

3R - 25

REPORTS

DATE:

May 2001

28-57

CROSS TIMBERS OPERATING COMPANY

GROUNDWATER REMEDIATION REPORT

1999-2000

**FROST, JACK B #2
(D) SECTION 27, T27N, R10W, NMPM
SAN JUAN COUNTY, NEW MEXICO**

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

MAY 2001

**PREPARED BY:
BLAGG ENGINEERING, INC.**

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

**Cross Timbers Operating Company (CTOC)
Frost, Jack B # 2 - Separator Pit
Nw/4 Nw/4 Sec. 27, T27N, R10W**

Pit closure Date: August 5, 1994
(Documentation Included)
Monitor Well Installation Date: September 21, 1999
Monitor Well Sampling Dates: 9/27/99, 2/18/00, 6/20/00

Groundwater Monitor Well Sampling Procedures:

Groundwater samples were collected from site monitor wells (MW's) following US EPA: 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 US EPA Method 8021. Additional groundwater was collected and placed in laboratory supplied 500 ml plastic containers and analyzed for general water quality per US EPA Method 600/4-79-020. The samples were preserved cool (BTEX samples also preserved with mercuric chloride) 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:

BTEX and general chemistry results for the three (3) quarterly sampling events are summarized in the following tables. All MW BTEX constituents satisfactorily meet the New Mexico Water Quality Control Commission's (NMWQCC) allowable concentrations for groundwater. The general water quality results also met NMWQCC standards for groundwater or was less than/statistically equal to the apparent background levels derived from MW #1 (except for fluoride MW #1 = 1.96 mg/L & MW #3 = 4.40 mg/L).

Summary:

In review of the pit closure information conducted by Envirotech, Inc., it is apparent that the groundwater level has increased dramatically since that activity (approx. 15 ft. in Sept., '94 to 11 ft. in Sept., '99). Although it is unknown if this phenomena has transpired consistently over time, Blagg Engineering, Inc. is confident that the total depth of all monitor wells are adequate in retrieving any residual contamination residing at the greater depth.

Based on the determined groundwater gradient (figures 2, 3, and 4), MW #3 appears to be positioned to sufficiently substantiate and delineate the source area.

In accordance with the attached correspondence (*refer to letter dated May 11, 2001 - RE: CTOC, 2000 Annual Groundwater Reports, San Juan County, NM, Permanent Closure Requested*) and the NMOCD previously approved groundwater management plan (GMP), specifically Section 2.0, CTOC respectfully request permanent closure for the site separator pit.

This document contains all pertinent information detailed in section 5.0 (Reporting) of the GMP. Upon receiving permanent closure notification from NMOCD, CTOC will conduct plug and abandonment of all sampling points as addressed in Section 6.0 of the GMP.

CROSS TIMBERS GROUNDWATER MONITOR WELL LAB RESULTS
 SUBMITTED BY BLAGG ENGINEERING, INC.

FROST, JACK B # 2 - SEPARATOR PIT
UNIT D, SEC. 27, T27N, R10W

REVISED: JULY 10, 2000

FILENAME: (JF-2Q-00.WK4) NJV

SAMPLE DATE	MONITOR WELL No:	D.T.W. (ft)	T.D. (ft)	TDS mg/L	COND. umhos	pH	PRODUCT (in)	BTEX EPA METHOD 8021 (PPB)			
								Benzene	Toluene	Ethyl Benzene	Total Xylene
27-Sep-99	MW #1	8.73	20.00	3,400	6,810	8.0		24.9	4.0	ND	6.3
18-Feb-00		9.26			3,800	8.0		ND	ND	ND	ND
20-Jun-00		9.28			3,500	8.1		ND	ND	ND	ND
27-Sep-99	MW #2	11.71	20.00	915	1,876	7.6		350	60.1	90.5	253.9
18-Feb-00		11.87			1,900	7.7		0.9	ND	2.6	3.9
20-Jun-00		11.38			2,100	7.6		0.5	ND	1.6	3.5
27-Sep-99	MW #3	13.76	20.00	2,080	4,180	8.1		21.2	3.1	3.1	15.1
18-Feb-00		12.87			2,700	8.2		ND	ND	ND	ND
20-Jun-00		12.42			2,800	8.2		ND	ND	ND	ND

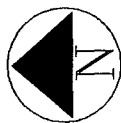
GENERAL WATER QUALITY
CROSS TIMBERS OPERATING COMPANY

FROST, JACK B # 2

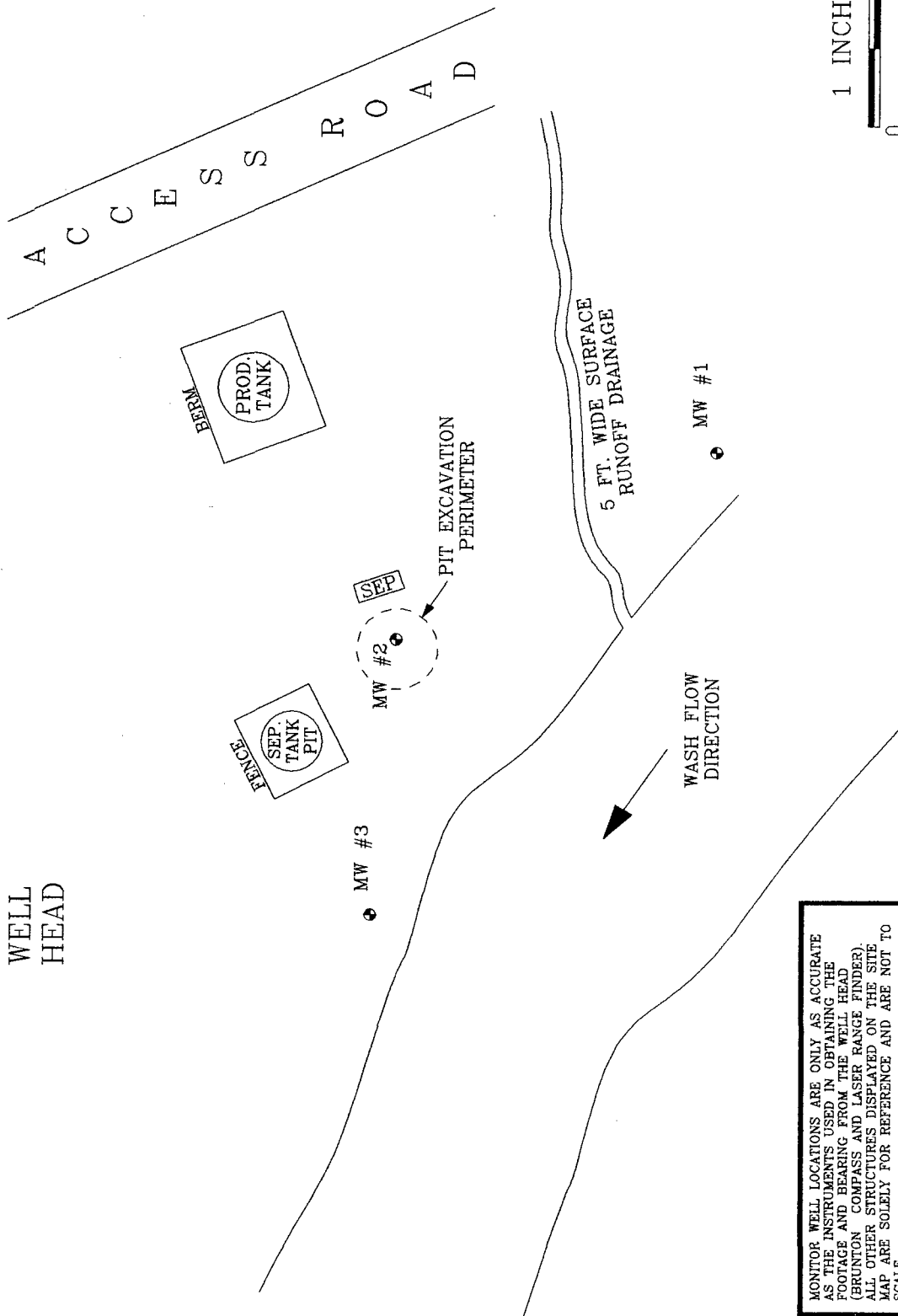
SAMPLE DATE : September 27 , 1999

PARAMETERS	MW # 1	MW # 2	MW # 3	Units
LAB pH	7.85	7.98	7.80	s. u.
LAB CONDUCTIVITY @ 25 C	6,810	1,876	4,180	umhos / cm
TOTAL DISSOLVED SOLIDS @ 180 C	3,400	915	2,080	mg / L
TOTAL DISSOLVED SOLIDS (Calc)	3,370	710	1,980	mg / L
SODIUM ABSORPTION RATIO	48.9	10.5	39.2	ratio
TOTAL ALKALINITY AS CaCO3	638	316	524	mg / L
TOTAL HARDNESS AS CaCO3	94.0	78.0	52.0	mg / L
BICARBONATE as HCO3	638	316	524	mg / L
CARBONATE AS CO3	< 1	< 1	< 1	mg / L
HYDROXIDE AS OH	< 1	< 1	< 1	mg / L
NITRATE NITROGEN	0.1	1.0	0.5	mg / L
NITRITE NITROGEN	0.004	0.300	0.021	mg / L
CHLORIDE	5.0	2.0	4.5	mg / L
FLUORIDE	1.96	1.21	4.40	mg / L
PHOSPHATE	0.9	6.5	1.0	mg / L
SULFATE	1,850	260	983	mg / L
IRON	0.007	0.288	0.042	mg / L
CALCIUM	28.8	25.6	18.4	mg / L
MAGNESIUM	5.4	3.4	1.5	mg / L
POTASSIUM	3.0	3.0	3.0	mg / L
SODIUM	1090	214	650	mg / L
CATION / ANION DIFFERENCE	0.25	0.02	0.20	%

FIGURE 1



⊕
WELL
HEAD



1 INCH = 50 FT.

0 50 100 FT.

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

CROSS TIMBERS OPERATING CO.

FROST, JACK B #2

NW/4 NW/4 SEC. 27, T27N, 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.

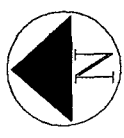
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FILENAME: JF-B2-SM.SKD

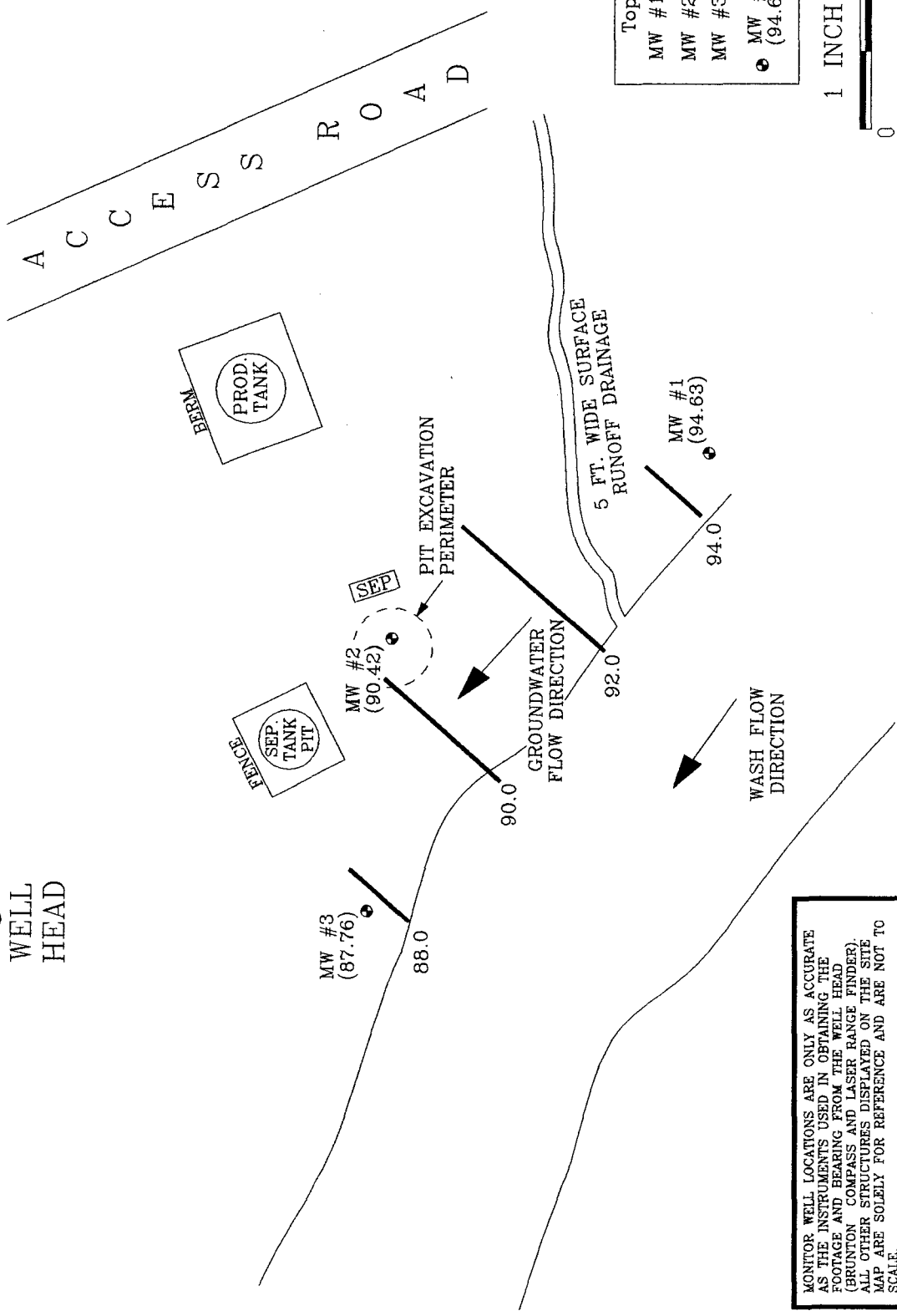
SITE
MAP

09/99

FIGURE 2
(3rd 1/4, 1999)



⊕
WELL
HEAD



Top of Well Elevation	
MW #1	(103.36)
MW #2	(102.13)
MW #3	(101.52)
● MW #1 Groundwater Elevation as of 9/27/99.	(94.63)

1 INCH = 50 FT.
0 50 100 FT.

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

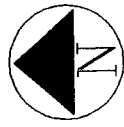
CROSS TIMBERS OPERATING CO.
FROST, JACK B #2
NW/4 NW/4 SEC. 27, T27N, R10W
SAN JUAN COUNTY, NEW MEXICO

