Larson & Associates, Inc.
Environmental Consultants

July 26, 2002

Mr. Paul R. Sheeley
Environmental Engineer
New Mexico Oil Conservation Division
1625 N. French Drive
Hobbs, New Mexico 88240

RE: Produced Water Spill Investigation Report, Texaco Exploration and Production, Inc., Vacuum Glorietta West Unit, ABO Flow Line, UL-D, Section 6, Township 18 South, Range 35 East, Lea County, New Mexico.

Dear Mr. Sheeley:

Texaco Exploration and Production, Inc. (Texaco) has retained Larson and Associates, Inc. (LA) to investigate a produced water spill that occurred from the ABO flow line (Site) Unit Letter D (NW/4, NW/4), Section 6, Township 18 South, Range 35 East, Lea County, New Mexico. The SBO flow line is associated with the Vacuum Glorietta West Unit. This report presents findings of that investigation. The spill involved produced water from a polyethylene flow line on April 24, 2002. Texaco recovered as much fluid as possible, and tilled the area. The tilled area covered approximately 0.5 acres (150 x 150 feet). Figure 1 presents a location and topographic map. Figure 2 presents a detailed drawing for the Site.

Setting

The Site is located approximately 17 miles northwest of Hobbs, New Mexico, at an elevation approximately 3975 feet above mean sea level (AMSL). A thin veneer of unconsolidated wind-blown sand (Recent-age) covers the Site, and overlies the Ogallala formation (Tertiary-age). The Ogallala formation consists of poorly to well-cemented sand and sandstone, interbedded with clay, silt and gravel. The Ogallala formation overlies the Triassic-age Chinle formation (commonly referred to as "red bed") consisting chiefly of mudstone, shale and sandstone. Groundwater has been observed at depths from approximately 110 to 130 feet below ground surface (BGS) in borings and monitoring wells drilled near the Site.

Current Investigation

LA was requested to perform an electromagnetic (EM) terrain conductivity survey at the Site to evaluate the vertical and horizontal extent of the spill, and to collect soil samples from a boring. The EM survey was performed using an EM-34 terrain conductivity meter manufactured by Geonics Limited, Missasauga, Ontario, Canada. The EM-34 meter requires 2 persons to operate, and consists of a transmitter, transmitter coil, receiver coil and receiver consol. The EM-34 has a depth of exploration that ranges from 0 to approximately 200 feet BGS, depending on the distance of separation between the transmitter and receiver coils (coil separation), as well as the orientation of the transmitter and receiver coils (i.e., vertical or horizontal coplanar. Shallow conductivity measurements are acquired while the transmitter and receiver coils are oriented vertical coplanar or horizontal dipole (HD) mode. Deeper conductivity measurements are

Chev/Texaco - 216419
facility - fPAC0605447469

incident - nPAC0605447681
application - pPAC0605447818

507 North Marienfeld, Suite 202 ◆ Midland, Texas 79701 ◆ Ph. (915) 687-0901 ◆ Fax (915) 687-0456

acquired while the transmitter and receiver coils are oriented horizontal coplanar or vertical dipole (VD) mode. The EM technique measures the electrical properties (i.e., conductivity) of soil and rock, as well as the electrical properties of groundwater. The EM method has been employed successfully to identify and delineate impacts to soil and groundwater involving produced water. The major factor that contributes to the conductivity of soil and rock is the conductivity of the formation water. The conductivity of the formation water depends primarily on the dissolved solids content. The EM induction technique utilizes current flow induced in the subsurface materials by a surface transmitter. An alternating electric current produced by a transmitter coil generates an alternating magnetic field that induces current flow through the earth material. The secondary magnetic field sensed by the receiver coil depends on the strength of the primary magnetic field, current frequency, distance between transmitting and receiving coils, and ground conductivity. The primary magnetic field, current frequency, and coil separation can be accounted for, leaving ground conductivity as the only unknown variable to be measured. The ground conductivity is digitally displayed in millimhos per meter (mmhos/m) at the receiver consol.

The EM-34 survey was performed using a 10-meter coil separation in the HD mode (0 to 24.6 feet), 20-meter coil separation in the HD mode (0 to 49.2 feet) and VD mode (0 to 98.4 feet). A sample grid measuring approximately 70,000 square feet (200 x 350 feet) was established at the Site using a Nikon total station system (TSS). Measurement stations were established inside the sample grid approximately every 50 feet for a total of forty (40) stations. Three (3) EM-34 measurements were collected at each station for a total of 120 conductivity measurements, including background. The EM-34 measurement stations are shown on Figure 2. The measurements collected during the EM-34, 10-meter (HD) and 20-meter (HD and VD) surveys are presented as contoured drawings in Figure 3 (10-meter HD), Figure 4 (20-meter HD) and Figure 5 (20-meter VD). Appendix A presents the EM-34 data sheets.

A soil boring was drilled in the area of the highest conductivity values recorded by the EM-34 on June 19, 2002. The boring was drilled by Scarborough Drilling, Inc. using an air rotary drilling rig, and soil samples were collected at the surface, and approximately every ten (10) feet using a split-spoon sampler. The split-spoon sampler was thoroughly washed between sample events, and the drilling rig and associates equipment (i.e., bit, rods, etc.) were washed with a high-pressure hot water washer before drilling. The boring was advanced to approximately 50 feet BGS, and drill cuttings were placed on the ground adjacent to the boring. The soil samples were placed in clean glass sample jars, labeled, chilled in an ice chest, and delivered under chain-of-custody control to Environmental Lab of Texas, Inc., located in Odessa, Texas. A portion of each sample was also placed in a clean glass sample jar for headspace analysis. The headspace jars were filled approximately ¾ full, and a layer of aluminum foil was placed over the opening of the jar before replacing the cap. The headspace samples were set aside and allowed to warm up to ambient temperature before a RAE Instruments, Model 2000 photoionization detector (PID) was used to measure the concentration of organic vapors in the headspace sample. The PID probe was inserted into the headspace of the sample jars (through the aluminum foil), and the concentration of organic vapors was displayed by the instrument in parts per million (ppm). The NMOCD allows a PID measurement of less than 100 ppm to substitute a laboratory analysis for benzene and total BTEX. However, the PID measurement cannot be used as a substitute for TPH analysis by a laboratory. Soil samples that exhibited PID readings above 100 ppm included: 1'

(>1999 ppm), 10' (>1999), 20' (>1999 ppm), 30' (>1999 ppm) and 40' (675.6 ppm). The sample from approximately 50 feet BGS recorded a PID reading of 16.8 ppm. All samples were analyzed for chloride using EPA method SW-846-9253. The samples from 1', 10', 30' and 50' were also analyzed for benzene, toluene, ethylbenzene, xylene (collectively referred to as BTEX) using EPA method SW-846-8021B, and total petroleum hydrocarbons (TPH) using method SW-846-8015 for gasoline range organics (GRO) and diesel range organic (DRO). Table 1 presents a summary of the PID and laboratory analysis. The PID readings are also graphically displayed on the boring log presented in Appendix B. Appendix C presents the laboratory report.

Investigation Results

Referring to Figure 3 (EM-34, 10-meter HD, 0 to 24.6 feet), the background value for the Site was 5.0 mmhos/m. EM-34, 10-meter HD measurements within the spill area ranged from background to greater than six (6) times background. EM-34, 10-meter HD measurements greater than two (2) times background were recorded at stations 50 north/50 east (10.1 mmhos/m), and 250 north/100 east (11.8 mmhos/m). EM-34, 10-meter HD readings exceeded approximately three (3) times background at locations 200 north/100 east and 250 north/150 east (18.1 mmhos/m). The EM-34, 10-meter HD measurement exceeded five (5) times background at locations 150 north/100 east (27.3 mmhos/m), and 200 north/50 east (25.1 mmhos/m). EM-34, 10-meter HD measurements greater than six (6) times background were recorded at locations 100 north/50 east (34.1 mhos/m), and 150 north/50 east (32.1 mmhos/m).

