3R - 104

REPORTS

DATE:

FEB, 1999

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

February 17, 1999

Mr. William C. Olson -Hydrogeologist
Environmental Bureau
New Mexico Oil Conservation Division
2040 Pacheco
State Land Building
Santa Fe, New Mexico 87505

RE: Cross Timbers Oil Co. (Amoco) Pit Closure/Groundwater Monitoring Reports
San Juan County, New Mexico

Dear Mr. Olson:

The attached reports on pit closure/groundwater monitoring at nineteen (19) previously owned Amoco well locations is being submitted for your review. These well sites have been acquired by Cross Timbers Co. as of December, 1997. The well names are listed on the following page of this correspondence. The reports for each individual well site are laid out in the following order;

1) Pit Closure documentation and/or a brief description of all activities which occurred during the investigation, sampling procedures, and/or interpretations, conclusions, and possible recommendations.
2) A summary spreadsheet (when applicable) containing laboratory BTEX, general chemistry (if applicable), and any other pertinent information.
3) When applicable: site and groundwater gradient maps, boring logs, and monitor well detail schematics.
4) Laboratory reports for each sampling event.
5) Quality Assurance/Quality Control data.

A copy of this report is also being submitted to Mr. Denny Foust at the Aztec NMOCD office. If you have any questions or comments concerning this report, please contact Blagg Engineering at 632-1199.

Respectfully submitted,
Blagg Engineering, Inc.

Nelson Velez.
Staff Geologist

Attachments: Pit Closure/Groundwater Monitoring Reports

xc: Denny Foust, NMOCD Aztec Office; Nina Hutton, Cross Timbers Oil Co.

NJV/njv FEB99-PC.COV

Cross Timbers Oil Company
Pit Closure/Groundwater Monitoring Reports
Well Sites being submitted, February 1999

1)	Abrams GC C # 1	Unit F, Sec. 25, T29N, R10W
2)	Abrams L # 1A	Unit I, Sec. 26, T29N, R10W
3)	Anderson GC A # 1	Unit C, Sec. 28, T29N, R10W
4)	Armenta GC A # 1	Unit D, Sec. 27, T29N, R10W
5)	Baca GC A # 1	Unit H, Sec. 26, T29N, R10W
6)	Baca GC A # 1A	Unit F, Sec. 26, T29N, R10W
7)	Chavez GC C # 1R	Unit J, Sec. 23, T29N, R10W
8)	Federal GC 3-1	Unit N, Sec. 23, T29N, R10W
9)	Garcia GC B # 1E	Unit M, Sec. 21, T29N, R10W
10)	Haney GC B # 1E	Unit M, Sec. 20, T29N, R10W
11)	Hare GC C # 1	Unit M, Sec. 25, T29N, R10W
12)	Hare GC C # 1E	Unit F, Sec. 25, T29N, R10W
13)	Hare GC F # 1	Unit G, Sec. 23, T29N, R11W
14)	Lefkovitz GC B # 1	Unit A, Sec. 25, T29N, R10W
15)	Masden GC # 1	Unit A, Sec. 28, T29N, R11W
16)	Romero GC A # 1	Unit K, Sec. 27, T29N, R10W
17)	Stedje GC # 1	Unit F, Sec. 27, T30N, R12W
18)	Stedje GC # 1E	Unit A, Sec. 27, T30N, R12W
19)	Trujillo GC A # 1	Unit C, Sec. 28, T29N, R10W

NJV/njv

FEB99-PC.COV

District I
P.O. Box 1980, Hobbs, NM
District II
P.O. Drawer DD, Artesia, NM 88211
District III
1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

SUBMIT 1 COPY TO APPROPRIATE DISTRICT OFFICE AND 1 COPY TO SANTA FE OFFICE

RECEIVED
FEB 19 1999
ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

PIT REMEDIATION AND CLOSURE REPORT

DENIED
Chloride above standards

Operator: Amoco Production Company **Telephone:** (505) - 326-9200

Address: 200 Amoco Court, Farmington, New Mexico 87401

Facility Or: Well Name BACA GC A # 1A

Location: Unit or Qtr/Qtr Sec F Sec 26 T 29N R 10 W County SAN JUAN

Pit Type: Separator X Dehydrator ___ Other Blow

Land Type: BLM ___, State ___, Fee ___, Other COM. AGMT.

Pit Location: (Attach diagram)
Pit dimensions: length 25', width 25', depth 3'
Reference: wellhead X, other ___
Footage from reference: 160'
Direction from reference: 75 Degrees X East North X of ___ West South ___

Depth To Ground Water: (Vertical distance from contaminants to seasonal high water elevation of ground water)	Less than 50 feet (20 points) 50 feet to 99 feet (10 points) Greater than 100 feet (0 Points)	20
Wellhead Protection Area: (Less than 200 feet from a private domestic water source, or; less than 1000 feet from all other water sources)	Yes (20 points) No (0 points)	0
Distance To Surface Water: (Horizontal distance to perennial lakes, ponds, rivers, streams, creeks, irrigation canals and ditches)	Less than 200 feet (20 points) 200 feet to 1000 feet (10 points) Greater than 1000 feet (0 points)	20
	RANKING SCORE (TOTAL POINTS):	40

Date Remediation Started: _____ **Date Completed:** 4/1/94

Remediation Method: (Check all appropriate sections) Excavation X Approx. cubic yards 69

Landfarmed X Insitu Bioremediation ___

Other _____

Remediation Location: (ie. landfarmed onsite, name and location of offsite facility) Onsite X Offsite _____

General Description Of Remedial Action: Excavation

Ground Water Encountered: No ___ Yes X Depth 3'

Final Pit: Closure Sampling: (if multiple samples, attach sample results and diagram of sample locations and depths)

Sample location see Attached Documents

Sample depth _____

Sample date _____ Sample time _____

Sample Results

Benzene(ppm) _____

Total BTEX(ppm) _____

Field headspace(ppm) _____

TPH _____

Ground Water Sample: Yes X No ___ (If yes, attach sample results)

I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF

DATE 4/25/94

SIGNATURE B J Shaw PRINTED NAME AND TITLE Buddy D. Shaw Environmental Coordinator

B - 14.8
T - 68
E - 20.[illegible]
X - 337.8

RESULTS TO Bo[illegible]cCLOY 4-11-94

TPH = ND

REO

NOTE: MCDANIEL GC "B" #1E

ENVIROTECH Inc.

5796 US HWY. 64, FARMINGTON, NM 87401
(505) 632-0615

PIT NO: C4961 NEW
C.O.C. NO: 3472

FIELD REPORT: CLOSURE VERIFICATION

JOB No: 92140
PAGE No: 1 of 1

LOCATION: LEASE: BACA GC "A" WELL: 1A QD: SE/4, NW/4 (F)
SEC. 26 TWP: 29N RNG: 10W BM: NM CNTY: SJ ST: NM PIT: BLOW/SEP
CONTRACTOR: PAUL VELASQUEZ
EQUIPMENT USED: EXCAVATOR

DATE STARTED: 4-1-94
DATE FINISHED: 4-1-94
ENVIRONMENTAL SPECIALIST: REO

SOIL REMEDIATION: QUANTITY: PIT ~ 25' x 25' x 3' DEEP
DISPOSAL FACILITY: LANDFARM ON SITE
LAND USE: SWAMP LAND
SURFACE CONDITIONS: EXCAVATED PRIOR TO ARRIVAL.

FIELD NOTES & REMARKS: PIT LOCATED APPROXIMATELY 160 FEET N 75° E FROM WELLHEAD.
PIT EXCAVATED TO GROUNDWATER @ 3'
APPEARS TO SERVICE 3 SEPARATORS + BLOW FOR POSSIBLY BOTH WELLS.
GAS BLOWING INTO PIT AT ARRIVAL.
WAITED FOR GAS TO STOP PRIOR TO SAMPLING

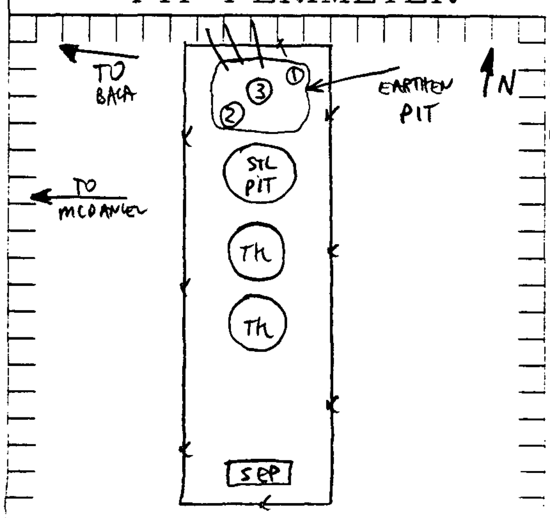
FIELD 418.1 CALCULATIONS

SAMPLE I.D.	LAB No:	WEIGHT (g)	mL. FREON	DILUTION	READING	CALC. ppm

DEPTH TO GROUNDWATER: 3'
NEAREST WATER SOURCE: SAN JUAN → NORTH
NEAREST SURFACE WATER: SWAMP 20' EAST
NMOCD RANKING SCORE: > 20
NMOCD TPH CLOSURE STD: 100 PPM TPH

SCALE
0 20 40 FEET

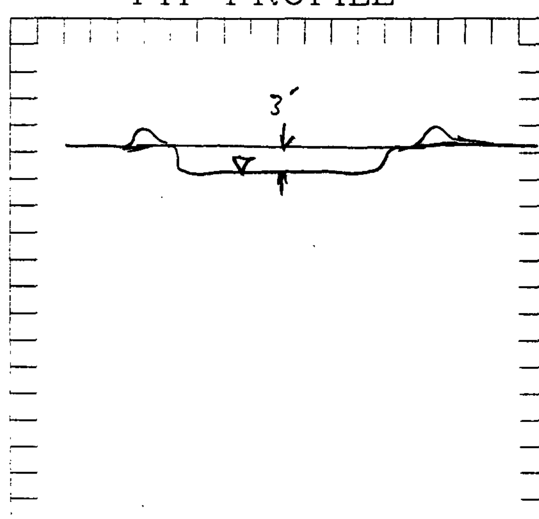
PIT PERIMETER



OVM RESULTS

SAMPLE ID	FIELD HEADSPACE PID (ppm)
① NES@2'	18
② SWS@2'	79
③ B@3'	WATER
	LAB
③	BTEX
②	418.1

PIT PROFILE



TRAVEL NOTES: CALLOUT: 3-31-94 ONSITE: 4-1-94 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:	3 @ 3'	Date Reported:	04-05-94
Laboratory Number:	7140	Date Sampled:	04-01-94
Sample Matrix:	Water	Date Received:	04-04-94
Preservative:	HgCl & Cool	Date Analyzed:	04-04-94
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	14.8	0.2
Toluene	68	0.4
Ethylbenzene	20.2	0.2
p,m-Xylene	298	0.2
o-Xylene	39.8	0.2

