

3R - 384

REPORTS

DATE:

1999 - 2000

312384

CROSS TIMBERS OPERATING COMPANY

GROUNDWATER REMEDIATION REPORT

1999-2000

**HARE GC B #1E
(E) SECTION 23, T29N, R11W, 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)
Hare GC B # 1E - Separator Pit
Sw/4 Nw/4 Sec. 23, T29N, R11W**

Site Assessment Date: May 14, 1992
(Documentation Included)
Pit closure Date: June 26, 1992
(Documentation Included)
Monitor Well Installation Dates: 10/8/99 & 12/7/99
Monitor Well Sampling Dates: 12/9/99, 2/21/00, 6/21/00

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.

Summary:

In review of the site assessment information conducted by Envirotech, Inc., it is apparent that the groundwater level has increased dramatically since that activity (approx. 10 ft. in May, '92 to 5 ft. in Dec., '99). Although it is unknown if this phenomena has transpired consistently over time, Blagg Engineering, Inc. is confident that the total depth of MW #2 and #3 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.

HARE GC B #1E - SEPARATOR PIT
UNIT E, SEC. 23, T29N, R11W

REVISED: JULY 14, 2000

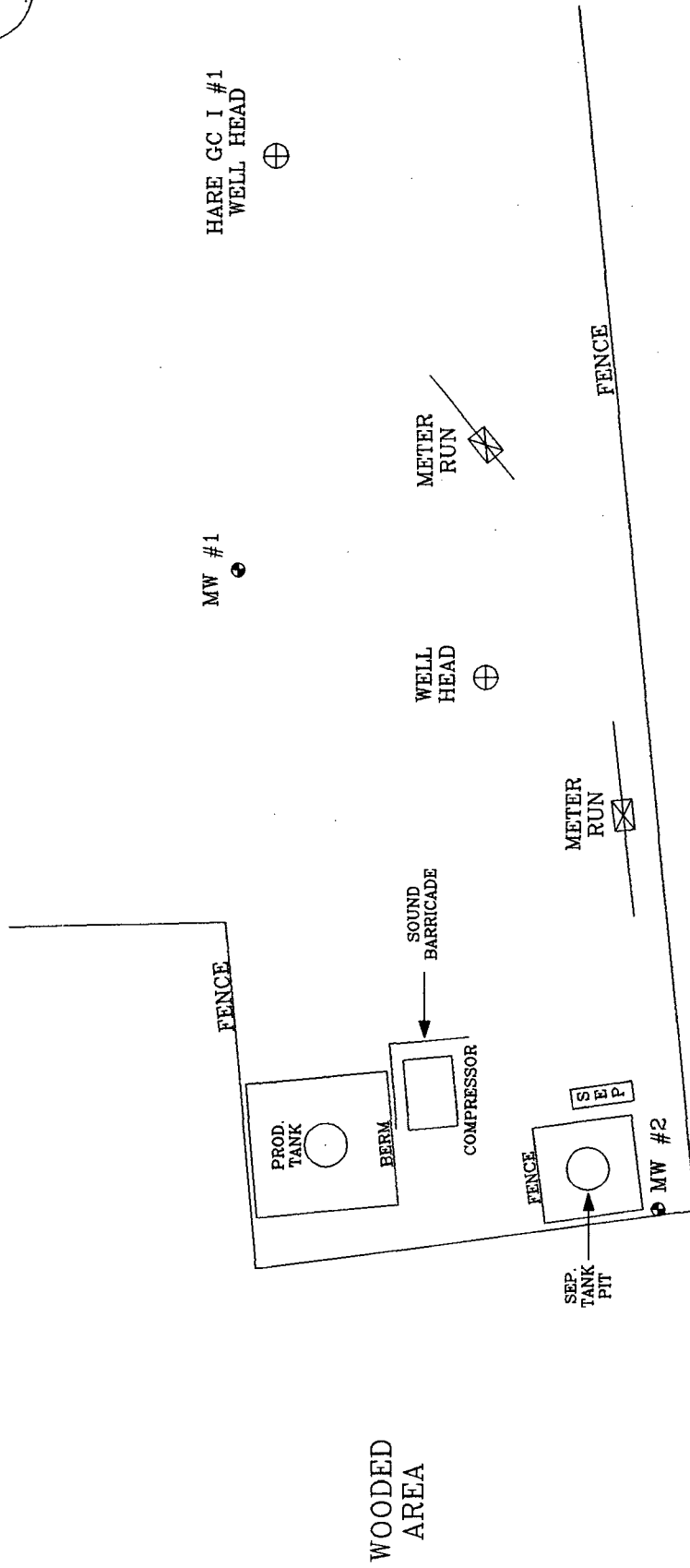
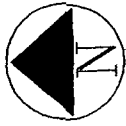
FILENAME: (B1-2Q-00.WK4) NJV

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
09-Dec-99	MW #1	5.33	18.00	5,150	10,320	6.9		2.1	7.3	3.8	10.5
21-Feb-00		5.47	14.00					-	-	-	-
21-Jun-00		3.42						-	-	-	-
09-Dec-99	MW #2	6.99	18.00	3,500	7,020	7.0		9.0	8.7	5.3	10.7
21-Feb-00		7.47	16.00		3,100	7.1		ND	ND	ND	ND
21-Jun-00		5.70			2,600	7.1		ND	ND	ND	ND
09-Dec-99	MW #3	5.31	17.00	3,380	6,770	7.0		5.7	5.3	2.8	4.3
21-Feb-00		5.61	14.00		3,200	7.1		ND	ND	ND	ND
21-Jun-00		4.19			3,100	7.0		ND	ND	ND	ND

GENERAL WATER QUALITY
CROSS TIMBERS OPERATING COMPANY
HARE GC B #1E
SAMPLE DATE : December 9 , 1999

PARAMETERS	MW # 1	MW # 2	MW # 3	Units
LAB pH	6.91	7.00	6.95	s. u.
LAB CONDUCTIVITY @ 25 C	10,320	7,020	6,770	umhos / cm
TOTAL DISSOLVED SOLIDS @ 180 C	5,150	3,500	3,380	mg / L
TOTAL DISSOLVED SOLIDS (Calc)	5,000	3,430	3,300	mg / L
SODIUM ABSORPTION RATIO	12.5	7.8	5.4	ratio
TOTAL ALKALINITY AS CaCO ₃	404	372	400	mg / L
TOTAL HARDNESS AS CaCO ₃	1,360	1,200	1,440	mg / L
BICARBONATE as HCO ₃	404	372	400	mg / L
CARBONATE AS CO ₃	< 0.1	< 0.1	< 0.1	mg / L
HYDROXIDE AS OH	< 0.1	< 0.1	< 0.1	mg / L
NITRATE NITROGEN	< 0.1	< 0.1	< 0.1	mg / L
NITRITE NITROGEN	0.004	0.003	0.004	mg / L
CHLORIDE	28.0	26.0	17.4	mg / L
FLUORIDE	1.33	1.22	1.22	mg / L
PHOSPHATE	< 0.1	0.2	0.6	mg / L
SULFATE	3,150	2,110	2,020	mg / L
IRON	0.004	0.001	0.015	mg / L
CALCIUM	475	402	512	mg / L
MAGNESIUM	41.0	46.2	38.6	mg / L
POTASSIUM	3.5	0.9	0.7	mg / L
SODIUM	1,060	620	470	mg / L
CATION / ANION DIFFERENCE	0.29	0.08	0.00	%

FIGURE 1



OPEN FIELD
(PARTLY WOODED)

1 INCH = 40 FT.



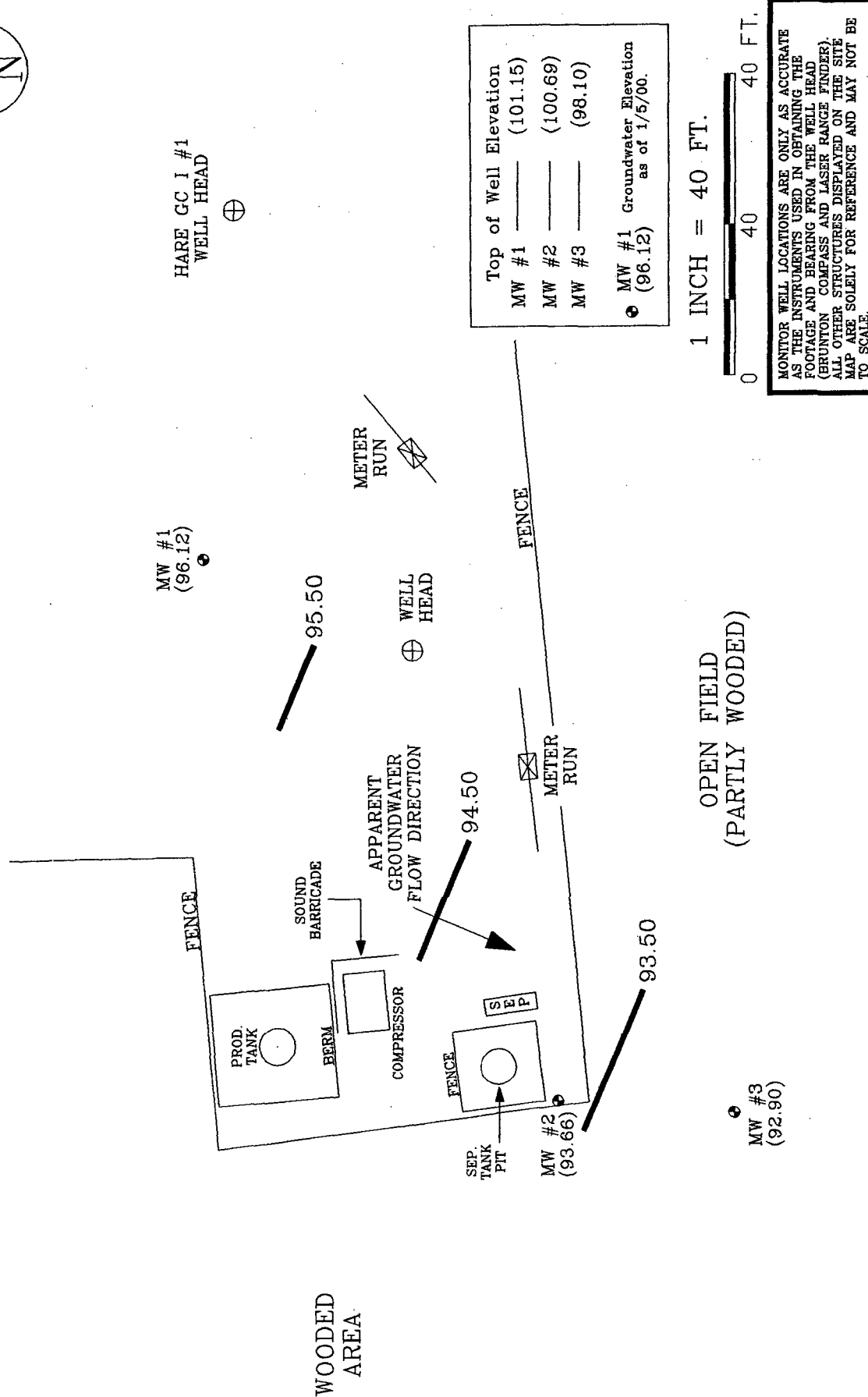
MONITOR WELL LOCATIONS ARE ONLY AS ACCURATE AS THE INSTRUMENTS USED IN OBTAINING THE FOOTAGE AND BEARING FROM THE WELL HEAD (BRUNTON COMPASS AND LASER RANGE FINDER). ALL OTHER STRUCTURES DISPLAYED ON THE SITE MAP ARE SOLELY FOR REFERENCE AND MAY NOT BE TO SCALE.

