

3R - 114

REPORTS

DATE:

1999

CROSS TIMBERS OIL COMPANY

GROUNDWATER REMEDIATION REPORT

1999

**HARE GC C #1
(M) SECTION 25, T29N, R10W, NMPM
SAN JUAN COUNTY, NEW MEXICO**

RECEIVED

FEB 25 2000

ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

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

FEBRUARY 2000

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

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

**Cross Timbers Oil Company (CTOC)
Hare GC C # 1 - Separator Pit
Se/4 Nw/4 Sec. 25, T29N, R10W**

<u>Site Assessment Date:</u>	June 25, 1992 (Documentation Included)
<u>Pit closure Date:</u>	April 6, 1994 (Documentation Included)
<u>Monitor Well Installation Date:</u>	Sept. 30, 1999
<u>Monitor Well Sampling Date:</u>	October 4, 1999

Groundwater Monitor Well Sampling Procedures:

Groundwater samples were collected from site monitor wells (MW's) following USEPA: SW-846 protocol. The samples were collected using new disposable bailers and placed in new laboratory supplied 40 ml glass vials with teflon septa caps. Samples were analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) per USEPA Method 8021. Additional groundwater was collected and placed in laboratory supplied 500 ml plastic containers and analyzed for general water quality per USEPA Method 600/4-79-020. The samples were preserved cool (BTEX samples also preserved with mercuric chloride) and hand delivered to a qualified laboratory for testing. Waste generated during monitor well sampling and development was disposed of utilizing the separator tank pit located on the well site.

Water Quality Information:

The BTEX results for all three (3) MW's during the October 4, 1999 sampling event were non detectable at practical quantitation limits. The general water quality results did meet New Mexico Water Quality Control Commission's allowable concentration for groundwater or was less than/statistically equal to the apparent background levels derived from MW #1.

Summary and/or Recommendations:

Based on the enclosed documentation, the groundwater within the separator pit area appears to meet all the criteria for permanent closure. All aspects of the NMOCD previously approved groundwater management plan has been adhered to. Therefore, CTOC is requesting permanent closure status for this pit.

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

HARE GC C #1- SEPARATOR PIT UNIT M, SEC. 25, T29N, R10W
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DRAFTED: DECEMBER 5, 1999

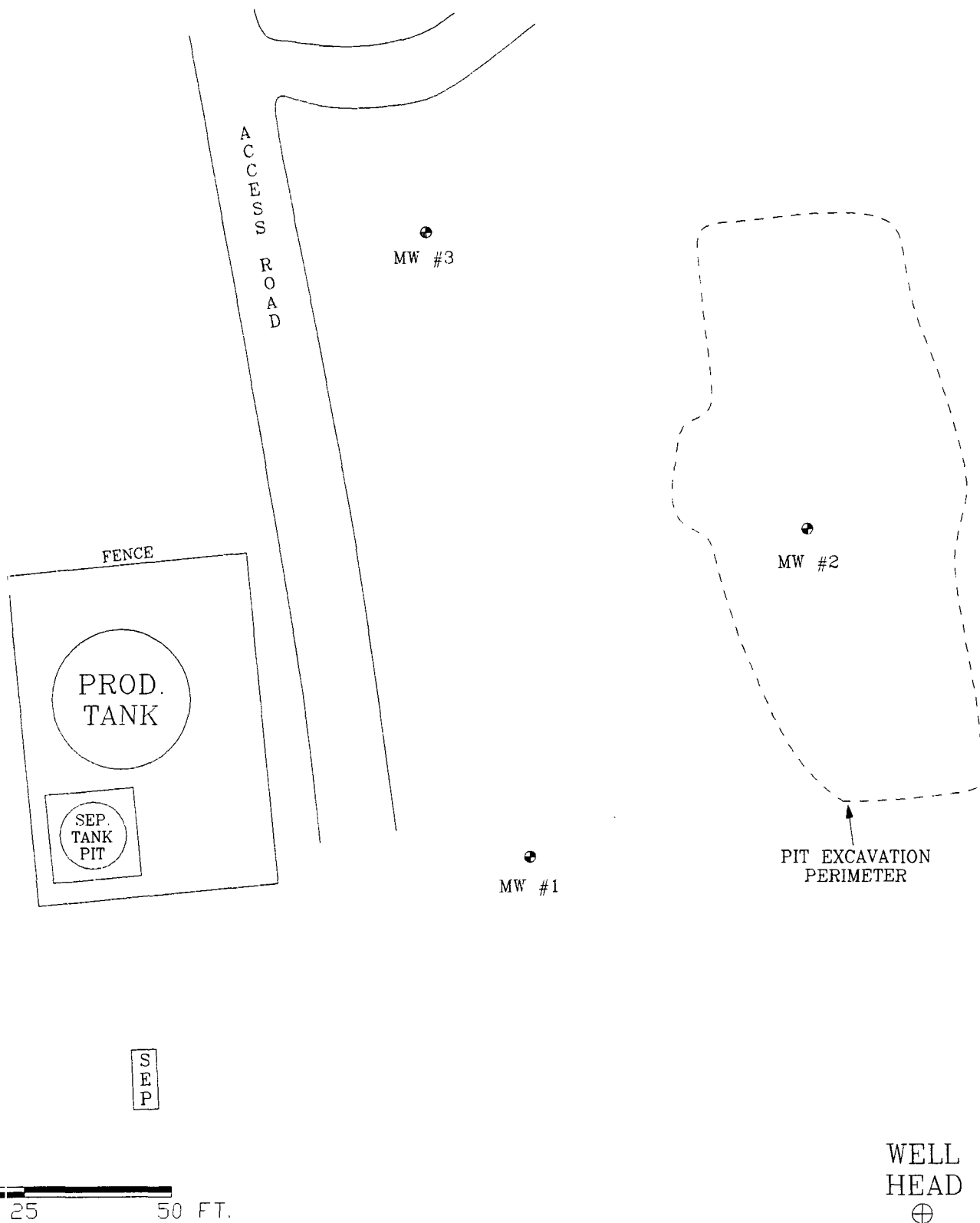
FILENAME: (C1-4Q-99.WK4) NJV

SAMPLE DATE	MONITOR WELL No:	D.T.W. (ft)	T.D. (ft)	TDS mg/L	COND. umhos	pH	PRODUCT (in)	BTEX EPA METHOD 8020 (PPB)			
								Benzene	Toluene	Ethyl Benzene	Total Xylene
04-Oct-99	MW #1	20.10	25.00	1,470	2,950	7.5		ND	ND	ND	ND
04-Oct-99	MW #2	19.46	25.00	810	1,636	7.5		ND	ND	ND	ND
04-Oct-99	MW #3	18.17	25.00	740	1,470	7.6		ND	ND	ND	ND

GENERAL WATER QUALITY
CROSS TIMBERS OIL COMPANY
HARE GC C # 1
SAMPLE DATE : October 4 , 1999

PARAMETERS	MW # 1	MW # 2	MW # 3	Units
LAB pH	7.52	7.51	7.61	s. u.
LAB CONDUCTIVITY @ 25 C	2,950	1,636	1,470	umhos / cm
TOTAL DISSOLVED SOLIDS @ 180 C	1,470	810	740	mg / L
TOTAL DISSOLVED SOLIDS (Calc)	1,400	780	700	mg / L
SODIUM ADSORPTION RATIO	6.6	6.3	6.6	ratio
TOTAL ALKALINITY AS CaCO3	342	370	376	mg / L
TOTAL HARDNESS AS CaCO3	396	180	150	mg / L
BICARBONATE as HCO3	342	370	376	mg / L
CARBONATE AS CO3	< 1	< 1	< 1	mg / L
HYDROXIDE AS OH	< 1	< 1	< 1	mg / L
NITRATE NITROGEN	0.1	1.5	< 0.1	mg / L
NITRITE NITROGEN	0.077	0.111	0.003	mg / L
CHLORIDE	2.2	4.0	2.2	mg / L
FLUORIDE	3.70	3.80	3.60	mg / L
PHOSPHATE	< 0.1	0.2	< 0.1	mg / L
SULFATE	730	278	225	mg / L
IRON	0.001	0.001	0.001	mg / L
CALCIUM	158	65.6	56.8	mg / L
MAGNESIUM	< 0.1	3.9	2.0	mg / L
POTASSIUM	2.8	1.6	1.4	mg / L
SODIUM	300	195	185	mg / L
CATION / ANION DIFFERENCE	0.18	0.57	0.06	

FIGURE 1



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

TO METER RUN
198', S48W FROM
WELL HEAD

CROSS TIMBERS OIL COMPANY

HARE GC C # 1

SW/4 SW/4 SEC. 25, T29N, R10W

SAN JUAN COUNTY, NEW MEXICO

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87
BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

PROJECT: MW INSTALL.