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	97 %
Bromofluorobenzene	86 %

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: Baca GC "A" #1A Blow/Sep C4961

Tony Tinsley
Analyst

Review

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

EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Amoco	Project #:	92140
Sample ID:	2 SWS @ 2'	Date Sampled:	04-01-94
Laboratory Number:	7139	Date Received:	04-04-94
Sample Matrix:	Soil	Date Analyzed:	04-08-94
Preservative:	Cool	Date Reported:	04-08-94
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	ND	20.0

ND = Parameter not detected at the stated detection limit.
N/A = Not applicable

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

Comments: Baca GC "A" #1A Blow/Sep Pit C4961

Tony Tristone
Analyst

David D. Young
Review

3472

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location	ANALYSIS/PARAMETERS	C4961
AMOCO # 92140	BACA GC "A" #1A Blow/SEP		

Sampler: (Signature): R. E. O'Neill

Chain of Custody Tape No.:

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	418.1	BTEX					Remarks
(2) SWS @ 2'	4-1-94	1320	7139	SOIL	1	✓						RUSH
(3) @ 3'	4-1-94	1320	7140	WATER	2		✓					"

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
R. E. O'Neill	4-4-94	0735	Tony Tristano	4/4/94	0735
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

san juan repro Form 576-81

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
2040 S. PACHECO
SANTA FE, NEW MEXICO 87505
(505) 827-7131

January 16, 1997

CERTIFIED MAIL
RETURN RECEIPT NO. P-269-269-237

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

RE: FINAL SAN JUAN BASIN PIT CLOSURE REPORTS

Dear Mr. Shaw:

The New Mexico Oil Conservation Division (OCD) has completed a review of 25 Amoco Production Company (Amoco) "PIT REMEDIATION AND CLOSURE REPORTS" with April 21, 1994 and April 25, 1994 dates.

The OCD's review of the above referenced document is addressed below:

A. The pit closure/soil remediation activities conducted at the sites listed below are **approved.**

1. Bruington GC B#1E (Blow pit) Unit O, Sec. 15, T29N, R12W.
2. Bruington GC B#1E (Separator pit) Unit O, Sec. 15, T29N, R12W.

Please be advised that OCD approval does not relieve Amoco of liability if remaining contaminants are found to pose a future threat to surface water, ground water, human health or the environment. In addition, OCD approval does not relieve Amoco of responsibility for compliance with any other federal, state or local laws and/or regulations.

B. The pit remedial activities conducted at the sites listed below are satisfactory. However, according to the reports, onsite landfarming and/or composting actions are still continuing at the sites. Subsequently, the OCD cannot issue final closure approval at this time and approval of closure actions at these sites is **denied.** Please resubmit final closure reports for these sites upon completion of the landfarming and/or composting activities. The final reports will include the results of the soil remediation levels achieved, the laboratory analyses and associated quality assurance/quality control data and the disposition of the remediated soils.

1. Abrams GC E #1E (Blow/separator) Unit M, Sec. 30, T29N, R10W.
2. Abrams L #1A (Separator pit) Unit I, Sec. 26, T29N, R10W.

3.	Black GC #1E (Blow pit)	Unit G, Sec. 29, T29N, R10W.
4.	Eaton A #001 (Separator pit)	Unit P, Sec. 25, T29N, R11W.
5.	Garcia GC B#1 (Separator pit)	Unit J, Sec. 21, T29N, R10W.
6.	Garcia GC B#1 (Blow pit)	Unit J, Sec. 21, T29N, R10W.
7.	GCU #230E (Separator pit)	Unit O, Sec. 23, T28N, R12W.
8.	Hare GC C#1 (Blow pit)	Unit M, Sec. 25, T29N, R10W.
9.	Hare GC C#1 (Separator pit)	Unit M, Sec. 25, T29N, R10W.
10.	Harold B Chapson (Separator pit)	Unit J, Sec. 28, T29N, R10W.
11.	Lefkovitz GC B#1E (Separator pit)	Unit P, Sec. 25, T29N, R10W.
12.	Lefkovitz GC B#1E (Compressor pit)	Unit P, Sec. 25, T29N, R10W.
13.	Lefkovitz GC B#1E (Blow pit)	Unit P, Sec. 25, T29N, R10W.
14.	Maddox GC A#1 (Blow pit)	Unit M, Sec. 27, T29N, R10W.
15.	Maddox Gas Unit B#1 (Blow pit)	Unit O, Sec. 27, T29N, R10W.
16.	Pollock GC D#1 (Separator pit)	Unit M, Sec. 27, T29N, R10W.
17.	Sanchez GC B#1E (Separator pit)	Unit E, Sec. 28, T29N, R10W.
18.	VCU #26 (Blow pit)	Unit D, Sec. 22, T28N, R04W.

C. The final pit remedial contaminant levels at the sites listed below are in excess of the OCD's recommended remediation levels. Consequently, the OCD cannot issue final closure approval and approval of closure actions at these sites is **denied**. The OCD requests that Amoco address the extent of the remaining contamination at these sites. The OCD will reconsider issuing closure approval upon resubmission of pit closure forms which address the remaining extent of contamination at the sites. The resubmitted forms should include the completed form and all pertinent information related to the extent of contamination, the results of the soil remediation levels achieved, the results of the soil remediation levels achieved, the laboratory analyses and associated quality assurance/quality control data and the disposition of the remediated soils.

1.	Morris GC C#1E (Separator pit)	Unit I, Sec. 26, T29N, R10W.

D. Ground waters at the sites listed below are contaminated with petroleum related constituents in excess of New Mexico Water Quality Control Commission ground water standards. In addition, the extent of ground water contamination at the sites has not been determined. Therefore, approval of these pit closure forms is **denied**. The OCD requests that Amoco investigate the extent of contamination and, if necessary, remediate contaminated ground water pursuant to Amoco's November 21, 1995 ground water investigation/remediation work plan which was approved by the OCD on November 29, 1995.

1.	Baca GC A#1A (Separator pit)	Unit F, Sec. 26, T29N, R11W.
2.	~~Masden GC #1 (Separator pit)~~	~~Unit A, Sec. 28, T29N, R11W.~~
3.	State GC BS #1 (Separator pit)	Unit K, Sec. 23, T29N, R11W.
4.	State GC BS #1 (Separator pit)	Unit K, Sec. 23, T29N, R11W.

To simplify the approval process for both Amoco and OCD, the OCD requests that Amoco submit all future pit closure reports only upon completion of all closure activities including onsite landfarming or composting of contaminated soils. The reports should include the completed form and all pertinent information related to the extent of contamination, the results of the soil remediation levels in the pits and landfarms, all laboratory analyses and associated quality assurance/quality control data and the disposition of all remediated soils.

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

Sincerely,

William C. Olson
Hydrogeologist
Environmental Bureau

xc: OCD Aztec District Office
Bill Liess, BLM Farmington District Office
David Deardorff, New Mexico State Land Office
Nelson Velez, Blagg Engineering, Inc.
Ms. Charmaine Tso, Navajo Nation EPA

BACA GC A # 1A - Separator Pit
Se/4 Nw/4 Sec. 26, T29N, R10W

Pit closure Date:	**April 4, 1994 (Documentation Included)**
Monitor Well Installation Date:	**May 7, 1996**
Monitor Well Sampling Date:	**June 12, 1996**

Groundwater Monitor Well Sampling Procedures:

Groundwater samples were collected from site monitor wells following USEPA: SW-846 protocol. The samples were collected using new disposable bailers and placed in new laboratory supplied 40 ml glass vials with teflon septa caps. Samples were analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) per USEPA Method 8020. When applicable, additional groundwater was collected and place in laboratory supplied 250 or 500 ml plastic containers and analyzed for general water quality per USEPA Method 600/4-79-020. The samples were preserved cool (BTEX samples also preserved with mercuric chloride) 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.

Water Quality Information:

The BTEX results for all three (3) monitor wells during the June 12, 1997 sampling event were non detectable or below the New Mexico Water Quality Control Commission's allowable concentration for groundwater. The general water quality results revealed total dissolved solids adjacent to the separator pit area (MW #2) to be below the up and down gradient levels (MW #1 & #3).

Summary and/or Recommendations:

Based on the enclosed documentation, the groundwater adjacent to the separator pit area appears to meet all the criteria for permanent closure. All aspects of the Amoco groundwater plan dated October 22, 1996 (approved by NMOCD with letter dated February 7, 1997) have been adhered to. Therefore, Amoco is requesting permanent closure status for the separator pit. Finally, as a formality, enclosed is NMOCD's letter dated January 16, 1997 which addresses the pit closure verification and states that final closure for the pit was denied (see page 2 of document).

AMOCO GROUNDWATER MONITOR WELL LABORATORY RESULTS

SUBMITTED BY BLAGG ENGINEERING, INC.