CROSS TIMBERS OPERATING CO.
HARE GC B #1E
SW/4 NW/4 SEC. 23, T29N, R11W
SAN JUAN COUNTY, NEW MEXICO

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

PROJECT: MW INSTALL.
DRAWN BY: NJV
FILENAME: H-B1E-SM.SKD

SITE
MAP
12/99



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 MAY NOT BE TO SCALE.

CROSS TIMBERS OPERATING CO.
HARE GC B #1E
SW/4 NW/4 SEC. 23, T29N, R11W
SAN JUAN COUNTY, NEW MEXICO

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

PROJECT: MW SAMPLING

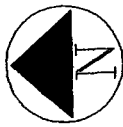
DRAWN BY: NJV

FILENAME: 12-09--GW.SKD

GROUNDWATER GRADIENT MAP

12/99

FIGURE 3
(1st 1/4, 2000)



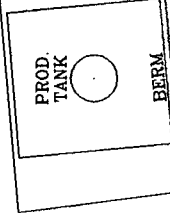
HARE GC I #1
WELL HEAD

MW #1
(95.68)



WOODED
AREA

FENCE



METER
RUN

94.50
WELL
HEAD

94.00

METER
RUN

SEP.
TANK
PIT

MW #2
(93.22)

93.50

METER
RUN

93.00

FENCE

Top of Well Elevation	
MW #1	(101.15)
MW #2	(100.69)
MW #3	(98.10)

MW #1 Groundwater Elevation
as of 2/21/00.
(95.68)

1 INCH = 40 FT.



OPEN FIELD
(PARTLY WOODED)

MW #3
(92.49)

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 MAY NOT BE
TO SCALE.

CROSS TIMBERS OPERATING CO.

HARE GC B #1E

SW/4 NW/4 SEC. 23, T29N, R11W

SAN JUAN COUNTY, NEW MEXICO

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

PROJECT: MW SAMPLING

DRAWN BY: NJV

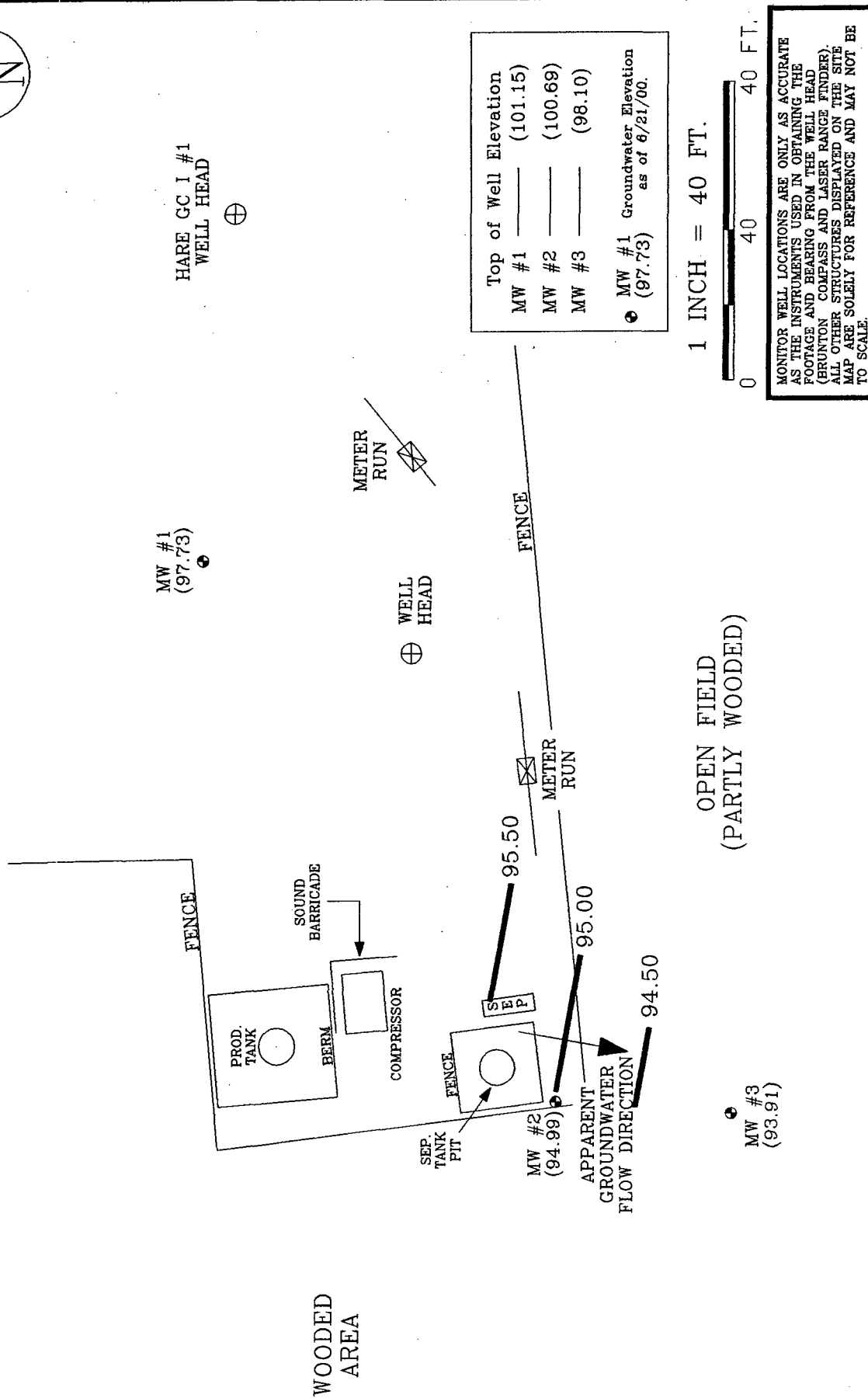
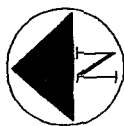
FILENAME: 02-21-GW.SKD

GROUNDWATER
GRADIENT

MAP

02/00

FIGURE 4
(2nd 1/4, 2000)



CROSS TIMBERS OPERATING CO.

HARE GC B #1E

SW/4 NW/4 SEC. 23, T29N, R11W

SAN JUAN COUNTY, NEW MEXICO

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

PROJECT: MW SAMPLING

DRAWN BY: NJV

FILENAME: 06-21-GW.SKD

GROUNDWATER
GRADIENT
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 10/8/99
DATE FINISHED 10/8/99
OPERATOR..... REP
PREPARED BY NJV

CLIENT: CROSS TIMBERS OPERATING COMPANY
LOCATION NAME: HARE GC B #1E
CONTRACTOR: BLAGG ENGINEERING, INC.
EQUIPMENT USED: MOBILE DRILL RIG (EARTHPROBE)
BORING LOCATION: 61 FT., N23.5E FEET FROM WELL HEAD.

DEPTH FEET	INTERVAL	LITHOLOGY INTERVAL	MW SCHEMATIC	FIELD CLASSIFICATION AND REMARKS
1				GROUND SURFACE
2				TOP OF CASING APPROX. 2.30 FT. ABOVE GROUND SURFACE.
3				
4				GW DEPTH ON 1/5/00 = 2.73 FT. (APPROX.) FROM GROUND SURFACE.
5				MODERATE YELLOWISH BROWN SAND TO SILTY SAND, NON COHESIVE, SLIGHTLY MOIST TO SATURATED, FIRM, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED PHYSICALLY (0.0 - 9.50 FT. INTERVAL).
6				
7				
8				
9				
10				
11				
12				DARK YELLOWISH BROWN SILTY CLAY TO CLAY, COHESIVE TO SLIGHTLY PLASTIC, SATURATED, FIRM TO LOOSE, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED PHYSICALLY (9.50 - 15.0 FT. INTERVAL).
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				

NOTE:  - SAND TO SILTY SAND.

 - SILTY CLAY TO CLAY.

TOS - TOP OF SCREEN FROM GROUND SURFACE.

TD - TOTAL DEPTH OF MONITOR WELL FROM GROUND SURFACE.

GW - GROUND WATER.

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 10/8/99
DATE FINISHED 10/8/99
OPERATOR..... REP
PREPARED BY NJV

CLIENT: CROSS TIMBERS OPERATING COMPANY
LOCATION NAME: HARE GC B #1E
CONTRACTOR: BLAGG ENGINEERING, INC.
EQUIPMENT USED: MOBILE DRILL RIG (EARTHPROBE)
BORING LOCATION: 126 FT., S72W FEET FROM WELL HEAD.

DEPTH FEET	INTERVAL	LITHOLOGY INTERVAL	MW SCHEMATIC	FIELD CLASSIFICATION AND REMARKS
				GROUND SURFACE
1				TOP OF CASING APPROX. 2.00 FT. ABOVE GROUND SURFACE.
2				
3				MODERATE YELLOWISH BROWN SAND TO SILTY SAND, NON COHESIVE, SLIGHTLY MOIST TO SATURATED, FIRM, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED PHYSICALLY (0.0 - 7.00 FT. INTERVAL).
4				
5				▼ GW DEPTH ON 1/5/00 = 5.03 FT. (APPROX.) FROM GROUND SURFACE.
6				
7				
8				
9				
10				
11				DARK YELLOWISH BROWN SILTY CLAY TO CLAY, COHESIVE TO SLIGHTLY PLASTIC, SATURATED, FIRM TO LOOSE, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED PHYSICALLY (7.00 - 15.0 FT. INTERVAL).
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				

NOTE:  - SAND TO SILTY SAND.

 - SILTY CLAY TO CLAY.

TOS - TOP OF SCREEN FROM GROUND SURFACE.

TD - TOTAL DEPTH OF MONITOR WELL FROM GROUND SURFACE.

GW - GROUND WATER.