Referring to Figure 4 (EM-34, 20-meter HD, 0 to 49.2 feet), the background reading was 6.8 mmhos/m. EM-34, 20-meter HD measurements within the spill area ranged from background to greater than three (3) times background. EM-34, 20-meter HD measurements greater than two (2) times background were recorded at stations 50 north/50 east and 200 north/50 east (19.4 mmhos/m), and 200 north/100 east (15.8 mmhos/m). EM-34, 20-meter HD measurements greater than three (3) times background were recorded at stations 100 north/50 east (21.4 mmhos/m), and 150 north/50 east (25.2 mmhos/m).

Referring to Figure 5 (EM-34, 20-meter VD, 0 to 98.4 feet), the background reading was 9.4 mmhos/m. EM-34, 20-meter VD measurements within the spill area ranged from background to greater than three (3) times background. An EM-34, 20-meter VD measurements greater than two (2) times background was recorded at station 100 north/100 east (21.0 mmho/m), and may be attributed to metallic interference from an underground pipeline at the surveyed station. An EM-34, 20-meter VD measurements greater than three (3) times background was recorded at station 150 north/50 east (29.7 mmhos/m). The EM-34 conductivity survey recorded the greatest conductivity values in the vicinity of stations 100 north/50 east, and 150 north/50 east. Boring BH-1 was drilled in the area of the highest EM-34 readings.

The NMOCD has established soil remediation action levels (RRAL) for benzene, total BTEX and TPH resulting from spills involving crude oil ("Guidelines for Remediation of Leaks, Spills and Releases, August 13, 1993"). Remediation levels for benzene, total BTEX and TPH were calculated using the following NMOCD criteria:

Criteria	Result	Ranking Score
Depth-to-Groundwater	>100 Feet	0
Wellhead Protection Area	No	0
Distance to Surface Water Body	>1000 Horizontal Feet	0
		Total: 0

The following RRALs have been assigned to the Site based on NMOCD criteria:

Benzene	**10 mg/kg**
Total BTEX	**50 mg/kg**
TPH	**5000 mg/kg**

Referring to Table 1, neither benzene, total BTEX nor TPH were reported above the RRAL in any sample. The NMOCD does not have an RRAL for chloride in soil, although it has applied the New Mexico Water Quality Control Commission (NMWQCC) groundwater standard of 250 milligrams per liter (mg/L) as an action level for chloride in soil. The only soil sample elevated above the drinking water standard was the surface sample (1'), which recorded a chloride value of 3,490 mg/kg. The results of chloride analysis appear to correlate well with EM-34, 10-meter HD and 20-meter HD measurements.

Recommendations

The horizontal and vertical extent of impact from the spill was determined from the investigations. The impact is limited to an elevated chloride level in the approximate upper 1 foot of the unsaturated zone soil. Please call Mr. Rodney G. Bailey at (915) 687-7100 or myself at (915) 687-0901 if you have questions.

Sincerely,

Larson and Associates, Inc.

Mark J. Larson, CPG, CGWP
President

Encl.

cc: Mr. Rodney G. Bailey - ChevronTexaco
Mr. William C. Olson – NMOCD Hydrologist

Texaco Exploration and Production Inc.
Permian Business Unit
15 Smith Road
Midland, TX 79705
Tel (915) 687-7251
Fax (915) 687-7110
bailerg@chevrontexaco.com

Rodney Bailey
HES Champion

ChevronTexaco

Date: August 1, 2002

New Mexico Oil Conservation Division
1625 N. French Drive
Hobbs New Mexico 88240
Attn Paul Sheeley

Re: Produce Water Spill Investigation
ABO Flow line

Dear Mr. Sheeley;

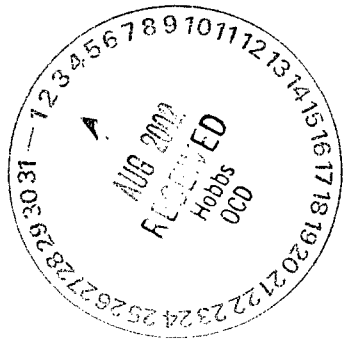
Attached is the investigation report for the ABO spill that occurred on 4-29-02. Also a revised C141 is included. The original C-141 stated the wrong location. As the report shows the impact is limited to an elevated chloride level in the approximate upper 1 foot of the unsaturated zone soil.

If you have any question please call me at 915-687-7251.

Sincerely,

Rodney Bailey

ChevronTexaco
Rodney Bailey
HES Champion



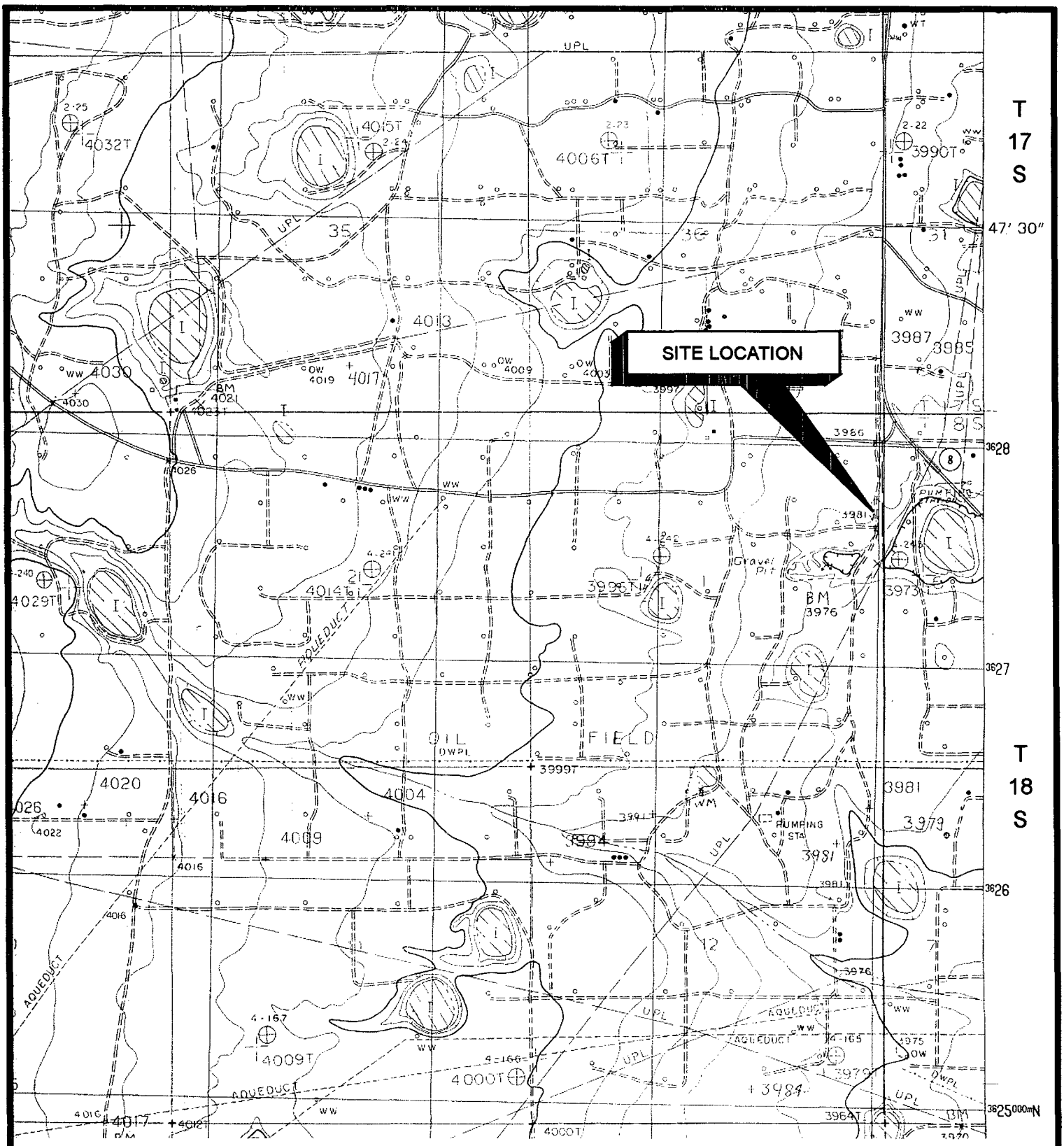
TABLES

Table 1: **Summary of BTEX, TPH and Chloride Analysis of Soil Samples**
Texaco Vacuum Unit ABO Flow Line
UL-D, Sec. 6, T18S, R35E, Lea County, New Mexico