BACA GC A # 1A – SEPARATOR PIT
UNIT F, SEC. 26, T29N, R10W

REVISED DATE: JANUARY 13, 1997

FILENAME: (BA-2Q-96.WK3) NJV

SAMPLE DATE	MONITOR WELL No:	D.T.W. (ft)	T.D. (ft)	TDS mg/L	COND. umhos	pH	PRODUCT (in)	BTEX EPA METHOD 8020 (PPB) Benzene	Toluene	Ethyl Benzene	Total Xylene
12-Jun-96	MW #1	4.92	7.79	8210	5000	7.1		0.67	6	ND	1
12-Jun-96	MW #2	6.97	10.03	2860	2500	7.0		ND	ND	ND	ND
12-Jun-96	MW #3	6.77	9.24	4710	2400	6.9		ND	4	ND	ND

GENERAL WATER QUALITY

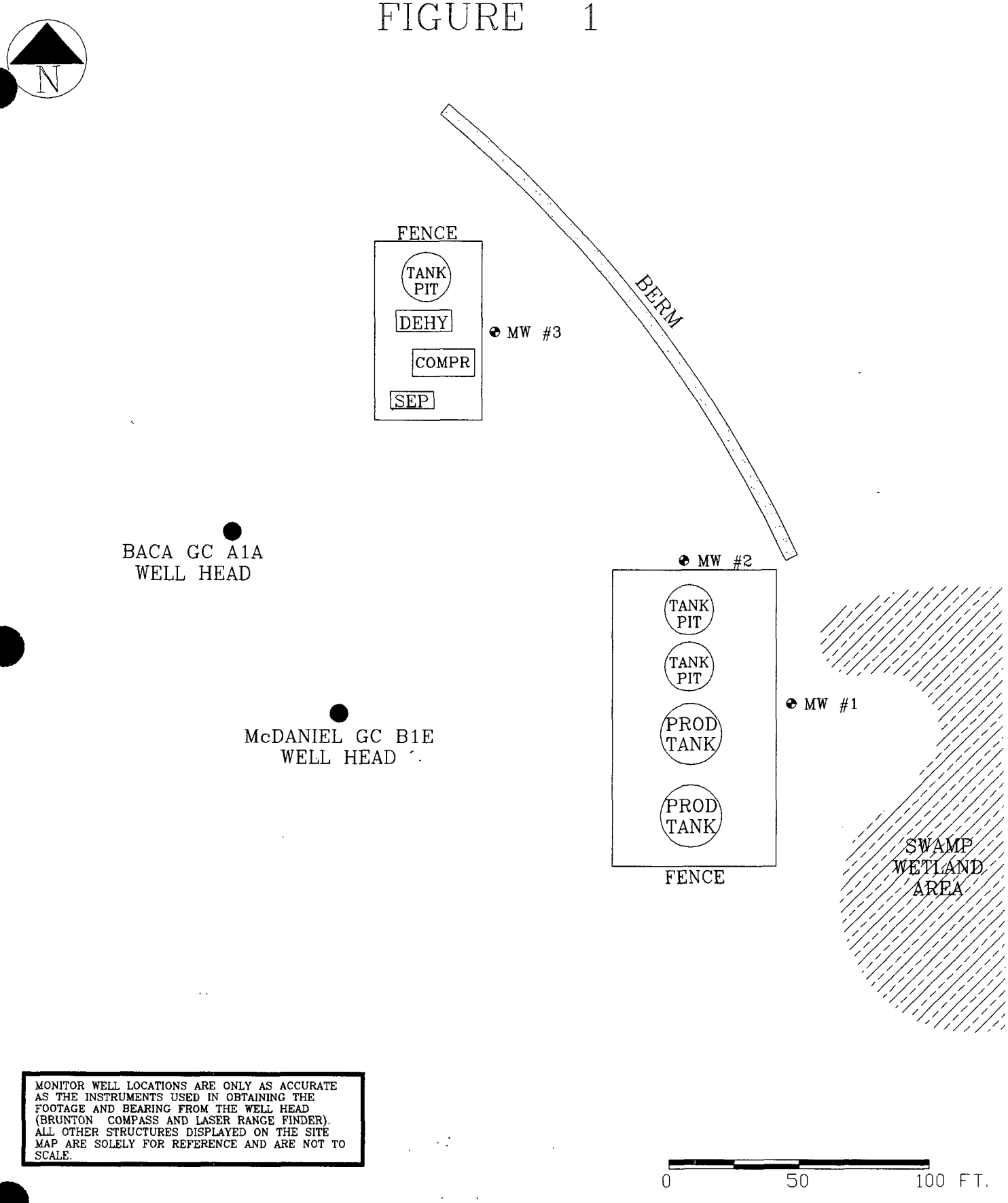
AMOCO PRODUCTION COMPANY

BACA GC A # 1A

SAMPLE DATE : JUNE 12, 1996

PARAMETERS		MW # 1	MW # 2	MW # 3	Units
GENERAL	LAB pH	7.3	7.5	7.2	s. u.
	LAB CONDUCTIVITY (25 DEG. CELCIUS)	8,210	3,720	5,670	umhos cm
	TOTAL DISSOLVED SOLIDS (180 DEG. CELCIUS)	8,210	2,860	4,710	mg / L
	TOTAL DISSOLVED SOLIDS (CALCULATED)	7,860	2,560	4,130	mg / L
ANIONS	TOTAL ALKALINITY AS CaCO3	764	239	358	mg / L
	BICARBONATE ALKALINITY (AS CaCO3)	764	239	358	mg / L
	CARBONATE ALKALINITY (AS CaCO3)	NA	NA	NA	mg / L
	HYDROXIDE ALKALINITY (AS CaCO3)	NA	NA	NA	mg / L
	CHLORIDE	40.0	17.5	342	mg / L
	SULFATE	4,960	1,600	2,250	mg / L
	NITRATE + NITRITE – N	NA	NA	NA	
	NITRATE – N	NA	NA	NA	
	NITRITE – N	NA	NA	NA	
CATIONS	TOTAL HARDNESS AS CaCO3	4,620	900	1,460	mg / L
	CALCIUM	497	311	498	mg / L
	MAGNESIUM	91.6	30.2	53.2	mg / L
	POTASSIUM	17.0	36.0	12.00	mg / L
	SODIUM	1,800	420	760	mg / L
DATA VALIDATION					ACCEPTANCE LEVEL
	CATION/ANION DIFFERENCE	3.75	1.87	0.80	+/– 5 %
	TDS (180):TDS (CALCULATED)	1.0	1.1	1.1	1.0 – 1.2

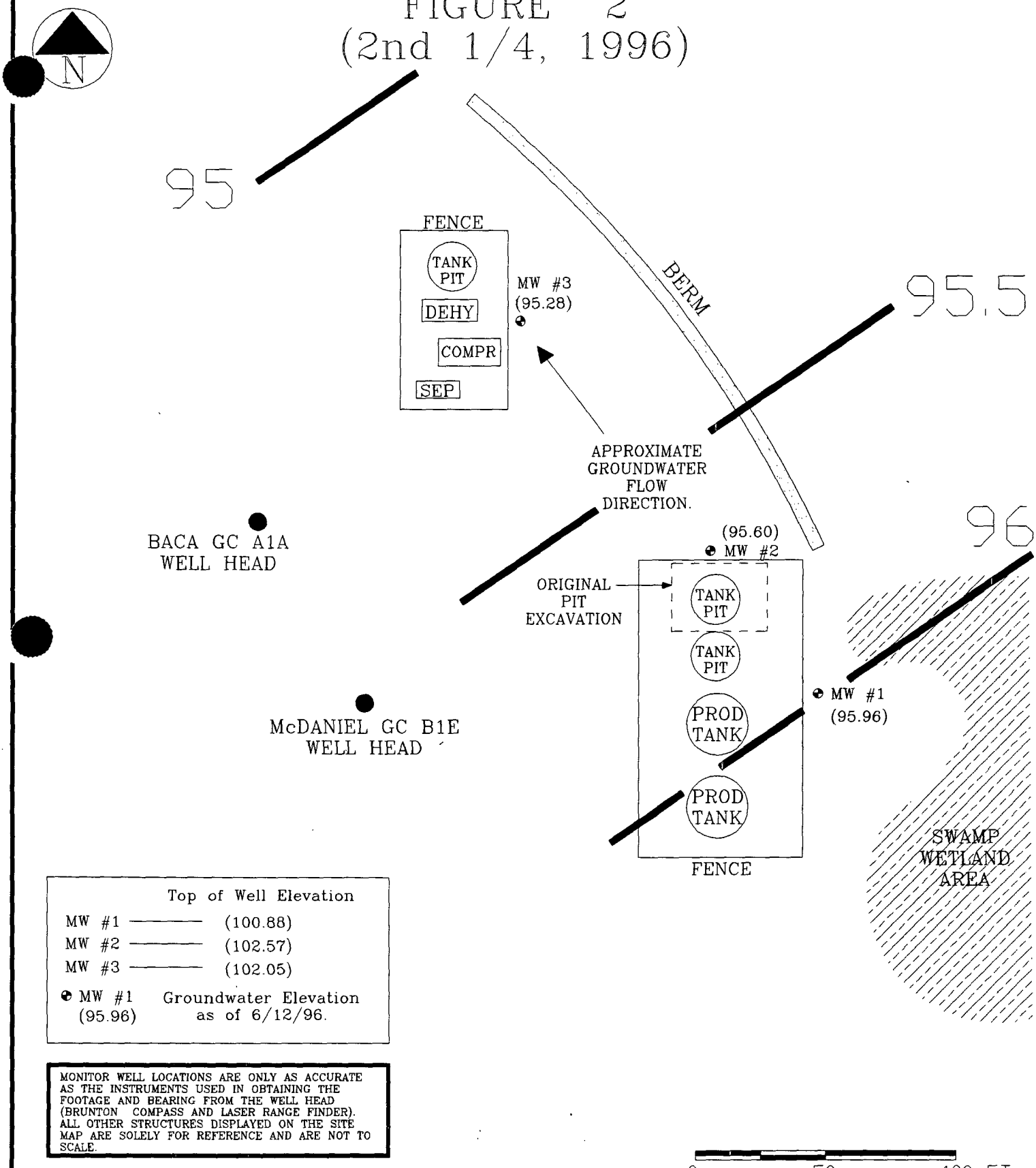
FIGURE 1



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

AMOCO PRODUCTION COMPANY BACA GC A1A SE/4 NW/4 SEC. 26, T29N, R10W 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: BACA-A1A	SITE MAP 6/96

FIGURE 2
(2nd 1/4, 1996)



AMOCO PRODUCTION COMPANY BACA GC A1A SE/4 NW/4 SEC. 26, T29N, R10W 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 Monitor. DRAWN BY: NJV FILENAME: BACA-A1A REVISED: 1/17/97 NJV	GROUNDWATER GRADIENT MAP 6/96

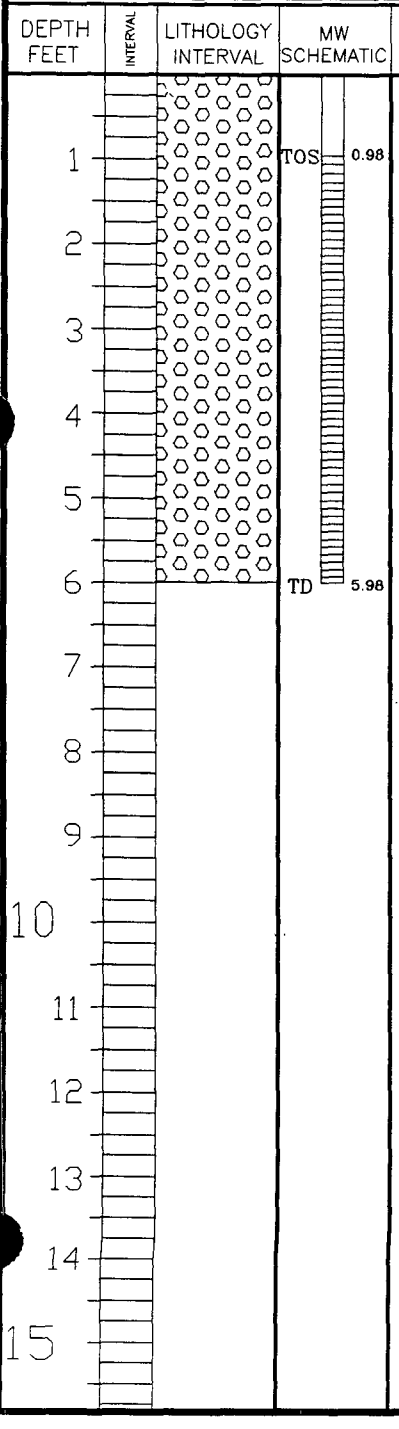
BLAGG ENGINEERING, Inc.