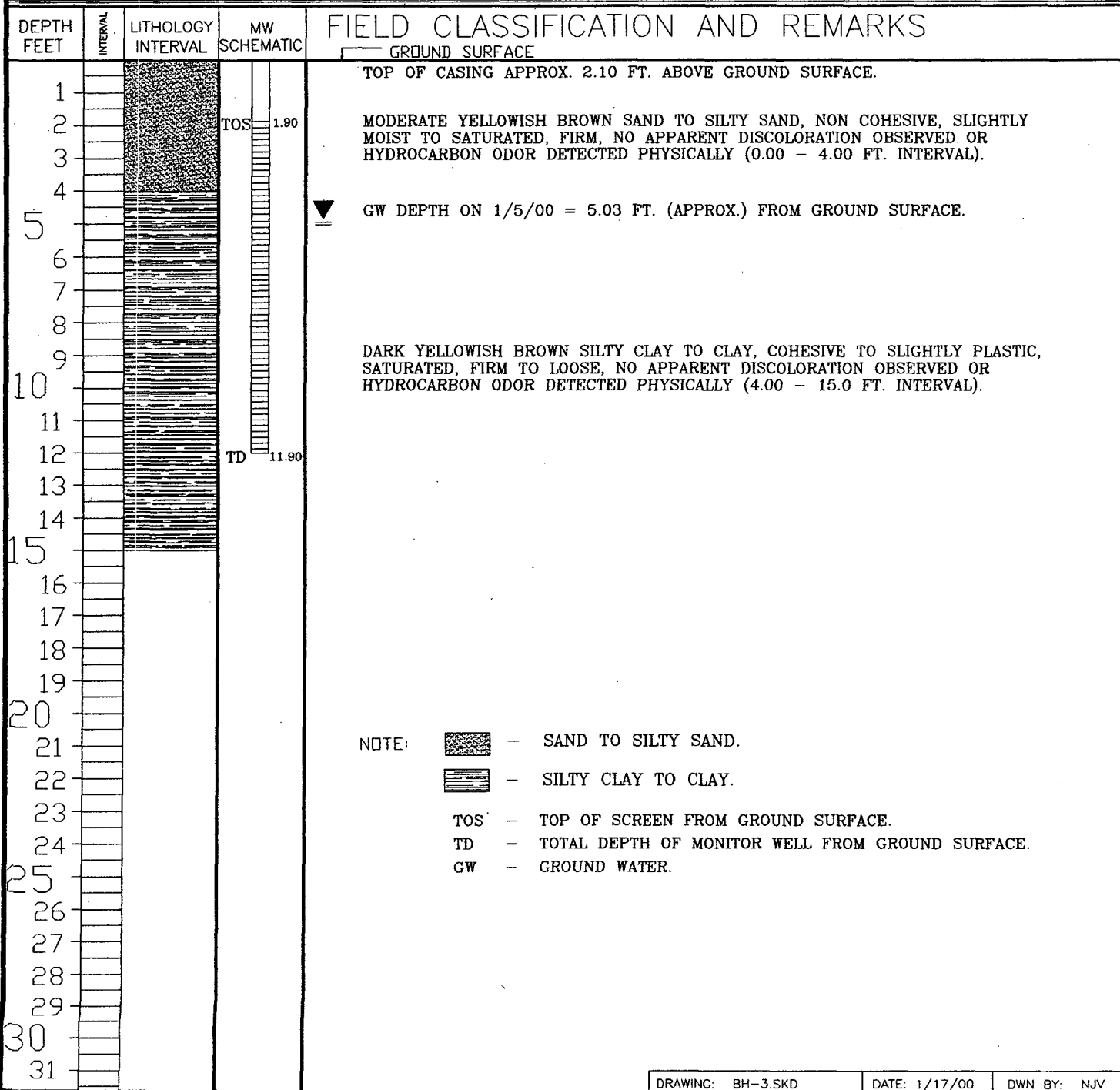
BLAGG ENGINEERING, Inc.

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

BORE / TEST HOLE REPORT

BORING #..... BH - 3
MW #..... 3
PAGE #..... 3
DATE STARTED 12/7/99
DATE FINISHED 12/7/99
OPERATOR..... REP
PREPARED BY NJV

CLIENT: CROSS TIMBERS OPERATING COMPANY
LOCATION NAME: HARE GC B #1E
CONTRACTOR: BLAGG ENGINEERING, INC.
EQUIPMENT USED: MOBILE DRILL RIG (EARTHPROBE)
BORING LOCATION: 150 FT., S55W FEET FROM WELL HEAD.



MONITOR WELL #1

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

DATE: JAN. '00

FILENAME: MW-1

2" DIA. SCH. 40 PVC
WELL CASING WITH SLIP
CAP (approx. 2.30 ft.
above ground surface)

TOTAL CASING
LENGTH = 1.70 ft.
FROM GROUND SURFACE
TO TOP OF SCREEN

0.01 INCH SLOTTED
SCREEN SCH 40
(approx. 1.03 ft.
above water table)

0.01 INCH SLOTTED
SCREEN SCH 40 WITH
POINTED END CAP
(10 ft. total length;
approx. 8.97 ft. below
water table)

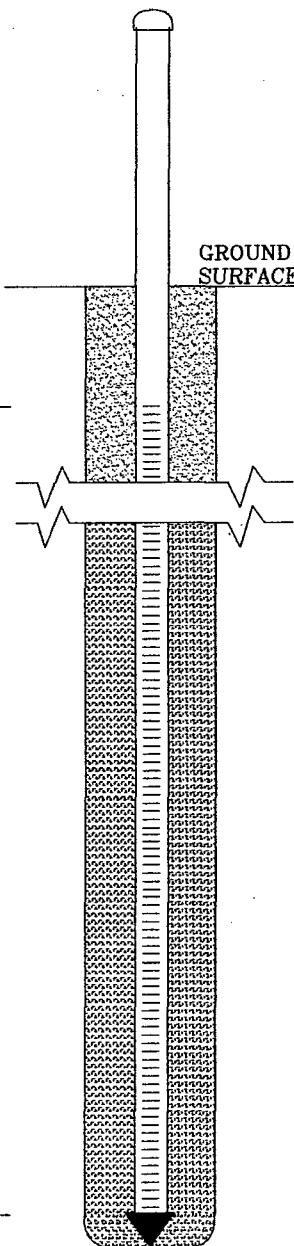
TOTAL DEPTH = 11.70 ft.
FROM GROUND SURFACE

GROUND
SURFACE

2.73 ft. ANNULAR ABOVE
WATER TABLE COMPLETED
WITH COLORADO SILICA SAND
(approx. 1.70 ft. above
top of screen)

WATER TABLE
APPROX. 2.73 ft. FROM
GROUND SURFACE
(measured 01/5/00)

12.27 ft. ANNULAR BELOW
WATER TABLE COMPLETED
WITH EXISTING SOIL

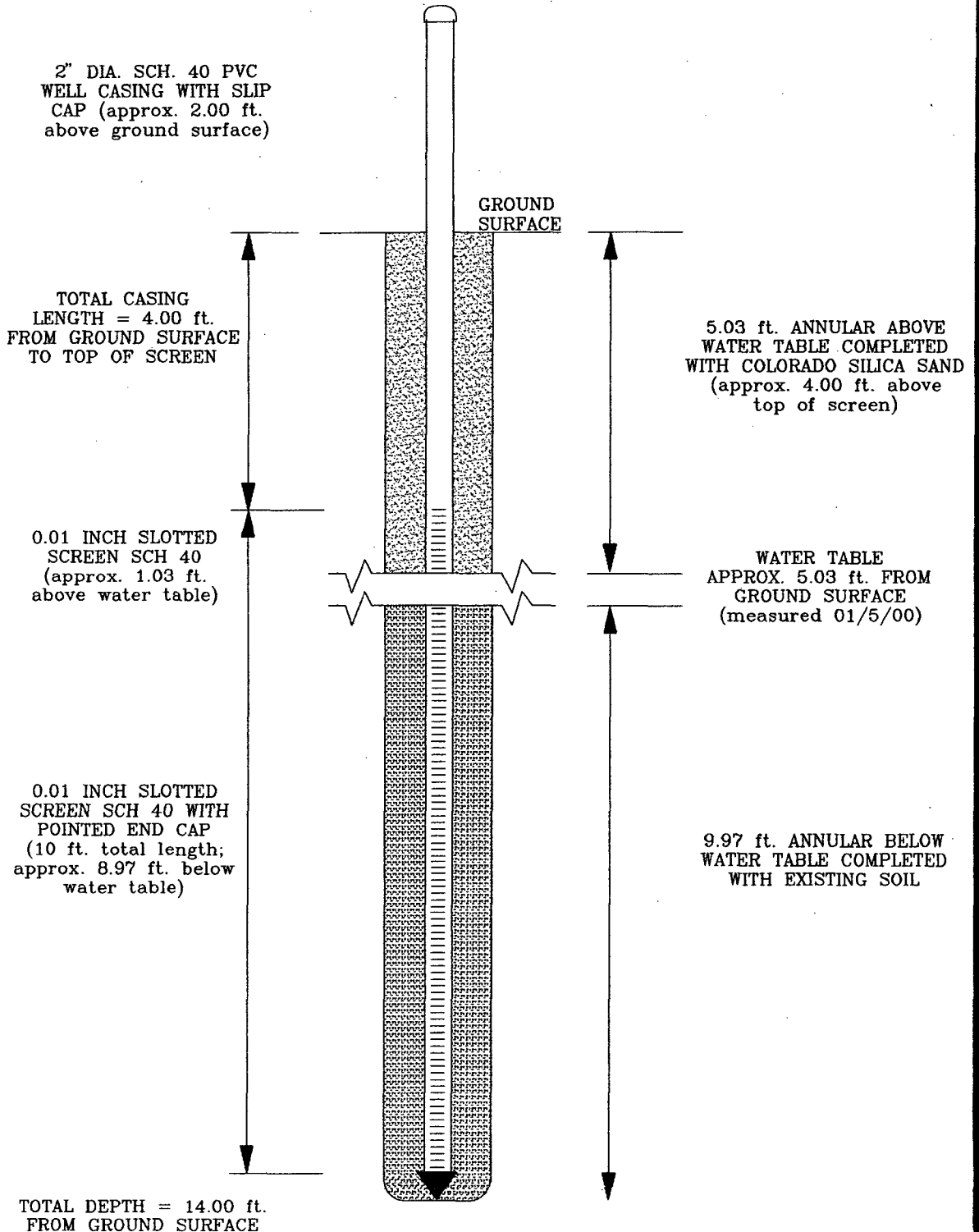


MONITOR WELL #2

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) 632-1189

MONITOR WELL SCHEMATIC
DRAFTED BY: NJV
DATE: JAN. '00
FILENAME: MW-2



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

DATE: JAN. '00

FILENAME: MW-3

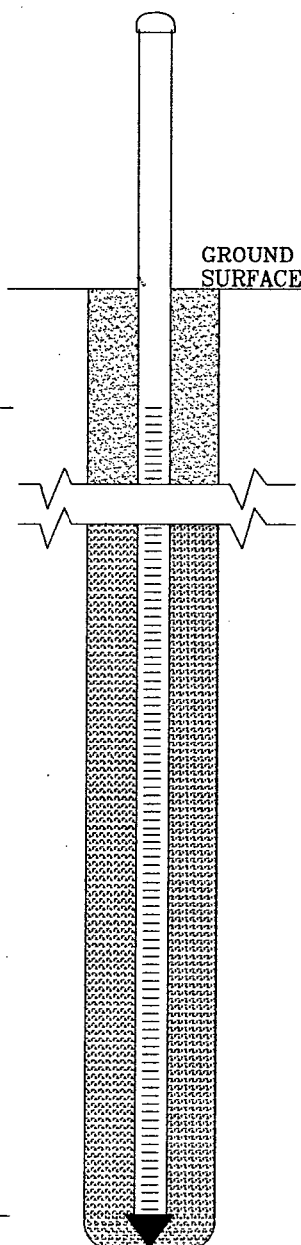
2" DIA. SCH. 40 PVC
WELL CASING WITH SLIP
CAP (approx. 2.10 ft.
above ground surface)

