1R - 252

# GENERAL CORRESPONDENCE

## YEAR(S):

2002 - 1996

## Olson, William

**From:** Reed, Joe [JReed@arcadis-us.com]
**Sent:** Wednesday, March 20, 2002 9:07 AM
**To:** 'wolson@state.nm.us'
**Cc:** Elliott, Sandra; 'patterh@chevrontexaco.com'
**Subject:** MW-33, North Eunice Gas Plant

Mr. Olson:

As per our phone conversation yesterday morning, I am notifying you that we have unexpectedly encountered some form of hydrocarbon at a monitor well location south of the former Texaco North Eunice Gas Plant, Eunice, New Mexico, on City of Eunice Property. The well is located about 1,500 feet south of the plant, 400 feet southeast of the City's elevated water tower, and 900 feet west of Main Street. The monitor well was being drilled to define the outer limits of chromium contamination in the groundwater in the area. The monitor well is up-gradient from the North Eunice Gas Plant, and the source of hydrocarbon is not known at this time. Upon drilling from 40 feet below ground surface to the total depth (TD) of 62 feet, when the drill bit got to TD, stained cuttings started to surface and a sheen of hydrocarbon appeared on the drill pit. It is my estimation at this time that, with sample lag time, it is probable that the staining and hydrocarbon was encountered in the capillary fringe just above the water table at about 40 to 45 feet.

ARCADIS has placed 30 feet of screen in the monitor well from 32 to 62 feet below ground surface and gravel packed the well. As soon as the well is developed, we will be inspecting the well for phase-separated hydrocarbon, and we will report any further developments to you as we have the information.

A. Joseph Reed
Associate Vice President/Senior Project Advisor
ARCADIS
1030 Andrews Highway
Suite 120
Midland, Texas 79701
Office: (915) 699-1381
Fax: (915) 699-1978
email: jreed@arcadis-us.com

by very specific types of hospitals. The bill would greatly benefit the state's three general for-profit hospitals, one being Hobbs Lea Regional Medical Center.

*JAMES GILBERT*

*HOBBS NEWS-SUN* 2/11/01

*Readers can call James Gilbert at 397-4556, ext. 140, or e-mail their comments to government@leaco.net.*

# LAWSUIT DISCUSSED

EUNICE - A potential lawsuit against Texaco and Dynegy was discussed Friday afternoon as several residents came to the city's community center where Bill Robins, an attorney with a Houston-based law firm, talked to them about joining the suit.

The suit, which Robins expect to file in about two weeks, centers around the Eunice North Plant and chromate contaminants the plant reportedly put into the surrounding area.

Robins says chrome-6, which is a by-product of the plant's normal operation, is highly toxic.

"Chrome-6 is what we're most concerned about, because it's highly carcinogenic," Robins said. "In any form it's a contaminate that can potentially be hazardous to people's health."

Attempts to contact Texaco and Dynegy before press time were not successful.

"This is very early in the process," Robins said. "We were originally hired by the Simses, and (have) just recently been hired by these other folks. We are in the process of completing our investigation."

Robins didn't know how much the suit would ask for, but did say it would seek multiple damages.

"We are going to be seeking property damages," Robins said. "A number of these people have personal injuries."

The gas plant, which was previously operated by Texaco, is currently operated by Dynegy.

Robins said the plant was first built in the late 1940s or early 1950s, but that "people have just started discovering it within the last couple of years A lot of these people didn't realize they had a problem until they went out and started sampling the soil."

Robins said the chromate has found its way into the groundwater around the plant,

which might not present a problem for people connected to municipal water, but does for those using wells.

"It's in the water and the soil around their houses," Robins said. "A lot of these people have turned up with illnesses."

Robins says he has about 30 families signed onto the suit.

Robins' clients all live in areas immediately adjacent to the plant and may have been exposed to the chromate for many years.

One of those landowners is Bob Lord, who suspects the chromate compounds of poisoning his well water. Lord said he found out about the contamination about three years ago, when representatives from Texaco's environmental division told him of it.

In October he had the soil around his property tested and discovered it was contaminated.

"It started with my water well," Lord said. "I didn't know I had any problem until Texaco told me, and then I got interested in the ground samples It's contaminated. I lost four horses. I lost two premature and two just died as babies. I was watering them out of that water well."

Another of those landowners is Leo Sims, who was one of the first to contact Robins. Sims said part of his motivation in filing the suit was to help other local landowners and county residents.

"We've been longtime land owners in Lea County, and we're very concerned about the presence of hazardous materials in the ground and water, not only for ourselves, but for the community," Sims said.

Robins said the extent of the contamination is not yet known.

While the chromate materials have contaminated areas around the plant, Robins said the city's water supply appeared safe.

"The chrome contamination is in the ground water and the soil, but not - as far as I know - in the city water supply," he said.

For many of the people involved in the suit, the issue hits close to home.

"I put a lot of money in my house, and a lot of improvements around my property," Lord said. "I'm just wondering what's going to happen, just like everybody else."

***Mark R. Fletcher***

***Hobbs News-Sun***

**Olson, William**
**From:** Reed, Joe [SMTP:JReed@arcadis-us.com]
**Sent:** Wednesday, December 13, 2000 4:25 PM
**To:** Bill Olson (E-mail)
**Cc:** Patterson Robert H. (E-mail)
**Subject:** Groundwater Remediation Work Plan Eunice #2 (North) Gas Plant

Dear Bill:

I have sent to you, by Federal Express today, a copy of the "Groundwater Remediation Work Plan, Eunice #2 (North) Gas Plant, Eunice, New Mexico" prepared by ARCADIS Geraghty & Miller, Inc. at the request of Robert Patterson, with Texaco Exploration and Production Inc. Should you not receive this copy tomorrow morning, or should you have any questions, please do not hesitate to contact me at the below email or mail address or by phone. Thanks, Joe Reed.

Please note new e-mail address below.

A. Joseph Reed
ARCADIS Geraghty & Miller, Inc.
1030 Andrews Hwy - Suite 120
Midland, TX 79701
915-699-1381
email: jreed@arcadis-us.com

**Olson, William**
**From:** Olson, William
**Sent:** Thursday, November 30, 2000 9:01 AM
**To:** 'Patterson, Robert H '
**Subject:** RE: North Eunice Gas Plant Remediation Plan

The below extension request is approved.

---

**From: Patterson, Robert H [SMTP:patterh@texaco.com]**
Sent: Thursday, November 30, 2000 8:29 AM
To: 'wolson@state.nm.us'
Cc: Hall, Larry R
Subject: North Eunice Gas Plant Remediation Plan

Bill,

To update you on our progress in submitting the remediation plan for the Eunice #2 (North) Gas Plant, we met with both contractors in October as stated in my previous letter. However, due to the complexity of the project, we ended up requesting additional information from both companies before making our selection. We have selected Arcadis, Geraghty & Miller (AG&M) to be the contractor for this project. I met with AG&M yesterday and expect a draft plan this week. Based on my discussion I anticipate that the plan will be ready to submit within two weeks. To this end I am requesting an extension to December 15, 2000 for submitting the referenced plan.

Sincerely,

Robert H. Patterson

Texaco Exploration and Production Inc.
Permian Business Unit

500 North Loraine
Midland TX 79701

P O Box 3109
Midland TX 79702



October 5, 2000

State of New Mexico
Oil Conservation Division
2040 S. Pacheco
Santa Fe, New Mexico 87505

Attention: Mr. William Olson

Re: Subsurface Abatement and Remediation Plan
for Eunice #2 (North) Gas Plant
Lea County, New Mexico

Dear Bill:

I have received three proposals for the subsurface abatement and remediation of the Eunice #2 (North) Gas Plant. We have eliminated one proposal but have not made a final determination between the other two proposals. We anticipate meeting with both companies this month before making our decision. To this end I am requesting an extension to the end of October, 2000 for submitting the referenced plan.

Please advise if you have any questions. I can be contacted at 915-688-4836.

Sincerely,

Robert H. Patterson

RHP:cfb

File
Chrono

Verbal approval
to Robert Patterson
voice mail
Will Olson 10/19/00

Texaco Exploration and Production Inc.
Permian Business Unit

500 North Loraine
Midland TX 79701

P.O.Box 3109
Midland TX 79702

July 25, 2000

JUL 28

State of New Mexico
Oil Conservation Division
2040 S. Pacheco
Santa Fe, NM 87505

Attention: Mr. Bill Olson

Re: GROUND WATER INVESTIGATION REPORT
TEXACO EUNICE NORTH GAS PLANT

Dear Mr. Olson:

In reference to your letter of May 30, 2000, concurring with Texaco's investigation actions and ordering a remediation plan by July 30, 2000. Due to the complexity of this plan Texaco has verbally requested an extension to the deadline for submitting a remediation plan.

To confirm our phone conversation on this date, you have given Texaco an extension until Friday September 29, 2000 to submit a remediation plan for the Eunice North Gas Plant.

Thank-you for your consideration of Texaco's requested time extension.

Sincerely,

Robert H. Patterson

RHP:cfb

File/Chrono

Chris Williams, OCD Hobbs District Office

# NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

**GARY E. JOHNSON**
Governor
**Jennifer A. Salisbury**
Cabinet Secretary

**Lori Wrotenbery**
Director
**Oil Conservation Division**

May 30, 2000

**CERTIFIED MAIL**
**RETURN RECEIPT NO. 5051-3266**

Mr. Robert Patterson
Texaco Exploration and Production, Inc.
500 North Loraine
Midland, Texas 79702

**RE: GROUND WATER INVESTIGATION REPORT**
**TEXACO EUNICE NORTH GAS PLANT**

Dear Mr. Patterson:

The New Mexico Oil Conservation Division (OCD) has reviewed Texaco Exploration and Production, Inc.'s (TEPI) March 14, 2000 "FINAL GROUNDWATER PLUME DELINEATION REPORT, TEXACO EXPLORATION AND PRODUCTION, INC., FORMER EUNICE #2 (NORTH) GAS PLANT, EUNICE, NEW MEXICO, MARCH 2000" which was submitted on behalf of TEPI by their consultant Highlander Environmental Corp. This document contains the results of TEPI's additional investigations of the extent of ground water contamination at TEPI's Eunice North Gas Plant in Lea County, New Mexico.

The investigation actions conducted to date are satisfactory. The OCD requires that TEPI submit a work plan to remediate contaminated soils and ground water identified in the site investigations. The work plan shall be submitted to the OCD Santa Fe Office by July 30, 2000 with a copy provided to the OCD Hobbs District Office.

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

Sincerely,

William C. Olson
Hydrologist
Environmental Bureau

xc: Chris Williams, OCD Hobbs District Office
Mark Larson, Highlander Environmental Corp.
Robert Lord
Bob Patterson, Rowland Trucking Co.

*Highlander Environmental Corp.*

*Midland, Texas*

March 14, 2000



Mr. William C. Olson
New Mexico Oil Conservation Division
Environmental Bureau
2040 S. Pacheco
Santa Fe, New Mexico 87505

**Re: Final Groundwater Plume Delineation Report, Texaco Exploration and Production Inc., Former Eunice # 2 (North) Gas Plant, Eunice, New Mexico, March 2000**

Dear Mr. Olson:

On behalf of Texaco Exploration and Production Inc. (Texaco), please find enclosed one copy of the above-referenced report. The report presents the results of groundwater investigations conducted at Texaco's former Eunice #2 (North) Gas Plant, located near Eunice, New Mexico. Please call if you have questions.

Sincerely,
*Highlander Environmental Corp.*

Mark J. Larson
Senior Project Manager

Encl.

cc: Mr. Robert Patterson, Texaco
Mr. Chris Williams, NMOCD- Hobbs District

*1910 N. Big Spring • Midland, Texas 79705 • (915) 682-4559 • Fax (915) 682-3946*

## Olson, William

**From:** Foote, Robert W [SMTP:footerw@texaco.com]
**Sent:** Wednesday, August 26, 1998 9:20 AM
**To:** Olson, William
**Subject:** Address

Bill,

Good to make your acquaintance.

My address is:

Bob Foote
Texaco E&P Inc.
P.O. Box 2100
Denver, CO 80201

or 4601 DTC Blvd
Denver, CO 80237

303-793-4959
303-793-5509 (F)
FooteRW@Texaco.com

Please direct all future correspondance regarding the remediation efforts at Eunice North and South to my address.

Thanks,

Bob Foote

## Olson, William

**To:** Robert Browning
**Subject:** RE: FOLLOW-UP
**Importance:** High

This proposal is not currently approval without furthur information. If Texaco wishes to use this as a remediation technique, detailed information will need to be provided in the overall remediation plan on construction, operation and maintenance of the pond, proposed uses of the minnows, and a risk assessment of impacts on human health and the environment as a result of the minnow uses.

---

**From:** Browning, Robert W[SMTP:brownrw@texaco.com]
**Sent:** Monday, August 24, 1998 2:35 PM
**To:** 'Olson, Bill - NMOCD'
**Subject:** FOLLOW-UP
**Importance:** High

This message is in MIME format. Since your mail reader does not understand this format, some or all of this message may not be legible.

------ =_NextPart_000_01BDCF96.6C0F69C0
Content-Type: text/plain

Bill,
I wanted to touch base with you as a matter of follow-up related to the June 22, 1998 letter that I sent to you concerning the proposed "minnow pond" for Mr. Bob Lord in Eunice. You will recall that Texaco agreed to construct a pond for Mr. Lord's use pending approval from the NMOCD. You will recall that as part of the approval process, you had requested some additional information related to the possible impacts that chromium might have on the minnows and subsequent food chain. The information that I had at my disposal was forwarded to you as an attachment to the 6/22/98 letter.

I have been out of pocket for five of the past seven weeks and am just now starting to get somewhat caught up on my projects. I'm in the process of transferring to Houston with a new assignment with Texaco and am trying to tie up some loose ends before I relocate. Is there any additional information that you need to facilitate the approval?

Please feel free to contact me should you have any questions related to this. As usual, I appreciate you assistance in this matter.

Robert W. Browning
TNAP - West EH&S Department
Midland, Texas
Texnet 672 - 4804
(915) 688 - 4804

------ =_NextPart_000_01BDCF96.6C0F69C0
Content-Type: application/ms-tnef
Content-Transfer-Encoding: base64

## Olson, William

**From:** Browning, Robert W[SMTP:brownrw@texaco.com]
**Sent:** Monday, August 24, 1998 2:35 PM
**To:** 'Olson, Bill - NMOCD'
**Subject:** FOLLOW-UP
**Importance:** High

This message is in MIME format. Since your mail reader does not understand this format, some or all of this message may not be legible.

