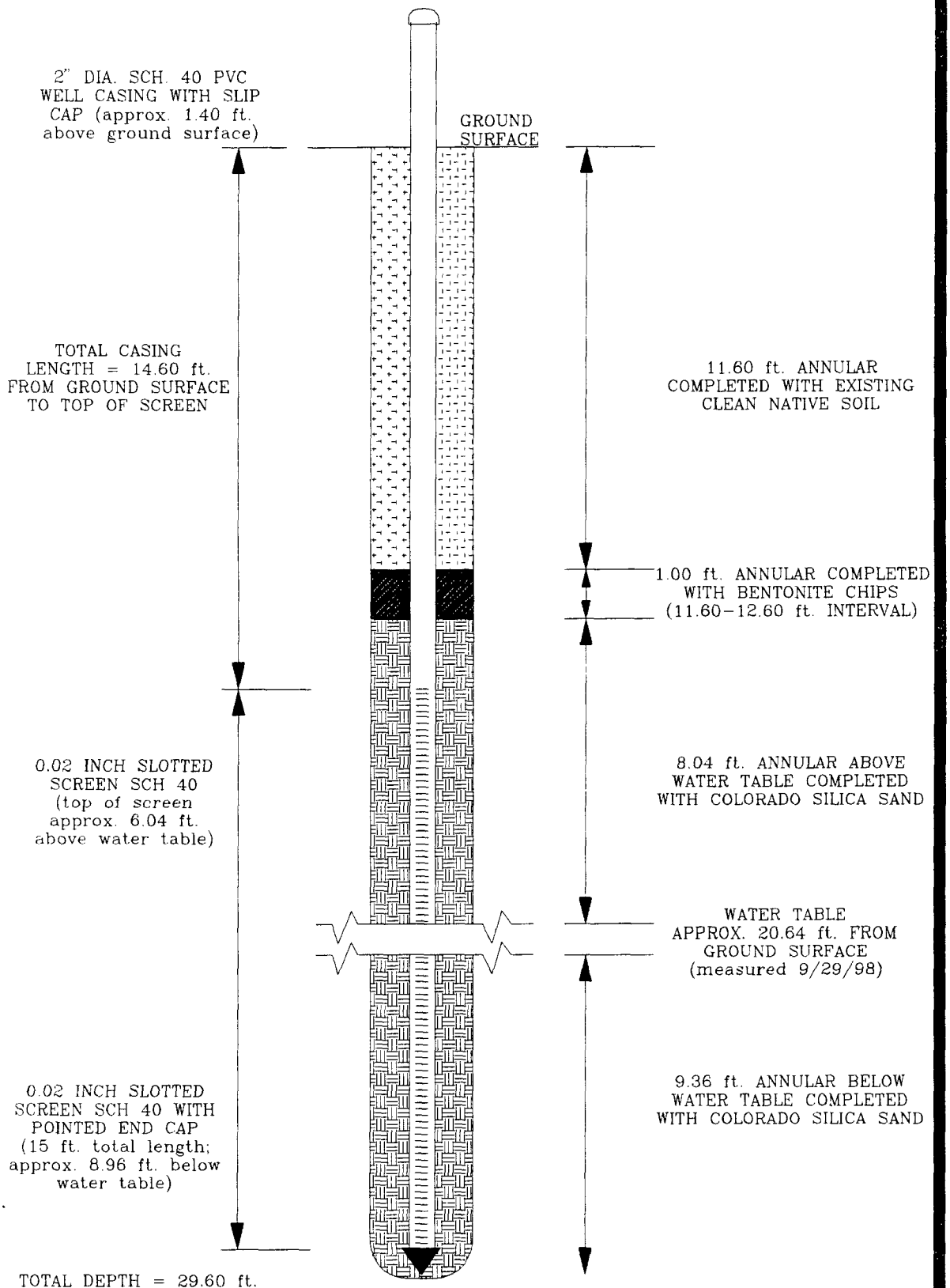
MONITOR WELL SCHEMATIC

DRAFTED BY: NJV

DATE: FEB. '97

FILENAME: MW-5

MONITOR WELL #5R



AMOCO PRODUCTION COMPANY

COOPER GC #1E

MONITOR WELL CONSTRUCTION & COMPLETION

INSTALLED WITH MOBILE RIG

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

MONITOR WELL SCHEMATIC

DRAFTED BY: NJV

INSTALL. DATE: MAR. '98

FILENAME: MW-5R

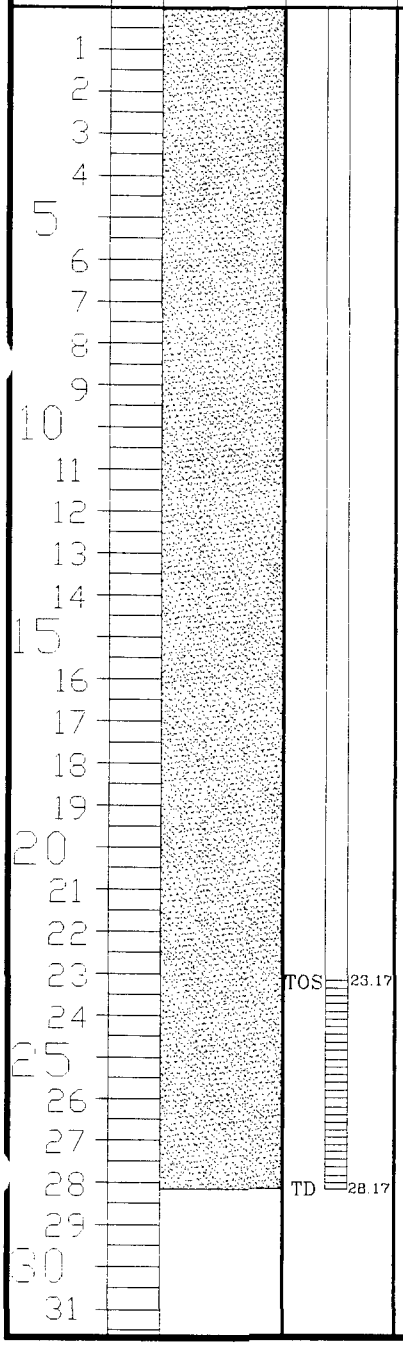
BLAGG ENGINEERING, Inc.

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

BORE / TEST HOLE REPORT

LOCATION NAME:	COOPER GC # 1E
CLIENT:	AMOCO PRODUCTION COMPANY
CONTRACTOR:	BLAGG ENGINEERING, INC.
EQUIPMENT USED:	MOBILE DRILL RIG (EARTHPROBE)
BORING LOCATION:	S49E, 30 FEET FROM WELL HEAD.

BORING #.....	BH - 1
MW #.....	2
PAGE #.....	1
DATE STARTED	4/26/96
DATE FINISHED	4/26/96
OPERATOR.....	JCB
PREPARED BY	NJV



FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROX. 1.83 FT. ABOVE GROUND SURFACE.

DARK YELLOWISH BROWN SAND TO SILTY SAND CONTINUOUS THROUGHOUT ENTIRE BORING, NON COHESIVE, SLIGHTLY MOIST TO SATURATED (AT GROUNDWATER), FIRM, NO APPARENT HYDROCARBON ODOR OBSERVED (0 - 28.17 FT. INTERVAL).

▼ GW DEPTH ON 6/7/96 = 19.33 FT. (APPROX.) FROM GROUND SURFACE.

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

DRAWING: COOP1E-2	DATE: 2/07/97	DWN BY: NJV

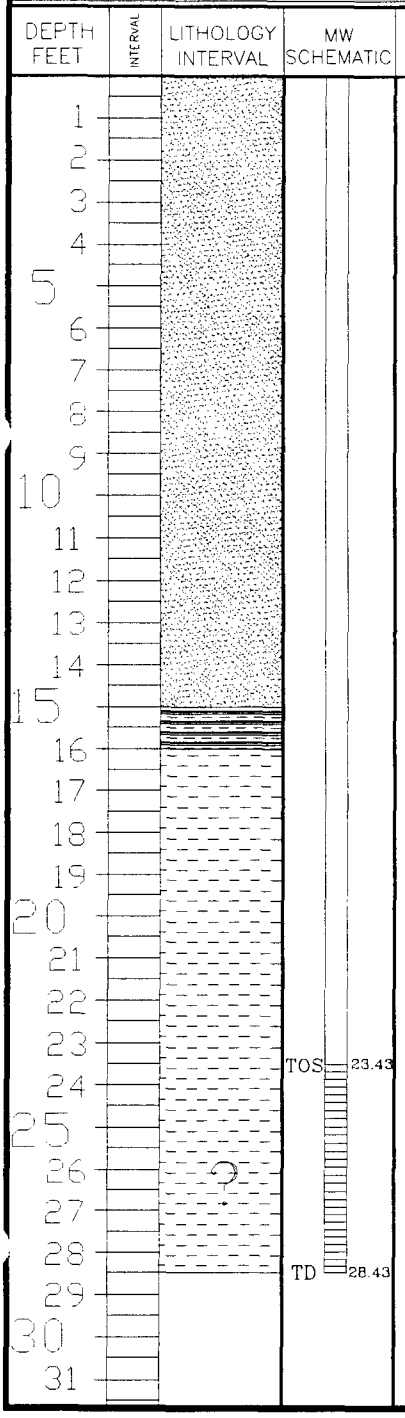
BLAGG ENGINEERING, Inc.

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

BORE / TEST HOLE REPORT

LOCATION NAME:	COOPER GC # 1E
CLIENT:	AMOCO PRODUCTION COMPANY
CONTRACTOR:	BLAGG ENGINEERING, INC.
EQUIPMENT USED:	MOBILE DRILL RIG (EARTHPROBE)
BORING LOCATION:	S40W, 87 FEET FROM WELL HEAD.

BORING #.....	BH - 2
MW #.....	3
PAGE #.....	2
DATE STARTED	4/26/96
DATE FINISHED	4/26/96
OPERATOR.....	JCB
PREPARED BY	NJV



FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROX. 1.57 FT. ABOVE GROUND SURFACE.

DARK YELLOWISH BROWN SAND TO SILTY SAND, NON COHESIVE, SLIGHTLY MOIST, FIRM, NO APPARENT HYDROCARBON ODOR OBSERVED (0 - 15.00 FT. INTERVAL).

DARK YELLOWISH BROWN CLAY, PLASTIC, SLIGHTLY MOIST, STIFF TO HARD, NO APPARENT HYDROCARBON ODOR OBSERVED (15.00 - 16.00 FT. INTERVAL).

▼ GW DEPTH ON 6/7/96 = 20.65 FT. (APPROX.) FROM GROUND SURFACE.

LIGHT TO DARK OLIVE GRAY SAND TO SILTY SAND, NON COHESIVE, SLIGHTLY MOIST TO SATURATED (IN GROUNDWATER), FIRM TO LOOSE, STRONG HYDROCARBON ODOR OBSERVED (16.00 - 28.43 FT. INTERVAL).

NOTES:

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

DRAWING: COOP1E-3	DATE: 2/06/97	DWN BY: NJV

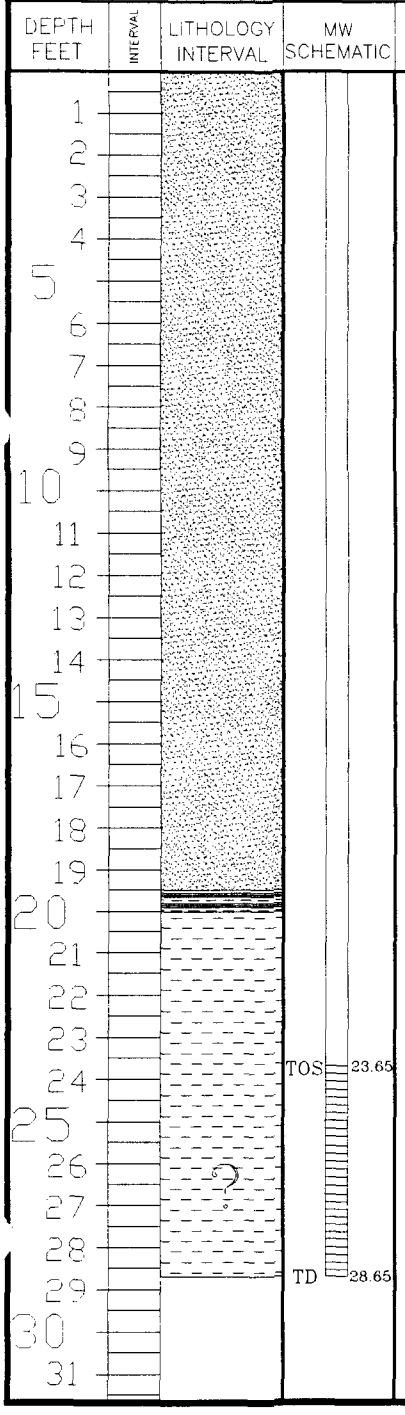
BLAGG ENGINEERING, Inc.

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

BORE / TEST HOLE REPORT

LOCATION NAME:	COOPER GC # 1E
CLIENT:	AMOCO PRODUCTION COMPANY
CONTRACTOR:	BLAGG ENGINEERING, INC.
EQUIPMENT USED:	MOBILE DRILL RIG (EARTHPROBE)
BORING LOCATION:	S15W, 126 FEET FROM WELL HEAD.

BORING #.....	BH - 3
MW #.....	4
PAGE #.....	3
DATE STARTED	4/28/96
DATE FINISHED	4/28/96
OPERATOR.....	JCB
PREPARED BY	NJV



FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROX. 1.35 FT. ABOVE GROUND SURFACE.

DARK YELLOWISH BROWN SAND TO SILTY SAND, NON COHESIVE, SLIGHTLY MOIST, FIRM, NO APPARENT HYDROCARBON ODOR OBSERVED (0 - 19.00 FT. INTERVAL).

DARK YELLOWISH BROWN CLAY, PLASTIC, SLIGHTLY MOIST, STIFF TO HARD, NO APPARENT HYDROCARBON ODOR OBSERVED (19.00 - 20.00 FT. INTERVAL).

▼ GW DEPTH ON 6/7/96 = 22.80 FT. (APPROX.) FROM GROUND SURFACE.

LIGHT OLIVE GRAY TO MEDIUM GRAY SAND TO SILTY SAND, NON COHESIVE, SLIGHTLY MOIST TO SATURATED (IN GROUNDWATER), FIRM TO LOOSE, STRONG HYDROCARBON ODOR OBSERVED (20.00 - 28.65 FT. INTERVAL).

NOTES:
- SAND TO SILTY SAND.
- SAND TO SILTY SAND (DISCOLORED).
- CLAY.

TOS - TOP OF SCREEN FROM GROUND SURFACE.
TD - TOTAL DEPTH OF MONITOR WELL FROM GROUND SURFACE.
GW - GROUND WATER.
INTERVAL THICKNESS OF HYDROCARBON CONTAMINATION UNCERTAIN.

DRAWING: COOP1E-4	DATE: 2/07/97	DWN BY: NJV

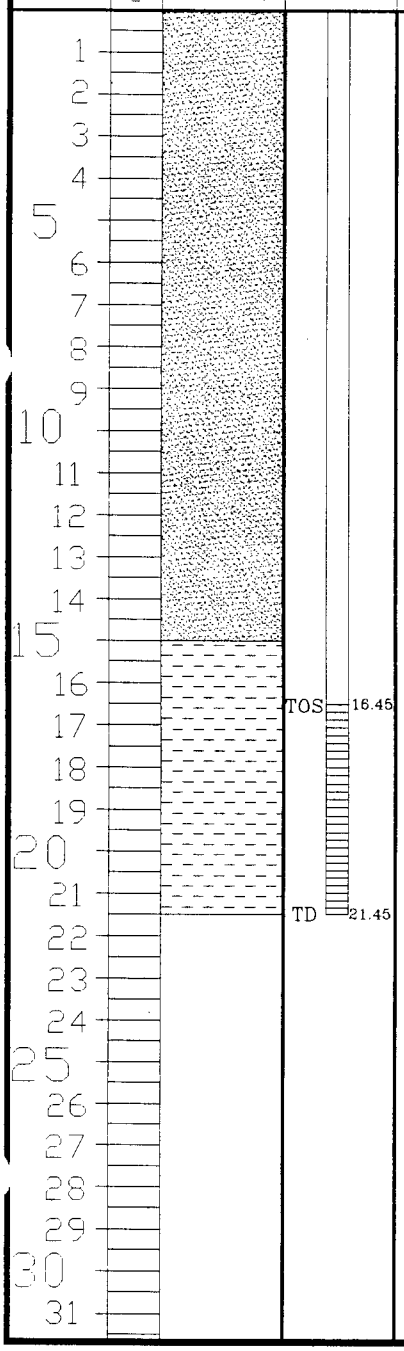
BLAGG ENGINEERING, Inc.

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

BORE / TEST HOLE REPORT

BORING # ..... BH - 4
MW # 5
PAGE # 4
DATE STARTED 4/29/96
DATE FINISHED 4/29/96
OPERATOR ..... JCB
PREPARED BY NJV

LOCATION NAME: COOPER GC # 1E
CLIENT: AMOCO PRODUCTION COMPANY
CONTRACTOR: BLAGG ENGINEERING, INC.
EQUIPMENT USED: MOBILE DRILL RIG (EARTHPROBE)
BORING LOCATION: S22W, 189 FEET FROM WELL HEAD.



FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROX. 2.05 FT. ABOVE GROUND SURFACE.

DARK YELLOWISH BROWN SAND TO SILTY SAND, NON COHESIVE, SLIGHTLY MOIST, FIRM, NO APPARENT HYDROCARBON ODOR OBSERVED (0 - 15.00 FT. INTERVAL).

▼ GW DEPTH ON 6/7/96 = 17.76 FT. (APPROX.) FROM GROUND SURFACE.

MEDIUM GRAY SAND TO SILTY SAND, NON COHESIVE, SLIGHTLY MOIST TO SATURATED (IN GROUNDWATER), FIRM TO LOOSE, STRONG HYDROCARBON ODOR OBSERVED (15.00 - 21.45 FT. INTERVAL).

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

DRAWING: COOP1E-5 | DATE: 2/07/97 | DWN BY: NJV

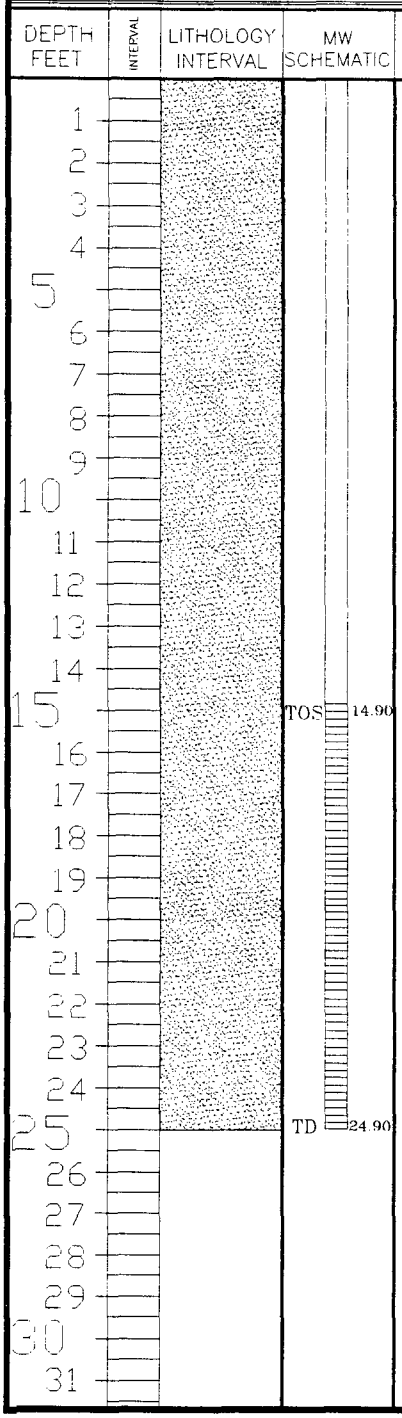
BLAGG ENGINEERING, Inc.

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

BORE / TEST HOLE REPORT

LOCATION NAME:	COOPER GC # 1E
CLIENT:	AMOCO PRODUCTION COMPANY
CONTRACTOR:	BLAGG ENGINEERING, INC.
EQUIPMENT USED:	MOBILE DRILL RIG (EARTHPROBE)
BORING LOCATION:	S18E, 108 FEET FROM WELL HEAD.

BORING #.....	BH - 5
MW #.....	2R
PAGE #.....	5
DATE STARTED	3/30/98
DATE FINISHED	3/30/98
OPERATOR.....	JCB
PREPARED BY	NJV



FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROX. 1.10 FT. ABOVE GROUND SURFACE.

DARK YELLOWISH BROWN SAND TO SILTY SAND CONTINUOUS THROUGHOUT ENTIRE BORING, NON COHESIVE TO COHESIVE, SLIGHTLY MOIST TO SATURATED (IN GROUNDWATER), FIRM TO LOOSE, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED (0.0 - 25.00 FT. INTERVAL).

▼ GW DEPTH ON 3/31/98 = 21.44 FT. (APPROX.) FROM GROUND SURFACE.

NOTES: ▒ - SAND TO SILTY SAND.

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

DRAWING: COOP-2R	DATE: 4/20/98	DWN BY: NJV

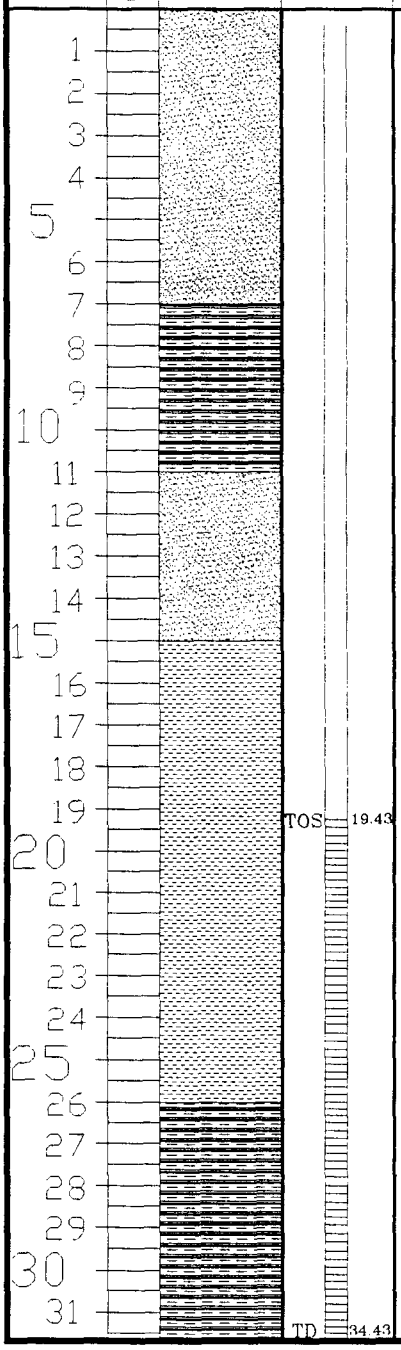
BLAGG ENGINEERING, Inc.

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

BORE / TEST HOLE REPORT

BORING #..... BH - 6
MW #..... 3R
PAGE #..... 6
DATE STARTED 3/31/98
DATE FINISHED 3/31/98
OPERATOR..... MC
PREPARED BY NJV

LOCATION NAME: COOPER GC # 1E
CLIENT: AMOCO PRODUCTION COMPANY
CONTRACTOR: BLAGG ENGINEERING, INC.
EQUIPMENT USED: MOBILE DRILL RIG (EARTHPROBE)
BORING LOCATION: S43.5W, 110.5 FEET FROM WELL HEAD.



FIELD CLASSIFICATION AND REMARKS

TOP OF CASING APPROX. 0.40 FT. BELOW GROUND SURFACE.

DARK YELLOWISH BROWN SAND TO SILTY SAND, NON COHESIVE TO COHESIVE, SLIGHTLY MOIST, FIRM, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED (0.0 - 7.00 FT. INTERVAL).

DARK YELLOWISH BROWN CLAY, PLASTIC TO HIGHLY PLASTIC (9.0 - 11.0 FT. INTERVAL), SLIGHTLY MOIST, FIRM TO STIFF, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED (7.0 - 11.00 FT. INTERVAL).

DARK YELLOWISH BROWN SAND TO SILTY SAND, NON COHESIVE TO COHESIVE, SLIGHTLY MOIST, FIRM, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED (11.0 - 15.00 FT. INTERVAL).

DARK YELLOWISH BROWN SILTY SAND PHASING INTO CLAY, NON COHESIVE TO PLASTIC, SLIGHTLY MOIST TO SATURATED, FIRM TO STIFF, DISCOLORATION OBSERVED WITH STRONG HYDROCARBON ODOR DETECTED BETWEEN (18.0 - 26.00 FT. INTERVAL), TOTAL INTERVAL (15.0 - 26.0 FT.).

OLIVE GRAY CLAY, HIGHLY PLASTIC, SATURATED, STIFF, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED, (26.0 - 35.0 FT. INTERVAL).

▼ GW DEPTH ON 3/31/98 = 25.92 FT. (APPROX.) FROM GROUND SURFACE.