TOTAL CASING
LENGTH = 1.90 ft.
FROM GROUND SURFACE
TO TOP OF SCREEN

0.01 INCH SLOTTED
SCREEN SCH 40
(approx. 1.20 ft.
above water table)

0.01 INCH SLOTTED
SCREEN SCH 40 WITH
POINTED END CAP
(10 ft. total length;
approx. 8.80 ft. below
water table)

TOTAL DEPTH = 11.90 ft.
FROM GROUND SURFACE



3.10 ft. ANNULAR ABOVE
WATER TABLE COMPLETED
WITH COLORADO SILICA SAND
(approx. 1.90 ft. above
top of screen)

WATER TABLE
APPROX. 3.10 ft. FROM
GROUND SURFACE
(measured 01/5/00)

11.90 ft. ANNULAR BELOW
WATER TABLE COMPLETED
WITH EXISTING SOIL

BLAGG ENGINEERING, INC.**MONITOR WELL SAMPLING DATA**CLIENT : CROSS TIMBERS OPER. CO.CHAIN-OF-CUSTODY # : 7316LOCATION : HARE GC B #1ELABORATORY (S) USED : ENVIROTECH, INC.Date : December 9, 1999SAMPLER : REPFilename : 12-09-99.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	101.90	96.57	5.33	18.00	1200	7.4	2,900	6.25	-
2	100.67	93.68	6.99	18.00	1210	7.4	2,700	5.50	-
3	98.20	92.89	5.31	17.00	1220	7.3	2,500	5.75	-

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 "

Collected BTEX and anion / cation samples for all MW's listed above .

BLAGG ENGINEERING, INC.
MONITOR WELL SAMPLING DATA

CLIENT : CROSS TIMBERS OPER. CO.

CHAIN-OF-CUSTODY # : -

LOCATION : HARE GC B # 1E

LABORATORY (S) USED : ENVIROTECH, INC.

Date : January 5, 2000

SAMPLER : -

Filename : 01-05-00.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	101.15	96.12	5.03	14.00	-	-	-	-	-
2	100.69	93.66	7.03	16.00	-	-	-	-	-
3	98.10	92.90	5.20	14.00	-	-	-	-	-

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 "

Raised all MW' s on 12 / 13 / 99 . Raised MW # 1 4 ft. & cut off 4 ft., raised MW # 2
2 ft. & cut off 2 ft., raised MW # 3 3 ft. & cut off 3 ft. Collected DTW on date 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:	12-10-99
Chain of Custody:	7316	Date Sampled:	12-09-99
Laboratory Number:	G574	Date Received:	12-09-99
Sample Matrix:	Water	Date Analyzed:	12-09-99
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	7.3	1	0.2
Ethylbenzene	3.8	1	0.2
p,m-Xylene	6.0	1	0.2
o-Xylene	4.5	1	0.1
Total Xylene	10.5		
Total BTEX	23.7		

ND - Parameter not detected at the stated detection limit.

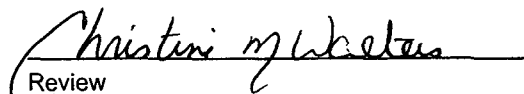
Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	96 %
	Bromofluorobenzene	96 %

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: Hare GC B # 1E.


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:	12-10-99
Chain of Custody:	7316	Date Sampled:	12-09-99
Laboratory Number:	G575	Date Received:	12-09-99
Sample Matrix:	Water	Date Analyzed:	12-09-99
Preservative:	HgCl ₂ & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	9.0	1	0.2
Toluene	8.7	1	0.2
Ethylbenzene	5.3	1	0.2
p,m-Xylene	7.8	1	0.2
o-Xylene	2.9	1	0.1
Total Xylene	10.7		
Total BTEX	33.7		

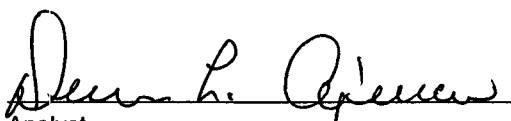
ND - Parameter not detected at the stated detection limit.

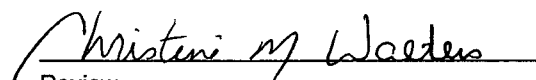
Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	98 %
	Bromofluorobenzene	98 %

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: Hare GC B # 1E.


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:	12-10-99
Chain of Custody:	7316	Date Sampled:	12-09-99
Laboratory Number:	G576	Date Received:	12-09-99
Sample Matrix:	Water	Date Analyzed:	12-09-99
Preservative:	HgCl ₂ & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	5.7	1	0.2
Toluene	5.3	1	0.2
Ethylbenzene	2.8	1	0.2
p,m-Xylene	3.6	1	0.2
o-Xylene	0.7	1	0.1
Total Xylene	4.3		
Total BTEX	18.1		

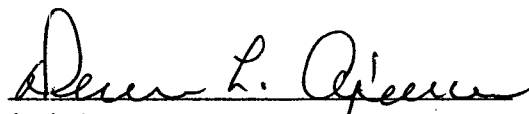
ND - Parameter not detected at the stated detection limit.

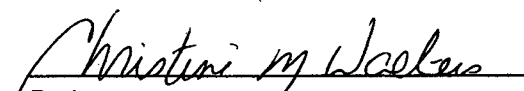
Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	100 %
	Bromofluorobenzene	100 %

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: Hare GC B # 1E.


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

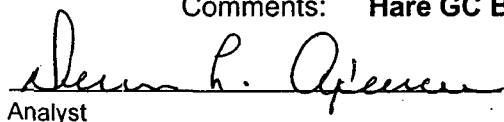
CATION / ANION ANALYSIS

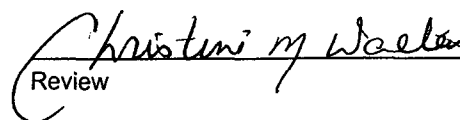
Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW # 1	Date Reported:	12-10-99
Laboratory Number:	G574	Date Sampled:	10-09-99
Chain of Custody:	7316	Date Received:	10-09-99
Sample Matrix:	Water	Date Extracted:	N/A
Preservative:	Cool	Date Analyzed:	12-10-99
Condition:	Cool & Intact		

Parameter	Analytical Result	Units	Units
pH	6.91	s.u.	
Conductivity @ 25° C	10,320	umhos/cm	
Total Dissolved Solids @ 180C	5,150	mg/L	
Total Dissolved Solids (Calc)	5,000	mg/L	
SAR	12.5	ratio	
Total Alkalinity as CaCO3	404	mg/L	
Total Hardness as CaCO3	1,360	mg/L	
Bicarbonate as HCO3	404	mg/L	6.62 meq/L
Carbonate as CO3	<0.1	mg/L	0.00 meq/L
Hydroxide as OH	<0.1	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	28.0	mg/L	0.79 meq/L
Fluoride	1.33	mg/L	0.07 meq/L
Phosphate	<0.1	mg/L	0.00 meq/L
Sulfate	3,150	mg/L	65.58 meq/L
Iron	0.004	mg/L	
Calcium	475	mg/L	23.70 meq/L
Magnesium	41.0	mg/L	3.37 meq/L
Potassium	3.5	mg/L	0.09 meq/L
Sodium	1,060	mg/L	46.11 meq/L
Cations			73.28 meq/L
Anions			73.06 meq/L
Cation/Anion Difference			0.29%

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: Hare GC B # 1E.


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

CATION / ANION ANALYSIS

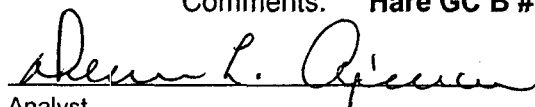
Client: Blagg / Cross Timbers
Sample ID: MW # 2
Laboratory Number: G575
Chain of Custody: 7316
Sample Matrix: Water
Preservative: Cool
Condition: Cool & Intact

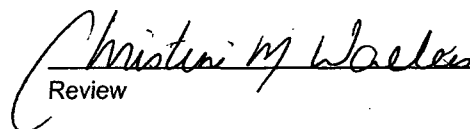
Project #: 403410
Date Reported: 12-10-99
Date Sampled: 10-09-99
Date Received: 10-09-99
Date Extracted: N/A
Date Analyzed: 12-10-99

Parameter	Analytical Result	Units		Units
pH	7.00	s.u.		
Conductivity @ 25° C	7,020	umhos/cm		
Total Dissolved Solids @ 180C	3,500	mg/L		
Total Dissolved Solids (Calc)	3,430	mg/L		
SAR	7.8	ratio		
Total Alkalinity as CaCO3	372	mg/L		
Total Hardness as CaCO3	1,200	mg/L		
Bicarbonate as HCO3	372	mg/L	6.10	meq/L
Carbonate as CO3	<0.1	mg/L	0.00	meq/L
Hydroxide as OH	<0.1	mg/L	0.00	meq/L
Nitrate Nitrogen	<0.1	mg/L	0.00	meq/L
Nitrite Nitrogen	0.003	mg/L	0.00	meq/L
Chloride	26.0	mg/L	0.73	meq/L
Fluoride	1.22	mg/L	0.06	meq/L
Phosphate	0.2	mg/L	0.01	meq/L
Sulfate	2,110	mg/L	43.93	meq/L
Iron	0.001	mg/L		
Calcium	402	mg/L	20.06	meq/L
Magnesium	46.4	mg/L	3.82	meq/L
Potassium	0.9	mg/L	0.02	meq/L
Sodium	620	mg/L	26.97	meq/L
Cations			50.87	meq/L
Anions			50.83	meq/L
Cation/Anion Difference			0.08%	

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: Hare GC B # 1E.


