3R - 131

REPORTS

DATE:

1996-1998

CROSS TIMBERS OIL COMPANY

GROUNDWATER REMEDIATION REPORT

1996-1998

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

PREPARED FOR:
MR. WILLIAM C. OLSON
NEW MEXICO OIL CONSERVATION DIVISION

FEBRUARY 1999

PREPARD BY:
BLAGG ENGINEERING, INC.

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

SULLIVAN GC D #1 - Blow & Separator Pits
NW/4 NE/4 Sec. 26, T29N, R11W

Site Assessment Date:	No Assessment Conducted
Pit Closure Dates:	May 5, 1994 - June 8, 1994 (Documentation Included)
Monitor Well Installation Date:	April 30, 1996
Monitor Well Sampling Dates:	June 10, 1996 June 27, 1997 June 12, 1998

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 production tank located on the well site.

Water Quality Information:

BTEX and general chemistry results for the 1996, 1997 and 1998 quarterly sampling events are summarized in the following tables. Pursuant to Amoco's NMOCD approved groundwater plan, sampling of MWs #2, #3 and #4 was terminated after the initial 1996 BTEX results revealed non detectable or below regulatory levels for all constituents with respect to New Mexico Water Quality Control Commission (NMWQCC) allowable concentrations for groundwater. MW #1 was subsequently sampled annually and has yielded a long term decrease in BTEX constituents.

Summary and/or Recommendations:

Based on the enclosed documentation, residual groundwater contamination in excess of NMWQCC standards is present in only one well at the site, monitor well MW#1. Downgradient from MW#1, monitor well MW#4 has tested BTEX constituents at non-detect or values below NMWQCC standards. It is recommended that continued annual sampling of MW#1 be conducted to track the natural attenuation of BTEX contamination at this well.

All aspects of the Amoco revised groundwater plan dated October 22, 1996 (approved by NMOCD with letter dated February 7, 1997) have been followed.

AMOCO GROUNDWATER MONITOR WELL LABORATORY RESULTS

SUBMITTED BY BLAGG ENGINEERING, INC.

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

REVISED DATE: June 12, 1998

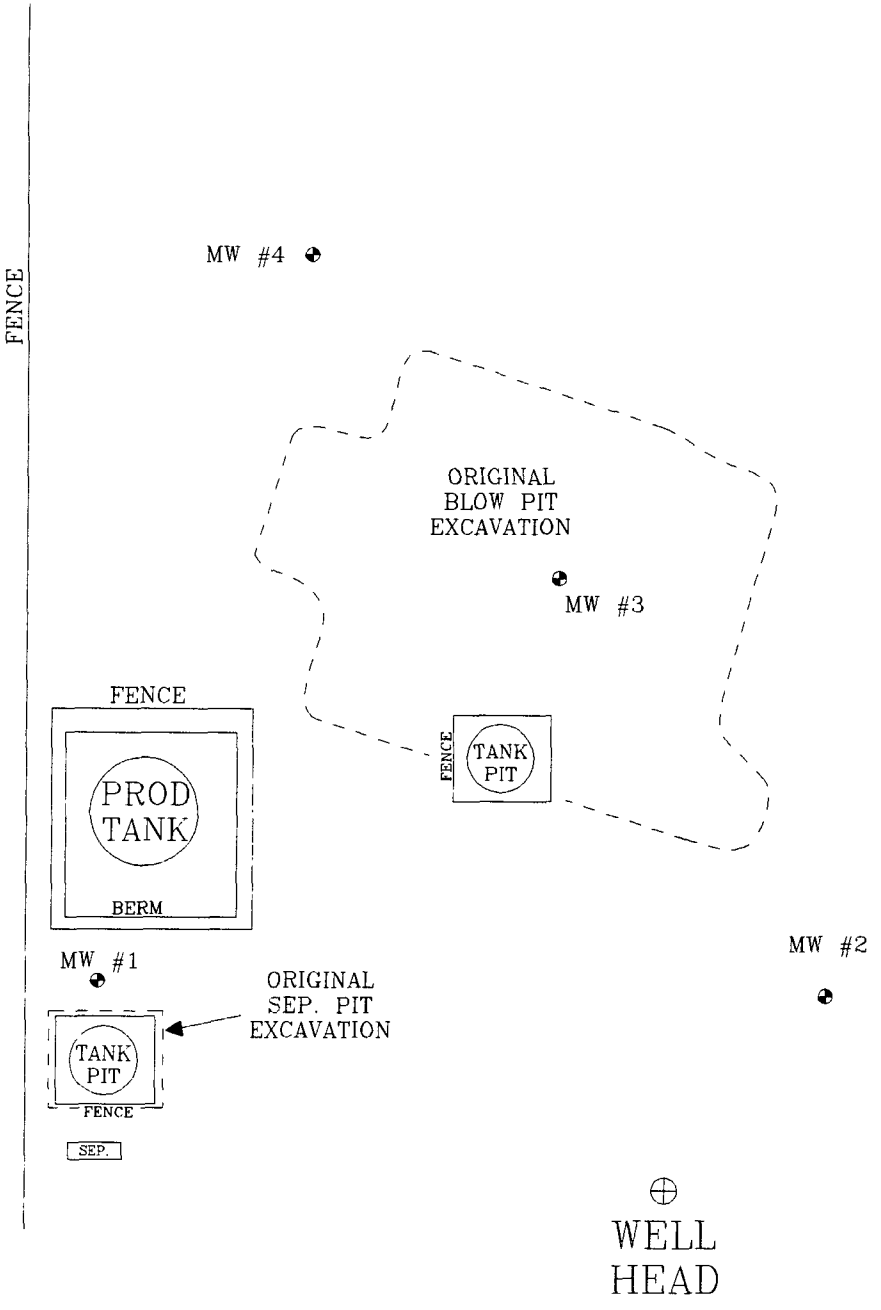
FILENAME: (SU-2Q-98.WK3) NJV

								BTEX EPA METHOD 8020 (PPB)			
SAMPLE DATE	MONITOR WELL No:	D.T.W. (ft)	T.D. (ft)	TDS mg/L	COND. umhos	pH	PRODUCT (in)	Benzene	Toluene	Ethyl Benzene	Total Xylene
10-Jun-96	MW #1	7.69	10.00	38300	10500	7.5		298	90.6	29.8	417.5
27-Jun-97		7.81	10.00		12900	7.3		675	208	342	645
12-Jun-98		7.31	10.00		13200	7.2		131	8.8	0.4	8.6
10-Jun-96	MW #2	7.85	10.00	10600	5500	7.4		ND	ND	ND	ND
10-Jun-96	MW #3	8.48	10.00	5310	3600	6.9		ND	13.00	ND	2.52
10-Jun-96	MW #4	8.04	10.00	10700	3500	7.0		ND	ND	ND	9.24

GENERAL WATER QUALITY
AMOCO PRODUCTION COMPANY
SULLIVAN GC D # 1
SAMPLE DATE : JUNE 10, 1996

PARAMETERS		MW # 1	MW # 2	MW # 3	MW # 4	Units
GENERAL	LAB pH	7.9	7.8	7.1	7.3	s. u.
	LAB CONDUCTIVITY (25 DEG. CELCIUS)	38,600	11,300	6,470	11,800	umhos cm
	TOTAL DISSOLVED SOLIDS (180 DEG. CELCIUS)	38,300	10,600	5,310	10,700	mg / L
	TOTAL DISSOLVED SOLIDS (CALCULATED)	26,900	10,100	4,930	7,930	mg / L
ANIONS	TOTAL ALKALINITY AS CaCO3	640	478	1,100	3,440	mg / L
	BICARBONATE ALKALINITY (AS CaCO3)	640	478	1,100	3,440	mg / L
	CARBONATE ALKALINITY (AS CaCO3)	NA	NA	NA	NA	mg / L
	HYDROXIDE ALKALINITY (AS CaCO3)	NA	NA	NA	NA	mg / L
	CHLORIDE	200	1,250	177	180	mg / L
	SULFATE	18,100	5,050	2,550	2,740	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	2,790	1,390	1,670	2,230	mg / L
	CALCIUM	526	354	575	598	mg / L
	MAGNESIUM	358	124	56.4	179	mg / L
	POTASSIUM	14.0	24.0	21.0	670	mg / L
	SODIUM	7,400	3,000	890	1,500	mg / L
DATA VALIDATION						ACCEPTANCE LEVEL
	CATION/ANION DIFFERENCE	2.17	2.92	4.94	1.54	+/– 5 %
	TDS (180):TDS (CALCULATED)	1.4	1.0	1.1	1.3	1.0 – 1.2