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

DRAWING: COOP-3R | DATE: 4/20/98 | DWN BY: NJV

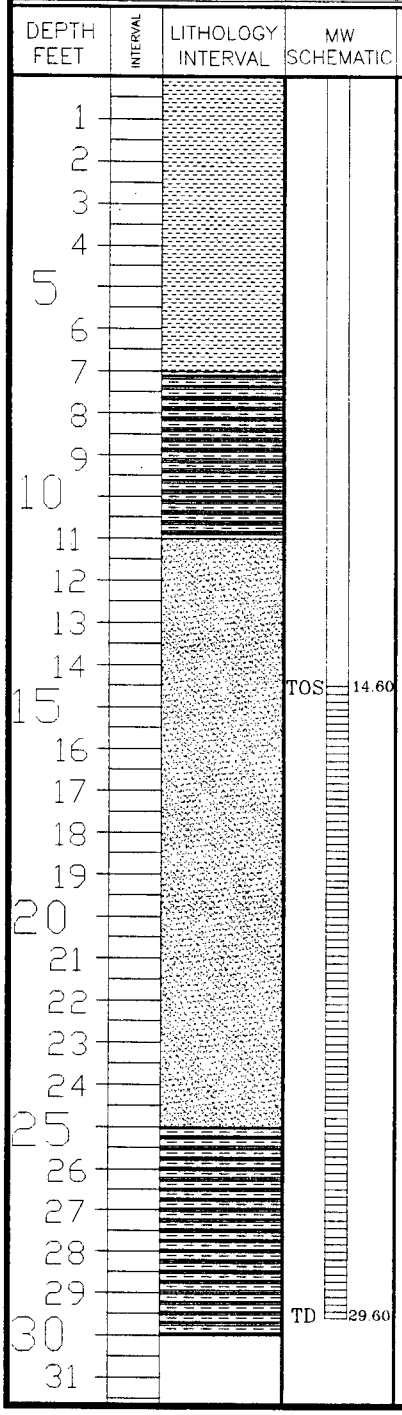
BLAGG ENGINEERING, Inc.

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

BORE / TEST HOLE REPORT

LOCATION NAME:	COOPER GC # 1E
CLIENT:	AMOCO PRODUCTION COMPANY
CONTRACTOR:	BLAGG ENGINEERING, INC.
EQUIPMENT USED:	MOBILE DRILL RIG (EARTHPROBE)
BORING LOCATION:	S20W, 185.5 FEET FROM WELL HEAD.

BORING #.....	BH - 7
MW #.....	5R
PAGE #.....	6
DATE STARTED	3/31/98
DATE FINISHED	4/1/98
OPERATOR.....	MC
PREPARED BY	NJV



FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROX. 1.40 FT. BELOW GROUND SURFACE.

DARK YELLOWISH BROWN SILTY CLAY, COHESIVE TO SLIGHTLY PLASTIC, SLIGHTLY MOIST, FIRM TO STIFF, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED (0.0 - 7.00 FT. INTERVAL).

DARK YELLOWISH BROWN CLAY, PLASTIC TO HIGHLY PLASTIC (9.0 - 11.0 FT. INTERVAL), SLIGHTLY MOIST, FIRM TO STIFF, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED (7.0 - 11.00 FT. INTERVAL).

DARK YELLOWISH BROWN SAND TO SILTY SAND, NON COHESIVE TO COHESIVE, SLIGHTLY MOIST, FIRM, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED (11.0 - 25.00 FT. INTERVAL).

OLIVE GRAY CLAY, SLIGHTLY TO HIGHLY PLASTIC, SATURATED, STIFF, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED, (25.0 - 30.0 FT. INTERVAL).

GW DEPTH ON 4/1/98 = 28.22 FT. (APPROX.) FROM GROUND SURFACE.

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

DRAWING: COOP-5R	DATE: 4/20/98	DWN BY: NJV

BLAGG ENGINEERING, INC.

FIELD BORING LOG

TEST BORING No.	MONITOR WELL No.	PROJECT No.	PROJECT NAME:	SHEET:
TH1	—		AMOCO	1 OF 1

MFG DESIGNATION OF DRILL:	PROJECT LOCATION:
BLAGG DRILL RIG	COOPER GC 1E

TYPE OF BIT:	SURFACE ELEVATION OF TB OR MW:	TOTAL DEPTH OF HOLE:
3" AUGER		25'

DATE:	TIME STARTED:	TIME COMPLETED:	DRILLING Co.:
9-19-96			BLAGG

COMPLETION TYPE:	ENGINEER:	CREW:	GROUNDWATER DEPTH:	TIME:
BACKFILLED	REO	JCB		

SURFACE CONDITIONS:

DIST FROM SURF.	SAMPLE TYPE	SAMPLE No.	OVM READ IN PPM	BLOWS PER 6 IN.	USCS	LOG OF MATERIAL/COMMENTS
2					SW	MOIST, BROWN, WELL GRADED SAND - NO STAIN, NO ODOR
4						
6						
8						
10						
12						
14					▽	APPROX. WATER SAMPLE COLLECTED
16						
18						
20						
22						
24						TD = 23'
26						
28						
30						

BLAGG ENGINEERING, INC.

FIELD BORING LOG

TEST BORING No.	MONITOR WELL No.	PROJECT No.	PROJECT NAME:	SHEET:
TH2			AMOCO	1 OF 1

MFG. DESIGNATION OF DRILL:	PROJECT LOCATION:
BLAGG DRILL RIG	COOPER GC 1E

TYPE OF BIT:	SURFACE ELEVATION OF TB OR MW:	TOTAL DEPTH OF HOLE:
3" AUGER		20'

DATE:	TIME STARTED:	TIME COMPLETED:	DRILLING Co.:
9-19-96			BLAGG

COMPLETION TYPE:	ENGINEER:	CREW:	GROUNDWATER DEPTH:	TIME:
BACKFILLED	REO	JCB		

SURFACE CONDITIONS:

DIST FROM SURF.	SAMPLE TYPE	SAMPLE No.	OVM READ IN PPM	BLOWS PER 6 IN.	USCS	LOG OF MATERIAL/COMMENTS
2					SW	MOIST BROWN, WELL GRADED SAND - NO STAIN, NO ODOR
4						
6						
8						
10						
12						
14					▽	~APPROX. WATER SAMPLE COLLECTED
16						
18						
20						TD = 20'
22						
24						
26						
28						
30						

BLAGG ENGINEERING, INC.

FIELD BORING LOG

TEST BORING No.	MONITOR WELL No.	PROJECT No.	PROJECT NAME:	SHEET:
TH3	6		AMOCO	1 OF 1

MFG. DESIGNATION OF DRILL:	PROJECT LOCATION:
BLAGG DRILL RIG	COOPER GC 1E

TYPE OF BIT:	SURFACE ELEVATION OF TB OR MW:	TOTAL DEPTH OF HOLE:
3" AUGER		20'

DATE:	TIME STARTED:	TIME COMPLETED:	DRILLING Co.:
9-19-96			BLAGG

COMPLETION TYPE:	ENGINEER:	CREW:	GROUNDWATER DEPTH:	TIME:
MONITOR WELL	REO	JCB		

SURFACE CONDITIONS:

DIST FROM SURF.	SAMPLE TYPE	SAMPLE No.	OVM READ IN PPM	BLOWS PER 6 IN.	USCS	LOG OF MATERIAL/COMMENTS
2					SW	MOIST, BROWN, WELL GRADED SAND - NO ODOR, NO STAIN
4						
6						
8						
10						
12						
14					▽	APPROX WATER SAMPLE COLLECTED
16						
18						
20						T.D. = 20'
22						
24						
26						
28						
30						

BLAGG ENGINEERING, Inc.

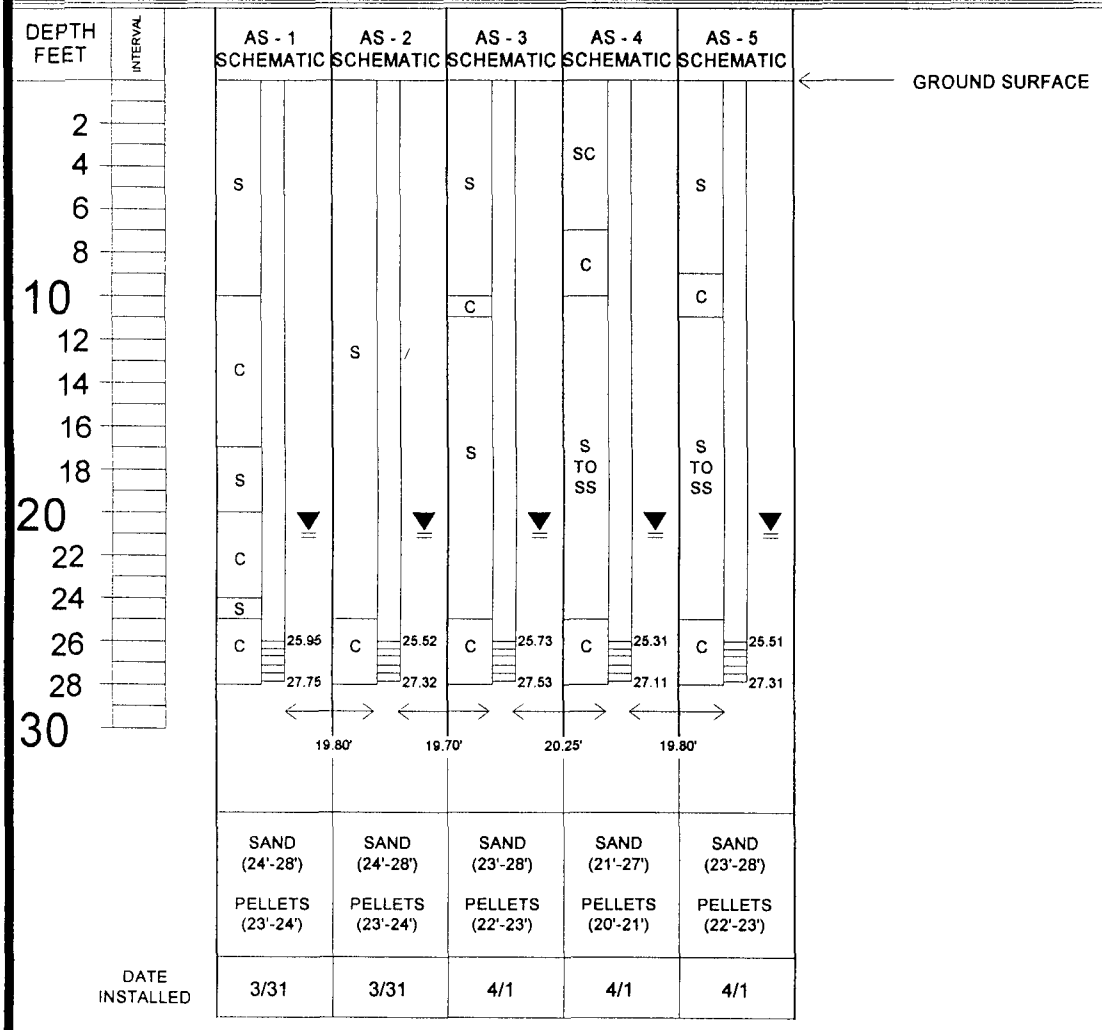
P.O. BOX 87
BLOOMFIELD, NM 87413
(505) 632-1199

AIR SPARGE SYSTEM BORE HOLE SCHEMATIC

PAGE #..... 1

LOCATION NAME:	COOPER GC # 1E
CLIENT:	CROSS TIMBERS OIL COMPANY
CONTRACTOR:	BLAGG ENGINEERING, INC. / ENVIROTECH, INC.
EQUIPMENT USED:	MOBILE DRILL RIG
BORING LOCATION:	SEE AIR SPARGING SITE SCHEMATIC.

DATE STARTED 3/31/98
DATE FINISHED 4/01/98
OPERATOR..... MC
PREPARED BY..... NJV



LEGEND

AS-1 = AIR SPARGE POINT DESIGNATION.
S = NON COHESIVE SAND.
C = SLIGHTLY TO HIGHLY PLASTIC CLAY.
SC = COHESIVE TO SLIGHTLY PLASTIC SILTY CLAY.
SS = NON COHESIVE TO SLIGHTLY COHESIVE SILTY SAND.
▼ - INDICATES APPROX. WATER TABLE DEPTH.

DRAWING: 1E-AS-1	DATE: 3/22/00	DWN BY: NJV

BLAGG ENGINEERING, Inc.

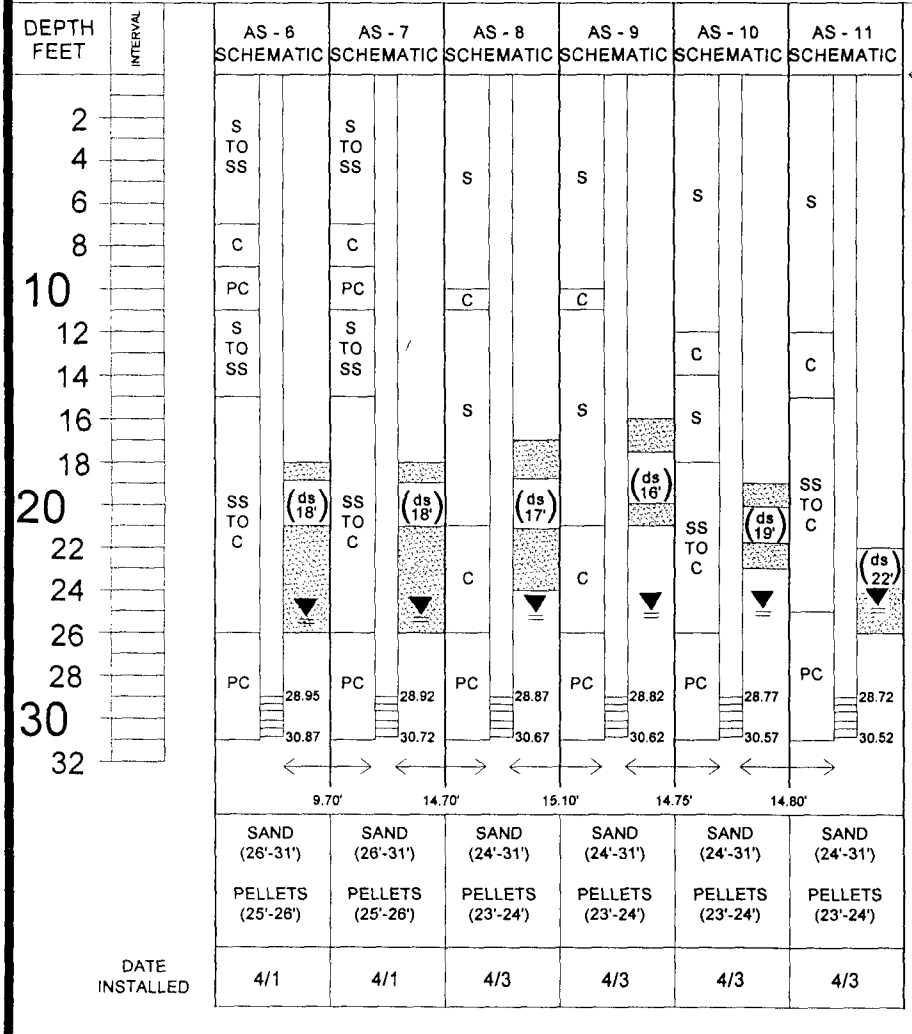
P.O. BOX 87
BLOOMFIELD, NM 87413
(505) 632-1199

AIR SPARGE SYSTEM BORE HOLE SCHEMATIC

PAGE #..... 2

LOCATION NAME:	COOPER GC # 1E
CLIENT:	CROSS TIMBERS OIL COMPANY
CONTRACTOR:	BLAGG ENGINEERING, INC. / ENVIROTECH, INC.
EQUIPMENT USED:	MOBILE DRILL RIG
BORING LOCATION:	SEE AIR SPARGING SITE SCHEMATIC.

DATE STARTED 3/31/98
DATE FINISHED 4/01/98
OPERATOR..... MC
PREPARED BY..... NJV



COLLECTED TPH & BTEX SAMPLES AT AS-8 (20') - OVM = 222 parts per million (ppm) TIME: 0810.

LEGEND

AS-1 = AIR SPARGE POINT DESIGNATION.
S = NON COHESIVE SAND.
C = SLIGHTLY TO HIGHLY PLASTIC CLAY.
SC = COHESIVE TO SLIGHTLY PLASTIC SILTY CLAY.
SS = NON COHESIVE TO SLIGHTLY COHESIVE SILTY SAND.
PC = HIGHLY PLASTIC CLAY.
(ds 19') = DISCOLORED SOIL WITH TOP INTERVAL STATED.
▼ - INDICATES APPROX. WATER TABLE DEPTH.

DRAWING: 1E-AS-2	DATE: 3/22/00	DWN BY: NJV

BLAGG ENGINEERING, Inc.

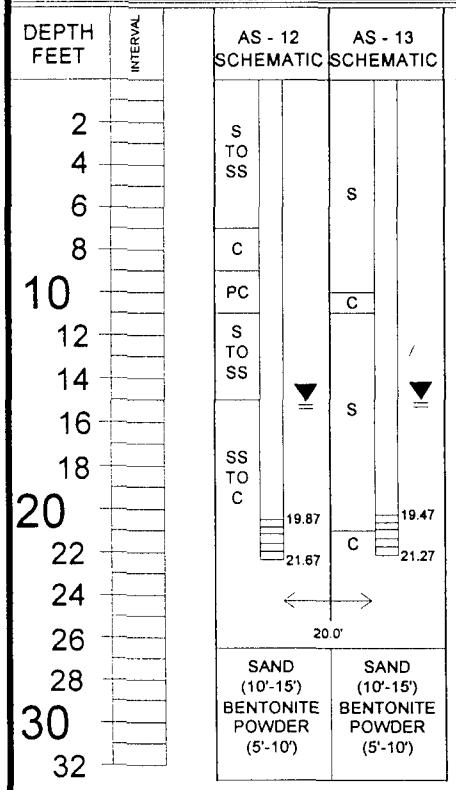
P.O. BOX 87
BLOOMFIELD, NM 87413
(505) 632-1199

AIR SPARGE SYSTEM BORE HOLE SCHEMATIC

PAGE #..... 3

LOCATION NAME:	COOPER GC # 1E
CLIENT:	CROSS TIMBERS OIL COMPANY
CONTRACTOR:	BLAGG ENGINEERING, INC.
EQUIPMENT USED:	MOBILE DRILL RIG
BORING LOCATION:	SEE AIR SPARGING SITE SCHEMATIC.

DATE STARTED 9/12/00
DATE FINISHED 9/12/00
OPERATOR..... JCB
PREPARED BY..... NJV



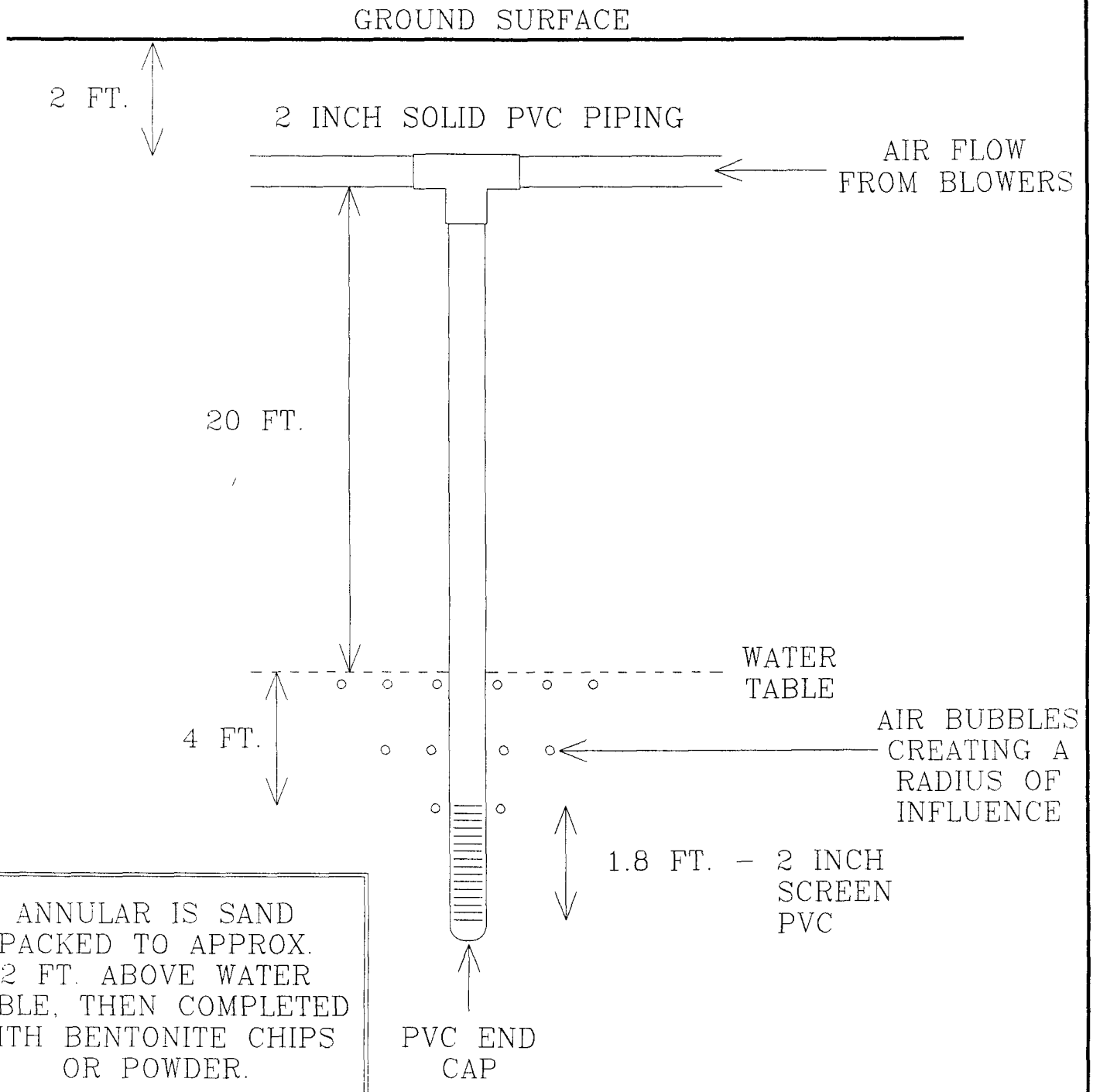
NOTE: DEPTH TO WATER (DTW) MEASURED ON 9/12/00 = 14.56 FT. FROM TOP OF CASING IN MW #3R. TOP OF CASING MEASURED AT 0.31 FT. BELOW GROUND SURFACE (BGS), THEREBY DTW = 14.87 FT. BGS.

LEGEND

AS-12 = AIR SPARGE POINT DESIGNATION.
S = NON COHESIVE SAND.
SS = NON COHESIVE TO SLIGHTLY COHESIVE SILTY SAND.
C = SLIGHTLY TO HIGHLY PLASTIC CLAY.
PC = HIGHLY PLASTIC CLAY.
▼ - INDICATES APPROX. WATER TABLE DEPTH.

DRAWING: 1E-AS-3	DATE: 12/29/00	DWN BY: NJV

SIMPLISTIC AIR SPARGE POINT CONSTRUCTION



AMOCO PRODUCTION COMPANY COOPER GC # 1E NW/4 SE/4 SEC. 15, T29N, R11W SAN JUAN COUNTY, NEW MEXICO	BLAGG ENGINEERING, INC. CONSULTING PETROLEUM / RECLAMATION SERVICES P.O. BOX 87 BLOOMFIELD, NEW MEXICO 87413 PHONE: (505) 632-1199	PROJECT: RECLAM. SYS. DRAWN BY: NJV FILENAME: ASP-TEMP DRAFTED: 3/22/00 NJV	AIR SPARGE POINT 3/00

BLAGG ENGINEERING, INC.

MONITOR WELL SAMPLING DATA

CLIENT : AMOCO PRODUCTION CO.

CHAIN-OF-CUSTODY # : 2481

COOPER GC # 1E - SEPARATOR PIT
UNIT J, SEC. 15, T29N, R11W

LABORATORY (S) USED : ANAITAS

Date : June 7, 1996

Filename : 06-07-96.WK4

SAMPLER : R E O

PROJECT MANAGER : R E O

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING	pH TIME	CONDUCT (umhos)	VOLUME PURGED (gal.)	FREE PRODUCT (ft)
2	101.88	80.72	21.16	30.00	1010	7.3	900	2.00	-
3	101.28	79.06	22.22	30.00	1040	6.9	2,000	1.50	-
4	101.32	77.17	24.15	30.00	1110	6.8	800	3.00	-
5	95.22	75.41	19.81	23.50	1140	6.8	1,100	1.50	-

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 ".

ANAITAS ENVIRONMENTAL LABS

PURGEABLE AROMATICS

Blagg Engineering, Inc.

Project ID:	Cooper GC 1E	Report Date:	06/24/96
Sample ID:	MW - 2	Date Sampled:	06/07/96
Lab ID:	3810	Date Received:	06/07/96
Sample Matrix:	Water	Date Analyzed:	06/20/96
Preservative:	Cool, $HgCl_2$		
Condition:	Intact		

Target Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	1.00
o-Xylene	ND	0.50

Total BTEX	ND

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Trifluorotoluene	94	88 - 110%
Bromofluorobenzene	96	86 - 115%

Reference: Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

Comments:

Analyst

Review

ANAITAS ENVIRONMENTAL LABS

PURGEABLE AROMATICS

Blagg Engineering, Inc.

Project ID:	Cooper GC 1E	Report Date:	06/24/96
Sample ID:	MW - 3	Date Sampled:	06/07/96
Lab ID:	3811	Date Received:	06/07/96
Sample Matrix:	Water	Date Analyzed:	06/20/96
Preservative:	Cool, $HgCl_2$		
Condition:	Intact		

Target Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Benzene	2,290	125
Toluene	5,410	125
Ethylbenzene	1,460	125
m,p-Xylenes	13,420	500
o-Xylene	2,590	125

Total BTEX	25,200

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Trifluorotoluene	93	88 - 110%
Bromofluorobenzene	96	86 - 115%

Reference: Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

Comments:

Analyst

Review

ANAITAS ENVIRONMENTAL LABS

PURGEABLE AROMATICS

Blagg Engineering, Inc.