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

CATION / ANION ANALYSIS

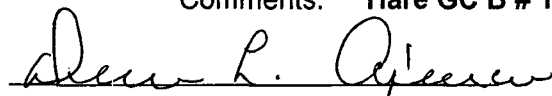
Client: Blagg / Cross Timbers
Sample ID: MW # 3
Laboratory Number: G576
Chain of Custody: 7316
Sample Matrix: Water
Preservative: Cool
Condition: Cool & Intact

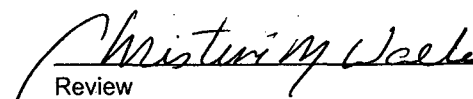
Project #: 403410
Date Reported: 12-10-99
Date Sampled: 10-09-99
Date Received: 10-09-99
Date Extracted: N/A
Date Analyzed: 12-10-99

Parameter	Analytical Result	Units	Units
pH	6.95	s.u.	
Conductivity @ 25° C	6,770	umhos/cm	
Total Dissolved Solids @ 180C	3,380	mg/L	
Total Dissolved Solids (Calc)	3,300	mg/L	
SAR	5.4	ratio	
Total Alkalinity as CaCO3	400	mg/L	
Total Hardness as CaCO3	1,440	mg/L	
Bicarbonate as HCO3	400	mg/L	6.56 meq/L
Carbonate as CO3	<0.1	mg/L	0.00 meq/L
Hydroxide as OH	<0.1	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	17.4	mg/L	0.49 meq/L
Fluoride	1.22	mg/L	0.06 meq/L
Phosphate	0.6	mg/L	0.02 meq/L
Sulfate	2,020	mg/L	42.06 meq/L
Iron	0.015	mg/L	
Calcium	512	mg/L	25.55 meq/L
Magnesium	38.6	mg/L	3.18 meq/L
Potassium	0.7	mg/L	0.02 meq/L
Sodium	470	mg/L	20.45 meq/L
Cations			49.19 meq/L
Anions			49.19 meq/L
Cation/Anion Difference			0.00%

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: Hare GC B # 1E.


Analyst


Review

CHAIN OF CUSTODY RECORD

7316

Client / Project Name		Project Location		ANALYSIS / PARAMETERS																					
BLAGG / CROSSIMBERS		HARE GC B#1E																							
Sampler: REP		Client No. 403410																							
Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	TEST (GC) ANAL.							Remarks												
MW#1	12.9.99	1200	G574	WATER	3	✓	✓																		
MW#2	12.9.99	1210	G575	WATER	3	✓	✓																		
MW#3	12.9.99	1220	G576	WATER	3	✓	✓																		
													BTEX SAMPLES												
													PRESERVE. HCL/ COOL												
													AIC SAMPLES												
													PRESERVE - COOL												
Relinquished by: (Signature)		Date 12.9.99		Time 1245		Received by: (Signature)		Date 12.9.99		Time 1245															
Relinquished by: (Signature)						Received by: (Signature)																			
Relinquished by: (Signature)						Received by: (Signature)																			
ENVIROTECH INC. 5796 U.S. Highway 64 Farmington, New Mexico 87401 (505) 632-0615																									
Sample Receipt <table border="1"> <tr> <td>Y</td> <td>N</td> <td>N/A</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="3">Received Intact</td> </tr> <tr> <td colspan="3">Cool - Ice/Blue Ice</td> </tr> </table>														Y	N	N/A				Received Intact			Cool - Ice/Blue Ice		
Y	N	N/A																							
Received Intact																									
Cool - Ice/Blue Ice																									

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS QUALITY ASSURANCE REPORT

Client:	N/A	Project #:	N/A
Sample ID:	12-09-BTEX QA/QC	Date Reported:	12-10-99
Laboratory Number:	G571	Date Sampled:	N/A
Sample Matrix:	Water	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	12-09-99
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	2.2294E-001	2.2366E-001	0.32%	ND	0.2
Toluene	9.8579E-002	9.8599E-002	0.02%	ND	0.2
Ethylbenzene	7.8696E-002	7.8790E-002	0.12%	ND	0.2
p,m-Xylene	7.2057E-002	7.2071E-002	0.02%	ND	0.2
o-Xylene	6.6135E-002	6.6334E-002	0.30%	ND	0.1

Duplicate Conc. (ug/L)	Sample	Duplicate	%Diff.	Accept Limit
Benzene	1.2	1.2	0.0%	0 - 30%
Toluene	1.2	1.2	0.0%	0 - 30%
Ethylbenzene	0.7	0.7	0.0%	0 - 30%
p,m-Xylene	1.2	1.3	8.3%	0 - 30%
o-Xylene	0.6	0.6	0.0%	0 - 30%

Spike Conc. (ug/L)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Limits
Benzene	1.2	50.0	51.1	100%	39 - 150
Toluene	1.2	50.0	51.2	100%	46 - 148
Ethylbenzene	0.7	50.0	50.7	100%	32 - 160
p,m-Xylene	1.2	100.0	101	100%	46 - 148
o-Xylene	0.6	50.0	50.6	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 G571 - G576.

Analyst

Review

William L. O'Connell

Christine M. Walen

BLAGG ENGINEERING, INC.
MONITOR WELL SAMPLING DATA

CLIENT : CROSS TIMBERS OPER. CO.

CHAIN-OF-CUSTODY # : 10355

LOCATION : HARE GC B # 1E

LABORATORY (S) USED : ON - SITE TECH.

Date : February 21, 2000

SAMPLER : N J V

Filename : 02-21-00.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	101.15	95.68	5.47	14.00	-	-	-	-	-
2	100.69	93.22	7.47	16.00	1020	7.1	3,100	4.25	-
3	98.10	92.49	5.61	14.00	1055	7.1	3,200	4.25	-

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 "

Collected BTEX samples from MW's 2 & 3. Poor recovery and large quantity of sediment
initially in both MW 's (brown murky appearance).

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 01-Mar-00

Client:	Blagg Engineering	Client Sample Info:	CTOC - Hare GC B #1E
Work Order:	0002047	Client Sample ID:	MW #2
Lab ID:	0002047-01A	Matrix:	AQUEOUS
Project:	CTOC- Hare GC B #1E	Collection Date:	2/21/2000 10:20:00 AM
		COC Record:	10355

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
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

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:	CTOC - Hare GC B #1E
Work Order:	0002047	Client Sample ID:	MW #3
Lab ID:	0002047-02A	Matrix:	AQUEOUS
Project:	CTOC- Hare GC B #1E	Collection Date:	2/21/2000 10:55:00 AM
		COC Record:	10355

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

P.O. BOX 2606 • FARMINGTON, NM 87499

- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

1 of 1



CHAIN OF CUSTODY RECORD

Date: 2/22/00

Page: 1 of 1

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

Purchase Order No.:		Project No.	
Name: <u>NELSON VELEZ</u>		Title:	
Company: <u>BLAKE ENGINEERING, INC.</u>		Company:	
Address: <u>P.O. BOX 87</u>		Mailing Address:	
City, State, Zip: <u>Bloomfield, NM 87413</u>		City, State, Zip:	
Telephone No.:		Telephone No.:	
632-1199		632-3903	
Telefax No.:		Telefax No.:	
632-1199		632-3903	
PROJECT LOCATION:		ANALYSIS REQUESTED	
CROC - HARE GC B #1E			
SAMPLER'S SIGNATURE: <u>Nelson Velez</u>			
SAMPLE IDENTIFICATION		LAB ID	
DATE	TIME	MATRIX	PRES.
2/21/00	1020	WATER	HEI
2/21/00	1055	WATER	HEI
MW # 2		2	
MW # 3		2	
RELINQUISHED BY: <u>Nelson Velez</u>		RECEIVED BY: <u>De C</u>	
DATE/TIME: <u>2/22/00 1330</u>		DATE/TIME: <u>2/22/00 1330</u>	
RELINQUISHED BY:		RECEIVED BY:	
DATE/TIME:		DATE/TIME:	
RELINQUISHED BY:		RECEIVED BY:	
DATE/TIME:		DATE/TIME:	
METHOD OF SHIPMENT:		DATE/TIME:	
AUTHORIZED BY: _____		DATE: <u>2/28/00</u>	
(Client Signature Must Accompany Request)		SPECIAL INSTRUCTIONS / REMARKS:	
		<u>Please fax results upon analytical completion.</u>	

On Site Technologies, LTD.

Date: 01-Mar-00

CLIENT: Blagg Engineering

Work Order: 0002047

Project: CTOC- Hare GC B #1E

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:	0002047	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

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: 0002047

Project: CTOC- Hare GC B #1E

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:		0002047		Run ID: GC-1_000225A				SeqNo: 24480			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	21250	120	10000	12000	92.6%	73	126				
Ethylbenzene	11460	120	10000	1328	101.3%	88	113				
m,p-Xylene	19960	250	20000	539.9	97.1%	83	112				
Methyl tert-Butyl Ether	52230	250	10000	45200	70.2%	81	125				
o-Xylene	10540	120	10000	336.6	102.1%	93	110				
Toluene	11160	120	10000	1020	101.5%	76	126				

Sample ID: 0002042-02AMSD		Batch ID: GC-1_000225		Test Code: SW8021B		Units: µg/L		Analysis Date 2/25/2000		Prep Date:	
Client ID:		0002047		Run ID: GC-1_000225A				SeqNo: 24481			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	20810	120	10000	12000	88.2%	73	126	21250	2.1%	6	
Ethylbenzene	11230	120	10000	1328	99.0%	88	113	11460	2.0%	5	
m,p-Xylene	19580	250	20000	539.9	95.2%	83	112	19960	1.9%	7	
Methyl tert-Butyl Ether	52130	250	10000	45200	69.3%	81	125	52230	0.2%	9	ES ✓
o-Xylene	10390	120	10000	336.6	100.5%	93	110	10540	1.4%	6	
Toluene	10940	120	10000	1020	99.2%	76	126	11160	2.0%	6	

CONFIRMED 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

On Site Technologies, LTD.

Date: 01-Mar-00

CLIENT: Blagg Engineering
 Work Order: 0002047
 Project: CTOC- Hare GC B #1E

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:		0002047	Run ID: GC-1_000225A		SeqNo: 24478						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	40.92	0.5	40	0.139	102.0%	89	112				
Ethylbenzene	41.42	0.5	40	0.0595	103.4%	93	112				
m,p-Xylene	78.63	1	80	0.1049	98.2%	88	108				
Methyl tert-Butyl Ether	41.32	1	40	0	103.3%	87	115				
o-Xylene	41.44	0.5	40	0.0485	103.5%	93	112				
Toluene	41.14	0.5	40	0.1347	102.5%	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: 0002047

Project: CTCOC- Hare GC B #1E

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:		0002047		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:		0002047		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: 0002047

Project: CTOC- Hare GC B #1E

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: 0002047 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				

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: 0002047
Project: CTOC- Hare GC B #1E
Test No: SW8021B

QC SUMMARY REPORT SURROGATE RECOVERIES

Aromatic Volatiles by GC/PID

Sample ID	14FBZ	4BCBZ	FLBZ					
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	90.2	89.5	89.4					
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					
0002043-03A	90.4	89.5	89.6					
0002044-01A	90.4	89.8	89.6					
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					
0002049-01A	89.8	89.3	90.1					
CCV1 BTEX_00010	90	89.3	89.3					
CCV2 BTEX_00010	89.4	89.5	89.4					
CCV3 BTEX_00010	88.9	89.2	88.6					
LCS WATER	89.5	89.4	88.1					
MBI	90.5	88.2	89.4					

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 # : 10601

LOCATION : HARE GC B # 1E

LABORATORY (S) USED : ON - SITE TECH.