DRAWN BY: NJV

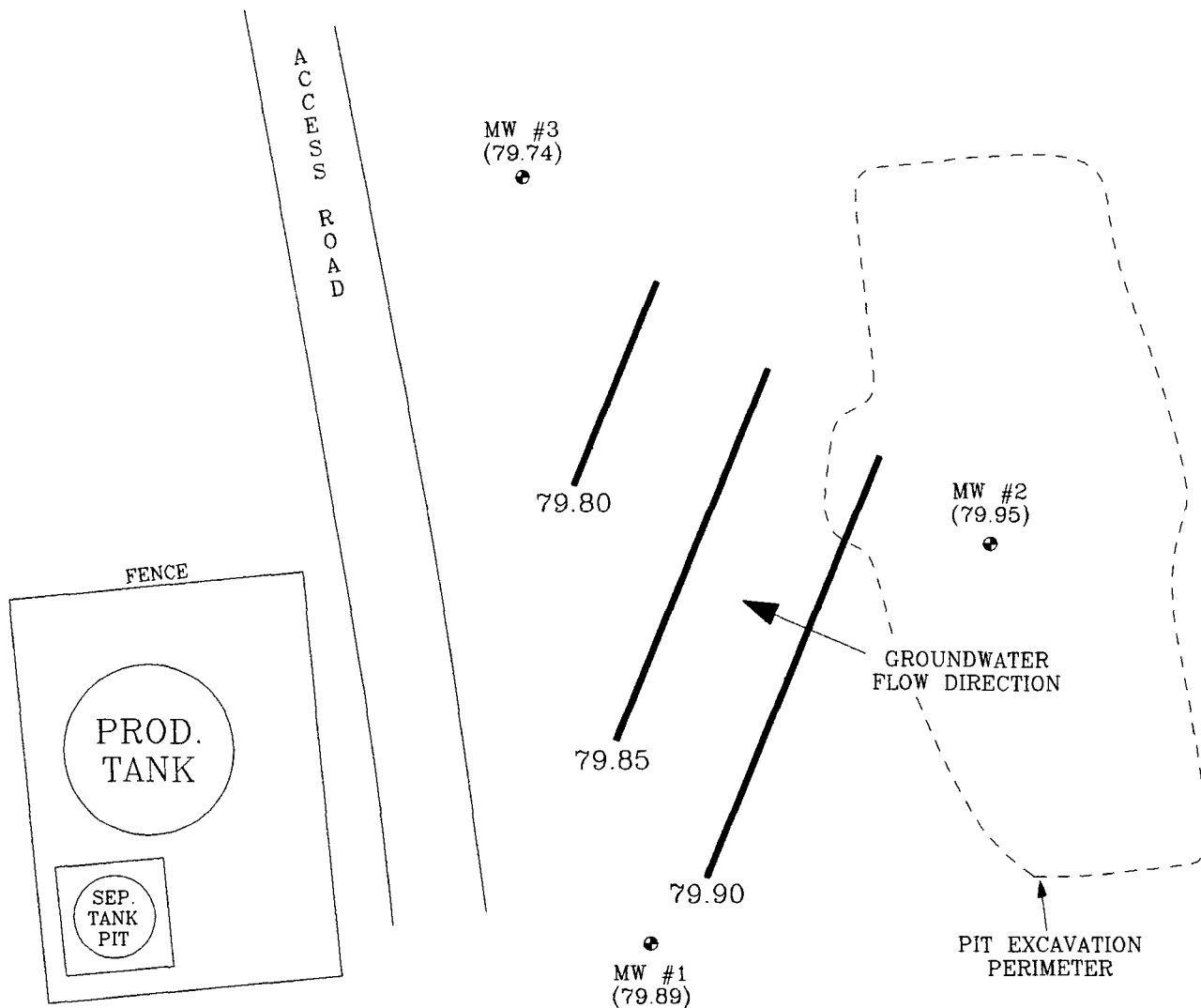
FILENAME: HARE-SM.SKD

SITE
MAP

09/99



FIGURE 2 (4th 1/4, 1999)



S
E
P

0 25 50 FT.

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

Top of Well Elevation

MW #1 ——— (99.99)

MW #2 ——— (99.41)

MW #3 ——— (97.91)

● MW #1 Groundwater Elevation (79.89) as of 10/4/99.

WELL
HEAD
⊕

CROSS TIMBERS OIL COMPANY

HARE GC C # 1

SW/4 SW/4 SEC. 25, T29N, R10W

SAN JUAN COUNTY, NEW MEXICO

BLAGG ENGINEERING, INC.
CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87
BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

PROJECT: MW SAMPLING

DRAWN BY: NJV

FILENAME: HARE-GW.SKD

GROUNDWATER
GRADIENT
MAP
10/99

BLAGG ENGINEERING, Inc.

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

BORE / TEST HOLE REPORT

CLIENT: CROSS TIMBERS OIL COMPANY
LOCATION NAME: HARE GC C #1
CONTRACTOR: BLAGG ENGINEERING, INC.
EQUIPMENT USED: MOBILE DRILL RIG (EARTHPROBE)
BORING LOCATION: 90 FT., N48W FEET FROM WELL HEAD.

BORING #..... BH - 1
MW #..... 1
PAGE #..... 1
DATE STARTED 9/30/99
DATE FINISHED 9/30/99
OPERATOR..... REP
PREPARED BY NJV

DEPTH FEET	INTERVAL	LITHOLOGY INTERVAL	MW SCHEMATIC	FIELD CLASSIFICATION AND REMARKS
				GROUND SURFACE
1				TOP OF CASING APPROX. 3.00 FT. ABOVE GROUND SURFACE.
2				MODERATE YELLOWISH BROWN SAND, NON COHESIVE, SLIGHTLY MOIST, FIRM, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED PHYSICALLY (0.00 - 2.00 FT. INTERVAL).
3				
4				
5				
6				DARK YELLOWISH BROWN CLAY, COHESIVE TO SLIGHTLY PLASTIC, SLIGHTLY MOIST, FIRM TO STIFF, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED PHYSICALLY (2.00 - 10.00 FT. INTERVAL).
7				
8				
9				
10				
11				LIGHT GRAY SILTY CLAY, COHESIVE TO SLIGHTLY PLASTIC, SLIGHTLY MOIST, FIRM TO STIFF, NO APPARENT HYDROCARBON ODOR DETECTED PHYSICALLY (10.00 - 15.00 FT. INTERVAL).
12				
13				
14				
15				
16				▼ GW DEPTH ON 10/4/99 = 17.10 FT. (APPROX.) FROM GROUND SURFACE.
17				
18				MODERATE YELLOWISH BROWN SAND, NON COHESIVE, SLIGHTLY MOIST TO SATURATED, FIRM TO LOOSE, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED PHYSICALLY (15.00 - 22.00 FT. INTERVAL).
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				

NOTE:  - SAND.
 - CLAY.
 - SILTY 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

CLIENT: CROSS TIMBERS OIL COMPANY
LOCATION NAME: HARE GC C #1
CONTRACTOR: BLAGG ENGINEERING, INC.
EQUIPMENT USED: MOBILE DRILL RIG (EARTHROBE)
BORING LOCATION: 117 FT., N9.5W FEET FROM WELL HEAD.