Project ID:	Cooper GC 1E	Report Date:	06/24/96
Sample ID:	MW - 4	Date Sampled:	06/07/96
Lab ID:	3812	Date Received:	06/07/96
Sample Matrix:	Water	Date Analyzed:	06/20/96
Preservative:	Cool, $HgCl_2$		
Condition:	Intact		

Target Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Benzene	2,900	125
Toluene	18,220	500
Ethylbenzene	937	125
m,p-Xylenes	11,180	250
o-Xylene	2,740	125

Total BTEX	36,000

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Trifluorotoluene	93	88 - 110%
Bromofluorobenzene	95	86 - 115%

Reference: Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

Comments:

Analyst

Review

ANAITAS ENVIRONMENTAL LABS

PURGEABLE AROMATICS

Blagg Engineering, Inc.

Project ID:	Cooper GC 1E	Report Date:	06/25/96
Sample ID:	MW - 5	Date Sampled:	06/07/96
Lab ID:	3813	Date Received:	06/07/96
Sample Matrix:	Water	Date Analyzed:	06/21/96
Preservative:	Cool, $HgCl_2$		
Condition:	Intact		

Target Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Benzene	9,940	500
Toluene	24,260	500
Ethylbenzene	962	500
m,p-Xylenes	8,070	1,000
o-Xylene	2,180	500

Total BTEX	45,400

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Trifluorotoluene	97	88 - 110%
Bromofluorobenzene	98	86 - 115%

Reference: Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

Comments:

Analyst

Review

ANAITAS ENVIRONMENTAL LABS

General Water Quality
Blagg Engineering, Inc.

Project ID:	Cooper GC 1E	Date Reported:	06/24/96
Sample ID:	MW - 2	Date Sampled:	06/07/96
Laboratory ID:	3810	Time Sampled:	10:10
Sample Matrix:	Water	Date Received:	06/07/96

Parameter		Analytical Result	Units
General	Lab pH	7.6	s.u.
	Lab Conductivity @ 25° C	1,660	µmhos/cm
	Total Dissolved Solids @ 180°C	1,110	mg/L
	Total Dissolved Solids (Calc)	1,010	mg/L
Anions	Total Alkalinity as $CaCO_3$	191	mg/L
	Bicarbonate Alkalinity as $CaCO_3$	191	mg/L
	Carbonate Alkallnity as $CaCO_3$	NA	mg/L
	Hydroxide Alkalinity as $CaCO_3$	NA	mg/L
	Chloride	1.67	mg/L
	Sulfate	581	mg/L
	Nitrate + Nitrite - N	NA	
	Nitrate - N	NA	
	Nitrite - N	NA	
Cations	Total Hardness as $CaCO_3$	556	mg/L
	Calcium	202	mg/L
	Magnesium	12.3	mg/L
	Potassium	< 5.0	mg/L
	Sodium	100	mg/L
Data Validation			Acceptance Level
	Cation/Anion Difference	1.46	+/- 5 %
	TDS (180):TDS (calculated)	1.1	1.0 - 1.2

Reference U.S.E.P.A. 600/4-79-020, Methods for Chemical Analysis of Water and Wastes, 1983.
Standard Methods For The Examination Of Water And Wastewater, 18th ed., 1992.

Review

ANAITAS ENVIRONMENTAL LABS

General Water Quality

Blagg Engineering, Inc.

Project ID:	Cooper GC 1E	Date Reported:	06/24/96
Sample ID:	MW - 3	Date Sampled:	06/07/96
Laboratory ID:	3811	Time Sampled:	10:40
Sample Matrix:	Water	Date Received:	06/07/96

Parameter		Analytical Result	Units
General	Lab pH	7.3	s.u.
	Lab Conductivity @ 25° C	2,760	µmhos/cm
	Total Dissolved Solids @ 180°C	2,090	mg/L
	Total Dissolved Solids (Calc)	1,920	mg/L
Anions	Total Alkalinity as $CaCO_3$	334	mg/L
	Bicarbonate Alkalinity as $CaCO_3$	334	mg/L
	Carbonate Alkalinity as $CaCO_3$	NA	mg/L
	Hydroxide Alkalinity as $CaCO_3$	NA	mg/L
	Chloride	1.67	mg/L
	Sulfate	1,140	mg/L
	Nitrate + Nitrite - N	NA	
	Nitrate - N	NA	
	Nitrite - N	NA	
Cations	Total Hardness as $CaCO_3$	859	mg/L
	Calcium	308	mg/L
	Magnesium	22.1	mg/L
	Potassium	< 5.0	mg/L
	Sodium	240	mg/L
Data Validation			Acceptance Level
	Cation/Anion Difference	4.94	+/- 5 %
	TDS (180):TDS (calculated)	1.1	1.0 - 1.2

Reference U.S.E.P.A. 600/4-79-020, Methods for Chemical Analysis of Water and Wastes, 1983.
Standard Methods For The Examination Of Water And Wastewater, 18th ed., 1992.

Review

ANAITAS ENVIRONMENTAL LABS

General Water Quality
Blagg Engineering, Inc.

Project ID:	Cooper GC 1E	Date Reported:	06/24/96
Sample ID:	MW - 4	Date Sampled:	06/07/96
Laboratory ID:	3812	Time Sampled:	11:10
Sample Matrix:	Water	Date Received:	06/07/96

Parameter		Analytical Result	Units
General	Lab pH	7.4	s.u.
	Lab Conductivity @ 25° C	829	µmhos/cm
	Total Dissolved Solids @ 180°C	323	mg/L
	Total Dissolved Solids (Calc)	319	mg/L
Anions	Total Alkalinity as $CaCO_3$	263	mg/L
	Bicarbonate Alkalinity as $CaCO_3$	263	mg/L
	Carbonate Alkalinity as $CaCO_3$	NA	mg/L
	Hydroxide Alkalinity as $CaCO_3$	NA	mg/L
	Chloride	4.17	mg/L
	Sulfate	37.0	mg/L
	Nitrate + Nitrite - N	NA	
	Nitrate - N	NA	
	Nitrite - N	NA	
Cations	Total Hardness as $CaCO_3$	222	mg/L
	Calcium	72.9	mg/L
	Magnesium	9.82	mg/L
	Potassium	< 5.0	mg/L
	Sodium	37.0	mg/L
Data Validation			Acceptance Level
	Cation/Anion Difference	0.51	+/- 2 %
	TDS (180):TDS (calculated)	1.0	1.0 - 1.2

Reference U.S.E.P.A. 600/4-79-020, Methods for Chemical Analysis of Water and Wastes, 1983.
Standard Methods For The Examination Of Water And Wastewater, 18th ed., 1992.

Review

ANAITAS
ENVIRONMENTAL LABS

General Water Quality
Blagg Engineering, Inc.

Project ID:	Cooper GC 1E	Date Reported:	06/24/96
Sample ID:	MW - 5	Date Sampled:	06/07/96
Laboratory ID:	3813	Time Sampled:	11:40
Sample Matrix:	Water	Date Received:	06/07/96

Parameter		Analytical Result	Units
General	Lab pH	7.4	s.u.
	Lab Conductivity @ 25° C	986	µmhos/cm
	Total Dissolved Solids @ 180°C	595	mg/L
	Total Dissolved Solids (Calc)	588	mg/L
Anions	Total Alkalinity as $CaCO_3$	501	mg/L
	Bicarbonate Alkalinity as $CaCO_3$	501	mg/L
	Carbonate Alkalinity as $CaCO_3$	NA	mg/L
	Hydroxide Alkalinity as $CaCO_3$	NA	mg/L
	Chloride	35.8	mg/L
	Sulfate	11.5	mg/L
	Nitrate + Nitrite - N	NA	
	Nitrate - N	NA	
	Nitrite - N	NA	
Cations	Total Hardness as $CaCO_3$	465	mg/L
	Calcium	158	mg/L
	Magnesium	17.2	mg/L
	Potassium	< 5.0	mg/L
	Sodium	65.0	mg/L

Data Validation			Acceptance Level
	Cation/Anion Difference	3.60	+/- 5 %
	TDS (180):TDS (calculated)	1.0	1.0 - 1.2

Reference U.S.E.P.A. 600/4-79-020, Methods for Chemical Analysis of Water and Wastes, 1983. Standard Methods For The Examination Of Water And Wastewater, 18th ed., 1992.

Review

181

ANAITAS ENVIRONMENTAL LABS

807 S. CARLTON • FARMINGTON, NM 87401 • (505) 326-2395

CHAIN OF CUSTODY

Page 1 of 1

PROJECT MANAGER:
Anaitas Lab I.D.:

Company: BLAGG
Address:

Phone: 632-1199
Fax:

Bill To: SAME
Company:
Address:

Sample ID	Date	Time	Matrix	Lab ID	Petroleum Hydrocarbons (418.1)	Gasoline / Diesel (mod. 8015)	Gasoline (GRO)	Aromatic HCs BTEX/MTBE (602 / 8020)	Chlorinated Hydrocarbons (8010)	SDWA Volatiles (502.1 / 503.1)	Chlorinated Pesticides / PCBs (608 / 8080)	Herbicides (615 / 8150)	Volatiles GC/MS (624 / 8240 / 8260)	Base / Neutral / Acid GC/MS (625 / 8270)	Polynuclear Aromatic Hydrocarbons (8100)	TCLP Extraction	Other (specify):	Cation / Anion	Specific Cations (specify):	Specific Anions (specify):	BOD / Fecal / Total Coliform	Solids: TDS / TSS / SS	Nutrients: NH4+ / NO2- / NO3- / TKN	Oil and Grease	Other (specify):	Priority Pollutants	RCRA Metals (Total)	RCRA Metals TCLP (1311)	Other (specify):	COMMENTS
MW-2	6-7	1010	WATER					✓										✓												
MW-3	"	1040	"					✓										✓												
MW-4	"	1110	"					✓										✓												
MW-5	"	1140	"					✓										✓												

Project Information	Sample Receipt
Proj. #:	No. Containers:
Proj. Name: AMOCO	Custody Seals: Y / N / NA
P. O. No:	Received Intact:
Shipped Via: DEL'D	Received Cold:

Required Turnaround Time (Prior Authorization Required for Rush)

COOPER 6C 1E

Sampled By:	Relinquished By:	Relinquished By:
Signature / Date: REO 6-7-96	Signature / Date: REO 6-7-96	Signature / Date:
Company: BEI / Time: —	Company: BEI / Time: 1445	Company: / Time:
Received By:	**Received By:**	**Received By:**
Signature / Date:	Signature / Date:	Signature / Date: M. Williams 6/7/96
Company: / Time:	Company: / Time:	Company: Anaitas / Time: 2:45

Please Fill Out Thoroughly.

Shaded areas for lab use only.

White/Yellow: Anaitas
Pink: Client

ANAITAS
ENVIRONMENTAL LABS

June 25, 1996

Bob O'Neill
Blagg Engineering, Inc.
PO Box 87
Bloomfield, NM 87413

Dear Mr. O'Neill:

Enclosed are the results for the analysis of the samples received June 7, 1996. The samples were from the Cooper GC 1E site. Analyses for Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) and general water quality parameters were performed on the samples, as per the accompanying chain of custody form.

Analysis was performed on the samples according to EPA Method 602, using a Hewlett-Packard 5890 gas chromatograph equipped with an OI Analytical purge and trap (model 4560) and a photoionization detector. Detectable levels of btex analytes were found in the samples, as reported.

Water parameters were determined for the samples according to the appropriate methodologies as outlined in Standard Methods for the Examination of Water and Wastewater, 18th edition, 1992.

Quality control reports appear at the end of the analytical package and can be identified by title. Should you have any questions regarding the analysis, feel free to call.

Sincerely,

Denise A. Bohemier
Lab Director

807 SOUTH CARLTON • FARMINGTON, NM 87401 • (505) 326-2395 PH • 326-2486 FAX

PURGEABLE AROMATICS

Quality Control Report

Method Blank Analysis

Sample Matrix: Water
Lab ID: MB35236

Report Date: 06/24/96
Date Analyzed: 06/20/96

Target Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	1.00
o-Xylene	ND	0.50

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Trifluorotoluene	98	88 - 110%
Bromofluorobenzene	100	86 - 115%

Reference: Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

Comments:

Analyst

Review

PURGEABLE AROMATICS

Quality Control Report

Method Blank Analysis

Sample Matrix: Water
Lab ID: MB35237

Report Date: 06/24/96
Date Analyzed: 06/21/96

Target Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	1.00
o-Xylene	ND	0.50

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Trifluorotoluene	99	88 - 110%
Bromofluorobenzene	99	86 - 115%

Reference: Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

Comments:

Analyst

Review

Purgeable Aromatics

Duplicate Analysis

Lab ID:	3808Dup	Report Date:	06/24/96
Sample Matrix:	Water	Date Sampled:	06/07/96
Preservative:	Cool, HgCl2	Date Received:	06/07/96
Condition:	Intact	Date Analyzed:	06/20/96

Target Analyte	Original Conc. (ug/L)	Duplicate Conc. (ug/L)	Acceptance Range (ug/L)
Benzene	347	339	280 - 406
Toluene	28.5	26.2	21.5 - 33.2
Ethylbenzene	156	148	99.4 - 205
m,p-Xylenes	1,580	1,550	NE
o-Xylene	ND	ND	NE

ND - Analyte not detected at the stated detection limit.
NA - Not applicable or not calculated.
NE - Duplicate acceptance range not established by the EPA.

	Surrogate	Percent Recovery	Acceptance Limits
Quality Control:	Trifluorotoluene	99	88 - 110%
	Bromofluorobenzene	97	86 - 115%

Reference: Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

Comments:

Analyst

Review

Purgeable Aromatics

Matrix Spike Analysis

Lab ID:	3807Spk	Report Date:	06/24/96
Sample Matrix:	Water	Date Sampled:	06/07/96
Preservative:	Cool, HgCl2	Date Received:	06/07/96
Condition:	Intact	Date Analyzed:	06/20/96

Target Analyte	Spike Added (ug/L)	Original Conc. (ug/L)	Spiked Sample Conc. (ug/L)	% Recovery	Acceptance Limits (%)
Benzene	10	ND	10.5	101%	39 -150
Toluene	10	1.84	11.5	97%	46 - 148
Ethylbenzene	10	ND	10.5	103%	32 - 160
m,p-Xylenes	20	ND	20.9	102%	NE
o-Xylene	10	ND	10.2	98%	NE

ND - Analyte not detected at the stated detection limit.
NA - Not applicable or not calculated.
NE - Spike acceptance range not established by the EPA.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Trifluorotoluene	103	88 - 110%
Bromofluorobenzene	104	86 - 115%

Reference: Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

Comments:

Analyst

Review

Purgeable Aromatics

Duplicate Analysis

Lab ID:	3813Dup	Report Date:	06/24/96
Sample Matrix:	Water	Date Sampled:	06/07/96
Preservative:	Cool, $HgCl_2$	Date Received:	06/07/96
Conditlon:	Intact	Date Analyzed:	06/21/96

Target Analyte	Original Conc. (ug/L)	Duplicate Conc. (ug/L)	Acceptance Range (ug/L)
Benzene	9,940	9,930	8,150 - 11,700
Toluene	24,260	24,350	19,930 - 28,700
Ethylbenzene	962	957	632 - 1,290
m,p-Xylenes	8,070	8,110	NE
o-Xylene	2,180	2,140	NE

ND - Analyte not detected at the stated detection limit.
NA - Not applicable or not calculated.
NE - Duplicate acceptance range not established by the EPA.

	Surrogate	Percent Recovery	Acceptance Limits
Quality Control:	Trifluorotoluene	96	88 - 110%
	Bromofluorobenzene	99	86 - 115%

Reference: Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

Comments:

Analyst

Review

Purgeable Aromatics

Matrix Spike Analysis

Lab ID:	3883Spk	Report Date:	06/24/96
Sample Matrix:	Water	Date Sampled:	06/10/96
Preservative:	Cool, $HgCl_2$	Date Received:	06/10/96
Condition:	Intact	Date Analyzed:	06/21/96

Target Analyte	Spike Added (ug/L)	Original Conc. (ug/L)	Spiked Sample Conc. (ug/L)	% Recovery	Acceptance Limits (%)
Benzene	10	ND	10.1	101%	39 -150
Toluene	10	0.58	10.4	98%	46 - 148
Ethylbenzene	10	ND	10.7	104%	32 - 160
m,p-Xylenes	20	ND	20.4	100%	NE
o-Xylene	10	ND	10.2	99%	NE

ND - Analyte not detected at the stated detection limit.
NA - Not applicable or not calculated.
NE - Spike acceptance range not established by the EPA.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Trifluorotoluene	96	88 - 110%
Bromofluorobenzene	99	86 - 115%

Reference: Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

Comments:

Analyst

Review

General Water Quality

Quality Control Report

Blagg Engineering, Inc.

Report Date: 6/24/96

Parameter	Analytical Result	Certified Value	Acceptance Range	Units
Laboratory pH	8.96	9.05	8.85 - 9.25	s.u.
Conductivity	1323	1210	1030 - 1400	µmhos/cm
Total Dissolved Solids	900	905	787 - 1020	mg/L
Total Alkalinity	167	174	155 - 193	mg/L
Chloride	152	155	144 - 166	mg/L
Sulfate	107	116	99.8 - 132	mg/L
Total Hardness	232	254	218 - 290	mg/L
Calcium	60.7	54.6	47.0 - 62.2	mg/L
Magnesium	NA	NA	NA	mg/L
Potassium	110	112	95.2 - 129	mg/L
Sodium	180	180	153 - 207	mg/L

Reference: U.S.E.P.A. 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983. Standard Methods For The Examination Of Water And Wastewater, 18th ed., 1992.

Comments:

Review

ANAITAS ENVIRONMENTAL LABS

PURGEABLE AROMATICS

Blagg Engineering, Inc.

Project ID:	Cooper GC 1E	Report Date:	09/20/96
Sample ID:	TH - 1	Date Sampled:	09/19/96
Lab ID:	5125	Date Received:	09/19/96
Sample Matrix:	Water	Date Analyzed:	09/19/96
Preservative:	Cool, $HgCl_2$		
Condition:	Intact		

Target Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Benzene	1,200	20.0
Toluene	1.03	0.20
Ethylbenzene	4.52	0.20
m,p-Xylenes	19.9	0.40
o-Xylene	29.1	2.00

Total BTEX	**1,250**

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Trifluorotoluene	111	88 - 110%
Bromofluorobenzene	103	86 - 115%

Reference: Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

Comments: High toluene-d8 recovery is due to hydrocarbon interference at the d8 retention time.

Analyst

Review

ANAITAS ENVIRONMENTAL LABS

PURGEABLE AROMATICS

Blagg Engineering, Inc.

Project ID:	Cooper GC 1E	Report Date:	09/20/96
Sample ID:	TH - 2	Date Sampled:	09/19/96
Lab ID:	5126	Date Received:	09/19/96
Sample Matrix:	Water	Date Analyzed:	09/19/96
Preservative:	Cool, $HgCl_2$		
Condition:	Intact		

Target Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Benzene	0.99	0.20
Toluene	0.24	0.20
Ethylbenzene	ND	0.20
m,p-Xylenes	0.45	0.40
o-Xylene	ND	0.20

Total BTEX	**1.68**

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Trifluorotoluene	105	88 - 110%
Bromofluorobenzene	105	86 - 115%

Reference: Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

Comments:

Analyst

Review

ANAITAS ENVIRONMENTAL LABS

PURGEABLE AROMATICS

Blagg Engineering, Inc.

Project ID:	Cooper GC 1E	Report Date:	09/20/96
Sample ID:	TH - 3 ~ MW #6	Date Sampled:	09/19/96
Lab ID:	5127	Date Received:	09/19/96
Sample Matrix:	Water	Date Analyzed:	09/19/96
Preservative:	Cool, $HgCl_2$		
Condition:	Intact		

Target Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Benzene	0.92	0.20
Toluene	0.91	0.20
Ethylbenzene	0.49	0.20
m,p-Xylenes	1.64	0.40
o-Xylene	0.51	0.20

Total BTEX	**4.46**

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Trifluorotoluene	105	88 - 110%
Bromofluorobenzene	105	86 - 115%

Reference: Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

Comments:

Analyst

Review

ANAITAS ENVIRONMENTAL LABS

PURGEABLE AROMATICS

Blagg Engineering, Inc.

Project ID:	Cooper GC 1E	Report Date:	09/20/96
Sample ID:	MW - 5	Date Sampled:	09/19/96
Lab ID:	5128	Date Received:	09/19/96
Sample Matrix:	Water	Date Analyzed:	09/19/96
Preservative:	Cool, $HgCl_2$		
Condition:	Intact		

Target Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Benzene	7,860	200
Toluene	7,160	200
Ethylbenzene	364	20.0
m,p-Xylenes	2,850	40.0
o-Xylene	742	20.0

Total BTEX	**19,000**

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Trifluorotoluene	99	88 - 110%
Bromofluorobenzene	100	86 - 115%

Reference: Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

Comments:

Analyst

Review

ANAITAS ENVIRONMENTAL LABS

807 S. CARLTON • FARMINGTON, NM 87401 • (505) 326-2395

CHAIN OF CUSTODY

Page 1 of 1

PROJECT MANAGER:
Anaitas Lab I.D.:

Company: BLAGG
Address:

Phone: 632-1199
Fax:

Bill To: SAME
Company:
Address:

Sample ID	Date	Time	Matrix	Lab ID	Petroleum Hydrocarbons (418.1)	Gasoline / Diesel (mod. 8015)	Gasoline (GRO)	Aromatic HCs BTEX/MTBE (602 / 8020)	Chlorinated Hydrocarbons (8010)	SDWA Volatiles (502.1 / 503.1)	Chlorinated Pesticides / PCBs (608 / 8080)	Herbicides (615 / 8150)	Volatiles GC/MS (624 / 8240 / 8260)	Base / Neutral / Acid GC/MS (625 / 8270)	Polynuclear Aromatic Hydrocarbons (8100)	TCLP Extraction	Other (specify):	Cation / Anion	Specific Cations (specify):	Specific Anions (specify):	BOD / Fecal / Total Coliform	Solids: TDS / TSS / SS	Nutrients: NH4+ / NO2- / NO3- / TKN	Oil and Grease	Other (specify):	Priority Pollutants	RCRA Metals (Total)	RCRA Metals TCLP (1311)	Other (specify):	COMMENTS
TH-1	9-19	0925	WATER					✓																					
TH-2	"	1015	"					✓																					
TH-3	"	1100	"					✓																					
MW-5	"	1110	"					✓																					

Project Information	Sample Receipt
Proj. #:	No. Containers:
Proj. Name: AMOCO	Custody Seals: Y / N / NA
P. O. No:	Received Intact:
Shipped Via: DELO	Received Cold:

Required Turnaround Time (Prior Authorization Required for Rush)

COOPER 6C 1E

Sampled By:	Relinquished By:	Relinquished By:
Signature / Date: R. P. O'Neill 9-19-96	Signature / Date: R. P. O'Neill 9-19-96	Signature / Date:
Company: BEI Time: —	Company: BEI Time: 1258	Company: Time:
Received By:	**Received By:**	**Received By:**
Signature / Date:	Signature / Date:	Signature / Date: 9/19/96
Company: Time:	Company: Time:	Company: Anaitas Time: 12:58 pm

Please Fill Out Thoroughly.

Shaded areas for lab use only.

White/Yellow: Anaitas
Pink: Client

ANAITAS ENVIRONMENTAL LABS

PURGEABLE AROMATICS

Blagg Engineering, Inc.

Project ID:	Cooper GC 1E	Report Date:	09/25/96
Sample ID:	TH - 4 – MW #7	Date Sampled:	09/23/96
Lab ID:	5131	Date Received:	09/23/96
Sample Matrix:	Water	Date Analyzed:	09/24/96
Preservative:	Cool, $HgCl_2$		
Condition:	Intact		

Target Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Benzene	3,550	100
Toluene	2,100	100
Ethylbenzene	319	100
m,p-Xylenes	1,730	200
o-Xylene	396	100

Total BTEX	**8,100**

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Trifluorotoluene	105	88 - 110%
Bromofluorobenzene	102	86 - 115%

Reference: Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

Comments:

Analyst

Review

ANAITAS ENVIRONMENTAL LABS

PURGEABLE AROMATICS

Blagg Engineering, Inc.

Project ID:	Cooper GC 1E	Report Date:	09/25/96
Sample ID:	TH - 5 MW # 8	Date Sampled:	09/23/96
Lab ID:	5132	Date Received:	09/23/96
Sample Matrix:	Water	Date Analyzed:	09/24/96
Preservative:	Cool, $HgCl_2$		
Condition:	Intact		

Target Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Benzene	0.56	0.50
Toluene	1.71	0.50
Ethylbenzene	4.79	0.50
m,p-Xylenes	8.39	1.00
o-Xylene	3.56	0.50

Total BTEX	**19.0**

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Trifluorotoluene	103	88 - 110%
Bromofluorobenzene	101	86 - 115%

Reference: Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

Comments:

Analyst

Review

ANAITAS ENVIRONMENTAL LABS

PURGEABLE AROMATICS

Blagg Engineering, Inc.