Date : June 21, 2000

SAMPLER : N J V

Filename : 06-21-00.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	101.15	97.73	3.42	14.00	-	-	-	-	-
2	100.69	94.99	5.70	16.00	0955	7.1	2,600	5.00	-
3	98.10	93.91	4.19	14.00	1020	7.0	3,100	5.00	-

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 "

Fair / good recovery in MW's 2 & 3 . Collected BTEX samples from MW # 2 & 3 .

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



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

ANALYTICAL REPORT

Date: 12-Jul-00

Client:	Blagg Engineering	Client Sample Info:	Hare GC B #1E
Work Order:	0006055	Client Sample ID:	MW #2
Lab ID:	0006055-01A	Matrix:	AQUEOUS
Project:	Cross Timbers - Hare GC B #1E	Collection Date:	6/21/2000 9:55:00 AM
		COC Record:	10601

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
-----------	--------	-----	------	-------	----	---------------

AROMATIC VOLATILES BY GC/PID

SW8021B

Analyst: DM

Benzene	ND	0.5		µg/L	1	6/30/2000
Toluene	ND	0.5		µg/L	1	6/30/2000
Ethylbenzene	ND	0.5		µg/L	1	6/30/2000
m,p-Xylene	ND	1		µg/L	1	6/30/2000
o-Xylene	ND	0.5		µg/L	1	6/30/2000

Qualifiers:

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

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

1 of 2

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



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

ANALYTICAL REPORT

Date: 12-Jul-00

Client:	Blagg Engineering	Client Sample Info:	Hare GC B #1E
Work Order:	0006055	Client Sample ID:	MW #3
Lab ID:	0006055-02A	Matrix:	AQUEOUS
Project:	Cross Timbers - Hare GC B #1E	Collection Date:	6/21/2000 10:20:00 AM
		COC Record:	10601

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
-----------	--------	-----	------	-------	----	---------------

AROMATIC VOLATILES BY GC/PID

SW8021B

Analyst: DM

Benzene	ND	0.5		µg/L	1	6/30/2000
Toluene	ND	0.5		µg/L	1	6/30/2000
Ethylbenzene	ND	0.5		µg/L	1	6/30/2000
m,p-Xylene	ND	1		µg/L	1	6/30/2000
o-Xylene	ND	0.5		µg/L	1	6/30/2000

Qualifiers:

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

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

2 of 2

P.O. BOX 2606 • FARMINGTON, NM 87499

- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

[illegible]

On Site Technologies, LTD.

Date: 12-Jul-00

CLIENT: Blagg Engineering

Work Order: 0006055

Project: Cross Timbers - Hare GC B #1E

QC SUMMARY REPORT

Method Blank

Sample ID: MB1	Batch ID: GC-1_000630	Test Code: SW8021B	Units: µg/L	Analysis Date 6/30/2000	Prep Date:
Client ID:	0006055	Run ID: GC-1_000630A		SeqNo: 29660	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Benzene	.0662	0.5			J
Ethylbenzene	.0926	0.5			J
m,p-Xylene	.1955	1			J
Methyl tert-Butyl Ether	ND	1			J
o-Xylene	.1915	0.5			J
Toluene	.2052	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: 12-Jul-00

CLIENT: Blagg Engineering

Work Order: 0006055

Project: Cross Timbers - Hare GC B #1E

QC SUMMARY REPORT

Sample Matrix Spike

Sample ID: 0006067-02AMS		Batch ID: GC-1_000630		Test Code: SW8021B		Units: µg/L		Analysis Date 6/30/2000		Prep Date:	
Client ID:		0006055		Run ID:		GC-1_000630A		SeqNo: 29661			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	6142	50	4000	2160	99.6%	73	126				
Ethylbenzene	4770	50	4000	761.2	100.2%	88	113				
m,p-Xylene	10130	100	8000	2541	94.9%	83	112				
Methyl tert-Butyl Ether	4269	100	4000	192.6	101.9%	81	125				
o-Xylene	4523	50	4000	475	101.2%	93	110				
Toluene	6361	50	4000	2326	100.9%	76	126				

Sample ID: 0006067-02AMSD		Batch ID: GC-1_000630		Test Code: SW8021B		Units: µg/L		Analysis Date 6/30/2000		Prep Date:	
Client ID:		0006055		Run ID:		GC-1_000630A		SeqNo: 29662			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	6030	50	4000	2160	96.7%	73	126	6142	1.9%	6	
Ethylbenzene	4686	50	4000	761.2	98.1%	88	113	4770	1.8%	5	
m,p-Xylene	9959	100	8000	2541	92.7%	83	112	10130	1.7%	7	
Methyl tert-Butyl Ether	4256	100	4000	192.6	101.6%	81	125	4269	0.3%	9	
o-Xylene	4455	50	4000	475	99.5%	93	110	4523	1.5%	6	
Toluene	6245	50	4000	2326	98.0%	76	126	6361	1.8%	6	

Qualifiers:

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

On Site Technologies, LTD.

Date: 12-Jul-00

CLIENT: Blagg Engineering

Work Order: 0006055

Project: Cross Timbers - Hare GC B #1E

QC SUMMARY REPORT

Laboratory Control Spike - generic

Sample ID: LCS WATER	Batch ID: GC-1_000630	Test Code: SW8021B	Units: µg/L	Analysis Date	6/30/2000	Prep Date:	
Client ID:	0006055	Run ID: GC-1_000630A		SeqNo:	29659		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit
Benzene	40.35	0.5	40	0.0662	100.7%	89	112
Ethylbenzene	40.86	0.5	40	0.0926	101.9%	93	112
m,p-Xylene	77.5	1	80	0.1955	96.6%	88	108
Methyl tert-Butyl Ether	40.23	1	40	0	100.6%	87	115
o-Xylene	41.16	0.5	40	0.1915	102.4%	93	112
Toluene	41.01	0.5	40	0.2052	102.0%	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: 12-Jul-00

CLIENT: Blagg Engineering
 Work Order: 0006055
 Project: Cross Timbers - Hare GC B #1E

QC SUMMARY REPORT

Continuing Calibration Verification Standard

Sample ID: CCV1 BTEX_0004		Batch ID: GC-1_000630		Test Code: SW8021B		Units: µg/L		Analysis Date 6/30/2000		Prep Date:	
Client ID:		0006055		Run ID:		GC-1_000630A		SeqNo: 29656			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	20.74	0.5	20	0	103.7%	85	115				
Ethylbenzene	21	0.5	20	0	105.0%	85	115				
m,p-Xylene	39.95	1	40	0	99.9%	85	115				
Methyl tert-Butyl Ether	20.49	1	20	0	102.5%	85	115				
o-Xylene	21.27	0.5	20	0	106.4%	85	115				
Toluene	21.05	0.5	20	0	105.3%	85	115				
1,4-Difluorobenzene	89.85	0	100	0	89.9%	80	105				
4-Bromochlorobenzene	84.68	0	100	0	84.7%	78	108				
Fluorobenzene	88.46	0	100	0	88.5%	78	108				

Sample ID: CCV2 BTEX_0004		Batch ID: GC-1_000630		Test Code: SW8021B		Units: µg/L		Analysis Date 6/30/2000		Prep Date:	
Client ID:		0006055		Run ID:		GC-1_000630A		SeqNo: 29657			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	20.07	0.5	20	0	100.4%	85	115				
Ethylbenzene	20.26	0.5	20	0	101.3%	85	115				
m,p-Xylene	38.7	1	40	0	96.7%	85	115				
Methyl tert-Butyl Ether	20.64	1	20	0	103.2%	85	115				
o-Xylene	20.52	0.5	20	0	102.6%	85	115				
Toluene	20.42	0.5	20	0	102.1%	85	115				
1,4-Difluorobenzene	90.15	0	100	0	90.1%	80	105				
4-Bromochlorobenzene	85.09	0	100	0	85.1%	78	108				
Fluorobenzene	88.6	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: 0006055
Project: Cross Timbers - Hare GC B #1E

QC SUMMARY REPORT
 Continuing Calibration Verification Standard

Sample ID: CCV3 BTEX_0004		Batch ID: GC-1_000630	Test Code: SW8021B	Units: µg/L	Analysis Date 6/30/2000	Prep Date:
Client ID: 0006055		Run ID: GC-1_000630A	PQL	SPK value	SeqNo: 29658	
Analyte	Result	PQL	SPK value	SPK Ref Val	LowLimit	HighLimit
Benzene	40.36	0.5	40	0	85	115
Ethylbenzene	40.66	0.5	40	0	85	115
m,p-Xylene	77.16	1	80	0	85	115
Methyl tert-Butyl Ether	41.35	1	40	0	85	115
o-Xylene	41.21	0.5	40	0	85	115
Toluene	40.98	0.5	40	0	85	115
1,4-Difluorobenzene	89.84	0	100	0	80	105
4-Bromochlorobenzene	85.42	0	100	0	78	108
Fluorobenzene	87.99	0	100	0	78	108
					%REC	%RPD
					100.9%	
					101.7%	
					96.4%	
					103.4%	
					103.0%	
					102.4%	
					89.8%	
					85.4%	
					88.0%	
					RPD Ref Val	RPDLimit
						Qual

On Site Technologies, LTD.

Date: 12-Jul-00

CLIENT: Blagg Engineering
 Work Order: 0006055
 Project: Cross Timbers - Hare GC B #1E
 Test No: SW8021B

QC SUMMARY REPORT SURROGATE RECOVERIES

Aromatic Volatiles by GC/PID

Sample ID	14FBZ	4BCBZ	FLBZ				
0006050-18A	90.2	82.4	89.6				
0006054-02A	90.3	85	89.2				
0006055-01A	90.7	83.9	89.4				
0006055-02A	90.5	85	89.2				
0006056-01A	90.3	85.5	89.2				
0006056-02A	87.4	83	86.9				
0006056-03A	90.4	85	89.4				
0006061-01A	91	85.2	89.2				
0006061-02A	88.8	84	87				
0006061-03A	90	85	88.2				
0006061-04A	90.6	85	89.2				
0006061-05A	90.6	84.7	89.1				
0006067-01A	90.4	83.8	89.1				
0006067-02A	89.6	85	88.6				
0006067-02AMS	89.5	85.6	87.8				
0006067-02AMSD	89.5	85.7	87.7				
0006067-03A	89.8	84.6	89.2				
0006068-02A	89.3	85.2	87.3				
0006068-03A	84.3	80.2	83.1				
0006071-01A	90.7	83.4	89.1				
CCV1 BTEX_00040	89.8	84.7	88.4				
CCV2 BTEX_00040	90.1	85.1	88.6				
CCV3 BTEX_00040	89.8	85.4	88				
LCS WATER	89.4	85.5	88.1				
MB1	90	84.3	89				

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

* Surrogate recovery outside acceptance limits

120701

ENVIROTECH Inc.