BORING #..... BH - 2
MW #..... 2
PAGE #..... 2
DATE STARTED 9/30/99
DATE FINISHED 9/30/99
OPERATOR..... REP
PREPARED BY NJV

DEPTH
FEET

INTERVAL

LITHOLOGY
INTERVAL

MW
SCHEMATIC

FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROX. 3.00 FT. ABOVE GROUND SURFACE.

MODERATE YELLOWISH BROWN SAND, NON COHESIVE, SLIGHTLY MOIST, FIRM,
NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED
PHYSICALLY (0.00 - 8.00 FT. INTERVAL).

LIGHT GRAY SILTY CLAY, COHESIVE TO SLIGHTLY PLASTIC, SLIGHTLY MOIST
TO SATURATED, FIRM TO STIFF, NO APPARENT HYDROCARBON ODOR DETECTED
PHYSICALLY (8.00 - 17.00 FT. INTERVAL).

▼ GW DEPTH ON 10/4/99 = 16.46 FT. (APPROX.) FROM GROUND SURFACE.

MEDIUM GRAY SAND, NON COHESIVE, SATURATED, FIRM TO LOOSE, NO APPARENT
HYDROCARBON ODOR DETECTED PHYSICALLY (17.00 - 22.00 FT. INTERVAL).

NOTE:  - SAND.

 - MEDIUM GRAY SAND.

 - SILTY 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

CLIENT: CROSS TIMBERS OIL COMPANY
LOCATION NAME: HARE GC C #1
CONTRACTOR: BLAGG ENGINEERING, INC.
EQUIPMENT USED: MOBILE DRILL RIG (EARTHPROBE)
BORING LOCATION: 186 FT., N27W FEET FROM WELL HEAD.

BORING #..... BH - 3
MW #..... 3
PAGE #..... 3
DATE STARTED 9/30/99
DATE FINISHED 9/30/99
OPERATOR..... REP
PREPARED BY NJV

DEPTH FEET	INTERVAL	LITHOLOGY INTERVAL	MW SCHEMATIC	FIELD CLASSIFICATION AND REMARKS
				GROUND SURFACE
1				TOP OF CASING APPROX. 3.00 FT. ABOVE GROUND SURFACE.
2				MODERATE YELLOWISH BROWN SAND, NON COHESIVE, SLIGHTLY MOIST, FIRM, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED PHYSICALLY (0.00 - 3.00 FT. INTERVAL).
3				
4				
5				DARK YELLOWISH BROWN CLAY, COHESIVE TO SLIGHTLY PLASTIC, SLIGHTLY MOIST, FIRM TO STIFF, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED PHYSICALLY (3.00 - 8.00 FT. INTERVAL).
6				
7				
8				
9				
10				LIGHT GRAY SILTY CLAY, COHESIVE TO SLIGHTLY PLASTIC, SLIGHTLY MOIST, FIRM TO STIFF, NO APPARENT HYDROCARBON ODOR DETECTED PHYSICALLY (8.00 - 14.00 FT. INTERVAL).
11				
12			TOS 12.00	
13				
14				
15				▼ GW DEPTH ON 10/4/99 = 15.17 FT. (APPROX.) FROM GROUND SURFACE.
16				
17				
18				DARK YELLOWISH BROWN SAND, NON COHESIVE, SLIGHTLY MOIST TO SATURATED, FIRM TO LOOSE, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED PHYSICALLY (14.00 - 22.00 FT. INTERVAL).
19				
20				
21				
22			TD 22.00	
23				
24				
25				
26				
27				
28				
29				
30				
31				

NOTE:  - SAND.
 - CLAY.
 - SILTY CLAY.

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

MONITOR WELL #1

INSTALLED WITH MOBILE RIG

MONITOR WELL CONSTRUCTION & COMPLETION

HARE GC C # 1

CROSS TIMBERS OIL COMPANY

PHONE: (505) 632-1199

BLOOMFIELD, NEW MEXICO 87413

P.O. BOX 87

CONSULTING PETROLEUM / RECLAMATION SERVICES

BLAGG ENGINEERING, INC.

FILENAME: MW-1

DATE: JAN. '00

DRAFTED BY: NJV

MONITOR WELL SCHEMATIC

2" DIA. SCH. 40 PVC
WELL CASING WITH SLIP
CAP (approx. 3.00 ft.
above ground surface)

GROUND
SURFACE

3.00 ft. INTERVAL
COMPLETED WITH
CLEAN NATIVE SOIL

TOTAL CASING
LENGTH = 12.00 ft.
FROM GROUND SURFACE
TO TOP OF SCREEN

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

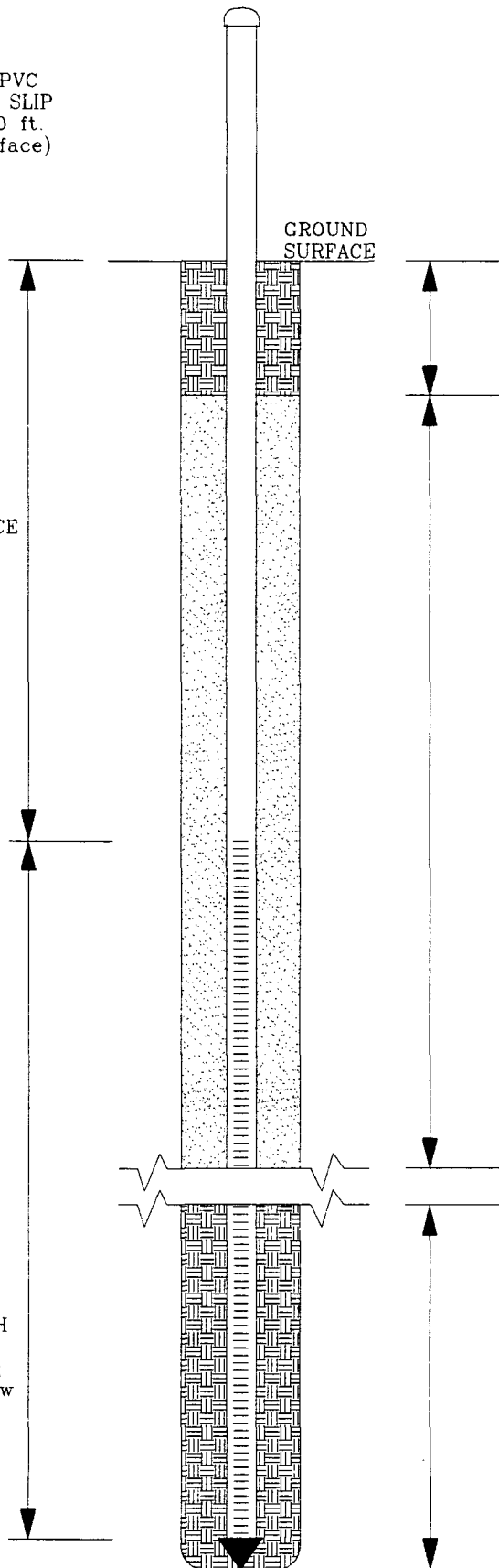
0.02 INCH SLOTTED
SCREEN SCH 40
(approx. 5.10 ft.
above water table)