Borehole Number	Sample Date	Sample Depth (feet BGS)	PID (ppm)	Benzene mg/kg	Total BTEX mg/kg	DRO >C12-C35 mg/kg	GRO C6-C12 mg/kg	TPH (C6-C35) mg/kg	Chloride mg/kg
BH-1	6/19/2002	0-10"	>1999	<0.025	<0.125	<10.0	<10.0	<20.0	3490.00
BH-1	6/19/2002	10-11'	>1999	<0.025	<0.125	<10.0	<10.0	<20.0	118.0
BH-1	6/19/2002	20-21'	>1999	----	----	----	----	----	68.2
BH-1	6/19/2002	30-31'	>1999	<0.025	<0.125	<10.0	<10.0	<20.0	127.0
BH-1	6/19/2002	40-41'	675.6	----	----	----	----	----	81.8
BH-1	6/19/2002	50-51'	16.8	<0.025	<0.125	<10.0	<10.0	<20.0	29.5

Notes: All analyses performed by Environmental Lab of Texas I, LTD., Midland, Texas
1. BGS: Depth in feet below ground surface
2. mg/kg: Concentration in milligrams per kilogram
3. <: Concentration below test method detection limit
4. ---: No data available

FIGURES



TAKEN FROM U.S.G.S.
BUCKEYE, NEW MEXICO 1985
7.5' QUADRANGLES

SCALE: 1"=2000'

FIGURE # 1

LEA COUNTY, NEW MEXICO

TEXACO EXPLORATION and PRODUCTION INC.