Project ID:	Cooper GC 1E	Report Date:	09/25/96
Sample ID:	TH - 6 mw # 9	Date Sampled:	09/23/96
Lab ID:	5133	Date Received:	09/23/96
Sample Matrix:	Water	Date Analyzed:	09/24/96
Preservative:	Cool, $HgCl_2$		
Condition:	Intact		

Target Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Benzene	14.0	0.50
Toluene	1.05	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	1.00
o-Xylene	ND	0.50

Total BTEX	**15.1**

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Trifluorotoluene	105	88 - 110%
Bromofluorobenzene	103	86 - 115%

Reference: Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

Comments:

Analyst

Review

ANALYTICA
ENVIRONMENTAL LABORATORY

807 S. CARLTON • FARMINGTON, NM 87401 • (505) 326-2395

CHAIN OF CUSTODY

0559

Page 1 of 1

PROJECT MANAGER: R. E. O'NEILL
Analytica Lab I.D.:

Company: BLAGG ENGR.
Address:

Phone: 632-1199
Fax:

Bill To: SAME
Company:
Address:

Sample ID	Date	Time	Matrix	Lab ID	ORGANIC ANALYSES: Petroleum Hydrocarbons (418.1)	Gasoline / Diesel (mod. 8015)	Gasoline (GRO)	Aromatic HCs BTEX/MTBE (602/8020)	Chlorinated Hydrocarbons (8010)	SDWA Volatiles (502.1/503.1)	Chlorinated Pesticides / PCBs (608 / 8080)	Herbicides (615 / 8150)	Volatiles GC/MS (624 / 8240 / 8260)	Base / Neutral / Acid GC/MS (625 / 8270)	Polynuclear Aromatic Hydrocarbons (8100)	TCLP Extraction	Other (specify):	WATER ANALYSES: Cation / Anion	Specific Cations (specify):	Specific Anions (specify):	BOD / Fecal / Total Coliform	Solids : TDS / TSS / SS	Nutrients: NH4+ / NO2- / NO3- / TKN	Oil and Grease	Other (specify):	METALS: Priority Pollutants	RCRA Metals (Total)	RCRA Metals TCLP (1311)	Other (specify):	COMMENTS
TH-4	9-23		WATER					✓																					
TH-5	"		"					✓																					
TH-6	"		"					✓																					

Project Information	Sample Receipt
Proj. #:	No. Containers:
Proj Name: Amoco	Custody Seals: Y / N / NA
P.O. No.	Received Intact:
Shipped Via: DEL'D	Received Cold
Required Turnaround Time (Prior Authorization Required for Rush)	
COOPER 6C IE	

Sampled by:	Relinquished by:	Relinquished by:
Signature: R E O'Neill	Signature: R E O'Neill	Signature:
Date: 9-23-96	Date: 9-23-96	Date:
Company: BLAGG	Company: BLAGG	Company:
Time: —	Time:	Time:
Received By:	Received By:	Received By:
Signature:	Signature:	Signature:
Date:	Date:	Date: 9-23-96
Company:	Company:	Company:
Time:	Time:	Time: 1430

Please Fill Out Thoroughly.

Shaded areas for lab use only.

White/Yellow: Analytica
Pink: Client

ANAITAS
ENVIRONMENTAL LABS

September 20, 1996

Bob O'Neill
Blagg Engineering, Inc.
PO Box 87
Bloomfield, NM 87413

Dear Mr. O' Neill:

Enclosed are the results for the analysis of the samples received September 23, 1996. The samples were from the Cooper GC 1E location. Analysis for Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) was performed on the samples, as per the accompanying chain of custody form.

Analysis was performed on the samples according to EPA Method 602, using a Hewlett-Packard 5890 gas chromatograph equipped with an OI Analytical purge and trap (model 4560) and a photoionization detector. Detectable levels of btex analytes were found in the samples, as reported.

Quality control reports appear at the end of the analytical package and can be identified by title. Should you have any questions regarding the analysis, feel free to call.

Sincerely,

Denise A. Bohemier
Lab Director

807 SOUTH CARLTON • FARMINGTON, NM 87401• (505) 326-2395 PH • 326-2486 FAX

PURGEABLE AROMATICS

Quality Control Report

Method Blank Analysis

Sample hydrocarbon: Water
Lab ID: MB35327

Report Date: 09/20/96
Date Analyzed: 09/19/96

Target Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Benzene	ND	0.20
Toluene	ND	0.20
Ethylbenzene	ND	0.20
m,p-Xylenes	ND	0.40
o-Xylene	ND	0.20

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Trifluorotoluene	102	88 - 110%
Bromofluorobenzene	102	86 - 115%

Reference: Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

Comments:

Analyst

Review

Purgeable Aromatics

Duplicate Analysis

Lab ID:	5125Dup	Report Date:	09/20/96
Sample Matrix:	Water	Date Sampled:	09/19/96
Preservative:	Cool, $HgCl_2$	Date Received:	09/19/96
Condition:	Intact	Date Analyzed:	09/19/96

Target Analyte	Original Conc. (ug/L)	Duplicate Conc. (ug/L)	Acceptance Range (ug/L)
Benzene	1,200	1,200	980 - 1,420
Toluene	1.03	0.88	0 - 2.09
Ethylbenzene	4.52	4.26	1.98 - 6.80
m,p-Xylenes	19.9	18.9	NE
o-Xylene	29.1	25.3	NE

ND - Analyte not detected at the stated detection limit.
NA - Not applicable or not calculated.
NE - Duplicate acceptance range not established by the EPA.

	Surrogate	Percent Recovery	Acceptance Limits
Quality Control:	Trifluorotoluene	108	88 - 110%
	Bromofluorobenzene	103	86 - 115%

Reference: Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

Comments:

Analyst

Review

Purgeable Aromatics

Matrix Spike Analysis

Lab ID:	5126Spk	Report Date:	09/20/96
Sample Matrix:	Water	Date Sampled:	09/19/96
Preservative:	Cool, $HgCl_2$	Date Received:	09/19/96
Condition:	Intact	Date Analyzed:	09/19/96

Target Analyte	Spike Added (ug/L)	Original Conc. (ug/L)	Spiked Sample Conc. (ug/L)	% Recovery	Acceptance Limits (%)
Benzene	10	0.99	10.5	95%	39 -150
Toluene	10	0.24	10.2	99%	46 - 148
Ethylbenzene	10	ND	10.0	100%	32 - 160
m,p-Xylenes	20	0.45	20.2	99%	NE
o-Xylene	10	ND	10.1	100%	NE

ND - Analyte not detected at the stated detection limit.
NA - Not applicable or not calculated.
NE - Spike acceptance range not established by the EPA.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Trifluorotoluene	106	88 - 110%
Bromofluorobenzene	102	86 - 115%

Reference: Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

Comments:

Analyst

Review

PURGEABLE AROMATICS

Quality Control Report

Method Blank Analysis

Sample hydrocarbon: Water
Lab ID: MB35332

Report Date: 09/25/96
Date Analyzed: 09/24/96

Target Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	1.00
o-Xylene	ND	0.50

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Trifluorotoluene	102	88 - 110%
Bromofluorobenzene	102	86 - 115%

Reference: Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

Comments:

Analyst

Review

Purgeable Aromatics

Duplicate Analysis

Lab ID:	5132Dup	Report Date:	09/25/96
Sample Matrix:	Water	Date Sampled:	09/23/96
Preservative:	Cool, HgCl2	Date Received:	09/23/96
Condition:	Intact	Date Analyzed:	09/24/96

Target Analyte	Original Conc. (ug/L)	Duplicate Conc. (ug/L)	Acceptance Range (ug/L)
Benzene	0.56	0.49	0 - 1.80
Toluene	1.71	1.45	0.34 - 2.83
Ethylbenzene	4.79	3.98	1.98 - 6.80
m,p-Xylenes	8.39	7.25	NE
o-Xylene	3.56	3.04	NE

ND - Analyte not detected at the stated detection limit.
NA - Not applicable or not calculated.
NE - Duplicate acceptance range not established by the EPA.

	Surrogate	Percent Recovery	Acceptance Limits
Quality Control:	Trifluorotoluene	104	88 - 110%
	Bromofluorobenzene	101	86 - 115%

Reference: Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

Comments:

Analyst

Review

Purgeable Aromatics

Matrix Spike Analysis

Lab ID:	5132Spk	Report Date:	09/25/96
Sample Matrix:	Water	Date Sampled:	09/23/96
Preservative:	Cool, HgCl2	Date Received:	09/23/96
Condition:	Intact	Date Analyzed:	09/24/96

Target Analyte	Spike Added (ug/L)	Original Conc. (ug/L)	Spiked Sample Conc. (ug/L)	% Recovery	Acceptance Limits (%)
Benzene	10	0.56	10.9	103%	39 -150
Toluene	10	1.71	11.5	98%	46 - 148
Ethylbenzene	10	4.79	14.6	98%	32 - 160
m,p-Xylenes	20	8.39	27.9	98%	NE
o-Xylene	10	3.56	13.4	98%	NE

ND - Analyte not detected at the stated detection limit.
NA - Not applicable or not calculated.
NE - Spike acceptance range not established by the EPA.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Trifluorotoluene	107	88 - 110%
Bromofluorobenzene	107	86 - 115%

Reference: Method 602.2, Purgeable Aromatics; Federal Register, Vol. 49, No. 209, Oct. 1984.

Comments:

Analyst

Review

BLAGG ENGINEERING, INC.

MONITOR WELL SAMPLING DATA

CLIENT : AMOCO PRODUCTION CO.

CHAIN-OF-CUSTODY # : 5112

COOPER GC # 1E - SEPARATOR PIT
UNIT J, SEC. 15, T29N, R11W

LABORATORY (S) USED : ENVIROTECH, INC.

Date : June 27, 1997

SAMPLER : N J V

Filename : 06-27-97.WK3

PROJECT MANAGER : N J V

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	VOLUME PURGED (gal.)	FREE PRODUCT (ft)
2	101.88	77.10	24.78	–	–	–	–	–	–
3	101.28	75.09	26.19	30.00	1130	7.4	2,100	2.00	–
4	101.32	73.59	27.73	30.00	1200	7.3	1,200	1.50	–
5	95.22	72.52	22.70	23.68	1220	7.5	1,300	0.50	–

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 # 5 – very poor recovery . Collected BTEX samples for MW # 3, # 4, & # 5 only.

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Blagg / Amoco	Project #:	04034-10
Sample ID:	MW #3	Date Reported:	06-25-97
Chain of Custody:	5112	Date Sampled:	06-23-97
Laboratory Number:	B488	Date Received:	06-24-97
Sample Matrix:	Water	Date Analyzed:	06-24-97
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**14.3**	**1**	**0.2**
Toluene	**29.6**	**1**	**0.2**
Ethylbenzene	**97.9**	**1**	**0.2**
p,m-Xylene	**288**	**1**	**0.2**
o-Xylene	**210**	**1**	**0.1**
Total BTEX	**640**		

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	**98 %**
	Bromofluorobenzene	**101 %**

References: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, July 1992.

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1994.

Comments: **Cooper GC #1E.**

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 8020
AROMATIC VOLATILE ORGANICS

Client:	Blagg / Amoco	Project #:	04034-10
Sample ID:	MW #4	Date Reported:	06-25-97
Chain of Custody:	5112	Date Sampled:	06-23-97
Laboratory Number:	B489	Date Received:	06-24-97
Sample Matrix:	Water	Date Analyzed:	06-24-97
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**1,215**	**10**	**1.8**
Toluene	**71.7**	**10**	**1.7**
Ethylbenzene	**1,620**	**10**	**1.5**
p,m-Xylene	**2,436**	**10**	**2.2**
o-Xylene	**3,290**	**10**	**1.0**
Total BTEX	**8,633**		

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	**99 %**
	Bromofluorobenzene	**100 %**

References: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, July 1992.

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1994.

Comments: **Cooper GC #1E.**

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 8020
AROMATIC VOLATILE ORGANICS

Client:	Blagg / Amoco	Project #:	04034-10
Sample ID:	MW #5	Date Reported:	06-25-97
Chain of Custody:	5112	Date Sampled:	06-23-97
Laboratory Number:	B490	Date Received:	06-24-97
Sample Matrix:	Water	Date Analyzed:	06-24-97
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**1,720**	**10**	**1.8**
Toluene	**635**	**10**	**1.7**
Ethylbenzene	**72.8**	**10**	**1.5**
p,m-Xylene	**435**	**10**	**2.2**
o-Xylene	**530**	**10**	**1.0**
Total BTEX	**3,390**		

ND - Parameter not detected at the stated detection limit.

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

References: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, July 1992.

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1994.

Comments: **Cooper GC #1E.**

Analyst

Review

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

5112

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location	ANALYSIS/PARAMETERS
BLAGG / AMOCO	COOPER GC #1E	

Sampler: (Signature)	Chain of Custody Tape No.
Nelson Velez	04034-10

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	BTEX (8020)						Remarks
MW #3	6/23/97	1130	B488	WATER	2	✓						PRESERV. - COOL & $HgCl_2$
MW #4	6/23/97	1200	B489	WATER	2	✓						" " "
MW #5	6/23/97	1220	B490	WATER	2	✓						" " "
				samples received cool & intact - DA								

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Nelson Velez	6/24/97	0725	Glenna L. Aguirre	6/24/97	0725
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

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

QUALITY ASSURANCE / QUALITY CONTROL

DOCUMENTATION

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 8020
AROMATIC VOLATILE ORGANICS
QUALITY ASSURANCE REPORT

Client:	QA/QC	Project #:	N/A
Sample ID:	Laboratory Blank	Date Reported:	06-25-97
Laboratory Number:	06-24-BTEX.BLANK	Date Sampled:	N/A
Sample Matrix:	Water	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	06-24-97
Condition:	N/A	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	**ND**	**0.2**
Toluene	**ND**	**0.2**
Ethylbenzene	**ND**	**0.2**
p,m-Xylene	**ND**	**0.2**
o-Xylene	**ND**	**0.1**

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	**96 %**
	Bromofluorobenzene	**99 %**

References: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, July 1992.

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1994.

Comments: **QA/QC for samples B486 - B493.**

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 8020
AROMATIC VOLATILE ORGANICS
QUALITY ASSURANCE REPORT

Client:	QA/QC	Project #:	N/A
Sample ID:	Matrix Duplicate	Date Reported:	06-25-97
Laboratory Number:	B487	Date Sampled:	N/A
Sample Matrix:	Water	Date Received:	N/A
Preservative:	HgCl and Cool	Date Analyzed:	06-24-97
Condition:	Cool and Intact	Analysis Requested:	BTEX-8020

Parameter	Sample Result (ug/L)	Duplicate Result (ug/L)	Percent Diff.	Det. Limit (ug/L)	Dilution Factor
Benzene	**ND**	**ND**	**0.0%**	**0.2**	**1**
Toluene	**ND**	**ND**	**0.0%**	**0.2**	**1**
Ethylbenzene	**ND**	**ND**	**0.0%**	**0.2**	**1**
p,m-Xylene	**0.3**	**0.3**	**0.0%**	**0.2**	**1**
o-Xylene	**0.1**	**0.1**	**0.0%**	**0.1**	**1**

ND - Parameter not detected at the stated detection limit.

QA/QC Acceptance Criteria:	Parameter	Maximum Difference
	8020 Compounds	**30 %**

References: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, July 1992.

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1994.

Comments: **QA/QC for samples B486 - B493.**

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 8020
AROMATIC VOLATILE ORGANICS
QUALITY ASSURANCE REPORT

Client:	QA/QC	Project #:	N/A
Sample ID:	Matrix Spike	Date Reported:	06-25-97
Laboratory Number:	B487	Date Sampled:	N/A
Sample Matrix:	Water	Date Received:	N/A
Preservative:	Cool	Date Analyzed:	06-24-97
Condition:	Cool and Intact		

Parameter	Sample Result (ug/L)	Spike Added (ug/L)	Spiked Sample Result (ug/L)	Det. Limit (ug/L)	Percent Recovery	SW-846 % Rec. Accept. Range
Benzene	**ND**	**50.0**	**50.2**	**0.2**	**100%**	**39-150**
Toluene	**ND**	**50.0**	**50.1**	**0.2**	**100%**	**46-148**
Ethylbenzene	**ND**	**50.0**	**51.3**	**0.2**	**102%**	**32-160**
p,m-Xylene	**0.3**	**100**	**100**	**0.2**	**100%**	**46-148**
o-Xylene	**0.1**	**50.0**	**50.8**	**0.1**	**101%**	**46-148**

ND - Parameter not detected at the stated detection limit.

References: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, July 1992.

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1994.

Comments: **QA/QC for samples B486 - B493.**

Analyst

Review

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

BLAGG ENGINEERING, INC.

MONITOR WELL SAMPLING DATA

CLIENT : AMOCO PRODUCTION CO.

CHAIN-OF-CUSTODY # : 5414

COOPER GC # 1E - SEPARATOR PIT
UNIT J, SEC. 15, T29N, R11W

LABORATORY (S) USED : ENVIROTECH, INC.

Date : August 22, 1997

SAMPLER : JCB

Filename : 08-22-97.WK3

PROJECT MANAGER : NJV

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)
TH A			21.94	24.40	1035	–	–	1.25	–
TH B			23.25	27.50	1050			2.25	–
TH C			20.03	23.50	1105			1.75	–
TH D			20.64	24.00	1130			1.75	–

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 ".

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Blagg / AMOCO	Project #:	04034-10
Sample ID:	TH A	Date Reported:	08-25-97
Chain of Custody:	5414	Date Sampled:	08-22-97
Laboratory Number:	B915	Date Received:	08-22-97
Sample Matrix:	Water	Date Analyzed:	08-25-97
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	**0.4**	**1**	**0.2**
Ethylbenzene	**1.1**	**1**	**0.2**
p,m-Xylene	**8.5**	**1**	**0.2**
o-Xylene	**4.9**	**1**	**0.1**
Total BTEX	**14.9**		

ND - Parameter not detected at the stated detection limit.

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

References: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, July 1992.

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1994.

Comments: **Cooper 1E.**

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 8020
AROMATIC VOLATILE ORGANICS

Client:	Blagg / AMOCO	Project #:	04034-10
Sample ID:	TH B	Date Reported:	08-25-97
Chain of Custody:	5414	Date Sampled:	08-22-97
Laboratory Number:	B916	Date Received:	08-22-97
Sample Matrix:	Water	Date Analyzed:	08-25-97
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	**11.3**	**1**	**0.2**
Ethylbenzene	**11.1**	**1**	**0.2**
p,m-Xylene	**9.9**	**1**	**0.2**
o-Xylene	**8.7**	**1**	**0.1**
Total BTEX	**41.0**		

ND - Parameter not detected at the stated detection limit.

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

References: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, July 1992.

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1994.

Comments: **Cooper 1E.**

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 8020
AROMATIC VOLATILE ORGANICS

Client:	Blagg / AMOCO	Project #:	04034-10
Sample ID:	TH C	Date Reported:	08-25-97
Chain of Custody:	5414	Date Sampled:	08-22-97
Laboratory Number:	B917	Date Received:	08-22-97
Sample Matrix:	Water	Date Analyzed:	08-25-97
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**92.8**	**1**	**0.2**
Toluene	**ND**	**1**	**0.2**
Ethylbenzene	**ND**	**1**	**0.2**
p,m-Xylene	**41.9**	**1**	**0.2**
o-Xylene	**37.2**	**1**	**0.1**
Total BTEX	**172**		

ND - Parameter not detected at the stated detection limit.

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

References: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, July 1992.

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1994.

Comments: **Cooper 1E.**

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 8020
AROMATIC VOLATILE ORGANICS

Client:	Blagg / AMOCO	Project #:	04034-10
Sample ID:	TH D	Date Reported:	08-25-97
Chain of Custody:	5414	Date Sampled:	08-22-97
Laboratory Number:	B918	Date Received:	08-22-97
Sample Matrix:	Water	Date Analyzed:	08-25-97
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**10.3**	**1**	**0.2**
Toluene	**2.4**	**1**	**0.2**
Ethylbenzene	**ND**	**1**	**0.2**
p,m-Xylene	**8.2**	**1**	**0.2**
o-Xylene	**3.3**	**1**	**0.1**
Total BTEX	**24.2**		

ND - Parameter not detected at the stated detection limit.

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

References: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, July 1992.

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1994.

Comments: **Cooper 1E.**

Analyst

Review

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

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location
BLAGG/AMOCO	COOPER 1E

Sampler: (Signature)	Chain of Custody Tape No.
J.C. Blagg	07034-10

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	BTEX						Remarks
THA	8-22-97	1035	B915	WATER	2	X						
THB	"	1050	B916	"	2	X						
THC	"	1105	B917	"	2	X						
THD	"	1130	B918	"	2	X						

ANALYSIS/PARAMETERS

Sample received cool & intact pm

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
J.C. Blagg	8/22/97	1418	Dan L. Glenn	8-22-97	1418
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

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

QUALITY ASSURANCE / QUALITY CONTROL

DOCUMENTATION

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 8020
AROMATIC VOLATILE ORGANICS
QUALITY ASSURANCE REPORT

Client:	N/A	Project #:	N/A
Sample ID:	Laboratory Blank	Date Reported:	08-25-97
Laboratory Number:	08-25-BTEX.BLANK	Date Sampled:	N/A
Sample Matrix:	Water	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	08-25-97
Condition:	N/A	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	**ND**	**0.2**
Toluene	**ND**	**0.2**
Ethylbenzene	**ND**	**0.2**
p,m-Xylene	**ND**	**0.2**
o-Xylene	**ND**	**0.1**

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	**98 %**
	Bromofluorobenzene	**99 %**

References: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, July 1992.

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1994.

Comments: **QA/QC for samples B915 - B918.**

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 8020
AROMATIC VOLATILE ORGANICS
QUALITY ASSURANCE REPORT

Client:	QA/QC	Project #:	N/A
Sample ID:	Matrix Duplicate	Date Reported:	08-25-97
Laboratory Number:	B915	Date Sampled:	N/A
Sample Matrix:	Water	Date Received:	N/A
Preservative:	HgCl and Cool	Date Analyzed:	08-25-97
Condition:	Cool and Intact	Analysis Requested:	BTEX-8020

Parameter	Sample Result (ug/L)	Duplicate Result (ug/L)	Percent Diff.	Det. Limit (ug/L)	Dilution Factor
Benzene	**ND**	**ND**	**0.0%**	**0.2**	**1**
Toluene	**0.4**	**0.4**	**0.0%**	**0.2**	**1**
Ethylbenzene	**1.1**	**1.1**	**0.0%**	**0.2**	**1**
p,m-Xylene	**8.5**	**8.3**	**1.4%**	**0.2**	**1**
o-Xylene	**4.9**	**4.9**	**0.0%**	**0.1**	**1**

ND - Parameter not detected at the stated detection limit.

QA/QC Acceptance Criteria:	Parameter	Maximum Difference
	8020 Compounds	**30 %**

References: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, July 1992.

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1994.

Comments: **QA/QC for samples B915 - B918.**

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 8020
AROMATIC VOLATILE ORGANICS
QUALITY ASSURANCE REPORT

Client:	QA/QC	Project #:	N/A
Sample ID:	Matrix Spike	Date Reported:	08-25-97
Laboratory Number:	B915	Date Sampled:	N/A
Sample Matrix:	Water	Date Received:	N/A
Preservative:	Cool	Date Analyzed:	08-25-97
Condition:	Cool and Intact		

Parameter	Sample Result (ug/L)	Spike Added (ug/L)	Spiked Sample Result (ug/L)	Det. Limit (ug/L)	Percent Recovery	SW-846 % Rec. Accept. Range
Benzene	**ND**	**50.0**	**48.6**	**0.2**	**97%**	**39-150**
Toluene	**0.4**	**50.0**	**49.4**	**0.2**	**98%**	**46-148**
Ethylbenzene	**1.1**	**50.0**	**50.5**	**0.2**	**99%**	**32-160**
p,m-Xylene	**8.5**	**100**	**106**	**0.2**	**98%**	**46-148**
o-Xylene	**4.9**	**50.0**	**53.4**	**0.1**	**97%**	**46-148**

ND - Parameter not detected at the stated detection limit.

References: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, July 1992.

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1994.

Comments: **QA/QC for samples B915 - B918.**

Analyst

Review

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

BLAGG ENGINEERING, INC.

MONITOR WELL SAMPLING DATA

CLIENT : AMOCO PRODUCTION CO.

CHAIN–OF–CUSTODY # : 5740

COOPER GC # 1E – SEPARATOR PIT
UNIT J, SEC. 15, T29N, R11W

LABORATORY (S) USED : ENVIROTECH, INC.

Date : April 9, 1998

SAMPLER : N J V

Filename : 04–09–98.WK3

PROJECT MANAGER : N J V

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	VOLUME PURGED (gal.)	FREE PRODUCT (ft)
MW – 2R	94.29	71.62	22.67	26.00	0933	–	–	1.75	–
MW – 3R	97.03	71.44	25.59	34.03	1005	–	–	4.25	–
MW – 5	94.00	70.57	23.43	23.50	–	–	–	–	–
MW – 5R	94.12	–	–	31.00	–	–	–	–	–

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 ".

Collected BTEX & anion / cation samples for MW # 2R & # 3R only .