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Robert W. Browning
TNAP - West EH&S Department
Midland, Texas
Texnet 672 - 4804
(915) 688 - 4804

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AADAAAAAAAAARgAAAAAQhQAAAAAAAAMADIAIIAYAAAAAAMAAAAAAAABGAAAAABGFAAAAAAAAAwA
N

*Highlander Environmental Corp.*

*Midland, Texas*

July 14, 1998



Mr. William C. Olson, Hydrogeologist
New Mexico Energy, Minerals, & Natural Resources Department
Oil Conservation Division
2040 South Pacheco Street
Santa Fe, New Mexico 87505

**Re: Submittal of Additional Information Pertaining to Soil and Groundwater Investigation, Former Texaco Exploration and Production, Inc., Eunice # 2 (North) Gas Plant, Lea County, New Mexico**

Dear Mr. Olson:

Highlander Environmental Corp. (Highlander) has been requested by Texaco Exploration and Production, Inc. (Texaco) to submit additional information to the New Mexico Oil Conservation Division (OCD) pertaining to soil and groundwater investigations at its former Eunice # 2 (North) Gas Plant (Site), located at Eunice, New Mexico. The additional information was requested by the OCD on May 15, 1998, following its review of the report titled, "Addendum Final Investigation Report, Texaco Exploration and Production, Inc., Eunice # 2 (North) Gas Plant, Lea County, New Mexico, January 1998". Please find the following enclosed:

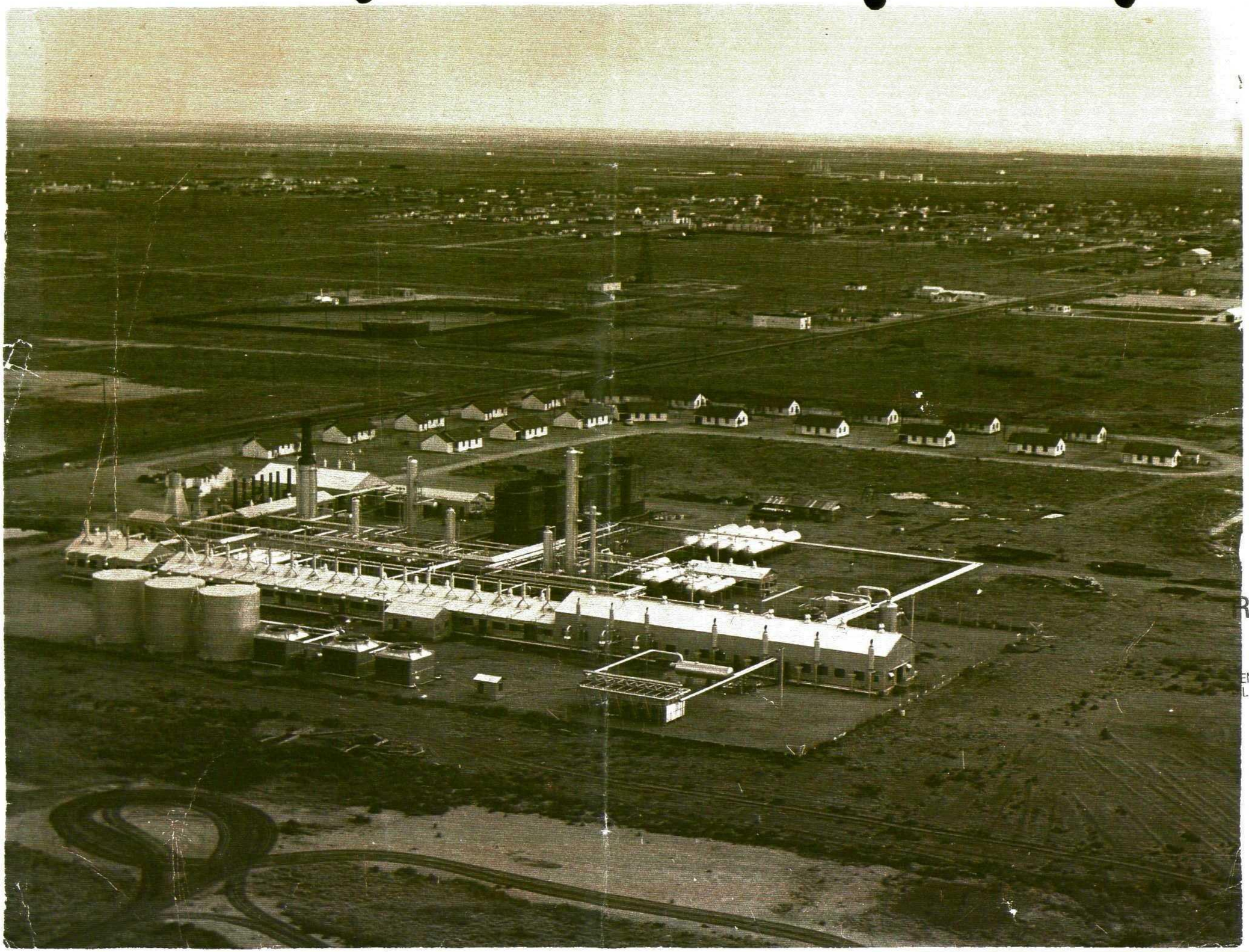
- Copies of aerial photographs for February 7, 1949, February 4, 1968 and an oblique aerial photograph (circa 1952);
- Groundwater potentiometric surface maps for the upper (shallow) and lower (deep) Ogallala aquifer, December 18, 1997;
- Isopleth maps for chloride and TDS concentrations in groundwater for the upper (shallow) and lower (deep) Ogallala aquifer, April 22, 1997 through December 4, 1997.

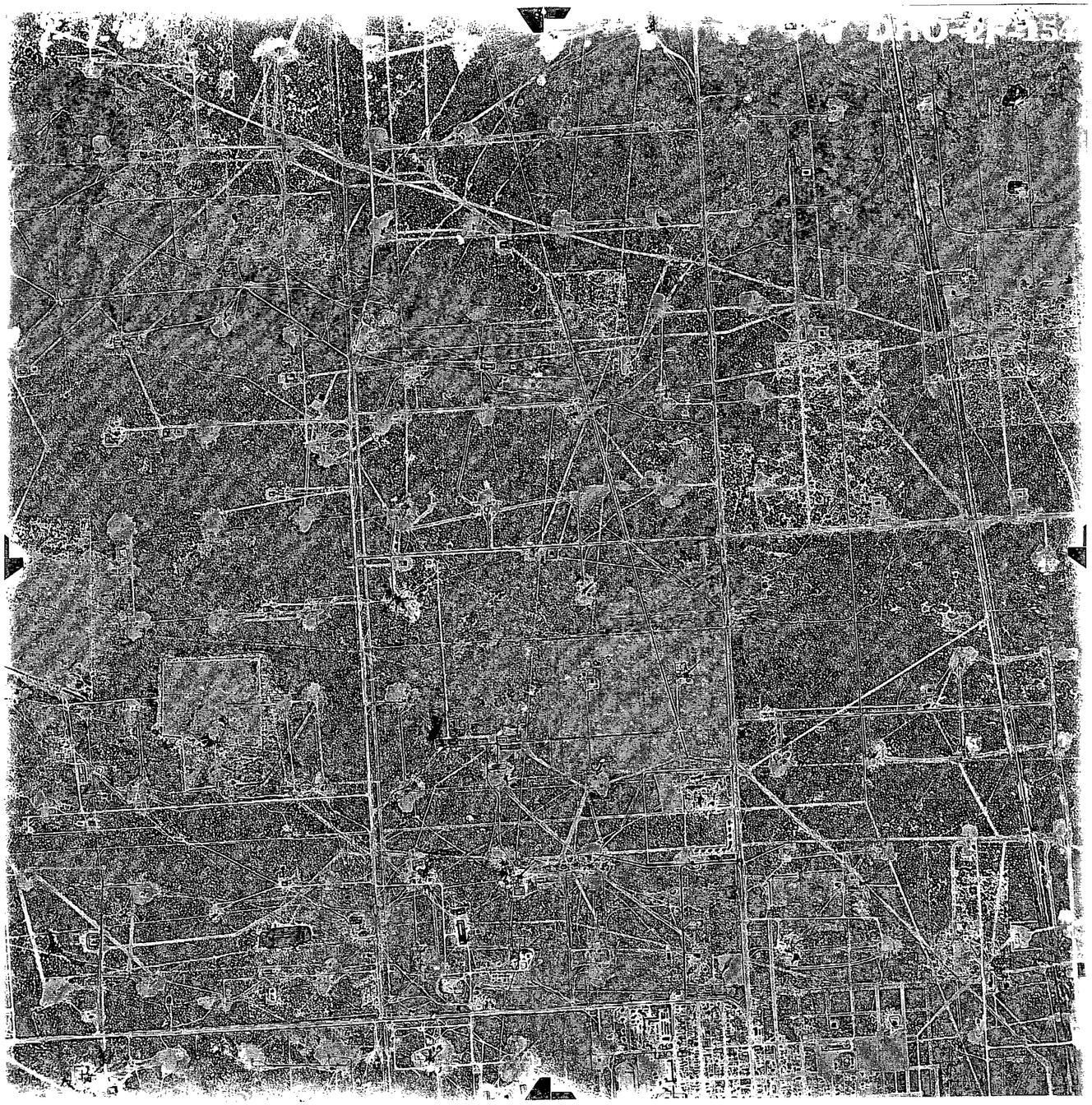
Please call if you have questions.

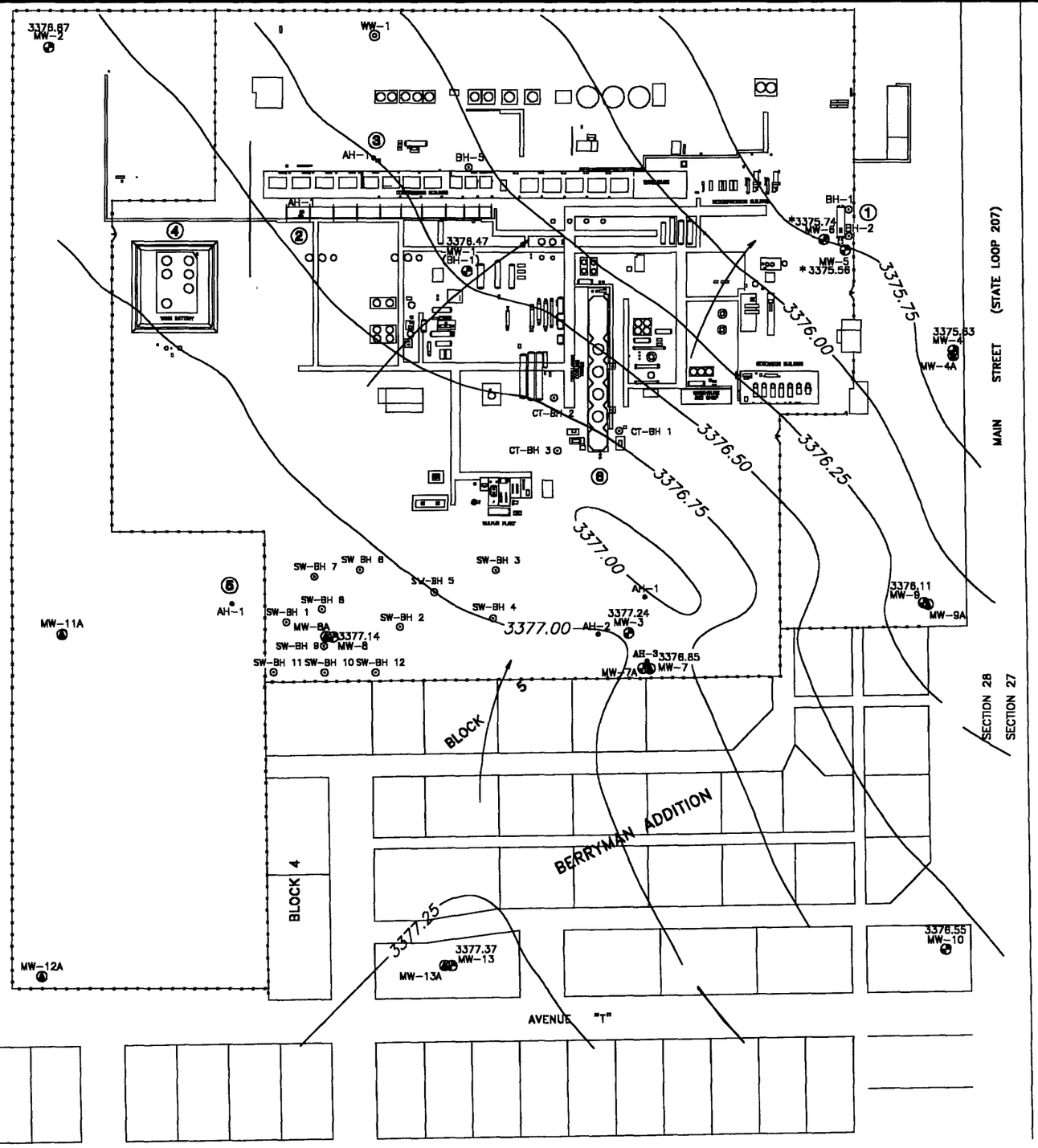
Sincerely,
*Highlander Environmental Corp.*