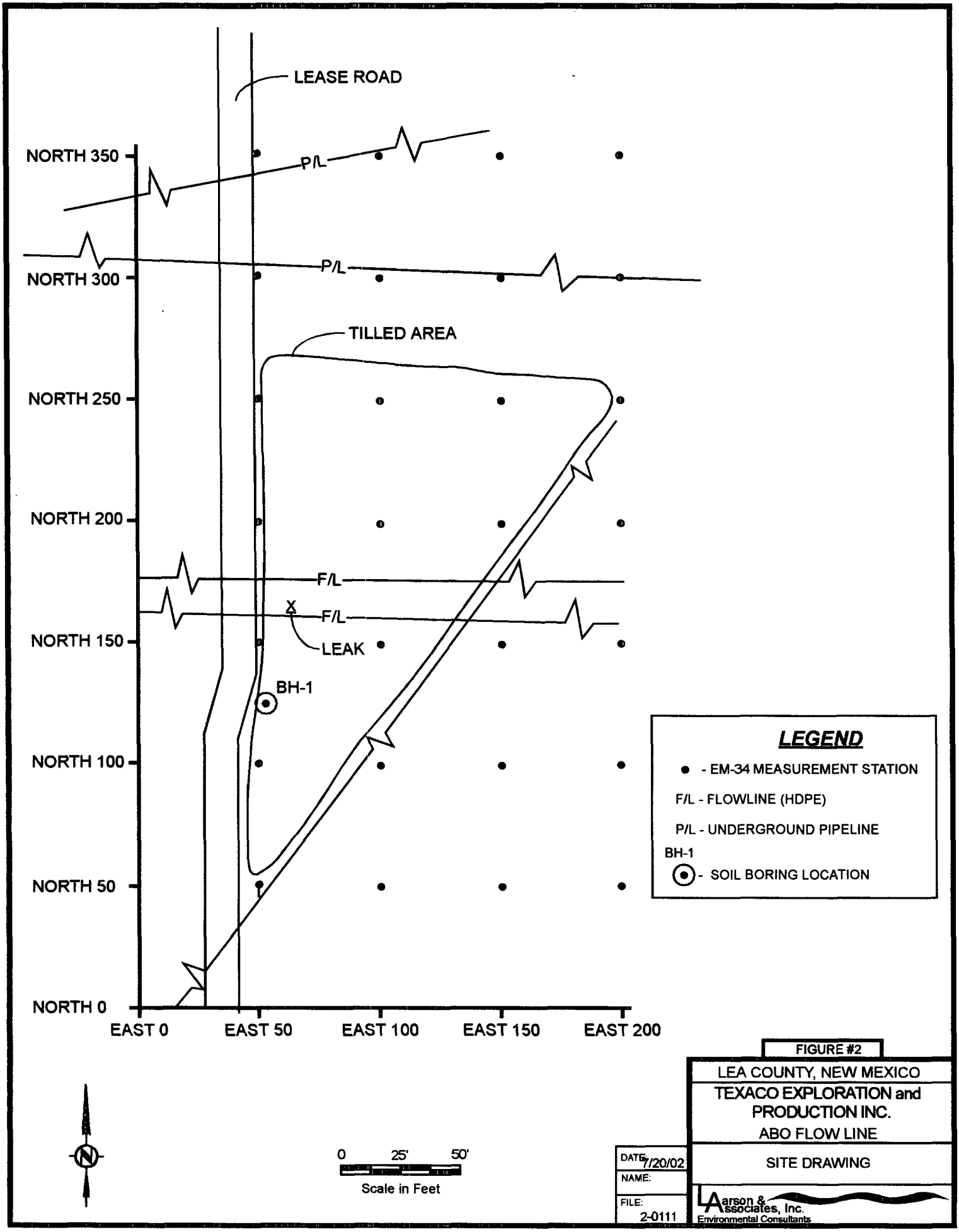
VACUUM UNIT ABO FLOW LINE

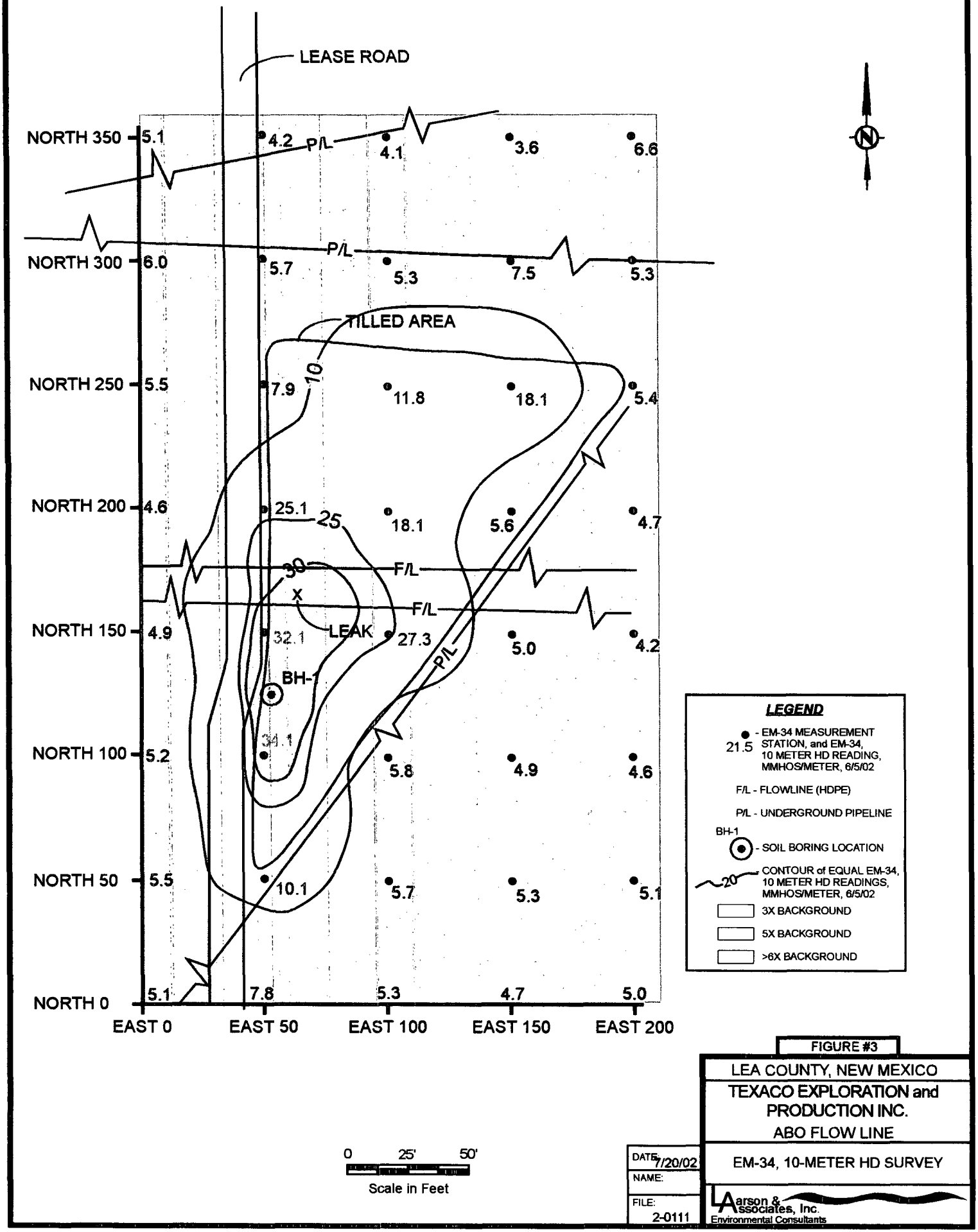
UL-D SEC 6, T18S, R35E

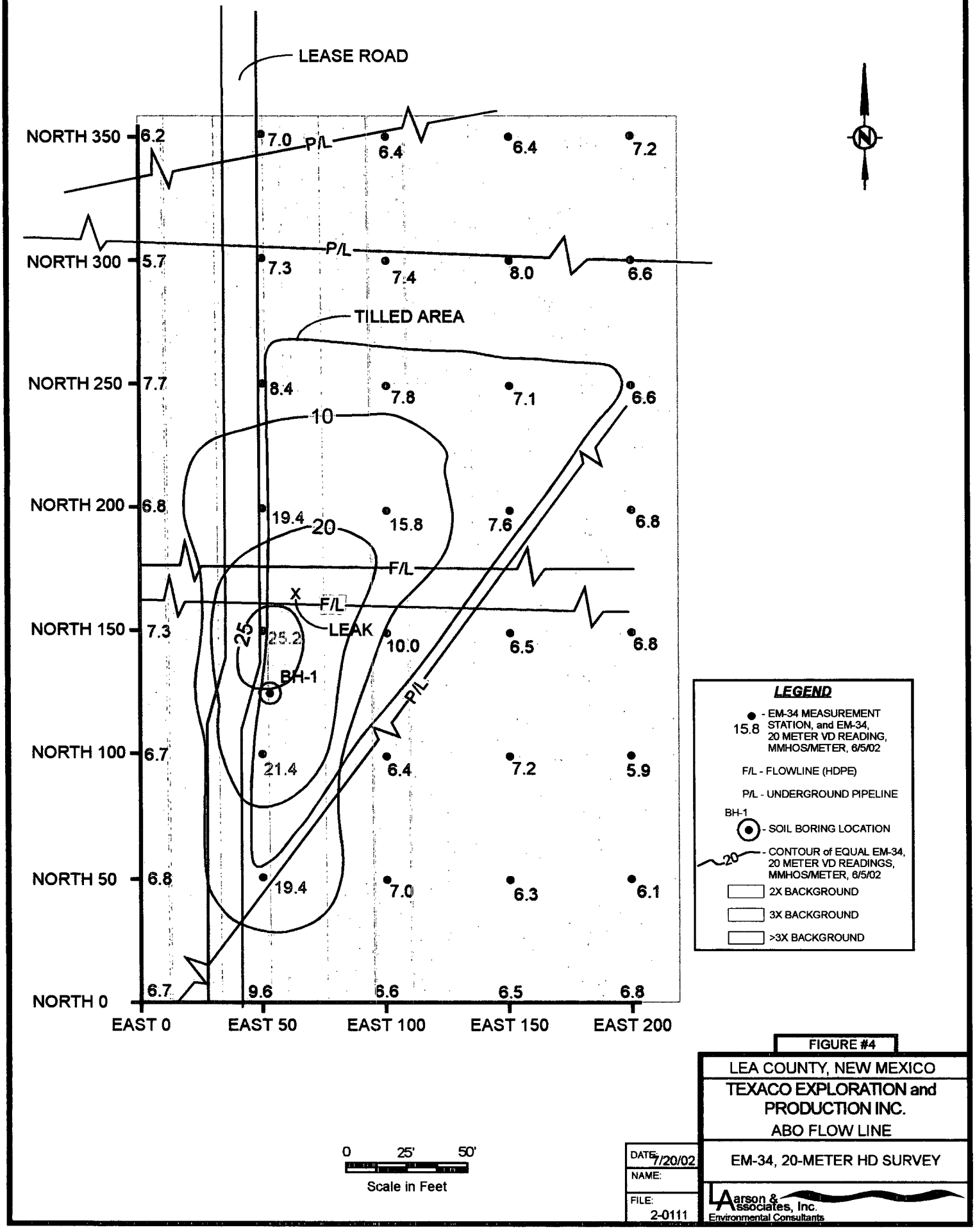
TOPOGRAPHIC MAP

DATE:	07/18/02
NAME:	CC
FILE:	2-0102

Larson & Associates, Inc.
Environmental Consultants


LEASE ROAD
NORTH 350
P/L
NORTH 300
P/L
TILLED AREA
NORTH 250
NORTH 200
F/L
F/L
LEAK
NORTH 150
BH-1
NORTH 100
NORTH 50
NORTH 0
EAST 0
EAST 50
EAST 100
EAST 150
EAST 200
LEGEND
- EM-34 MEASUREMENT STATION
F/L - FLOWLINE (HDPE)
P/L - UNDERGROUND PIPELINE
BH-1
- SOIL BORING LOCATION
0
25'
50'
Scale in Feet
FIGURE #2
LEA COUNTY, NEW MEXICO
TEXACO EXPLORATION and PRODUCTION INC.
ABO FLOW LINE
SITE DRAWING
DATE: 7/20/02
NAME:
FILE: 2-0111
Larson & Associates, Inc.
Environmental Consultants


LEASE ROAD
NORTH 350
NORTH 300
NORTH 250
NORTH 200
NORTH 150
NORTH 100
NORTH 50
NORTH 0
EAST 0
EAST 50
EAST 100
EAST 150
EAST 200
5.1
4.2
4.1
3.6
6.6
P/L
6.0
5.7
5.3
7.5
5.3
TILLED AREA
10
5.5
7.9
11.8
18.1
5.4
4.6
25.1
25
18.1
5.6
4.7
30
F/L
X
LEAK
4.9
32.1
27.3
5.0
4.2
BH-1
34.1
5.2
5.8
4.9
4.6
5.5
10.1
5.7
5.3
5.1
5.1
7.8
5.3
4.7
5.0
LEGEND
21.5 - EM-34 MEASUREMENT STATION, and EM-34, 10 METER HD READING, MMHOS/METER, 6/5/02
F/L - FLOWLINE (HDPE)
P/L - UNDERGROUND PIPELINE
BH-1 - SOIL BORING LOCATION
20 - CONTOUR of EQUAL EM-34, 10 METER HD READINGS, MMHOS/METER, 6/5/02
3X BACKGROUND
5X BACKGROUND
>6X BACKGROUND
0 25' 50'
Scale in Feet
FIGURE #3
LEA COUNTY, NEW MEXICO
TEXACO EXPLORATION and PRODUCTION INC.
ABO FLOW LINE
EM-34, 10-METER HD SURVEY
DATE: 7/20/02
NAME:
FILE: 2-0111
Larson & Associates, Inc.
Environmental Consultants