FIGURE 1

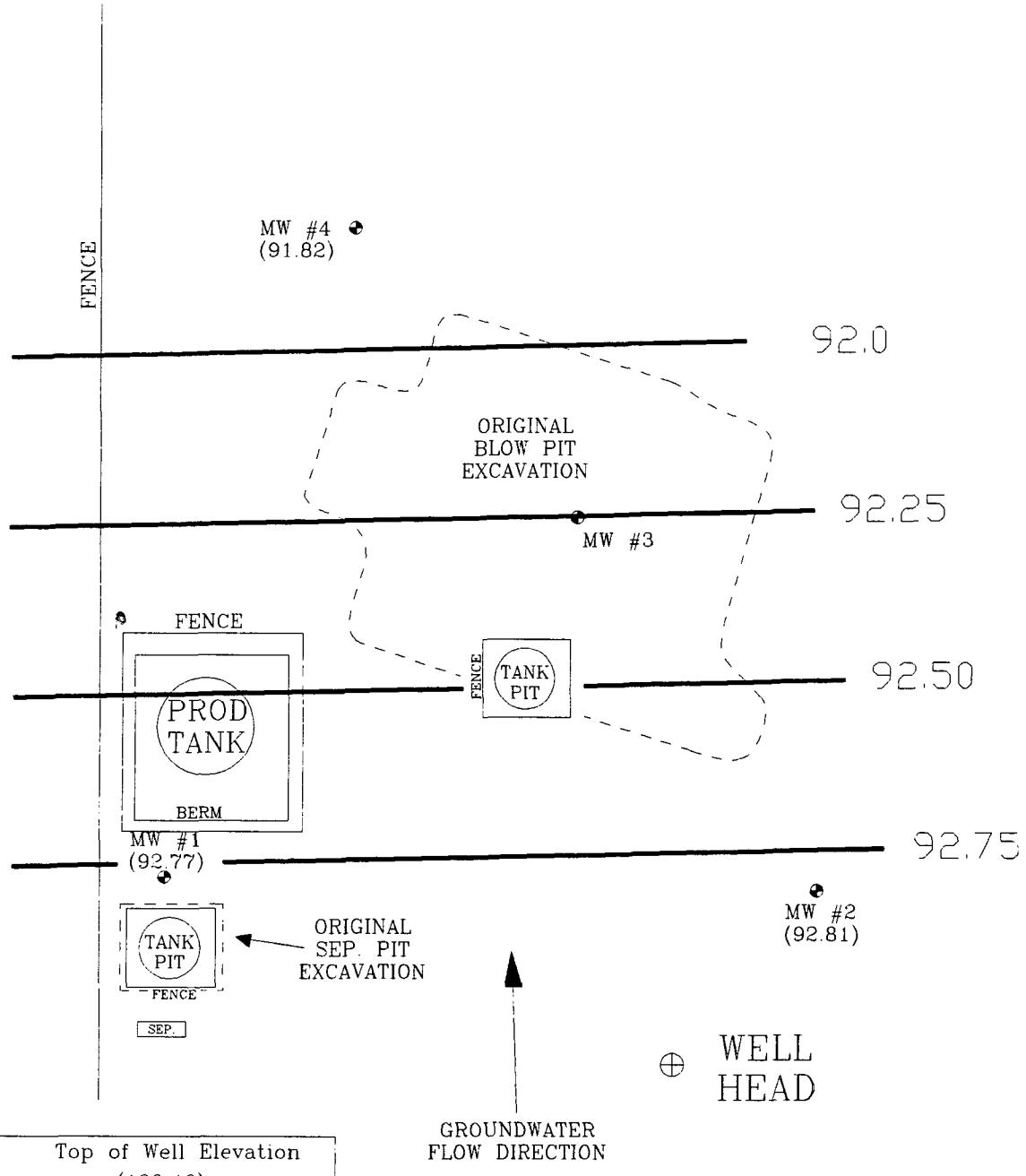


MONITOR WELL LOCATIONS ARE ONLY AS ACCURATE AS THE INSTRUMENTS USED IN OBTAINING THE FOOTAGE AND BEARING FROM THE WELL HEAD (BRUNTON COMPASS AND LASER RANGE FINDER). ALL OTHER STRUCTURES DISPLAYED ON THE SITE MAP ARE SOLELY FOR REFERENCE AND ARE NOT TO SCALE.

0 50 100 FT.

AMOCO PRODUCTION COMPANY SULLIVAN GC D1 NW/4 NE/4 SEC. 26, 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 MONITOR. DRAWN BY: NJV FILENAME: SULL-SM REVISED 2/10/97 NJV	SITE MAP 6/96

FIGURE 2
(2nd 1/4, 1996)



	Top of Well Elevation
MW #1	(100.46)
MW #2	(100.66)
MW #3	(99.92)
MW #4	(99.86)

MW #1 (92.77) Groundwater Elevation as of 6/10/96.

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 50 100 FT.

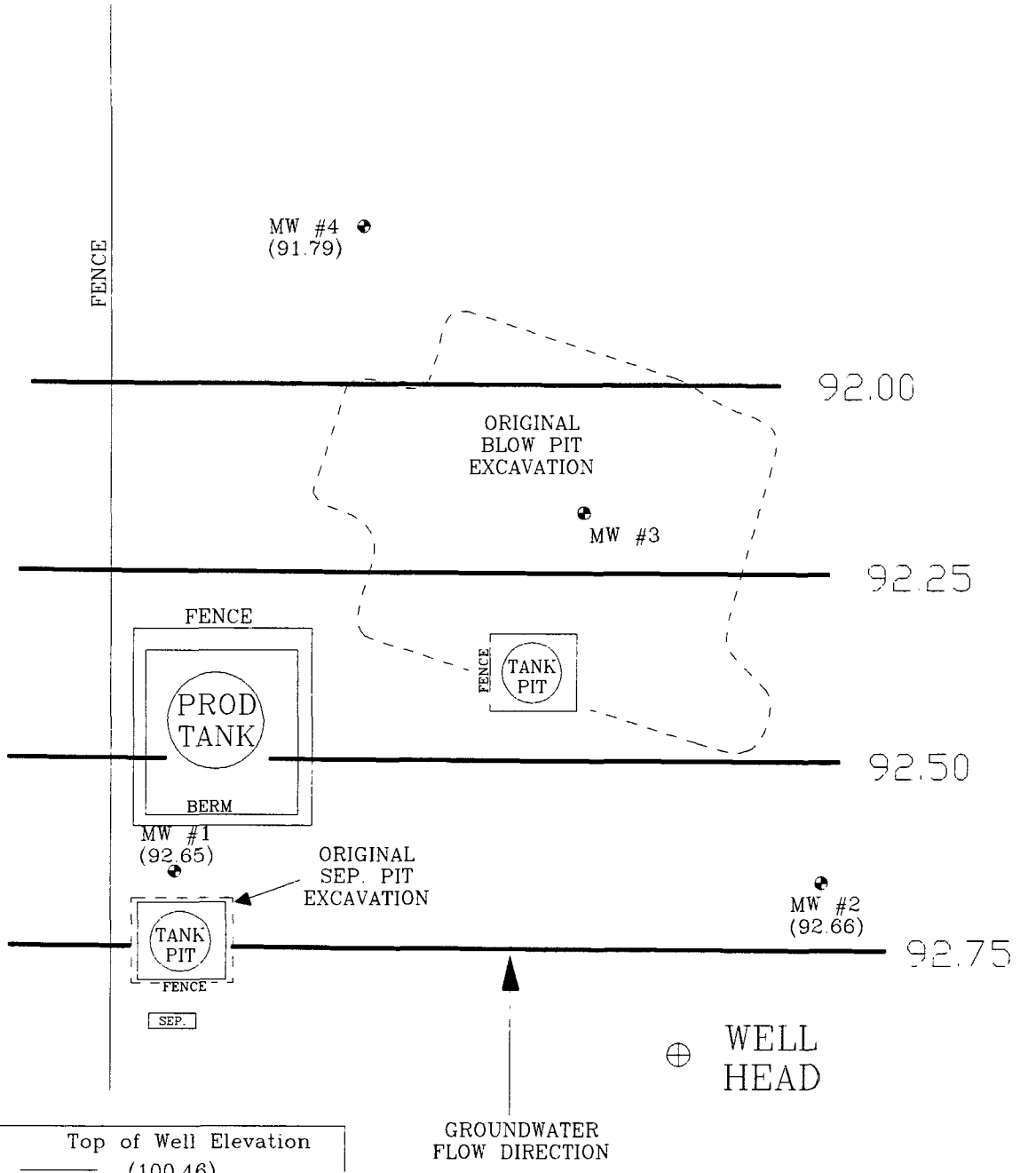
AMOCO PRODUCTION COMPANY
SULLIVAN GC D1
NW/4 NE/4 SEC. 26, T29N, R11W
SAN JUAN COUNTY, NEW MEXICO

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

PROJECT: 1/4ly MONITOR.
DRAWN BY: NJV
FILENAME: 06-10-96
REVISED: 2/10/97 NJV

GROUNDWATER GRADIENT MAP
6/96

FIGURE 3
(2nd 1/4, 1997)



	Top of Well Elevation
MW #1	(100.46)
MW #2	(100.66)
MW #3	(99.92)
MW #4	(99.86)

◓ MW #1 (92.65) Groundwater Elevation as of 6/27/97.

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.

0 50 100 FT.

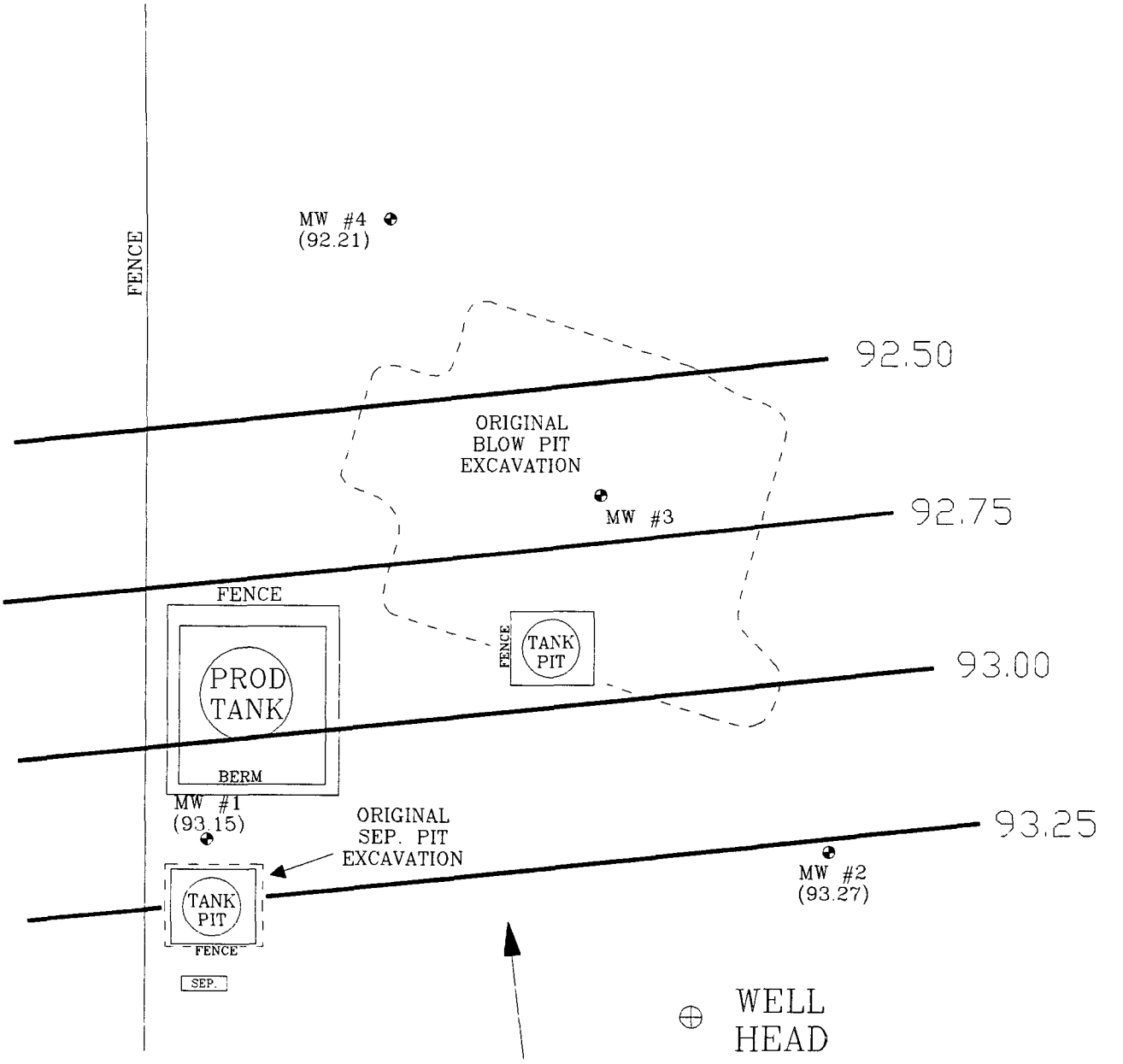
AMOCO PRODUCTION COMPANY
SULLIVAN GC D1
NW/4 NE/4 SEC. 26, T29N, R11W
SAN JUAN COUNTY, NEW MEXICO

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

PROJECT: 1/4ly MONITOR.
DRAWN BY: NJV
FILENAME: 06-27-97
REVISED 6/30/97 NJV

GROUNDWATER GRADIENT MAP
6/97

FIGURE 4
(2nd 1/4, 1998)



Top of Well Elevation	
MW #1	(100.46)
MW #2	(100.66)
MW #3	(99.92)
MW #4	(99.86)

MW #1 (93.15) Groundwater Elevation as of 6/12/98.