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

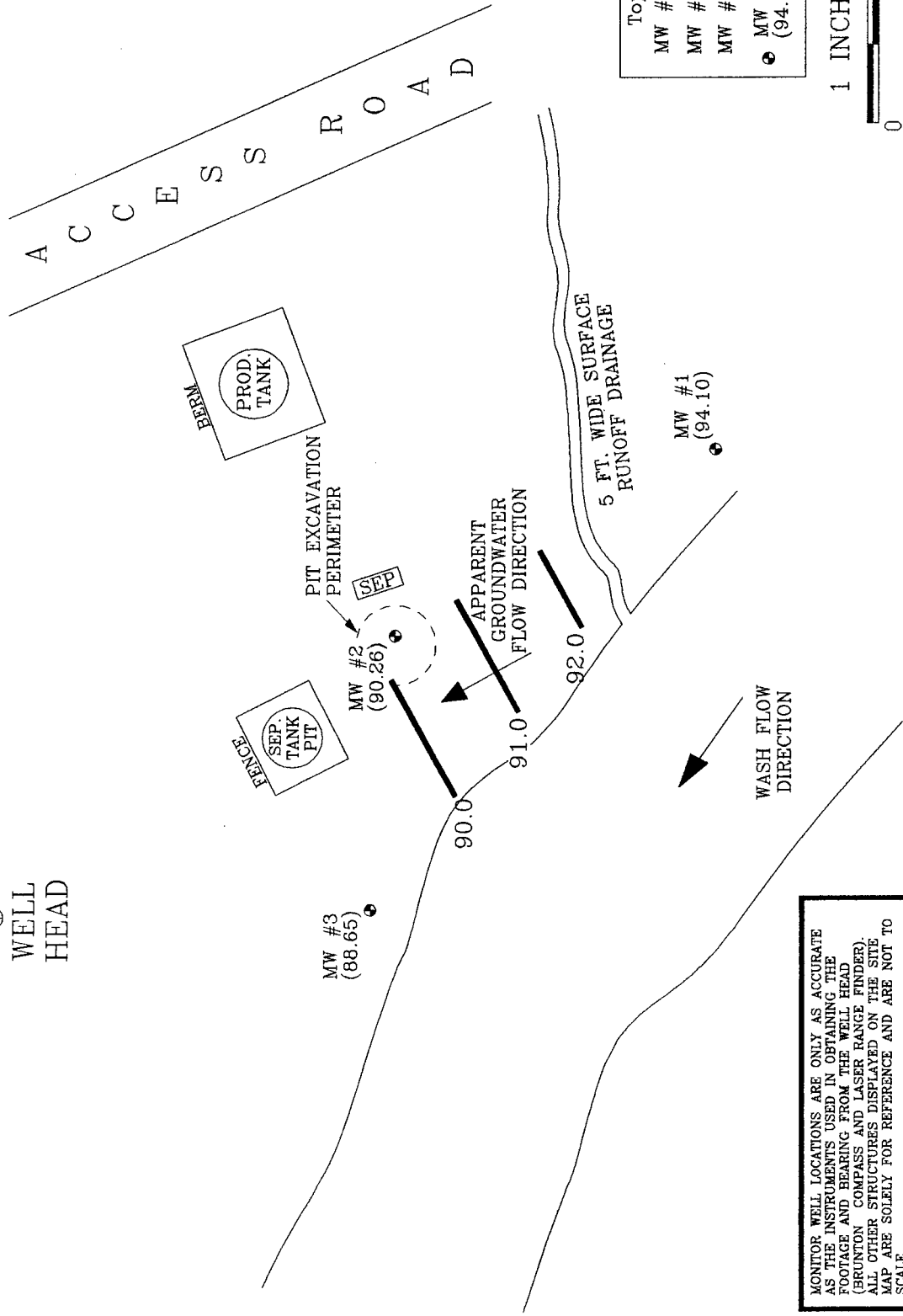
PROJECT: MW INSTALL.
DRAWN BY: NJV
FILENAME: 09-27-GW.SKD

GROUNDWATER
CONTOUR
MAP
09/99

FIGURE 3
(1st 1/4, 2000)



⊕
WELL
HEAD



Top of Well Elevation	
MW #1	(103.36)
MW #2	(102.13)
MW #3	(101.52)
● MW #1 Groundwater Elevation as of 2/18/00.	(94.10)

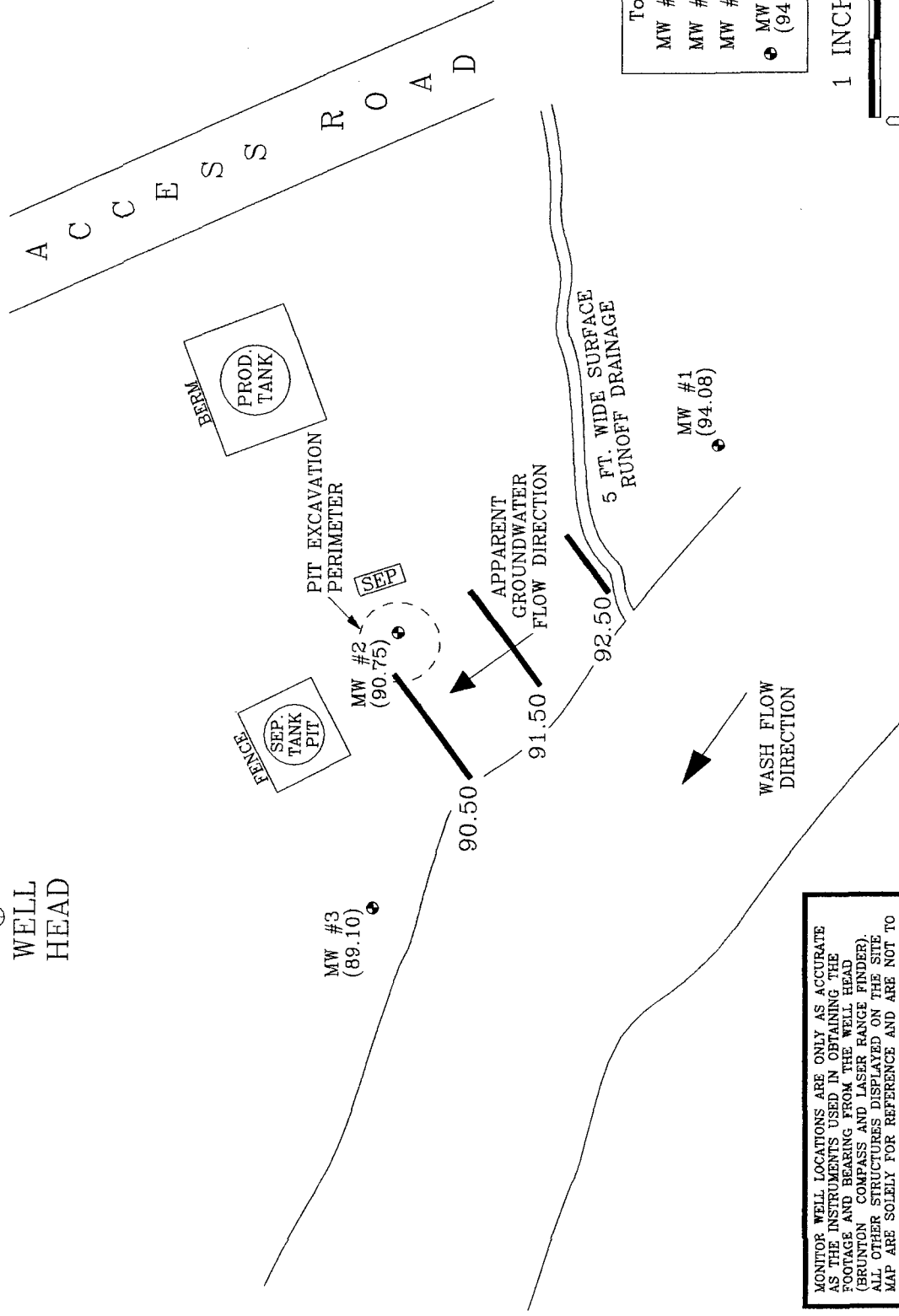
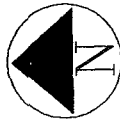
1 INCH = 50 FT.



CROSS TIMBERS OPERATING CO. FROST, JACK B #2 NW/4 NW/4 SEC. 27, T27N, 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 SAMPLING DRAWN BY: NJV FILENAME: 02-18-GW.SKD	GROUNDWATER CONTOUR MAP 02/00

FIGURE 4
(2nd 1/4, 2000)

⊕
WELL
HEAD



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.

CROSS TIMBERS OPERATING CO.

FROST, JACK B #2

NW/4 NW/4 SEC. 27, T27N, 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 SAMPLING

DRAWN BY: NJV

FILENAME: 06-20-GW.SKD

GROUNDWATER
CONTOUR
MAP

06/00

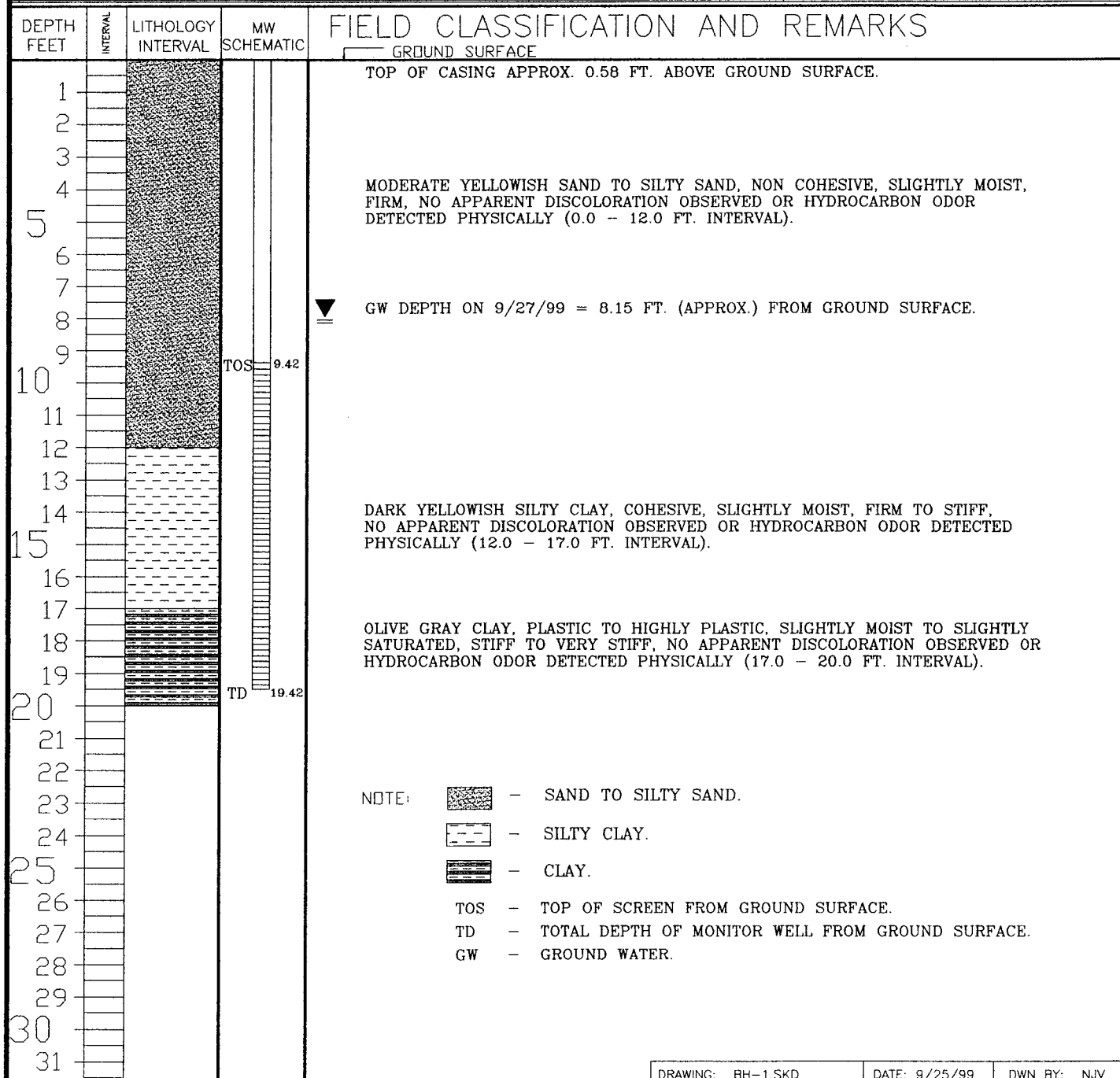
BLAGG ENGINEERING, Inc.

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

BORE / TEST HOLE REPORT

BORING #..... BH - 1
MW #..... 1
PAGE #..... 1
DATE STARTED 9/21/99
DATE FINISHED 9/21/99
OPERATOR..... REP
PREPARED BY NJV

CLIENT: CROSS TIMBERS OPERATING COMPANY
LOCATION NAME: FROST, JACK B #2
CONTRACTOR: BLAGG ENGINEERING, INC.
EQUIPMENT USED: MOBILE DRILL RIG (EARTHPROBE)
BORING LOCATION: 273 FT., S33E FEET FROM WELL HEAD.



DRAWING: BH-1.SKD

DATE: 9/25/99

DWN BY: NJV

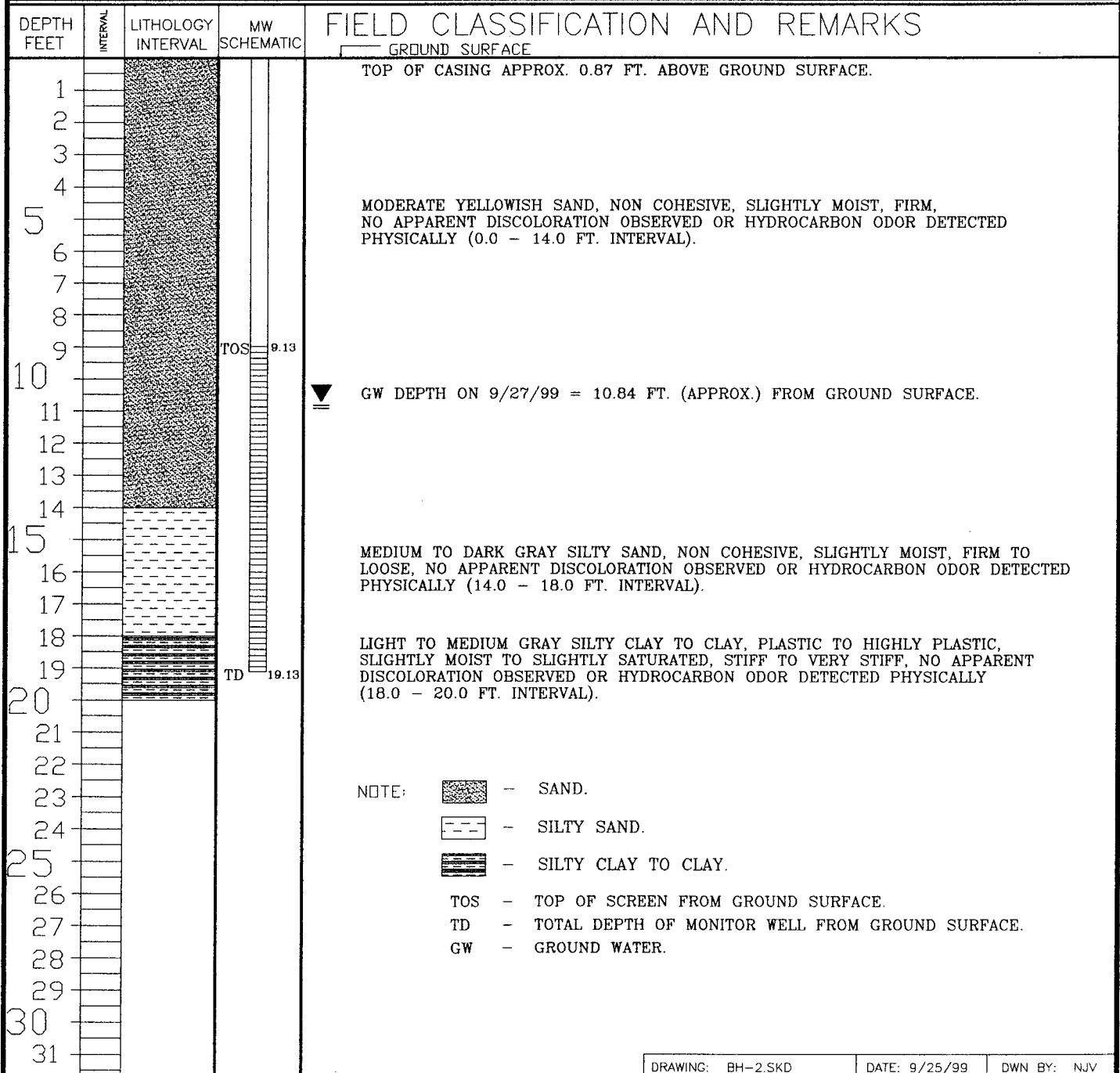
BLAGG ENGINEERING, Inc.