Mark J. Larson
Senior Project Manager

Encl.
cc: Mr. Bob Foote, TEPI
Mr. Wayne Price, OCD-Hobbs District








RECEIVED

JUL 15 1998

ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

| Monitor Well Number | Top of Casing Elevation, Feet AMLS | Ground Elevation, Feet AMLS |
|---|---|---|
| MW-1 | 3428.57 | 3428.79 |
| MW-2 | 3432.17 | 3432.29 |
| MW-3 | 3428.27 | 3426.10 |
| MW-4 | 3423.38 | 3423.59 |
| MW-4A | 3423.57 | 3423.59 |
| MW-5 | 3424.77 | 3425.49 |
| MW-6 | 3425.26 | 3425.09 |
| MW-7 | 3428.39 | 3426.28 |
| MW-7A | 3428.13 | 3426.28 |
| MW-8 | 3430.13 | 3427.90 |
| MW-8A | 3430.01 | 3427.90 |
| MW-9 | 3427.63 | 3425.09 |
| MW-9A | 3427.48 | 3425.09 |
| MW-10 | 3419.42 | 3419.77 |
| MW-11A | 3431.77 | 3429.28 |
| MW-12A | 3429.92 | 3427.42 |
| MW-13 | 3424.11 | 3424.35 |
| MW-13A | 3424.25 | 3424.39 |
| MW-14A | 3423.90 | 3424.05 |
| MW-15A | 3420.55 | 3420.65 |
| MW-16A | 3419.92 | 3419.99 |
| MW-17A | 3424.36 | 3424.48 |
| MW-18A | 3416.86 | 3417.04 |
| MW-19A | 3414.74 | 3414.95 |

| Water Well Number | Datum Eelevation, Feet AMLS | Ground Elevation, Feet AMLS |
|---|---|---|
| Lord Water Well | 3419.97 | 3419.47 |
| Rowland Water Well | 3419.47 | 3418.47 |
| W.W. #1 | 3429.95 | 3428.78 |

***LEGEND***

| | |
|---|---|
| BH-1 ⊙ | BOREHOLE LOCATION |
| 3378.47 MW-1 ⊕ | MONITOR WELL LOCATION (SHALLOW) AND GROUNDWATER POTENTIOMETRIC SURFACE ELEVATION, FEET AMSL, 12/18/97 |
| MW-4A ⊕ | MONITOR WELL LOCATION (DEEP) |
| -3376.00- | CONTOUR OF GROUNDWATER (SHALLOW) POTENTIOMETRIC SURFACE ELEVATION, FEET AMSL, 12/18/97 |
| → | GROUNDWATER FLOW DIRECTION |
| * | CORRECTED FOR PSH THICKNESS |

***SCALE***
1" = 185'
0 185 230

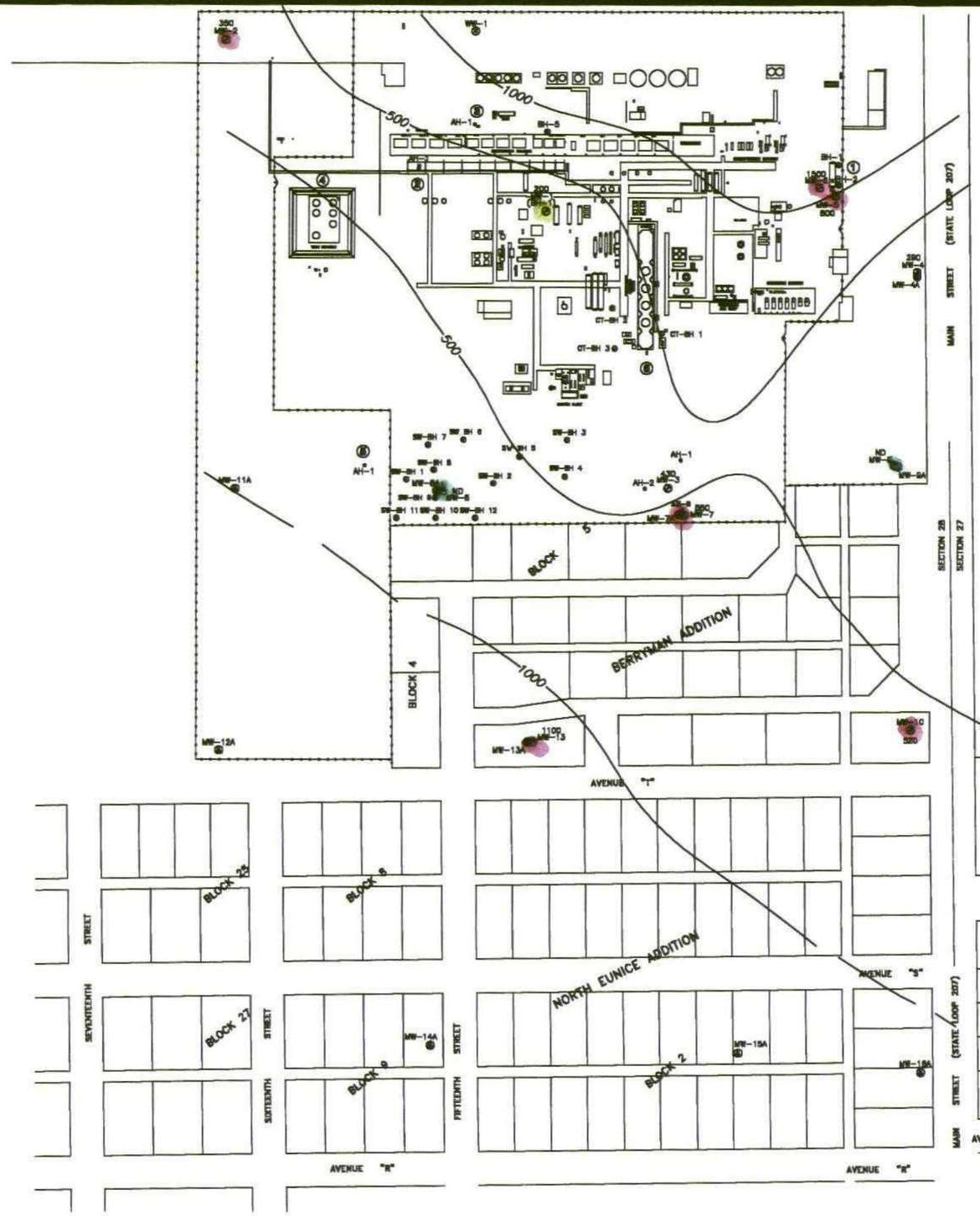
LEA COUNTY, NEW MEXICO

# TEXACO
EXPLORATION & PRODUCTION, INC.

EUNICE #2 (NORTH) GAS PLANT
GROUNDWATER POTENTIOMETRIC SURFACE MAP (SHALLOW), 12/18/97

*HIGHLANDER ENVIRONMENTAL*
*MIDLAND, TEXAS*

DATE: 7/13/97
DWN. BY: JDA
FILE: C:\787\POT-SHALLOW




| Monitor Well Number | Top of Casing Elevation, Feet AMLS | Ground Elevation, Feet AMLS |
|---|---|---|
| MW-1 | 3438.87 | 3436.79 |
| MW-2 | 3439.17 | 3436.89 |
| MW-3 | 3438.17 | 3436.10 |
| MW-4 | 3493.38 | 3491.59 |
| MW-4A | 3493.67 | 3491.59 |
| MW-5 | 3424.77 | 3422.49 |
| MW-6 | 3426.28 | 3423.99 |
| MW-7 | 3428.36 | 3426.28 |
| MW-7A | 3428.13 | 3426.28 |
| MW-8 | 3430.13 | 3427.80 |
| MW-8A | 3430.01 | 3427.80 |
| MW-9 | 3427.81 | 3425.50 |
| MW-9A | 3427.48 | 3425.09 |
| MW-10 | 3418.62 | 3416.77 |
| MW-11A | 3431.77 | 3429.28 |
| MW-12A | 3428.62 | 3426.43 |
| MW-13 | 3424.13 | 3421.89 |
| MW-13A | 3424.26 | 3421.89 |
| MW-14A | 3423.80 | 3421.65 |
| MW-15A | 3420.55 | 3420.65 |
| MW-16A | 3418.62 | 3416.88 |
| MW-17A | 3426.78 | 3424.48 |
| MW-18A | 3417.63 | 3417.63 |
| MW-19A | 3414.74 | 3414.65 |

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|---|---|---|
| Lard Water Well | 3418.87 | 3419.47 |
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| W.W. #1 | 3429.65 | 3428.78 |

**LEGEND**

- BH-1 — BOREHOLE LOCATION
- 220 MW-1 — MONITOR WELL LOCATION (SHALLOW) AND CHLORIDE CONCENTRATION IN GROUNDWATER (SHALLOW) MG/L, 4/22/97-12/4/97
- MW-4A — MONITOR WELL LOCATION (DEEP)
- 500 — CONTOUR OF CHLORIDE CONCENTRATION IN GROUNDWATER (SHALLOW), MG/L, 4/22/97-12/4/97
- ND — NO DATA AVAILABLE

RECEIVED
JUL 15 1998
ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

SCALE
1" = 600'
0 225 450

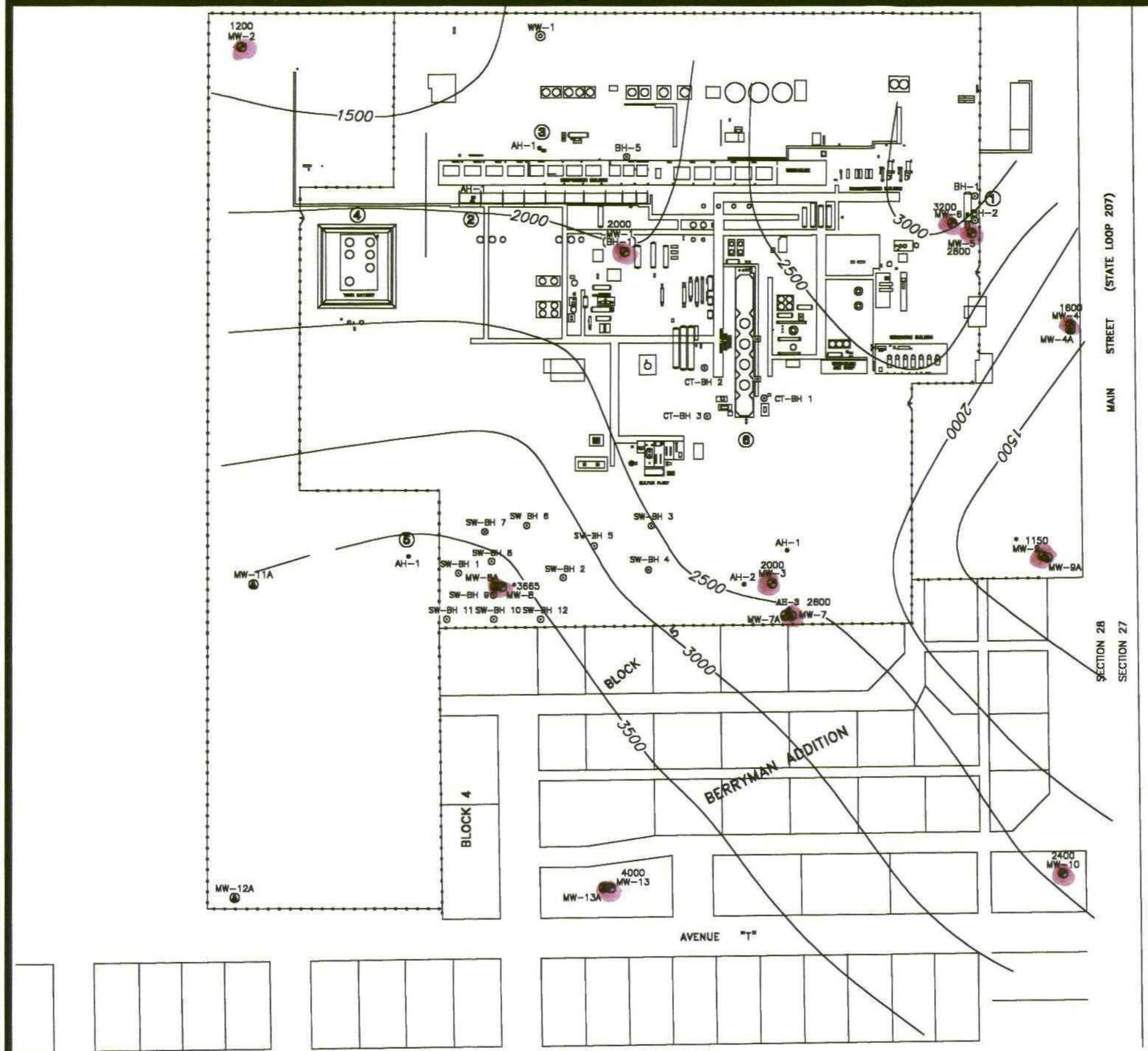
LEA COUNTY, NEW MEXICO

# TEXACO
EXPLORATION & PRODUCTION, INC.

## EUNICE #2 (NORTH) GAS PLANT
ISOPLETH MAP OF CHLORIDE CONCENTRATION IN GROUNDWATER (SHALLOW) 4/22/97-12/4/97

*HIGHLANDER ENVIRONMENTAL*
*MIDLAND, TEXAS*

DATE: 7/13/98
DWN. BY: JDA
FILE: C:\787\CHL-SHALLOW






| Monitor Well Number | Top of Casing Elevation, Feet AMLS | Ground Elevation, Feet AMLS |
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| MW-7 | 3428.39 | 3426.26 |
| MW-7A | 3428.13 | 3426.28 |
| MW-8 | 3430.13 | 3427.90 |
| MW-8A | 3430.01 | 3427.90 |
| MW-9 | 3427.63 | 3425.09 |
| MW-9A | 3427.48 | 3425.09 |
| MW-10 | 3419.42 | 3419.77 |
| MW-11A | 3431.77 | 3429.28 |
| MW-12A | 3429.92 | 3427.42 |
| MW-13 | 3424.11 | 3424.35 |
| MW-13A | 3424.25 | 3424.39 |
| MW-14A | 3423.80 | 3424.05 |
| MW-15A | 3420.55 | 3420.65 |
| MW-16A | 3419.92 | 3419.99 |
| MW-17A | 3424.38 | 3424.48 |
| MW-18A | 3416.86 | 3417.04 |
| MW-19A | 3414.74 | 3414.95 |

| Water Well Number | Datum Eelevation, Feet AMLS | Ground Elevation, Feet AMLS |
|---|---|---|
| Lord Water Well | 3419.97 | 3419.47 |
| Rowland Water Well | 3419.47 | 3418.47 |
| W.W. #1 | 3429.95 | 3428.78 |