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

BORE / TEST HOLE REPORT

LOCATION NAME:	BACA GC A # 1A
CLIENT:	AMOCO PRODUCTION COMPANY
CONTRACTOR:	BLAGG ENGINEERING, INC. / PAUL & SONS
EQUIPMENT USED:	BACKHOE
BORING LOCATION:	S73E, 225 FEET FROM WELL HEAD.

BORING #.....	BH - 1
MW #.....	1
PAGE #.....	1
DATE STARTED	5/17/96
DATE FINISHED	5/17/96
OPERATOR.....	BM
PREPARED BY	NJV



FIELD CLASSIFICATION AND REMARKS

TOP OF CASING APPROX. 1.75 FT. ABOVE GROUND SURFACE.

DARK YELLOWISH BROWN SAND AND GRAVEL CONTINUOUS THROUGHOUT ENTIRE BORING, NON COHESIVE, SLIGHTLY MOIST TO SATURATED (AT GROUNDWATER), FIRM, NO APPARENT HYDROCARBON ODOR OBSERVED (0.0 - 5.98 FT. INTERVAL).

▼ GW DEPTH ON 6/12/96 = 3.17 FT. (APPROX.) FROM GROUND SURFACE.

NOTES:
- SAND & GRAVEL (VARYING SIZES).
- TOS - TOP OF SCREEN FROM GROUND SURFACE.
- TD - TOTAL DEPTH OF MONITOR WELL FROM GROUND SURFACE.
- GW - GROUND WATER.

DRAWING: BACA-1	DATE: 2/25/97	DWN BY: NJV

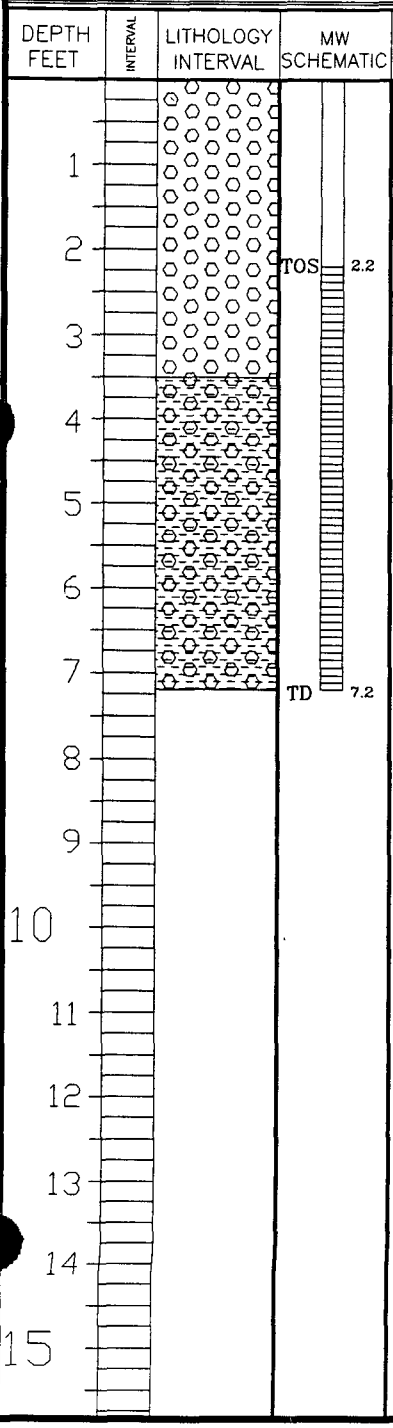
BLAGG ENGINEERING, Inc.

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

BORE / TEST HOLE REPORT

LOCATION NAME:	BACA GC A # 1A
CLIENT:	AMOCO PRODUCTION COMPANY
CONTRACTOR:	BLAGG ENGINEERING, INC. / PAUL & SONS
EQUIPMENT USED:	BACKHOE
BORING LOCATION:	S86E, 174 FEET FROM WELL HEAD.

BORING #.....	BH - 2
MW #.....	2
PAGE #.....	2
DATE STARTED	5/17/96
DATE FINISHED	5/17/96
OPERATOR.....	BM
PREPARED BY	NJV



FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROX. 2.80 FT. ABOVE GROUND SURFACE.

DARK YELLOWISH BROWN SAND AND GRAVEL, NON COHESIVE, SLIGHTLY MOIST, FIRM, NO APPARENT HYDROCARBON ODOR OBSERVED (0.0 - 3.5 FT. INTERVAL).

▼ GW DEPTH ON 6/12/96 = 4.17 FT. (APPROX.) FROM GROUND SURFACE.

DARK GRAY SAND AND GRAVEL, NON COHESIVE, SATURATED, FIRM TO LOOSE, NO APPARENT HYDROCARBON ODOR OBSERVED (3.5 - 7.2 FT. INTERVAL).

NOTES:
- SAND & GRAVEL (VARYING SIZES).
- SAND & GRAVEL (VARYING SIZES) DISCOLORED.
- TOS - TOP OF SCREEN FROM GROUND SURFACE.
- TD - TOTAL DEPTH OF MONITOR WELL FROM GROUND SURFACE.
- GW - GROUND WATER.

DRAWING: BACA-2	DATE: 2/25/97	DWN BY: NJV

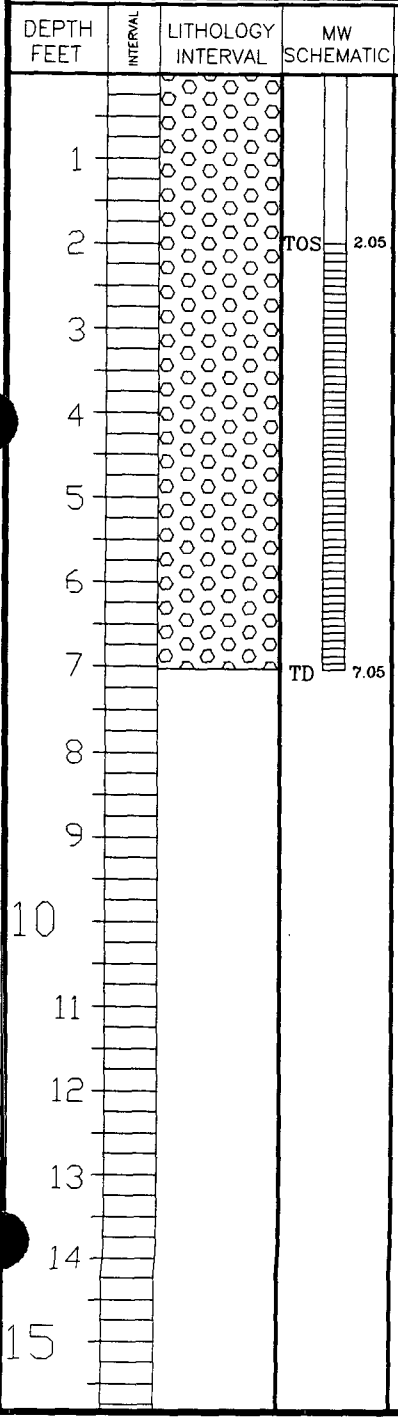
BLAGG ENGINEERING, Inc.

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

BORE / TEST HOLE REPORT

LOCATION NAME:	BACA GC A # 1A
CLIENT:	AMOCO PRODUCTION COMPANY
CONTRACTOR:	BLAGG ENGINEERING, INC. / PAUL & SONS
EQUIPMENT USED:	BACKHOE
BORING LOCATION:	N53E, 126 FEET FROM WELL HEAD.

BORING #.....	BH - 3
MW #.....	3
PAGE #.....	3
DATE STARTED	5/17/96
DATE FINISHED	5/17/96
OPERATOR.....	BM
PREPARED BY	NJV



FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROX. 2.15 FT. ABOVE GROUND SURFACE.

DARK YELLOWISH BROWN SAND AND GRAVEL CONTINUOUS THROUGHOUT ENTIRE BORING, NON COHESIVE, SLIGHTLY MOIST TO SATURATED (AT GROUNDWATER), FIRM, NO APPARENT HYDROCARBON ODOR OBSERVED (0.0 - 7.05 FT. INTERVAL).

▼ GW DEPTH ON 6/12/96 = 4.62 FT. (APPROX.) FROM GROUND SURFACE.

NOTES:
- SAND & GRAVEL (VARYING SIZES).
- TOS - TOP OF SCREEN FROM GROUND SURFACE.
- TD - TOTAL DEPTH OF MONITOR WELL FROM GROUND SURFACE.
- GW - GROUND WATER.