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 50 100 FT.

AMOCO PRODUCTION COMPANY
SULLIVAN GC D1
NW/4 NE/4 SEC. 26, 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 MONITOR
DRAWN BY: NJV
FILENAME: 06-12-98
REVISED: 6/16/98 NJV

GROUNDWATER GRADIENT MAP
6/98

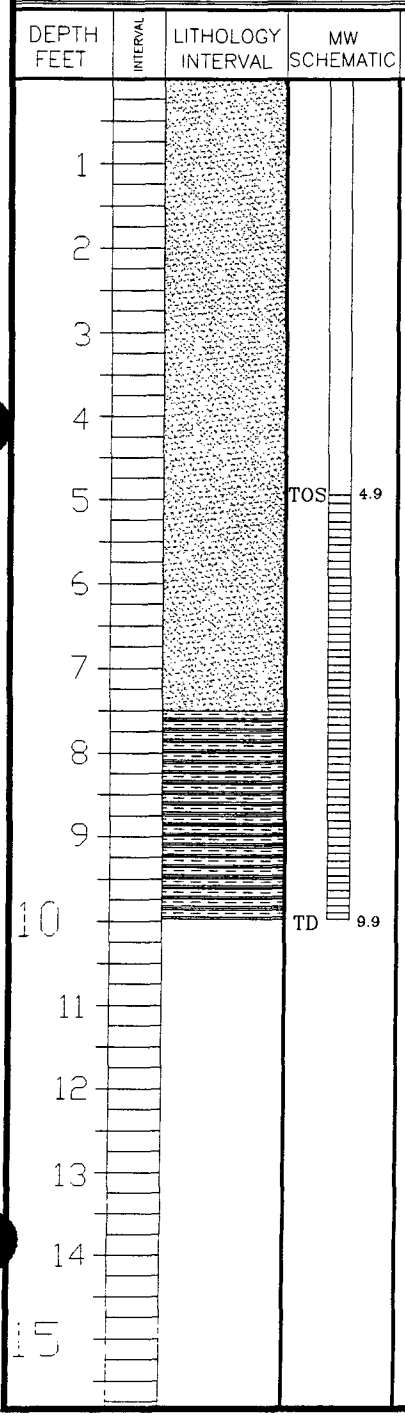
BLAGG ENGINEERING, Inc.

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

BORE / TEST HOLE REPORT

LOCATION NAME:	SULLIVAN GC D # 1
CLIENT:	AMOCO PRODUCTION COMPANY
CONTRACTOR:	BLAGG ENGINEERING, INC.
EQUIPMENT USED:	MOBILE DRILL RIG (EARTHPROBE)
BORING LOCATION:	N70W, 159 FEET FROM WELL HEAD.

BORING #.....	BH - 1
MW #.....	1
PAGE #.....	1
DATE STARTED	4/30/96
DATE FINISHED	4/30/96
OPERATOR.....	JCB
PREPARED BY	NJV



FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROX. 0.1 FT. ABOVE GROUND SURFACE.

DARK YELLOWISH BROWN SILTY SAND TO SILTY CLAY, NON COHESIVE, SLIGHTLY MOIST TO SATURATED (AT GROUNDWATER), FIRM, NO APPARENT HYDROCARBON ODOR OBSERVED (0.0 - 7.5 FT. INTERVAL).

▼ GW DEPTH ON 6/10/96 = 7.59 FT. (APPROX.) FROM GROUND SURFACE.

LIGHT TO DARK GRAY SILTY SAND TO SILTY CLAY, NON COHESIVE, SATURATED, FIRM TO LOOSE, STRONG HYDROCARBON ODOR OBSERVED (7.5 - 9.9 FT. INTERVAL).

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

DRAWING: SULL-1 | DATE: 3/5/97 | DWN BY: NJV

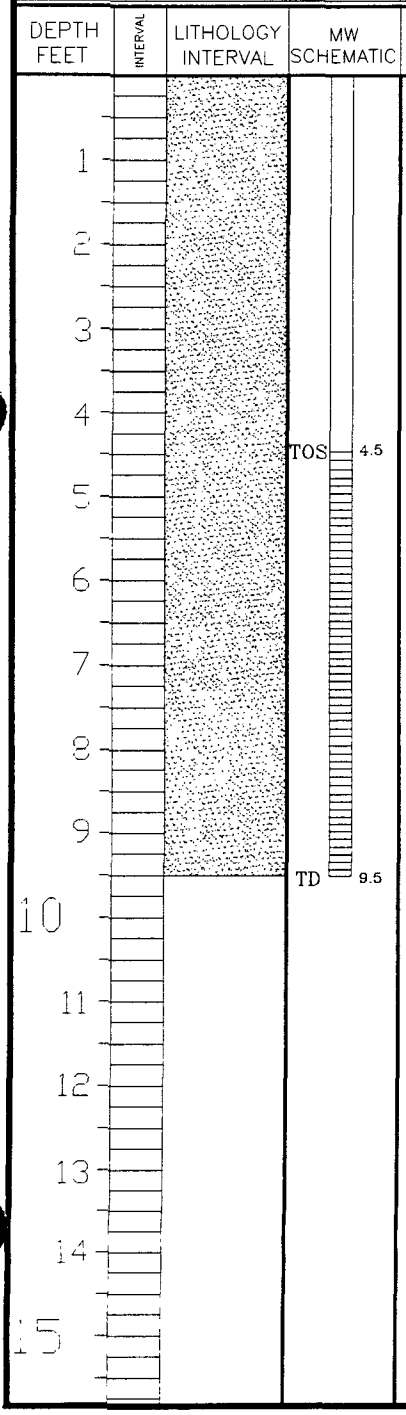
BLAGG ENGINEERING, Inc.

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

BORE / TEST HOLE REPORT

LOCATION NAME:	SULLIVAN GC D # 1
CLIENT:	AMOCO PRODUCTION COMPANY
CONTRACTOR:	BLAGG ENGINEERING, INC.
EQUIPMENT USED:	MOBILE DRILL RIG (EARTHPROBE)
BORING LOCATION:	N40E, 66 FEET FROM WELL HEAD.

BORING #.....	BH - 2
MW #.....	2
PAGE #.....	2
DATE STARTED	4/30/96
DATE FINISHED	4/30/96
OPERATOR.....	JCB
PREPARED BY	NJV



FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROX. 0.5 FT. ABOVE GROUND SURFACE.

DARK YELLOWISH BROWN SILTY SAND TO SILTY CLAY CONTINUOUS THROUGHOUT ENTIRE BORING, NON COHESIVE, SLIGHTLY MOIST TO SATURATED (AT GROUNDWATER), FIRM TO LOOSE, NO APPARENT HYDROCARBON ODOR OBSERVED (0.0 - 9.5 FT. INTERVAL).

▼ GW DEPTH ON 6/10/96 = 7.35 FT. (APPROX.) FROM GROUND SURFACE.

NOTES: ▨ - SILTY SAND TO SILTY CLAY.

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

DRAWING: SULL-2	DATE 3/5/97	DWN BY. NJV

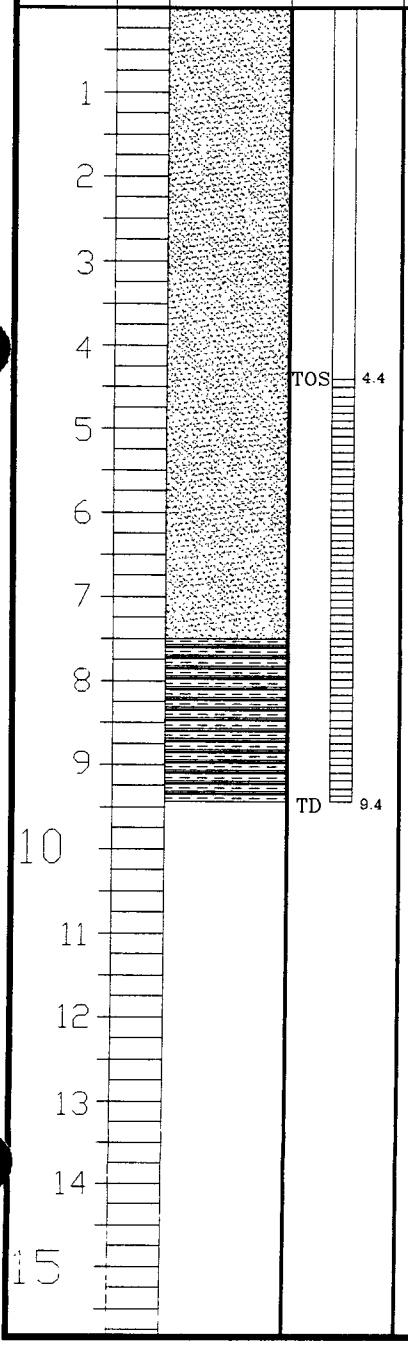
BLAGG ENGINEERING, Inc.

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

BORE / TEST HOLE REPORT

LOCATION NAME:	SULLIVAN GC D # 1
CLIENT:	AMOCO PRODUCTION COMPANY
CONTRACTOR:	BLAGG ENGINEERING, INC.
EQUIPMENT USED:	MOBILE DRILL RIG (EARTHPROBE)
BORING LOCATION:	N10W, 162 FEET FROM WELL HEAD.

BORING #.....	BH - 3
MW #.....	3
PAGE #.....	3
DATE STARTED	4/30/96
DATE FINISHED	4/30/96
OPERATOR.....	JCB
PREPARED BY	NJV



FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROX. 0.6 FT. ABOVE GROUND SURFACE.