***LEGEND***

| | |
|---|---|
| BH-1 ⊙ | BOREHOLE LOCATION |
| 2000 MW-1 ⊘ | MONITOR WELL LOCATION (SHALLOW) AND TDS CONCENTRATION IN GROUNDWATER, MG/L 4/22/97-12/4/97 |
| MW-4A ⊙ | MONITOR WELL LOCATION (DEEP) |
| -2000- | CONTOUR OF TDS CONCENTRATION IN GROUNDWATER (SHALLOW), MG/L, 4/22/97-12/4/97 |
| * | CALCULATED FROM FIELD CONDUCTIVITY MEASUREMENT |

***SCALE***
1" = 165'
0 165 330

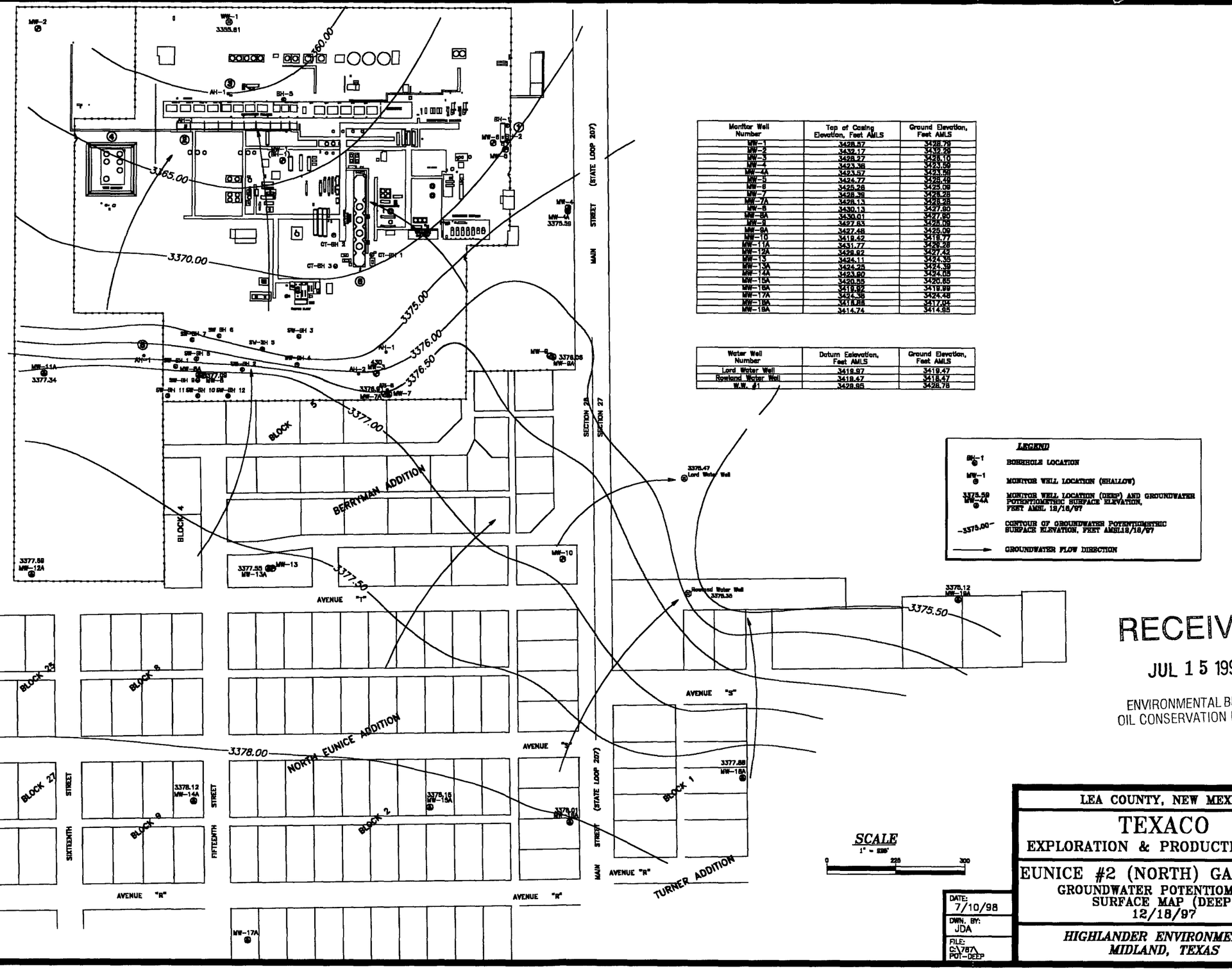
LEA COUNTY, NEW MEXICO

# TEXACO
EXPLORATION & PRODUCTION, INC.

## EUNICE #2 (NORTH) GAS PLANT
ISOPLETH MAP OF TDS CONCENTRATION IN GROUNDWATER (SHALLOW), 4/22/97-12/4/97

DATE: 7/10/98
DWN. BY: JDA
FILE: C:\787\TDS-SHALLOW

*HIGHLANDER ENVIRONMENTAL*
*MIDLAND, TEXAS*




| Monitor Well Number | Top of Casing Elevation, Feet AMLS | Ground Elevation, Feet AMLS |
|---|---|---|
| MW-1 | 3428.57 | 3428.78 |
| MW-2 | 3432.17 | 3432.29 |
| MW-3 | 3428.27 | 3428.10 |
| MW-4 | 3423.38 | 3423.59 |
| MW-4A | 3493.57 | 3493.56 |
| MW-5 | 3424.77 | 3425.49 |
| MW-6 | 3425.26 | 3425.09 |
| MW-7 | 3428.36 | 3428.28 |
| MW-7A | 3428.13 | 3428.28 |
| MW-8 | 3430.13 | 3427.90 |
| MW-8A | 3430.01 | 3427.90 |
| MW-9 | 3427.63 | 3425.09 |
| MW-9A | 3427.48 | 3425.09 |
| MW-10 | 3418.42 | 3418.77 |
| MW-11A | 3431.77 | 3429.28 |
| MW-12A | 3429.62 | 3427.42 |
| MW-13 | 3424.11 | 3424.35 |
| MW-13A | 3424.25 | 3424.39 |
| MW-14A | 3423.80 | 3424.05 |
| MW-15A | 3420.55 | 3420.85 |
| MW-16A | 3419.82 | 3419.99 |
| MW-17A | 3424.36 | 3424.48 |
| MW-18A | 3418.86 | 3417.05 |
| MW-19A | 3414.74 | 3414.95 |

| Water Well Number | Datum Elevation, Feet AMLS | Ground Elevation, Feet AMLS |
|---|---|---|
| Lord Water Well | 3419.97 | 3419.47 |
| Rowland Water Well | 3418.47 | 3418.47 |
| W.W. #1 | 3429.95 | 3428.78 |

**LEGEND**

- SH-1 — BOREHOLE LOCATION
- MW-1 — MONITOR WELL LOCATION (SHALLOW)
- 3375.59 MW-4A — MONITOR WELL LOCATION (DEEP) AND GROUNDWATER POTENTIOMETRIC SURFACE ELEVATION, FEET AMSL 12/18/97
- -3375.00- — CONTOUR OF GROUNDWATER POTENTIOMETRIC SURFACE ELEVATION, FEET AMSL12/18/97
- GROUNDWATER FLOW DIRECTION



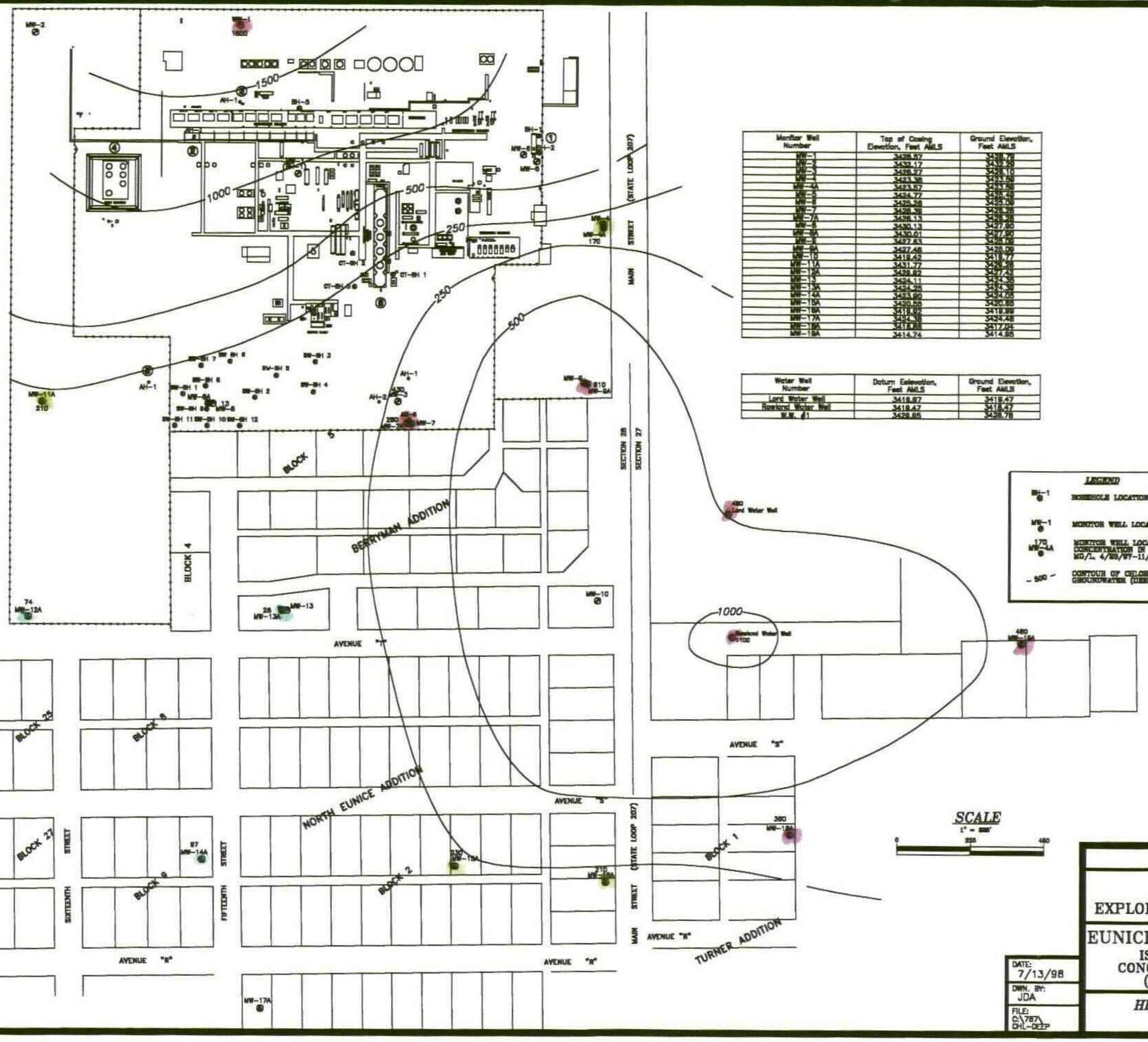
LEA COUNTY, NEW MEXICO

# TEXACO
EXPLORATION & PRODUCTION, INC.

## EUNICE #2 (NORTH) GAS PLANT
GROUNDWATER POTENTIOMETRIC SURFACE MAP (DEEP)
12/18/97

*HIGHLANDER ENVIRONMENTAL*
*MIDLAND, TEXAS*

DATE: 7/10/98
DWN. BY: JDA
FILE: C:\787\POT-DEEP




| Monitor Well Number | Top of Casing Elevation, Feet AMLS | Ground Elevation, Feet AMLS |
|---|---|---|
| MW-1 | 3428.57 | 3428.76 |
| MW-2 | 3432.17 | 3432.36 |
| MW-3 | 3428.57 | 3428.10 |
| MW-4 | 3431.36 | 3431.09 |
| MW-4A | 3431.67 | 3431.36 |
| MW-5 | 3434.77 | 3434.46 |
| MW-6 | 3425.26 | 3425.09 |
| MW-7 | 3428.36 | 3428.26 |
| MW-7A | 3428.13 | 3428.26 |
| MW-8 | 3430.13 | 3427.80 |
| MW-8A | 3430.01 | 3427.90 |
| MW-9 | 3427.83 | 3428.76 |
| MW-9A | 3427.46 | 3428.09 |
| MW-10 | 3419.42 | 3418.77 |
| MW-11A | 3431.77 | 3431.26 |
| MW-12A | 3429.82 | 3429.49 |
| MW-13 | 3424.11 | 3424.36 |
| MW-13A | 3424.36 | 3424.36 |
| MW-14A | 3423.90 | 3424.26 |
| MW-15A | 3420.15 | 3420.85 |
| MW-16A | 3418.69 | 3418.99 |
| MW-17A | 3424.18 | 3424.48 |
| MW-18A | 3418.88 | 3417.25 |
| MW-19A | 3414.74 | 3414.85 |

| Water Well Number | Datum Elevation, Feet AMLS | Ground Elevation, Feet AMLS |
|---|---|---|
| Land Water Well | 3418.87 | 3418.47 |
| Rowland Water Well | 3418.47 | 3418.47 |
| W.W. #1 | 3428.85 | 3428.76 |

**LEGEND**

- BH-1 — BOREHOLE LOCATION
- MW-1 — MONITOR WELL LOCATION (SHALLOW)
- 175 MW-4A — MONITOR WELL LOCATION (DEEP) AND CHLORIDE CONCENTRATION IN GROUNDWATER MG/L 4/23/97-11/10/97
- 500 — CONTOUR OF CHLORIDE CONCENTRATION IN GROUNDWATER (DEEP), MG/L 4/23/97-11/10/97