WATER TABLE
APPROX. 17.10 ft. FROM
GROUND SURFACE
(measured 10/4/99)

0.02 INCH SLOTTED
SCREEN SCH 40 WITH
POINTED END CAP
(10 ft. total length;
approx. 4.90 ft. below
water table)

5.25 ft. ANNULAR BELOW
WATER TABLE COMPLETED
WITH EXISTING SOIL
CONDITIONS

TOTAL DEPTH = 22.00 ft.
FROM GROUND SURFACE



MONITOR WELL #2

2" DIA. SCH. 40 PVC
WELL CASING WITH SLIP
CAP (approx. 3.00 ft.
above ground surface)

GROUND
SURFACE

3.00 ft. INTERVAL
COMPLETED WITH
CLEAN NATIVE SOIL

TOTAL CASING
LENGTH = 12.00 ft.
FROM GROUND SURFACE
TO TOP OF SCREEN

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

0.02 INCH SLOTTED
SCREEN SCH 40
(approx. 4.46 ft.
above water table)

WATER TABLE
APPROX. 16.46 ft. FROM
GROUND SURFACE
(measured 10/4/99)

0.02 INCH SLOTTED
SCREEN SCH 40 WITH
POINTED END CAP
(10 ft. total length;
approx. 5.54 ft. below
water table)

5.89 ft. ANNULAR BELOW
WATER TABLE COMPLETED
WITH EXISTING SOIL
CONDITIONS

TOTAL DEPTH = 22.00 ft.
FROM GROUND SURFACE

CROSS TIMBERS OIL COMPANY

HARE GC C # 1

MONITOR WELL CONSTRUCTION & COMPLETION

INSTALLED WITH MOBILE RIG

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

MONITOR WELL SCHEMATIC

DRAFTED BY: NJV

DATE: JAN. '00

FILENAME: MW-2

MONITOR WELL #3

2" DIA. SCH. 40 PVC
WELL CASING WITH SLIP
CAP (approx. 3.00 ft.
above ground surface)

GROUND
SURFACE

3.00 ft. INTERVAL
COMPLETED WITH
CLEAN NATIVE SOIL

TOTAL CASING
LENGTH = 12.00 ft.
FROM GROUND SURFACE
TO TOP OF SCREEN

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

0.02 INCH SLOTTED
SCREEN SCH 40
(approx. 3.17 ft.
above water table)

WATER TABLE
APPROX. 15.17 ft. FROM
GROUND SURFACE
(measured 10/4/99)

0.02 INCH SLOTTED
SCREEN SCH 40 WITH
POINTED END CAP
(10 ft. total length;
approx. 6.83 ft. below
water table)

7.18 ft. ANNULAR BELOW
WATER TABLE COMPLETED
WITH EXISTING SOIL
CONDITIONS

TOTAL DEPTH = 22.00 ft.
FROM GROUND SURFACE

CROSS TIMBERS OIL COMPANY

HARE GC C # 1

MONITOR WELL CONSTRUCTION & COMPLETION

INSTALLED WITH MOBILE RIG

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

MONITOR WELL SCHEMATIC

DRAFTED BY: NJV

DATE: JAN. '00

FILENAME: MW-3

BLAGG ENGINEERING, INC.**MONITOR WELL SAMPLING DATA**CLIENT : CROSS TIMBERS OIL CO.CHAIN-OF-CUSTODY # : 730310064LOCATION : HARE GC C # 1LABORATORY (S) USED : ENVIROTECH, INC.ON - SITE TECH.Date : October 4, 1999SAMPLER : REPFilename : 10-04-99.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	99.99	79.89	20.10	25.00	1110	7.6	1,600	2.50	-
2	99.41	79.95	19.46	25.00	1140	7.9	900	2.75	-
3	97.91	79.74	18.17	25.00	1205	7.4	1,000	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".Collected BTEX and anion / cation samples for all MW's listed above .

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 13-Oct-99

Client:	Blagg Engineering	Client Sample Info:	Hare GC C #1
Work Order:	9910006	Client Sample ID:	MW #1
Lab ID:	9910006-01A	Matrix:	AQUEOUS
Project:	Hare GC C #1	Collection Date:	10/04/1999 11:10:00 AM
		COC Record:	10064

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC/PID		SW8021B		Analyst: DM		
Benzene	ND	0.5		µg/L	1	10/06/1999
Toluene	ND	0.5		µg/L	1	10/06/1999
Ethylbenzene	ND	0.5		µg/L	1	10/06/1999
m,p-Xylene	ND	1		µg/L	1	10/06/1999
o-Xylene	ND	0.5		µg/L	1	10/06/1999

Qualifiers:

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

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

P.O. BOX 2606 • FARMINGTON, NM 87499

- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 13-Oct-99

Client:	Blagg Engineering	Client Sample Info:	Hare GC C #1
Work Order:	9910006	Client Sample ID:	MW #2
Lab ID:	9910006-02A	Matrix:	AQUEOUS
Project:	Hare GC C #1	Collection Date:	10/04/1999 11:40:00 AM
		COC Record:	10064

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC/PID		SW8021B		Analyst: DM		
Benzene	ND	0.5		µg/L	1	10/06/1999
Toluene	ND	0.5		µg/L	1	10/06/1999
Ethylbenzene	ND	0.5		µg/L	1	10/06/1999
m,p-Xylene	ND	1		µg/L	1	10/06/1999
o-Xylene	ND	0.5		µg/L	1	10/06/1999

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: 13-Oct-99

Client:	Blagg Engineering	Client Sample Info:	Hare GC C #1
Work Order:	9910006	Client Sample ID:	MW #3
Lab ID:	9910006-03A	Matrix:	AQUEOUS
Project:	Hare GC C #1	Collection Date:	10/04/1999 12:05:00 PM
		COC Record:	10064

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC/PID		SW8021B		Analyst: DM		
Benzene	ND	0.5		µg/L	1	10/06/1999
Toluene	ND	0.5		µg/L	1	10/06/1999
Ethylbenzene	ND	0.5		µg/L	1	10/06/1999
m,p-Xylene	ND	1		µg/L	1	10/06/1999
o-Xylene	ND	0.5		µg/L	1	10/06/1999

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 -

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

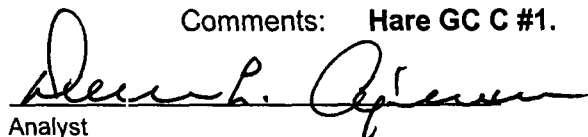
CATION / ANION ANALYSIS

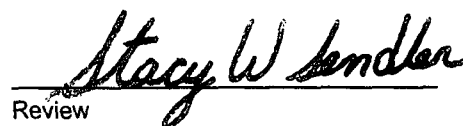
Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW #1	Date Reported:	10-06-99
Laboratory Number:	G154	Date Sampled:	10-04-99
Chain of Custody:	7303	Date Received:	10-04-99
Sample Matrix:	Water	Date Extracted:	N/A
Preservative:	Cool	Date Analyzed:	10-05-99
Condition:	Cool & Intact		

Parameter	Analytical Result	Units		Units
pH	7.52	s.u.		
Conductivity @ 25° C	2,950	umhos/cm		
Total Dissolved Solids @ 180C	1,470	mg/L		
Total Dissolved Solids (Calc)	1,400	mg/L		
SAR	6.6	ratio		
Total Alkalinity as CaCO3	342	mg/L		
Total Hardness as CaCO3	396	mg/L		
Bicarbonate as HCO3	342	mg/L	5.61	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	0.077	mg/L	0.00	meq/L
Chloride	2.2	mg/L	0.06	meq/L
Fluoride	3.70	mg/L	0.19	meq/L
Phosphate	<0.1	mg/L	0.00	meq/L
Sulfate	730	mg/L	15.20	meq/L
Iron	0.001	mg/L		
Calcium	158	mg/L	7.90	meq/L
Magnesium	<0.1	mg/L	0.00	meq/L
Potassium	2.8	mg/L	0.07	meq/L
Sodium	300	mg/L	13.05	meq/L
Cations			21.03	meq/L
Anions			21.06	meq/L
Cation/Anion Difference			0.18%	

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 C #1.