DARK YELLOWISH BROWN SILTY SAND TO SILTY CLAY, NON COHESIVE, SLIGHTLY MOIST TO SATURATED (AT GROUNDWATER), FIRM, NO APPARENT HYDROCARBON ODOR OBSERVED (0.0 - 7.5 FT. INTERVAL).

▼ GW DEPTH ON 6/10/96 = 7.88 FT. (APPROX.) FROM GROUND SURFACE.

LIGHT TO DARK GRAY SILTY SAND TO SILTY CLAY, NON COHESIVE, SATURATED, FIRM TO LOOSE, NO APPARENT HYDROCARBON ODOR OBSERVED (7.5 - 9.4 FT. INTERVAL).

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

DRAWING: SULL-3 | DATE: 3/5/97 | DWN BY: NJV

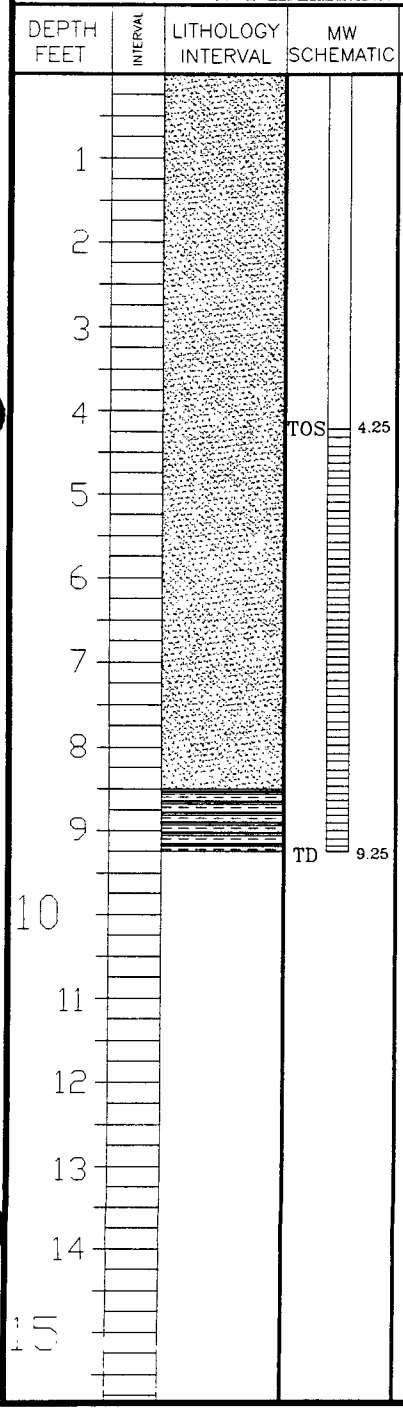
BLAGG ENGINEERING, Inc.

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

BORE / TEST HOLE REPORT

LOCATION NAME:	SULLIVAN GC D # 1
CLIENT:	AMOCO PRODUCTION COMPANY
CONTRACTOR:	BLAGG ENGINEERING, INC.
EQUIPMENT USED:	MOBILE DRILL RIG (EARTHPROBE)
BORING LOCATION:	N21W, 261 FEET FROM WELL HEAD.

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



FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROX. 0.75 FT. ABOVE GROUND SURFACE.

DARK YELLOWISH BROWN SILTY SAND TO SILTY CLAY, NON COHESIVE, SLIGHTLY MOIST TO SATURATED (AT GROUNDWATER), FIRM, NO APPARENT HYDROCARBON ODOR OBSERVED (0.0 - 8.5 FT. INTERVAL).

▼ GW DEPTH ON 6/10/96 = 7.29 FT. (APPROX.) FROM GROUND SURFACE.

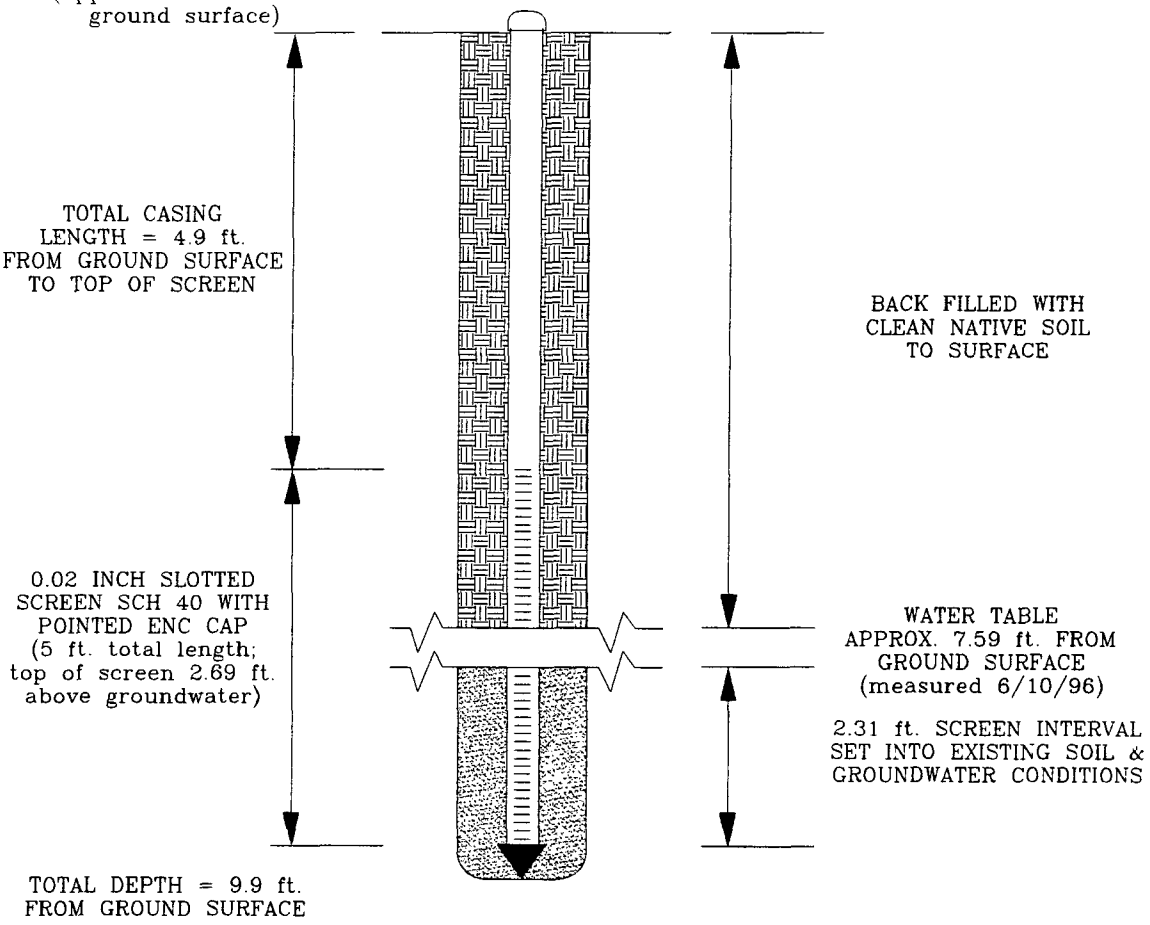
LIGHT TO DARK GRAY SILTY SAND TO SILTY CLAY, NON COHESIVE, SATURATED, FIRM TO LOOSE, NO APPARENT HYDROCARBON ODOR OBSERVED (8.5 - 9.25 FT. INTERVAL).