DRAWING: BACA-3	DATE: 2/25/97	DWN BY: NJV

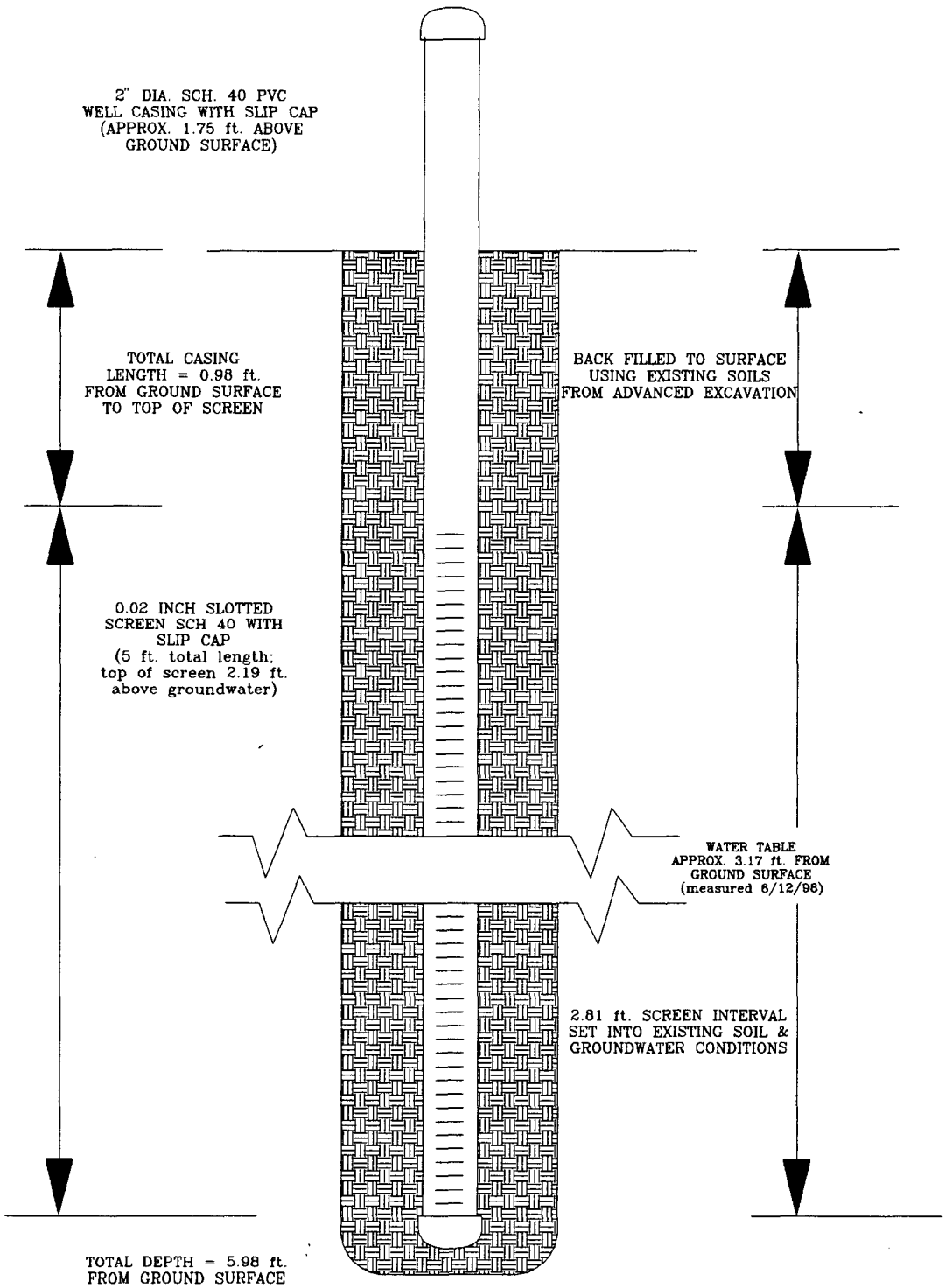
MONITOR WELL #1

AMOCO PRODUCTION COMPANY

BACA GC A # 1A

MONITOR WELL CONSTRUCTION & COMPLETION

INSTALLED WITH BACKHOE



BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

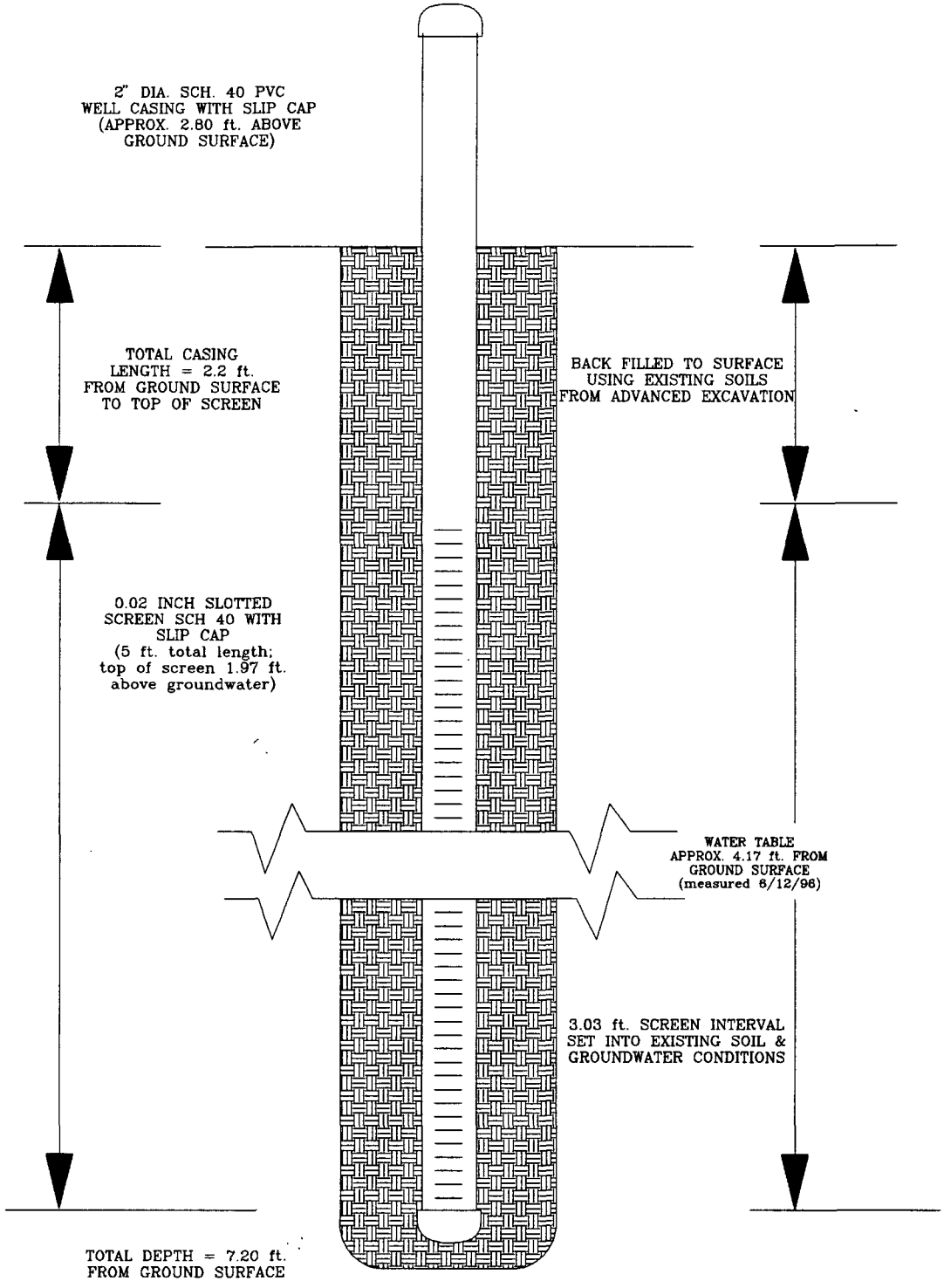
MONITOR WELL SCHEMATIC

DRAFTED BY: NJV

DATE: MAR. '97

FILENAME: MW-

MONITOR WELL #2



AMOCO PRODUCTION COMPANY

BACA GC A # 1A

MONITOR WELL CONSTRUCTION & COMPLETION

INSTALLED WITH BACKHOE

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

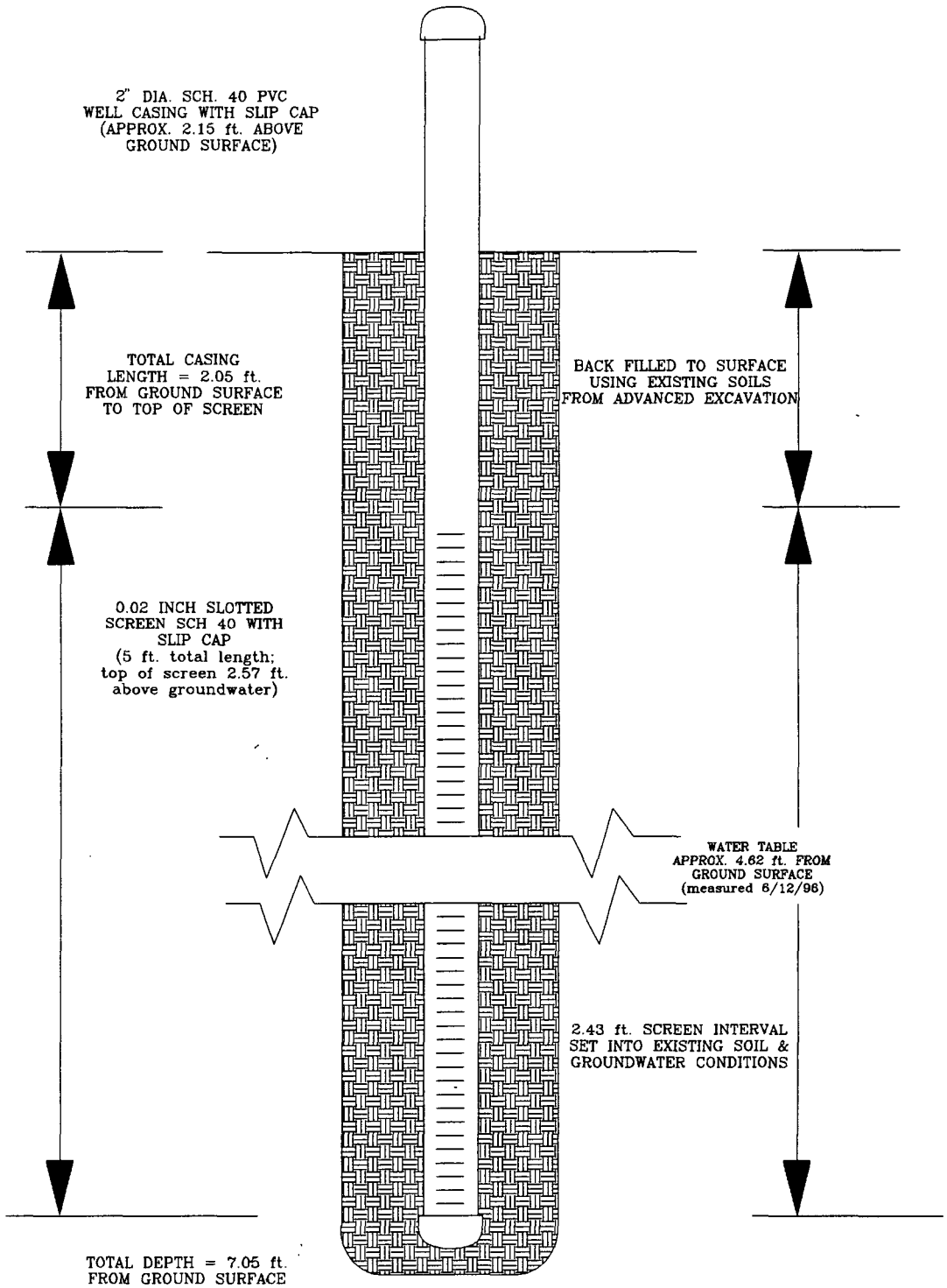
MONITOR WELL SCHEMATIC

DRAFTED BY: NJV

DATE: MAR. '97

FILENAME: MW-2

MONITOR WELL #3



AMOCO PRODUCTION COMPANY

BACA GC A # 1A

MONITOR WELL CONSTRUCTION & COMPLETION

INSTALLED WITH BACKHOE

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: MAR. '97

FILENAME: MW-3

BLAGG ENGINEERING INC.