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

BORE / TEST HOLE REPORT

BORING #..... BH - 2
MW #..... 2
PAGE #..... 2
DATE STARTED 9/21/99
DATE FINISHED 9/21/99
OPERATOR..... REP
PREPARED BY NJV

CLIENT: CROSS TIMBERS OPERATING COMPANY
LOCATION NAME: FROST, JACK B #2
CONTRACTOR: BLAGG ENGINEERING, INC.
EQUIPMENT USED: MOBILE DRILL RIG (EARTHPROBE)
BORING LOCATION: 156 FT., S35E FEET FROM WELL HEAD.



DRAWING: BH-2.SKD

DATE: 9/25/99

DWN BY: NJV

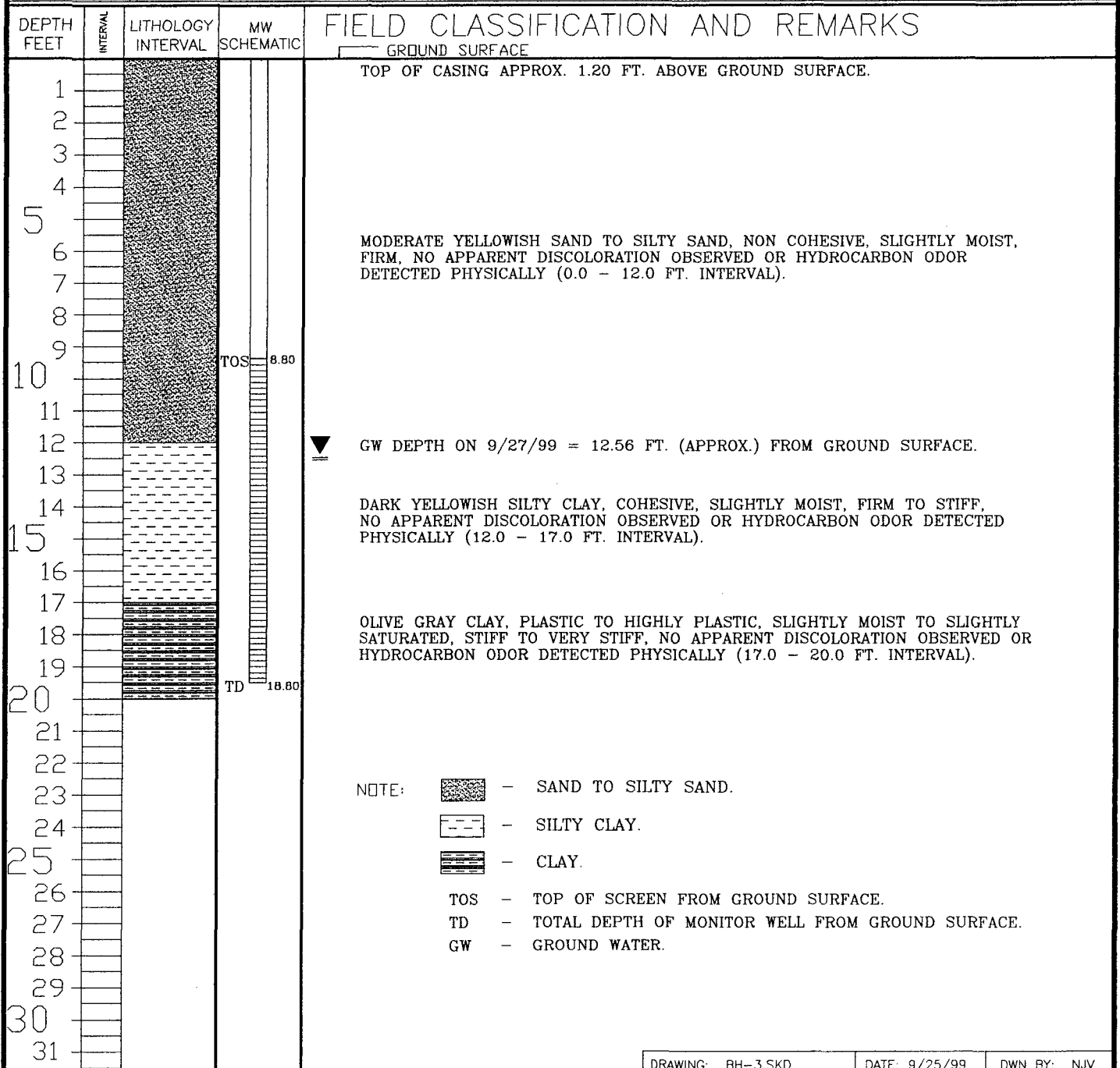
BLAGG ENGINEERING, Inc.

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

BORE / TEST HOLE REPORT

BORING #..... BH - 3
MW #..... 3
PAGE #..... 3
DATE STARTED 9/21/99
DATE FINISHED 9/21/99
OPERATOR..... REP
PREPARED BY NJV

CLIENT: CROSS TIMBERS OPERATING COMPANY
LOCATION NAME: FROST, JACK B #2
CONTRACTOR: BLAGG ENGINEERING, INC.
EQUIPMENT USED: MOBILE DRILL RIG (EARTHPROBE)
BORING LOCATION: 120 FT., S1E FEET FROM WELL HEAD.



DRAWING: BH-3.SKD

DATE: 9/25/99

DWN BY: NJV

MONITOR WELL #1

2" DIA. SCH. 40 PVC
WELL CASING WITH SLIP
CAP (approx. 0.58 ft.
above ground surface)

GROUND
SURFACE

TOTAL CASING
LENGTH = 9.42 ft.
FROM GROUND SURFACE
TO TOP OF SCREEN

8.15 ft. ANNULAR ABOVE
WATER TABLE COMPLETED
WITH COLORADO SILICA SAND

WATER TABLE
APPROX. 8.15 ft. FROM
GROUND SURFACE
(measured 9/27/99)

0.02 INCH SLOTTED
SCREEN SCH 40 WITH
POINTED END CAP
(10 ft. total length)

11.85 ft. ANNULAR BELOW
WATER TABLE COMPLETED
WITH EXISTING SOIL

TOTAL DEPTH = 19.42 ft.
FROM GROUND SURFACE

CROSS TIMBERS OPERATING CO.

HARE GC B # 1E

MONITOR WELL CONSTRUCTION & COMPLETION

INSTALLED WITH MOBILE RIG

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

MONITOR WELL SCHEMATIC

DRAFTED BY: NJV

INSTALL. DATE: JAN. '00

FILENAME: MW-1

MONITOR WELL #2

INSTALLED WITH MOBILE RIG

MONITOR WELL CONSTRUCTION & COMPLETION

HARE GC B # 1E

CROSS TIMBERS OPERATING CO.

PHONE: (505) 632-1199

BLOOMFIELD, NEW MEXICO 87413

P.O. BOX 87

CONSULTING PETROLEUM / RECLAMATION SERVICES

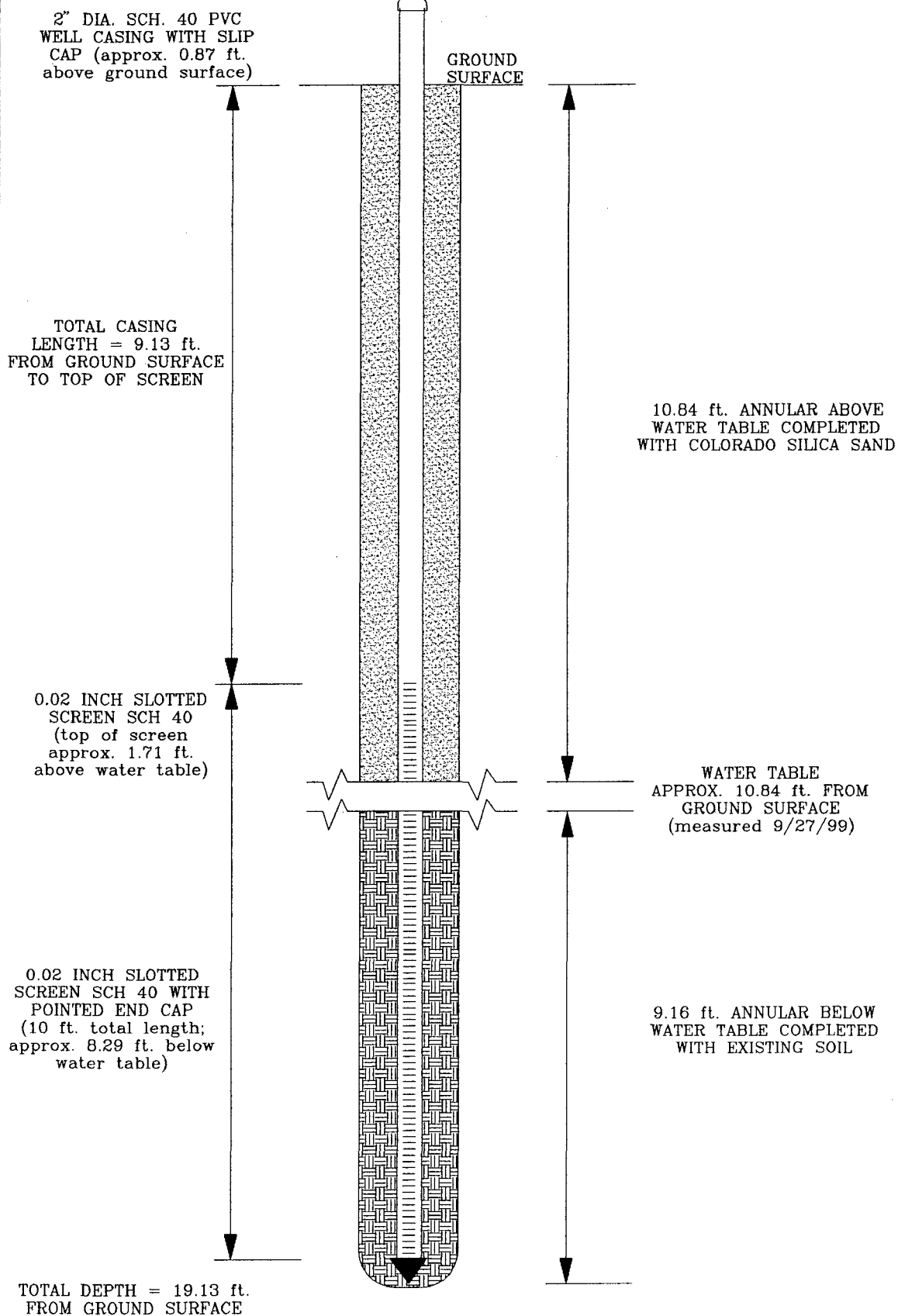
BLAGG ENGINEERING, INC.

FILENAME: MW-2

INSTALL. DATE: JAN. '00

DRAFTED BY: NJV

MONITOR WELL SCHEMATIC

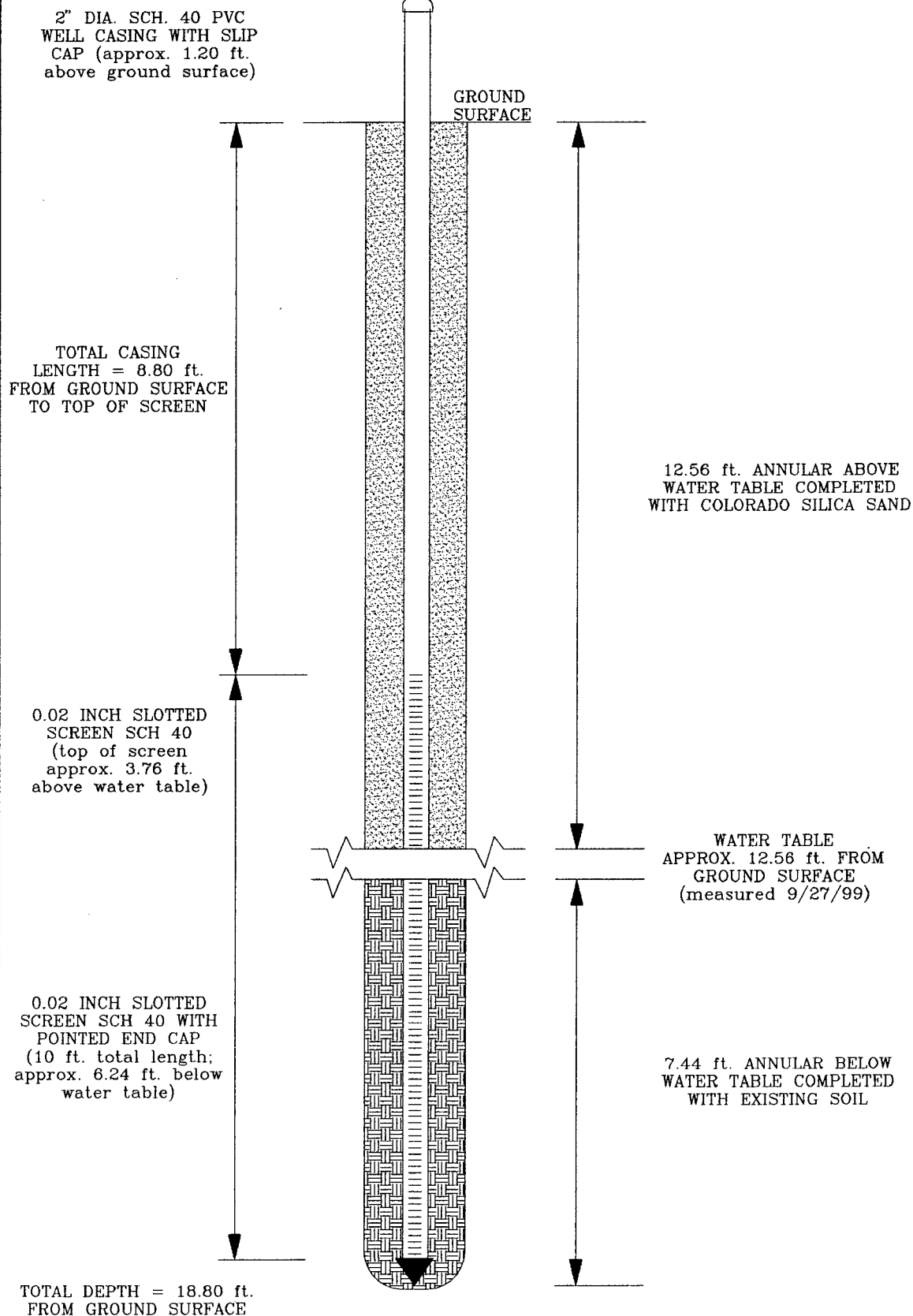


MONITOR WELL #3

CROSS TIMBERS OPERATING CO.
HARE GC B # 1E
MONITOR WELL CONSTRUCTION & COMPLETION
INSTALLED WITH MOBILE RIG

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

MONITOR WELL SCHEMATIC
DRAFTED BY: NJV
INSTALL. DATE: JAN. '00
FILENAME: MW-3



BLAGG ENGINEERING, INC.**MONITOR WELL SAMPLING DATA**CLIENT : CROSS TIMBERS OPER. CO.CHAIN-OF-CUSTODY # : 7301LOCATION : FROST, JACK B # 2LABORATORY (S) USED : ENVIROTECH, INC.Date : September 27, 1999SAMPLER : REPFilename : 09-27-99.WK4PROJECT 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	103.36	94.63	8.73	20.00	1315	8.0	3800	5.50	-
2	102.13	90.42	11.71	20.00	1230	7.6	2000	4.00	-
3	101.52	87.76	13.76	20.00	1335	8.1	2500	3.00	-

NOTES : Volume of water purged from well prior to sampling: $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3 \text{ (wellbores)}$.(i.e. 2" MW $r = (1/12) \text{ ft. } h = 1 \text{ ft.}$) (i.e. 4" MW $r = (2/12) \text{ ft. } h = 1 \text{ ft.}$)

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".Poor recovery in MW #'s 1 & 3 . Collected BTEX and anion / cation samples for
all MW 's listed above .