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

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

DRAWING: SULL-4	DATE 3/5/97	DWN BY: NJV

MONITOR WELL #1



AMOCO PRODUCTION COMPANY

SULLIVAN GC D # 1

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

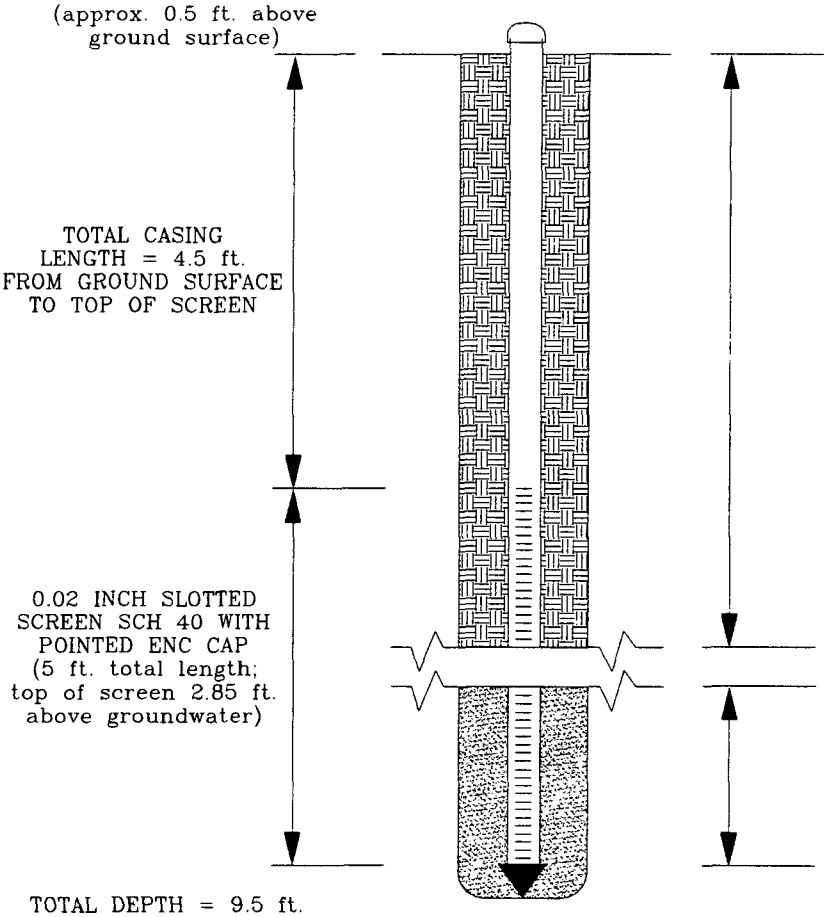
MONITOR WELL SCHEMATIC

DRAFTED BY: NJV

DATE: APR. '97

FILENAME: MW-1

MONITOR WELL #2



AMOCO PRODUCTION COMPANY

SULLIVAN GC D # 1

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: APR. '97

FILENAME: MW-2

MONITOR WELL #3

AMOCO PRODUCTION COMPANY

SULLIVAN GC D # 1

MONITOR WELL CONSTRUCTION & COMPLETION

INSTALLED WITH MOBILE RIG

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

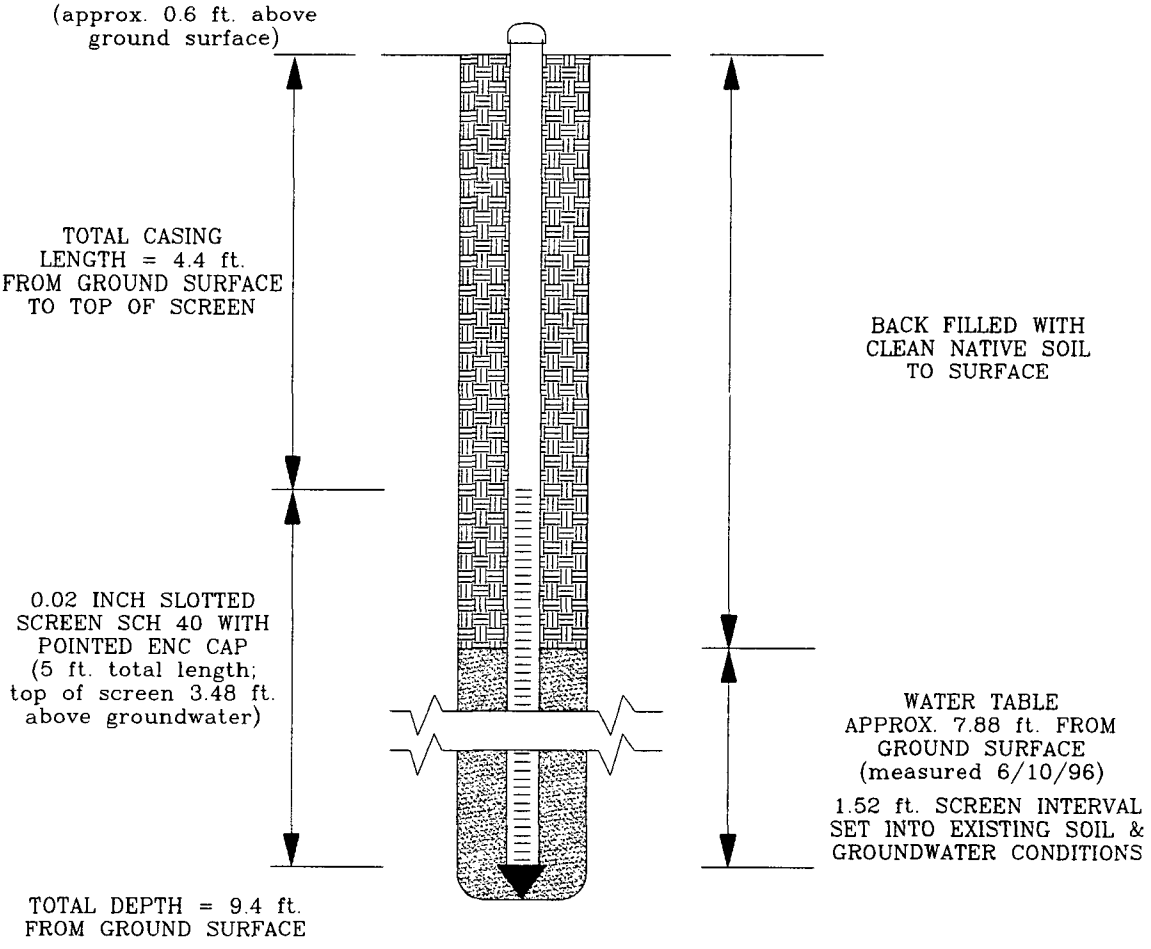
PHONE: (505) 632-1199

MONITOR WELL SCHEMATIC

DRAFTED BY: NJV

DATE: APR. '97

FILENAME: MW-3



MONITOR WELL #4

AMOCO PRODUCTION COMPANY

SULLIVAN GC D # 1

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: APR. '97

FILENAME: MW-4

BLAGG ENGINEERING INC.

MONITOR WELL QUARTERLY MONITORING DATA

DATE: 6-10-96 PROJECT NO: _____

CLIENT: Amoco CHAIN-OF-CUSTODY NO: 2486

LOCATION: SULLIVAN GC D1

PROJECT MANAGER: REO SAMPLER: REO

MONITOR WELL DATA

WELL #	WELL ELEV.	WATER ELEV.	DTW (FT)	T.D. (FT)	TIME	pH	COND. (uMHO)	BAIL (GAL)	PROD (IN)	
mw-1	100.46	92.77	7.69	10.35	1040	7.5	10,500	0.4	—	CUT 0.12'
mw-2	100.66	92.81	7.85	10.34	1100	7.4	5500	0.2	—	CUT 0.12'
mw-3	99.92	91.44	8.48	10.34	1115	6.9	3600	0.2	—	CUT 0.12'
mw-4	99.86	91.82	8.04	10.34	1135	7.0	3500	1.0	—	CUT 0.12'
	CUT TARGETS OFF ALL WELLS									

10.06 .29 10.35

10.05 .29 10.34

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:	Sullivan GC D1	Report Date:	06/25/96
Sample ID:	MW - 1	Date Sampled:	06/10/96
Lab ID:	3879	Date Received:	06/10/96
Sample Matrix:	Water	Date Analyzed:	06/20/96
Preservative:	Cool, $HgCl_2$		
Condition:	Intact		

Target Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Benzene	298	25.0
Toluene	90.6	5.00
Ethylbenzene	29.8	5.00
m,p-Xylenes	332	10.0
o-Xylene	85.5	5.00

Total BTEX	840

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Trifluorotoluene	103	88 - 110%
Bromofluorobenzene	103	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:	Sullivan GC D1	Report Date:	06/25/96
Sample ID:	MW - 2	Date Sampled:	06/10/96
Lab ID:	3880	Date Received:	06/10/96
Sample Matrix:	Water	Date Analyzed:	06/19/96
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	97	88 - 110%
Bromofluorobenzene	109	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:	Sullivan GC D1	Report Date:	06/25/96
Sample ID:	MW -3	Date Sampled:	06/10/96
Lab ID:	3881	Date Received:	06/10/96
Sample Matrix:	Water	Date Analyzed:	06/19/96
Preservative:	Cool, $HgCl_2$		
Condition:	Intact		

Target Analyte	Concentration (ug/L)	Detection Limit (ug/L)
Benzene	ND	0.50
Toluene	13.0	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	1.00
o-Xylene	2.52	0.50

Total BTEX	15.5

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Trifluorotoluene	125	88 - 110%
Bromofluorobenzene	109	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:	Sullivan GC D1	Report Date:	06/25/96
Sample ID:	MW - 4	Date Sampled:	06/10/96
Lab ID:	3882	Date Received:	06/10/96
Sample Matrix:	Water	Date Analyzed:	06/19/96
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	5.64	1.00
o-Xylene	3.60	0.50

Total BTEX	9.24

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Trifluorotoluene	89	88 - 110%
Bromofluorobenzene	99	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:	Sullivan GC D1	Date Reported:	06/25/96
Sample ID:	MW - 1	Date Sampled:	06/10/96
Laboratory ID:	3879	Time Sampled:	10:40
Sample Matrix:	Water	Date Received:	06/10/96

Parameter		Analytical Result	Units
General	Lab pH	7.9	s.u.
	Lab Conductivity @ 25° C	38,600	µmhos/cm
	Total Dissolved Solids @ 180°C	38,300	mg/L
	Total Dissolved Solids (Calc)	26,900	mg/L
Anions	Total Alkalinity as $CaCO_3$	640	mg/L
	Bicarbonate Alkalinity as $CaCO_3$	640	mg/L
	Carbonate Alkalinity as $CaCO_3$	NA	mg/L
	Hydroxide Alkalinity as $CaCO_3$	NA	mg/L
	Chloride	200	mg/L
	Sulfate	18,100	mg/L
	Nitrate + Nitrite - N	NA	
	Nitrate - N	NA	
	Nitrite - N	NA	
Cations	Total Hardness as $CaCO_3$	2,790	mg/L
	Calcium	526	mg/L
	Magnesium	358	mg/L
	Potassium	14.0	mg/L
	Sodium	7,400	mg/L
Data Validation			Acceptance Level
	Cation/Anion Difference	2.17	+/- 5 %
	TDS (180):TDS (calculated)	1.4	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:	Sullivan GC D1	Date Reported:	06/25/96
Sample ID:	MW - 2	Date Sampled:	06/10/96
Laboratory ID:	3880	Time Sampled:	11:00
Sample Matrix:	Water	Date Received:	06/10/96

Parameter		Analytical Result	Units
General	Lab pH	7.8	s.u.
	Lab Conductivity @ 25° C	11,300	µmhos/cm
	Total Dissolved Solids @ 180°C	10,600	mg/L
	Total Dissolved Solids (Calc)	10,100	mg/L
Anions	Total Alkalinity as $CaCO_3$	478	mg/L
	Bicarbonate Alkalinity as $CaCO_3$	478	mg/L
	Carbonate Alkalinity as $CaCO_3$	NA	mg/L
	Hydroxide Alkalinity as $CaCO_3$	NA	mg/L
	Chloride	1,250	mg/L
	Sulfate	5,050	mg/L
	Nitrate + Nitrite - N	NA	
	Nitrate - N	NA	
	Nitrite - N	NA	
Cations	Total Hardness as $CaCO_3$	1,390	mg/L
	Calcium	354	mg/L
	Magnesium	124	mg/L
	Potassium	24.0	mg/L
	Sodium	3,000	mg/L
Data Validation			Acceptance Level
	Cation/Anion Difference	2.92	+/- 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:	Sullivan GC D1	Date Reported:	06/25/96
Sample ID:	MW - 3	Date Sampled:	06/10/96
Laboratory ID:	3881	Time Sampled:	11:15
Sample Matrix:	Water	Date Received:	06/10/96

Parameter		Analytical Result	Units
General	Lab pH	7.1	s.u.
	Lab Conductivity @ 25° C	6,470	µmhos/cm
	Total Dissolved Solids @ 180°C	5,310	mg/L
	Total Dissolved Solids (Calc)	4,930	mg/L
Anions	Total Alkalinity as $CaCO_3$	1,100	mg/L
	Bicarbonate Alkalinity as $CaCO_3$	1,100	mg/L
	Carbonate Alkalinity as $CaCO_3$	NA	mg/L
	Hydroxide Alkalinity as $CaCO_3$	NA	mg/L
	Chloride	177	mg/L
	Sulfate	2,550	mg/L
	Nitrate + Nitrite - N	NA	
	Nitrate - N	NA	
	Nitrite - N	NA	
Cations	Total Hardness as $CaCO_3$	1,670	mg/L
	Calcium	575	mg/L
	Magnesium	56.4	mg/L
	Potassium	21.0	mg/L
	Sodium	890	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:	Sullivan GC D1	Date Reported:	06/25/96
Sample ID:	MW - 4	Date Sampled:	06/10/96
Laboratory ID:	3882	Time Sampled:	11:35
Sample Matrix:	Water	Date Received:	06/10/96

Parameter		Analytical Result	Units
General	Lab pH	7.3	s.u.
	Lab Conductivity @ 25° C	11,800	µmhos/cm
	Total Dissolved Solids @ 180°C	10,700	mg/L
	Total Dissolved Solids (Calc)	7,930	mg/L
Anions	Total Alkalinity as $CaCO_3$	3,440	mg/L
	Bicarbonate Alkalinity as $CaCO_3$	3,440	mg/L
	Carbonate Alkalinity as $CaCO_3$	NA	mg/L
	Hydroxide Alkalinity as $CaCO_3$	NA	mg/L
	Chloride	180	mg/L
	Sulfate	2,740	mg/L
	Nitrate + Nitrite - N	NA	
	Nitrate - N	NA	
	Nitrite - N	NA	
Cations	Total Hardness as $CaCO_3$	2,230	mg/L
	Calcium	598	mg/L
	Magnesium	179	mg/L
	Potassium	670	mg/L
	Sodium	1,500	mg/L
Data Validation			Acceptance Level
	Cation/Anion Difference	1.54	+/- 5 %
	TDS (180):TDS (calculated)	1.3	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

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 10, 1996. The samples were from the Sullivan GC D1 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. Two of the water samples were outside the acceptance limits for the TDS(measured) to TDS(calculated) ratio. The sample designated MW - 1 contained hydrocarbons that interfere with the TDS analysis. The sample designated MW - 4 contained a black material that could not be filtered out. This resulted in high measured TDS values.