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Blagg / AMOCO	Project #:	04034-10
Sample ID:	MW # 2R	Date Reported:	04-10-98
Chain of Custody:	5740	Date Sampled:	04-09-98
Laboratory Number:	D092	Date Received:	04-09-98
Sample Matrix:	Water	Date Analyzed:	04-10-98
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**2.4**	**1**	**0.2**
Toluene	**9.9**	**1**	**0.2**
Ethylbenzene	**2.7**	**1**	**0.2**
p,m-Xylene	**13.1**	**1**	**0.2**
o-Xylene	**3.1**	**1**	**0.1**
Total BTEX	**31.2**		

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: **Cooper GC # 1E.**

Analyst

Review

5796 U.S. Highway 64 • 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 # 3R	Date Reported:	04-10-98
Chain of Custody:	5740	Date Sampled:	04-09-98
Laboratory Number:	D093	Date Received:	04-09-98
Sample Matrix:	Water	Date Analyzed:	04-10-98
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**43.3**	**1**	**0.2**
Toluene	**222**	**1**	**0.2**
Ethylbenzene	**8.3**	**1**	**0.2**
p,m-Xylene	**108**	**1**	**0.2**
o-Xylene	**26.6**	**1**	**0.1**
Total BTEX	**410**		

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: **Cooper GC # 1E.**

Analyst

Review

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

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

CATION / ANION ANALYSIS

Client:	Blagg / AMOCO	Project #:	04034-10
Sample ID:	MW # 2R	Date Reported:	04-10-98
Laboratory Number:	D092	Date Sampled:	04-09-98
Chain of Custody:	5740	Date Received:	04-09-98
Sample Matrix:	Water	Date Extracted:	N/A
Preservative:	Cool	Date Analyzed:	04-10-98
Condition:	Cool & Intact		

Parameter	Analytical Result	Units		Units
pH	**6.58**	s.u.		
Conductivity @ 25° C	**1,200**	umhos/cm		
Total Dissolved Solids @ 180C	**590**	mg/L		
Total Dissolved Solids (Calc)	**586**	mg/L		
SAR	**0.0**	ratio		
Total Alkalinity as CaCO3	**235**	mg/L		
Total Hardness as CaCO3	**464**	mg/L		
Bicarbonate as HCO3	**235**	mg/L	3.85	meq/L
Carbonate as CO3	**<1**	mg/L	0.00	meq/L
Hydroxide as OH	**<1**	mg/L	0.00	meq/L
Nitrate Nitrogen	**0.1**	mg/L	0.00	meq/L
Nitrite Nitrogen	**<0.001**	mg/L	0.00	meq/L
Chloride	**46.9**	mg/L	1.32	meq/L
Fluoride	**0.85**	mg/L	0.04	meq/L
Phosphate	**0.9**	mg/L	0.03	meq/L
Sulfate	**202**	mg/L	4.21	meq/L
Calcium	**185**	mg/L	9.23	meq/L
Magnesium	**<0.1**	mg/L	0.00	meq/L
Potassium	**5.03**	mg/L	0.13	meq/L
Sodium	**2.2**	mg/L	0.10	meq/L
Cations			9.46	meq/L
Anions			9.46	meq/L
Cation/Anion Difference			**0.01%**	

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments: **Cooper GC # 1E.**

Analyst

Review

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

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

CATION / ANION ANALYSIS

Client:	Blagg / AMOCO	Project #:	04034-10
Sample ID:	MW # 3R	Date Reported:	04-10-98
Laboratory Number:	D093	Date Sampled:	04-09-98
Chain of Custody:	5740	Date Received:	04-09-98
Sample Matrix:	Water	Date Extracted:	N/A
Preservative:	Cool	Date Analyzed:	04-10-98
Condition:	Cool & Intact		

Parameter	Analytical Result	Units		Units
pH	**7.13**	s.u.		
Conductivity @ 25° C	**15,600**	umhos/cm		
Total Dissolved Solids @ 180C	**7,800**	mg/L		
Total Dissolved Solids (Calc)	**7,780**	mg/L		
SAR	**26.0**	ratio		
Total Alkalinity as CaCO3	**346**	mg/L		
Total Hardness as CaCO3	**1,156**	mg/L		
Bicarbonate as HCO3	**346**	mg/L	5.67	meq/L
Carbonate as CO3	**<1**	mg/L	0.00	meq/L
Hydroxide as OH	**<1**	mg/L	0.00	meq/L
Nitrate Nitrogen	**21.1**	mg/L	0.34	meq/L
Nitrite Nitrogen	**0.064**	mg/L	0.00	meq/L
Chloride	**23.1**	mg/L	0.65	meq/L
Fluoride	**1.87**	mg/L	0.10	meq/L
Phosphate	**0.5**	mg/L	0.02	meq/L
Sulfate	**5,035**	mg/L	104.83	meq/L
Calcium	**425**	mg/L	21.21	meq/L
Magnesium	**22.9**	mg/L	1.88	meq/L
Potassium	**10.1**	mg/L	0.26	meq/L
Sodium	**2,030**	mg/L	88.31	meq/L
Cations			111.66	meq/L
Anions			111.61	meq/L
Cation/Anion Difference			**0.04%**	

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments: **Cooper GC # 1E.**

Analyst

Review

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

5740

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location	ANALYSIS/PARAMETERS
BLAGG / AMOCO	COOPER GC #1E	

Sampler: (Signature) Nelson Velez

Chain of Custody Tape No.

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	BTEX (8021)	ANION/CATION					Remarks
												ANION/CATION PRESERV - COOL ONLY
MW # 2R	4/9/98	0933	D092	WATER	3	✓	✓					
												BTEX PRESERV. -
MW # 3R	4/9/98	1005	D093	WATER	3	✓	✓					$HgCl_2$ & COOL
				SAMPLES	RECEIVED	COOL & INTACT						

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Nelson Velez	4/9/98	1031	Donna L. Ogden	4.9.98	1031
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

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:	04-10-BTEX QA/QC	Date Reported:	04-10-98
Laboratory Number:	D092	Date Sampled:	N/A
Sample Matrix:	Water	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	04-10-98
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	4.8757E-05	4.9803E-05	2.15%	ND	0.2
Toluene	5.4539E-05	5.5938E-05	2.56%	ND	0.2
Ethylbenzene	6.1355E-05	6.3123E-05	2.88%	ND	0.2
p,m-Xylene	4.9248E-05	5.0771E-05	3.09%	ND	0.2
o-Xylene	5.8524E-05	5.9657E-05	1.94%	ND	0.1

Duplicate Conc. (ug/L)	Sample	Duplicate	%Diff.	Accept Limit
Benzene	2.4	2.4	0.0%	0 - 30%
Toluene	9.9	9.9	0.0%	0 - 30%
Ethylbenzene	2.7	2.7	0.0%	0 - 30%
p,m-Xylene	13.1	13.1	0.0%	0 - 30%
o-Xylene	3.1	3.1	0.0%	0 - 30%

Spike Conc. (ug/L)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Limits
Benzene	2.4	50.0	52.3	100%	39 - 150
Toluene	9.9	50.0	59.3	99%	46 - 148
Ethylbenzene	2.7	50.0	52.5	100%	32 - 160
p,m-Xylene	13.1	100.0	112	99%	46 - 148
o-Xylene	3.1	50.0	53.0	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 D092 - D093.**

Analyst

Review

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

BLAGG ENGINEERING, INC.

MONITOR WELL SAMPLING DATA

CLIENT : AMOCO PRODUCTION CO.

CHAIN-OF-CUSTODY # : 6007

COOPER GC # 1E - SEPARATOR PIT
UNIT J, SEC. 15, T29N, R11W

LABORATORY (S) USED : ENVIROTECH, INC.

Date : May 30, 1998

SAMPLER : N J V

Filename : 05-30-98.WK3

PROJECT MANAGER : N J V

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING	pH TIME	CONDUCT (umhos)	VOLUME PURGED (gal.)	FREE PRODUCT (ft)
MW - 2R	94.29	71.32	22.97	26.00	-	-	-	-	-
MW - 3R	97.03	71.55	25.48	34.03	0830	7.2	5,900	4.25	-
MW - 5	-	-	-	23.50	-	-	-	-	-
MW - 5R	94.12	64.09	30.03	31.00	0800	7.3	2,500	4.50	-

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 ".

Collected BTEX samples for MW # 3R & # 5R. Sampled first bail of MW # 5R .

Redrilled MW # 5 - June 5, 1998 . Dry hole recorded June 5, 1998 @ 2:45 pm .

TD = 24.00 ft. TOC = 1.00 ft. ags . 15 ft. screen, 10 ft. casing .

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Blagg / AMOCO	Project #:	04034-10
Sample ID:	MW #3R	Date Reported:	06-01-98
Chain of Custody:	6007	Date Sampled:	05-30-98
Laboratory Number:	D322	Date Received:	06-01-98
Sample Matrix:	Water	Date Analyzed:	06-01-98
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**110**	**1**	**0.2**
Toluene	**81.3**	**1**	**0.2**
Ethylbenzene	**1.5**	**1**	**0.2**
p,m-Xylene	**20.4**	**1**	**0.2**
o-Xylene	**3.8**	**1**	**0.1**
Total BTEX	**217**		

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: **Cooper GC #1E.**

Analyst

Review

5796 U.S. Highway 64 • 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 #5R	Date Reported:	06-01-98
Chain of Custody:	6007	Date Sampled:	05-30-98
Laboratory Number:	D323	Date Received:	06-01-98
Sample Matrix:	Water	Date Analyzed:	06-01-98
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**1.1**	**1**	**0.2**
Toluene	**1.1**	**1**	**0.2**
Ethylbenzene	**1.0**	**1**	**0.2**
p,m-Xylene	**1.3**	**1**	**0.2**
o-Xylene	**0.7**	**1**	**0.1**
Total BTEX	**5.2**		

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: **Cooper GC #1E.**

Analyst

Review

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

CHAIN OF CUSTODY RECORD

6007

Client / Project Name	Project Location	ANALYSIS / PARAMETERS
BLAGG / AMOCO	COOPER GC #1E	
Sampler: NJV	**Client No.** 04034-10	

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	BTEX (8021)						Remarks
												PRESERV - $HgCl_2$ & COOL
MW #3R	5/30/98	0830	D322	WATER	2	✓						
MW #5R	5/30/98	0800	D323	WATER	2	✓						

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
[signature]	6/1/98	0710	[signature]	6.1.98	0710
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

RP COC'S 6004-6005
6007-6008

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	✓		

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:	06-01-BTEX QA/QC	Date Reported:	06-01-98
Laboratory Number:	D317	Date Sampled:	N/A
Sample Matrix:	Water	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	06-01-98
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	1.5028E-02	1.11%	ND	0.2
Toluene	2.2878E-02	2.2993E-02	0.50%	ND	0.2
Ethylbenzene	1.0578E-02	1.0663E-02	0.81%	ND	0.2
p,m-Xylene	8.4559E-03	8.5672E-03	1.32%	ND	0.2
o-Xylene	8.7385E-03	8.8357E-03	1.11%	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	3.4	3.3	2.9%	0 - 30%
Toluene	1.6	1.6	0.0%	0 - 30%
Ethylbenzene	3.0	3.0	0.0%	0 - 30%
p,m-Xylene	37.4	36.9	1.3%	0 - 30%
o-Xylene	6.7	6.7	0.0%	0 - 30%

Spike Conc. (ug/L)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Limits
Benzene	3.4	50.0	53.2	100%	39 - 150
Toluene	1.6	50.0	51.5	100%	46 - 148
Ethylbenzene	3.0	50.0	52.9	100%	32 - 160
p,m-Xylene	37.4	100.0	135.2	98%	46 - 148
o-Xylene	6.7	50.0	56.4	99%	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 D317 - D324.**

Analyst

Review

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

BLAGG ENGINEERING, INC.

MONITOR WELL SAMPLING DATA

CLIENT : AMOCO PRODUCTION CO.

CHAIN-OF-CUSTODY # : 6300

COOPER GC # 1E - SEPARATOR PIT
UNIT J, SEC. 15, T29N, R11W

LABORATORY (S) USED : ENVIROTECH, INC.

Date : September 29, 1998

SAMPLER : N J V

Filename : 09-29-98.WK3

PROJECT MANAGER : N J V

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING	pH TIME	CONDUCT (umhos)	VOLUME PURGED (gal.)	FREE PRODUCT (ft)
MW - 2R	94.29	74.29	20.00	26.00	-	-	-	-	-
MW - 3R	97.03	75.87	21.16	34.03	1410	7.2	2,900	6.50	-
MW - 5	94.00	72.60	21.40	23.50	-	-	-	-	-
MW - 5R	94.12	72.08	22.04	31.00	1345	7.0	3,200	4.50	-

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 ".

Collected BTEX samples for MW # 3R & # 5R .

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Blagg / AMOCO	Project #:	04034-10
Sample ID:	MW #3R	Date Reported:	10-01-98
Chain of Custody:	6301	Date Sampled:	09-29-98
Laboratory Number:	E001	Date Received:	09-30-98
Sample Matrix:	Water	Date Analyzed:	09-30-98
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**895**	**1**	**0.2**
Toluene	**587**	**1**	**0.2**
Ethylbenzene	**165**	**1**	**0.2**
p,m-Xylene	**686**	**1**	**0.2**
o-Xylene	**233**	**1**	**0.1**
Total BTEX	**2,570**		

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: **Cooper GC #1E.**

Analyst

Review

5796 U.S. Highway 64 • 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 #5R	Date Reported:	10-01-98
Chain of Custody:	6301	Date Sampled:	09-29-98
Laboratory Number:	E002	Date Received:	09-30-98
Sample Matrix:	Water	Date Analyzed:	09-30-98
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**4.7**	**1**	**0.2**
Toluene	**2.3**	**1**	**0.2**
Ethylbenzene	**ND**	**1**	**0.2**
p,m-Xylene	**22.5**	**1**	**0.2**
o-Xylene	**6.7**	**1**	**0.1**
Total BTEX	**36.2**		

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: **Cooper GC #1E.**

Analyst

Review

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

CHAIN OF CUSTODY RECORD

63U1

Client / Project Name	Project Location
BLAGG / AMOCO	COOPER GC #1E
Sampler: NJV	Client No. 04034-10

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	BTEX (8021)						Remarks
MW #3R	9/29/98	1410	E001	WATER	2	✓						PRESERV. - COOL
MW #5R	9/29/98	1345	E002	WATER	2	✓						PRESERV. - COOL

ANALYSIS / PARAMETERS

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Nelson Velez	9/30/98	0700	Debra L. Alpine	9.30.98	0700
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

RP COC's 6300 - 6301

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	✓		

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	N/A	Project #:	N/A
Sample ID:	09-30-BTEX QA/QC	Date Reported:	10-01-98
Laboratory Number:	D996	Date Sampled:	N/A
Sample Matrix:	Soil	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	09-30-98
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	5.7865E-002	5.8051E-002	0.3%	ND	0.2
Toluene	1.8978E-002	1.9042E-002	0.3%	ND	0.2
Ethylbenzene	2.0822E-002	2.0902E-002	0.4%	ND	0.2
p,m-Xylene	1.6870E-002	1.6955E-002	0.5%	ND	0.2
o-Xylene	1.7776E-002	1.7829E-002	0.3%	ND	0.1

Duplicate Conc. (ug/Kg)	Sample	Duplicate	%Diff.	Accept Range	Detect. Limit
Benzene	498	504	0.9%	0 - 30%	8.8
Toluene	3,400	3,430	0.9%	0 - 30%	8.4
Ethylbenzene	2,920	2,940	0.7%	0 - 30%	7.6
p,m-Xylene	12,720	12,850	1.0%	0 - 30%	10.8
o-Xylene	6,210	6,310	1.6%	0 - 30%	5.2

Spike Conc. (ug/Kg)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Range
Benzene	498	50.0	542	100%	39 - 150
Toluene	3,400	50.0	3,410	100%	46 - 148
Ethylbenzene	2,920	50.0	2,940	99%	32 - 160
p,m-Xylene	12,720	100	12,580	99%	46 - 148
o-Xylene	6,210	50.0	6,190	99%	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 D996, D998 - E002 and E004 - E007.**

Analyst

Review

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

BLAGG ENGINEERING, INC.

MONITOR WELL SAMPLING DATA

CLIENT : AMOCO PRODUCTION CO.

CHAIN-OF-CUSTODY # : 6430

COOPER GC # 1E - SEPARATOR PIT
UNIT J, SEC. 15, T29N, R11W

LABORATORY (S) USED : ENVIROTECH, INC.

Date : December 18, 1998

Filename : 12-18-98.WK3

SAMPLER : N J V

PROJECT MANAGER : N J V

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING	pH TIME	CONDUCT (umhos)	VOLUME PURGED (gal.)	FREE PRODUCT (ft)
MW - 2R	94.29	74.37	19.92	26.00	-	-	-	-	-
MW - 3R	97.03	74.99	22.04	34.03	1100	7.6	6,000	6.00	-
MW - 5	94.00	72.26	21.74	23.50	-	-	-	-	-
MW - 5R	94.12	71.78	22.34	31.00	1025	7.1	3,100	4.25	-

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 ".

Collected BTEX samples for MW # 3R & # 5R .

P & S reclamation system operating @ time of sampling .

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Blagg / AMOCO	Project #:	04034-10
Sample ID:	MW #3 R	Date Reported:	12-22-98
Chain of Custody:	6430	Date Sampled:	12-18-98
Laboratory Number:	E413	Date Received:	12-21-98
Sample Matrix:	Water	Date Analyzed:	12-22-98
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**301**	**1**	**0.2**
Toluene	**44.2**	**1**	**0.2**
Ethylbenzene	**49.9**	**1**	**0.2**
p,m-Xylene	**140**	**1**	**0.2**
o-Xylene	**29.6**	**1**	**0.1**
Total BTEX	**565**		

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: **Cooper GC #1 E.**

Analyst

Review

5796 U.S. Highway 64 • 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 #5 R	Date Reported:	12-22-98
Chain of Custody:	6430	Date Sampled:	12-18-98
Laboratory Number:	E414	Date Received:	12-21-98
Sample Matrix:	Water	Date Analyzed:	12-22-98
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**9.1**	**1**	**0.2**
Toluene	**1.4**	**1**	**0.2**
Ethylbenzene	**0.8**	**1**	**0.2**
p,m-Xylene	**3.6**	**1**	**0.2**
o-Xylene	**0.9**	**1**	**0.1**
Total BTEX	**15.8**		

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: **Cooper GC #1 E.**

Analyst

Review

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

CHAIN OF CUSTODY RECORD

6450

Client / Project Name			Project Location		ANALYSIS / PARAMETERS							
BLAGG / AMOCO			COOPER GC #1E									
Sampler: REP			Client No. 04034-10									
Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	BTEX (8021)						Remarks
MW #3R	12/18/98	1100	E443	WATER	2	✓						PRESERV. - HgCl2 + COOL
MW #5R	12/18/98	1025	E414	WATER	2	✓						"

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
[signature]	12/21/98	0949	[signature]	12.21.98	0949
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

Ref COC 6430 - 6431

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	✓		

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:	12-22-BTEX QA/QC	Date Reported:	12-22-98
Laboratory Number:	E413	Date Sampled:	N/A
Sample Matrix:	Water	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	12-22-98
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	301	301	0.0%	0 - 30%
Toluene	44.2	44.5	0.7%	0 - 30%
Ethylbenzene	49.9	50.3	0.8%	0 - 30%
p,m-Xylene	140	146	4.2%	0 - 30%
o-Xylene	29.6	29.8	0.7%	0 - 30%

Spike Conc. (ug/L)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Limits
Benzene	301	50.0	341	97%	39 - 150
Toluene	44.2	50.0	92.5	98%	46 - 148
Ethylbenzene	49.9	50.0	98.0	98%	32 - 160
p,m-Xylene	140	100.0	234	97%	46 - 148
o-Xylene	29.6	50.0	78.7	99%	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 E413 - E418.**

Analyst

Review

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

BLAGG ENGINEERING, INC.

MONITOR WELL SAMPLING DATA

CLIENT : AMOCO PRODUCTION CO.

CHAIN-OF-CUSTODY # : 6612

COOPER GC # 1E - SEPARATOR PIT
UNIT J, SEC. 15, T29N, R11W

LABORATORY (S) USED : ENVIROTECH, INC.

Date : February 18, 1999

SAMPLER : N J V

Filename : 02-18-99.WK4

PROJECT MANAGER : N J V

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	VOLUME PURGED (gal.)	FREE PRODUCT (ft)
MW - 2R	94.29	73.33	20.96	26.00	-	-	-	-	-
MW - 3R	97.03	73.41	23.62	34.03	1250	7.3	4,300	5.10	-
MW - 5	-	-	-	23.50	-	-	-	-	-
MW - 5R	94.12	70.20	23.92	31.00	1220	6.9	2,400	3.50	-

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 ".

Collected BTEX samples for MW # 3R & # 5R .

BEI reclamation system operating @ time of sampling .

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Blagg / AMOCO	Project #:	403410
Sample ID:	MW # 3R	Date Reported:	02-19-99
Chain of Custody:	6612	Date Sampled:	02-18-99
Laboratory Number:	E677	Date Received:	02-18-99
Sample Matrix:	Water	Date Analyzed:	02-19-99
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**329**	**1**	**0.2**
Toluene	**125**	**1**	**0.2**
Ethylbenzene	**94.8**	**1**	**0.2**
p,m-Xylene	**204**	**1**	**0.2**
o-Xylene	**54.5**	**1**	**0.1**
Total BTEX	**807**		

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: **Cooper GC 1E.**

Analyst

Review

5796 U.S. Highway 64 • 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 #:	403410
Sample ID:	MW # 5R	Date Reported:	02-19-99
Chain of Custody:	6612	Date Sampled:	02-18-99
Laboratory Number:	E678	Date Received:	02-18-99
Sample Matrix:	Water	Date Analyzed:	02-19-99
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**3.0**	**1**	**0.2**
Toluene	**1.8**	**1**	**0.2**
Ethylbenzene	**0.5**	**1**	**0.2**
p,m-Xylene	**3.1**	**1**	**0.2**
o-Xylene	**1.6**	**1**	**0.1**
Total BTEX	**10.0**		

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: **Cooper GC 1E.**

Analyst

Review

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

CHAIN OF CUSTODY RECORD

6612

Client / Project Name: BLAGG / AMOCO	Project Location: COOPER GC 1E
Sampler: NJV	Client No.: 04034-10

ANALYSIS / PARAMETERS

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	BTEX (8021)					Remarks
MW #3R	2/18/99	1250	E677	WATER	2	✓					BOTH SAMPLES - PRESERV. - $HgCl_2$ & COOL
MW #5R	2/18/99	1220	E678	WATER	2	✓					

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
[signature]	2/18/99	1435	[signature]	2.18.99	1435
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	✓		

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:	02-19-BTEX QA/QC	Date Reported:	02-19-99
Laboratory Number:	E674	Date Sampled:	N/A
Sample Matrix:	Water	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	02-19-99
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	7.9975E-002	8.0232E-002	0.32%	ND	0.2
Toluene	7.5726E-002	7.5741E-002	0.02%	ND	0.2
Ethylbenzene	5.3049E-002	5.3112E-002	0.12%	ND	0.2
p,m-Xylene	4.6305E-002	4.6314E-002	0.02%	ND	0.2
o-Xylene	4.6122E-002	4.6261E-002	0.30%	ND	0.1

Duplicate Conc. (ug/L)	Sample	Duplicate	%Diff.	Accept Limit
Benzene	1.5	1.5	0.0%	0 - 30%
Toluene	1.5	1.4	6.7%	0 - 30%
Ethylbenzene	5.5	5.3	3.6%	0 - 30%
p,m-Xylene	45.7	45.8	0.2%	0 - 30%
o-Xylene	9.5	9.2	3.2%	0 - 30%

Spike Conc. (ug/L)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Limits
Benzene	1.5	50.0	51.5	100%	39 - 150
Toluene	1.5	50.0	51.4	100%	46 - 148
Ethylbenzene	5.5	50.0	55.3	100%	32 - 160
p,m-Xylene	45.7	100.0	143.6	99%	46 - 148
o-Xylene	9.5	50.0	59.0	99%	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 E674 - E678.**

Analyst

Review

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

BLAGG ENGINEERING, INC.

MONITOR WELL SAMPLING DATA

CLIENT : AMOCO PRODUCTION CO.

CHAIN-OF-CUSTODY # : 6670

COOPER GC # 1E - SEPARATOR PIT
UNIT J, SEC. 15, T29N, R11W

LABORATORY (S) USED : ENVIROTECH, INC.

Date : May 27, 1999

SAMPLER : N J V

Filename : 05-27-99.WK4

PROJECT MANAGER : N J V

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	VOLUME PURGED (gal.)	FREE PRODUCT (ft)
MW - 2R	94.29	78.22	16.07	26.00	-	-	-	-	-
MW - 3R	97.03	75.66	21.37	34.03	1005	6.9	1,200	6.25	-
MW - 5	-	-	-	23.50	-	-	-	-	-
MW - 5R	94.12	73.75	20.37	31.00	0925	7.4	1,200	5.25	-

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 ".

Collected BTEX samples for MW # 3R & # 5R .

BEI reclamation system not operating @ time of sampling .

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Blagg / AMOCO	Project #:	403410
Sample ID:	MW # 3R	Date Reported:	05-27-99
Chain of Custody:	6670	Date Sampled:	05-27-99
Laboratory Number:	F408	Date Received:	05-27-99
Sample Matrix:	Water	Date Analyzed:	05-27-99
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**628**	**10**	**1.8**
Toluene	**733**	**10**	**1.7**
Ethylbenzene	**106**	**10**	**1.5**
p,m-Xylene	**281**	**10**	**2.2**
o-Xylene	**112**	**10**	**1.0**
Total BTEX	**1,860**		

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: **Cooper GC # 1E.**

Analyst

Review

5796 U.S. Highway 64 • 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 #:	403410
Sample ID:	MW # 5R	Date Reported:	05-27-99
Chain of Custody:	6670	Date Sampled:	05-27-99
Laboratory Number:	F409	Date Received:	05-27-99
Sample Matrix:	Water	Date Analyzed:	05-27-99
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**20.3**	**1**	**0.2**
Toluene	**22.7**	**1**	**0.2**
Ethylbenzene	**2.1**	**1**	**0.2**
p,m-Xylene	**20.2**	**1**	**0.2**
o-Xylene	**10.6**	**1**	**0.1**
Total BTEX	**75.9**		

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: **Cooper GC # 1E.**

Analyst

Review

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

CHAIN OF CUSTODY RECORD

66/0

Client / Project Name	Project Location	ANALYSIS / PARAMETERS
BLAGG / AMOCO	COOPER GC #1E	
Sampler: NJV	Client No. 04034-10	

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	BTEX (8021)						Remarks
												BOTH SAMPLES PRESERV. HgCl2 & COOL
MW #3R	5/27/99	1005	F408	WATER	2	✓						
MW #5R	5/27/99	0925	F409	WATER	2	✓						

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
[signature]	5/27/99	11:14	[signature]	5.27.99	11:14
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	✓		

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:	05-27-BTEX QA/QC	Date Reported:	05-27-99
Laboratory Number:	F398	Date Sampled:	N/A
Sample Matrix:	Water	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	05-27-99
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	1.6360E-002	1.6412E-002	0.32%	ND	0.2
Toluene	1.7563E-002	1.7566E-002	0.02%	ND	0.2
Ethylbenzene	7.1313E-003	7.1398E-003	0.12%	ND	0.2
p,m-Xylene	8.5740E-003	8.5758E-003	0.02%	ND	0.2
o-Xylene	7.9281E-003	7.9520E-003	0.30%	ND	0.1

Duplicate Conc. (ug/L)	Sample	Duplicate	%Diff.	Accept Limit
Benzene	78.9	79.0	0.1%	0 - 30%
Toluene	22.0	22.2	0.9%	0 - 30%
Ethylbenzene	51.6	52.1	1.0%	0 - 30%
p,m-Xylene	207	216	4.4%	0 - 30%
o-Xylene	66.9	67.4	0.7%	0 - 30%

Spike Conc. (ug/L)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Limits
Benzene	78.9	50.0	128	99%	39 - 150
Toluene	22.0	50.0	72.0	100%	46 - 148
Ethylbenzene	51.6	50.0	102	100%	32 - 160
p,m-Xylene	207	100.0	305	99%	46 - 148
o-Xylene	66.9	50.0	117	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 F398 - F400, F405 - F406 and F408 - F409.**

Analyst

Review

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

BLAGG ENGINEERING, INC.