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW #1	Date Reported:	09-30-99
Chain of Custody:	7301	Date Sampled:	09-27-99
Laboratory Number:	G127	Date Received:	09-28-99
Sample Matrix:	Water	Date Analyzed:	09-30-99
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	24.9	1	0.2
Toluene	4.0	1	0.2
Ethylbenzene	ND	1	0.2
p,m-Xylene	4.7	1	0.2
o-Xylene	1.6	1	0.1
Total Xylene	6.3		
Total BTEX	35.2		

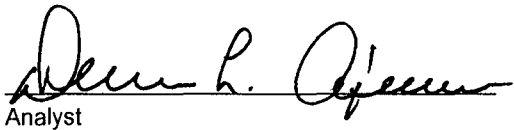
ND - Parameter not detected at the stated detection limit.

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

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

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

Comments: Jack Frost B #2.


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW #2	Date Reported:	09-30-99
Chain of Custody:	7301	Date Sampled:	09-27-99
Laboratory Number:	G128	Date Received:	09-28-99
Sample Matrix:	Water	Date Analyzed:	09-30-99
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	350	1	0.2
Toluene	60.1	1	0.2
Ethylbenzene	90.5	1	0.2
p,m-Xylene	233	1	0.2
o-Xylene	20.9	1	0.1
Total Xylene	254		
Total BTEX	754		

ND - Parameter not detected at the stated detection limit.

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

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

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

Comments: Jack Frost B #2.


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW #3	Date Reported:	09-30-99
Chain of Custody:	7301	Date Sampled:	09-27-99
Laboratory Number:	G129	Date Received:	09-28-99
Sample Matrix:	Water	Date Analyzed:	09-30-99
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	21.2	1	0.2
Toluene	3.1	1	0.2
Ethylbenzene	3.1	1	0.2
p,m-Xylene	14.2	1	0.2
o-Xylene	0.9	1	0.1
Total Xylene	15.1		
Total BTEX	42.5		

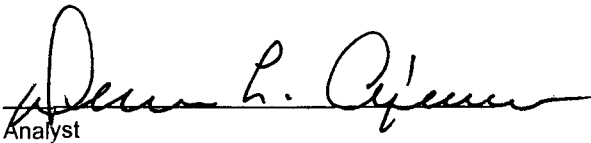
ND - Parameter not detected at the stated detection limit.

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

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

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

Comments: Jack Frost B #2.


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

CATION / ANION ANALYSIS

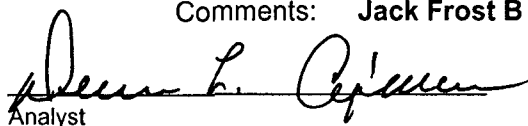
Client: Blagg / Cross Timbers
Sample ID: MW #1
Laboratory Number: G127
Chain of Custody: 7301
Sample Matrix: Water
Preservative: Cool
Condition: Cool & Intact

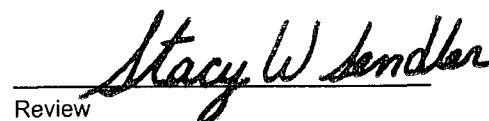
Project #: 403410
Date Reported: 09-30-99
Date Sampled: 09-27-99
Date Received: 09-28-99
Date Extracted: N/A
Date Analyzed: 09-29-99

Parameter	Analytical Result	Units	Units
pH	7.85	s.u.	
Conductivity @ 25° C	6,810	umhos/cm	
Total Dissolved Solids @ 180C	3,400	mg/L	
Total Dissolved Solids (Calc)	3,370	mg/L	
SAR	48.9	ratio	
Total Alkalinity as CaCO3	638	mg/L	
Total Hardness as CaCO3	94.0	mg/L	
Bicarbonate as HCO3	638	mg/L	10.46 meq/L
Carbonate as CO3	<1	mg/L	0.00 meq/L
Hydroxide as OH	<1	mg/L	0.00 meq/L
Nitrate Nitrogen	0.1	mg/L	0.00 meq/L
Nitrite Nitrogen	0.004	mg/L	0.00 meq/L
Chloride	5.0	mg/L	0.14 meq/L
Fluoride	1.96	mg/L	0.10 meq/L
Phosphate	0.9	mg/L	0.03 meq/L
Sulfate	1,850	mg/L	38.52 meq/L
Iron	0.007	mg/L	
Calcium	28.8	mg/L	1.44 meq/L
Magnesium	5.4	mg/L	0.44 meq/L
Potassium	3.0	mg/L	0.08 meq/L
Sodium	1,090	mg/L	47.42 meq/L
Cations			49.37 meq/L
Anions			49.25 meq/L
Cation/Anion Difference			0.25%

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

Comments: Jack Frost B #2.


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

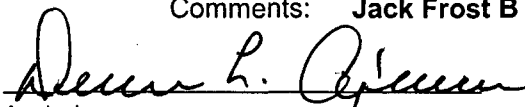
CATION / ANION ANALYSIS

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW #2	Date Reported:	09-30-99
Laboratory Number:	G128	Date Sampled:	09-27-99
Chain of Custody:	7301	Date Received:	09-28-99
Sample Matrix:	Water	Date Extracted:	N/A
Preservative:	Cool	Date Analyzed:	09-29-99
Condition:	Cool & Intact		

Parameter	Analytical Result	Units		Units
pH	7.98	s.u.		
Conductivity @ 25° C	1,876	umhos/cm		
Total Dissolved Solids @ 180C	915	mg/L		
Total Dissolved Solids (Calc)	710	mg/L		
SAR	10.5	ratio		
Total Alkalinity as CaCO3	316	mg/L		
Total Hardness as CaCO3	78.0	mg/L		
Bicarbonate as HCO3	316	mg/L	5.18	meq/L
Carbonate as CO3	<1	mg/L	0.00	meq/L
Hydroxide as OH	<1	mg/L	0.00	meq/L
Nitrate Nitrogen	1.0	mg/L	0.02	meq/L
Nitrite Nitrogen	0.300	mg/L	0.01	meq/L
Chloride	2.0	mg/L	0.06	meq/L
Fluoride	1.21	mg/L	0.06	meq/L
Phosphate	6.5	mg/L	0.21	meq/L
Sulfate	260	mg/L	5.41	meq/L
Iron	0.288	mg/L		
Calcium	25.6	mg/L	1.28	meq/L
Magnesium	3.4	mg/L	0.28	meq/L
Potassium	3.0	mg/L	0.08	meq/L
Sodium	214	mg/L	9.31	meq/L
Cations			10.94	meq/L
Anions			10.94	meq/L
Cation/Anion Difference			0.02%	

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

Comments: Jack Frost B #2.


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

CATION / ANION ANALYSIS

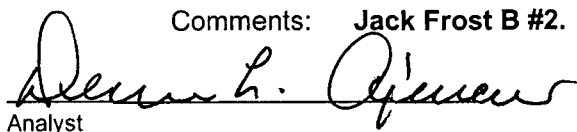
Client: Blagg / Cross Timbers
Sample ID: MW #3
Laboratory Number: G129
Chain of Custody: 7301
Sample Matrix: Water
Preservative: Cool
Condition: Cool & Intact

Project #: 403410
Date Reported: 09-30-99
Date Sampled: 09-27-99
Date Received: 09-28-99
Date Extracted: N/A
Date Analyzed: 09-29-99

Parameter	Analytical Result	Units	Units
pH	7.80	s.u.	
Conductivity @ 25° C	4,180	umhos/cm	
Total Dissolved Solids @ 180C	2,080	mg/L	
Total Dissolved Solids (Calc)	1,980	mg/L	
SAR	39.2	ratio	
Total Alkalinity as CaCO3	524	mg/L	
Total Hardness as CaCO3	52.0	mg/L	
Bicarbonate as HCO3	524	mg/L	8.59 meq/L
Carbonate as CO3	<1	mg/L	0.00 meq/L
Hydroxide as OH	<1	mg/L	0.00 meq/L
Nitrate Nitrogen	0.5	mg/L	0.01 meq/L
Nitrite Nitrogen	0.021	mg/L	0.00 meq/L
Chloride	4.5	mg/L	0.13 meq/L
Fluoride	4.40	mg/L	0.23 meq/L
Phosphate	1.0	mg/L	0.03 meq/L
Sulfate	983	mg/L	20.47 meq/L
Iron	0.042	mg/L	
Calcium	18.4	mg/L	0.92 meq/L
Magnesium	1.5	mg/L	0.12 meq/L
Potassium	3.0	mg/L	0.08 meq/L
Sodium	650	mg/L	28.28 meq/L
Cations			29.39 meq/L
Anions			29.45 meq/L
Cation/Anion Difference			0.20%

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

Comments: Jack Frost B #2.


Analyst


Review

7301

ENVIROTECH INC.

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Farmington, New Mexico 87401
(505) 632-0615

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS QUALITY ASSURANCE REPORT

Client:	N/A	Project #:	N/A
Sample ID:	09-30-BTEX QA/QC	Date Reported:	09-30-99
Laboratory Number:	G124	Date Sampled:	N/A
Sample Matrix:	Water	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	09-30-99
Condition:	N/A	Analysis:	BTEX

Calibration and Detection Limits (ug/L)	I-Cal RF	C-Cal RF	%Diff	Blank Conc	Detect Limit
		Accept. Range 0 - 15%			
Benzene	3.6219E-001	3.6335E-001	0.32%	ND	0.2
Toluene	2.7867E-002	2.7872E-002	0.02%	ND	0.2
Ethylbenzene	4.1931E-002	4.1981E-002	0.12%	ND	0.2
p,m-Xylene	3.6569E-002	3.6576E-002	0.02%	ND	0.2
o-Xylene	3.1955E-002	3.2051E-002	0.30%	ND	0.1

Duplicate Conc. (ug/L)	Sample	Duplicate	%Diff	Accept Limit
Benzene	13.9	13.8	0.7%	0 - 30%
Toluene	11.0	11.3	2.7%	0 - 30%
Ethylbenzene	17.2	17.2	0.0%	0 - 30%
p,m-Xylene	6.7	6.8	1.5%	0 - 30%
o-Xylene	3.3	3.3	0.0%	0 - 30%

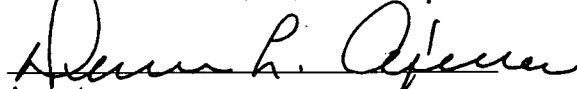
Spike Conc. (ug/L)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Limits
Benzene	13.9	50.0	63.6	100%	39 - 150
Toluene	11.0	50.0	60.9	100%	46 - 148
Ethylbenzene	17.2	50.0	67.0	100%	32 - 160
p,m-Xylene	6.7	100.0	107	100%	46 - 148
o-Xylene	3.3	50.0	53.3	100%	46 - 148

ND - Parameter not detected at the stated detection limit.

* - Administrative level set at 80 - 120.

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

Comments: QA/QC for samples G124 - G129.


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client: Blagg / Crosstimbers
Sample ID: MW # 1
Chain of Custody: 6999
Laboratory Number: G159
Sample Matrix: Water
Preservative: HgCl₂ & Cool
Condition: Cool & Intact

Project #: 403410
Date Reported: 10-07-99
Date Sampled: 10-06-99
Date Received: 10-06-99
Date Analyzed: 10-07-99
Analysis Requested: BTEX

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	1.4	1	0.2
Toluene	ND	1	0.2
Ethylbenzene	0.2	1	0.2
p,m-Xylene	2.4	1	0.2
o-Xylene	0.7	1	0.1
Total Xylene	3.1		
Total BTEX	4.7		

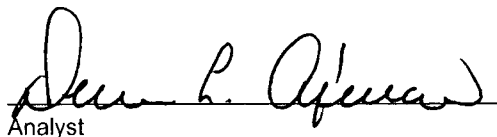
ND - Parameter not detected at the stated detection limit.

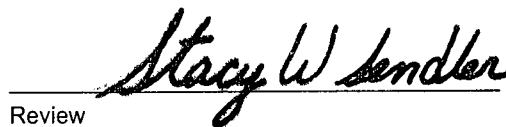
Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	96 %
	Bromofluorobenzene	96 %

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

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

Comments: Jack Frost B #2.


Analyst


Review

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 18-Oct-99

Client: Blagg Engineering

Client Sample Info: Jack Frost B#2

Work Order: 9910012

Client Sample ID: MW #1

Lab ID: 9910012-01A Matrix: AQUEOUS

Collection Date: 10/6/99 1:20:00 PM

Project: Jack Frost B#2

COC Record: 10343

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC/PID		SW8021B		Analyst: HR		
Benzene	ND	0.5		µg/L	1	10/15/99
Toluene	ND	0.5		µg/L	1	10/15/99
Ethylbenzene	ND	0.5		µg/L	1	10/15/99
m,p-Xylene	ND	1		µg/L	1	10/15/99
o-Xylene	ND	0.5		µg/L	1	10/15/99

Qualifiers:
PQL - Practical Quantitation Limit
ND - Not Detected at Practical Quantitation Limit
J - Analyte detected below Practical Quantitation Limit
B - Analyte detected in the associated Method Blank

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
Surr: - Surrogate

1 of 1

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- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client:	Blagg / Crosstimbers	Project #:	403410
Sample ID:	MW #4	Date Reported:	10-07-99
Chain of Custody:	6998	Date Sampled:	10-06-99
Laboratory Number:	G158	Date Received:	10-06-99
Sample Matrix:	Water	Date Analyzed:	10-07-99
Preservative:	HgCl ₂ & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	2.1	1	0.2
Toluene	1.6	1	0.2
Ethylbenzene	0.3	1	0.2
p,m-Xylene	3.3	1	0.2
o-Xylene	0.2	1	0.1
Total Xylene	3.5		
Total BTEX	7.5		

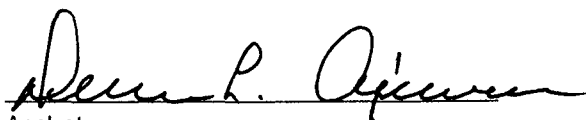
ND - Parameter not detected at the stated detection limit.

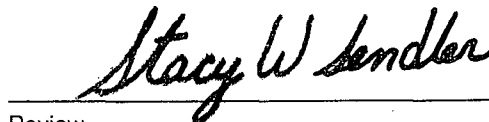
Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	95 %
	Bromofluorobenzene	95 %

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

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

Comments: Jack Frost Z #1.