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: MB35235

Report Date: 06/25/96
Date Analyzed: 06/19/96

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	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:	3796Dup	Report Date:	06/25/96
Sample Matrix:	Water	Date Sampled:	06/05/96
Preservative:	Cool, $HgCl_2$	Date Received:	06/05/96
Condition:	Intact	Date Analyzed:	06/19/96

Target Analyte	Original Conc. (ug/L)	Duplicate Conc. (ug/L)	Acceptance Range (ug/L)
Benzene	ND	ND	NA
Toluene	23.6	20.9	17.3 - 27.2
Ethylbenzene	6.94	6.30	3.45 - 9.79
m,p-Xylenes	3.14	2.71	NE
o-Xylene	3.48	3.01	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	105	88 - 110%
	Bromofluorobenzene	125	86 - 115%

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

Comments: High bromofluorobenzene recovery is due to hydrocarbon interference at the BFB retention times.

Analyst

Review

Purgeable Aromatics

Matrix Spike Analysis

Lab ID:	3794Spk	Report Date:	06/25/96
Sample Matrix:	Water	Date Sampled:	06/05/96
Preservative:	Cool, $HgCl_2$	Date Received:	06/05/96
Condition:	Intact	Date Analyzed:	06/19/96

Target Analyte	Spike Added (ug/L)	Original Conc. (ug/L)	Spiked Sample Conc. (ug/L)	% Recovery	Acceptance Limits (%)
Benzene	10	ND	9.92	99%	39 -150
Toluene	10	ND	9.97	98%	46 - 148
Ethylbenzene	10	ND	10.0	100%	32 - 160
m,p-Xylenes	20	ND	19.9	98%	NE
o-Xylene	10	ND	10.2	101%	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	99	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:	3807Spk	Report Date:	06/25/96
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:	3808Dup	Report Date:	06/25/96
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

General Water Quality

Quality Control Report

Blagg Engineering, Inc.

Report Date: 6/25/96

Parameter	Analytical Result	Certified Value	Acceptance Range	Units
Laboratory pH	9.05	9.09	8.89 - 9.92	s.u.
Conductivity	1341	1210	1030 - 1400	µmhos/cm
Total Dissolved Solids	950	913	794 - 1030	mg/L
Total Alkalinity	191	180	160 - 200	mg/L
Chloride	130	138	128 - 148	mg/L
Sulfate	128	124	107 - 141	mg/L
Total Hardness	257	254	218 - 290	mg/L
Calcium	56.7	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

PROJECT MANAGER:
Anaitas Lab I.D.:

Company: BCAGG
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	6-10	1040	WATER					✓										✓												
MW-2	"	1100	"					✓										✓												
MW-3	"	1115	"					✓										✓												
MW-4	"	1135	"					✓										✓												

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)

SULLIVAN GC D 1

Sampled By:	Relinquished By:	Relinquished By:
Signature / Date: RGO 6-10-96	Signature / Date: RGO 6-10-96	Signature / Date:
Company: BEI Time: —	Company: BEI Time: 1420	Company: Time:
Received By:	Received By:	Received By:
Signature / Date:	Signature / Date:	Signature / Date:
Company: Time:	Company: Time:	Company: Time:

Please Fill Out Thoroughly.

Shaded areas for lab use only.

White/Yellow: Anaitas
Pink: Client

BLAGG ENGINEERING, INC.

MONITOR WELL SAMPLING DATA

CLIENT : AMOCO PRODUCTION CO.

CHAIN-OF-CUSTODY # : 5124

SULLIVAN GC D # 1 - BLOW & SEP. PITS
UNIT B, SEC. 26, 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)
1	100.46	92.65	7.81	10.00	0945	7.3	12,900	1.10	–
2	100.66	92.66	8.00	10.00	–	–	–	–	–
4	99.86	91.79	8.07	10.00	–	–	–	–	–

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 ".

MW # 1 – poor recovery . Collected BTEX samples for MW # 1 only .

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Blagg / Amoco	Project #:	04034-10
Sample ID:	MW #1	Date Reported:	07-01-97
Chain of Custody:	5124	Date Sampled:	06-27-97
Laboratory Number:	B553	Date Received:	06-27-97
Sample Matrix:	Water	Date Analyzed:	06-30-97
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**675**	**10**	**1.8**
Toluene	**208**	**10**	**1.7**
Ethylbenzene	**342**	**10**	**1.5**
p,m-Xylene	**311**	**10**	**2.2**
o-Xylene	**334**	**10**	**1.0**
Total BTEX	**1,870**		

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: **Sullivan GC D 1.**

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	SULLIVAN GC D1	

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 #1	6/27/97	0945	B553	WATER	2	✓					PRESERV. - COOL &
											$HgCl_2$
					Sample received cool & intact						

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Nelson Velez	6/27/97	1443	[signature]	6-27-97	1443
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

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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:	06-30-97
Laboratory Number:	06-30-BTEX.BLANK	Date Sampled:	N/A
Sample Matrix:	Water	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	06-30-97
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	**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: **QA/QC for samples B548 - B554.**

Analyst

Review

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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:	06-30-97
Laboratory Number:	B548	Date Sampled:	N/A
Sample Matrix:	Water	Date Received:	N/A
Preservative:	HgCl and Cool	Date Analyzed:	06-30-97
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	**0.2**	**0.2**	**0.0%**	**0.2**	**1**
p,m-Xylene	**0.5**	**0.5**	**0.0%**	**0.2**	**1**
o-Xylene	**0.2**	**0.2**	**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 B548 - B554.**

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:	06-30-97
Laboratory Number:	B548	Date Sampled:	N/A
Sample Matrix:	Water	Date Received:	N/A
Preservative:	Cool	Date Analyzed:	06-30-97
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**	**50.0**	**0.2**	**100%**	**46-148**
Ethylbenzene	**0.2**	**50.0**	**50.1**	**0.2**	**100%**	**32-160**
p,m-Xylene	**0.5**	**100**	**100**	**0.2**	**100%**	**46-148**
o-Xylene	**0.2**	**50.0**	**50.1**	**0.1**	**100%**	**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 B548 - B554.**

Analyst

Review

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BLAGG ENGINEERING, INC.

MONITOR WELL SAMPLING DATA

CLIENT : AMOCO PRODUCTION CO.

CHAIN-OF-CUSTODY # : 6027

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

LABORATORY (S) USED : ENVIROTECH, INC.

Date : June 12, 1998

SAMPLER : N J V

Filename : 06-12-98.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)
1	100.46	93.15	7.31	10.00	1615	7.2	13,200	1.30	-
2	100.66	93.27	7.39	10.00	-	-	-	-	-
4	99.86	92.21	7.65	10.00	-	-	-	-	-

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 ".

MW # 1 - poor recovery . Collected BTEX samples for MW # 1 only .

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Blagg / AMOCO	Project #:	04034-10
Sample ID:	MW #1	Date Reported:	06-16-98
Chain of Custody:	6027	Date Sampled:	06-12-98
Laboratory Number:	D414	Date Received:	06-14-98
Sample Matrix:	Water	Date Analyzed:	06-16-98
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**131**	**1**	**0.2**
Toluene	**8.8**	**1**	**0.2**
Ethylbenzene	**0.4**	**1**	**0.2**
p,m-Xylene	**5.7**	**1**	**0.2**
o-Xylene	**2.9**	**1**	**0.1**
Total BTEX	**149**		

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: **Sullivan GC D #1.**

Analyst

Review

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CHAIN OF CUSTODY RECORD

6027

Client / Project Name	Project Location	ANALYSIS / PARAMETERS
BLAGG / AMOCO	SULLIVAN GC D #1 ~~BERGIN GC #1E~~ NV	
Sampler: NJV	Client No. 04034-10	

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	BTEX (8021)						Remarks
MW ~~#3~~ NV #1	6/12/98	1615	0414	WATER	2	✓						PRESERV. - $HgCl_2$ & COOL

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Nelson Velez	6/14/98	1510	Debra L. Aguirre	6.14.98	1520
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

Rf COC's 6021, 6023 – 6024, 6026 – 6028

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:	06-16-BTEX QA/QC	Date Reported:	06-16-98
Laboratory Number:	D409	Date Sampled:	N/A
Sample Matrix:	Water	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	06-16-98
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	5.4370E-02	5.4424E-02	0.10%	ND	0.2
Toluene	2.9051E-02	2.9138E-02	0.30%	ND	0.2
Ethylbenzene	2.6516E-02	2.6730E-02	0.81%	ND	0.2
p,m-Xylene	1.8915E-02	1.9048E-02	0.70%	ND	0.2
o-Xylene	2.1590E-02	2.1720E-02	0.60%	ND	0.1

Duplicate Conc. (ug/L)	Sample	Duplicate	%Diff.	Accept Limit
Benzene	ND	ND	0.0%	0 - 30%
Toluene	ND	ND	0.0%	0 - 30%
Ethylbenzene	ND	ND	0.0%	0 - 30%
p,m-Xylene	0.8	0.8	0.0%	0 - 30%
o-Xylene	ND	ND	0.0%	0 - 30%

Spike Conc. (ug/L)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Limits
Benzene	ND	50.0	50.0	100%	39 - 150
Toluene	ND	50.0	50.0	100%	46 - 148
Ethylbenzene	ND	50.0	50.0	100%	32 - 160
p,m-Xylene	0.8	100.0	101	100%	46 - 148
o-Xylene	ND	50.0	50.0	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 D409- D416.**

Analyst

Review

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C4229

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.: Fed # 94000209
6. If Indian, Allottee or Tribe Name:
7. If Unit or CA, Agreement Designation: Com. Agmt. # SW 209
8. Well Name and No.: SULLIVAN GC D #1
9. API Well No.: 3004507733
10. Field and Pool, or Exploratory Area: DAKOTA
11. County or Parish, State: SAN JUAN, N.M.