SCALE
1" = 200'
0 240 480

RECEIVED
JUL 15 1998
ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

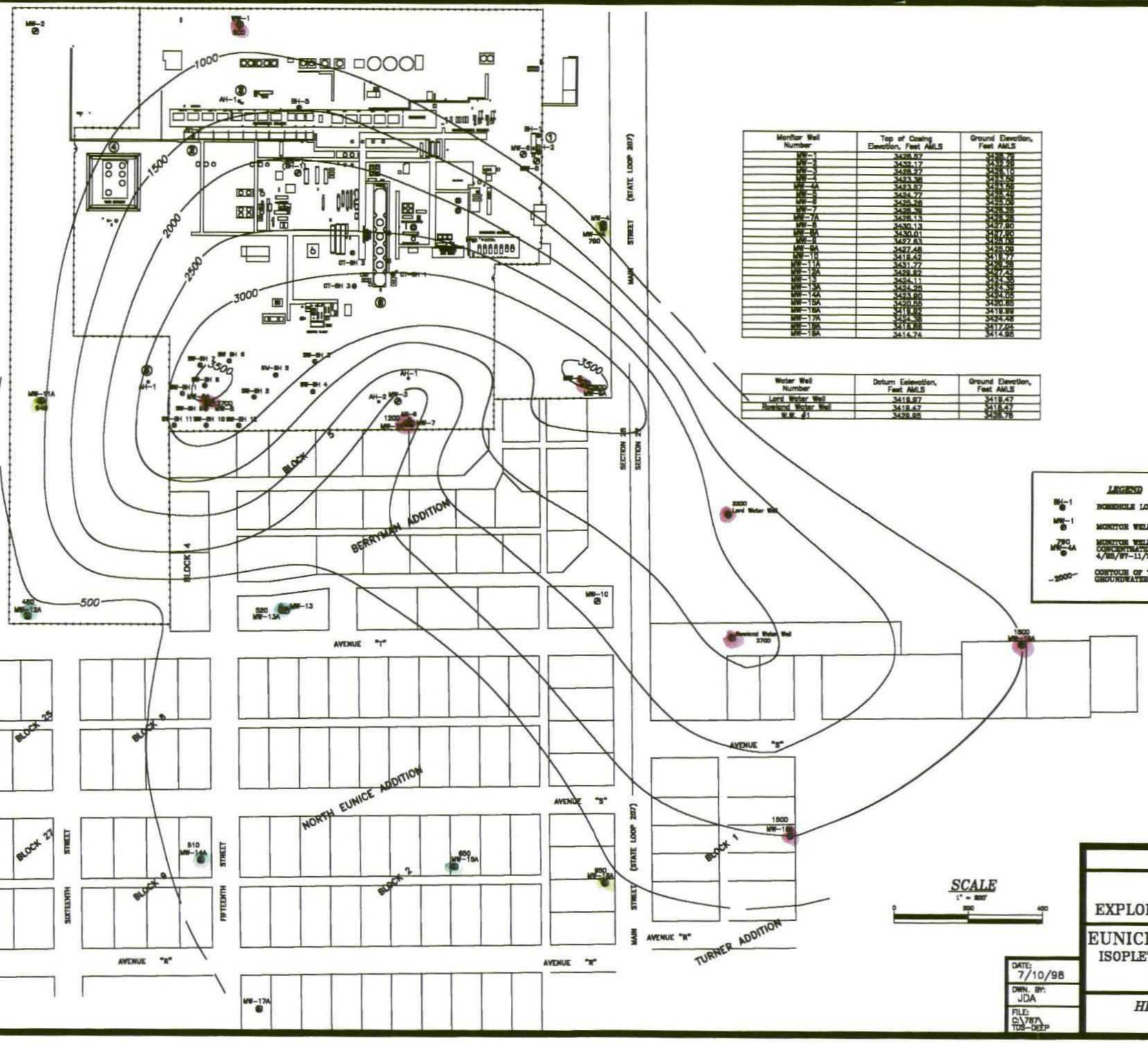
LEA COUNTY, NEW MEXICO

# TEXACO
EXPLORATION & PRODUCTION, INC.

## EUNICE #2 (NORTH) GAS PLANT
ISOPLETH MAP OF CHLORIDE CONCENTRATION IN GROUNDWATER (DEEP) 4/23/97-11/10/97

*HIGHLANDER ENVIRONMENTAL*
*MIDLAND, TEXAS*

DATE: 7/13/98
DWN. BY: JDA
FILE: C:\787\CHL-DEEP




| Monitor Well Number | Top of Casing Elevation, Feet AMLS | Ground Elevation, Feet AMLS |
|---|---|---|
| MW-1 | 3438.57 | 3438.76 |
| MW-2 | 3439.17 | 3439.29 |
| MW-3 | 3438.27 | 3438.10 |
| MW-4 | 3433.36 | 3433.58 |
| MW-4A | 3433.57 | 3433.80 |
| MW-5 | 3434.77 | 3435.45 |
| MW-6 | 3435.26 | 3435.09 |
| MW-7 | 3438.36 | 3438.53 |
| MW-7A | 3438.13 | 3438.38 |
| MW-8 | 3430.13 | 3427.80 |
| MW-8A | 3430.01 | 3427.80 |
| MW-9 | 3427.63 | 3428.76 |
| MW-9A | 3427.48 | 3428.09 |
| MW-10 | 3418.45 | 3418.77 |
| MW-11A | 3431.77 | 3431.58 |
| MW-12A | 3429.82 | 3429.42 |
| MW-13 | 3424.11 | 3424.30 |
| MW-13A | 3424.26 | 3424.47 |
| MW-14A | 3423.90 | 3424.12 |
| MW-15A | 3420.55 | 3420.65 |
| MW-16A | 3419.91 | 3419.99 |
| MW-17A | 3424.36 | 3424.48 |
| MW-18A | 3418.88 | 3417.65 |
| MW-19A | 3414.74 | 3414.85 |

| Water Well Number | Datum Elevation, Feet AMLS | Ground Elevation, Feet AMLS |
|---|---|---|
| Land Water Well | 3419.87 | 3419.47 |
| Reviland Water Well | 3418.47 | 3418.47 |
| W.W. #1 | 3429.85 | 3428.76 |

**LEGEND**

- BH-1 — BOREHOLE LOCATION
- MW-1 — MONITOR WELL LOCATION (SHALLOW)
- 780 MW-4A — MONITOR WELL LOCATION (DEEP) AND TDS CONCENTRATION IN GROUNDWATER, MG/L 4/23/97-11/10/97
- 2000 — CONTOUR OF TDS CONCENTRATION IN GROUNDWATER (DEEP), MG/L, 4/23/97-11/10/97

RECEIVED
JUL 15 1998
ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

SCALE
1" = 200'
0 200 400

LEA COUNTY, NEW MEXICO

# TEXACO
EXPLORATION & PRODUCTION, INC.

## EUNICE #2 (NORTH) GAS PLANT
ISOPLETH MAP OF TDS CONCENTRATION IN GROUNDWATER (DEEP)
4/23/97-11/10/97

*HIGHLANDER ENVIRONMENTAL*
*MIDLAND, TEXAS*

DATE: 7/10/98
DWN. BY: JDA
FILE: C:\787\TDS-DEEP

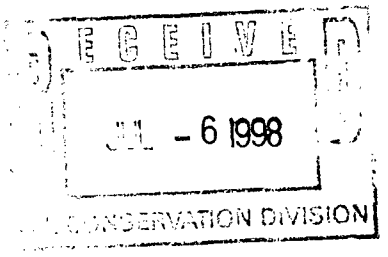
Roy W Hamilton
Manager
Gas Department
Denver Division

Texaco Exploration and
Production Inc

4601 DTC Blvd
Denver CO 80237

P O Box 46535
Denver CO 80201-6535

303 793 4880
FAX 303 793 4935
FAX 303 793 4612




June 30, 1998

Mr. Bill Olson
Hydrologist
Environmental Bureau
Oil Conservation Division
2040 South Pacheco
Santa Fe, New Mexico 87505

Dear Mr. Olson,

On June 4, 1998, Mr. Robert Browning telephoned notice of possible groundwater impacts at Texaco Exploration & Production Inc.'s (TEPI) Buckeye Gas Plant. This was followed up on June 12, 1998 with written notification to the Oil Conservation Division's Hobbs office. Several lab samples of the water from the plant's water well showed levels of benzene in excess of the State standards. TEPI is now in the process of reviewing the data and investigating the source.

We understand there has been a history of problems with oil and gas produced water disposal wells in the vicinity of the Buckeye Gas Plant. The source of the benzene found in our fresh water well is not clear. There have been several investigations, data gathering and reports on this matter. We are currently in the process of obtaining this material for review. In addition, we are pursuing additional sampling that may "fingerprint" the source of the contamination in our water well. We will keep you posted on our progress and investigation plans. We should have this completed by September 1, 1998.

As you may be aware, TEPI and Dynegy (formerly NGC/Warren Corp.) are merging our respective gas processing assets in Lea County. We are forming a joint-venture company to be called Versado Gas Processors, L.L.C. The Buckeye Gas Plant will be part of this joint-venture. As part of our joint-venture agreement, Texaco will be responsible for most environmental issues resulting from Texaco operations prior to the formation of the joint-venture. This includes the Buckeye Gas Plant groundwater investigation. This joint-venture does not include the Texaco oil and gas producing operations based out of Hobbs, New Mexico.

We are currently in transition to the new company. Both Texaco and Dynegy key personnel are leaving to assume employment with Versado, others are retiring, and still others are transferring back to the parent companies. Over the next 60-90 days, we should have our final staff in place. Since Texaco Gas Plants Operating Unit will no longer have any offices in the Eunice-Hobbs areas, the Buckeye groundwater investigation as well as the ongoing Eunice North and South investigation and remediation work will be coordinated out of our Denver office.

Thank you for your consideration. If you have any questions or require any further information, please contact Mr. Robert W. Foote at 303-793-4959.

Sincerely,

Roy W. Hamilton
Gas Plant Operating Unit Manager

Cc: Wayne Price, OCD Hobbs District Office

Texaco



June 22, 1998

Mr. William C. Olson
Hydrogeologist - Environmental Bureau
State of New Mexico
Energy, Minerals and Natural Resources Department
Oil Conservation Division
2040 S. Pacheco
Santa Fe, New Mexico 87505

Dear Bill,

As requested, please find attached the World Health Organization's 1996 publication entitled "Guidelines for Drinking-Water Quality". This material was sent to me by Texaco's Corporate Safety & Industrial Hygiene Department in response to concerns that Mr. Lord and I had related to the effects of chromium on his livestock. Hopefully, it will assist in facilitating the approval process for the construction of a small minnow pond for Mr. Lord.

Please feel free to contact me at (915) 688-4804 should you have additional questions concerning this issue. As usual, Texaco appreciates your assistance and guidance in this matter.

Sincerely,

Robert W Browning

Robert W. Browning
EH&S Professional – Environmental
Texaco Exploration & Production, Inc.

Cc: Bob Lord (w/out attachment)

INTERNATIONAL PROGRAMME ON CHEMICAL SAFETY

TO: Robert Browning
@ 672-4891

Page 1 of 13
FYI - Kwong.

# Guidelines for drinking-water quality

SECOND EDITION

## *Volume 2*
## *Health criteria and other supporting information*

World Health Organization
Geneva
1996

12. Fadeeva VK. [Effect of drinking-water with different chloride contents on experimental animals.] *Gigiena i sanitarija*, 1971, 36(6):11-15 (in Russian). (Dialog Abstract No. 051634).

13. Wesson LG. *Physiology of the human kidney.* New York, NY, Grune and Stratton, 1969:591 (cited in ref. 4).

14. Gregory R. Galvanic corrosion of lead solder in copper pipework. *Journal of the Institute of Water and Environmental Management*, 1990, 4(2):112-118.

## 13.11 Chromium

### 13.11.1 General description

#### *Identity*

Chromium is widely distributed in the earth's crust. It can exist in oxidation states of +2 to +6. Soils and rocks may contain small amounts of chromium, almost always in the trivalent state.

#### *Physicochemical properties (1–4)*

| *Property* | *Cr* | *$CrCl_3$* | *$K_2CrO_4$* | *$Cr_2O_3$* | *$CrO_3$* |
|---|---|---|---|---|---|
| Melting point (°C) | 1857 | 1152 | 968.3 | 2266 | 196 |
| Boiling point (°C) | 2672 | – | – | 4000 | – |
| Solubility (g/litre) | insoluble | slightly soluble | 790 | insoluble | 624 |
| Density (g/cm$^3$) | 7.14 | 2.76 | 2.73 | 5.21 | 2.70 |

#### *Major uses*

Chromium and its salts are used in the leather tanning industry, the manufacture of catalysts, pigments and paints, fungicides, the ceramic and glass industry, and in photography, and for chrome alloy and chromium metal production, chrome plating, and corrosion control (*1*, *3*, *4*).

#### *Environmental fate*

The distribution of compounds containing chromium(III) and chromium(VI) depends on the redox potential, the pH, the presence of oxidizing or reducing compounds, the kinetics of the redox reactions, the formation of chromium(III) complexes or insoluble chromium(III) salts, and the total chromium concentration. In the environment, chromium(VI) occurs mostly as $CrO_4^{2-}$ or $HCrO_4^-$, and chromium(III) as $Cr(OH)_n^{(3-n)+}$. In soil, chromium(III) predominates. Chromium(VI) can easily be reduced to chromium(III) by organic matter, for example, and its occurrence in soil is often the result of human activities. In water,

chromium(III) is a positive ion that forms hydroxides and complexes, and is adsorbed at relatively high pH values. In surface waters, the ratio of chromium(III) to chromium(VI) varies widely, and relatively high concentrations of the latter can be found locally. In general, chromium(VI) salts are more soluble than those of chromium(III), making chromium(VI) relatively mobile.

In air, chromium is present in the form of aerosols. It can be removed from the atmosphere by wet and dry deposition. Both trivalent and hexavalent chromium are released into the air. Because of analytical difficulties, data on chromium speciation in ambient air are rarely available, but the proportion present as chromium(VI) has been estimated as 0.01–30%, based on one study (*4*).

## 13.11.2 Analytical methods

Methods for the determination of chromium in biological and environmental samples are developing rapidly, and all early results (especially for the lower chromium levels) should be interpreted with caution.

Many techniques can be used for the determination of total chromium, including atomic absorption spectroscopy, emission spectroscopy, X-ray fluorescence, and neutron activation analysis. Detection limits for atomic absorption spectroscopy are in the range 0.05–0.2 µg/litre (*5*).

For determining chelated chromium or the hexavalent or trivalent form only, such methods as gas chromatography (with various detection techniques), polarography, and spectrophotometry can be used (*3–5*). The determination of chromium species is currently a very sophisticated procedure, and few analytical data are available (*4*).