Analyst


Review

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 18-Oct-99

Client:	Blagg Engineering	Client Sample Info:	Jack Frost Z#1
Work Order:	9910013	Client Sample ID:	MW #4
Lab ID:	9910013-01A	Matrix:	AQUEOUS
Project:	Jack Frost Z#1	Collection Date:	10/6/99 11:00:00 AM
		COC Record:	10342

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC/PID		SW8021B		Analyst: HR		
Benzene	ND	0.5		µg/L	1	10/15/99
Toluene	ND	0.5		µg/L	1	10/15/99
Ethylbenzene	ND	0.5		µg/L	1	10/15/99
m,p-Xylene	ND	1		µg/L	1	10/15/99
o-Xylene	ND	0.5		µg/L	1	10/15/99

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

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- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

1 of 1

693

ENVIROTECH INC.

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CHAIN OF CUSTODY RECORD

ON SITE

TECHNOLOGIES, LTD.

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Date: 10.6.99

Page: 1 of 1[illegible]

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CHAIN OF CUSTODY RECORD



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LAB (505) 325-5667 • FAX (505) 327-1496

Date: 10 6 99
Page: 1 of 1

Purchase Order No.:		Project No.		Name		Title	
SEND INVOICE TO		Name		Company			
Name		Company		Mailing Address			
Address		City, State, Zip		Telephone No.		Telefax No.	
City, State, Zip		Telephone No.		Telefax No.			
PROJECT LOCATION: JACK FROST Z #1				ANALYSIS REQUESTED			
SAMPLER'S SIGNATURE: Ed Frost							
SAMPLE IDENTIFICATION				LAB ID			
DATE				TIME			
MAY 4				1100 W			
PRES				1500			
2001							
RESULTS TO				Number of Containers			
REPORT				2			
Relinquished by:				Received by:		Date/Time	
Relinquished by:				Received by:		Date/Time	
Relinquished by:				Received by:		Date/Time	
Method of Shipment:				Rush		24-48 Hours	
Special Instructions/Remarks:				10 Working Days		By Date	
Authorized by:				Date			
(Client Signature Must Accompany Request)							

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:	10-07-BTEX QA/QC	Date Reported:	10-07-99
Laboratory Number:	G158	Date Sampled:	N/A
Sample Matrix:	Water	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	10-07-99
Condition:	N/A	Analysis:	BTEX

Calibration and Detection Limits (ug/L)	I-Cal RF:	C-Cal RF: Accept. Range 0 - 15%	%Diff	Blank Conc	Detect. Limit
Methyl-t-butyl Ether	6.6779E-002	6.6926E-002	0.22%	ND	0.2
Benzene	3.6219E-001	3.6335E-001	0.32%	ND	0.2
Toluene	2.7867E-002	2.7872E-002	0.02%	ND	0.2
Ethylbenzene	4.1931E-002	4.1981E-002	0.12%	ND	0.2
p,m-Xylene	3.6569E-002	3.6576E-002	0.02%	ND	0.2
o-Xylene	3.1955E-002	3.2051E-002	0.30%	ND	0.1

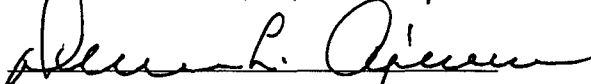
Duplicate Conc. (ug/L)	Sample	Duplicate	%Diff	Accept Limit
Benzene	2.1	2.0	4.8%	0 - 30%
Toluene	1.6	1.6	0.0%	0 - 30%
Ethylbenzene	0.3	0.3	0.0%	0 - 30%
p,m-Xylene	3.3	3.3	0.0%	0 - 30%
o-Xylene	0.2	0.2	0.0%	0 - 30%

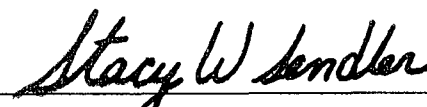
Spike Conc. (ug/L)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Limits
Benzene	2.1	50.0	52.1	100%	39 - 150
Toluene	1.6	50.0	51.6	100%	46 - 148
Ethylbenzene	0.3	50.0	50.3	100%	32 - 160
p,m-Xylene	3.3	100.0	103.3	100%	46 - 148
o-Xylene	0.2	50.0	50.3	100%	46 - 148

ND - Parameter not detected at the stated detection limit.

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

Comments: QA/QC for samples G158 - G159.


Analyst


Review

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:	10-07-BTEX QA/QC	Date Reported:	10-07-99
Laboratory Number:	G158	Date Sampled:	N/A
Sample Matrix:	Water	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	10-07-99
Condition:	N/A	Analysis:	BTEX

Calibration and Detection Limits (ug/L)	I-Cal RF	C-Cal RF	%Diff	Blank Conc	Detect Limit
		Accept. Range 0 - 15%			
Methyl-t-butyl Ether	6.6779E-002	6.6926E-002	0.22%	ND	0.2
Benzene	3.6219E-001	3.6335E-001	0.32%	ND	0.2
Toluene	2.7867E-002	2.7872E-002	0.02%	ND	0.2
Ethylbenzene	4.1931E-002	4.1981E-002	0.12%	ND	0.2
p,m-Xylene	3.6569E-002	3.6576E-002	0.02%	ND	0.2
o-Xylene	3.1955E-002	3.2051E-002	0.30%	ND	0.1

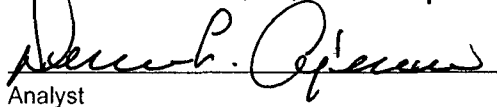
Duplicate Conc. (ug/L)	Sample	Duplicate	%Diff	Accept Limit
Benzene	2.1	2.0	4.8%	0 - 30%
Toluene	1.6	1.6	0.0%	0 - 30%
Ethylbenzene	0.3	0.3	0.0%	0 - 30%
p,m-Xylene	3.3	3.3	0.0%	0 - 30%
o-Xylene	0.2	0.2	0.0%	0 - 30%

Spike Conc. (ug/L)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Limits
Benzene	2.1	50.0	52.1	100%	39 - 150
Toluene	1.6	50.0	51.6	100%	46 - 148
Ethylbenzene	0.3	50.0	50.3	100%	32 - 160
p,m-Xylene	3.3	100.0	103.3	100%	46 - 148
o-Xylene	0.2	50.0	50.3	100%	46 - 148

ND - Parameter not detected at the stated detection limit.

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

Comments: QA/QC for samples G158 - G159.


Analyst


Review

On Site Technologies, LTD.

Date: 18-Oct-99

CLIENT: Blagg Engineering
Work Order: 9910013
Project: Jack Frost Z#1

QC SUMMARY REPORT
Method Blank

Sample ID: MB1	Batch ID: GC-1_991015	Test Code: SW8021B	Units: µg/L	Analysis Date: 10/15/99	Prep Date:
Client ID:	9910013	Run ID: GC-1_991015A		SeqNo: 20607	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Benzene	ND	0.5			
Ethylbenzene	ND	0.5			
m,p-Xylene	.2588	1			J
Methyl tert-Butyl Ether	ND	1			
o-Xylene	.0849	0.5			J
Toluene	.2295	0.5			J

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

1 of 1

On Site Technologies, LTD.

Date: 18-Oct-99

CLIENT: Blagg Engineering
Work Order: 9910013
Project: Jack Frost Z#1

QC SUMMARY REPORT

Sample Matrix Spike

Sample ID: 9910015-01AMS	Batch ID: GC-1_991015	Test Code: SW8021B	Units: µg/L	Analysis Date: 10/15/99	Prep Date:
Client ID: 9910013	Run ID: GC-1_991015A	PQL	SPK value	SeqNo: 20608	
Analyte	Result	SPK	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Benzene	6738	25	2000	4676	103.2% 80 116
Ethylbenzene	4718	25	2000	2647	103.6% 80 118
m,p-Xylene	6248	50	4000	2382	96.6% 77 116
Methyl tert-Butyl Ether	2768	50	2000	823.3	97.2% 62 122
o-Xylene	2170	25	2000	88.14	104.1% 83 117
Toluene	2344	25	2000	233.8	105.5% 80 116

Sample ID: 9910015-01AMSD	Batch ID: GC-1_991015	Test Code: SW8021B	Units: µg/L	Analysis Date: 10/15/99	Prep Date:
Client ID: 9910013	Run ID: GC-1_991015A	PQL	SPK value	SeqNo: 20609	
Analyte	Result	SPK	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Benzene	6738	25	2000	4676	103.1% 80 116 6738 0.0% 7
Ethylbenzene	4739	25	2000	2647	104.6% 80 118 4718 0.4% 7
m,p-Xylene	6287	50	4000	2382	97.6% 77 116 6248 0.6% 7
Methyl tert-Butyl Ether	2655	50	2000	823.3	91.6% 62 122 2768 4.2% 7
o-Xylene	2190	25	2000	88.14	105.1% 83 117 2170 0.9% 6
Toluene	2355	25	2000	233.8	106.1% 80 116 2344 0.5% 6

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

On Site Technologies, LTD.

Date: 18-Oct-99

CLIENT: Blagg Engineering
 Work Order: 9910013
 Project: Jack Frost Z#1

QC SUMMARY REPORT

Laboratory Control Spike - generic

Sample ID: LCS WATER	Batch ID: GC-1_991015	Test Code: SW8021B	Units: µg/L	Analysis Date: 10/15/99	Prep Date:
Client ID: 9910013	Run ID: GC-1_991015A	PQL	SPK value	SeqNo: 20606	
Analyte	Result	PQL	SPK value	LowLimit	HighLimit
Benzené	41.4	0.5	40	87	119
Ethylbenzene	41.95	0.5	40	89	117
m,p-Xylene	78.11	1	80	88	114
Methyl tert-Butyl Ether	38.6	1	40	69	129
o-Xylene	41.1	0.5	40	90	116
Toluene	41.28	0.5	40	90	115
				%REC	%RPD
				103.5%	
				104.9%	
				97.3%	
				96.5%	
				102.6%	
				102.6%	
				RPD Ref Val	RPDLimit
					Qual

Qualifiers: NID - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

On Site Technologies, LTD.

Date: 18-Oct-99

QC SUMMARY REPORT

Continuing Calibration Verification Standard

CLIENT: Blagg Engineering
Work Order: 9910013
Project: Jack Frost Z#1

Sample ID: CCV1 BTEX_9910		Batch ID: GC-1_991015		Test Code: SW8021B		Units: µg/L		Analysis Date: 10/15/99		Prep Date:		
Client ID:		9910013		Run ID: GC-1_991015A				SeqNo: 20603				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene		21.62	0.5	20	0	108.1%	85	115				
Ethylbenzene		21.89	0.5	20	0	109.4%	85	115				
m,p-Xylene		41.04	1	40	0	102.6%	85	115				
Methyl tert-Butyl Ether		19.65	1	20	0	98.3%	85	115				
o-Xylene		21.52	0.5	20	0	107.6%	85	115				
Toluene		21.49	0.5	20	0	107.5%	85	115				
1,4-Difluorobenzene		90.6	0	100	0	90.6%	80	120				
4-Bromochlorobenzene		93.38	0	100	0	93.4%	80	120				
Fluorobenzene		89.25	0	100	0	89.3%	80	120				

Sample ID: CCV2 BTEX_9910		Batch ID: GC-1_991015		Test Code: SW8021B		Units: µg/L		Analysis Date: 10/15/99		Prep Date:		
Client ID:		9910013		Run ID: GC-1_991015A				SeqNo: 20604				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene		21.53	0.5	20	0	107.6%	85	115				
Ethylbenzene		21.71	0.5	20	0	108.6%	85	115				
m,p-Xylene		40.48	1	40	0	101.2%	85	115				
Methyl tert-Butyl Ether		20.44	1	20	0	102.2%	85	115				
o-Xylene		21.36	0.5	20	0	106.8%	85	115				
Toluene		21.36	0.5	20	0	106.8%	85	115				
1,4-Difluorobenzene		90.39	0	100	0	90.4%	80	120				
4-Bromochlorobenzene		94.89	0	100	0	94.9%	80	120				
Fluorobenzene		89.54	0	100	0	89.5%	80	120				

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Blagg Engineering
Work Order: 9910013
Project: Jack Frost Z#1

QC SUMMARY REPORT

Continuing Calibration Verification Standard

Sample ID: CCV3 BTEX_9910		Batch ID: GC-1_991015	Test Code: SW8021B	Units: µg/L	Analysis Date: 10/15/99		Prep Date:	
Client ID: 9910013		Run ID: GC-1_991015A	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit
Analyte		Result					RPD Ref Val	%RPD
							RPDLimit	Qual
Benzene		41.66	0.5	40	0	104.2%	85	115
Ethylbenzene		41.74	0.5	40	0	104.4%	85	115
m,p-Xylene		77.74	1	80	0	97.2%	85	115
Methyl tert-Butyl Ether		40.98	1	40	0	102.4%	85	115
o-Xylene		41	0.5	40	0	102.5%	85	115
Toluene		41.38	0.5	40	0	103.4%	85	115
1,4-Difluorobenzene		89.97	0	100	0	90.0%	80	120
4-Bromochlorobenzene		93.68	0	100	0	93.7%	80	120
Fluorobenzene		88.9	0	100	0	88.9%	80	120

CLIENT: Blagg Engineering
Work Order: 9910013
Project: Jack Frost Z#1
Test No: SW8021B

QC SUMMARY REPORT SURROGATE RECOVERIES

Aromatic Volatiles by GC/PID

Sample ID	14FBZ	4BCBZ	FLBZ					
9910009-01A	90.4	93.5	89.8					
9910009-03A	90.4	92.8	89					
9910009-04A	91	97.2	90.3					
9910012-01A	90.4	94.2	89.7					
9910013-01A	89.2	91.8	88.6					
9910015-01A	95.3	95.5	90.5					
9910015-01AMS	95.1	93.7	90.3					
9910015-01AMSD	95	95.4	91.1					
9910015-02A	100	96.8	93.7					
9910015-03A	91.1	93.8	90.1					
9910015-04A	91	93.8	90.5					
9910015-05A	90.2	95.7	91.5					
9910015-06A	90.7	93.8	90.6					
9910015-07A	96.1	93.5	92.7					
9910015-20A	91.1	94.4	90.2					
9910015-21A	91	93.8	89.9					
9910015-22A	90.6	93.4	89.9					
9910015-23A	91	93	90					
9910015-24A	90.5	92.9	90.1					
9910015-25A	90.9	92.7	90.2					
9910015-26A	90.2	94.5	89.5					
CCV1 BTEX_99100	90.6	93.4	89.2					
CCV2 BTEX_99100	90.4	94.9	89.5					
CCV3 BTEX_99100	90	93.7	88.9					
LCS WATER	90.1	92.8	88.6					
MB1	91.1	98.6	89.6					

Acronym	Surrogate	QC Limits
14FBZ	= 1,4-Difluorobenzene	80-120
4BCBZ	= 4-Bromochlorobenzene	80-120
FLBZ	= Fluorobenzene	80-120

* Surrogate recovery outside acceptance limits

BLAGG ENGINEERING, INC.
MONITOR WELL SAMPLING DATA

CLIENT : CROSS TIMBERS OPER. CO.

CHAIN-OF-CUSTODY # : 10353

LOCATION : FROST, JACK B # 2

LABORATORY (S) USED : ON - SITE TECH.