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

94146-5/13
94149-5/14

FIELD REPORT: SITE ASSESSMENT

JOB No: 92140
PAGE No: 1 of 1

PROJECT: PIT ASSESSMENTS & CLOSURE
CLIENT: AMOCO PRODUCTION COMPANY
CONTRACTOR: ENVIROTECH, INC.
EQUIPMENT USED: Backhoe w/

DATE STARTED: 5/13/92
DATE FINISHED: 5/14/92
ENVIRO. SPCLT: RB
OPERATOR: DB
ASSISTANT: LT

LOCATION: LSE: Hare WELL: B-1E QD: SW/4 NW/4
SEC: 23 TWP: T29N RNG: R21W PM: NMP MCNTY: ST ST: NMP PIT: SEP PIT

LAND USE: Agricultural farmland adjacent on north, range land to south
SURFACE CONDITIONS: Fiberglass tank (8' dia x 6' h) buried on site

FIELD NOTES & REMARKS: Clay soils w/ high plasticity in immediate pit perimeter fence site area. T3 & dug outside AMOCO perimeter fence. Shows N/D OUM reads. T3 & T4 are located down gradient of SEP PIT. Soils are contaminated in immediate SEP PIT location.

SAMPLE INVENTORY:		
SAMPL ID:	SAMPL TYPE:	LABORATORY ANALYSIS:
2006	CU-1	HEAD

SAMPLE INVENTORY:

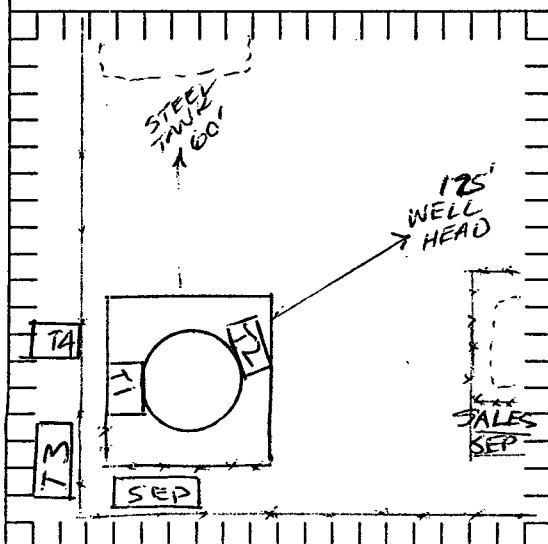
[illegible]

SCALE



0 10 20 FEET

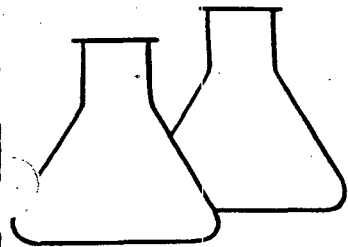
SITE DIAGRAM



TEST HOLE LOGS:

TH#: 1				TH#: 2				TH#: 3				TH#: 4			
SOIL TYPE:	SMPL TYPE:	OVM/TPH		SOIL TYPE:	SMPL TYPE:	OVM/TPH		SOIL TYPE:	SMPL TYPE:	OVM/TPH		SOIL TYPE:	SMPL TYPE:	OVM/TPH	
CP				CP				CP				CP			
CH				CH				CH				CH			
			2			4				N/D				N/D	
		1202													
			5			45				N/D				N/D	
		432													
			8												
		6													
			10			32				N/D				N/D	
		91				44				N/D				N/D	
		228								N/D				N/D	
	GW				GW				GW				GW		

SOIL TYPE: C - Clay, M - SIL, S - Sand, G - Gravel Plasticity: L - None, H - Plastic Grading: P - Poorly, W - Well



ENVIROTECH LABS

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

EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client: AMOCO
Sample ID: T-1 @ 2'
Laboratory Number: 0660
Sample Matrix: Soil
Preservative: Cool
Condition: Cool & Intact

Project #: 92140
Date Reported: 06-13-92
Date Sampled: 05-14-92
Date Received: NA
Date Analyzed: 06-08-92
Analysis Needed: TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	180	5.0

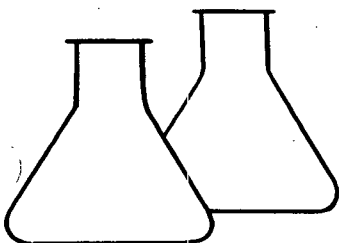
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Hare B-1 E Separatory Pit 94149 +
94146

Tony Tristano
Analyst

Review



ENVIROTECH LABS

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

EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	T 1 @ 2'	Date Reported:	09-24-92
Laboratory Number:	0660	Date Sampled:	05-14-92
Sample Matrix:	Soil	Date Received:	05-14-92
Preservative:	Cool	Date Extracted:	06-08-92
Condition:	Cool & Intact	Date Analyzed:	09-23-92
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	120
Toluene	126	70
Ethylbenzene	ND	20.0
p,m-Xylene	ND	70
o-Xylene	164	60

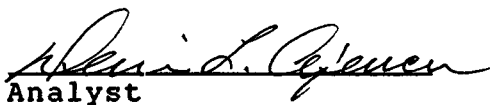
SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	102 %
	Bromfluorobenzene	89 %

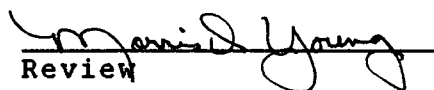
Method: Method 5030, Purge-and-Trap, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

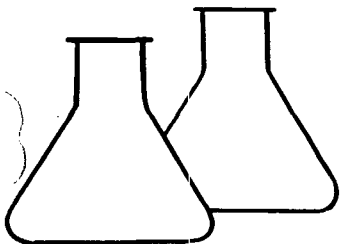
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Hare GC B 1E Separator Pit 94149


Analyst


Review



ENVIROTECH LABS

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

EPA METHOD 8020
AROMATIC VOLATILE ORGANICS
HEADSPACE EXTRACTION

Client:	AMOCO	Project #:	92140
Sample ID:	T1 @ 2'	Date Reported:	09-01-92
Laboratory Number:	0659	Date Sampled:	05-14-92
Sample Matrix:	Soil	Date Received:	05-14-92
Preservative:	NA	Date Analyzed:	07-13-92
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	1.6
Toluene	75	1.6
Ethylbenzene	ND	1.6
p,m-Xylene	469	1.6
o-Xylene	239	1.6

Method: Method 3810, Headspace, Test Methods for Evaluating
Solid Waste, SW-846, USEPA, Sept. 1986

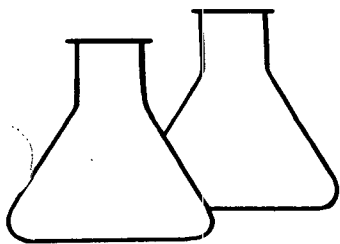
Method 8020, Aromatic Volatile Organics, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: Hare GC B-1E---Separator Pit---~~94149~~ 94146

Al Chaharley
Analyst

Marisela 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:	T1 @ GW	Date Reported:	08-24-92
Laboratory Number:	0661	Date Sampled:	05-14-92
Sample Matrix:	Water	Date Received:	05-14-92
Preservative:	HgCl & Cool	Date Analyzed:	06-26-92
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	540	0.2
Toluene	690	1.4
Ethylbenzene	26.1	0.5
p,m-Xylene	269	1.2
o-Xylene	56	0.4

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	135.0 %
	Bromfluorobenzene	111.6 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

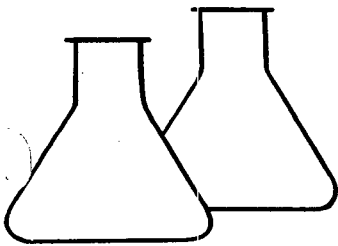
Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: Hare B-1E---Separator Pit---94149
Excessive surrogate recovery due to coelution of surrogate with hydrocarbons from sample.

Robert M. Young
Analyst

Maria L. 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:	T4 @ GW	Date Reported:	08-24-92
Laboratory Number:	0662	Date Sampled:	05-14-92
Sample Matrix:	Water	Date Received:	05-14-92
Preservative:	HgCl & Cool	Date Analyzed:	06-26-92
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	239	10.0
Toluene	173	70
Ethylbenzene	60	25.0
p,m-Xylene	148	60
o-Xylene	53	20.0

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	125.2 %
	Bromfluorobenzene	138.0 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

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: Hare B-1E---Separator Pit---94149
Excessive surrogate recovery due to coelution of surrogate with hydrocarbons from sample.

Robert M. Young
Analyst

Marissa Young
Review

64149

CHAIN OF CUSTODY RECORD

[illegible]

San Juan rearo Form 570-91

C4374

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

State of New Mexico
Energy, Minerals and Natural Resources Department
OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

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

PTT REMEDIATION AND CLOSURE REPORT

Operator: Amoco Production Company		Telephone: (505) - 326-9200	
Address: 200 Amoco Court, Farmington, New Mexico 87401			
Facility Or: HARE GC B #1E			
Well Name			
Location: Unit or Qtr/Qtr Sec E Sec 23 T 29N R 11W county SAN JUAN			
Pit Type: Separator ☒ Dehydrator ☐ Other ☐			
Land Type: BLM ☐ State ☐ Fee ☒ Other ☐			
Pit Location: Pit dimensions: length 12', width 12', depth 6'			
(attach diagram)			
Reference: wellhead ☒ , other ☐			
Footage from reference: 111'			
Direction from reference: 69 Degrees East North ☐			
X West South X			
Depth To Ground Water:			
(Vertical distance from		Less than 50 feet (20 points)	
contaminants to seasonal		50 feet to 99 feet (10 points)	
high water elevation of		Greater than 100 feet (0 Points) 20	
ground water)			
Wellhead Protection Area:		Yes (20 points)	
(Less than 200 feet from a private		No (0 points) 0	
domestic water source, or; less than			
1000 feet from all other water sources)			
Distance To Surface Water:		Less than 200 feet (20 points)	
(Horizontal distance to perennial		200 feet to 1000 feet (10 points)	
lakes, ponds, rivers, streams, creeks,		Greater than 1000 feet (0 points) 70	
irrigation canals and ditches)			
RANKING SCORE (TOTAL POINTS):			30

C4374

SEP. PIT

Date Remediation Started: _____ Date Completed: 7/7/92

Remediation Method: Excavation ☒ Approx. cubic yards 20
(Check all appropriate sections) Landfarmed ☒ Insitu Bioremediation _____
Other _____

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

General Description Of Remedial Action: _____

Excavation

Ground Water Encountered: No ☒ Yes _____ Depth _____Final Pit: Sample location see Attached Documents

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

Sample depth 6' (PIT BOTTOM)Sample date 6/26/92 Sample time 1445

Sample Results

Benzene(ppm) _____

Total BTEX(ppm) _____

Field headspace(ppm) 0.0TPH 6.7 ppmGround Water Sample: Yes _____ No ☒ (If yes, attach sample results)

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

DATE 2/15/00 ⁹⁵

SIGNATURE

B. ShawPRINTED NAME
AND TITLEBuddy D. Shaw
ENVIRONMENTAL COORDINATOR

ENVIROTECH Inc.