1. Type of Well: ☐ Oil Well ☒ Gas Well ☐ Other
2. Name of Operator: Amoco Production Company
3. Address and Telephone No.: 200 Amoco Court, Farmington, N.M. 87401 Tel: (505) 326-9200
4. Location of Well (Footage, Sec., T., R., M., or Survey Description): NW/NE S.26 . T29N. R11W

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 documentation.

① BLOW PIT - ABANDONED, CLOSED UNDER SEC. 2.3 GW PLAN.

NOT REQUESTING CLOSURE FOR SEPARATOR PIT @ PRESENT TIME. MV 5/25/98.

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

Signed R A Shaw Title Enviro. Coordinator Date 5/25/98 MV

(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

C4229

District I
P O Box 1980, Hobbs, NM
District II
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

PIT REMEDIATION AND CLOSURE REPORT

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

Address: 200 Amoco Court, Farmington, New Mexico 87401

Facility Or: Sullivan GC D1
Well Name

Location: Unit or Qtr/Qtr Sec B Sec 26 T 29N R 11W County SAN JUAN

Pit Type: Separator ___ Dehydrator ___ Other Blow

Land Type: BLM ___, State ___, Fee ___, Other ___

Pit Location: (Attach diagram)
Pit dimensions: length 100', width 150', depth 7'
Reference: wellhead X, other ___
Footage from reference: 160'
Direction from reference: 12 Degrees ___ East North X of X 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)	10
	RANKING SCORE (TOTAL POINTS):	30

P&O

fed #94000209

CLIENT: Amoco

ENVIROTECH Inc.

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

PIT NO: C4229

C.O.C. NO: 3574

FIELD REPORT: CLOSURE VERIFICATION

JOB No: 92140

PAGE No: 1 of 1

LOCATION: LEASE: Sullivan GC D WELL #: 1 PIT: blow

UNIT: B SEC: 26 TWP: 29N RNG: 11W BM: NM CNTY: SJ ST: Nm

CONTRACTOR: P Velasquez

DATE STARTED: 5/5/94

DATE FINISHED: 5/5/94

ENVIRONMENTAL SPECIALIST: NV

SOIL REMEDIATION: EXCAVATION APPROX. 100 FT. x 150 FT. x 9 FT. DEEP.

DISPOSAL FACILITY: landfarmed on-site

LAND USE: BLM

FIELD NOTES & REMARKS: PIT LOCATED APPROXIMATELY 160 FEET N12W FROM WELLHEAD.

DEPTH TO GROUNDWATER: <50 NEAREST SURFACE WATER: <1000 NEAREST WATER SOURCE: >1000

NMOCD RANKING SCORE: 30 NMOCD TPH CLOSURE STD: 100 PPM

SOIL AND EXCAVATION DESCRIPTION: previously excavated

collected 2 water samples for BTEX (8020) @ #1 5'; #2 9'
time: 1155; 1200

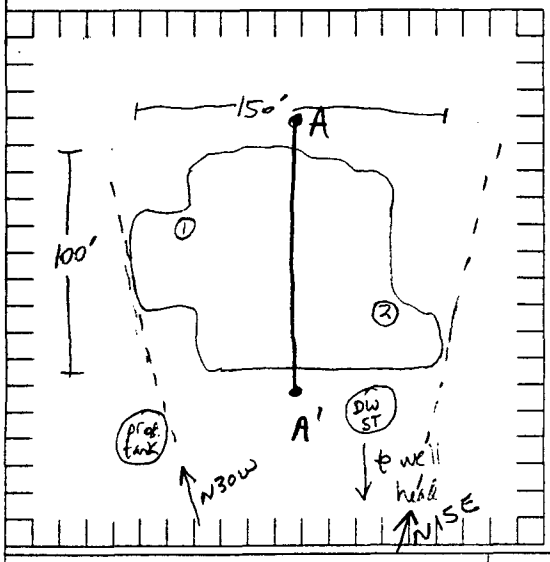
FIELD 418.1 CALCULATIONS

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

SCALE

0 FEET

PIT PERIMETER



OVM RESULTS

SAMPLE ID	FIELD HEADSPACE PID (ppm)

PIT PROFILE

TRAVEL NOTES: CALLOUT: 5/4/94 ONSITE: 5/5/94

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:	1 @ 5'	Date Reported:	05-06-94
Laboratory Number:	7357	Date Sampled:	05-05-94
Sample Matrix:	Water	Date Received:	05-06-94
Preservative:	HgCl and Cool	Date Analyzed:	05-06-94
Condition:	Cool and Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	1.9	0.2
Toluene	26.4	0.4
Ethylbenzene	12.0	0.3
p,m-Xylene	114	0.4
o-Xylene	23.2	0.4

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	97 %
Bromofluorobenzene	101 %

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: Sullivan GC D1 Blow Pit C4229

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:	2 @ 9'	Date Reported:	05-06-94
Laboratory Number:	7358	Date Sampled:	05-05-94
Sample Matrix:	Water	Date Received:	05-06-94
Preservative:	HgCl and Cool	Date Analyzed:	05-06-94
Condition:	Cool and Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	62	0.2
Toluene	58	0.4
Ethylbenzene	33.8	0.3
p,m-Xylene	477	0.4
o-Xylene	17.6	0.4

SURROGATE RECOVERIES:

Parameter	Percent Recovery
Trifluorotoluene	96 %
Bromofluorobenzene	100 %

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: Sullivan GC D1 Blow Pit C4229

Analyst

Review

3574

CHAIN OF CUSTODY RECORD

C4229

Client/Project Name	Project Location	ANALYSIS/PARAMETERS
AMOCO 92140	BLOW PIT SULLIVAN GC D1	
Sampler: (Signature) Nelson Velez	Chain of Custody Tape No.	

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	BTEX (8020)					Remarks
① @ 5'	5/5/94	1155	7357	WATER	2	✓					
② @ 9'	5/5/94	1200	7358	WATER	2	✓					

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Nelson Velez	5/6/94	0804	Denise L. Spencer	5-6-94	0804
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

CLIENT: AMOCO

BLAGG ENGINEERING, INC.

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

LOCATION NO: B0004
C.O.C. NO: 5635

FIELD REPORT: LANDFARM/COMPOST PILE CLOSURE VERIFICATION

LOCATION: NAME: SULLIVAN GC D WELL #: 1 PITS: BLOW, SEP.
QUAD/UNIT: (B) SEC: 26 TWP: 29 N RNG: 11 W PM: NM CNTY: SJ ST: NM
QTR/FOOTAGE: NW/4 NE/4 CONTRACTOR: P&S

DATE STARTED: 11.26.97
DATE FINISHED:
ENVIRONMENTAL SPECIALIST: NV/EP

SOIL REMEDIATION:

REMEDIATION SYSTEM: LANDFARM
APPROX. CUBIC YARDAGE: 6,256
LAND USE: RANGE
LIFT DEPTH (ft): NA

FIELD NOTES & REMARKS:

DEPTH TO GROUNDWATER: <50' NEAREST WATER SOURCE: >1000' NEAREST SURFACE WATER: <1000'

NMOCD RANKING SCORE: 30 NMOCD TPH CLOSURE STD: 100 PPM

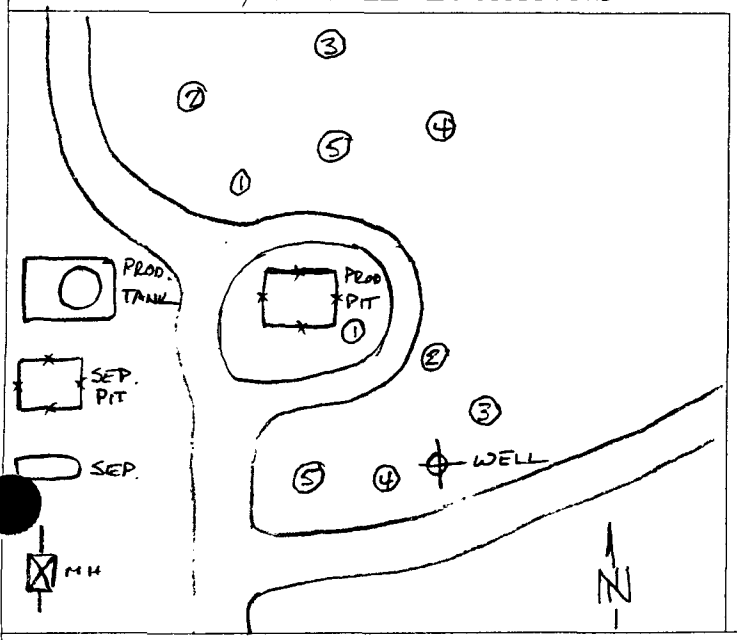
SOIL IS A SLIGHTLY MOIST DK BROWN CLAY W/SILTY SAND. NO STAIN OR HC ODOR. TOOK 2 5PT COMP. SAMPLES OF AREA DUE TO SIZE OF EXCAVATION.

SOILS FROM THE MASDEN GC #1 (740 C.Y.), MASDEN GC #1E (500 C.Y.), & DAVIS GC G #1 (766 C.Y.) WERE TRANSPORTED TO SITE.