Date : February 18, 2000

SAMPLER : N J V

Filename : 02-18-00.WK4

PROJECT MANAGER : N J V

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	VOLUME PURGED (gal.)	FREE PRODUCT (ft)
1	103.36	94.10	9.26	20.00	1405	8.0	3,800	5.25	-
2	102.13	90.26	11.87	20.00	1335	7.7	1,900	4.00	-
3	101.52	88.65	12.87	20.00	1430	8.2	2,700	3.50	-

NOTES : Volume of water purged from well prior to sampling: $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3 \text{ (wellbores)}$.

(i.e. 2" MW $r = (1/12) \text{ ft. } h = 1 \text{ ft.}$ (i.e. 4" MW $r = (2/12) \text{ ft. } h = 1 \text{ ft.}$)

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 "

Very poor recovery in MW # 3 . Poor recovery in MW # 1. Collected BTEX from
all MW 's listed above . DTW = 19.40 ft. in MW # 3 @ time of collections (purging
initiated @ 1310 hrs. Labeled first sample vial for MW # 3 for lab tech. to analysis .

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 01-Mar-00

Client:	Blagg Engineering	Client Sample Info:	Frost, Jack B #2
Work Order:	0002044	Client Sample ID:	MW #1
Lab ID:	0002044-01A	Matrix:	AQUEOUS
Project:	Frost, Jack B #2	Collection Date:	2/18/2000 2:05:00 PM
		COC Record:	10353

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC/PID		SW8021B		Analyst: DM		
Benzene	ND	0.5		µg/L	1	2/25/2000
Toluene	ND	0.5		µg/L	1	2/25/2000
Ethylbenzene	ND	0.5		µg/L	1	2/25/2000
m,p-Xylene	ND	1		µg/L	1	2/25/2000
o-Xylene	ND	0.5		µg/L	1	2/25/2000

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

1 of 1

P.O. BOX 2606 • FARMINGTON, NM 87499

- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 01-Mar-00

Client: Blagg Engineering

Client Sample Info: Frost, Jack B #2

Work Order: 0002044

Client Sample ID: MW #2

Lab ID: 0002044-02A Matrix: AQUEOUS

Collection Date: 2/18/2000 1:35:00 PM

Project: Frost, Jack B #2

COC Record: 10353

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC/PID		SW8021B		Analyst: DM		
Benzene	0.9	0.5		µg/L	1	2/28/2000
Toluene	ND	0.5		µg/L	1	2/28/2000
Ethylbenzene	2.6	0.5		µg/L	1	2/28/2000
m,p-Xylene	3.9	1		µg/L	1	2/28/2000
o-Xylene	ND	0.5		µg/L	1	2/28/2000

Qualifiers:

PQL - Practical Quantitation Limit

S - Spike Recovery outside accepted recovery limits

ND - Not Detected at Practical Quantitation Limit

R - RPD outside accepted recovery limits

J - Analyte detected below Practical Quantitation Limit

E - Value above quantitation range

B - Analyte detected in the associated Method Blank

Surr: - Surrogate

1 of 1

P.O. BOX 2606 • FARMINGTON, NM 87499

- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 01-Mar-00

Client:	Blagg Engineering	Client Sample Info:	Frost, Jack B #2
Work Order:	0002044	Client Sample ID:	MW #3
Lab ID:	0002044-03A	Matrix:	AQUEOUS
Project:	Frost, Jack B #2	Collection Date:	2/18/2000 2:30:00 PM
		COC Record:	10353

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC/PID		SW8021B		Analyst: DM		
Benzene	ND	0.5		µg/L	1	2/25/2000
Toluene	ND	0.5		µg/L	1	2/25/2000
Ethylbenzene	ND	0.5		µg/L	1	2/25/2000
m,p-Xylene	ND	1		µg/L	1	2/25/2000
o-Xylene	ND	0.5		µg/L	1	2/25/2000

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

1 of 1

P.O. BOX 2606 • FARMINGTON, NM 87499

- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -



CHAIN OF CUSTODY RECORD

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

10353

Date 2/1/00

Page 1 of 1

Purchase Order No.:		Project No.		Name <u>SAME</u>		Title	
SEND INVOICE TO		Name <u>NEISON VELEZ</u>		Company			
		Company <u>BLISS ENGINEERING, INC.</u>		Mailing Address			
		Address <u>P.O. BOX 87</u>		City, State, Zip			
		City, State, Zip <u>BLOOMFIELD, NM 87413</u>		Telephone No. <u>632-1179</u>		Telefax No. <u>632-3903</u>	
PROJECT LOCATION: <u>FLOTT, TACK 8 # 2</u>				ANALYSIS REQUESTED			
SAMPLER'S SIGNATURE: <u>Neison Velez</u>							
SAMPLE IDENTIFICATION				LAB ID			
RAW # 1		DATE	TIME	MATRIX	PRES		
		2/18/00	1405	WATER	COOL & HEL	100020441 CIA	
RAW # 2		DATE	TIME	MATRIX	PRES		
		2/18/00	1335	WATER	COOL & HEL	02A	
RAW # 3		DATE	TIME	MATRIX	PRES		
		2/18/00	1430	WATER	COOL & HEL	PLEASE USE WPA-01A	
						WITH (D) ON	
						LABEL - 1ST	
						WAL USED C	
						TIME OF SAMPLING	
Relinquished by: <u>Neison Velez</u>		Date/Time <u>2/18/00 15:27</u>		Received by: <u>[Signature]</u>		Date/Time <u>2/18/00 15:27</u>	
Relinquished by:		Date/Time		Received by:		Date/Time	
Relinquished by:		Date/Time		Received by:		Date/Time	
Method of Shipment:				Rush		24-48 Hours	
				10 Working Days		By Date	
Authorized by:		Date		Special Instructions / Remarks:			
(Client Signature Must Accompany Request)							

On Site Technologies, LTD.

Date: 01-Mar-00

CLIENT: Blagg Engineering
Work Order: 0002044
Project: Frost, Jack B #2

QC SUMMARY REPORT

Method Blank

Sample ID: MB1	Batch ID: GC-1_000225	Test Code: SW8021B	Units: µg/L	Analysis Date: 2/25/2000	Prep Date:
Client ID:	0002044	Run ID: GC-1_000225A		SeqNo: 24479	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Benzene	.139	0.5			J
Ethylbenzene	.0595	0.5			J
m,p-Xylene	.1049	1			J
Methyl tert-Butyl Ether	ND	1			
o-Xylene	.0485	0.5			J
Toluene	.1347	0.5			J

Sample ID: MB1	Batch ID: GC-1_000228	Test Code: SW8021B	Units: µg/L	Analysis Date: 2/28/2000	Prep Date:
Client ID:	0002044	Run ID: GC-1_000228A		SeqNo: 24562	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Benzene	ND	0.5			
Ethylbenzene	ND	0.5			
m,p-Xylene	ND	1			
Methyl tert-Butyl Ether	ND	1			
o-Xylene	ND	0.5			
Toluene	.0832	0.5			J

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

On Site Technologies, LTD.

Date: 01-Mar-00

CLIENT: Blagg Engineering
Work Order: 0002044
Project: Frost, Jack B #2

QC SUMMARY REPORT

Sample Matrix Spike

Sample ID: 0002042-02AMS	Batch ID: GC-1_000225	Test Code: SW8021B	Units: µg/L	Analysis Date: 2/25/2000	Prep Date:
Client ID: 0002044	Run ID: GC-1_000225A	PQL	SPK value	SeqNo: 24480	
Analyte	Result		SPK Ref Val	LowLimit	HighLimit
Benzene	21250	120	10000	73	126
Ethylbenzene	11460	120	10000	88	113
m,p-Xylene	19960	250	20000	83	112
Methyl tert-Butyl Ether	52230	250	10000	81	125
o-Xylene	10540	120	10000	93	110
Toluene	11160	120	10000	76	126
				%REC	%RPD
				92.6%	
				101.3%	
				97.1%	
				70.2%	
				102.1%	
				101.5%	
				RPD Ref Val	RPDLimit
					Qual
					ES ✓

Sample ID: 0002042-02AMSD	Batch ID: GC-1_000225	Test Code: SW8021B	Units: µg/L	Analysis Date: 2/25/2000	Prep Date:
Client ID: 0002044	Run ID: GC-1_000225A	PQL	SPK value	SeqNo: 24481	
Analyte	Result		SPK Ref Val	LowLimit	HighLimit
Benzene	20810	120	10000	73	126
Ethylbenzene	11230	120	10000	88	113
m,p-Xylene	19580	250	20000	83	112
Methyl tert-Butyl Ether	52130	250	10000	81	125
o-Xylene	10390	120	10000	93	110
Toluene	10940	120	10000	76	126
				%REC	%RPD
				88.2%	2.1%
				99.0%	2.0%
				95.2%	1.9%
				69.3%	0.2%
				100.5%	1.4%
				99.2%	2.0%
				RPD Ref Val	RPDLimit
					Qual
					6
					5
					7
					9
					6
					6
					ES ✓

con/Finmed Lcs 3/1/00

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Blagg Engineering
Work Order: 0002044
Project: Frost, Jack B #2

QC SUMMARY REPORT

Sample Matrix Spike

Sample ID: 0002039-02AMS		Batch ID: GC-1_000228		Test Code: SW8021B		Units: µg/L		Analysis Date 2/28/2000		Prep Date:	
Client ID:		0002044		Run ID: GC-1_000228A				SeqNo: 24563			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	893.8	10	800	119.1	96.8%	73	126				
Ethylbenzene	1399	10	800	637.1	95.3%	88	113				
m,p-Xylene	6044	20	1600	4542	93.8%	83	112				
Methyl tert-Butyl Ether	812.5	20	800	35.51	97.1%	81	125				
o-Xylene	1389	10	800	617.7	96.5%	93	110				
Toluene	2642	10	800	1861	97.7%	76	126				

Sample ID: 0002039-02AMSD		Batch ID: GC-1_000228		Test Code: SW8021B		Units: µg/L		Analysis Date 2/28/2000		Prep Date:	
Client ID:		0002044		Run ID: GC-1_000228A				SeqNo: 24564			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	891.7	10	800	119.1	96.6%	73	126	893.8	0.2%		6
Ethylbenzene	1394	10	800	637.1	94.6%	88	113	1399	0.4%		5
m,p-Xylene	6019	20	1600	4542	92.3%	83	112	6044	0.4%		7
Methyl tert-Butyl Ether	819.4	20	800	35.51	98.0%	81	125	812.5	0.8%		9
o-Xylene	1390	10	800	617.7	96.6%	93	110	1389	0.0%		6
Toluene	2634	10	800	1861	96.7%	76	126	2642	0.3%		6

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

On Site Technologies, LTD.

Date: 01-Mar-00

CLIENT: Blagg Engineering
Work Order: 0002044
Project: Frost, Jack B #2

QC SUMMARY REPORT

Laboratory Control Spike - generic

Sample ID: LCS WATER	Batch ID: GC-1_000225	Test Code: SW8021B	Units: µg/L	Analysis Date 2/25/2000	Prep Date:
Client ID: 0002044	Run ID: GC-1_000225A	PQL	SPK value	SeqNo: 24478	
Analyte	Result		SPK Ref Val	LowLimit	HighLimit
Benzene	40.92	0.5	0.139	89	112
Ethylbenzene	41.42	0.5	0.0595	93	112
m,p-Xylene	78.63	1	0.1049	88	108
Methyl tert-Butyl Ether	41.32	1	0	87	115
o-Xylene	41.44	0.5	0.0485	93	112
Toluene	41.14	0.5	0.1347	92	111

Sample ID: LCS WATER	Batch ID: GC-1_000228	Test Code: SW8021B	Units: µg/L	Analysis Date 2/28/2000	Prep Date:
Client ID: 0002044	Run ID: GC-1_000228A	PQL	SPK value	SeqNo: 24561	
Analyte	Result		SPK Ref Val	LowLimit	HighLimit
Benzene	40.38	0.5	0	89	112
Ethylbenzene	41.28	0.5	0	93	112
m,p-Xylene	78.41	1	0	88	108
Methyl tert-Butyl Ether	40.59	1	0	87	115
o-Xylene	41.17	0.5	0	93	112
Toluene	40.9	0.5	0.0832	92	111

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

On Site Technologies, LTD.

Date: 01-Mar-00

CLIENT: Blagg Engineering
Work Order: 0002044
Project: Frost, Jack B #2

QC SUMMARY REPORT

Continuing Calibration Verification Standard

Sample ID: CCV1 BTEX_0001		Batch ID: GC-1_000225	Test Code: SW8021B	Units: µg/L		Analysis Date 2/25/2000		Prep Date:			
Client ID:		0002044	Run ID:	GC-1_000225A		SeqNo: 24475					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	20.45	0.5	20	0	102.2%	85	115				
Ethylbenzene	20.85	0.5	20	0	104.3%	85	115				
m,p-Xylene	39.34	1	40	0	98.3%	85	115				
Methyl tert-Butyl Ether	20.41	1	20	0	102.0%	85	115				
o-Xylene	20.78	0.5	20	0	103.9%	85	115				
Toluene	20.31	0.5	20	0	101.6%	85	115				
1,4-Difluorobenzene	90.02	0	100	0	90.0%	80	105				
4-Bromochlorobenzene	89.28	0	100	0	89.3%	78	108				
Fluorobenzene	89.34	0	100	0	89.3%	78	108				

Sample ID: CCV2 BTEX_0001		Batch ID: GC-1_000225	Test Code: SW8021B	Units: µg/L		Analysis Date 2/25/2000		Prep Date:			
Client ID:		0002044	Run ID:	GC-1_000225A		SeqNo: 24476					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	19.74	0.5	20	0	98.7%	85	115				
Ethylbenzene	20.35	0.5	20	0	101.8%	85	115				
m,p-Xylene	38.38	1	40	0	95.9%	85	115				
Methyl tert-Butyl Ether	20.52	1	20	0	102.6%	85	115				
o-Xylene	20.42	0.5	20	0	102.1%	85	115				
Toluene	19.92	0.5	20	0	99.6%	85	115				
1,4-Difluorobenzene	89.37	0	100	0	89.4%	80	105				
4-Bromochlorobenzene	89.5	0	100	0	89.5%	78	108				
Fluorobenzene	89.36	0	100	0	89.4%	78	108				

Qualifiers: ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Blagg Engineering

Work Order: 0002044

Project: Frost, Jack B #2

QC SUMMARY REPORT

Continuing Calibration Verification Standard

Sample ID: CCV3 BTEX_0001 Batch ID: GC-1_000225 Test Code: SW8021B Units: µg/L Analysis Date 2/25/2000 Prep Date:
 Client ID: 0002044 Run ID: GC-1_000225A SeqNo: 24477

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	40.08	0.5	40	0	100.2%	85	115				
Ethylbenzene	40.36	0.5	40	0	100.9%	85	115				
m,p-Xylene	76.66	1	80	0	95.8%	85	115				
Methyl tert-Butyl Ether	41.52	1	40	0	103.8%	85	115				
o-Xylene	40.6	0.5	40	0	101.5%	85	115				
Toluene	40.21	0.5	40	0	100.5%	85	115				
1,4-Difluorobenzene	88.88	0	100	0	88.9%	80	105				
4-Bromochlorobenzene	89.24	0	100	0	89.2%	78	108				
Fluorobenzene	88.61	0	100	0	88.6%	78	108				