LEASE ROAD
NORTH 350
NORTH 300
NORTH 250
NORTH 200
NORTH 150
NORTH 100
NORTH 50
NORTH 0
EAST 0
EAST 50
EAST 100
EAST 150
EAST 200
6.2
7.0
6.4
6.4
7.2
P/L
5.7
7.3
7.4
8.0
6.6
TILLED AREA
7.7
8.4
7.8
7.1
6.6
10
6.8
19.4
15.8
7.6
6.8
20
F/L
X
F/L
LEAK
7.3
25
25.2
10.0
6.5
6.8
BH-1
P/L
6.7
21.4
6.4
7.2
5.9
6.8
19.4
7.0
6.3
6.1
6.7
9.6
6.6
6.5
6.8
LEGEND
15.8 - EM-34 MEASUREMENT STATION, and EM-34, 20 METER VD READING, MMHOS/METER, 6/5/02
F/L - FLOWLINE (HDPE)
P/L - UNDERGROUND PIPELINE
BH-1 - SOIL BORING LOCATION
20 - CONTOUR of EQUAL EM-34, 20 METER VD READINGS, MMHOS/METER, 6/5/02
2X BACKGROUND
3X BACKGROUND
>3X BACKGROUND
0
25'
50'
Scale in Feet
FIGURE #4
LEA COUNTY, NEW MEXICO
TEXACO EXPLORATION and PRODUCTION INC.
ABO FLOW LINE
EM-34, 20-METER HD SURVEY
DATE: 7/20/02
NAME:
FILE: 2-0111
Larson & Associates, Inc.
Environmental Consultants

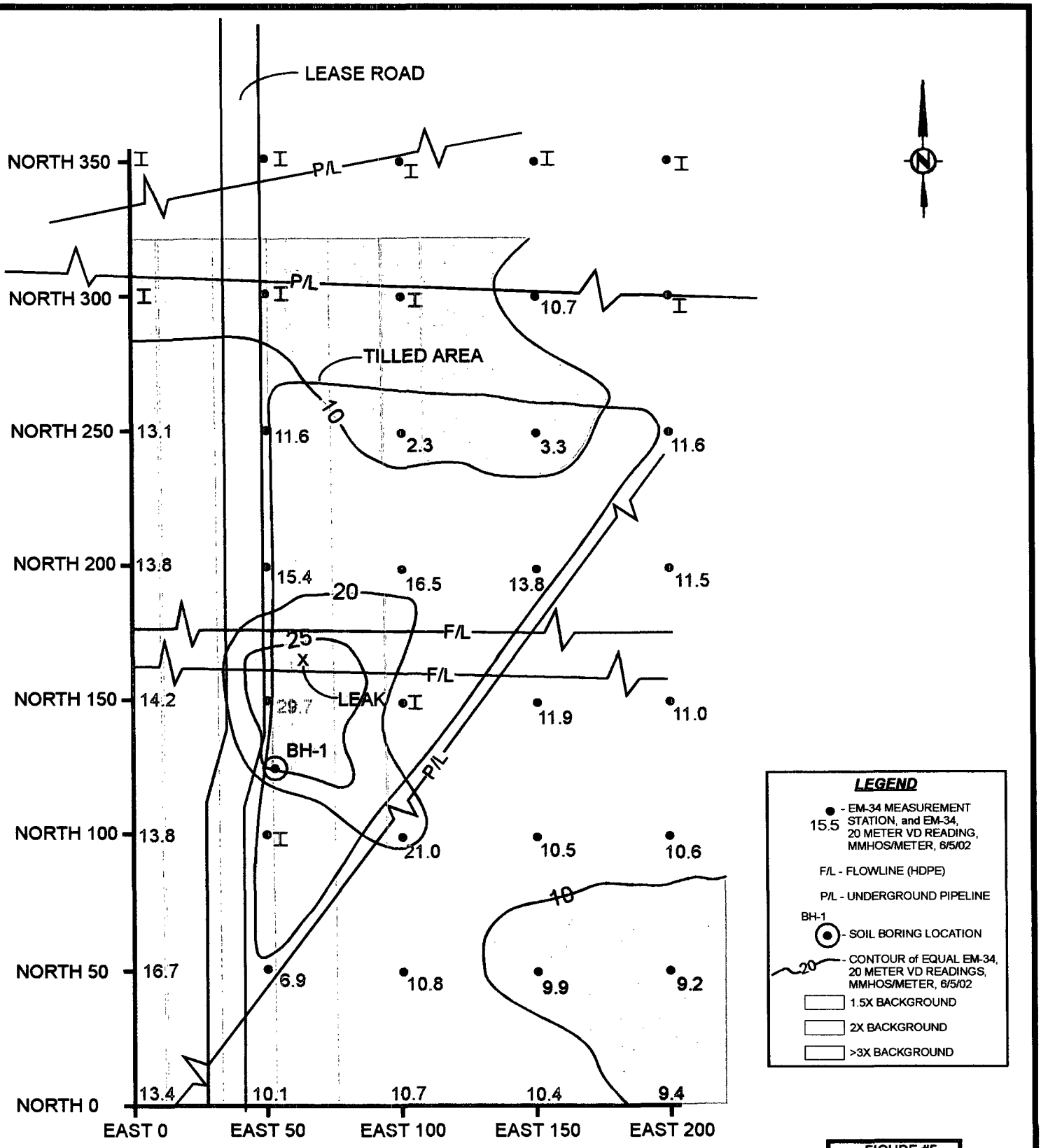


FIGURE #5

LEA COUNTY, NEW MEXICO

TEXACO EXPLORATION and PRODUCTION INC.

ABO FLOW LINE

EM-34, 20-METER VD SURVEY

DATE: 7/20/02

NAME:

FILE: 2-0111

Aarson & Associates, Inc.
Environmental Consultants

APPENDIX A

EM Survey Field Sheets

Texaco Exploration and Production Inc.
Vacuum Unit ABO Flowline
EM-34 Survey

Profile:	200 East	**Date:**	05-June-02
Spacing (Ft):	50	**Start:**	1110
Direction:	S-N	**Stop:**	1120

STATION	Scale	10-Meter HD (mmhos/meter)	20-Meter HD (mmhos/meter)	20-Meter VD (mmhos/meter)	NOTES
0 North		5.0	6.8	9.4	
50 North		5.1	6.1	9.2	
100 North		4.6	5.9	10.6	
150 North		4.2	6.8	11.0	
200 North		4.7	6.8	11.5	
250 North		5.4	6.6	11.6	
300 North		5.3	6.6	I	Pipeline (SW-NE) at station
350 North		6.6	7.2	I	

Notes:
1. I: Interference

Texaco Exploration and Production Inc.
Vacuum Unit ABO Flowline
EM-34 Survey

Profile:	0 East	**Date:**	05-June-02
Spacing (Ft):	50	**Start:**	0950
Direction:	N - S	**Stop:**	1000

STATION	Scale	10-Meter HD (mmhos/meter)	20-Meter HD (mmhos/meter)	20-Meter VD (mmhos/meter)	NOTES
0 North		5.1	6.7	13.4	Pipeline (SW-NE) 7' south
50 North		5.5	6.8	16.7	
100 North		5.2	6.7	13.8	
150 North		4.9	7.3	14.2	
200 North		4.6	6.8	13.8	
250 North		5.5	7.7	13.1	Flowlines (E-W) 15' south
300 North		6.0	5.7	I	Pipeline (E-W)
350 North		5.1	6.2	I	Pipeline (E-W)

Notes:
1. I: Interference

Texaco Exploration and Production Inc.
Vacuum Unit ABO Flowline
EM-34 Survey

Profile:	50 East	**Date:**	05-June-02
Spacing (Ft):	50	**Start:**	1010
Direction:	S - N	**Stop:**	1020

STATION	Scale	10-Meter HD (mmhos/meter)	20-Meter HD (mmhos/meter)	20-Meter VD (mmhos/meter)	NOTES
0 North		7.8	9.6	10.1	
50 North		10.1	19.4	6.9	Pipeline (SW-NE) 7' north
100 North		34.1	21.4	I	Pipeline (SW-NE) 20' south
150 North		32.1	25.2	29.7	
200 North		25.1	19.4	15.4	
250 North		7.9	8.4	11.6	
300 North		5.7	7.3	I	Pipeline (E-W) 15' north
350 North		4.2	7.0	I	Edge of lease road