5796 US HWY. 64, FARMINGTON, NM. 87401
(505) 832-0815

FIELD REPORT: CLOSURE VERIFICATION

JOB No: 92140
PAGE No: 1 of 1

LOCATION: LEASE: HARE GAS Com B WELL: No. 15 QD: SW 1/4 NW 1/4 E
SEC: 23 TWP: 29N RNG: 11W BM: NM CNTY: SJ ST: NM PIT: Sep.
CONTRACTOR: _____
EQUIPMENT USED: _____

DATE STARTED: 6-26-92
DATE FINISHED: 6-26-92

ENVIRONMENTAL
SPECIALIST: J.W.

SOIL REMEDIATION: QUANTITY: _____
DISPOSAL FACILITY: _____
LAND USE: Residential
SURFACE CONDITIONS: Earthen Pit.

FIELD NOTES & REMARKS: Pit is located approx 110' west and 15' south of well head. Took OUM Readings from all four walls. North wall had an isolated pocket of contamination approximately 2' x 2' in diameter. Took OUM readings from contaminated area and one from c/c of wall. Recovered T.P.H sample from bottom of pit at center.

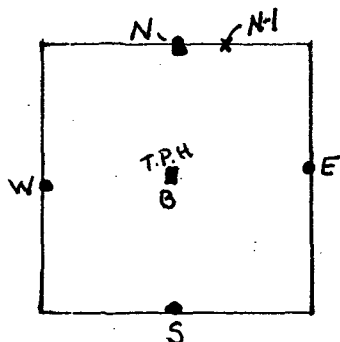


SCALE



0 2' 4' FEET

PIT PERIMETER



SAMPLE RESULTS

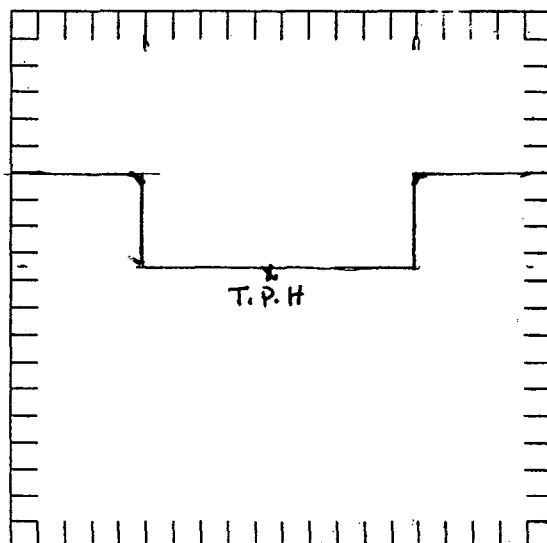
[illegible]

SCALE

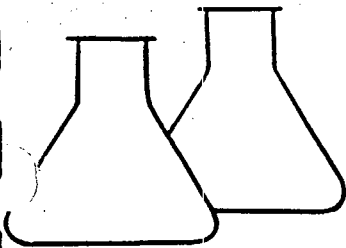


0 2' 4' FEET

PIT PROFILE



TRAVEL NOTES: CALLOUT: _____ ONSITE: _____



ENVIROTECH LABS

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

EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client: AMOCO
Sample ID: T1 @ center of pit
Laboratory Number: 1689
Sample Matrix: Soil
Preservative: Cool
Condition: Cool & Intact

Project #: 92140
Date Reported: 07-07-92
Date Sampled: 06-26-92
Date Received: 06-26-92
Date Analyzed: 07-07-92
Analysis Needed: TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	6.7	5.0

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

ND - Parameter not detected at the stated detection limit.

Comments: Hare Gas Com B #1E Separator Pit 94374

Vanessa Zanon
Analyst

Karl Sammons
Review

94374

CHAIN OF CUSTODY RECORD

[illegible]**ENVIROTECH INC.**

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

6/26/92

CLIENT: AMOCO

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

LOCATION NO: C4374C.D.C. NO: 5656

FIELD REPORT: LANDFARM/COMPOST PILE CLOSURE VERIFICATION

LOCATION: NAME: HARE GC CB WELL #: 01E PITS: SEP.DATE STARTED: 12-13-97QUAD/UNIT (E) SEC: 23 TWP: 29N RNG: 11W PM: NM CNTY: SS ST: NM

DATE FINISHED: _____

QTR/FOOTAGE: SW/4 NW/4CONTRACTOR: —ENVIRONMENTAL
SPECIALIST: NV/EP.

SOIL REMEDIATION:

REMEDICATION SYSTEM: LANDFARM.APPROX. CUBIC YARDAGE: 20LAND USE: RANGE.LIFT DEPTH (ft): NA

FIELD NOTES & REMARKS:

DEPTH TO GROUNDWATER: < 50' NEAREST WATER SOURCE: > 1000' NEAREST SURFACE WATER: < 1000'NMOC D RANKING SCORE: 30 NMOC D TPH CLOSURE STD: 100 PPM

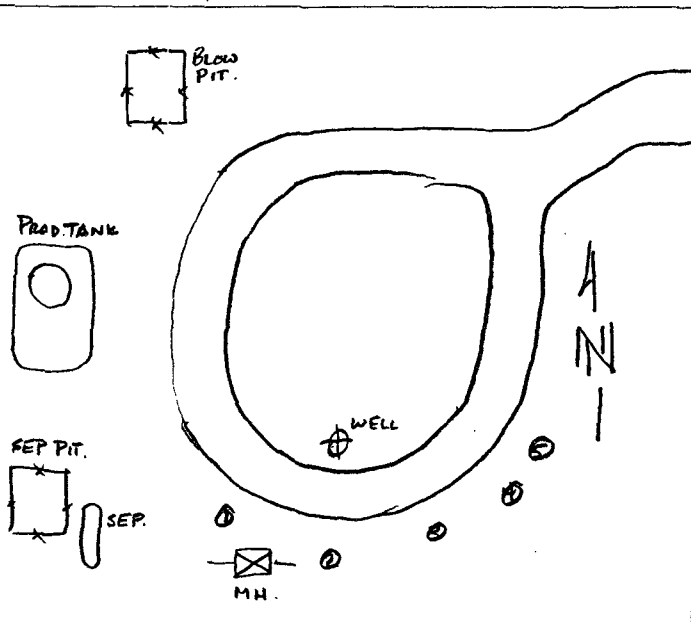
SOIL IS A MOIST COHESIVE DK BROWN CLAYISH W/ DK YELLOW
NO STAIN OR HO ODOR NO VISIBLE LANDFARM ON LOCATION.
TOOK A 5 PT COMPOSITE SAMPLE FOR LAB ANALYSIS.

NO ACTUAL LANDFARM OBSERVED ON WELL SITE.

FIELD 418.1 CALCULATIONS

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

SKETCH/SAMPLE LOCATIONS



OVM RESULTS

LAB SAMPLES

SAMPLE ID	FIELD HEADSPACE PID (ppm)	SAMPLE ID	ANALYSIS	TIME	RESULTS
LF-1	0.0	LF-1	8015	1215	ND

SCALE

0 1 FT

TRAVEL NOTES:

CALLOUT: N/AONSITE: 12-13-97 1215

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8015 Modified Nonhalogenated Volatile Organics Total Petroleum Hydrocarbons

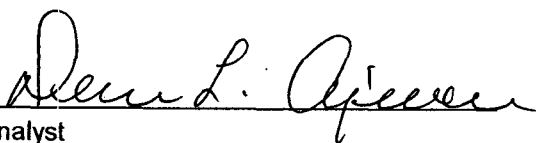
Client:	Blagg / AMOCO	Project #:	04034-10
Sample ID:	LF - 1	Date Reported:	12-16-97
Laboratory Number:	C699	Date Sampled:	12-13-97
Chain of Custody No:	5656	Date Received:	12-15-97
Sample Matrix:	Soil	Date Extracted:	12-15-97
Preservative:	Cool	Date Analyzed:	12-16-97
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

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

ND - Parameter not detected at the stated detection limit.

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

Comments: Hare GC B #1E Landfarm. 5 Pt. Composite.


Analyst


Review

RF 0015 8495 → 5656

ENVIROTECH INC.

5796 U.S. Highway 64-3014

Farmington, New Mexico 87401

(505) 632-0615

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA Method 8015 Modified Nonhalogenated Volatile Organics Total Petroleum Hydrocarbons

Quality Assurance Report

Client:	QA/QC	Project #:	N/A
Sample ID:	12-16-TPH QA/QC	Date Reported:	12-16-97
Laboratory Number:	C696	Date Sampled:	N/A
Sample Matrix:	Methylene Chloride	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	12-16-97
Condition:	N/A	Analysis Requested:	TPH

Calibration	I-Cal Date	I-Cal RF	C-Cal RF	% Difference	Accept. Range
Gasoline Range C5 - C10	10-28-97	2.9715E-04	3.1083E-04	4.60%	0 - 15%
Diesel Range C10 - C28	10-28-97	2.9167E-04	3.0670E-04	5.15%	0 - 15%

Blank Conc. (mg/L - mg/Kg)	Concentration	Detection Limit
Gasoline Range C5 - C10	ND	0.2
Diesel Range C10 - C28	ND	0.1
Total Petroleum Hydrocarbons	ND	0.2

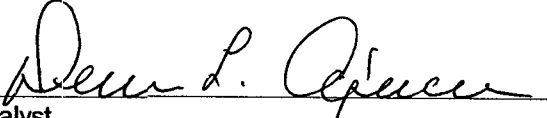
Duplicate Conc. (mg/Kg)	Sample	Duplicate	% Difference	Accept. Range
Gasoline Range C5 - C10	ND	ND	0.0%	0 - 30%
Diesel Range C10 - C28	ND	ND	0.0%	0 - 30%

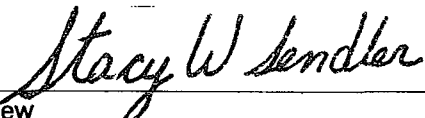
Spike Conc. (mg/Kg)	Sample	Spike Added	Spike Result	% Recovery	Accept. Range
Gasoline Range C5 - C10	ND	250	250	100%	75 - 125%
Diesel Range C10 - C28	ND	250	250	100%	75 - 125%

ND - Parameter not detected at the stated detection limit.

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

Comments: QA/QC for samples C696 - C699.


Analyst


Review