FIELD 418.1 CALCULATIONS

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

SKETCH/SAMPLE LOCATIONS



SCALE
0 FT

OVM RESULTS

SAMPLE ID	FIELD HEADSPACE PID (ppm)
LF-1	0.0
LF-2	0.0

LAB SAMPLES

SAMPLE ID	ANALYSIS	TIME	RESULTS
LF-1	8015	1155	ND
LF-2	8015	1155	ND

TRAVEL NOTES: CALLOUT: N/A. ONSITE: 11.26.97 1145

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:	12-05-97
Laboratory Number:	C622	Date Sampled:	11-26-97
Chain of Custody No:	5635	Date Received:	12-03-97
Sample Matrix:	Soil	Date Extracted:	12-03-97
Preservative:	Cool	Date Analyzed:	12-04-97
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: **Sullivan GC D # 1 Landfarm. 5 Pt. Composite.**

Analyst

Review

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5635

CHAIN OF CUSTODY RECORD

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

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	TPH (8015)						Remarks
LF-1	11/26/97	1145	C622	SOIL	1	✓						5 PT. COMPOSITE
LF-2	11/26/97	1155	C623	SOIL	1	✓						5 PT. COMPOSITE
												BOTH SAMPLES
												PRESERV. - COOL
				SAMPLES RECEIVED COOL & INTACT DLM								

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Ed Potter QV	12/2/97	0700	Nelson Velez	12/2/97	0700
Relinquished by: (Signature) Nelson Velez	12/3/97	0817	Received by: (Signature) Allen L. Aplin	12-3-97	0817
Relinquished by: (Signature)			Received by: (Signature)		

Ref COC's 5632-5637

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

Client:	Blagg / AMOCO	Project #:	04034-10
Sample ID:	LF - 2	Date Reported:	12-05-97
Laboratory Number:	C623	Date Sampled:	11-26-97
Chain of Custody No:	5635	Date Received:	12-03-97
Sample Matrix:	Soil	Date Extracted:	12-03-97
Preservative:	Cool	Date Analyzed:	12-04-97
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: **Sullivan GC D # 1 Landfarm. 5 Pt. Composite.**

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:	12-04-PM-TPH QA/QC	Date Reported:	12-05-97
Laboratory Number:	C619	Date Sampled:	N/A
Sample Matrix:	Methylene Chloride	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	12-04-97
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	2.9715E-04	3.0698E-04	3.31%	0 - 15%
Diesel Range C10 - C28	10-28-97	2.9167E-04	3.0288E-04	3.84%	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	249	100%	75 - 125%
Diesel Range C10 - C28	ND	250	250	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 C619 - C625.**

Analyst

Review

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

R0004

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.: SW209

6. If Indian, Allottee or Tribe Name:

7. If Unit or CA, Agreement Designation: SW209

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

8. Well Name and No.: SULLIVAN GC D1

2. Name of Operator: AMOCO PRODUCTION COMPANY

9. API Well No.: 3004507733

3. Address and Telephone No.: 200 AMOCO COURT, FARMINGTON, NM 87401 326-9200

10. Field and Pool, or Exploratory Area: DAKOTA

4. Location of Well (Footage, Sec., T., R., M., or Survey Description): NW1/4, NE1/4, SEC. 26, T29N, R11W, NMPM

11. County or Parish, State: SAN JUAN, N.M.

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.)*

SEE ATTACHMENTS

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

Signed [signature] Title ENVIRO. COORDINATOR Date 6/13/94

(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

B0004

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

PIT REMEDIATION AND CLOSURE REPORT

Operator: AMOCO PRODUCTION COMPANY **Telephone:** 326-9200

Address: 200 AMOCO COURT, FARMINGTON, NM 87401

Facility Or: Well Name: SULLIVAN GC D1

Location: Unit or Qtr/Qtr Sec B Sec 26 T 29N R 11W County SAN JUAN

Pit Type: Separator ✓ Dehydrator ___ Other ___

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

Pit Location: (Attach diagram)
Pit dimensions: length 30', width 25', depth 9'
Reference: wellhead ✓, other ___
Footage from reference: 151'
Direction from reference: 77 Degrees ___ East North ✓ 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)	10
	RANKING SCORE (TOTAL POINTS):	30

Date Remediation Started: _____ **Date Completed:** 6/8/94

Remediation Method: (Check all appropriate sections) Excavation ✓ Approx. cubic yards 250

Landfarmed ___ Insitu Bioremediation ✓

Other _____

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

General Description Of Remedial Action: EXCAVATION

Ground Water Encountered: No ___ Yes ✓ Depth 8'

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

Sample location SEE "CLOSURE VERIFICATION" SHEET

Sample depth @ GW (8')

Sample date 6/8/94 Sample time 1115

Sample Results

Benzene(ppm) .132

Total BTEX(ppm) 1.509

Field headspace(ppm) 179

TPH _____

Ground Water Sample: Yes ✓ 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 6/13/94

SIGNATURE B J Shaw

PRINTED NAME AND TITLE Buddy D Shaw Environmental Coordinator

RESULTS GIVEN TO BOB McCOY 6/10/94

CLIENT: Amoco	BLAGG ENGINEERING, INC. P.O. BOX 87, BLOOMFIELD, NM 87413 (505) 632-1199	~~LOCATION NO:~~ B0004 C.O.C. NO: 1563

FIELD REPORT: CLOSURE VERIFICATION

JOB No:
PAGE No: 1 of 1

LOCATION: NAME: SULLIVAN GC WELL #: D1 PIT: SEP
QUAD/UNIT: B SEC: 26 TWP: 29N RNG: 11W BM: NM CNTY: SJ ST: NM
QTR/FOOTAGE: NW¼ NE¼ CONTRACTOR: P. VELASQUEZ

DATE STARTED: 6/8/94
DATE FINISHED: 6/8/94
ENVIRONMENTAL SPECIALIST: NV

SOIL REMEDIATION: EXCAVATION APPROX. 30 FT. x 25 FT. x 9 FT. DEEP.
DISPOSAL FACILITY: _____ CUBIC YARDAGE: 250
LAND USE: RANGE LEASE: FED. COM # 94000209

FIELD NOTES & REMARKS: PIT LOCATED APPROXIMATELY 151 FEET N77W FROM WELLHEAD.
DEPTH TO GROUNDWATER: 8' NEAREST WATER SOURCE: >1000 NEAREST SURFACE WATER: <1000
NMOCD RANKING SCORE: 30 NMOCD TPH CLOSURE STD: 100 PPM FM. - OK

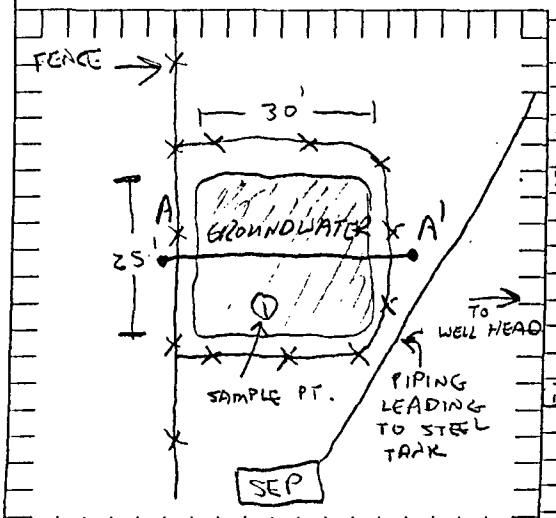
SOIL AND EXCAVATION DESCRIPTION: SOIL SAMPLES NOT ACCESSIBLE. DISCOLORED SOIL MED. GRAY IN APPEARANCE APPROX. 5-6' THICK ABOVE GROUNDWATER @ TIME OF SAMPLING.

FIELD 418.1 CALCULATIONS

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

SCALE
0 FT

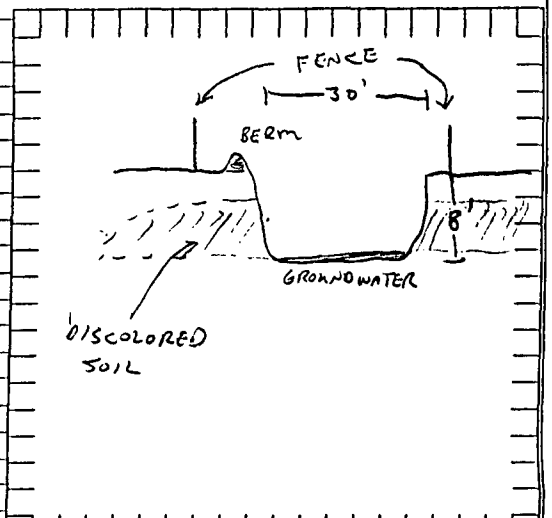
PIT PERIMETER



OVM RESULTS

SAMPLE ID	FIELD HEADSPACE PID (ppm)
1 @ GW (8')	179
2	
3	
4	
5	
LAB SAMPLES	
1 @ GW (8')	BTEX (8020)

PIT PROFILE



TRAVEL NOTES: CALLOUT: 6/8/94 ONSITE: 6/8/94

ON SITE TECHNOLOGIES, LTD.

AROMATIC VOLATILE ORGANICS

Attn:	*Nelson Velez*	Date:	6/9/94
Company:	*Blagg Engineering*	*Lab ID:*	*1653*
Address:	*P.O. Box 87*	*Sample ID:*	*1563*
City, State:	*Bloomfield, NM 87413*	*Job No.*	*2-1000*

Project Name:	***Sullivan GC D1*** SEP				
Project Location:	***1 @ GW (8') - ~~Bldg.~~ Pit***				
Sampled by:	NV	Date:	6/8/94	Time:	11:15
Analyzed by:	DLA	Date:	6/9/94		
Sample Matrix:	*Liquid*				

Aromatic Volatile Organics

Component	***Measured Concentration ug/L
Benzene	*132*
Toluene	*495*
Ethylbenzene	*66*
m,p-Xylene	*682*
o-Xylene	*134*
TOTAL	*1,509 ug/L*

ND - Not Detectable
*** - Method Detection Limit, 2 ug/L*

***Method** - SW-846 EPA Method 8020 Aromatic Volatile Organics by Gas Chromatography*

Approved by: Bill Vandiver, PhD.
Date: 6/9/94

FAX: (505) 327-1496 ▪ 24 HR. – (505) 327-7105 ▪ OFF.: (505) 325-8786
3005 NORTHRIDGE DRIVE ▪ SUITE F ▪ P. O. BOX 2606 ▪ FARMINGTON, NEW MEXICO 87499

ON SITE TECHNOLOGIES LIMITED

657 W. Maple ▪ P. O. Box 2606 ▪ Farmington, NM 87499
LAB: (505) 325-5667 ▪ FAX: (505) 325-6256

CHAIN OF CUS.ODY RECORD

No 1563

Date: 6/8/94

Page 1 of 1

B0004

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

Special Instructions: Sullivan GC D1

Sampler: Nelson Velez

SAMPLE IDENTIFICATION	DATE/TIME SAMPLED	COMPOSITE/ GRAB	PRESERVATIVES	Number of Containers	ANALYSIS REQUESTED: BTEX (8015)	Remarks (matrix)
(1) DP Gw (8') - SEP PIT	6/8/94 1115	GRAB	HgCl	2	✓	
1653-1563						

Relinquished by: Nelson Velez	Date/Time 6/8/94 1421	Received by: Dean Copeland	Date/Time 6/8/94 1421
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time

Method of Shipment:

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

Rush	5 Working Days	10 Working Days	Sampling Location:

Distribution: White – On Site Yellow Pink – Sampler Goldenrod – Client