MONITOR WELL SAMPLING DATA

CLIENT : AMOCO PRODUCTION CO.

CHAIN-OF-CUSTODY # : 6698

COOPER GC # 1E - SEPARATOR PIT
UNIT J, SEC. 15, T29N, R11W

LABORATORY (S) USED : ENVIROTECH, INC.

Date : August 23, 1999

SAMPLER : N J V

Filename : 08-23-99.WK4

PROJECT MANAGER : N J V

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	VOLUME PURGED (gal.)	FREE PRODUCT (ft)
MW - 2R	94.29	79.68	14.61	26.00	-	-	-	-	-
MW - 3R	97.03	78.70	18.33	34.03	0945	7.0	1,100	7.75	-
MW - 5	-	-	-	23.50	-	-	-	-	-
MW - 5R	94.12	76.19	17.93	31.00	0905	7.0	1,600	6.50	-

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 ".

Collected BTEX samples for MW # 3R & # 5R . DTW @ # 3R = 22.7 ft. during collection .

BEI reclamation system running, but not operating @ time of sampling .

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Blagg / AMOCO	Project #:	403410
Sample ID:	MW #3R	Date Reported:	08-24-99
Chain of Custody:	6698	Date Sampled:	08-23-99
Laboratory Number:	F965	Date Received:	08-23-99
Sample Matrix:	Water	Date Analyzed:	08-24-99
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**270**	**1**	**0.2**
Toluene	**33.7**	**1**	**0.2**
Ethylbenzene	**85.4**	**1**	**0.2**
p,m-Xylene	**215**	**1**	**0.2**
o-Xylene	**74.0**	**1**	**0.1**
Total Xylene	**289**		
Total BTEX	**678**		

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: **Cooper GC #1 E.**

Analyst

Review

5796 U.S. Highway 64 • 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 #:	403410
Sample ID:	MW #5R	Date Reported:	08-24-99
Chain of Custody:	6698	Date Sampled:	08-23-99
Laboratory Number:	F964	Date Received:	08-23-99
Sample Matrix:	Water	Date Analyzed:	08-24-99
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**1.0**	**1**	**0.2**
Toluene	**2.4**	**1**	**0.2**
Ethylbenzene	**0.2**	**1**	**0.2**
p,m-Xylene	**8.6**	**1**	**0.2**
o-Xylene	**2.7**	**1**	**0.1**
Total Xylene	**11.3**		
Total BTEX	**14.9**		

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: **Cooper GC #1 E.**

Analyst

Review

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

CHAIN OF CUSTODY RECORD

665

Client / Project Name	Project Location
BLAGG/AMOCO	COOPER GC #1E
Sampler: NJV	Client No. 403410

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	BTEX (8021)						Remarks
MW #5R	8/23/99	0905	F964	WATER	2	✓						BOTH SAMPLES PRESERV. - $HgCl_2$ & COOL
MW #3R	8/23/99	0945	F965	WATER	2	✓						

ANALYSIS / PARAMETERS

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Nelson Velez	8/23/99	1346	Dawn L. Ogburn	8.23.99	1346
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	✓		

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:	08-24-BTEX QA/QC	Date Reported:	08-24-99
Laboratory Number:	F964	Date Sampled:	N/A
Sample Matrix:	Water	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	08-24-99
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	3.6219E-001	3.6335E-001	0.32%	ND	0.2
Toluene	2.7867E-002	2.7872E-002	0.02%	ND	0.2
Ethylbenzene	4.1931E-002	4.1981E-002	0.12%	ND	0.2
p,m-Xylene	3.6569E-002	3.6576E-002	0.02%	ND	0.2
o-Xylene	3.1955E-002	3.2051E-002	0.30%	ND	0.1

Duplicate Conc. (ug/L)	Sample	Duplicate	%Diff.	Accept Limit
Benzene	1.0	1.0	0.0%	0 - 30%
Toluene	2.4	2.4	0.0%	0 - 30%
Ethylbenzene	0.2	0.2	0.0%	0 - 30%
p,m-Xylene	8.6	8.9	3.5%	0 - 30%
o-Xylene	2.7	2.7	0.0%	0 - 30%

Spike Conc. (ug/L)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Limits
Benzene	1.0	50.0	51.1	100%	39 - 150
Toluene	2.4	50.0	52.5	100%	46 - 148
Ethylbenzene	0.2	50.0	50.2	100%	32 - 160
p,m-Xylene	8.6	100.0	109	100%	46 - 148
o-Xylene	2.7	50.0	52.8	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 F964 - F969.**

Analyst

Review

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

BLAGG ENGINEERING, INC.

MONITOR WELL SAMPLING DATA

CLIENT : AMOCO PRODUCTION CO.

CHAIN-OF-CUSTODY # : 7448

COOPER GC # 1E - SEPARATOR PIT
UNIT J, SEC. 15, T29N, R11W

LABORATORY (S) USED : ENVIROTECH, INC.

Date : December 6, 1999

SAMPLER : N J V

Filename : 12-06-99.WK4

PROJECT MANAGER : N J V

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	VOLUME PURGED (gal.)	FREE PRODUCT (ft)
MW - 2R	94.29	80.64	13.65	26.00	-	-	-	-	-
MW - 3R	97.03	79.21	17.82	34.03	1050	7.1	1,200	8.00	-
MW - 5	-	-	-	23.50	-	-	-	-	-
MW - 5R	94.12	77.07	17.05	31.00	1130	7.0	1,800	7.00	-

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 ".

Collected BTEX samples for MW # 3R & # 5R . DTW @ # 3R = 20.0 ft. during collection .

BEI reclamation system not operating @ time of sampling .

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Blagg / AMOCO	Project #:	403410
Sample ID:	MW # 3R	Date Reported:	12-07-99
Chain of Custody:	7448	Date Sampled:	12-06-99
Laboratory Number:	G542	Date Received:	12-06-99
Sample Matrix:	Water	Date Analyzed:	12-06-99
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**103**	**1**	**0.2**
Toluene	**410**	**1**	**0.2**
Ethylbenzene	**98.5**	**1**	**0.2**
p,m-Xylene	**786**	**1**	**0.2**
o-Xylene	**219**	**1**	**0.1**
Total Xylene	**1,010**		
Total BTEX	**1,620**		

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: **Cooper GC # 1E.**

Analyst

Review

5796 U.S. Highway 64 • 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 #:	403410
Sample ID:	MW # 5R	Date Reported:	12-07-99
Chain of Custody:	7448	Date Sampled:	12-06-99
Laboratory Number:	G543	Date Received:	12-06-99
Sample Matrix:	Water	Date Analyzed:	12-06-99
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**5.4**	**1**	**0.2**
Toluene	**ND**	**1**	**0.2**
Ethylbenzene	**ND**	**1**	**0.2**
p,m-Xylene	**25.1**	**1**	**0.2**
o-Xylene	**25.8**	**1**	**0.1**
Total Xylene	**50.9**		
Total BTEX	**56.3**		

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: **Cooper GC # 1E.**

Analyst

Review

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

CHAIN OF CUSTODY RECORD

7448

Client / Project Name	Project Location
BLAGG / AMOCO	COOPER GC #1E
Sampler: NJV	Client No. 40340

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	BTEX (8021)						Remarks
MW #3R	12/6/99	1050	G542	WATER	2	✓						BOTH SAMPLES
			G542B CV									PRESERV. - $HgCl_2$ &
MW #5R	12/6/99	1130	G543	WATER	2	✓						COOL

ANALYSIS / PARAMETERS

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Nelson Velez	12/6/99	1359	Christine M Walden	12-6-99	13:59
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	✓		

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:	12-06-BTEX QA/QC	Date Reported:	12-07-99
Laboratory Number:	G538	Date Sampled:	N/A
Sample Matrix:	Water	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	12-06-99
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	1.0021E+000	1.0054E+000	0.32%	ND	0.2
Toluene	6.8221E-001	6.8234E-001	0.02%	ND	0.2
Ethylbenzene	6.1562E-002	6.1636E-002	0.12%	ND	0.2
p,m-Xylene	5.6170E-002	5.6181E-002	0.02%	ND	0.2
o-Xylene	5.1027E-002	5.1180E-002	0.30%	ND	0.1

Duplicate Conc. (ug/L)	Sample	Duplicate	%Diff.	Accept Limit
Benzene	42.7	41.1	3.7%	0 - 30%
Toluene	119	119	0.0%	0 - 30%
Ethylbenzene	113	110	2.8%	0 - 30%
p,m-Xylene	1,100	1,080	1.8%	0 - 30%
o-Xylene	540	524	2.9%	0 - 30%

Spike Conc. (ug/L)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Limits
Benzene	42.7	50.0	93.0	100%	39 - 150
Toluene	119	50.0	172	102%	46 - 148
Ethylbenzene	113	50.0	165	101%	32 - 160
p,m-Xylene	1,100	100.0	1,200	100%	46 - 148
o-Xylene	540	50.0	600	102%	46 - 148

ND - Parameter not detected at the stated detection limit.

* - Administrative level 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 G538 - G545.**

Analyst

Review

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

BLAGG ENGINEERING, INC.

MONITOR WELL SAMPLING DATA

CLIENT : BP AMOCO

CHAIN-OF-CUSTODY # : 10361

COOPER GC # 1E - SEPARATOR PIT
UNIT J, SEC. 15, T29N, R11W

LABORATORY (S) USED : ON - SITE TECH.

Date : February 24, 2000

SAMPLER : N J V

Filename : 02-24-00.WK4

PROJECT MANAGER : N J V

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	VOLUME PURGED (gal.)	FREE PRODUCT (ft)
MW - 2R	94.29	75.64	18.65	26.00	-	-	-	-	-
MW - 3R	97.03	75.41	21.62	34.03	0900	7.6	2,500	6.25	-
MW - 5	-	-	-	23.50	-	-	-	-	-
MW - 5R	94.12	72.46	21.66	31.00	0850	7.6	1,000	4.75	-

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 ".

Collected BTEX samples from MW # 3R & # 5R . BEI reclamation system operating @ time of sampling . Collected true DTW measurements on 2 / 25 / 00 . DTW decreased between 3.80 - 5.00 ft. since last sampling event (12 / 06 / 99) .

OFF: (505) 325-5667

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-1556

ANALYTICAL REPORT

Date: *01-Mar-00*

Client:	Blagg Engineering	**Client Sample Info:**	Cooper GC #1E
Work Order:	0002054	**Client Sample ID:**	MW #3R
Lab ID:	0002054-01A **Matrix:** AQUEOUS	**Collection Date:**	2/24/2000 9:00:00 AM
Project:	BP Amoco- Cooper GC #1E	**COC Record:**	10361

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC/PID		**SW8021B**				Analyst: **DM**
Benzene	290	5		µg/L	10	2/29/2000
Toluene	790	5		µg/L	10	2/29/2000
Ethylbenzene	130	5		µg/L	10	2/29/2000
m,p-Xylene	1200	10		µg/L	10	2/29/2000
o-Xylene	220	5		µg/L	10	2/29/2000

Qualifiers:

PQL - Practical Quantitation Limit

ND - Not Detected at Practical Quantitation Limit

J - Analyte detected below Practical Quantitation Limit

B - Analyte detected in the associated Method Blank

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Surr: - Surrogate

P.O. BOX 2606 • FARMINGTON, NM 87499

OFF: (505) 325-5667

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-1556

ANALYTICAL REPORT

Date: *01-Mar-00*

Client:	Blagg Engineering	**Client Sample Info:**	Cooper GC #1E
Work Order:	0002054	**Client Sample ID:**	MW #5R
Lab ID:	0002054-02A **Matrix:** AQUEOUS	**Collection Date:**	2/24/2000 8:50:00 AM
Project:	BP Amoco- Cooper GC #1E	**COC Record:**	10361

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC/PID		**SW8021B**				Analyst: **DM**
Benzene	ND	0.5		µg/L	1	2/29/2000
Toluene	ND	0.5		µg/L	1	2/29/2000
Ethylbenzene	ND	0.5		µg/L	1	2/29/2000
m,p-Xylene	ND	1		µg/L	1	2/29/2000
o-Xylene	ND	0.5		µg/L	1	2/29/2000

Qualifiers:

PQL - Practical Quantitation Limit

ND - Not Detected at Practical Quantitation Limit

J - Analyte detected below Practical Quantitation Limit

B - Analyte detected in the associated Method Blank

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Surr: - Surrogate

P.O. BOX 2606 • FARMINGTON, NM 87499

1[illegible]61

CHAIN OF CUSTODY RECORD

ON SITE TECHNOLOGIES, LTD.
612 E. Murray Dr. • P.O. Box 2606 • Farmington, NM 87499
LAB: (505) 325-5667 • FAX: (505) 327-1496

Date: 2/24/00

Page: 1 of 1

Purchase Order No.:	Project No.
SEND INVOICE TO Name	NELSON VELEZ
Company	BLAGG ENGINEERING, INC.
Dept.	
Address	P.O. BOX 87
City, State, Zip	BLOOMFIELD NM 87413
REPORT RESULTS TO Name	SAME
Title	
Company	
Mailing Address	
City, State, Zip	
Telephone No.	632-1199
Telefax No.	632-3903

PROJECT LOCATION: BP AMOCO - COOPER GC #1E

SAMPLER'S SIGNATURE: Nelson Velez

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE PRES.	Number of Containers	BTEX (8021)								LAB ID
MW #3R	2/24/00	0920	WATER	COOL & HCl	2	✓								0002054-01A
MW #5R	2/24/00	0850	WATER	COOL & HCl	2	✓								-02A

Relinquished by: Nelson Velez	Date/Time 2/24/00 1437	Received by: [illegible]	Date/Time 2/24/00 1437
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time
Method of Shipment:		Rush ☐ 24-48 Hours ☐ 10 Working Days ☐	By Date 3/3/00

Authorized by: ______________ Date ______________
(Client Signature Must Accompany Request)

Special Instructions / Remarks: PLEASE FAX RESULTS UPON ANALYTICAL COMPLETION.

Distribution: White - On Site Yellow - LAB Pink - Sampler Goldenrod - Client

On Site Technologies, LTD.

Date: *01-Mar-00*

CLIENT: Blagg Engineering
Work Order: 0002054
Project: BP Amoco- Cooper GC #1E

QC SUMMARY REPORT

Method Blank

Sample ID: **MB1** Batch ID: **GC-1_000229** Test Code: **SW8021B** Units: **µg/L** Analysis Date **2/29/2000** Prep Date:

Client ID: **0002054** Run ID: **GC-1_000229A** SeqNo: **24671**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	.0873	0.5									J
Ethylbenzene	.0742	0.5									J
m,p-Xylene	.2172	1									J
Methyl tert-Butyl Ether	ND	1									
o-Xylene	.0814	0.5									J
Toluene	.1879	0.5									J

Qualifiers:

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

On Site Technologies, LTD.

Date: *01-Mar-00*

CLIENT: Blagg Engineering
Work Order: 0002054
Project: BP Amoco- Cooper GC #1E

QC SUMMARY REPORT

Sample Matrix Spike

Sample ID: **0002054-01AMS** Batch ID: **GC-1_000229** Test Code: **SW8021B** Units: **µg/L** Analysis Date **2/29/2000** Prep Date:

Client ID: **MW #3R** **0002054** Run ID: **GC-1_000229A** SeqNo: **24672**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	687	5	400	288.1	99.7%	73	126				
Ethylbenzene	531.7	5	400	134.6	99.3%	88	113				
m,p-Xylene	1964	10	800	1178	98.3%	83	112				
Methyl tert-Butyl Ether	402	10	400	0	100.5%	81	125				
o-Xylene	619.8	5	400	223.8	99.0%	93	110				
Toluene	1200	5	400	787	103.3%	76	126				

Sample ID: **0002054-01AMSD** Batch ID: **GC-1_000229** Test Code: **SW8021B** Units: **µg/L** Analysis Date **2/29/2000** Prep Date:

Client ID: **MW #3R** **0002054** Run ID: **GC-1_000229A** SeqNo: **24673**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	661.9	5	400	288.1	93.4%	73	126	687	3.7%	6	
Ethylbenzene	513.1	5	400	134.6	94.6%	88	113	531.7	3.6%	5	
m,p-Xylene	1894	10	800	1178	89.5%	83	112	1964	3.6%	7	
Methyl tert-Butyl Ether	393.2	10	400	0	98.3%	81	125	402	2.2%	9	
o-Xylene	620.4	5	400	223.8	99.2%	93	110	619.8	0.1%	6	
Toluene	1156	5	400	787	92.3%	76	126	1200	3.8%	6	

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

On Site Technologies, LTD.

Date: *01-Mar-00*

CLIENT: Blagg Engineering
Work Order: 0002054
Project: BP Amoco- Cooper GC #1E

QC SUMMARY REPORT

Laboratory Control Spike - generic

Sample ID: **LCS WATER** Batch ID: **GC-1_000229** Test Code: **SW8021B** Units: **µg/L** Analysis Date **2/29/2000** Prep Date:

Client ID: **0002054** Run ID: **GC-1_000229A** SeqNo: **24670**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	39.59	0.5	40	0.0873	98.8%	89	112				
Ethylbenzene	40.28	0.5	40	0.0742	100.5%	93	112				
m,p-Xylene	76.5	1	80	0.2172	95.4%	88	108				
Methyl tert-Butyl Ether	39.41	1	40	0	98.5%	87	115				
o-Xylene	40.09	0.5	40	0.0814	100.0%	93	112				
Toluene	40.02	0.5	40	0.1879	99.6%	92	111				

Qualifiers:

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

On Site Technologies, LTD.

Date: *01-Mar-00*

CLIENT: Blagg Engineering
Work Order: 0002054
Project: BP Amoco- Cooper GC #1E

QC SUMMARY REPORT

Continuing Calibration Verification Standard

Sample ID: **CCV1 BTEX_0001** Batch ID: **GC-1_000229** Test Code: **SW8021B** Units: **µg/L** Analysis Date **2/29/2000** Prep Date:

Client ID: **0002054** Run ID: **GC-1_000229A** SeqNo: **24665**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	19.78	0.5	20	0	98.9%	85	115				
Ethylbenzene	20.37	0.5	20	0	101.9%	85	115				
m,p-Xylene	38.43	1	40	0	96.1%	85	115				
Methyl tert-Butyl Ether	20.01	1	20	0	100.0%	85	115				
o-Xylene	20.25	0.5	20	0	101.2%	85	115				
Toluene	19.98	0.5	20	0	99.9%	85	115				
1,4-Difluorobenzene	89.73	0	100	0	89.7%	80	105				
4-Bromochlorobenzene	90.01	0	100	0	90.0%	78	108				
Fluorobenzene	88.26	0	100	0	88.3%	78	108				

Sample ID: **CCV2 BTEX_0001** Batch ID: **GC-1_000229** Test Code: **SW8021B** Units: **µg/L** Analysis Date **2/29/2000** Prep Date:

Client ID: **0002054** Run ID: **GC-1_000229A** SeqNo: **24666**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	19.1	0.5	20	0	95.5%	85	115				
Ethylbenzene	19.64	0.5	20	0	98.2%	85	115				
m,p-Xylene	36.94	1	40	0	92.3%	85	115				
Methyl tert-Butyl Ether	19.41	1	20	0	97.0%	85	115				
o-Xylene	19.59	0.5	20	0	98.0%	85	115				
Toluene	19.28	0.5	20	0	96.4%	85	115				
1,4-Difluorobenzene	89.93	0	100	0	89.9%	80	105				
4-Bromochlorobenzene	90.04	0	100	0	90.0%	78	108				
Fluorobenzene	88.09	0	100	0	88.1%	78	108				

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

CLIENT: Blagg Engineering
Work Order: 0002054
Project: BP Amoco- Cooper GC #1E

QC SUMMARY REPORT
Continuing Calibration Verification Standard

Sample ID: **CCV3 BTEX_0001** Batch ID: **GC-1_000229** Test Code: **SW8021B** Units: **µg/L** Analysis Date **2/29/2000** Prep Date:
Client ID: **0002054** Run ID: **GC-1_000229A** SeqNo: **24667**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	38.44	0.5	40	0	96.1%	85	115				
Ethylbenzene	38.91	0.5	40	0	97.3%	85	115				
m,p-Xylene	73.62	1	80	0	92.0%	85	115				
Methyl tert-Butyl Ether	39.67	1	40	0	99.2%	85	115				
o-Xylene	38.98	0.5	40	0	97.5%	85	115				
Toluene	38.82	0.5	40	0	97.0%	85	115				
1,4-Difluorobenzene	89.07	0	100	0	89.1%	80	105				
4-Bromochlorobenzene	90.83	0	100	0	90.8%	78	108				
Fluorobenzene	87.69	0	100	0	87.7%	78	108				

Sample ID: **CCV4 BTEX_0001** Batch ID: **GC-1_000229** Test Code: **SW8021B** Units: **µg/L** Analysis Date **2/29/2000** Prep Date:
Client ID: **0002054** Run ID: **GC-1_000229A** SeqNo: **24668**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	20.78	0.5	20	0	103.9%	85	115				
Ethylbenzene	21.36	0.5	20	0	106.8%	85	115				
m,p-Xylene	40.26	1	40	0	100.6%	85	115				
Methyl tert-Butyl Ether	17.61	1	20	0	88.1%	85	115				
o-Xylene	21.27	0.5	20	0	106.3%	85	115				
Toluene	20.96	0.5	20	0	104.8%	85	115				
1,4-Difluorobenzene	88.96	0	100	0	89.0%	80	105				
4-Bromochlorobenzene	88	0	100	0	88.0%	78	108				
Fluorobenzene	88.46	0	100	0	88.5%	78	108				

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

CLIENT: Blagg Engineering
Work Order: 0002054
Project: BP Amoco- Cooper GC #1E

QC SUMMARY REPORT
Continuing Calibration Verification Standard

Sample ID: **CCV5 BTEX_0001** Batch ID: **GC-1_000229** Test Code: **SW8021B** Units: **µg/L** Analysis Date **2/29/2000** Prep Date:

Client ID: **0002054** Run ID: **GC-1_000229A** SeqNo: **24669**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	20.23	0.5	20	0	101.2%	85	115				
Ethylbenzene	20.81	0.5	20	0	104.1%	85	115				
m,p-Xylene	39.26	1	40	0	98.2%	85	115				
Methyl tert-Butyl Ether	20.94	1	20	0	104.7%	85	115				
o-Xylene	20.83	0.5	20	0	104.2%	85	115				
Toluene	20.48	0.5	20	0	102.4%	85	115				
1,4-Difluorobenzene	90.04	0	100	0	90.0%	80	105				
4-Bromochlorobenzene	88.66	0	100	0	88.7%	78	108				
Fluorobenzene	88.26	0	100	0	88.3%	78	108				

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

On Site Technologies, LTD.

Date: 01-Mar-00

CLIENT: Blagg Engineering
Work Order: 0002054
Project: BP Amoco- Cooper GC #1E
Test No: SW8021B

QC SUMMARY REPORT
SURROGATE RECOVERIES

Aromatic Volatiles by GC/PID

Sample ID	14FBZ	4BCBZ	FLBZ
0002054-01A	88	88.9	87.9
0002054-01AMS	88.3	89.1	87.2
0002054-01AMSD	87.8	88.6	86.2
0002054-02A	90.1	89.9	89.1
0002055-01A	91.1	89.6	90.4
0002055-02A	89.7	87.8	88.9
0002055-03A	89.7	89.7	89.5
0002055-04A	90	89.7	90.8
0002055-05A	90.8	89.7	89.1
0002055-06A	89.5	88.6	89.4
0002058-01A	89.8	89.4	89.7
0002059-01A	90	90.7	89
0002059-02A	89.5	90	88.8
0002059-03A	90.8	90.6	88.7
0002059-04A	89.4	89.2	88.6
0002059-05A	90.4	90.1	88.9
0002059-06A	90.1	90.4	89.1
0002063-01A	87.5	86.6	86.8
CCV1 BTEX_00010	89.7	90	88.2
CCV2 BTEX_00010	89.9	90	88.1
CCV3 BTEX_00010	89.1	90.8	87.7
CCV4 BTEX_00010	89	88	88.5
CCV5 BTEX_00010	90	88.7	88.2
LCS WATER	89.1	89.9	87.8
MB1	90	88.9	89.3

Acronym		Surrogate	QC Limits
14FBZ	=	1,4-Difluorobenzene	80-105
4BCBZ	=	4-Bromochlorobenzene	78-108
FLBZ	=	Fluorobenzene	78-108

*** Surrogate recovery outside acceptance limits**

BLAGG ENGINEERING, INC.

MONITOR WELL SAMPLING DATA

CLIENT : BP AMOCO

CHAIN-OF-CUSTODY # : 10583

COOPER GC # 1E - SEPARATOR PIT
UNIT J, SEC. 15, T29N, R11W

LABORATORY (S) USED : ON - SITE TECH.

Date : May 15, 2000

SAMPLER : N J V

Filename : 05-15-00.WK4

PROJECT MANAGER : N J V

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	VOLUME PURGED (gal.)	FREE PRODUCT (ft)
MW - 2R	94.29	78.17	16.12	26.00	-	-	-	-	-
MW - 3R	97.03	76.54	20.49	34.03	1520	7.2	6,600	6.75	-
MW - 5R	94.12	73.82	20.30	31.00	1445	7.2	1,200	5.25	-

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 ".

Collected BTEX samples from MW # 3R & # 5R . BEI reclamation system operating @ time of sampling . Collected true DTW measurements on 5 / 19 / 00 .