Notes:
1. I: Interference

Texaco Exploration and Production Inc.
Vacuum Unit ABO Flowline
EM-34 Survey

Profile:	100 East	**Date:**	05-June-02
Spacing (Ft):	50	**Start:**	1025
Direction:	N - S	**Stop:**	1035

STATION	Scale	10-Meter HD (mmhos/meter)	20-Meter HD (mmhos/meter)	20-Meter VD (mmhos/meter)	NOTES
0 North		5.3	6.6	10.7	
50 North		5.7	7.0	10.8	
100 North		5.8	6.4	21.0	Pipeline (SW-NE) 25' east
150 North		27.3	10.0	I	Pipeline (SE-NW) 21' south
200 North		18.1	15.8	16.5	Flowlines (E-W) 15' south
250 North		11.8	7.8	2.3	Pipeline (E-W) 15' north
300 North		5.3	7.4	I	Pipeline (E-W) 15' north
350 North		4.1	6.4	I	Pipeline (E-W) at station

Notes:
1. I: Interference

Texaco Exploration and Production Inc.
Vacuum Unit ABO Flowline
EM-34 Survey

Profile:	150 East	**Date:**	05-June-02
Spacing (Ft):	50	**Start:**	1055
Direction:	N-S	**Stop:**	1105

STATION	Scale	10-Meter HD (mmhos/meter)	20-Meter HD (mmhos/meter)	20-Meter VD (mmhos/meter)	NOTES
0 North		4.7	6.5	10.4	
50 North		5.3	6.3	9.9	Pipeline (SW-NE) 7' north
100 North		4.9	7.2	10.5	Pipeline (SW-NE) 20' south
150 North		5.0	6.5	11.9	
200 North		5.6	7.6	13.8	
250 North		18.1	7.1	3.3	
300 North		7.5	8.0	10.7	Pipeline (SW-NE) 15' south
350 North		3.6	6.4	I	Pipeline (E-W) 10' north

Notes:
1. I: Interference

APPENDIX B

Soil Boring Log

Client: Texaco

Project: Abo Flow Line

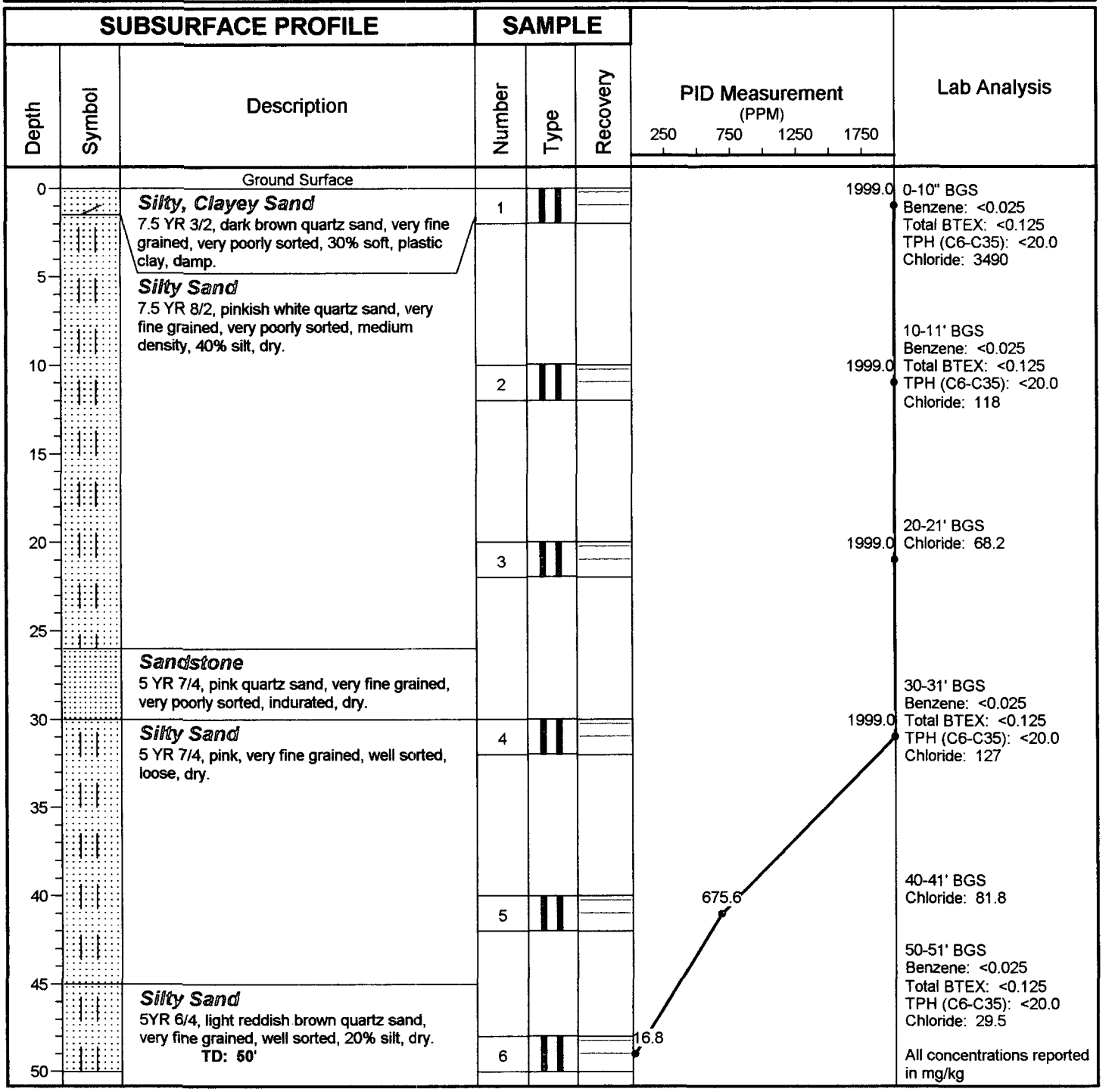
Project No: 2-0111

Location: UL-D, Sec 6, T18S, R35E, Lea Co., NM

Log of Borehole: BH-1

Geologist: Cindy K. Crain

Page: 1 of 1



Drilling Method: Rotary

Date Drilled: 6/19/02

Hole Size: 7 7/8"

Larson and Associates, Inc.
507 North Marienfeld St., Ste. 202
Midland, Texas 79701
(915) 687-0901

Checked by: CKC

Drilled by: Scarborough Drilling, Inc.

APPENDIX C

Laboratory Report

ANALYTICAL REPORT

Prepared for:

Cindy Crain
LARSON AND ASSOCIATES, INC.
P.O. BOX 50685
MIDLAND, TX 79710

Project:	Texaco/ Vacuum ABO Flowline
Order#:	G0203716
Report Date:	07/12/2002

Certificates
US EPA Laboratory Code TX00158

ENVIRONMENTAL LAB OF TEXAS

SAMPLE WORK LIST

LARSON AND ASSOCIATES, INC.
P.O. BOX 50685
MIDLAND, TX 79710
915-687-0456

Order#: G0203716
Project: 2-0111
Project Name: Texaco/ Vacuum ABO Flowline
Location: None Given

The samples listed below were submitted to Environmental Lab of Texas and were received under chain of custody. Environmental Lab of Texas makes no representation or certification as to the method of sample collection, sample identification, or transportation/handling procedures used prior to the receipt of samples by Environmental Lab of Texas.