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	20.18	0.5	20	0	100.9%	85	115				
Ethylbenzene	20.93	0.5	20	0	104.7%	85	115				
m,p-Xylene	39.52	1	40	0	98.8%	85	115				
Methyl tert-Butyl Ether	19.8	1	20	0	99.0%	85	115				
o-Xylene	20.84	0.5	20	0	104.2%	85	115				
Toluene	20.44	0.5	20	0	102.2%	85	115				
1,4-Difluorobenzene	89.71	0	100	0	89.7%	80	105				
4-Bromochlorobenzene	89.1	0	100	0	89.1%	78	108				
Fluorobenzene	88.62	0	100	0	88.6%	78	108				

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Blagg Engineering
 Work Order: 0002044
 Project: Frost, Jack B #2

QC SUMMARY REPORT

Continuing Calibration Verification Standard

Sample ID: CCV2 BTEX_0001		Batch ID: GC-1_000228		Test Code: SW8021B		Units: µg/L		Analysis Date 2/28/2000		Prep Date:				
Client ID:		0002044		Run ID: GC-1_000228A		PQL		SeqNo: 24559						
Analyte	Result	PQL		SPK value		SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	19.4	0.5		20		0		97.0%	85	115				
Ethylbenzene	20.04	0.5		20		0		100.2%	85	115				
m,p-Xylene	37.84	1		40		0		94.6%	85	115				
Methyl tert-Butyl Ether	20.64	1		20		0		103.2%	85	115				
o-Xylene	20.14	0.5		20		0		100.7%	85	115				
Toluene	19.68	0.5		20		0		98.4%	85	115				
1,4-Difluorobenzene	89.28	0		100		0		89.3%	80	105				
4-Bromochlorobenzene	89.66	0		100		0		89.7%	78	108				
Fluorobenzene	88.78	0		100		0		88.8%	78	108				

Sample ID: CCV3 BTEX_0001		Batch ID: GC-1_000228	Test Code: SW8021B	Units: µg/L		Analysis Date 2/28/2000		Prep Date:					
Client ID:	0002044	Run ID:	GC-1_000228A	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Analyte	Result												
Benzene	38.89			0.5	40	0	97.2%	85	115				
Ethylbenzene	39.58			0.5	40	0	99.0%	85	115				
m,p-Xylene	75.31			1	80	0	94.1%	85	115				
Methyl tert-Butyl Ether	41.12			1	40	0	102.8%	85	115				
o-Xylene	40.19			0.5	40	0	100.5%	85	115				
Toluene	39.55			0.5	40	0	98.9%	85	115				
1,4-Difluorobenzene	89.13			0	100	0	89.1%	80	105				
4-Bromochlorobenzene	92.77			0	100	0	92.8%	78	108				
Fluorobenzene	87.92			0	100	0	87.9%	78	108				

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Blagg Engineering
 Work Order: 0002044
 Project: Frost, Jack B #2
 Test No: SW8021B

QC SUMMARY REPORT SURROGATE RECOVERIES

Aromatic Volatiles by GC/PID

Sample ID	14FBZ	4BCBZ	FLBZ					
0002039-02A	87.2	88	87.8					
0002039-02AMS	87.3	89.3	86					
0002039-02AMSD	87.1	89.6	86.4					
0002039-03A	84.8	89.3	86.2					
0002039-05A	86.3	87.9	86.5					
0002039-06A	84.6	86	84.8					
0002042-02A	89	89.1	88.1					
0002042-02AMS	88.4	90.4	87.3					
0002042-02AMSD	87.9	90.4	87.2					
0002042-03A	90.5	89.2	89.5					
0002042-04A	88.4	89.7	86.8					
0002042-05A	90.6	89.4	89.6					
0002042-06A	90	88.2	89.1					
0002042-07A	89.1	88.8	89.2					
0002042-09A	90	89.4	89.6					
0002043-01A	89.6	88.3	89					
0002043-02A	85.4	89.5	85.3					
0002043-03A	90.4	89.5	89.6					
0002044-01A	90.4	89.8	89.6					
0002044-02A	91.2	90	90.4					
0002044-03A	90	89.1	90.1					
0002046-01A	90.2	89.4	89.6					
0002046-02A	90.8	90.4	91.4					
0002047-01A	90.6	89.1	89.6					
0002047-02A	90	89.1	90					
0002048-01A	90	89.6	89					
0002048-02A	91.4	91.1	90					

Acronym

Surrogate

QC Limits

14FBZ

= 1,4-Difluorobenzene

80-105

4BCBZ

= 4-Bromochlorobenzene

78-108

FLBZ

= Fluorobenzene

78-108

* Surrogate recovery outside acceptance limits

CLIENT: Blagg Engineering
Work Order: 0002044
Project: Frost, Jack B #2
Test No: SW8021B

QC SUMMARY REPORT SURROGATE RECOVERIES

Aromatic Volatiles by GC/PID

Sample ID	14FBZ	4BCBZ	FLBZ					
0002049-01A	89.8	89.3	90.1					
0002050-01A	90.1	90.4	89					
0002050-02A	90.4	89.4	89.2					
0002050-03A	89.8	89.5	89.7					
0002050-04A	90.7	89.9	89					
0002051-01A	89.5	89.9	89.5					
0002053-01A	89.1	88.1	89.6					
0002053-02A	89.6	89.5	88.4					
0002053-03A	89.6	88.6	89.7					
0002053-04A	89.5	89.7	89.4					
CCV1 BTEX_00010	89.7	89.1	88.6					
CCV2 BTEX_00010	89.3	89.6	88.8					
CCV3 BTEX_00010	89.1	92.8	87.9					
LCS WATER	88.9	89.1	87.8					
MB1	90.2	88.3	89.7					

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

* Surrogate recovery outside acceptance limits

BLAGG ENGINEERING, INC.
MONITOR WELL SAMPLING DATA

CLIENT : CROSS TIMBERS OPER. CO.

CHAIN-OF-CUSTODY # : 10599

LOCATION : FROST, JACK B # 2

LABORATORY (S) USED : ON - SITE TECH.

Date : June 20, 2000

SAMPLER : N J V

Filename : 06-20-00.WK4

PROJECT MANAGER : N J V

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	VOLUME PURGED (gal.)	FREE PRODUCT (ft)
1	103.36	94.08	9.28	20.00	1155	8.1	3,500	5.25	-
2	102.13	90.75	11.38	20.00	1140	7.6	2,100	4.25	-
3	101.52	89.10	12.42	20.00	1325	8.2	2,800	3.75	-

NOTES : Volume of water purged from well prior to sampling: $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3 \text{ (wellbores)}$.

(i.e. 2" MW $r = (1/12) \text{ ft. } h = 1 \text{ ft.}$ (i.e. 4" MW $r = (2/12) \text{ ft. } h = 1 \text{ ft.}$)

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 ".

Very poor recovery in MW # 3 . Poor recovery in MW # 1 . Collected BTEX from
all MW 's listed above .

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



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

ANALYTICAL REPORT

Date: 30-Jun-00

Client:	Blagg Engineering	Client Sample Info:	Jack Frost B #2
Work Order:	0006048	Client Sample ID:	MW #1
Lab ID:	0006048-01A	Matrix:	AQUEOUS
Project:	Cross Timbers - Jack Frost B #2	Collection Date:	6/20/2000 11:55:00 AM
		COC Record:	10599

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC/PID		SW8021B		Analyst: DM		
Benzene	ND	0.5		µg/L	1	6/27/2000
Toluene	ND	0.5		µg/L	1	6/27/2000
Ethylbenzene	ND	0.5		µg/L	1	6/27/2000
m,p-Xylene	ND	1		µg/L	1	6/27/2000
o-Xylene	ND	0.5		µg/L	1	6/27/2000

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

1 of 3

P.O. BOX 2606 • FARMINGTON, NM 87499

- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

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



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

ANALYTICAL REPORT

Date: 30-Jun-00

Client:	Blagg Engineering	Client Sample Info:	Jack Frost B #2
Work Order:	0006048	Client Sample ID:	MW #2
Lab ID:	0006048-02A	Matrix:	AQUEOUS
Project:	Cross Timbers - Jack Frost B #2	Collection Date:	6/20/2000 11:40:00 AM
		COC Record:	10599

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC/PID		SW8021B		Analyst: DM		
Benzene	0.5	0.5		µg/L	1	6/27/2000
Toluene	ND	0.5		µg/L	1	6/27/2000
Ethylbenzene	1.6	0.5		µg/L	1	6/27/2000
m,p-Xylene	3.5	1		µg/L	1	6/27/2000
o-Xylene	ND	0.5		µg/L	1	6/27/2000

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

2 of 3

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- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

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



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

ANALYTICAL REPORT

Date: 30-Jun-00

Client:	Blagg Engineering	Client Sample Info:	Jack Frost B #2
Work Order:	0006048	Client Sample ID:	MW #3
Lab ID:	0006048-03A	Matrix:	AQUEOUS
Project:	Cross Timbers - Jack Frost B #2	Collection Date:	6/20/2000 1:25:00 PM
		COC Record:	10599

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC/PID		SW8021B				Analyst: DM
Benzene	ND	0.5		µg/L	1	6/27/2000
Toluene	ND	0.5		µg/L	1	6/27/2000
Ethylbenzene	ND	0.5		µg/L	1	6/27/2000
m,p-Xylene	ND	1		µg/L	1	6/27/2000
o-Xylene	ND	0.5		µg/L	1	6/27/2000

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

3 of 3

P.O. BOX 2606 • FARMINGTON, NM 87499

- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

On Site Technologies, LTD.

Date: 30-Jun-00

CLIENT: Blagg Engineering
Work Order: 0006048
Project: Cross Timbers - Jack Frost B #2

QC SUMMARY REPORT

Method Blank

Sample ID: MB1	Batch ID: GC-1_000627	Test Code: SW8021B	Units: µg/L	Analysis Date: 6/27/2000	Prep Date:
Client ID: 0006048	Run ID: GC-1_000627A			SeqNo: 29412	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Benzene	.0393	0.5			J
Ethylbenzene	.0995	0.5			J
m,p-Xylene	.1968	1			J
Methyl tert-Butyl Ether	ND	1			
o-Xylene	.2037	0.5			J
Toluene	.2611	0.5			J

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

On Site Technologies, LTD.

Date: 30-Jun-00

CLIENT: Blagg Engineering
Work Order: 0006048
Project: Cross Timbers - Jack Frost B #2

QC SUMMARY REPORT

Sample Matrix Spike

Sample ID: 0006050-17AMS		Batch ID: GC-1_000627		Test Code: SW8021B		Units: µg/L		Analysis Date: 6/27/2000		Prep Date:	
Client ID:		0006048		Run ID:		GC-1_000627A		SeqNo: 29413			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	223.5	2.5	200	21.68	100.9%	73	126				
Ethylbenzene	409.5	2.5	200	215.8	96.9%	88	113				
m,p-Xylene	378.7	5	400	0	94.7%	83	112				
Methyl tert-Butyl Ether	228.3	5	200	22.43	103.0%	81	125				
o-Xylene	204.2	2.5	200	2.268	101.0%	93	110				
Toluene	210.7	2.5	200	4.871	102.9%	76	126				

Sample ID: 0006050-17AMSD	Batch ID: GC-1_000627	Test Code: SW8021B	Units: µg/L	Analysis Date: 6/27/2000				Prep Date:			
Client ID: 0006048	Run ID: GC-1_000627A	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Analyte	Result										
Benzene	223.9	2.5	200	21.68	101.1%	73	126	223.5	0.2%	6	
Ethylbenzene	412.8	2.5	200	215.8	98.5%	88	113	409.5	0.8%	5	
m,p-Xylene	381.6	5	400	0	95.4%	83	112	378.7	0.8%	7	
Methyl tert-Butyl Ether	231.7	5	200	22.43	104.6%	81	125	228.3	1.5%	9	
o-Xylene	205.9	2.5	200	2.268	101.8%	93	110	204.2	0.9%	6	
Toluene	210.2	2.5	200	4.871	102.7%	76	126	210.7	0.2%	6	

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

On Site Technologies, LTD.

Date: 30-Jun-00

CLIENT: Blagg Engineering
Work Order: 0006048
Project: Cross Timbers - Jack Frost B #2

QC SUMMARY REPORT

Laboratory Control Spike - generic

Sample ID: LCS WATER		Batch ID: GC-1_000627	Test Code: SW8021B	Units: µg/L		Analysis Date: 6/27/2000		Prep Date:	
Client ID:		0006048	Run ID:	GC-1_000627A		SeqNo: 29411			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	RPDLimit
Benzene	43.46	0.5	40	0.0393	108.6%	89	112		
Ethylbenzene	43.38	0.5	40	0.0995	108.2%	93	112		
m,p-Xylene	82.31	1	80	0.1968	102.6%	88	108		
Methyl tert-Butyl Ether	42.71	1	40	0	106.8%	87	115		
o-Xylene	43.53	0.5	40	0.2037	108.3%	93	112		
Toluene	43.75	0.5	40	0.2611	108.7%	92	111		

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

On Site Technologies, LTD.

Date: 30-Jun-00

CLIENT: Blagg Engineering

Work Order: 0006048

Project: Cross Timbers - Jack Frost B #2

QC SUMMARY REPORT

Continuing Calibration Verification Standard

Sample ID: CCV1 BTEX_0004		Batch ID: GC-1_000627	Test Code: SW8021B	Units: µg/L		Analysis Date: 6/27/2000		Prep Date:	
Client ID: 0006048		Run ID: GC-1_000627A	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	SeqNo: 29408
Analyte	Result								
Benzene	21.53		0.5	20	0	107.7%	85	115	
Ethylbenzene	21.6		0.5	20	0	108.0%	85	115	
m,p-Xylene	41.25		1	40	0	103.1%	85	115	
Methyl tert-Butyl Ether	20.97		1	20	0	104.9%	85	115	
o-Xylene	21.82		0.5	20	0	109.1%	85	115	
Toluene	21.82		0.5	20	0	109.1%	85	115	
1,4-Difluorobenzene	90		0	100	0	90.0%	80	105	
4-Bromochlorobenzene	84.74		0	100	0	84.7%	78	108	
Fluorobenzene	88.88		0	100	0	88.9%	78	108	

Sample ID: CCV2 BTEX_0004		Batch ID: GC-1_000627	Test Code: SW8021B	Units: µg/L		Analysis Date: 6/27/2000		Prep Date:	
Client ID: 0006048		Run ID: GC-1_000627A	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	SeqNo: 29409
Analyte	Result								
Benzene	20.93		0.5	20	0	104.7%	85	115	
Ethylbenzene	20.83		0.5	20	0	104.1%	85	115	
m,p-Xylene	39.71		1	40	0	99.3%	85	115	
Methyl tert-Butyl Ether	21.37		1	20	0	106.8%	85	115	
o-Xylene	21.04		0.5	20	0	105.2%	85	115	
Toluene	21.03		0.5	20	0	105.2%	85	115	
1,4-Difluorobenzene	90.94		0	100	0	90.9%	80	105	
4-Bromochlorobenzene	84.85		0	100	0	84.8%	78	108	
Fluorobenzene	89.38		0	100	0	89.4%	78	108	

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT:

Blagg Engineering

Work Order:

0006048

Project:

Cross Timbers - Jack Frost B #2

QC SUMMARY REPORT

Continuing Calibration Verification Standard

Sample ID: CCV3 BTEX_0004		Batch ID: GC-1_000627	Test Code: SW8021B	Units: µg/L	Analysis Date: 6/27/2000		Prep Date:	
Client ID: 0006048		Run ID: GC-1_000627A	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit
Analyte	Result							
Benzene	41.25		0.5	40	0	103.1%	85	115
Ethylbenzene	40.94		0.5	40	0	102.3%	85	115
m,p-Xylene	77.72		1	80	0	97.1%	85	115
Methyl tert-Butyl Ether	43.03		1	40	0	107.6%	85	115
o-Xylene	41.38		0.5	40	0	103.4%	85	115
Toluene	41.45		0.5	40	0	103.6%	85	115
1,4-Difluorobenzene	89.97		0	100	0	90.0%	80	105
4-Bromochlorobenzene	85.27		0	100	0	85.3%	78	108
Fluorobenzene	88.73		0	100	0	88.7%	78	108

On Site Technologies, LTD.