## 13.11.3 Environmental levels and human exposure

### *Air*

In arctic air, chromium concentrations of 5–70 pg/m$^3$ have been measured. Ambient air at most stations in the USA contained very little chromium; mean levels were generally below 300 ng/m$^3$, and median levels less than 20 ng/m$^3$ (*6*). In non-industrialized areas, concentrations above 10 ng/m$^3$ are uncommon (*7*). Concentrations in urban areas are 2–4 times higher than regional background concentrations (*8*). The mean concentration of total chromium in air in the Netherlands varied from 2 to 5 ng/m$^3$ (*4*).

As a result of smoking, indoor air concentrations can be 10–400 times greater than outdoor concentrations (approximately 1000 ng/m$^3$).

### Water

The average concentration of chromium in rainwater is in the range 0.2–1 µg/litre (*4, 9–11*). Natural chromium concentrations in seawater of 0.04–0.5 µg/litre have been measured (*3*). In the North Sea, a concentration of 0.7 µg/litre was found (*4*).

The natural total chromium content of surface waters is approximately 0.5–2 µg/litre and the dissolved chromium content 0.02–0.3 µg/litre (*4, 10, 12*). Chromium concentrations in antarctic lakes increase with depth from <0.6 to 30 µg/litre (*13*). Most surface waters contain between 1 and 10 µg of chromium per litre. In general, the chromium content of surface waters reflects the extent of industrial activity. In surface waters in the USA, levels up to 84 µg/litre have been found (*1*); in central Canada, surface water concentrations ranged from 0.2 to 44 µg/litre.[1] In the Rhine, chromium levels are below 10 µg/litre (*14*), and in 50% of the natural stream waters in India the concentration is below 2 µg/litre (*9*).

In general, the chromium concentration in groundwater is low (<1 µg/litre). In the Netherlands, a mean concentration of 0.7 µg/litre has been measured, with a maximum of 5 µg/litre (*4*). In India, 50% of 1473 water samples from dug wells contained less than 2 µg/litre (9). In groundwater in the USA, levels up to 50 µg/litre have been reported; in shallow groundwater, median levels of 2–10 µg/litre have been found (*1,15*). Most supplies in the USA contain less than 5 µg/litre. In 1986, levels in 17 groundwater supplies and one surface water supply exceeded 50 µg/litre (*1*).

Approximately 18% of the population of the USA are exposed to drinking-water levels between 2 and 60 µg/litre and <0.1% to levels between 60 and 120 µg/litre (*1*). In the Netherlands, the chromium concentration of 76% of the supplies was below 1 µg/litre and of 98% below 2 µg/litre (*16*). A survey of Canadian drinking-water supplies gave an overall median level of 2 µg of chromium per litre, with maxima of 14 µg/litre (raw water) and 9 µg/litre (treated water) (*17*).

### Food

Food contains chromium at concentrations ranging from <10 to 1300 µg/kg (*4, 18, 19*). Highest concentrations have been found in meat, fish, fruit, and vegetables (*18*). Utensils used in the preparation of food may contribute to chromium levels.

### Estimated total exposure and relative contribution of drinking-water

Mean chromium intakes from food and water range from 52 to 943 µg/day (*3*). The estimated total intake of chromium from air, water, and food by the general

[1] Data from the National Water Quality Data Bank (NAQUADAT), Inland Waters Directorate, Environment Canada, 1985.

population in the United Kingdom is in the range 78–106 µg/day. Food contributed 93–98% of the total intake and water 1.9–7%. The contribution from air was negligible (*18*). In the Netherlands, the estimated mean daily chromium intake is 100 µg, with a range of 50–200 µg (*4*).

In general, food appears to be the major source of intake. Drinking-water intake can, however, contribute substantially when total chromium levels are above 25 µg/litre.

### 13.11.4 Kinetics and metabolism in laboratory animals and humans

Oral exposure studies in animals found that <0.5–6% of chromium compounds was absorbed; in human studies, the corresponding figure could be as much as 10%. Absorption depends on chromium speciation; chromium(VI) appears to be absorbed from the gastrointestinal tract to a greater extent than chromium(III). Tissue chromium levels of rats exposed to chromium(VI) (as potassium chromate) in drinking-water were 4–15 times higher than those of rats exposed to chromium(III) (as the trichloride). The absorption of chromium(VI) is lowered by partial intragastric reduction to chromium(III) (*20*). Mean fractional absorption values of 5% and 25% have been estimated for the gastrointestinal absorption of chromium(III) and chromium(VI) species and of organic chromium in food ("biologically incorporated"), respectively (*21*). A fractional absorption value of 5% is considered to be a good estimate for the gastrointestinal absorption of soluble inorganic chromium compounds, but 0.5% is more appropriate for that of insoluble inorganic chromium compounds such as chromium trioxide pigment (*20*).

Once absorbed, the fate of chromium will depend on the oxidation state. Chromium(VI) readily penetrates cell membranes, but chromium(III) does not. Chromium is therefore found in both erythrocytes and plasma after gastrointestinal absorption of chromium(VI) but exclusively in the plasma after that of chromium(III). Once transported through the cell membrane, chromium(VI) is rapidly reduced to chromium(III), which subsequently binds to macromolecules. In animal studies, chromium was found to accumulate mainly in liver, kidneys, spleen, and bone marrow after both oral and parenteral administration of different compounds, the distribution depending on the speciation. In humans, the highest concentrations are found in hilar lymph nodes and lungs, followed by spleen, liver, and kidneys (*20*), and tissue chromium levels decline with age. In both laboratory animals and humans, water-soluble compounds can be converted into insoluble compounds with long residence times.

After oral exposure to chromium compounds, especially those of chromium(III), chromium is recovered almost entirely in the faeces because of the poor absorption rate. Animal studies show that urine is the major route of elimi-

nation of absorbed chromium. In a 1-year balance study in which two humans had mean daily dietary intakes of 200 and 290 µg of chromium, 60% and 40% of the total amount excreted were recovered in the urine and faeces, respectively (*20*).

## 13.11.5 Effects on laboratory animals and *in vitro* test systems

### *Acute exposure*

Oral $LD_{50}$ values in rats were in the range 20–250 mg of chromium(VI) per kg of body weight and 185–615 mg of chromium(III) per kg of body weight, based on tests with dichromates and chromic compounds, respectively (*20*).

### *Short-term exposure*

Three-month-old inbred BD rats (5–14 per sex per dose) were exposed for 90 days, 5 days per week, to 0, 2%, or 5% of insoluble, nonhydrated chromium(III) oxide ($Cr_2O_3$) pigment in feed (*22*). The dose levels are equivalent to 0, 480, and 1210 mg of chromium(III) per kg of body weight per day (*20*). Survival, feed intake, body and organ weights, blood analysis, and the macroscopic and microscopic appearance of major organs were not affected. The only effect observed was a dose-related decrease in liver and spleen weights, ranging from 15% to 35% (*22*).

### *Long-term exposure*

#### Chromium(III)

In a 1-year study, 5-week-old Sprague-Dawley albino rats (9 males and 12 females) were exposed to 25 mg of chromium(III) per litre (as chromium trichloride, $CrCl_3$) in drinking-water, equivalent to 2.5 mg of chromium(III) per kg of body weight per day. Feed consumption, body weight gain, and the gross and microscopic appearance of tissues were not affected. The only effect observed was some accumulation of chromium in various tissues (*23*).

#### Chromium(VI)

In a 1-year study, 5-week-old albino Sprague-Dawley rats (8–12 per sex per dose) were exposed to dose levels up to 25 mg of chromium(VI) per litre (as potassium chromate) in drinking-water. The highest dose is equivalent to 2.5 mg of chromium(VI) per kg of body weight per day. Feed consumption, body weight gain, blood parameters, and the gross and microscopic appearance of organs were not affected. The only effects observed were decreased water consumption (20%) and accumulation of chromium in various tissues (*23*).

In a limited lifetime toxicity study in which Swiss mice of the Charles River CD strain (54 per sex) were exposed from weaning until death to 5 mg of chromium(VI) per litre (as potassium chromate) in drinking-water, survival parameters and body weight were not affected (*24*). Exposure of NMRI mice in a

29-month three-generation study to 135 mg of chromium(VI) per litre (as potassium chromate) in drinking-water did not affect survival or growth (*25*).

### *Reproductive toxicity, embryotoxicity, and teratogenicity*

In a 90-day study with limited numbers of 3-month-old inbred BD rats, exposure of male and female animals for 60 days prior to mating and through gestation to dose levels of 0, 2%, or 5% insoluble, nonhydrated chromium(II) oxide pigment in feed did not result in embryotoxicity or fetotoxicity or teratogenicity (*22*). In studies with hamsters and mice, parenteral administration of chromium(III) or chromium(VI) during gestation did result in embryotoxicity or fetotoxicity and teratogenicity. These effects appear to be associated with maternal toxicity, but definitive conclusions cannot be reached (*20*).

### *Mutagenicity and related end-points*

Chromium(VI) compounds cause mutations and allied effects such as chromosomal aberrations in a wide range of prokaryotic and eukaryotic test systems, both *in vitro* and *in vivo*. Chromium(III) compounds are not active in similar systems, or only at high, cytotoxic concentrations. It has therefore been concluded that chromium(VI) is mutagenic, whereas chromium(III) is not.

The mutagenic activity of chromium(VI) is decreased or abolished by reducing agents such as human gastric juice and rat liver microsomal fraction. Inactive chromium(III) compounds are not converted into mutagens by biological systems, but only by treatment with strong oxidizing agents. The difference between the mutagenic action of chromium(VI) and chromium(III) can be explained by differences in physicochemical properties. Although chromium(VI), which readily penetrates cell membranes, is the causative agent, there are strong indications that chromium(III) or intermediates such as chromium(V) formed during the intracellular reduction of chromium(VI) are the genetically active agents that form ligands with macromolecules such as DNA (*20*).

### *Carcinogenicity*

In a lifetime carcinogenicity study in which 3-month-old inbred male and female BD rats (60 per dose) were exposed, 5 days per week for 600 days, to 0, 2%, or 5% of insoluble, nonhydrated chromium(III) oxide pigment in feed, tumour incidence was not affected (*22*). The highest dose is equivalent to 1210 mg of chromium(III) per kg of body weight per day(*20*).

In a limited lifetime carcinogenicity study, Swiss mice of the Charles River CD strain (54 per sex) were exposed from weaning until death to 5 mg of chromium(VI) per litre (as potassium chromate) in drinking-water. According to the authors (*24*), the study suggested that chromium(VI) is carcinogenic, but the very limited data reported do not allow evaluation (*20*).

Exposure of NMRI mice in a 29-month three-generation study to 135 mg of chromium(VI) per litre (as potassium chromate) in drinking-water did not result in carcinogenic activity in the stomach (*25*).

The carcinogenicity of chromium, especially with regard to lung tumours, has also been investigated in a number of inhalation studies; in other studies, the chromium was administered by implantation or injection. Based on all the available studies, it has been concluded that there is sufficient evidence in experimental animals for the carcinogenicity of calcium, lead, strontium, and zinc chromates (chromium(VI)); limited evidence for the carcinogenicity of chromium trioxide (chromic acid) and sodium dichromate; and inadequate evidence for the carcinogenicity of other chromium(VI) and chromium(III) compounds and of metallic chromium (*2*, *26*).

## 13.11.6 Effects on humans

### *Requirements*

The daily chromium requirement for adults is estimated to be 0.5–2 µg of absorbable chromium(III). If a fractional absorption value of 25% for "biologically incorporated" chromium(III) in food is assumed, this is provided by a daily dietary intake of 2–8 µg of chromium(III), equivalent to 0.03–0.13 µg of chromium(III) per kg of body weight per day for a 60-kg adult (*20*).

### *Acute exposure*

Ingestion of 1–5 g of "chromate" (not further specified) resulted in severe acute effects such as gastrointestinal disorders, haemorrhagic diathesis, and convulsions. Death may occur following cardiovascular shock (*20*).

### *Mutagenicity*

In some occupational studies, increased incidences of genotoxic effects such as chromosomal aberrations and sister chromatid exchanges have been found in workers exposed to chromium(VI) compounds (*20*).

### *Carcinogenicity*

In epidemiological studies, an association has been found between occupational exposure to chromium(VI) compounds and mortality due to lung cancer. On the basis of these studies, it has been concluded that there is sufficient evidence of respiratory carcinogenicity in humans exposed to chromium(VI) in these occupational settings. Data on lung cancer risk in other chromium-associated occupational settings and for cancer at sites other than the lungs are considered to be insufficient. The epidemiological data do not allow an evaluation of the relative contributions to carcinogenic risk of metallic chromium, chromium(III), and

chromium(VI) or of soluble versus insoluble chromium compounds, but it appears that exposure to a mixture of chromium(VI) compounds of different solubilities results in the highest risk to humans (*2*, *26*).

IARC has classified chromium(VI) in Group 1 (carcinogenic to humans) and metallic chromium and chromium(III) in Group 3 (not classifiable as to their carcinogenicity to humans) (*2*, *26*).

### 13.11.7 Provisional guideline value

In principle, because the health effects are determined largely by the oxidation state, different guideline values for chromium(III) and chromium(VI) should be derived. However, current analytical methods and the variable speciation of chromium in water favour a guideline value for total chromium.

Because of the carcinogenicity of chromium(VI) by the inhalation route and its genotoxicity, the current guideline value of 0.05 mg/litre has been questioned, but the available toxicologial data do not support the derivation of a new value. As a practical measure, 0.05 mg/litre, which is considered to be unlikely to give rise to significant risks to health, has been retained as the provisional guideline value until additional information becomes available and chromium can be re-evaluated.

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## 13.12 Colour

### 13.12.1 General description

#### *Identity*

The appearance of colour in water is caused by the absoption of certain wavelengths of normal light by coloured substances ("true" colour) and by the scattering of light by suspended particles; combined, these constitute "apparent" colour (*1–3*). Treatment removes much of the suspended matter from drinking-water, and most of the remaining discoloration arises from true colour, which is generally substantially less than apparent colour (*4*).

#### *Organoleptic properties*

It has been suggested that the organic matter (primarily humic and fulvic acids) usually responsible for the colour of drinking-water give it an earthy smell and taste, but there is no conclusive evidence for this. Highly coloured polluted water will frequently have an objectionable taste, but the precise causal relationship is unknown. It is known that the organic colouring material in water stimulates the growth of many aquatic microorganisms, some of which are directly responsible for the production of odour in water (*5*).

hazardous. Diborane is an irritant to the lungs and kidneys. Decaborane and pentaborane are central nervous system poisons; however, the liver and kidneys may also be damaged if the exposure is severe (Browning, 1969).