Lab ID:	Sample :	Matrix:	Date / Time Collected	Date / Time Received	Container	Preservative
0203716-01	BH-1 (0-10")	SOIL	6/19/02 10:18	6/20/02 8:31	4 oz glass	Ice
	Lab Testing: 8015M, 8021B/5030 BTEX, Chloride	**Rejected:** No		**Temp:** 2.0 C		
0203716-02	BH-1 (10-11')	SOIL	6/19/02 10:27	6/20/02 8:31	4 oz glass	Ice
	Lab Testing: 8015M, 8021B/5030 BTEX, Chloride	**Rejected:** No		**Temp:** 2.0 C		
0203716-03	BH-1 (20-21')	SOIL	6/19/02 10:34	6/20/02 8:31	4 oz glass	Ice
	Lab Testing: Chloride	**Rejected:** No		**Temp:** 2.0 C		
0203716-04	BH-1 (30-31')	SOIL	6/19/02 10:45	6/20/02 8:31	4 oz glass	Ice
	Lab Testing: 8015M, 8021B/5030 BTEX, Chloride	**Rejected:** No		**Temp:** 2.0 C		
0203716-05	BH-1 (40-41')	SOIL	6/19/02 10:50	6/20/02 8:31	4 oz glass	Ice
	Lab Testing: Chloride	**Rejected:** No		**Temp:** 2.0 C		
0203716-06	BH-1 (50-51')	SOIL	6/19/02 11:08	6/20/02 8:31	4 oz glass	Ice
	Lab Testing: 8015M, 8021B/5030 BTEX, Chloride	**Rejected:** No		**Temp:** 2.0 C		

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

Cindy Crain
LARSON AND ASSOCIATES, INC.
P.O. BOX 50685
MIDLAND, TX 79710

Order#: G0203716
Project: 2-0111
Project Name: Texaco/ Vacuum ABO Flowline
Location: None Given

Lab ID: 0203716-01
Sample ID: BH-1 (0-10")

8015M

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
		6/20/02	1	1	CK	8015M

Parameter	Result mg/kg	RL
GRO, C6-C12	<10.0	10.0
DRO, >C12-C35	<10.0	10.0
TOTAL, C6-C35	<10.0	10.0

8021B/5030 BTEX

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0002129-02		6/20/02 20:56	1	25	CK	8021B

Parameter	Result mg/kg	RL
Benzene	<0.025	0.025
Ethylbenzene	<0.025	0.025
Toluene	<0.025	0.025
p/m-Xylene	<0.025	0.025
o-Xylene	<0.025	0.025

Lab ID: 0203716-02
Sample ID: BH-1 (10-11')

8015M

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
		6/20/02	1	1	CK	8015M

Parameter	Result mg/kg	RL
GRO, C6-C12	<10.0	10.0
DRO, >C12-C35	<10.0	10.0
TOTAL, C6-C35	<10.0	10.0

DL = Diluted out N/A = Not Applicable RL = Reporting Limit

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

Cindy Crain
LARSON AND ASSOCIATES, INC.
P.O. BOX 50685
MIDLAND, TX 79710

Order#: G0203716
Project: 2-0111
Project Name: Texaco/ Vacuum ABO Flowline
Location: None Given

Lab ID: 0203716-02
Sample ID: BH-1 (10-11')

8021B/5030 BTEX

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0002129-02		6/20/02 21:18	1	25	CK	8021B

Parameter	Result mg/kg	RL
Benzene	<0.025	0.025
Ethylbenzene	<0.025	0.025
Toluene	<0.025	0.025
p/m-Xylene	<0.025	0.025
o-Xylene	<0.025	0.025

Lab ID: 0203716-04
Sample ID: BH-1 (30-31')

8015M

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
		6/20/02	1	1	CK	8015M

Parameter	Result mg/kg	RL
GRO, C6-C12	<10.0	10.0
DRO, >C12-C35	<10.0	10.0
TOTAL, C6-C35	<10.0	10.0

DL = Diluted out N/A = Not Applicable RL = Reporting Limit

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

Cindy Crain
LARSON AND ASSOCIATES, INC.
P.O. BOX 50685
MIDLAND, TX 79710

Order#: G0203716
Project: 2-0111
Project Name: Texaco/ Vacuum ABO Flowline
Location: None Given

Lab ID: 0203716-04
Sample ID: BH-1 (30-31')

8021B/5030 BTEX

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0002129-02		6/20/02 21:41	1	25	CK	8021B

Parameter	Result mg/kg	RL
Benzene	<0.025	0.025
Ethylbenzene	<0.025	0.025
Toluene	<0.025	0.025
p/m-Xylene	<0.025	0.025
o-Xylene	<0.025	0.025

Lab ID: 0203716-06
Sample ID: BH-1 (50-51')

8015M

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
		6/20/02	1	1	CK	8015M

Parameter	Result mg/kg	RL
GRO, C6-C12	<10.0	10.0
DRO, >C12-C35	<10.0	10.0
TOTAL, C6-C35	<10.0	10.0

DL = Diluted out N/A = Not Applicable RL = Reporting Limit

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

Cindy Crain
LARSON AND ASSOCIATES, INC.
P.O. BOX 50685
MIDLAND, TX 79710

Order#: G0203716
Project: 2-0111
Project Name: Texaco/ Vacuum ABO Flowline
Location: None Given

Lab ID: 0203716-06
Sample ID: BH-1 (50-51')

8021B/5030 BTEX

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0002129-02		6/20/02 22:03	1	25	CK	8021B

Parameter	Result mg/kg	RL
Benzene	<0.025	0.025
Ethylbenzene	<0.025	0.025
Toluene	<0.025	0.025
p/m-Xylene	<0.025	0.025
o-Xylene	<0.025	0.025

Approval: Raland K Tuttle 7-12-02
Raland K. Tuttle, Lab Director, QA Officer — Date
Celey D. Keene, Org. Tech. Director
Jeanne McMurrey, Inorg. Tech. Director
Sandra Biezugbe, Lab Tech.
Sara Molina, Lab Tech.

DL = Diluted out N/A = Not Applicable RL = Reporting Limit

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

Cindy Crain
LARSON AND ASSOCIATES, INC.
P.O. BOX 50685
MIDLAND, TX 79710

Order#: G0203716
Project: 2-0111
Project Name: Texaco/ Vacuum ABO Flowline
Location: None Given

Lab ID: 0203716-01
Sample ID: BH-1 (0-10")

Test Parameters

Parameter	Result	Units	Dilution Factor	RL	Method	Date Analyzed	Analyst
Chloride	3490	mg/kg	1	10.0	9253	6/23/02	SB

Lab ID: 0203716-02
Sample ID: BH-1 (10-11')

Test Parameters

Parameter	Result	Units	Dilution Factor	RL	Method	Date Analyzed	Analyst
Chloride	118	mg/kg	1	10.0	9253	6/23/02	SB

Lab ID: 0203716-03
Sample ID: BH-1 (20-21')

Test Parameters

Parameter	Result	Units	Dilution Factor	RL	Method	Date Analyzed	Analyst
Chloride	68.2	mg/kg	1	10.0	9253	6/23/02	SB

Lab ID: 0203716-04
Sample ID: BH-1 (30-31')

Test Parameters

Parameter	Result	Units	Dilution Factor	RL	Method	Date Analyzed	Analyst
Chloride	127	mg/kg	1	10.0	9253	6/23/02	SB

Lab ID: 0203716-05
Sample ID: BH-1 (40-41')

Test Parameters

Parameter	Result	Units	Dilution Factor	RL	Method	Date Analyzed	Analyst
Chloride	81.8	mg/kg	1	10.0	9253	6/23/02	SB

Lab ID: 0203716-06
Sample ID: BH-1 (50-51')

Test Parameters

Parameter	Result	Units	Dilution Factor	RL	Method	Date Analyzed	Analyst
Chloride	29.5	mg/kg	1	10.0	9253	6/23/02	SB

RL = Reporting Limit N/A = Not Applicable

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

Cindy Crain	Order#:	G0203716
LARSON AND ASSOCIATES, INC.	Project:	2-0111
P.O. BOX 50685	Project Name:	Texaco/ Vacuum ABO Flowline
MIDLAND, TX 79710	Location:	None Given

Approval: Raland K Tuttle 7-12-02
Raland K. Tuttle, Lab Director, QA Officer Date
Celey D. Keene, Org. Tech. Director
Jeanne McMurrey, Inorg. Tech. Director
Sandra Biezugbe, Lab Tech.
Sara Molina, Lab Tech.