MONITOR WELL QUARTERLY MONITORING DATA

DATE: 6-12-96 PROJECT NO: _____

CLIENT: AMOCO CHAIN-OF-CUSTODY NO: 2492

LOCATION: BACA GC A1A

PROJECT MANAGER: PED SAMPLER: PED

MONITOR WELL DATA

WELL #	WELL ELEV.	WATER ELEV.	DTW (FT)	T.D. (FT)	TIME	pH	COND. (uMHO)	BAIL (GAL)	PROD (IN)
MW-1	100.88	95.96	4.92	7.79	1000	7.1	5000	0.5	—
MW-2	102.57	95.60	6.97	10.03	1015	7.0	2500	1.0	—
MW-3	102.05	95.28	6.77	9.24	1030	6.9	3400	0.3	—

7.50 .29 7.79

9.74 .29 10.03

.29 9.24

Notes: Volume of water bailed from well prior to sampling.
Ideally a minimum of 3 well volumes:
1.25" well = 24 oz. per foot of water.
= 2 bails per foot - small teflon bailer
= 3 bails per foot - 3/4" disposable bailer
2" well = 0.49 gallons per foot of water.
4" well = 1.95 gallons per foot of water.
Note well diameter if not standard 2".

ANAITAS ENVIRONMENTAL LABS

PURGEABLE AROMATICS

Blagg Engineering, Inc.

Project ID:	Baca GC A 1A	Report Date:	7/1/96
Sample ID:	MW - 1	Date Sampled:	6/12/96
Lab ID:	3917	Date Received:	6/12/96
Sample Matrix:	Water	Date Analyzed:	6/24/96
Preservative:	Cool, HgCl2		
Condition:	Intact		

Target Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Benzene	0.67	0.50
Toluene	6.44	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	1.34	1.00
o-Xylene	ND	0.50

Total BTEX	8.45

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Trifluorotoluene	106	88 - 110%
Bromofluorobenzene	108	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:	Baca GC A 1A	Report Date:	7/1/96
Sample ID:	MW - 2	Date Sampled:	6/12/96
Lab ID:	3918	Date Received:	6/12/96
Sample Matrix:	Water	Date Analyzed:	6/24/96
Preservative:	Cool, HgCl2		
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	108	88 - 110%
Bromofluorobenzene	108	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:	Baca GC A 1A	Report Date:	7/1/96
Sample ID:	MW - 3	Date Sampled:	6/12/96
Lab ID:	3919	Date Received:	6/12/96
Sample Matrix:	Water	Date Analyzed:	6/24/96
Preservative:	Cool, HgCl2		
Condition:	Intact		

Target Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Benzene	ND	0.50
Toluene	4.27	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	1.00
o-Xylene	ND	0.50
Total BTEX	4.27	

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Trifluorotoluene	105	88 - 110%
Bromofluorobenzene	108	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:	Baca GC A 1A	Date Reported:	06/28/96
Sample ID:	MW - 1	Date Sampled:	06/12/96
Laboratory ID:	3917	Time Sampled:	10:00
Sample Matrix:	Water	Date Received:	06/12/96

Parameter		Analytical Result	Units
General	Lab pH	7.3	s.u.
	Lab Conductivity @ 25° C	8,210	µmhos/cm
	Total Dissolved Solids @ 180°C	8,210	mg/L
	Total Dissolved Solids (Calc)	7,860	mg/L
Anions	Total Alkalinity as $CaCO_3$	764	mg/L
	Bicarbonate Alkalinity as $CaCO_3$	764	mg/L
	Carbonate Alkalinity as $CaCO_3$	NA	mg/L
	Hydroxide Alkalinity as $CaCO_3$	NA	mg/L
	Chloride	40.0	mg/L
	Sulfate	4,960	mg/L
	Nitrate + Nitrite - N	NA	
	Nitrate - N	NA	
	Nitrite - N	NA	
Cations	Total Hardness as $CaCO_3$	1,620	mg/L
	Calcium	497	mg/L
	Magnesium	91.6	mg/L
	Potassium	17.0	mg/L
	Sodium	1,800	mg/L
Data Validation			Acceptance Level
	Cation/Anion Difference	3.75	+/- 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

ANAITAS ENVIRONMENTAL LABS

General Water Quality
Blagg Engineering, Inc.

Project ID:	Baca GC A 1A	Date Reported:	06/28/96
Sample ID:	MW - 2	Date Sampled:	06/12/96
Laboratory ID:	3918	Time Sampled:	10:15
Sample Matrix:	Water	Date Received:	06/12/96

Parameter		Analytical Result	Units
General	Lab pH	7.5	s.u.
	Lab Conductivity @ 25° C	3,720	µmhos/cm
	Total Dissolved Solids @ 180°C	2,860	mg/L
	Total Dissolved Solids (Calc)	2,560	mg/L
Anions	Total Alkalinity as $CaCO_3$	239	mg/L
	Bicarbonate Alkalinity as $CaCO_3$	239	mg/L
	Carbonate Alkalinity as $CaCO_3$	NA	mg/L
	Hydroxide Alkalinity as $CaCO_3$	NA	mg/L
	Chloride	17.5	mg/L
	Sulfate	1,600	mg/L
	Nitrate + Nitrite - N	NA	
	Nitrate - N	NA	
	Nitrite - N	NA	
Cations	Total Hardness as $CaCO_3$	900	mg/L
	Calcium	311	mg/L
	Magnesium	30.2	mg/L
	Potassium	36.0	mg/L
	Sodium	420	mg/L
Data Validation			Acceptance Level
	Cation/Anion Difference	1.87	+/- 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:	Baca GC A 1A	Date Reported:	06/28/96
Sample ID:	MW - 3	Date Sampled:	06/12/96
Laboratory ID:	3919	Time Sampled:	10:30
Sample Matrix:	Water	Date Received:	06/12/96

Parameter		Analytical Result	Units
General	Lab pH	7.2	s.u.
	Lab Conductivity @ 25° C	5,670	µmhos/cm
	Total Dissolved Solids @ 180°C	4,710	mg/L
	Total Dissolved Solids (Calc)	4,130	mg/L
Anions	Total Alkalinity as $CaCO_3$	358	mg/L
	Bicarbonate Alkalinity as $CaCO_3$	358	mg/L
	Carbonate Alkalinity as $CaCO_3$	NA	mg/L
	Hydroxide Alkalinity as $CaCO_3$	NA	mg/L
	Chloride	342	mg/L
	Sulfate	2,250	mg/L
	Nitrate + Nitrite - N	NA	
	Nitrate - N	NA	
	Nitrite - N	NA	
Cations	Total Hardness as $CaCO_3$	1,460	mg/L
	Calcium	498	mg/L
	Magnesium	53.2	mg/L
	Potassium	12.0	mg/L
	Sodium	760	mg/L
Data Validation			Acceptance Level
	Cation/Anion Difference	0.80	+/- 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

July 1, 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 12, 1996. The samples were from the Baca GC A1A 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	Report Date:	7/1/96
Lab ID:	MB35240	Date Analyzed:	6/24/96

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	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

Duplicate Analysis

Lab ID:	3917Dup	Report Date:	7/1/96
Sample Matrix:	Water	Date Sampled:	6/12/96
Preservative:	Cool, HgCl2	Date Received:	6/12/96
Condition:	Intact	Date Analyzed:	6/24/96

Target Analyte	Original Conc. (ug/L)	Duplicate Conc. (ug/L)	Acceptance Range (ug/L)
Benzene	0.67	0.68	0 - 1.98
Toluene	6.44	6.56	4.37 - 8.63
Ethylbenzene	0.25	0.19	0 - 1.22
m,p-Xylenes	1.34	0.96	NE
o-Xylene	0.34	0.26	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	109	88 - 110%
	Bromofluorobenzene	107	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:	3914Spk	Report Date:	7/1/96
Sample Matrix:	Water	Date Sampled:	6/12/96
Preservative:	Cool, $HgCl_2$	Date Received:	6/12/96
Condition:	Intact	Date Analyzed:	6/24/96

Target Analyte	Spike Added (ug/L)	Original Conc. (ug/L)	Spiked Sample Conc. (ug/L)	% Recovery	Acceptance Limits (%)
Benzene	10	ND	10.3	103%	39 -150
Toluene	10	ND	10.2	99%	46 - 148
Ethylbenzene	10	ND	10.4	103%	32 - 160
m,p-Xylenes	20	ND	20.9	102%	NE
o-Xylene	10	ND	10.4	102%	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	101	88 - 110%
Bromofluorobenzene	101	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: 6/28/96

Parameter	Analytical Result	Certified Value	Acceptance Range	Units
Laboratory pH	9.03	9.09	8.89 - 9.29	s.u.
Conductivity	1313	1220	1040 - 1400	µmhos/cm
Total Dissolved Solids	870	913	794 - 1030	mg/L
Total Alkalinity	191	180	160 - 200	mg/L
Chloride	135	138	128 - 148	mg/L
Sulfate	115	124	107 - 141	mg/L
Total Hardness	239	254	218 - 290	mg/L
Calcium	57.8	54.6	47.0 - 62.2	mg/L
Magnesium	NA	NA	NA	mg/L
Potassium	120	123	105 - 141	mg/L
Sodium	170	173	147 - 199	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

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

CHAIN OF CUSTODY

6192

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-1	6-12	1000	WATER					✓										✓												
MW-2	"	1015	"					✓										✓												
MW-3	"	1030	"					✓										✓												

(Organic Analyses: Petroleum Hydrocarbons through Other; Water Analyses: Cation / Anion through Other; Metals: Priority Pollutants through Other. BTEX circled.)