## CESIUM

**Occurrence and Use.** Cesium occurs in nature as pollucite, a hydrous cesium-aluminum silicate. Its main industrial uses are as a catalyst in the polymerization of resin-forming materials and in photoelectric cells. It is useful in this respect because the range of sensitivity is approximately that of the human eye. Radioactive cesium is a constituent of nuclear fallout.

**Absorption, Excretion, Toxicity.** Cesium is absorbed after oral administration and is bound within the cells of the soft tissues such as kidney and muscle. It is found in the red blood cells and may in some circumstances be able to replace potassium. The urine is the main route of excretion. Increased potassium levels facilitate cesium excretion. The radioactive material is found in milk.

No cases of industrial injury related to the chemical toxicity of cesium have been reported. It is likely that replacement of potassium by cesium would produce ill effects in man, probably neuromuscular in nature, as has been demonstrated in experimental animals (Browning, 1969).

## CHROMIUM

**Occurrence and Use.** Chromite ($FeCr_2O_4$) is the most important chrome ore. Chromium plating is one of the major uses of this metal. Steel fabrication, paint and pigment manufacturing, and leather tanning constitute other major uses of chromium. The medicinal uses of chromium are limited to external application of chromium trioxide as a caustic and intravenous sodium radiochromate to evaluate the life-span of red cells.

**Absorption, Excretion, Toxicity.** Chromium exists in several valence states. Only the trivalent and hexavalent are biologically significant. While conversion from trivalent to hexavalent and other states is important chemically, the inner conversion from chromic to chromate does not apparently occur biologically. The conversion of hexavalent to trivalent does take place in the body.

Trivalent chromium is an essential element in animals. It plays a role in glucose and lipid metabolism. Chromium deficiency mimics diabetes mellitus and produces aortic plaques in rats. Chromium supplementation improves or normalizes glucose tolerance in diabetics, older people, and malnourished children. It has been suggested that chromium deficiency may be a basic factor in atherosclerosis (Mertz, 1969; Schroeder *et al.*, 1970c). A deficiency of trivalent chromium apparently increases the toxicity of lead (Schroeder *et al.*, 1965).

The major environmental exposure to chromium occurs as a consequence of its presence in food. Brown sugar and animal fats, especially butter, are chromium-rich foods. Chromium is found in urban air (Table 17-3). The concentration in natural water supplies is below 10 ppb; however, in municipal drinking water concentrations of 35 ppb have been reported (Table 17-2). The daily intake has been estimated at 60 $\mu$g (30 to 100 $\mu$g), 10 $\mu$g of which is due to water concentrations (Table 17-1). However, the absorption is limited to approximately 1 percent (Schroeder *et al.*, 1962b). The occurrence of chromium in food or water has not been shown to produce any significant adverse effects in either man or experimental animals (U.S. Public Health Service, 1962; Kanisawa and Schroeder, 1969; Schroeder and Mitchener, 1971).

The total chromium body burden of man has been estimated at less than 6 mg (Table 17-1). Chromium is transported across the placenta and concentrated in the fetus. The tissue concentrations tend to decline rapidly with age except for the lung concentration, which tends to increase. The decline of chromium levels with age does not occur in rats. Wide geographic variations in tissue concentration, presumably due to differences in dietary intake and atmospheric concentration, have been reported (Schroeder *et al.*, 1970d).

Water-soluble chromates disappear from the lungs into the circulatory system after intratracheal application, while the trivalent chromic chloride remains largely in the lungs. Oral administration of trivalent chromium results in little chromium absorption. The degree of absorption is slightly higher following administration of hexavalent compounds. Once absorbed, $Cr^{3+}$ is bound to the plasma proteins. Under normal conditions the body contains stores of chromium in the skin, lungs, muscle, and fat. The bone contains chromium, but this is not due to selective deposition. The caudate nucleus has been reported to have high concentrations. Hexavalent chromium is reduced to the trivalent form in the skin. In the blood little hexavalent chromium can be detected. The reticuloendothelial system, liver, spleen, testes, and bone marrow have an affinity for chromite, possibly as the result of phagocytosis of colloidal particles formed at higher tissue concentrations. On the other hand, chromates are bound largely to the red blood cells. Subcellular distribution studies have indicated that the nuclear fraction

contains almost one-half the intracellular chromium. Urinary excretion accounts for about 80 percent of injected chromium. However, elimination via the intestine may also play a role in chromium excretion. Milk is another secondary route of excretion (Mertz, 1969). Average urinary and blood concentrations are 0.4 and 2.8 μg/100 g, respectively (Imbus *et al.*, 1963).

Occupational exposure to chromium compounds ($Cr^{6+}$) causes dermatitis, penetrating ulcers on the hands and forearms, perforation of the nasal septum, and inflammation of the larynx and liver. The dermatitis is probably due to an allergenic response, although persons sensitive to $Cr^{6+}$ also respond to large amounts of $Cr^{6+}$ (Fregert and Rossman, 1964). The ulcers are believed to be due to chromate ion and not related to sensitization. Chromic acid, and, to a lesser extent, chromate, are presumably the causative agents in perforation of the nasal septum (Browning, 1969). Epidemiologic studies indicate that chromate is a carcinogen with bronchogenic carcinoma as the principal lesion. The latent period appears to be 10 to 15 years. The relative risk of chromate plant workers for respiratory cancer is 20 times greater than that of the general population. Experimental studies have suggested that calcium chromate may be the specific carcinogenic agent (Enterline, 1974). However, some investigators have produced cancer in experimental animals with injections of either the trivalent or hexavalent form (Hueper and Payne, 1962). Incorporation of hexavalent chromium (5 ppm) into the drinking water of mice over their lifetimes produced a slightly higher incidence of malignant tumors than in the controls. Trivalent chromium (chromium acetate) given to rats under similar conditions produced no such effect (Schroeder and Mitchner, 1971; Kanisawa and Schroeder, 1969).

## COBALT

**Occurrence and Use.** Cobalt is a relatively rare metal produced primarily as a by-product of other metals, chiefly copper. It is used in high-temperature alloys and in permanent magnets. Its salts are useful in paint driers, as catalysts, and in the production of numerous pigments. It is an essential element in that 1 μg of vitamin $B_{12}$ contains 0.0434 μg of cobalt. Vitamin $B_{12}$ is essential in the prevention of pernicious anemia. If other requirements exist, they are not well understood. Deficiency diseases of cattle and sheep caused by insufficient natural levels of cobalt are characterized by anemia and loss of weight or retarded growth.

**Absorption, Excretion, Toxicity.** Cobalt salts are generally well absorbed after oral ingestion, probably in the jejunum. Despite this fact, increased levels tend not to cause significant accumulation. About 80 percent of the ingested cobalt is excreted in the urine. Of the remaining, about 15 percent is excreted in the feces by an enterohepatic pathway, while the milk and sweat are other secondary routes of excretion. The total body burden has been estimated as 1.1 mg. The muscle contains the largest total fraction, but the fat has the highest concentration. The liver, heart, and hair have significantly higher concentrations than other organs, but the concentration in these organs is relatively low. The normal levels in human urine and blood are about 98 and 0.18 μg/l, respectively. The blood level is largely in association with the red cells.

Significant species differences have been observed in the excretion of radiocobalt. In rats and cattle 80 percent is eliminated in the feces (Schroeder *et al.*, 1967b).

Polycythemia is the characteristic response of most mammals, including man, to ingestion of excessive amounts of cobalt. Toxicity resulting from overzealous therapeutic administration has been reported to produce vomiting, diarrhea, and a sensation of warmth. Intravenous administration leads to flushing of the face, increased blood pressure, slowed respiration, giddiness, tinnitus, and deafness due to nerve damage (Browning, 1969).

High levels of chronic oral administration may result in the production of goiter. Epidemiologic studies suggest that the incidence of goiter is higher in regions containing increased levels of cobalt in the water and soil (Wills, 1966). The goitrogenic effect has been elicited by the oral administration of 3 to 4 mg/kg to children in the course of sickle cell anemia therapy (Browning, 1969).

Cardiomyopathy has been caused by excessive intake of cobalt, particularly in beer to which cobalt was added to enhance its foaming qualities. The onset of the poisoning occurred about one month after cobalt was added in concentrations of 1 ppm. Why such a low concentration should produce this effect in the absence of any similar change when cobalt is used therapeutically is unknown. The signs and symptoms were those of congestive heart failure. Autopsy findings revealed a tenfold increase in the cardiac levels of cobalt. Alcohol may have served to potentiate the effect of the cobalt (Morin and Daniel, 1967).

Hyperglycemia due to alpha cell pancreatic damage has been reported after injection into rats. Reduction of blood pressure has also been observed in rats after injection and has led to some experimental use in man (Schroeder *et al.*, 1967b).

## Olson, William

**From:** Browning, Robert W[SMTP:brownrw@texaco.com]
**Sent:** Thursday, June 18, 1998 6:12 AM
**To:** Olson, William
**Subject:** RE: Texaco Eunice North
**Importance:** High

I will send you what I have. It's a document that I received from our Industrial Hygiene Department in Houston. It is a study conducted by the World Health Organization which was published in 1996 entitled "Guidelines for Drinking Water Quality, Volume 2, Health Criteria and Other Supporting Information".

Also, I will confirm with Mr. Lord that he intends to use the minnows for bait. That was my understanding, but I will make sure.

Robert W. Browning
TNAP - West EH&S Department
Midland, Texas
Texnet 672 - 4804
(915) 688 - 4804

> -----Original Message-----
> From: Olson, William [SMTP:WOLSON@state.nm.us]
> Sent: Wednesday, June 17, 1998 11:23 AM
> To: 'Robert Browning'
> Subject: RE: Texaco Eunice North
> Importance: High
>
> If the Lord's are planning to use the minnows for bait our approval
> process
> gets more complicated. There would need to be a demonstration of the
> uptake
> of metals by minnows and subsequent bioaccumulation up the food chain.
>
> As far as the location of the Dicky private well, I am not sure
> exactly
> where it is located. Contact Wayne Price at the OCD Hobbs District
> Office.
> ----------
> ------
> ----------
> > ----------
> > From: Browning, Robert W[SMTP:brownrw@texaco.com]
> > Sent: Tuesday, June 16, 1998 12:42 PM
> > To: Olson, William
> > Subject: RE: Texaco Eunice North
> > Importance: High
> >
> > He is planning on using them for bait. He has a place on the lake
> up at
> > Logan (?).
> >
> > Robert W. Browning
> > TNAP - West EH&S Department

> > Midland, Texas
> > Texnet 672 - 4804
> > (915) 688 - 4804
> >
> > > -----Original Message-----
> > > From: Olson, William [SMTP:WOLSON@state.nm.us]
> > > Sent: Tuesday, June 16, 1998 11:11 AM
> > > To: 'Robert Browning'
> > > Subject: Texaco Eunice North
> > > Importance: High
> > >
> > > I reviewed your e-mail on Bob Lord having a pond for pumped
> > > contaminated
> > > ground water. The OCD would not have a problem with this as long
> as
> > > the
> > > pond was constructed according to OCD guidelines (ie. double
> lined,
> > > leak
> > > detection, etc.). What does he plan on doing with the minnows?
> > >
> > > Also want you to know that I received an e-mail from the OCD Hobbs
> > > District
> > > Office asking to include Mr. Dicky's private water well in
> Texaco's
> > > next
> > > sampling. Mr. Dicky lives north of the Lord's.
> >

**Olson, William** 6/17/98

**To:** Robert Browning
**Subject:** RE: Texaco Eunice North
**Importance:** High

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**Sent:** Tuesday, June 16, 1998 12:42 PM
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**Importance:** High

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Robert W. Browning
TNAP - West EH&S Department
Midland, Texas
Texnet 672 - 4804
(915) 688 - 4804

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## Olson, William

**From:** Browning, Robert W[SMTP:brownrw@texaco.com]
**Sent:** Tuesday, June 16, 1998 12:46 PM
**To:** Olson, William
**Subject:** RE: Texaco Eunice North
**Importance:** High

I'm not familiar with Mr. Dickey. I'll have to find out where he is located. What was the reasoning behind including his well? He would have to be a fairly good distance upgradient wouldn't he?

Robert W. Browning
TNAP - West EH&S Department
Midland, Texas
Texnet 672 - 4804
(915) 688 - 4804

> -----Original Message-----
> From: Olson, William [SMTP:WOLSON@state.nm.us]
> Sent: Tuesday, June 16, 1998 11:11 AM
> To: 'Robert Browning'
> Subject: Texaco Eunice North
> Importance: High
>
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> contaminated
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**Sent:** Tuesday, June 16, 1998 12:42 PM
**To:** Olson, William
**Subject:** RE: Texaco Eunice North
**Importance:** High

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Midland, Texas
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> contaminated
> ground water. The OCD would not have a problem with this as long as
> the
> pond was constructed according to OCD guidelines (ie. double lined,
> leak
> detection, etc.). What does he plan on doing with the minnows?
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> sampling. Mr. Dicky lives north of the Lord's.

6/16/98

**Olson, William**

**To:** Robert Browning
**Subject:** Texaco Eunice North
**Importance:** High

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Also want you to know that I received an e-mail from the OCD Hobbs District Office asking to include Mr. Dicky's private water well in Texaco's next sampling. Mr. Dicky lives north of the Lord's.

## Olson, William

**From:** Browning, Robert W[SMTP:brownrw@texaco.com]
**Sent:** Monday, June 15, 1998 2:48 PM
**To:** 'Olson, Bill - NMOCD'
**Subject:** AGREEMENT WITH BOB LORD
**Importance:** High

This message is in MIME format. Since your mail reader does not understand this format, some or all of this message may not be legible.

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Bill,

Texaco recently signed an agreement with Bob Lord which will assist him in tying his irrigation/livestock water into the city of Eunice water supply. One issue that Mr. Lord was very adamant on was the use of his water from his well. He stated that he would not allow us to pipe that water over to the plant. He wants to construct a small pond on his place to pump the water into so that he can raise some minnows.