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

CATION / ANION ANALYSIS

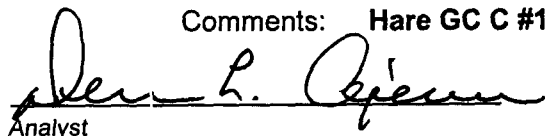
Client: Blagg / Cross Timbers
Sample ID: MW #2
Laboratory Number: G155
Chain of Custody: 7303
Sample Matrix: Water
Preservative: Cool
Condition: Cool & Intact

Project #: 403410
Date Reported: 10-06-99
Date Sampled: 10-04-99
Date Received: 10-04-99
Date Extracted: N/A
Date Analyzed: 10-05-99

Parameter	Analytical Result	Units	Units
pH	7.51	s.u.	
Conductivity @ 25° C	1,636	umhos/cm	
Total Dissolved Solids @ 180C	810	mg/L	
Total Dissolved Solids (Calc)	780	mg/L	
SAR	6.3	ratio	
Total Alkalinity as CaCO3	370	mg/L	
Total Hardness as CaCO3	180	mg/L	
Bicarbonate as HCO3	370	mg/L	6.06 meq/L
Carbonate as CO3	<1	mg/L	0.00 meq/L
Hydroxide as OH	<1	mg/L	0.00 meq/L
Nitrate Nitrogen	1.5	mg/L	0.02 meq/L
Nitrite Nitrogen	0.111	mg/L	0.00 meq/L
Chloride	4.0	mg/L	0.11 meq/L
Fluoride	3.80	mg/L	0.20 meq/L
Phosphate	0.2	mg/L	0.01 meq/L
Sulfate	278	mg/L	5.78 meq/L
Iron	0.001	mg/L	
Calcium	65.6	mg/L	3.27 meq/L
Magnesium	3.9	mg/L	0.32 meq/L
Potassium	1.6	mg/L	0.04 meq/L
Sodium	195	mg/L	8.48 meq/L
Cations			12.12 meq/L
Anions			12.19 meq/L
Cation/Anion Difference			0.57%

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 C #1.


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

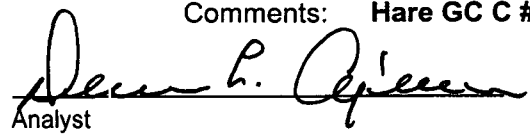
CATION / ANION ANALYSIS

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW #3	Date Reported:	10-06-99
Laboratory Number:	G156	Date Sampled:	10-04-99
Chain of Custody:	7303	Date Received:	10-04-99
Sample Matrix:	Water	Date Extracted:	N/A
Preservative:	Cool	Date Analyzed:	10-05-99
Condition:	Cool & Intact		

Parameter	Analytical Result	Units		Units
pH	7.61	s.u.		
Conductivity @ 25° C	1,470	umhos/cm		
Total Dissolved Solids @ 180C	740	mg/L		
Total Dissolved Solids (Calc)	700	mg/L		
SAR	6.6	ratio		
Total Alkalinity as CaCO3	376	mg/L		
Total Hardness as CaCO3	150	mg/L		
Bicarbonate as HCO3	376	mg/L	6.16	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	0.003	mg/L	0.00	meq/L
Chloride	2.2	mg/L	0.06	meq/L
Fluoride	3.60	mg/L	0.19	meq/L
Phosphate	<0.1	mg/L	0.00	meq/L
Sulfate	225	mg/L	4.67	meq/L
Iron	0.001	mg/L		
Calcium	56.8	mg/L	2.83	meq/L
Magnesium	2.0	mg/L	0.16	meq/L
Potassium	1.4	mg/L	0.04	meq/L
Sodium	185	mg/L	8.05	meq/L
Cations			11.08	meq/L
Anions			11.09	meq/L
Cation/Anion Difference			0.06%	

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 C #1.


Analyst


Review

73-3

[illegible]

TECHNOLOGIES, LTD.

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

Date: 10.4.99Page: of [illegible]

On Site Technologies, LTD.

Date: 13-Oct-99

CLIENT: Blagg Engineering
 Work Order: 9910006
 Project: Hare GC C #1

QC SUMMARY REPORT

Method Blank

Sample ID: MB1	Batch ID: GC-1_991006	Test Code: SW8021B	Units: µg/L	Analysis Date 10/06/1999	Prep Date:						
Client ID:	9910006	Run ID: GC-1_991006A		SeqNo: 20332							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	.0555										J
Ethylbenzene	ND	0.5									
m,p-Xylene	ND	1									
Methyl tert-Butyl Ether	ND	1									
o-Xylene	ND	0.5									
Toluene	.1301	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: 13-Oct-99

CLIENT: Blagg Engineering
Work Order: 9910006
Project: Hare GC C #1

QC SUMMARY REPORT

Sample Matrix Spike

Sample ID: 9910007-02AMS		Batch ID: GC-1_991006		Test Code: SW8021B		Units: µg/L		Analysis Date 10/06/1999		Prep Date:	
Client ID: 9910006		Run ID: GC-1_991006A		SeqNo: 20333							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	2790	10	800	1984	100.8%	80	116				
Ethylbenzene	1659	10	800	819.1	105.0%	80	118				
m,p-Xylene	4054	20	1600	2489	97.8%	77	116				
Methyl tert-Butyl Ether	1170	20	800	372.6	99.7%	62	122				
o-Xylene	1288	10	800	458.3	103.7%	83	117				
Toluene	2414	10	800	1572	105.2%	80	116				

Sample ID: 9910007-02AMSD		Batch ID: GC-1_991006		Test Code: SW8021B		Units: µg/L		Analysis Date 10/06/1999		Prep Date:	
Client ID: 9910006		Run ID: GC-1_991006A		SeqNo: 20334							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	2720	10	800	1984	92.0%	80	116	2790	2.6%	7	
Ethylbenzene	1619	10	800	819.1	99.9%	80	118	1659	2.5%	7	
m,p-Xylene	3961	20	1600	2489	92.0%	77	116	4054	2.3%	7	
Methyl tert-Butyl Ether	1064	20	800	372.6	86.5%	62	122	1170	9.5%	7	R
o-Xylene	1260	10	800	458.3	100.2%	83	117	1288	2.2%	6	
Toluene	2357	10	800	1572	98.1%	80	116	2414	2.4%	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: 13-Oct-99

CLIENT: Blagg Engineering

Work Order: 9910006

Project: Hare GC C #1

QC SUMMARY REPORT

Laboratory Control Spike - generic

Sample ID: LCS WATER	Batch ID: GC-1_9910006	Test Code: SW8021B	Units: µg/L	Analysis Date 10/06/1999	Prep Date:						
Client ID:	9910006	Run ID: GC-1_991006A		SeqNo: 20331							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	38.13	0.5	40	0.0555	95.2%	87	119				
Ethylbenzene	41.43	0.5	40	0	103.6%	89	117				
m,p-Xylene	77.3	1	80	0	96.6%	88	114				
Methyl tert-Butyl Ether	39.48	1	40	0	98.7%	69	129				
o-Xylene	41.01	0.5	40	0	102.5%	90	116				
Toluene	40.35	0.5	40	0.1301	100.6%	90	115				