OFF: (505) 325-5667
FAX: (505) 327-1496

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-1556
FAX: (505) 327-1496

ANALYTICAL REPORT

Date: *22-May-00*

Client:	Blagg Engineering	**Client Sample Info:**	Cooper GC #1E
Work Order:	0005032	**Client Sample ID:**	MW #3R
Lab ID:	0005032-01A **Matrix:** AQUEOUS	**Collection Date:**	5/15/2000 3:20:00 PM
Project:	BP Amoco - Cooper GC #1E	**COC Record:**	10583

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC/PID		**SW8021B**				Analyst: **DM**
Benzene	140	5		µg/L	10	5/20/2000
Toluene	110	5		µg/L	10	5/20/2000
Ethylbenzene	8.3	5		µg/L	10	5/20/2000
m,p-Xylene	480	10		µg/L	10	5/20/2000
o-Xylene	160	5		µg/L	10	5/20/2000

Qualifiers:

PQL - Practical Quantitation Limit
ND - Not Detected at Practical Quantitation Limit
J - Analyte detected below Practical Quantitation Limit
B - Analyte detected in the associated Method Blank
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
Surr: - Surrogate

P.O. BOX 2606 • FARMINGTON, NM 87499

OFF: (505) 325-5667
FAX: (505) 327-1496

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-1556
FAX: (505) 327-1496

ANALYTICAL REPORT

Date: *22-May-00*

Client:	Blagg Engineering	**Client Sample Info:**	Cooper GC #1E
Work Order:	0005032	**Client Sample ID:**	MW #5R
Lab ID:	0005032-02A **Matrix:** AQUEOUS	**Collection Date:**	5/15/2000 2:45:00 PM
Project:	BP Amoco - Cooper GC #1E	**COC Record:**	10583

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC/PID		**SW8021B**				Analyst: **DM**
Benzene	ND	0.5		µg/L	1	5/20/2000
Toluene	ND	0.5		µg/L	1	5/20/2000
Ethylbenzene	ND	0.5		µg/L	1	5/20/2000
m,p-Xylene	ND	1		µg/L	1	5/20/2000
o-Xylene	ND	0.5		µg/L	1	5/20/2000

Qualifiers:

PQL - Practical Quantitation Limit
ND - Not Detected at Practical Quantitation Limit
J - Analyte detected below Practical Quantitation Limit
B - Analyte detected in the associated Method Blank
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
Surr: - Surrogate

P.O. BOX 2606 • FARMINGTON, NM 87499

CHAIN OF CUSTODY RECORD

ON SITE TECHNOLOGIES, LTD.

612 E. Murray Dr. • P.O. Box 2606 • Farmington, NM 87499
LAB: (505) 325-5667 • FAX: (505) 327-1496

Date: 5/15/00

Page: 1 of 1

Purchase Order No.:	Project No.		
SEND INVOICE TO	Name: Jeff Blagg		
	Company: Blagg Engineering Inc.	Dept.	
	Address: P.O. Box 87		
	City, State, Zip: Bloomfield NM 87413		
REPORT RESULTS TO	Name: Nelson Velez	Title	
	Company: Same		
	Mailing Address		
	City, State, Zip		
	Telephone No. 632-1199	Telefax No. 632-3903	

PROJECT LOCATION: BP Amoco - Cooper GC #1E

SAMPLER'S SIGNATURE: Nelson V.

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	PRES.	Number of Containers	BTEX (8021)								LAB ID
MW #3	5/15/00	1520	water	Hcl & cool	2	✓								0005032-01A
MW #5	5/15/00	1445	water	Hcl & cool	2	✓								0005032-02A

Relinquished by: Nelson V.	Date/Time 5/15/00 1532	Received by: David Dimartin	Date/Time 5/15/00 1532
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time
Method of Shipment:		Rush / 24-48 Hours / 10 Working Days / By Date	

Authorized by: ______________________ Date ______________
(Client Signature Must Accompany Request)

Special Instructions / Remarks:

Distribution: White - On Site Yellow - LAB Pink - Sampler Goldenrod - Client

To Re-order Call 325-9600 or Fax 325-9764 alphagraphics® FORM # 01

On Site Technologies, LTD.

Date: *22-May-00*

CLIENT: Blagg Engineering
Work Order: 0005032
Project: BP Amoco - Cooper GC #1E

QC SUMMARY REPORT
Method Blank

Sample ID: **MB1** Batch ID: **GC-1_000520** Test Code: **SW8021B** Units: **µg/L** Analysis Date **5/20/2000** Prep Date:

Client ID: **0005032** Run ID: **GC-1_000520A** SeqNo: **27838**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.5									
Ethylbenzene	ND	0.5									
m,p-Xylene	ND	1									
Methyl tert-Butyl Ether	ND	1									
o-Xylene	ND	0.5									
Toluene	.0893	0.5									J

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

On Site Technologies, LTD.

Date: *22-May-00*

CLIENT: Blagg Engineering
Work Order: 0005032
Project: BP Amoco - Cooper GC #1E

QC SUMMARY REPORT
Sample Matrix Spike

Sample ID: **0005022-03AMS** Batch ID: **GC-1_000520** Test Code: **SW8021B** Units: **µg/L** Analysis Date **5/20/2000** Prep Date:
Client ID: **0005032** Run ID: **GC-1_000520A** SeqNo: **27839**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	6560	25	2000	4300	113.0%	73	126				
Ethylbenzene	2252	25	2000	120	106.6%	88	113				
m,p-Xylene	4980	50	4000	1000	99.5%	83	112				
Methyl tert-Butyl Ether	2174	50	2000	0	108.7%	81	125				
o-Xylene	2250	25	2000	170	104.0%	93	110				
Toluene	4377	25	2000	2300	103.8%	76	126				

Sample ID: **0005022-03AMSD** Batch ID: **GC-1_000520** Test Code: **SW8021B** Units: **µg/L** Analysis Date **5/20/2000** Prep Date:
Client ID: **0005032** Run ID: **GC-1_000520A** SeqNo: **27840**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	6404	25	2000	4300	105.2%	73	126	6560	2.4%	6	
Ethylbenzene	2201	25	2000	120	104.1%	88	113	2252	2.3%	5	
m,p-Xylene	4874	50	4000	1000	96.8%	83	112	4980	2.2%	7	
Methyl tert-Butyl Ether	2155	50	2000	0	107.8%	81	125	2174	0.9%	9	
o-Xylene	2207	25	2000	170	101.9%	93	110	2250	1.9%	6	
Toluene	4271	25	2000	2300	98.5%	76	126	4377	2.5%	6	

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

On Site Technologies, LTD.

Date: *22-May-00*

CLIENT: Blagg Engineering
Work Order: 0005032
Project: BP Amoco - Cooper GC #1E

QC SUMMARY REPORT

Laboratory Control Spike - generic

Sample ID: **LCS WATER** Batch ID: **GC-1_000520** Test Code: **SW8021B** Units: **µg/L** Analysis Date **5/20/2000** Prep Date:

Client ID: **0005032** Run ID: **GC-1_000520A** SeqNo: **27837**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	42.46	0.5	40	0	106.1%	89	112				
Ethylbenzene	42.76	0.5	40	0	106.9%	93	112				
m,p-Xylene	79.8	1	80	0	99.7%	88	108				
Methyl tert-Butyl Ether	43.17	1	40	0	107.9%	87	115				
o-Xylene	42.04	0.5	40	0	105.1%	93	112				
Toluene	42.16	0.5	40	0.0893	105.2%	92	111				

Qualifiers:

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

On Site Technologies, LTD.

Date: *22-May-00*

CLIENT: Blagg Engineering
Work Order: 0005032
Project: BP Amoco - Cooper GC #1E

QC SUMMARY REPORT

Continuing Calibration Verification Standard

Sample ID: **CCV1 BTEX_0004** Batch ID: **GC-1_000520** Test Code: **SW8021B** Units: **µg/L** Analysis Date **5/20/2000** Prep Date:

Client ID: **0005032** Run ID: **GC-1_000520A** SeqNo: **27834**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	22.59	0.5	20	0	112.9%	85	115				
Ethylbenzene	22.45	0.5	20	0	112.3%	85	115				
m,p-Xylene	41.89	1	40	0	104.7%	85	115				
Methyl tert-Butyl Ether	22.37	1	20	0	111.8%	85	115				
o-Xylene	22.1	0.5	20	0	110.5%	85	115				
Toluene	21.9	0.5	20	0	109.5%	85	115				
1,4-Difluorobenzene	88.27	0	100	0	88.3%	80	105				
4-Bromochlorobenzene	94.25	0	100	0	94.3%	78	108				
Fluorobenzene	84.19	0	100	0	84.2%	78	108				

Sample ID: **CCV2 BTEX_0004** Batch ID: **GC-1_000520** Test Code: **SW8021B** Units: **µg/L** Analysis Date **5/20/2000** Prep Date:

Client ID: **0005032** Run ID: **GC-1_000520A** SeqNo: **27835**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	21.55	0.5	20	0	107.7%	85	115				
Ethylbenzene	21.85	0.5	20	0	109.2%	85	115				
m,p-Xylene	40.65	1	40	0	101.6%	85	115				
Methyl tert-Butyl Ether	22.5	1	20	0	112.5%	85	115				
o-Xylene	21.57	0.5	20	0	107.8%	85	115				
Toluene	21.37	0.5	20	0	106.9%	85	115				
1,4-Difluorobenzene	87.86	0	100	0	87.9%	80	105				
4-Bromochlorobenzene	95.32	0	100	0	95.3%	78	108				
Fluorobenzene	83.48	0	100	0	83.5%	78	108				

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

CLIENT: Blagg Engineering
Work Order: 0005032
Project: BP Amoco - Cooper GC #1E

QC SUMMARY REPORT
Continuing Calibration Verification Standard

Sample ID: **CCV3 BTEX_0004** Batch ID: **GC-1_000520** Test Code: **SW8021B** Units: **µg/L** Analysis Date **5/20/2000** Prep Date:

Client ID: **0005032** Run ID: **GC-1_000520A** SeqNo: **27836**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	41.16	0.5	40	0	102.9%	85	115				
Ethylbenzene	41.2	0.5	40	0	103.0%	85	115				
m,p-Xylene	76.73	1	80	0	95.9%	85	115				
Methyl tert-Butyl Ether	43.95	1	40	0	109.9%	85	115				
o-Xylene	40.74	0.5	40	0	101.9%	85	115				
Toluene	40.75	0.5	40	0	101.9%	85	115				
1,4-Difluorobenzene	87.67	0	100	0	87.7%	80	105				
4-Bromochlorobenzene	94.93	0	100	0	94.9%	78	108				
Fluorobenzene	83.13	0	100	0	83.1%	78	108				

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

On Site Technologies, LTD.

Date: 22-May-00

CLIENT: Blagg Engineering
Work Order: 0005032
Project: BP Amoco - Cooper GC #1E
Test No: SW8021B

QC SUMMARY REPORT
SURROGATE RECOVERIES

Aromatic Volatiles by GC/PID

Sample ID	14FBZ	4BCBZ	FLBZ
0005018-01A	86.2	96.2	81.3
0005020-04A	88.4	93.9	84.4
0005022-01A	88.8	94.4	84.4
0005022-03A	86.6	95.1	82.1
0005022-03AMS	86.4	95.4	82.3
0005022-03AMSD	86.3	95.4	82.2
0005022-06A	83.2	93.4	79.3
0005022-08A	87.5	92.8	83.1
0005023-01A	86.5	94.1	82.6
0005031-01A	87	94.3	83.8
0005031-02A	87.8	94.7	83.9
0005031-03A	87.9	95.1	83.8
0005031-04A	87.6	94.6	83.7
0005032-01A	88	95	83.5
0005032-02A	88	94.6	84
0005036-01A	88.3	94.9	84.6
0005036-02A	88.3	95.1	84.1
0005036-03A	85.1	93.1	81.6
0005036-04A	88.3	95.1	84.2
0005036-05A	87.7	94.9	83.5
0005049-03A	87.6	92.9	83.3
0005049-05A	88.5	95	84.5
CCV1 BTEX_00040	88.3	94.2	84.2
CCV2 BTEX_00040	87.8	95.3	83.5
CCV3 BTEX_00040	87.7	94.9	83.1
LCS WATER	87.7	95	83
MB1	88.5	92.1	83.8

Acronym		Surrogate	QC Limits
14FBZ	=	1,4-Difluorobenzene	80-105
4BCBZ	=	4-Bromochlorobenzene	78-108
FLBZ	=	Fluorobenzene	78-108

*** Surrogate recovery outside acceptance limits**

BLAGG ENGINEERING, INC.

MONITOR WELL SAMPLING DATA

CLIENT : BP AMOCO

CHAIN-OF-CUSTODY # : 10773

COOPER GC # 1E - SEPARATOR PIT
UNIT J, SEC. 15, T29N, R11W

LABORATORY (S) USED : ON - SITE TECH.

Date : November 28, 2000

SAMPLER : N J V

Filename : 11-28-00.WK4

PROJECT MANAGER : N J V

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	VOLUME PURGED (gal.)	FREE PRODUCT (ft)
MW - 2R	94.29	81.62	12.67	26.00	-	-	-	-	-
MW - 3R	97.03	81.47	15.56	34.03	1100	7.6	900	9.00	-
MW - 5R	94.12	78.81	15.31	31.00	-	-	-	-	-

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 ".

Collected BTEX samples from MW # 3R only . BEI reclamation system operating @ time of sampling .

OFF: (505) 325-5667
FAX: (505) 327-1496

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-1556
FAX: (505) 327-1496

ANALYTICAL REPORT

Date: *15-Dec-00*

Client:	Blagg Engineering	**Client Sample Info:**	Cooper GC #1E
Work Order:	0011047	**Client Sample ID:**	MW #3R
Lab ID:	0011047-01A **Matrix:** AQUEOUS	**Collection Date:**	11/28/2000 11:00:00 AM
Project:	BP - Cooper GC #1E	**COC Record:**	10773

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC/PID		**SW8021B**				Analyst: **DC**
Benzene	220	5		µg/L	10	12/5/2000
Toluene	880	5		µg/L	10	12/5/2000
Ethylbenzene	74	5		µg/L	10	12/5/2000
m,p-Xylene	800	10		µg/L	10	12/5/2000
o-Xylene	210	5		µg/L	10	12/5/2000

Qualifiers:

PQL - Practical Quantitation Limit
ND - Not Detected at Practical Quantitation Limit
J - Analyte detected below Practical Quantitation Limit
B - Analyte detected in the associated Method Blank
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
Surr: - Surrogate

P.O. BOX 2606 • FARMINGTON, NM 87499
EMAIL: ONSITE@ONSITELTD.COM

CHAIN OF CUSTODY RECORD

Date: 11/28/00

Page: 1 of 1

ON SITE TECHNOLOGIES, LTD.

612 E. Murray Dr. • P.O. Box 2606 • Farmington, NM 87499
LAB: (505) 325-5667 • FAX: (505) 327-1496

Purchase Order No.:	Project No.		
SEND INVOICE TO: Name: JEFF BLAGG		REPORT RESULTS TO: Name: NELSON VELEZ	Title
Company: BLAGG ENGINEERING, INC.	Dept.	Company: JAMIE	
Address		Mailing Address	
City, State, Zip		City, State, Zip	
		Telephone No.: 632-1199	Telefax No.: 632-3903

PROJECT LOCATION: BP - COOPER CC #1E

SAMPLER'S SIGNATURE: Nelson Velez

SAMPLE IDENTIFICATION	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE PRES.	Number of Containers	ANALYSIS REQUESTED: BTEX (8021)	LAB ID
MW # 3R	11/28/00	1100	WATER	HCl & COOL	2	✓	[illegible]

Relinquished by: Nelson Velez	Date/Time 11/28/00 1515	Received by: David Martin	Date/Time 11/28/00 1516
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time

Method of Shipment:

Rush | 24-48 Hours | 10 Working Days | By Date

Authorized by: _____ Date _____
(Client Signature Must Accompany Request)

Special Instructions / Remarks:

Distribution: White - On Site Yellow - LAB Pink - Sampler Goldenrod - Client

On Site Technologies, LTD.

Date: *15-Dec-00*

CLIENT: Blagg Engineering
Work Order: 0011047
Project: BP - Cooper GC #1E

QC SUMMARY REPORT

Method Blank

Sample ID: **MB1** Batch ID: **GC-1_001205** Test Code: **SW8021B** Units: **µg/L** Analysis Date **12/5/2000** Prep Date:

Client ID: **0011047** Run ID: **GC-1_001205A** SeqNo: **33206**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.5									
Ethylbenzene	.0771	0.5									J
m,p-Xylene	.2174	1									J
Methyl tert-Butyl Ether	ND	1									
o-Xylene	.2053	0.5									J
Toluene	ND	0.5									

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

On Site Technologies, LTD.

Date: *15-Dec-00*

CLIENT: Blagg Engineering
Work Order: 0011047
Project: BP - Cooper GC #1E

QC SUMMARY REPORT

Sample Matrix Spike

Sample ID: **0012002-03AMS** Batch ID: **GC-1_001205** Test Code: **SW8021B** Units: **µg/L** Analysis Date **12/5/2000** Prep Date:

Client ID: **0011047** Run ID: **GC-1_001205A** SeqNo: **33207**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	1939	25	2000	0	97.0%	88	112				
Ethylbenzene	1968	25	2000	41.32	96.4%	86	113				
m,p-Xylene	4855	50	4000	1051	95.1%	85	108				
Methyl tert-Butyl Ether	1964	50	2000	0	98.2%	86	117				
o-Xylene	2031	25	2000	75.36	97.8%	92	110				
Toluene	1974	25	2000	0	98.7%	88	116				

Sample ID: **0012002-03AMSD** Batch ID: **GC-1_001205** Test Code: **SW8021B** Units: **µg/L** Analysis Date **12/5/2000** Prep Date:

Client ID: **0011047** Run ID: **GC-1_001205A** SeqNo: **33208**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	1950	25	2000	0	97.5%	88	112	1939	0.5%	6	
Ethylbenzene	1980	25	2000	41.32	96.9%	86	113	1968	0.6%	6	
m,p-Xylene	4890	50	4000	1051	96.0%	85	108	4855	0.7%	6	
Methyl tert-Butyl Ether	1998	50	2000	0	99.9%	86	117	1964	1.7%	7	
o-Xylene	2051	25	2000	75.36	98.8%	92	110	2031	1.0%	6	
Toluene	1989	25	2000	0	99.5%	88	116	1974	0.8%	6	

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

On Site Technologies, LTD.

Date: *15-Dec-00*

CLIENT: Blagg Engineering
Work Order: 0011047
Project: BP - Cooper GC #1E

QC SUMMARY REPORT

Laboratory Control Spike - generic

Sample ID: **LCS WATER** Batch ID: **GC-1_001205** Test Code: **SW8021B** Units: **µg/L** Analysis Date **12/5/2000** Prep Date:

Client ID: **0011047** Run ID: **GC-1_001205A** SeqNo: **33205**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	38.45	0.5	40	0	96.1%	96	111				
Ethylbenzene	38.65	0.5	40	0.0771	96.4%	96	111				
m,p-Xylene	77.64	1	80	0.2174	96.8%	92	105				
Methyl tert-Butyl Ether	38.91	1	40	0	97.3%	93	113				
o-Xylene	39.21	0.5	40	0.2053	97.5%	97	110				
Toluene	39.05	0.5	40	0	97.6%	97	109				

Qualifiers:

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

On Site Technologies, LTD.

Date: *15-Dec-00*

CLIENT: Blagg Engineering
Work Order: 0011047
Project: BP - Cooper GC #1E

QC SUMMARY REPORT

Continuing Calibration Verification Standard

Sample ID: **CCV1 BTEX_0010** Batch ID: **GC-1_001205** Test Code: **SW8021B** Units: **µg/L** Analysis Date **12/5/2000** Prep Date:

Client ID: **0011047** Run ID: **GC-1_001205A** SeqNo: **33202**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	20.34	0.5	20	0	101.7%	85	115				
Ethylbenzene	21.73	0.5	20	0	108.7%	85	115				
m,p-Xylene	42.14	1	40	0	105.3%	85	115				
Methyl tert-Butyl Ether	20.24	1	20	0	101.2%	85	115				
o-Xylene	20.94	0.5	20	0	104.7%	85	115				
Toluene	20.71	0.5	20	0	103.5%	85	115				
1,4-Difluorobenzene	73.54	0	80	0	91.9%	70	130				
4-Bromochlorobenzene	80.05	0	80	0	100.1%	70	130				
Fluorobenzene	73.2	0	80	0	91.5%	70	130				

Sample ID: **CCV2 BTEX_0010** Batch ID: **GC-1_001205** Test Code: **SW8021B** Units: **µg/L** Analysis Date **12/5/2000** Prep Date:

Client ID: **0011047** Run ID: **GC-1_001205A** SeqNo: **33203**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	19.51	0.5	20	0	97.6%	85	115				
Ethylbenzene	19.8	0.5	20	0	99.0%	85	115				
m,p-Xylene	39.72	1	40	0	99.3%	85	115				
Methyl tert-Butyl Ether	19.93	1	20	0	99.7%	85	115				
o-Xylene	20.17	0.5	20	0	100.9%	85	115				
Toluene	19.77	0.5	20	0	98.9%	85	115				
1,4-Difluorobenzene	73.34	0	80	0	91.7%	70	130				
4-Bromochlorobenzene	82.12	0	80	0	102.7%	70	130				
Fluorobenzene	73.54	0	80	0	91.9%	70	130				

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

CLIENT: Blagg Engineering
Work Order: 0011047
Project: BP - Cooper GC #1E

QC SUMMARY REPORT
Continuing Calibration Verification Standard

Sample ID: **CCV3 BTEX_0010** Batch ID: **GC-1_001205** Test Code: **SW8021B** Units: **µg/L** Analysis Date **12/5/2000** Prep Date:

Client ID: **0011047** Run ID: **GC-1_001205A** SeqNo: **33204**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	40.45	0.5	40	0	101.1%	85	115				
Ethylbenzene	40.3	0.5	40	0	100.8%	85	115				
m,p-Xylene	80.27	1	80	0	100.3%	85	115				
Methyl tert-Butyl Ether	41.06	1	40	0	102.7%	85	115				
o-Xylene	40.79	0.5	40	0	102.0%	85	115				
Toluene	40.68	0.5	40	0	101.7%	85	115				
1,4-Difluorobenzene	72.99	0	80	0	91.2%	70	130				
4-Bromochlorobenzene	82.48	0	80	0	103.1%	70	130				
Fluorobenzene	73.06	0	80	0	91.3%	70	130				

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

On Site Technologies, LTD.

Date: 15-Dec-00

CLIENT: Blagg Engineering
Work Order: 0011047
Project: BP - Cooper GC #1E
Test No: SW8021B

QC SUMMARY REPORT
SURROGATE RECOVERIES

Aromatic Volatiles by GC/PID

Sample ID	14FBZ	4BCBZ	FLBZ
0011047-01A	91.1	102	90.4
0011048-01A	90.2	98.1	89.6
0011048-02A	92.4	99.9	92.4
0011048-03A	92.3	101	94.2
0011048-04A	91.3	100	91.8
0011049-01A	93.7	103	92.6
0011049-02A	92	100	92.3
0011049-03A	91.5	99.6	91.8
0011049-04A	91.9	100	91
0011050-01A	88.1	96	87.6
0011050-02A	91.9	101	91.2
0011050-03A	89.2	99.6	92.3
0011050-04A	93.4	103	92.3
0012001-01A	91.2	101	91.6
0012002-01A	92.5	102	92.4
0012002-02A	92.8	102	93.1
0012002-03AMS	90.9	104	91.2
0012002-03AMSD	91	104	91
CCV1 BTEX_00100	91.9	100	91.5
CCV2 BTEX_00100	91.7	103	91.9
CCV3 BTEX_00100	91.2	103	91.3
LCS WATER	91	96.4	91.2
MB1	92.5	95.4	92.2

Acronym		Surrogate	QC Limits
14FBZ	=	1,4-Difluorobenzene	70-130
4BCBZ	=	4-Bromochlorobenzene	70-130
FLBZ	=	Fluorobenzene	70-130

*** Surrogate recovery outside acceptance limits**

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Blagg / Amoco	Project #:	04034-10
Sample ID:	2 @ 23'	Date Reported:	08-11-97
Laboratory Number:	B796	Date Sampled:	08-06-97
Chain of Custody No:	5137	Date Received:	08-08-97
Sample Matrix:	Soil	Date Extracted:	08-11-97
Preservative:	Cool	Date Analyzed:	08-11-97
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**1,470**	**0.2**
Diesel Range (C10 - C28)	**51.6**	**0.1**
Total Petroleum Hydrocarbons	**1,520**	**0.2**

ND - Parameter not detected at the stated detection limit.

References: Method 8015, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, July 1992.

Comments: **Cooper GC #1E Dehy Pit.**

Analyst

Review

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

5137

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location	ANALYSIS/PARAMETERS
BLAGG/AMOCO	DEHY PIT COOPER GC #1E	

Sampler: (Signature): Nelson Velez

Chain of Custody Tape No.: 04034-10

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	TPH (8015)						Remarks
② @ 23'	8/6/97	1408	8796	SOIL	1	✓						PRESERV. - COOL
				sample received cool & intact DCH								

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Nelson Velez	8/8/97	1000	J.C. Blagg	8-8-97	1000
J.C. Blagg	8-8-97	1332	Debra L. Spencer	8-8-97	1332
Relinquished by: (Signature)			Received by: (Signature)		

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

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

QUALITY ASSURANCE / QUALITY CONTROL

DOCUMENTATION

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 8015 Modified
Nonhalogenated Volatile Organic
Total Petroleum Hydrocarbons

Quality Assurance Report

Client:	QA/QC	Project #:	N/A
Sample ID:	Laboratory Blank	Date Reported:	08-11-97
Laboratory Number:	08-11-TPH.BLANK	Date Sampled:	N/A
Sample Matrix:	Methylene Chloride	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	08-11-97
Condition:	N/A	Analysis Requested:	TPH

Parameter	Concentration (mg/L)	Det. Limit (mg/L)
Gasoline Range C5 - C10	**ND**	**0.2**
Diesel Range C10 - C28	**ND**	**0.1**
Total Petroleum Hydrocarbons	**ND**	**0.2**

ND - Parameter not detected at the stated detection limit.