Date: 30-Jun-00

CLIENT: Blagg Engineering
Work Order: 0006048
Project: Cross Timbers - Jack Frost B #2
Test No: SW8021B

QC SUMMARY REPORT SURROGATE RECOVERIES

Aromatic Volatiles by GC/PID

Sample ID	14FBZ	4BCBZ	FLBZ				
0006046-01A	90.5	83.4	89.3				
0006046-02A	90.8	84.1	89.7				
0006047-03A	87	80.1	92.4				
0006048-01A	91	85.2	90				
0006048-02A	90.2	83.6	89.1				
0006048-03A	91	85.1	90				
0006049-01A	90	83.2	88.6				
0006049-02A	84.4	82.3	83.1				
0006049-03A	90.8	84.9	89.9				
0006050-01A	90.3	83.7	89.6				
0006050-02A	91	84.9	89.8				
0006050-03A	91.1	84.4	89.8				
0006050-04A	91	84.6	90				
0006050-05A	90.8	83.4	89.6				
0006050-07A	89.9	85.3	89.1				
0006050-17A	90.1	84.5	91.6				
0006050-17AMS	89.7	84.6	90.2				
0006050-17AMSD	89.5	85.1	90.3				
0006057-01A	83.5	76.6 *	86.9				
CCV1 BTEX_00040	90	84.7	88.9				
CCV2 BTEX_00040	90.9	84.8	89.4				
CCV3 BTEX_00040	90	85.3	88.7				
LCS WATER	89.6	85	88.7				
MB1	90.4	84.2	89.8				

Acronym

Surrogate

QC Limits

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

* Surrogate recovery outside acceptance limits

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM 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

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/NW SEC. 27, T27N, R10W NMPM

5. Lease Designation and Serial No.

SF-077951 A

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation

8. Well Name and No.

JACK FROST B #2

9. API Well No.

3004506295

10. Field and Pool, or Exploratory Area

DAKOTA

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

- ☐
- Notice of Intent
-
- ☒
- Subsequent Report
-
- ☐
- Final Abandonment Notice

TYPE OF ACTION

- ☐
- Abandonment
-
- ☐
- Recompletion
-
- ☐
- Plugging Back
-
- ☐
- Casing Repair
-
- ☐
- Altering Casing
-
- ☒
- Other Pit closure
-
- ☐
- Change of Plans
-
- ☐
- New Construction
-
- ☐
- Non-Routine Fracturing
-
- ☐
- Water Shut-Off
-
- ☐
- Conversion to Injection
-
- ☐
- 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.

SEPARATOR PIT - ABANDONED

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

Signed

B. Shaw

Title

Enviro. Coordinator

Date

10/14/94

(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

District I

P.O. Box 1980, Hobbs, NM

District II

P.O. Drawer DD, Arceia, 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

PTT REMEDIATION AND CLOSURE REPORTOperator: Amoco Production Company Telephone: (505) - 326-9200Address: 200 Amoco Court, Farmington, New Mexico 87401Facility Or: JACK FROST B # 2
Well NameLocation: Unit or Qtr/Qtr Sec D Sec 27 T 27N R 10W County SAN JUANPit Type: Separator X Dehydrator Other Land Type: BLM X, State , Fee , Other Pit Location: Pit dimensions: length 25', width 25', depth 15'
(Attach diagram)Reference: wellhead X, other Footage from reference: 150Direction from reference: 45 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) 0

RANKING SCORE (TOTAL POINTS): 20

Date Remediation Started: 8-5-94 Date Completed: 8-25-94

Remediation Method: Excavation X Approx. cubic yards 400
 (Check all appropriate sections) Landfarmed Insitu Bioremediation
 Other COMPOST

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

General Description Of Remedial Action:

Excavation ON-SITE COMPOST PILE CLOSURE RECORD SUBMITTED

WITH BLOW PIT CLOSURE, BLOW PIT & COMPOST PILE CLOSURE APPROVED

BY NMWD WITH LETTER DATED 12/12/96 (ATTACHED.)

SEPARATOR PIT CLOSURE DENIED BY NMWD WITH LETTER DATED 12/5/96

(ATTACHED) - DUE TO GROUNDWATER CONTAMINATION EXCEEDING NMWDCC STANDARDS.

Ground Water Encountered: No Yes X Depth 15'

Final Pit: Sample location see Attached Documents

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

Sample depth 15'

Sample date 8-25-94 Sample time

Sample Results

Benzene(ppm) ND

Total BTEX(ppm) 0.018

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

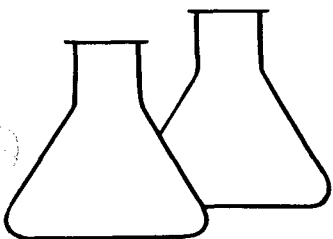
DATE 10/14/94

SIGNATURE

B. Shaw

PRINTED NAME
AND TITLE

Buddy D. Shaw
ENVIRONMENTAL COORDINATOR



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:	ground water	Date Reported:	08-15-94
Laboratory Number:	7765	Date Sampled:	08-05-94
Sample Matrix:	Water	Date Received:	08-08-94
Preservative:	HgCl & Cool	Date Analyzed:	08-11-94
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	48	0.3
Toluene	411	0.3
Ethylbenzene	ND	0.2
p,m-Xylene	55.9	0.3
o-Xylene	35.2	0.3

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	74 %
	Bromofluorobenzene	97 %

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

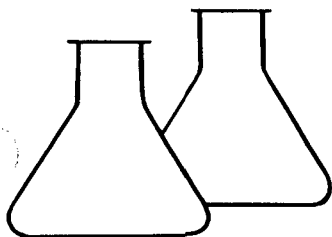
ND - Parameter not detected at the stated detection limit.

Comments: JACK FROST B # 2 A0079

SEPARATOR PIT

Rex L. Griffin
Analyst

Morris D. Young
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:	Groundwater	Date Reported:	09-01-94
Laboratory Number:	7847	Date Sampled:	08-25-94
Sample Matrix:	Water	Date Received:	08-25-94
Preservative:	HgCl & Cool	Date Analyzed:	08-29-94
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	0.3
Toluene	ND	0.3
Ethylbenzene	ND	0.2
p,m-Xylene	ND	0.3
o-Xylene	18.0	0.3

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	96 %
	Bromofluorobenzene	97 %

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: Jack Frost B #2 ground Water Pit A0079 SEPARATOR PIT

Rex L. Haffin
Analyst

Morris D. Young
Review

80114

CHAIN OF CUSTODY RECORD

[illegible]**ENVIROTECH INC.**

5796 U.S. Highway 64-3014

Farmington, New Mexico 87401

(505) 632-0615



STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

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

12

December 12, 1996

CERTIFIED MAIL
RETURN RECEIPT NO. P-269-269-227

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 Amoco Production Company's (Amoco) August 17, 1994 "AMOCO PRODUCTION COMPANY PIT CLOSURE VERIFICATIONS" which were submitted on behalf of Amoco by their consultant Blagg Engineering, Inc. This document contains "PIT REMEDIATION AND CLOSURE REPORTS" for 28 unlined pits in the San Juan Basin of Northwestern New Mexico.

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. Jack Frost B#2 (Blow pit)	Unit D, Sec. 27, T27N, R10W.
✓ 2. JC Gordon D#1 (Blow pit)	Unit P, Sec. 22, T27N, R10W.
✓ 3. JC Gordon D#1 (Separator pit)	Unit P, Sec. 22, T27N, R10W.
✓ 4. JC Gordon D#2E (Blow pit)	Unit M, Sec. 22, T27N, R10W.
✓ 5. JC Gordon D#2E (Separator pit)	Unit M, Sec. 22, T27N, R10W.
✓ 6. JC Gordon E#1 (Separator pit)	Unit K, Sec. 23, T27N, R10W.
7. Heath GC A#1 (Blow pit)	Unit H, Sec. 32, T30N, R09W.
8. Heath GC A#1 (Separator pit)	Unit H, Sec. 32, T30N, R09W.
9. Heath WD B#1 (Separator pit)	Unit A, Sec. 31, T30N, R09W.
10. Heath WD B#1A (Separator pit)	Unit I, Sec. 31, T30N, R09W.
11. Heath WD B#3E (Separator pit)	Unit H, Sec. 31, T30N, R09W.
12. Heath WD B#5 (Blow pit)	Unit N, Sec. 31, T30N, R09W.
13. Houck GC A#1A (Separator pit)	Unit C, Sec. 06, T29N, R09W.
14. Houck GC D#1 (Blow pit)	Unit C, Sec. 06, T29N, R09W.
✓ 15. Johnson GC B#1E (Blow pit)	Unit I, Sec. 21, T27N, R10W.
16. State GC CB #1 (Separator pit)	Unit M, Sec. 32, T30N, R09W.
17. State GC CB #1A (Compressor pit)	Unit E, Sec. 32, T30N, R09W.
18. State GC CB #1A (Separator pit)	Unit E, Sec. 32, T30N, R09W.

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. | JC Gordon C#1 (Blow pit) | Unit E, Sec. 23, T27N, R10W. |
| ✓2. | JC Gordon C#2 (Blow pit) | Unit K, Sec. 23, T27N, R10W. |
| ✓3. | JC Gordon D#1E (Separator pit) | Unit H, Sec. 22, T27N, R10W. |
| 4. | Schwerdtfeger A#1 (Blow pit) | Unit C, Sec. 36, T28N, R09W. |
| 5. | Schwerdtfeger A#1 (Tank drain pit) | Unit C, Sec. 36, T28N, R09W. |
| 6. | Schwerdtfeger A#1 (Separator I) | Unit C, Sec. 36, T28N, R09W. |
| 7. | Schwerdtfeger A#1 (Separator II) | Unit C, Sec. 36, T28N, R09W. |
| 8. | Warren #1 (Tank drain pit) | Unit N, Sec. 25, T28N, R09W. |

- 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. | JC Gordon E#1 (Compressor pit) | Unit K, Sec. 23, T27N, R10W. |
|-----|--------------------------------|------------------------------|

Mr. B.D. Shaw
December 12, 1996
Page 3

- 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 and 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. Romero GC A#1 (Separator pit) Unit K, Sec. 27, T29N, R10W.

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
Nelson Velez, Blagg Engineering, Inc.
Charmaine Tso, Navajo Nation EPA
David Deardorff, New Mexico State Land Office



STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

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

December 5, 1996

CERTIFIED MAIL

RETURN RECEIPT NO. P-269-269-222

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 Amoco Production Company's (Amoco) October 25, 1994 "AMOCO PRODUCTION COMPANY PIT CLOSURE VERIFICATIONS" which were submitted on behalf of Amoco by their consultant Blagg Engineering, Inc. This document contains "PIT REMEDIATION AND CLOSURE REPORTS" for 34 unlined pits in the San Juan Basin of Northwestern New Mexico.

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.	A.L. Elliott B#2 (Blow pit)	Unit M, Sec. 10, T29N, R09W.
2.	A.L. Elliott B#7 (Blow pit II)	Unit L, Sec. 10, T29N, R09W.
✓ 3.	Jack Frost B#1E (Blow pit)	Unit M, Sec. 27, T27N, R10W.
✓ 4.	Jack Frost B#1E (Dehy pit)	Unit M, Sec. 27, T27N, R10W.
✓ 5.	Jack Frost B#1E (Separator pit)	Unit M, Sec. 27, T27N, R10W.
6.	GCU #200E (Separator pit)	Unit P, Sec. 29, T29N, R12W.
7.	GCU #200E (Blow pit)	Unit P, Sec. 29, T29N, R12W.
8.	Heath GC G#1E (Blow pit)	Unit I, Sec. 08, T29N, R09W.
9.	Heath GC G#1E (Separator pit)	Unit I, Sec. 08, T29N, R09W.
10.	Heath GC G#1E (Dehy pit)	Unit I, Sec. 08, T29N, R09W.
✓ 11.	Jones LS #1A (Blow pit)	Unit J, Sec. 35, T29N, R08W.
✓ 12.	Kutz Deep Test A#1 (Blow pit)	Unit O, Sec. 27, T28N, R10W.
✓ 13.	C.A. McAdams B#1 (Blow pit)	Unit J, Sec. 28, T27N, R10W.
✓ 14.	C.A. McAdams B#1 (Separator pit)	Unit J, Sec. 28, T27N, R10W.
✓ 15.	C.A. McAdams B#2 (Blow pit)	Unit E, Sec. 28, T27N, R10W.
✓ 16.	Pipkin GC A#1E (Blow/tank pit)	Unit C, Sec. 07, T27N, R10W.
✓ 17.	Pipkin GC A#1E (Dehy pit)	Unit C, Sec. 07, T27N, R10W.
✓ 18.	Pipkin GC A#1E (Separator pit)	Unit C, Sec. 07, T27N, R10W.
✓ 19.	P.O. Pipkin #5 (Blow pit)	Unit A, Sec. 07, T27N, R10W.
20.	Pritchard #3 (Separator pit)	Unit H, Sec. 31, T29N, R08W.

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. A.L. Elliott B#1 (Separator pit) Unit H, Sec. 10, T29N, R09W.
2. A.L. Elliott B#1A (Separator pit) Unit F, Sec. 10, T29N, R09W.
3. A.L. Elliott B#1A (Blow pit) Unit F, Sec. 10, T29N, R09W.
4. A.L. Elliott B#2 (Compressor pit) Unit M, Sec. 10, T29N, R09W.
5. A.L. Elliott B#2 (Separator pit) Unit M, Sec. 10, T29N, R09W.
6. A.L. Elliott B#5E (Separator pit) Unit P, Sec. 10, T29N, R09W.
7. A.L. Elliott B#7 (Blow pit I) Unit L, Sec. 10, T29N, R09W.
8. W.D. Heath A#7 (Blow/compressor) Unit J, Sec. 08, T29N, R09W.
9. W.D. Heath A#9E (Blow pit) Unit J, Sec. 09, T29N, R09W.
- ✓ 10. Valencia Canyon Unit #15 (Blow pit) Unit I, Sec. 27, 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. Martin C. Federal #1 (Separator) Unit B, Sec. 03, T27N, R10W.
- ✓ 2. P.O. Pipkin #5 (Separator pit) Unit A, Sec. 07, T27N, R10W.

Mr. B.D. Shaw
December 5, 1996
Page 3

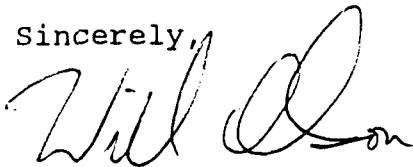
D. Ground water at the sites listed below is contaminated with petroleum related constituents in excess of New Mexico Water Quality Control Commission ground water standards and the extent of ground water contamination at the sites has not been determined. Therefore, approval of these pit closure forms 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. Jack Frost B#2 (Separator pit) Unit D, Sec. 27, T27N, R10W.
- ✓ 2. Sullivan Frame A#1 (Reserve pit) Unit D, Sec. 30, T29N, R10W.

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
Nelson Velez, Blagg Engineering, Inc.