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: 13-Oct-99

QC SUMMARY REPORT

Continuing Calibration Verification Standard

CLIENT: Blagg Engineering
Work Order: 9910006
Project: Hare GC C #1

Sample ID: CCV1 BTEX_9906		Batch ID: GC-1_991006	Test Code: SW8021B	Units: µg/L		Analysis Date 10/06/1999		Prep Date:	
Client ID:		9910006		Run ID: GC-1_991006A		SeqNo: 20328			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	Qual
Benzene	19.46	0.5	20	0	97.3%	85	115		
Ethylbenzene	21.39	0.5	20	0	107.0%	85	115		
m,p-Xylene	40.06	1	40	0	100.2%	85	115		
Methyl tert-Butyl Ether	20.2	1	20	0	101.0%	85	115		
o-Xylene	21.14	0.5	20	0	105.7%	85	115		
Toluene	20.71	0.5	20	0	103.6%	85	115		
1,4-Difluorobenzene	91.32	0	100	0	91.3%	80	120		
4-Bromochlorobenzene	88.82	0	100	0	88.8%	80	120		
Fluorobenzene	90.33	0	100	0	90.3%	80	120		

Sample ID: CCV2 BTEX_9906		Batch ID: GC-1_991006	Test Code: SW8021B	Units: µg/L		Analysis Date 10/06/1999		Prep Date:	
Client ID:		9910006		Run ID: GC-1_991006A		SeqNo: 20329			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	Qual
Benzene	19.28	0.5	20	0	96.4%	85	115		
Ethylbenzene	21.01	0.5	20	0	105.0%	85	115		
m,p-Xylene	39.3	1	40	0	98.2%	85	115		
Methyl tert-Butyl Ether	20.1	1	20	0	100.5%	85	115		
o-Xylene	20.96	0.5	20	0	104.8%	85	115		
Toluene	20.43	0.5	20	0	102.2%	85	115		
1,4-Difluorobenzene	91.04	0	100	0	91.0%	80	120		
4-Bromochlorobenzene	92.74	0	100	0	92.7%	80	120		
Fluorobenzene	90.62	0	100	0	90.6%	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: 9910006
Project: Hare GC C #1

QC SUMMARY REPORT
Continuing Calibration Verification Standard

Sample ID: CCV3 BTEX_9906		Batch ID: GC-1_991006	Test Code: SW8021B	Units: µg/L	Analysis Date 10/06/1999		Prep Date:	
Client ID: 9910006		Run ID: GC-1_991006A	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit
Analyte		Result						
Benzene		19.68	0.5	20	0	98.4%	85	115
Ethylbenzene		21.58	0.5	20	0	107.9%	85	115
m,p-Xylene		40.29	1	40	0	100.7%	85	115
Methyl tert-Butyl Ether		20.59	1	20	0	102.9%	85	115
o-Xylene		21.46	0.5	20	0	107.3%	85	115
Toluene		20.96	0.5	20	0	104.8%	85	115
1,4-Difluorobenzene		90.96	0	100	0	91.0%	80	120
4-Bromochlorobenzene		90.59	0	100	0	90.6%	80	120
Fluorobenzene		90.56	0	100	0	90.6%	80	120
						%RPD	RPDLimit	Qual

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: 13-Oct-99

CLIENT: Blagg Engineering

Work Order: 9910006

Project: Hare GC C #1

Test No: SW8021B

QC SUMMARY REPORT SURROGATE RECOVERIES

Aromatic Volatiles by GC/PID

Sample ID	14FBZ	4BCBZ	FLBZ
9910002-01A	92	90.9	91.3
9910002-03A	91.6	91.5	91.6
9910002-04A	92	91.3	91.5
9910002-05A	91.8	91.2	91.5
9910002-08A	92.2	91.7	91.6
9910002-09A	92.1	91	91.5
9910002-10A	91.7	90.2	91.7
9910002-11A	92.1	90.8	91.3
9910005-01A	91.8	91	91.3
9910005-02A	92	92.9	91.4
9910005-03A	91.9	91.3	91.2
9910006-01A	91.7	90.4	91.2
9910006-02A	91.7	91.1	91.5
9910006-03A	91.6	91.1	91.5
9910007-01A	92.6	90.5	91.9
9910007-02A	90.3	90.8	88
9910007-02AMS	90	91.3	87.2
9910007-02AMSD	90.1	92.2	87.6
9910007-03A	90.9	89.2	91.1
CCV1 BTEX_99061	91.3	88.8	90.3
CCV2 BTEX_99061	91	92.7	90.6
CCV3 BTEX_99061	91	90.6	90.6
LCS WATER	90.4	89.3	89.6
MB1	92	88.8	91.3

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

* Surrogate recovery outside acceptance limits

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1525

JOB No: 92140
PAGE No: 1 of 1

DATE STARTED: 6-25-92
DATE FINISHED: 6-25-92
ENVIRO. SPCLT: J.W.
OPERATOR: G.S.
ASSISTANT: T.C.

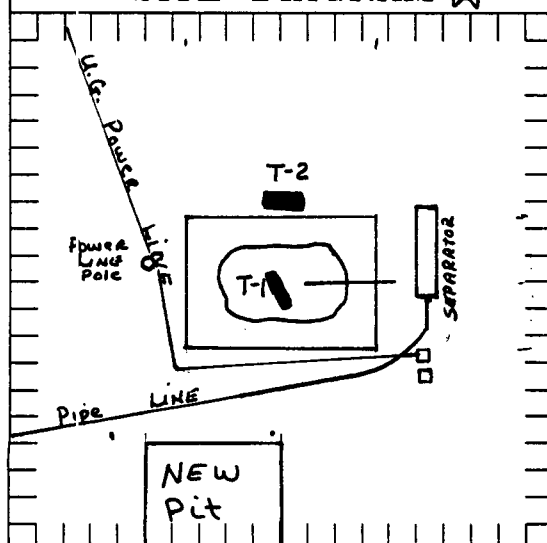
LAND USE: Farm - Pasture

SURFACE CONDITIONS: EARTHEN Pit

[illegible]

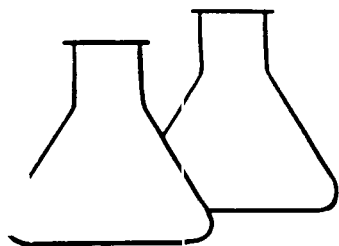
0 5' 10' FEET

SITE DIAGRAM



TH#:	SOIL TYPE:	SMPL TYPE:	OVM/TPH
1			
2			
3			
4			
5			
6	SM • Soil		510
7			
8			
9			
10			
11	SM Soil		536
12	T.O		12'
13			
14			
15			
16			
17			
18			
19			
20			

SOIL TYPE: C - Clay, M - SIL, S - Sand, G - Gravel Plasticity: L - None, H - Plastic Grading: P - Poor, 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 @ 6'
Laboratory Number: 1659
Sample Matrix: Soil
Preservative: Cool
Condition: Cool & Intact

Project #: 92140
Date Reported: 06-26-92
Date Sampled: 06-25-92
Date Received: 06-25-92
Date Analyzed: 06-26-92
Analysis Needed: TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	1,900	5.0

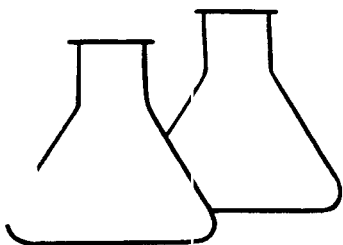
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Hare Gas Com 'C' #1 Separator Pit 94364