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)

BACA 6C A1A

Sampled By:	Relinquished By:	Relinquished By:
Signature: REO Date: 6-12-96	Signature: REO Date: 6-12-96	Signature: Date:
Company: BEI Time: —	Company: BEI Time: 1445	Company: Time:

Received By:	Received By:	Received By:
Signature: Date:	Signature: Date:	Signature: [signature] Date: 6/12
Company: Time:	Company: Time:	Company: Anaitas Time: 2:50

Please Fill Out Thoroughly.

Shaded areas for lab use only.

White/Yellow: Anaitas
Pink: Client

CLIENT: AMOCO

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

LOCATION NO: C4961
C.O.C. NO: 5621

FIELD REPORT: LANDFARM/COMPOST PILE CLOSURE VERIFICATION

LOCATION: NAME: BACA GC A WELL #: 1 M PITS: BLOW/SEP
QUAD/UNIT: (H) SEC: 26 TWP: 29 N RNG: 10W PM: NM CNTY: SJ ST: NM
QTR/FOOTAGE: SE/4 NE/4 CONTRACTOR: P & S

DATE STARTED: 11-24-97
DATE FINISHED:
ENVIRONMENTAL SPECIALIST: NV/EP

SOIL REMEDIATION:

REMEDIATION SYSTEM: LANDFARM
APPROX. CUBIC YARDAGE: 119
LAND USE: RANGE
LIFT DEPTH (ft): NA

FIELD NOTES & REMARKS:

DEPTH TO GROUNDWATER: <50' NEAREST WATER SOURCE: <1000' NEAREST SURFACE WATER: <200'
NMOCD RANKING SCORE: 50 NMOCD TPH CLOSURE STD: 100 PPM

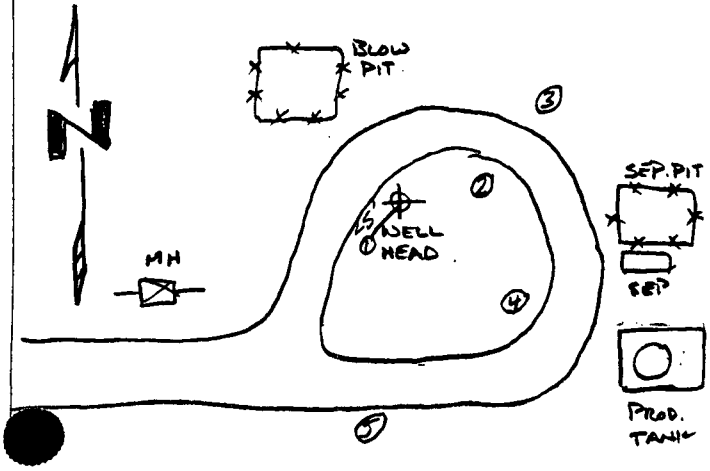
SOIL IS A DARK YELLOW W/ LIGHT BROWN, SILTY SAND. DRY, NO STAIN OR HC ODOR.
TOOK 5PT COMPOSITE

McDANIEL GC B1E INCLUDED, 50 C.Y. FROM DEHY PIT, NO ACTUAL LANDFARM OBSERVED ON ENTIRE WELL PAD.

FIELD 418.1 CALCULATIONS

SAMP. TIME	SAMPLE I.D.	LAB No:	WEIGHT (g)	mL. FREON	DILUTION	READING	CALC. ppm

SKETCH/SAMPLE LOCATIONS



OVM RESULTS

SAMPLE ID	FIELD HEADSPACE PID (ppm)
LF-1	10.8

LAB SAMPLES

SAMPLE ID	ANALYSIS	TIME	RESULTS
LF-1	8015	1220	ND

SCALE
0 FT

TRAVEL NOTES: CALLOUT: N/A ONSITE: 11 24 97 1220

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:	LF - 1	Date Reported:	12-03-97
Laboratory Number:	C593	Date Sampled:	11-24-97
Chain of Custody No:	5621	Date Received:	11-26-97
Sample Matrix:	Soil	Date Extracted:	11-26-97
Preservative:	Cool	Date Analyzed:	12-01-97
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)	**ND**	**0.1**
Total Petroleum Hydrocarbons	**ND**	**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: **Baca GC A #1A Landfarm. 5 Pt. Composite.**

Analyst

Review

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

5621

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location	ANALYSIS/PARAMETERS
BLAGG / AMOCO	LANDFARM BACA GC A #1A	
Sampler: (Signature) Ed Hasler	Chain of Custody Tape No. 04034-10	

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	TPH (8015)						Remarks
												PRESERV. - COOL
LF-1	11/24/97	1220	C593	SOIL	1	✓						5 PT. COMPOSITE
				SAMPLE RECEIVED COOL & INTACT								

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Ed Hasler	11/26/97	0700	Nelson Velez	11/26/97	0700
Relinquished by: (Signature) Nelson Velez	11/26/97	0944	Received by: (Signature) Allen L. Ogburn	11-26-97	0944
Relinquished by: (Signature)			Received by: (Signature)		

Ref COC's 5616 → 5628

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:	12-01-TPH QA/QC	Date Reported:	12-03-97
Laboratory Number:	C588	Date Sampled:	N/A
Sample Matrix:	Methylene Chloride	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	12-01-97
Condition:	N/A	Analysis Requested:	TPH

Calibration	I-Cal Date	I-Cal RF:	C-Cal RF:	% Difference	Accept. Range
Gasoline Range C5 - C10	10-28-97	6.1686E-04	6.1196E-04	0.79%	0 - 15%
Diesel Range C10 - C28	10-28-97	6.1629E-04	6.1444E-04	0.30%	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	ND	ND	0.0%	0 - 30%
Diesel Range C10 - C28	ND	ND	0.0%	0 - 30%

Spike Conc. (mg/Kg)	Sample	Spike Added	Spike Result	% Recovery	Accept. Range
Gasoline Range C5 - C10	ND	250	248	99%	75 - 125%
Diesel Range C10 - C28	ND	250	249	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 C588 - C596.**

Analyst

Review

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

C4961

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

5. Lease Designation and Serial No.

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation
COM. AGMT: NM015P3586C

1. Type of Well
☐ Oil Well ☒ Gas Well ☐ Other

8. Well Name and No.
BACA 6C A #1A

2. Name of Operator
Amoco Production Company

9. API Well No.
3004526180

3. Address and Telephone No.
200 Amoco Court, Farmington, N.M. 87401 Tel: (505) 326-9200

10. Field and Pool, or Exploratory Area
MESA VERDE

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
SE/4 NW/4 S-26 T29N R10W NMPM

11. County or Parish, State
SAN JUAN, NM

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
☐ Notice of Intent	☐ Abandonment	☐ Change of Plans
☒ Subsequent Report	☐ Recompletion	☐ New Construction
☐ Final Abandonment Notice	☐ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	☒ Other Pit closure	☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

PIT CLOSURE VERIFICATION

SEE ATTACHED DOCUMENTS

① BLOW PIT / SEPARATOR PIT — STEEL TANK INSTALLED, GROUNDWATER, PERMANENT CLOSURE UNDER AMOCO'S GW PLAN (SEC. 2.3) — REVISED 5/11/98.

14. I hereby certify that the foregoing is true and correct

Signed R A Shaw Title ENVIRO. COORDINATOR Date 4/25/94 RV

7/19/98 RV

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____
Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

GENERAL INSTRUCTIONS

This form is designed for submitting proposals to perform certain well operations, and reports of such operations when completed, as indicated, on Federal and Indian lands pursuant to applicable Federal law and regulations, and, if approved or accepted by any State, on all lands in such State, pursuant to applicable State law and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from, the local Federal and/or State office.

SPECIFIC INSTRUCTIONS

Item 4—If there are no applicable State requirements, locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local State or Federal office for specific instructions.

Item 13—Proposals to abandon a well and subsequent reports of abandonment should include such special information as is required by local Federal and/or State offices. In addition, such proposals and reports should include reasons for the abandonment; data on any former or present productive zones, or other zones with present significant fluid contents not sealed off by cement or otherwise; depths (top and bottom) and method of placement of cement plugs; mud or other material placed below, between and above plugs; amount, size, method of parting of any casing, liner or tubing pulled and the depth to top of any left in the hole; method of closing top of well; and date well site conditioned for final inspection looking to approval of the abandonment.

NOTICE

The Privacy Act of 1974 and the regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.

AUTHORITY: 30 U.S.C. 181 et. seq., 351 et. seq., 25 U.S.C. et. seq.; 43 CFR 3160.

PRINCIPAL PURPOSE — The information is to be used to evaluate, when appropriate, approve applications, and report completion of secondary well operations, on a Federal or Indian lease.

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(1) Evaluate the equipment and procedures used during the proposed or completed subsequent well operations.

(2) Request and grant approval to perform those actions covered by 43 CFR 3162.3-2(2).

(3) Analyze future applications to drill or modify operations in light of data obtained and methods used.

(4)(5) Information from the record and/or the record will be transferred to appropriate Federal, State, local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecutions.

EFFECT OF NOT PROVIDING INFORMATION — Filing of this notice and report and disclosure of the information is mandatory once an oil or gas well is drilled.

The Paperwork Reduction Act of 1980 (44 U.S.C. 3501, et. seq.) requires us to inform you that:

This information is being collected in order to evaluate proposed and/or completed subsequent well operations on Federal or Indian oil and gas leases.

This information will be used to report subsequent operations once work is completed and when requested, to obtain approval for subsequent operations not previously authorized.

Response to this request is mandatory for the specific types of activities specified in 43 CFR Part 3160.

BURDEN HOURS STATEMENT

Public reporting burden for this form is estimated to average 25 minutes per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management, (Alternate) Bureau Clearance Officer, (WO-771), 18 and C Streets, N.W., Washington, D.C. 20240, and the Office of Management and Budget, Paperwork Reduction Project (1004-0135), Washington, D.C. 20503.