RL = Reporting Limit N/A = Not Applicable

ENVIRONMENTAL LAB OF TEXAS

QUALITY CONTROL REPORT

8015M

Order#: G0203716

BLANK SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
TOTAL, C6-C35-mg/kg	0002124-02			<10.0		
MS SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
TOTAL, C6-C35-mg/kg	0203716-06	0	952	1020	107.1%	
MSD SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
TOTAL, C6-C35-mg/kg	0203716-06	0	952	1010	106.1%	1.%
SRM SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
TOTAL, C6-C35-mg/kg	0002124-05		1000	933	93.3%	

ENVIRONMENTAL LAB OF TEXAS

QUALITY CONTROL REPORT

8021B/5030 BTEX

Order#: G0203716

BLANK SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Benzene-mg/kg	0002129-02			<0.025		
Ethylbenzene-mg/kg	0002129-02			<0.025		
Toluene-mg/kg	0002129-02			<0.025		
p/m-Xylene-mg/kg	0002129-02			<0.025		
o-Xylene-mg/kg	0002129-02			<0.025		
CONTROL SOIL	**LAB-ID #**	**Sample Concentr.**	**Spike Concentr.**	**QC Test Result**	**Pct (%) Recovery**	**RPD**
Benzene-mg/kg	0002129-03		0.1	0.090	90.%	
Ethylbenzene-mg/kg	0002129-03		0.1	0.090	90.%	
Toluene-mg/kg	0002129-03		0.1	0.086	86.%	
p/m-Xylene-mg/kg	0002129-03		0.2	0.185	92.5%	
o-Xylene-mg/kg	0002129-03		0.1	0.091	91.%	
CONTROL DUP SOIL	**LAB-ID #**	**Sample Concentr.**	**Spike Concentr.**	**QC Test Result**	**Pct (%) Recovery**	**RPD**
Benzene-mg/kg	0002129-04		0.1	0.093	93.%	3.3%
Ethylbenzene-mg/kg	0002129-04		0.1	0.093	93.%	3.3%
Toluene-mg/kg	0002129-04		0.1	0.088	88.%	2.3%
p/m-Xylene-mg/kg	0002129-04		0.2	0.190	95.%	2.7%
o-Xylene-mg/kg	0002129-04		0.1	0.094	94.%	3.2%
SRM SOIL	**LAB-ID #**	**Sample Concentr.**	**Spike Concentr.**	**QC Test Result**	**Pct (%) Recovery**	**RPD**
Benzene-mg/kg	0002129-05		0.1	0.092	92.%	
Ethylbenzene-mg/kg	0002129-05		0.1	0.090	90.%	
Toluene-mg/kg	0002129-05		0.1	0.088	88.%	
p/m-Xylene-mg/kg	0002129-05		0.2	0.186	93.%	
o-Xylene-mg/kg	0002129-05		0.1	0.094	94.%	

ENVIRONMENTAL LAB OF TEXAS

QUALITY CONTROL REPORT

Test Parameters

Order#: G0203716

BLANK SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Chloride-mg/kg	0002145-01			<10.0		
CONTROL SOIL	**LAB-ID #**	**Sample Concentr.**	**Spike Concentr.**	**QC Test Result**	**Pct (%) Recovery**	**RPD**
Chloride-mg/kg	0002145-02		5000	5050	101.%	
MS SOIL	**LAB-ID #**	**Sample Concentr.**	**Spike Concentr.**	**QC Test Result**	**Pct (%) Recovery**	**RPD**
Chloride-mg/kg	0203716-05	81.8	769	859	101.1%	
MSD SOIL	**LAB-ID #**	**Sample Concentr.**	**Spike Concentr.**	**QC Test Result**	**Pct (%) Recovery**	**RPD**
Chloride-mg/kg	0203716-05	81.8	769	859	101.1%	0.%

CHAIN—OF—CUSTODY RECORD

Larson & Associates, Inc.
Environmental Consultants
507 N. Marienfeld, Ste. 202 • Midland, TX 79701
Fax: 915-687-0456
915-687-0901

CLIENT NAME: Texaco

SITE MANAGER: Cindy Crain

PROJECT NO.: 2-0111

PROJECT NAME: Vacuum Satellite #6

PAGE 1 OF 1

LAB. PO #

DATE	TIME	WATER	SOIL	OTHER	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	PARAMETERS/METHOD NUMBER: Chlorides	BTEX 8021B	TPH 8015M	LAB. I.D. NUMBER (LAB USE ONLY)	REMARKS (I.E., FILTERED, UNFILTERED, PRESERVED, UNPRESERVED, GRAB COMPOSITE)
6/19/02	1018		✓		BH-1 (0-10')	1	✓	✓	✓	0203716-01	
"	1027		✓		BH-1 (10-11')	1	✓	✓	✓	02	
"	1034		✓		BH-1 (20-21')	1	✓			03	
"	1045		✓		BH-1 (30-31')	1	✓	✓	✓	04	
"	1050		✓		BH-1 (40-41')	1	✓			05	
"	1108		✓		BH-1 (50-51')	1	✓	✓	✓	06	

SAMPLED BY: (Signature) Cindy Crain
DATE: 6/19/02
TIME: 1435

RELINQUISHED BY: (Signature) Cindy Crain
DATE: 6/20/02
TIME: 0831

RELINQUISHED BY: (Signature)
DATE:
TIME:

RECEIVED BY: (Signature)
DATE:
TIME:

RECEIVED BY: (Signature)
DATE:
TIME:

SAMPLE SHIPPED BY: (Circle)
FEDEX BUS AIRBILL #:
HAND DELIVERED UPS OTHER:

COMMENTS:

TURNAROUND TIME NEEDED

WHITE – RECEIVING LAB
YELLOW – RECEIVING LAB (TO BE RETURNED TO LA AFTER RECEIPT)
PINK – PROJECT MANAGER
GOLD – QA/QC COORDINATOR

RECEIVING LABORATORY: Env. Lab of Tx
ADDRESS: 12600 W. I-20 E
CITY: Odessa STATE: Tx ZIP: 79765
CONTACT: PHONE: 563-1800

RECEIVED BY: (Signature) Jeanne McMurrey
DATE: 06-20-02 TIME: 0831

SAMPLE CONDITION WHEN RECEIVED: 2.0°c

LA CONTACT PERSON:

SAMPLE TYPE:

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 South First, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
2040 South Pacheco, Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
2040 South Pacheco
Santa Fe, NM 87505

Form C-141
Revised March 17, 1999

Submit 2 Copies to appropriate District Office in accordance with Rule 116 on back side of form

Release Notification and Corrective Action

OPERATOR

☐ Initial Report ☑ Final Report

Name of Company: Chevron Texaco	Contact: Rodney Bailey
Address: 15 Smith Road Midland Tx 79705	Telephone No.: 915-687-7251
Facility Name: ½ mile West of Vacuum Colorieta West Unit Battery	Facility Type: Abo Flow Line

Surface Owner	Mineral Owner	Lease No.

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
D	6	18S	35E					Lea

NATURE OF RELEASE

Type of Release: Produce Water	Volume of Release: 200 bbls	Volume Recovered: 180 bbls
Source of Release: Flowline	Date and Hour of Occurrence: 4-29-02	Date and Hour of Discovery: 4-29-02
Was Immediate Notice Given? ☑ Yes ☐ No ☐ Not Required	If YES, To Whom? Sylvia	
By Whom? Rodney Bailey	Date and Hour: 4-29-02	
Was a Watercourse Reached? ☐ Yes ☑ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

Report Attached - Horz & Vertical Extent determined. Site Closed -

Describe Area Affected and Cleanup Action Taken.*

RECEIVED Hobbs OCD

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: Rodney Bailey	OIL CONSERVATION DIVISION
Printed Name:	Approved by District Supervisor:
Title:	Approval Date: / Expiration Date:
Date: 8-1-02 Phone:	Conditions of Approval: / Attached ☐

* Attach Additional Sheets If Necessary