Vanessa Danson
Analyst

Paul Lamswood
Review



ENVIROTECH LABS

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

EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	AMOCO	Project #:	92140
Sample ID:	T-2 @ 10'	Date Reported:	06-26-92
Laboratory Number:	1661	Date Sampled:	06-25-92
Sample Matrix:	Soil	Date Received:	06-25-92
Preservative:	Cool	Date Analyzed:	06-26-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	260	5.0

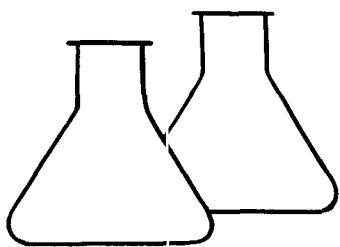
Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Hare Gas Com 'C' #1 Separator Pit 94364

Vanessa Pearson
Analyst

Paul L. Lammert
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 @ 12'	Date Reported:	09-24-92
Laboratory Number:	1660	Date Sampled:	06-25-92
Sample Matrix:	Soil	Date Received:	06-25-92
Preservative:	Cool	Date Analyzed:	09-15-92
Condition:	Cool and Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	23,300	40.0
Toluene	90,300	220
Ethylbenzene	5,100	40.0
p,m-Xylene	ND	100
o-Xylene	5,700	100

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 Gas Com 'C' #1---Separator Pit---94364

De Chabauty
Analyst

Morris D. Young
Review

94364

CHAIN OF CUSTODY RECORD

[illegible]**ENVIROTECH INC.**

5796 U.S. Highway 64-3014

Farmington, New Mexico 87401

(505) 632-0615

District I

P.O. Box 1980, Hobbs, NM

District II

P.O. Drawer DD, Artesia, NM 88211

District III

1000 Rio Brazos Rd, Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

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

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

PIT REMEDIATION AND CLOSURE REPORTOperator: Amoco Production Company Telephone: (505) - 326-9200Address: 200 Amoco Court, Farmington, New Mexico 87401Facility Or: HARE 6C C #1
Well NameLocation: Unit or Qtr/Qtr Sec M Sec 25 T 29 N R 10 W County SAN JUANPit Type: Separator X Dehydrator Other Land Type: BLM , State , Fee , Other COM. AGMT.Pit Location: Pit dimensions: length 100', width 50', depth 12'
(Attach diagram)Reference: wellhead X, other Footage from reference: 120'Direction from reference: 0 Degrees East North X
of
 West South

Depth To Ground Water:

(Vertical distance from
contaminants to seasonal
high water elevation of
ground water)

Less than 50 feet (20 points)

50 feet to 99 feet (10 points)

Greater than 100 feet (0 Points) 20

Wellhead Protection Area:

(Less than 200 feet from a private
domestic water source, or; less than
1000 feet from all other water sources)

Yes (20 points)

No (0 points) 0

Distance To Surface Water:

(Horizontal distance to perennial
lakes, ponds, rivers, streams, creeks,
irrigation canals and ditches)

Less than 200 feet (20 points)

200 feet to 1000 feet (10 points)

Greater than 1000 feet (0 points) 0RANKING SCORE (TOTAL POINTS): 20

C4364

SEP. PIT

Date Remediation Started: 4/1/94 Date Completed: 4/6/94

Remediation Method: Excavation X Approx. cubic yards 2222
(Check all appropriate sections) Landfarmed X Insitu Bioremediation
Other Compost

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

General Description of Remedial Action:

Excavation. REFER TO ATTACHED NMOC D LETTER DATED
APRIL 22, 1994 FOR LANDFARM/COMPOST
SOIL APPROVAL - SECTION A, #9 - BLOW PIT. 925
2/3/00

Ground Water Encountered: No Yes X Depth 14'Final Pit: Sample location see Attached Documents

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

Sample depth Sample date Sample time

Sample Results

Benzene(ppm) Total BTEX(ppm) Field headspace(ppm) TPH Ground Water Sample: Yes X No (If yes, attach sample results)

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

DATE 4/25/94

SIGNATURE

B. ShawPRINTED NAME
AND TITLEBuddy D. Shaw
ENVIRONMENTAL COORDINATOR

LOSE

ENVIROTECH Inc.

FIT NO. C4364

C.C.C. NO. 347.5
3489

JOE IC 92140
PAGE NO. 1 of 1

DATE STARTED: 4-1-94
DATE FINISHED: 4-6-94

ENVIRONMENTAL SPECIALIST: R 90

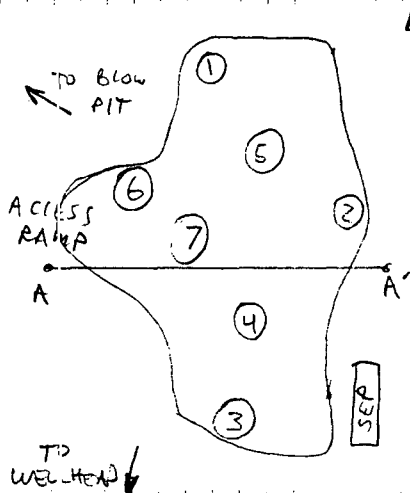
4-6-94 EXCAVATION CONTINUED INTO GROUNDWATER - BOTTOM CONTAMINATED SOIL REMOVED.
GROUNDWATER SAMPLED.

SAMPLE NO.	LAB No	WEIGHT (g)	ML FREQN	DILUTION	READING	CALC. conc

DEPTH TO GROUNDWATER: ~ $< 20'$
 DEEPEST WATER SOURCE: $> 1000'$
 DEEPEST SURFACE WATER: $> 1000'$
 MINIMUM FLOODING DEPTH: $> 20'$
 MINIMUM FLOODING DEPTH: $100 \text{ ft} \times 70 \text{ ft}$

[illegible]

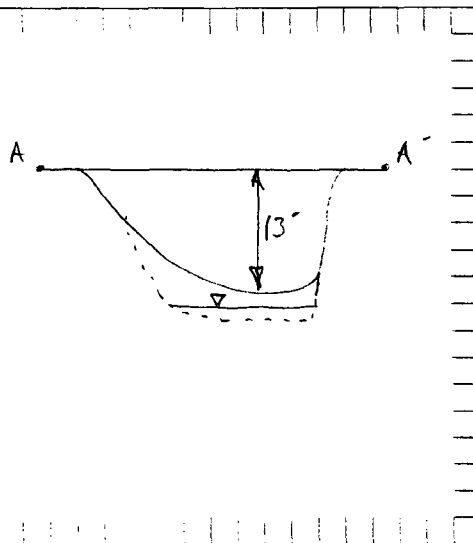
PIT PERIMETER



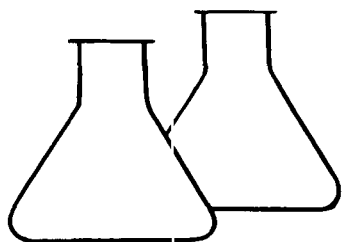
SAMPLE ID	FIELD HEATSPACE PID (SEC)
JS07'	7
ES06'	3
SS07'	3
SB@13'	1062
WL@13'	246
JS06'	ND

LAB
418.1
BTEX
99
@ 14" WATER
BTEX

PIT PROFILE



ONSITE.	4-1-94	0930
	4-6-94	1000



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:	4 SB @ 13'	Date Reported:	04-05-94
Laboratory Number:	7143	Date Sampled:	04-01-94
Sample Matrix:	Soil	Date Received:	04-04-94
Preservative:	Cool	Date Extracted:	04-04-94
Condition:	Cool & Intact	Date Analyzed:	04-04-94
		Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	8,300	20.2
Toluene	140,100	40.5
Ethylbenzene	16,200	20.2
p,m-Xylene	207,400	20.2
o-Xylene	46,700	20.2

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	108 %
	Bromofluorobenzene	111 %

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

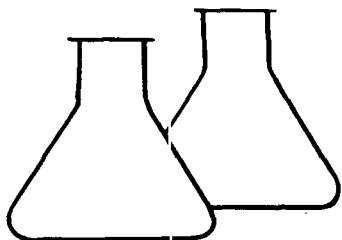
Method 8020, Aromatic Volatile Organics, Test Methods
for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986.