*U.S. GPO: 1990-773-016/26019

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

February 21, 2000

Mr. William C. Olson - Hydrologist
State of New Mexico Oil Conservation Division
2040 South Pacheco
State Land Office Building
Santa Fe, NM 87505

RE: 1999 ANNUAL GROUNDWATER REPORTS
SAN JUAN COUNTY, NEW MEXICO
PERMANENT CLOSURE REQUESTED

Dear Mr. Olson:

Blagg Engineering, Inc., on behalf of Cross Timbers Oil Company, respectfully submits the attached 1999 annual groundwater reports in which permanent closure is requested. This reporting adheres to the NMOCD's previously approved groundwater management plan.

A total of ten (10) well sites, listed on the following page, are associated with this correspodence. All work performed on the these well sites have been incorporated into individual packets.

The summary, conclusions, and/or recommendations made within these reports are based on information made available from the enclosed material. Any site specific inquiries should be examined within the individual packets.

If you have questions, please call and contact either myself or Jeffrey C. Blagg. Thank you for your cooperation and assistance.

Sincerely,
BLAGG ENGINEERING, INC.

Nelson Velez
Staff Geologist

Reviewed by:

Jeffrey C. Blagg, P.E.
President

Attachments: Individual Well site packets

cc: Denny Foust, Deputy Oil & Gas Inspector, New Mexico Oil Conservation Division, Aztec, NM
Bill Liese, Regional Environmental Officer, Bureau of Land Management, Farmington, NM (2 copies)
Nina Hutton, Environmental & Safety Manager, Cross Timbers Oil Company, Ft. Worth, TX

NV/nv

PERM-99.CVL

Groundwater Sites Requesting Permanent Closure

1.	Baca GC A #1A	Unit G, Sec. 26, T29N, R10W
2.	Haney GC B #1E	Unit M, Sec. 20, T29N, R10W
3.	Hare GC C #1	Unit M, Sec. 25, T29N, R10W
4.	Masden GC # 1E	Unit D, Sec. 28, T29N, R11W
5.	McDaniel GC B # 1E	Unit F, Sec. 26, T29N, R10W
6.	Pearce GC # 1E	Unit J, Sec. 23, T29N, R11W
7.	Sanchez GC # 1	Unit G, Sec. 28, T29N, R10W
8.	Snyder GC # 1A	Unit F, Sec. 19, T29N, R9W
9.	Sullivan Frame A # 1E	Unit A, Sec. 30, T29N, R10W
10.	Texas National GC # 1	Unit K, Sec. 19, T29N, R9W

District I
P.O. Box 1980, Hobbs, NM
District II
P.O. Drawer DD, Artesia, NM 88211
District III
1000 Rio Brazos Rd, Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

SUBMIT 1 COPY TO APPROPRIATE DISTRICT OFFICE AND 1 COPY TO SANTA FE OFFICE

Denied
GW above limits
No landfarm results

PIT REMEDIATION AND CLOSURE REPORT

Operator: Amoco Production Company **Telephone:** (505) -326-9200

Address: 200 Amoco Court, Farmington, New Mexico 87401

Facility Or: Well Name BACA GC A # 1A

Location: Unit or Qtr/Qtr Sec F Sec 26 T 29N R 10 W County SAN JUAN

Pit Type: Separator X Dehydrator ___ Other Blow

Land Type: BLM ___, State ___, Fee ___, Other Com. AGMT.

Pit Location: (Attach diagram)
Pit dimensions: length 25', width 25', depth 3'
Reference: wellhead X, other ___
Footage from reference: 160'
Direction from reference: 75 Degrees X East North X of ___ West South ___

Depth To Ground Water: (Vertical distance from contaminants to seasonal high water elevation of ground water)	Less than 50 feet (20 points) 50 feet to 99 feet (10 points) Greater than 100 feet (0 Points)	20
Wellhead Protection Area: (Less than 200 feet from a private domestic water source, or; less than 1000 feet from all other water sources)	Yes (20 points) No (0 points)	0
Distance To Surface Water: (Horizontal distance to perennial lakes, ponds, rivers, streams, creeks, irrigation canals and ditches)	Less than 200 feet (20 points) 200 feet to 1000 feet (10 points) Greater than 1000 feet (0 points)	20
	RANKING SCORE (TOTAL POINTS):	40

Date Remediation Started: _____ **Date Completed:** 4/1/94

Remediation Method: (Check all appropriate sections) Excavation X Approx. cubic yards 69

Landfarmed X Insitu Bioremediation ___

Other _____

Remediation Location: (ie. landfarmed onsite, name and location of offsite facility) Onsite X Offsite _____

General Description Of Remedial Action: _____

Excavation

Ground Water Encountered: No ___ Yes X Depth 3'

Final Pit: Closure Sampling: (if multiple samples, attach sample results and diagram of sample locations and depths)

Sample location see Attached Documents

Sample depth _____

Sample date _____ Sample time _____

Sample Results

Benzene(ppm) _____

Total BTEX(ppm) _____

Field headspace(ppm) _____

TPH _____

Ground Water Sample: Yes X No ___ (If yes, attach sample results)

I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF

DATE 4/25/94

SIGNATURE B J Shaw

PRINTED NAME AND TITLE Buddy D. Shaw Environmental Coordinator

L - 7.5
T - 6[redacted]
E - 20[redacted]
X - 337.8

RESULTS TO Bob McCoy 4-11-94

TPH= ND

Meter: McDaniel GC "B" #1E

ENVIROTECH Inc.

5796 US HWY. 64, FARMINGTON NM 87401
(505) 632-0615

PIT NO: C4961 NEW
COC NO: 3472

FIELD REPORT: CLOSURE VERIFICATION

JOB NO: 92140
PAGE NO: 1 of 1

LOCATION: LEASE: BACA GC "A" WELL: 1A QD: SE/4, NW/4 (F)
SEC: 26 TWP: 29N RNG: 10W BM: NM CNTY: SJ ST: NM PIT: Blow/Sep
CONTRACTOR: PAUL VELASQUEZ
EQUIPMENT USED: EXCAVATOR

DATE STARTED: 4-1-94
DATE FINISHED: 4-1-94
ENVIRONMENTAL SPECIALIST: REG

SOIL REMEDIATION: QUANTITY: PIT ~ 25' x 25' x 3' DEEP
DISPOSAL FACILITY: LAND FARM ON SITE
LAND USE: SWAMP LAND
SURFACE CONDITIONS: EXCAVATED PRIOR TO ARRIVAL.

FIELD NOTES & REMARKS: PIT LOCATED APPROXIMATELY 160 FEET N 75° E FROM WELLHEAD.
PIT EXCAVATED TO GROUNDWATER @ 3'
APPEARS TO SERVICE 3 SEPARATORS + BLOW FOR POSSIBLY BOTH WELLS.
GAS BLOWING INTO PIT AT ARRIVAL.
WAITED FOR GAS TO STOP PRIOR TO SAMPLING

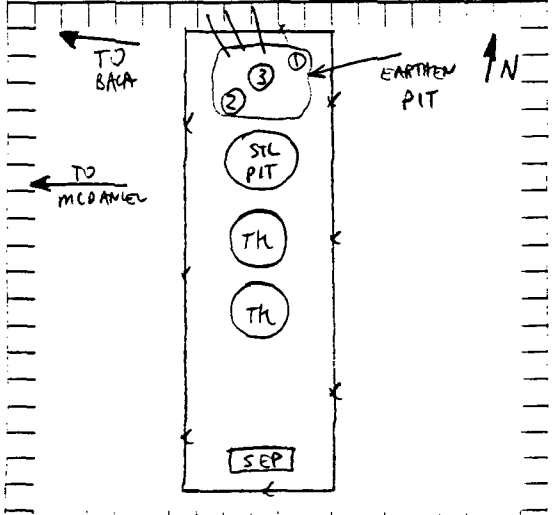
FIELD 418.1 CALCULATIONS

SAMPLE I.D.	LAB No.	WEIGHT (g)	mL. FREON	DILUTION	READING	CALC. ppm

DEPTH TO GROUNDWATER: 3'
NEAREST WATER SOURCE: SAN JUAN → NORTH
NEAREST SURFACE WATER: SWAMP 20' EAST
NMOCD RANKING SCORE: >20
NMOCD TPH CLOSURE STD: 100 ppm TPH

SCALE
0 20 40 FEET

PIT PERIMETER

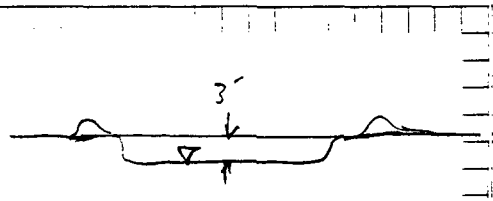


OVM RESULTS

SAMPLE	FIELD HEADSPACE PID (ppm)
① NES@2'	18
② SWS@2'	79
③ B@3'	WATER

LAB
③ BTEX
② 418.1

PIT PROFILE



TRAVEL NOTES: CALLOUT: 3-31-94 ONSITE: 4-1-94 1300 HRS

Y
1

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:	3 @ 3'	Date Reported:	04-05-94
Laboratory Number:	7140	Date Sampled:	04-01-94
Sample Matrix:	Water	Date Received:	04-04-94
Preservative:	HgCl & Cool	Date Analyzed:	04-04-94
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	14.8	0.2
Toluene	68	0.4
Ethylbenzene	20.2	0.2
p,m-Xylene	298	0.2
o-Xylene	39.8	0.2

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	97 %
Bromofluorobenzene	86 %

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: Baca GC "A" #1A Blow/Sep C4961

Tony Tinsley
Analyst

Review

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

EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Amoco	Project #:	92140
Sample ID:	2 SWS @ 2'	Date Sampled:	04-01-94
Laboratory Number:	7139	Date Received:	04-04-94
Sample Matrix:	Soil	Date Analyzed:	04-08-94
Preservative:	Cool	Date Reported:	04-08-94
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	ND	20.0

ND = Parameter not detected at the stated detection limit.
N/A = Not applicable

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

Comments: Baca GC "A" #1A Blow/Sep Pit C4961

Analyst

Review

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

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5. Lease Designation and Serial No.

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COM. AGMT: NM015P3586C

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☐ Oil Well ☒ Gas Well ☐ Other

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3004526180

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PIT CLOSURE VERIFICATION

SEE ATTACHED DOCUMENTS

14. I hereby certify that the foregoing is true and correct

Signed R.J. Shaw Title Enviro. Coordinator Date 4/25/94

(This space for Federal or State office use)

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