References: Method 8015, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, July 1992.

Comments: **QA/QC for samples B796 - B797.**

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 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons
Quality Assurance Report

Client:	QA/QC	Project #:	N/A
Sample ID:	Matrix Duplicate	Date Reported:	08-11-97
Laboratory Number:	B796	Date Sampled:	N/A
Sample Matrix:	Soil	Date Received:	N/A
Preservative:	Cool	Date Analyzed:	08-11-97
Condition:	Cool and Intact	Analysis Requested:	TPH

Parameter	Sample Result (mg/Kg)	Duplicate Result (mg/Kg)	Percent Difference
Gasoline Range (C5 - C10)	**1,470**	**1,400**	**5.0%**
Diesel Range (C10 - C28)	**51.6**	**50.4**	**2.5%**
Total Petroleum Hydrocarbons	**1,520**	**1,450**	**4.9%**

ND - Parameter not detected at the stated detection limit.

QA/QC Acceptance Criteria:	Parameter	Max Difference
	Petroleum Hydrocarbons	**30%**

References: Method 8015, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, July 1992.

Comments: **QA/QC for samples B796 - B797.**

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 8015 Modified
Nonhalogenated Volatile Hydrocarbons
Total Petroleum Hydrocarbons
Quality Assurance Report

Client:	QA/QC	Project #:	N/A
Sample ID:	Matrix Spike	Date Reported:	08-11-97
Laboratory Number:	B796	Date Sampled:	N/A
Sample Matrix:	Soil	Date Received:	N/A
Analysis Requested:	TPH	Date Analyzed:	08-11-97
Condition:	N/A		

Parameter	Sample Result (mg/kg)	Spike Added (mg/kg)	Spiked Sample Result (mg/kg)	Det. Limit (mg/kg)	Percent Recovery
Gasoline Range (C5 - C10)	**1,470**	**250**	**1,670**	**0.2**	**97%**
Diesel Range (C10 - C28)	**51.6**	**250**	**300**	**0.1**	**99%**
Total Petroleum Hydrocarbons	**1,520**	**500**	**1,970**	**0.2**	**98%**

ND - Parameter not detected at the stated detection limit.

QA/QC Acceptance Criteria:	Parameter	Acceptance Range
	Petroleum Hydrocarbons	**75 - 125%**

References: Method 8015, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, July 1992.

Comments: **QA/QC for samples B796 - B797.**

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 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Blagg / AMOCO	Project #:	04034-10
Sample ID:	SPG - 1	Date Reported:	10-09-97
Laboratory Number:	C226	Date Sampled:	10-02-97
Chain of Custody No:	5417	Date Received:	10-07-97
Sample Matrix:	Soil	Date Extracted:	10-07-97
Preservative:	Cool	Date Analyzed:	10-08-97
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**ND**	**0.2**
Diesel Range (C10 - C28)	**15.1**	**0.1**
Total Petroleum Hydrocarbons	**15.1**	**0.2**

ND - Parameter not detected at the stated detection limit.

References: Method 8015, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, July 1992.

Comments: **Cooper GC #1E Stockpile.**
Grab sample.

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 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Blagg / AMOCO	Project #:	04034-10
Sample ID:	SPC - 1	Date Reported:	10-09-97
Laboratory Number:	C227	Date Sampled:	10-02-97
Chain of Custody No:	5417	Date Received:	10-07-97
Sample Matrix:	Soil	Date Extracted:	10-07-97
Preservative:	Cool	Date Analyzed:	10-08-97
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**ND**	**0.2**
Diesel Range (C10 - C28)	**13.8**	**0.1**
Total Petroleum Hydrocarbons	**13.8**	**0.2**

ND - Parameter not detected at the stated detection limit.

References: Method 8015, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, July 1992.

Comments: **Cooper GC #1E Stockpile.**
5 pt. composite.

Christine M Walters
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 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Blagg / AMOCO	Project #:	04034-10
Sample ID:	SPG - 2	Date Reported:	10-09-97
Laboratory Number:	C228	Date Sampled:	10-07-97
Chain of Custody No:	5417	Date Received:	10-07-97
Sample Matrix:	Soil	Date Extracted:	10-07-97
Preservative:	Cool	Date Analyzed:	10-08-97
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**ND**	**0.2**
Diesel Range (C10 - C28)	**78.1**	**0.1**
Total Petroleum Hydrocarbons	**78.1**	**0.2**

ND - Parameter not detected at the stated detection limit.

References: *Method 8015, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste,* SW-846, USEPA, July 1992.

Comments: **Cooper GC #1E Stockpile.**
Grab sample.

Analyst

Review

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

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location	ANALYSIS/PARAMETERS
BLAGG/AMOCO	STOCKPILE COOPER GC #1E	

Sampler: (Signature): Nelson Velez

Chain of Custody Tape No.: 04034-10

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	TPH (8015)	Remarks
							ALL SAMPLES PRESERV. - COOL
SPG-1	10/2/97	0910 ~~0905~~	C226	SOIL	1	✓	GRAB SAMPLE
SPC-1	10/2/97	0915	C227	SOIL	1	✓	5 PT. COMPOSITE
SPG-2	10/7/97	1150	C228	SOIL	1	✓	GRAB SAMPLE
				Samples received cool & intact			

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Nelson Velez	10/7/97	1307	Glenn L. Spencer	10-7-97	1307
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

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

QUALITY ASSURANCE / QUALITY CONTROL

DOCUMENTATION

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 8015 Modified
Nonhalogenated Volatile Organic
Total Petroleum Hydrocarbons

Quality Assurance Report

Client:	QA/QC	Project #:	N/A
Sample ID:	Laboratory Blank	Date Reported:	10-09-97
Laboratory Number:	10-07-TPH.BLANK	Date Sampled:	N/A
Sample Matrix:	Methylene Chloride	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	10-08-97
Condition:	N/A	Analysis Requested:	TPH

Parameter	Concentration (mg/L)	Det. Limit (mg/L)
Gasoline Range C5 - C10	**ND**	**0.2**
Diesel Range C10 - C28	**ND**	**0.1**
Total Petroleum Hydrocarbons	**ND**	**0.2**

ND - Parameter not detected at the stated detection limit.

References: Method 8015, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, July 1992.

Comments: **QA/QC for samples C225 - C228.**

Christine M Walters
Analyst

Stacy W Sendler
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 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons
Quality Assurance Report

Client:	QA/QC	Project #:	N/A
Sample ID:	Matrix Duplicate	Date Reported:	10-09-97
Laboratory Number:	C225	Date Sampled:	N/A
Sample Matrix:	Soil	Date Received:	N/A
Preservative:	Cool	Date Analyzed:	10-08-97
Condition:	Cool and Intact	Analysis Requested:	TPH

Parameter	Sample Result (mg/Kg)	Duplicate Result (mg/Kg)	Percent Difference
Gasoline Range (C5 - C10)	**ND**	**ND**	**0.0%**
Diesel Range (C10 - C28)	**196**	**191**	**2.5%**
Total Petroleum Hydrocarbons	**196**	**191**	**2.5%**

ND - Parameter not detected at the stated detection limit.

QA/QC Acceptance Criteria:	Parameter	Max Difference
	Petroleum Hydrocarbons	**30%**

References: Method 8015, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, July 1992.

Comments: **QA/QC for samples C225 - C228.**

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 8015 Modified
Nonhalogenated Volatile Hydrocarbons
Total Petroleum Hydrocarbons
Quality Assurance Report

Client:	QA/QC	Project #:	N/A
Sample ID:	Matrix Spike	Date Reported:	10-09-97
Laboratory Number:	C225	Date Sampled:	N/A
Sample Matrix:	Soil	Date Received:	N/A
Analysis Requested:	TPH	Date Analyzed:	10-08-97
Condition:	N/A		

Parameter	Sample Result (mg/kg)	Spike Added (mg/kg)	Spiked Sample Result (mg/kg)	Det. Limit (mg/kg)	Percent Recovery
Gasoline Range (C5 - C10)	**ND**	**250**	**249**	**0.2**	**100%**
Diesel Range (C10 - C28)	**196**	**250**	**443**	**0.1**	**99%**
Total Petroleum Hydrocarbons	**196**	**500**	**692**	**0.2**	**100%**

ND - Parameter not detected at the stated detection limit.

QA/QC Acceptance Criteria:	Parameter	Acceptance Range
	Petroleum Hydrocarbons	**75 - 125%**

References: Method 8015, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, July 1992.

Comments: **QA/QC for samples C225 - C228.**

Christine M. Walters
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 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Blagg / AMOCO	Project #:	04034-10
Sample ID:	AS - 8 @ 20'	Date Reported:	04-06-98
Laboratory Number:	D077	Date Sampled:	04-03-98
Chain of Custody No:	5738	Date Received:	04-06-98
Sample Matrix:	Soil	Date Extracted:	04-06-98
Preservative:	Cool	Date Analyzed:	04-06-98
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**273**	**0.2**
Diesel Range (C10 - C28)	**8.7**	**0.1**
Total Petroleum Hydrocarbons	**282**	**0.2**

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Cooper GC # 1E.**

Analyst

Review

5796 U.S. Highway 64 • 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:	AS - 8 @ 20'	Date Reported:	04-06-98
Laboratory Number:	D077	Date Sampled:	04-03-98
Chain of Custody:	5738	Date Received:	04-06-98
Sample Matrix:	Soil	Date Analyzed:	04-06-98
Preservative:	Cool	Date Extracted:	04-06-98
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**1,420**	**17.5**
Toluene	**60,960**	**16.7**
Ethylbenzene	**47,660**	**15.2**
p,m-Xylene	**75,960**	**21.6**
o-Xylene	**73,400**	**10.4**
Total BTEX	**259,400**	

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 Volatile Organics, Test Methods for Evaluating Solid Waste, SW-84 USEPA, December 1996.

Comments: **Cooper GC # 1E.**

Analyst

Review

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

5738

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location	ANALYSIS/PARAMETERS
BLAGG / Amoco	COOPER GC # 1E	

Sampler: (Signature)	Chain of Custody Tape No.
Nelson Velez	04034-10

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	TPH (8015)	BTEX (8021)					Remarks
AS-8 @ 20'	4/3/98	0810	D077	SOIL	1	✓	✓					PRESERV. - COOL
				SAMPLE RECEIVED COOL & INTACT								DLA

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Nelson Velez	4/6/98	0759	Dawn L. Ogburn	4.6.98	0759
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

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA Method 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Quality Assurance Report

Client:	QA/QC	Project #:	N/A
Sample ID:	04-06-TPH QA/QC	Date Reported:	04-06-98
Laboratory Number:	D077	Date Sampled:	N/A
Sample Matrix:	Methylene Chloride	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	04-06-98
Condition:	N/A	Analysis Requested:	TPH

Calibration	I-Cal Date	I-Cal RF:	C-Cal RF:	% Difference	Accept. Range
Gasoline Range C5 - C10	03-27-98	5.6544E-04	5.6456E-04	0.16%	0 - 15%
Diesel Range C10 - C28	03-27-98	5.4387E-04	5.4331E-04	0.10%	0 - 15%

Blank Conc. (mg/L - mg/Kg)	Concentration	Detection Limit
Gasoline Range C5 - C10	ND	0.2
Diesel Range C10 - C28	ND	0.1
Total Petroleum Hydrocarbons	ND	0.2

Duplicate Conc. (mg/Kg)	Sample	Duplicate	% Difference	Accept. Range
Gasoline Range C5 - C10	273	271	0.8%	0 - 30%
Diesel Range C10 - C28	8.7	8.7	0.0%	0 - 30%

Spike Conc. (mg/Kg)	Sample	Spike Added	Spike Result	% Recovery	Accept. Range
Gasoline Range C5 - C10	273	250	523	100%	75 - 125%
Diesel Range C10 - C28	8.7	250	260	100%	75 - 125%

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Wast SW-846, USEPA, December 1996.

Comments: **QA/QC for samples D077 - D079.**

Analyst

Review

5796 U.S. Highway 64 • 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
QUALITY ASSURANCE REPORT

Client:	N/A	Project #:	N/A
Sample ID:	04-06-BTEX QA/QC	Date Reported:	04-06-98
Laboratory Number:	D077	Date Sampled:	N/A
Sample Matrix:	Soil	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	04-06-98
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	6.8842E-05	7.1785E-05	4.3%	ND	0.2
Toluene	7.5643E-05	7.8386E-05	3.6%	ND	0.2
Ethylbenzene	8.8155E-05	9.1637E-05	4.0%	ND	0.2
p,m-Xylene	6.5684E-05	6.7715E-05	3.1%	ND	0.2
o-Xylene	8.7047E-05	9.0580E-05	4.1%	ND	0.1

Duplicate Conc. (ug/Kg)	Sample	Duplicate	%Diff.	Accept Range	Detect. Limit
Benzene	1,420	1,400	1.4%	0 - 30%	17.5
Toluene	60,960	59,920	1.7%	0 - 30%	16.7
Ethylbenzene	47,660	46,890	1.6%	0 - 30%	15.2
p,m-Xylene	75,960	74,820	1.5%	0 - 30%	21.6
o-Xylene	73,400	72,710	0.9%	0 - 30%	10.4

Spike Conc. (ug/Kg)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Range
Benzene	1,420	50.0	1,470	100%	39 - 150
Toluene	60,960	50.0	61,010	100%	46 - 148
Ethylbenzene	47,660	50.0	47,710	100%	32 - 160
p,m-Xylene	75,960	100.0	76,060	100%	46 - 148
o-Xylene	73,400	50.0	73,450	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 sample D077.**

Analyst

Review

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

LAB RESULTS TO PAUL V. ON 11-3-93: SIDEWALLS OK, BOTTOM WATER CONTAMINATED HE WILL PUMP WATER,

ENVIROTECH Inc.

5796 US HWY. 64, FARMINGTON, NM 87401
(505) 632-0615

PIT NO: C4949
C.D.C. NO: —

FIELD REPORT: CLOSURE VERIFICATION

JOB No: 92140
PAGE No: 1 of 3

LOCATION: LEASE: COOPER GC WELL # 1E QD. NW/4, SE/4 (J)
SEC. 15 TWP: 29N RNG: 11W BM. NM CNTY. SJ ST NM PIT. SEP. (2)
CONTRACTOR: PAUL VELASQUEZ
EQUIPMENT USED EXCAVATOR

DATE STARTED: 10-27-93
DATE FINISHED: —
ENVIRONMENTAL SPECIALIST: REO

SOIL REMEDIATION: QUANTITY: EXCAVATION APPROX. 30' x 70' x 20' DEEP. APPROX: 1000 CUBIC YDS.
DISPOSAL FACILITY: LANDFARM AT COOPER #1
LAND USE: FARMING / RESIDENTIAL
SURFACE CONDITIONS: EXCAVATED PRIOR TO ARRIVAL

FIELD NOTES & REMARKS: PIT LOCATED APPROXIMATELY 95 FEET SOUTH FROM WELLHEAD.
DUAL COMPLETION WELL - 2 SEPARATORS REMOVED PRIOR TO EXCAVATION.
NORTH, EAST, SOUTH, AND BOTTOM OF PIT APPEARS TO BE CLEAN. (ORIGINAL EXCAVATION)
WEST WALL STILL CONTAMINATED - BLACK LAYER APPROX - 5-15' DEEP.
EXCAVATION WILL CONTINUE WEST. SOUTH SIDE BREAKS OPEN AS TOPO SLOPES DOWN TO SOUTH RAPIDLY.
EXCAVATION IS PRIMARILY SANDY SOIL WITH INTERBEDDED SILT LENSES. SEVERAL LENSES APPROX. 1 FOOT THICK. EACH.

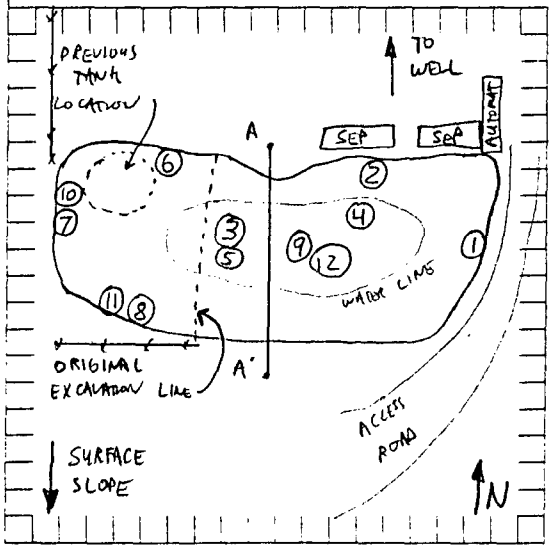
FIELD 418.1 CALCULATIONS

SAMPLE I.D.	LAB No:	WEIGHT (g)	mL. FREON	DILUTION	READING	CALC. ppm

DEPTH TO GROUNDWATER: ~20'
NEAREST WATER SOURCE HOME ~300' S.W
NEAREST SURFACE WATER: —
RANKING SCORE: > 20
WATER TPH CLOSURE STD: 100 PPM TPH

SCALE
0 10 20 FEET

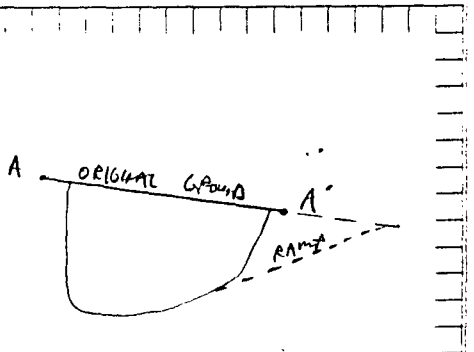
PIT PERIMETER



OVM RESULTS

SAMPLE ID	FIELD HEADSPACE PID (ppm)	
1	ES@10'	0.9 BROWN
2	NS@10'	0.9 BROWN
3	WS@10'	244 BLACK
4	NB@18'	42
5	WS@10'-3' IN	1766

PIT PROFILE



TRAVEL NOTES: CALLOUT: 10-27-93 ONSITE: 10-27-93 0930

PC

ENVIROTECH Inc.

5796 US HWY. 64, FARMINGTON, NM 87401
(505) 632-0615

PIT NO: C4949
C.O.C. NO: 3149
11-1-93

FIELD REPORT: CLOSURE VERIFICATION

JOB No 92140
PAGE No 2 of 3

LOCATION: LEASE COOPER GC WELL # 1E QD. NW/4, SE/4 (J)
SEC. 15 TWP. 29 N RNG: 11 W BM. NM CNTY. SJ ST NM PIT TANK S
CONTRACTOR: PAUL VELASCO'S W. OF SEP.
EQUIPMENT USED: EXCAVATOR

DATE STARTED: 10-29-93
DATE FINISHED: 11-1-93
ENVIRONMENTAL SPECIALIST: RED

SOIL REMEDIATION: QUANTITY: EXCAVATION APPROX. 50' DIA x 25' DEEP.
DISPOSAL FACILITY: LANDFARMING AT COOPER #1 / CROUCH MESA
LAND USE: FARMING / RESIDENTIAL
SURFACE CONDITIONS: EXCAVATION CONTINUING

FIELD NOTES & REMARKS: PIT LOCATED APPROXIMATELY _____ FEET _____ FROM WELLHEAD.
EXCAVATION APPROX. 25' DEEP - BOTTOM INTO WATER TABLE - HEAVY HYDROCARBON ODOR IN BOTTOM. EAST SIDE OF EXCAVATION BREAKS INTO SEPARATOR EXCAVATION. BOTTOM IN WATER - RECOMMEND EXCAVATE BOTTOM INTO WATER TABLE.
TO BE CONTINUED: - SIDEWALLS APPEAR TO BE CLEANING UP -
11-1-93: WATER IN EXCAVATION BOTTOM APPEARS CONTAMINATED.

FIELD 418.1 CALCULATIONS

SAMPLE I.D.	LAB No:	WEIGHT (g)	mL. FREON	DILUTION	READING	CALC. ppm
				—		

DEPTH TO GROUNDWATER:
NEAREST WATER SOURCE:
NEAREST SURFACE WATER:
NMOCD RANKING SCORE:
NMOCD TPH CLOSURE STD:

SCALE
0 FEET

PIT PERIMETER

SEE PAGE 1

OVM RESULTS

	SAMPLE ID	FIELD HEADSPACE PID (ppm)
	10-29-93	
6	NS @ 10'	7.7
7	WS @ 15'	105
8	SS @ 20'	120
9	CB @ 20'	O.R.
		>2000
	11-1-93	
10	WS @ 15'	32
11	SS @ 12'	12.8
		LAB
12	B @ 20'	WATER - BTEX
		LAB
10		418.1

PIT PROFILE

TRAVEL NOTES: CALLOUT: 10-28-93 / 11-1-93 ONSITE: 10-29-93 0800 / 11-1-93 1030

WATER SAMPLE RESULTS TO PAUL V. ON 11/10/93

ENVIROTECH Inc.

5796 US HWY 64, FARMINGTON, NM 87401
(505) 632-0615

PIT NO: C4999
CDC NO: 3157

FIELD REPORT: CLOSURE VERIFICATION

JOB No: 92140
PAGE No: 3 of 3

LOCATION: LEASE COOPER GC WELL # 1E QD (J)
SEC. 15 TWP. 29N RNG: 11W PM NM CNTY: ST ST NM FLD: SJP
CONTRACTOR: P.V.
EQUIPMENT USED: —

DATE STARTED: 11-5-93
DATE FINISHED: 11-5-93
ENVIRONMENTAL SPECIALIST: REO

SOIL REMEDIATION: QUANTITY: —
DISPOSAL FACILITY: —
LAND USE: —
SURFACE CONDITIONS: —

FIELD NOTES & REMARKS: PIT LOCATED APPROXIMATELY _____ FEET _____ FROM WELLHEAD.
WATER SAMPLE FROM PIT BOTTOM. PREVIOUSLY SAMPLED ON 11-1-93 AND FOUND TO BE CONTAMINATED. WATER PUMPED FROM PIT ON 11-2-93.
NEW INFLOW SAMPLED TODAY.

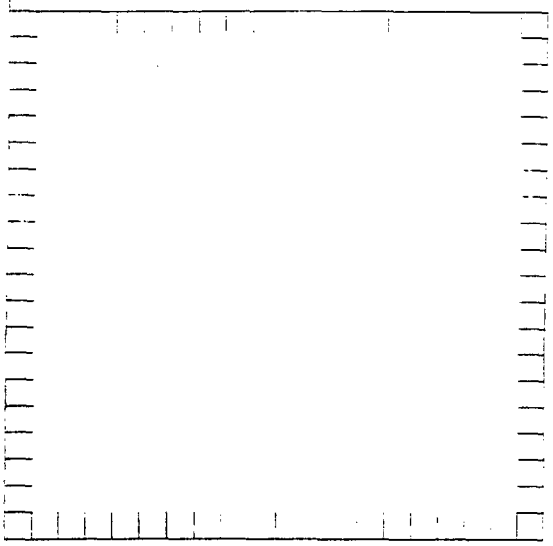
FIELD 418.1 CALCULATIONS

SAMPLE ID	LAB No:	WEIGHT (g)	mL FREON	DILUTION	READING	CALC (ppm)

DEPTH TO GROUNDWATER:
NEAREST WATER SOURCE:
NEAREST SURFACE WATER:
MINIMUM SEPARATING DISTANCE:
MOBILE TPH CLOSURE STD:

SCALE
0 FEET

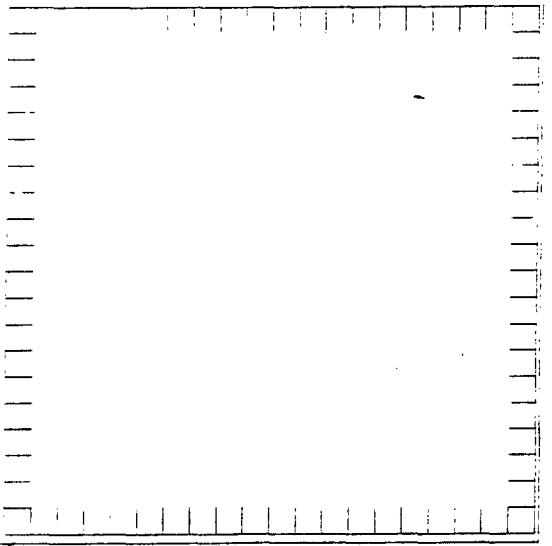
PIT PERIMETER



OVM RESULTS

SAMPLE ID	FIELD HEADSPACE PID (ppm)
LAB	
13 B@20'	WATER BTEX

PIT PROFILE



TRAVEL NOTES: CALLED OUT 11-5-93 ONSITE: 11-5-93 1300 HRS.

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:	12 B @ 20'	Date Reported:	11-02-93
Laboratory Number:	6427	Date Sampled:	11-01-93
Sample Matrix:	Water	Date Received:	11-01-93
Preservative:	HgCl and Cool	Date Analyzed:	11-01-93
Condition:	Cool and Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	12,900	1.0
Toluene	6,200	1.0
Ethylbenzene	720	1.0
p,m-Xylene	3,290	1.0
o-Xylene	2,140	1.0

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	98 %
Bromofluorobenzene	98 %

Method: Method 5030A, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, July 1992

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: Cooper GC # 1E Separator Pit C4949

Analyst

Review

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:	13 B @ 20'	Date Reported:	11-09-93
Laboratory Number:	6438	Date Sampled:	11-05-93
Sample Matrix:	Water	Date Received:	11-05-93
Preservative:	HgCl & Cool	Date Analyzed:	11-08-93
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	8,200	10.0
Toluene	16,400	25.0
Ethylbenzene	373	10.0
p,m-Xylene	5,100	20.0
o-Xylene	1,480	15.0

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	95 %
Bromofluorobenzene	99 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, July 1992

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: Cooper GC #1E Separator Pit C4949

Analyst

Review