ND - Parameter not detected at the stated detection limit.

Comments: Hare GC "C" #1 Sep C4364

Tony Tristano
Analyst

Massie D. Young
Review



ENVIROTECH LABS

5796 US HIGHWAY 64-3014 • FARMINGTON, NEW MEXICO 87401

PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client:	Amoco	Project #:	92140
Sample ID:	4 SB @ 13'	Date Sampled:	04-01-94
Laboratory Number:	7143	Date Received:	04-01-94
Sample Matrix:	Soil	Date Analyzed:	04-08-94
Preservative:	Cool	Date Reported:	04-08-94
Condition:	Cool & Intact	Analysis Needed:	TPH

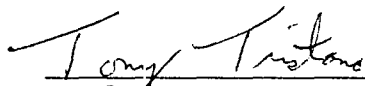
Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	1,140	20.0

ND = Parameter not detected at the stated detection limit.

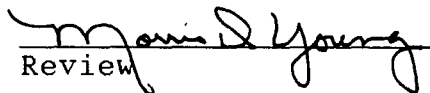
N/A = Not applicable

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

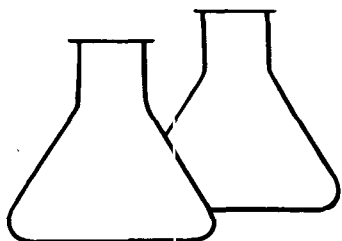
Comments: Hare GC "C" #1 Sep C4364



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:	7 water @ 14'	Date Reported:	04-07-94
Laboratory Number:	7154	Date Sampled:	04-06-94
Sample Matrix:	Water	Date Received:	04-06-94
Preservative:	HgCl and Cool	Date Analyzed:	04-06-94
Condition:	Cool and Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	4.1	0.2
Toluene	3.1	0.6
Ethylbenzene	ND	0.2
p,m-Xylene	2.4	0.2
o-Xylene	25.1	0.2

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	109 %
	Bromofluorobenzene	116 %

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

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

ND - Parameter not detected at the stated detection limit.

Comments: Hare GC "C" #1 Sep Pit C4364

Tony Tristano
Analyst

Morris D. Young
Review

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location	SEP. PIT #	ANALYSIS/PARAMETERS						C4364
AUCO # 92140	HARE GC "C" #1		No. of Containers	BTEX					Remarks
Sampler: (Signature)	Chain of Custody Tape No.	Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix			
R. E. O'Neil		(7) WARE @ 14'	4-6-94	1015	7154	WATER	2	✓	RUSH
Relinquished by: (Signature) R. E. O'Neil			Date 4-6-94	Time 1325	Received by: (Signature) <i>Tony Tristano</i>		Date 4/6/94	Time 1325	
Relinquished by: (Signature)					Received by: (Signature)				
Relinquished by: (Signature)					Received by: (Signature)				

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

San Juan Metro Form 57B-81



STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

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

April 22, 1999

CERTIFIED MAIL
RETURN RECEIPT NO: Z-274-520-642

Ms. Nina Hutton
Cross Timbers Oil Company
810 Houston St., Suite 2000
Fort Worth, Texas 76102-6298

RE: PIT CLOSURE/GROUND WATER MONITORING REPORTS

Dear Ms. Hutton:

The New Mexico Oil Conservation Division (OCD) has reviewed Cross Timbers Oil Company's (CTOC) February 17, 1999 "CROSS TIMBERS OIL CO. (AMOCO) PIT CLOSURE/GROUNDWATER MONITORING REPORTS, SAN JUAN COUNTY, NEW MEXICO" which was submitted on behalf of CTOC by their consultant Blagg Engineering, Inc. This document contains the results of CTOC's investigation, remediation and monitoring of ground water contamination related to the disposal of oilfield wastes in unlined pits at 20 sites in the San Juan Basin and requests closure of the remedial actions.

Below is the OCD's review of the above referenced documents:

- A. The soil and ground water remedial actions at the sites listed below are satisfactory and the OCD **approves** of the closure of these pit sites. Please be advised that OCD approval does not relieve CTOC of liability if remaining contaminants pose a future threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve CTOC of responsibility for compliance with any other federal, state, tribal or local laws and regulations.

- | | |
|--|------------------------------|
| 1. Abrams GC C #1 (Blow pit) | Unit F, Sec. 25, T29N, R10W. |
| 2. Anderson GC A#1 (Blow pit) | Unit C, Sec. 28, T29N, R10W. |
| 3. Armenta GC A#1 (Blow pit) | Unit D, Sec. 27, T29N, R10W. |
| 4. Baca GC A#1 (Blow pit) | Unit H, Sec. 26, T29N, R10W. |
| 5. Baca GC A#1 (Dehy pit) | Unit H, Sec. 26, T29N, R10W. |
| 6. Chavez GC C#1R (Blow/seperator pit) | Unit J, Sec. 23, T29N, R10W. |
| 7. Federal GC 3-1 (Blow pit) | Unit N, Sec. 23, T29N, R10W. |
| 8. Garcia GC B#1E (Blow pit) | Unit M, Sec. 21, T29N, R10W. |
| 9. Hare GC C#1 (Blow pit) | Unit M, Sec. 25, T29N, R10W. |
| 10. Hare GC C#1E (Blow pit) | Unit F, Sec. 25, T29N, R10W. |

- | | | |
|-----|----------------------------------|------------------------------|
| 11. | Hare GC F#1 (Separator pit) | Unit G, Sec. 23, T29N, R11W. |
| 12. | Lefkovitz GC B#1 (Blow pit) | Unit A, Sec. 25, T29N, R10W. |
| 13. | Lefkovitz GC B#1 (Separator pit) | Unit A, Sec. 25, T29N, R10W. |
| 14. | Masden GC #1 (Separator pit) | Unit A, Sec. 28, T29N, R11W. |
| 15. | Romero GC A#1 (Separator pit) | Unit K, Sec. 27, T29N, R10W. |
| 16. | Stedje GC #1 (Blow pit) | Unit F, Sec. 27, T30N, R12W. |
| 17. | Stedje GC #1E (Separator pit) | Unit A, Sec. 27, T30N, R12W. |
| 18. | Trujillo GC A#1 (Blow pit) | Unit C, Sec. 28, T29N, R10W. |

B. The sites listed below have chloride and/or total dissolved solids (TDS) contamination of ground water in excess of New Mexico Water Quality Control Commission (WQCC) standards. In addition, the downgradient and/or lateral extent of chloride and/or TDS contamination in ground water at these sites has not been completely defined. Therefore, approval of the closure actions at these sites is **denied**. The OCD requires that CTOC investigate the extent of and remediate these contaminants at each site pursuant to the previously approved ground water management plan.

- | | | |
|----|------------------------------------|------------------------------|
| 1. | Baca GC A #1A (Blow/separator pit) | Unit F, Sec. 26, T29N, R10W. |
| 2. | Haney GC B#1E (Separator pit) | Unit M, Sec. 20, T29N, R10W. |

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

Sincerely,



William C. Olson
Hydrologist
Environmental Bureau

xc: Denny Foust, OCD Aztec District Office
Bill Liess, BLM Farmington District Office
Nelson Velez, Blagg Engineering, Inc.