I informed him that we (Texaco) would agree to this as long as the NMOCD gave their approval. I think that in the long run this will be a good deal for all involved in that it will allow some pumping of the well to clean it up as well as being a cheaper alternative to boring beneath Main Street in Eunice to allow us to run a line to the plant. His limited pumping of the well is not going to have a significant impact on the plume. I think that we can control the plume with other wells. Also, I think that it would be cost prohibitive to try to set a rental tank and pump into it and then haul off the water. All in all, I think that we can accomplish what we want to do as far as remediation efforts go and still make honor Mr. Lord's wishes. He stated that he would be willing to allow us to continue to have access to the well for monitoring and would be willing to fence the pond so as to limit access to livestock. Also, he stated that he would line the pond.

Does the NMOCD have a problem with allowing us to take this approach?

Robert W. Browning
TNAP - West EH&S Department
Midland, Texas
Texnet 672 - 4804
(915) 688 - 4804

------ =_NextPart_000_01BD9898.B74CAB60
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## Olson, William

**From:** Price, Wayne
**Sent:** Saturday, June 13, 1998 2:55 PM
**To:** Bill Olson
**Cc:** Chris Williams
**Subject:** Texaco N. Eunice- Plant Groundwater Contamination

Dear Bill:

Gary Wink has ask me to have Texaco include in their next round of sampling a water well owned by Mr. Dicky Roberts. Mr. Roberts lives north or the Lords house.

Thanks!

CC: Gary Wink

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
2040 S. PACHECO
SANTA FE, NEW MEXICO 87505
(505) 827-7131

May 15, 1998

**CERTIFIED MAIL**
**RETURN RECEIPT NO. Z-235-437-267**

Mr. Robert W. Browning
Texaco Exploration and Production, Inc.
P.O. Box 3109
Midland, Texas 79702

**RE: SOIL AND GROUND WATER INVESTIGATION**
**TEXACO EUNICE NORTH GAS PLANT**
**LEA COUNTY, NEW MEXICO**

Dear Mr. Browning:

The New Mexico Oil Conservation Division (OCD) has reviewed Texaco Exploration and Production, Inc.'s (TEPI) January 30, 1998 "ADDENDUM FINAL INVESTIGATION REPORT, TEXACO EXPLORATION AND PRODUCTION, INC., EUNICE # 2 (NORTH) GAS PLANT, LEA COUNTY, NEW MEXICO, JANUARY 1998" which was submitted on behalf of TEPI by their consultant Highlander Environmental Corp. This document contains the results of TEPI's investigation of the extent soil and ground water contamination at TEPI's Eunice North Gas Plant in Lea County, New Mexico.

In order to complete a review of the above referenced document, the OCD requires that TEPI provide the OCD with the following information:

1. Copies of the various aerial photographs referenced in the text.

2. Separate shallow and deep ground water potentiometric surface maps. The ground water potentiometric surface map provided is a combination of data from both the shallow and deep zones.

3. Shallow and deep zone isopleth maps for total dissolved solids and chloride.

Please submit the above information to the OCD Santa Fe Office by July 15, 1998 with a copy provided to the OCD Hobbs District Office.

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

Sincerely,

William C. Olson
Hydrologist
Environmental Bureau

xc: Wayne Price, OCD Hobbs District Office
Mark Larson, Highlander Environmental Corp.
Robert Lord
Bob Patterson, Rowland Trucking Co.

NEW MEXICO ENERGY, MINERALS
& NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
DISTRICT I Hobbs
PO BOX 1980
Hobbs, NM 88241-1981
(505) 393-6161

Jennifer A. Salisbury
CABINET SECRETARY

RECEIVED
MAY 05 1998
Environmental Bureau
Oil Conservation Division

May 1, 1998

Bob Patterson
Rowland Trucking
P.O. Box 99
Eunice, NM 88231

Re: Water analysis for Rowland Water Well located SE of Texaco's N. Gas Plant and just South of Lord's residence. Alley Av. S.

Dear Bob:

Please find enclosed the results of the sampling event when NMOCD personnel collected water samples in this area during our investigation of the Texaco N. Gas Plant located in Eunice, NM. Please note your samples are identified as -02 in the analytical reports.

After reviewing the reports the analyticals reflect that your well has contaminants that exceed the NM WQCC groundwater standards. The Chromium level of 190 ppb exceeds the WQCC standard which is 50 ppb. There are other contaminants that also exceed the standard.

Please note the NMOCD District I office recommends that you not use this water as a drinking water source. Due to the levels of Chromium the District I office would also recommend that Rowland Trucking Co. should use caution in how it uses this water i.e. any discharge of this water might violate the NMOCD and/or WQCC rules and regulation standards.

If you require any further information or assistance please do not hesitate to call (505-393-6161) or write this office.

Sincerely Yours,

Wayne Price

Wayne Price-Environmental Engineer

cc: Chris Williams-NMOCD District I Supervisor
Bill Olson-Environmental Bureau, Santa Fe, NM

attachments- copy of water well analysis.

*Highlander Environmental Corp.*

*Midland, Texas*

January 30, 1998



Mr. William C. Olson
Hydrogeologist
New Mexico Energy, Minerals, & Natural Resources Department
Oil Conservation Division
2040 South Pacheco Street
Santa Fe, New Mexico 87505

**Re: Addendum Final Investigation Report, Texaco Exploration and Production, Inc., Eunice # 2 (North) Gas Plant, Lea County, New Mexico, January 1998**

Dear Mr. Olson:

On behalf of Texaco Exploration and Production, Inc. (Texaco), please find enclosed one (1) copy of the above-referenced report. The report documents the results of additional investigations conducted at the Eunice # 2 (North) Gas Plant, Lea County, New Mexico. Please call if you have questions.

Sincerely,
*Highlander Environmental Corp.*

Mark J. Larson
Project Manager

Encl.

cc: Robert Browning, Texaco Exploration and Production, Inc. w/ Enclosure
Bill Smith, Texaco Exploration and Production, Inc. w/Enclosure
Wayne Price, OCD-Hobbs District w/ Enclosure

Texaco Exploration
and Production Inc

500 North Loraine
Midland TX 79701

P O Box 3109
Midland TX 79702



December 18, 1997

Mr. William C. Olson
Hydrogeologist - Environmental Bureau
State of New Mexico
Energy, Minerals and Natural Resources Department
Oil Conservation Division
2040 S. Pacheco
Santa Fe, New Mexico 87505

Re: **Eunice North Gas Plant Soil and Groundwater Remediation**

Dear Bill,

This letter is to confirm our previous telephone conversation, which took place on December 12, 1997 at approximately 9:15 a.m. (CST). As discussed, we agreed to extend the December 15, 1997 deadline for the submittal of the Texaco Eunice North Gas Plant Groundwater Remediation Plan until February 1, 1998. This extension was requested due to the need to install additional groundwater monitoring wells on properties not owned or operated by Texaco. These wells were deemed necessary in order to further delineate the impact to groundwater by chromium. Additionally, work has been done inside the plant in order to attempt to identify the source of the chromium. This has been accomplished by installing additional monitoring wells as well as a number of soil borings in suspect areas.

Texaco greatly appreciates your patience and assistance in this matter. Upon completion of the investigation, the report will be prepared and reviewed by Texaco's Legal Department, Eunice Plant management, and myself. The report will then be submitted to your office for review and approval on or before February 1, 1998.

Please feel free to contact me at (915) 688-4804 should you have questions concerning this matter.

Robert W Browning

Robert W. Browning
EH&S Professional – Environmental
Texaco Exploration and Production, Inc.

Texaco Exploration
and Production Inc

500 North Loraine
Midland TX 79701

P O Box 3109
Midland TX 79702

September 5, 1997



Mr. William C. Olson
Hydrogeologist - Environmental Bureau
State of New Mexico
Energy, Minerals and Natural Resources Department
Oil Conservation Division
2040 S. Pacheco
Santa Fe, New Mexico 87505

Verbal approval to Robert Brownlow - Texaco on 10/9/97 at 1300 hrs. Will Olson

**RE: TEXACO EUNICE NORTH AND SOUTH GAS PLANTS**
**LEA COUNTY, NEW MEXICO**

Dear Bill,

Texaco E&P, Inc. respectfully requests an extension of the November 1, 1997 deadline for the submittal of the report concerning the further delineation of the impacted groundwater at the Eunice North Gas Plant. You will recall that you have previously granted an extension of time for the submittal of this report due to the fact that Texaco found it necessary to step outside of the plant boundary to install an additional monitor well. The well was installed, but the analytical tests indicate that it is now necessary to install at least seven (7) and possibly an eighth well down gradient of the plant site. As with the previous offsite well, this will require the assignment of easements from numerous third parties to allow access to property not owned by Texaco. One of the surface owners is in fact the State of New Mexico which will require the permitting of this well through the State Engineers Office. As you are well aware this can, and has, caused delays in our ability to complete the full delineation of the metals in groundwater situation at the facility. It is our hope that the easements will be granted shortly and we can proceed with the project. We are currently planning on beginning the installation of the additional wells during the week of October 13, 1997. However, we foresee that we will not be in a position to fully discuss the extent, nor the remediation, of affected soil and groundwater by November 1.

Upon completion of the drilling activity and our receipt of the analytical data, the report will be drafted and reviewed by myself, Highlander Environmental, Inc., plant personnel and as usual, Texaco's Legal Department in Denver, Colorado. **Please be advised, that the report will be submitted to you on or before December 15, 1997.**

Please be aware that at this time we are committing our full attention and available manpower to the delineation of the groundwater impact at the North Plant. It is our concern that it will be difficult to provide a well planned soil and groundwater remediation plan for the South Plant by October 31, 1997 as requested in your letter dated September 10, 1997. **It is requested that this**

**deadline also be extended. Please be advised that the remediation plan for the South Plant will be submitted to you by December, 1, 1997.**

Texaco greatly appreciates your consideration and cooperation in this matter. Please feel free to call me at (915) 688-4804 should you care to discuss this matter further or should you have any questions concerning the activities at the Eunice Gas Plant Complex.

Sincerely,

Robert W. Browning
EH&S Professional - Environmental,
Texaco Exploration & Production, Inc.

RWB/

cc: RWF
WAS - LML

Texaco Exploration
and Production Inc

500 North Loraine
Midland TX 79701

P O Box 3109
Midland TX 79702



September 5, 1997

Mr. William C. Olson
Hydrogeologist - Environmental Bureau
State of New Mexico
Energy, Minerals and Natural Resources Department
Oil Conservation Division
2040 S. Pacheco
Santa Fe, New Mexico 87505

9/9/97 0915
Gave verbal approval
to Robert Browning
Will Olson

**RE: TEXACO EUNICE NORTH GAS PLANT**
**LEA COUNTY, NEW MEXICO**

Dear Bill,

As mentioned in my e-mail message of September 5, 1997, Texaco E&P, Inc. respectfully requests an extension of the September 23, 1997 deadline for the submittal of the report concerning the further delineation of the impacted groundwater at the Eunice North Gas Plant as requested by Mr. Pat Sanchez in his letter dated July 23, 1997. At this time, we have drilled three (3) additional wells at the North Plant in order to determine the horizontal extent of the groundwater impact. Based on the results of those activities, we have found it necessary to step outside of the plant boundary and drill one more well off-site. This has required the assignment of an easement from a third party to allow us access to property not owned by Texaco. As you are well aware this can, and has, caused delays in our ability to complete the full delineation of the metals in groundwater situation at the facility. It is our hope that the easement will be granted shortly and we can proceed with the project. However, we foresee that we will not be in a position to fully discuss the extent, nor the remediation, of affected groundwater by September 23.

Upon completion of the drilling activity and our receipt of the analytical data, the report will be drafted and reviewed by myself, Highlander Environmental, Inc., plant personnel and as usual, Texaco's Legal Department in Denver, Colorado. **Please be advised, that the report will be submitted to you on or before November 1, 1997.**

Texaco greatly appreciates your consideration and cooperation in this matter. Please feel free to call me at (915) 688-4804 should you care to discuss this matter further or should you have any questions concerning the activities at the Eunice Gas Plant Complex.

Sincerely,

Robert W Browning

Robert W. Browning
EH&S Professional - Environmental,
Texaco Exploration & Production, Inc.

RWB/

cc: RWF
WAS - LML

## Bill Olson

**From:** Browning, Robert W [SMTP:brownrw@texaco.com]
**Sent:** Friday, September 05, 1997 6:32 AM
**To:** 'Olson, Bill - NMOCD'
**Cc:** Foote, Robert W ; Lehman, Larry M.; Smith, William A
**Subject:** GW-004 MODIFICATION
**Importance:** High

This message is in MIME format. Since your mail reader does not understand this format, some or all of this message may not be legible.

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Content-Transfer-Encoding: 7bit

Bill,
In Pat Sanchez's July 23, 1997 letter related to the further delineation/investigation of impacted groundwater at the Texaco Eunice North Gas Plant he states that the submittal of the Groundwater Remediation Plan will be considered a "modification" to GW-004. Our question is whether or not we have to submit the entire discharge plan with the Remediation Plan as an appendix/attachment, or can we submit the Plan by itself with reference made in the cover letter that this submittal will constitute a modification to GW-004?

Additionally, please be advised that in the course of the further delineation of the metals situation, we have drilled three additional monitor wells. We have yet to fully delineate the horizontal extent of the groundwater impact. Therefore, we are going to have to step out off of our property in order to do so. At this time we are trying to gain an easement to allow us to drill one more well. This has taken some time. Therefore, I will be sending a request for an extension of time beyond the 9/23 deadline for submittal of the requested information. We will be requesting that the deadline be extended to November 1, 1997. I will get this out later today. I will e-mail you an advanced copy when I get it drafted.

Thanks for your help, Bill.

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NEW MEXICO ENERGY, MINERALS
& NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
2040 South Pacheco Street
Santa Fe, New Mexico 87505
(505) 827-7131

July 23, 1997

**CERTIFIED MAIL**
**RETURN RECEIPT NO. P-326-936-640**

Mr. Robert W. Browning
Texaco Exploration and Production, Inc.
P.O. Box 3109
Midland, Texas 79702

**RE: GROUND WATER DELINEATION**
**REQUIREMENT OF FURTHER DELINEATION/INVESTIGATION**
**EUNICE NORTH GAS PLANT**
**DISCHARGE PLAN GW-004**
**LEA COUNTY, NEW MEXICO**

Dear Mr. Browning:

The New Mexico Oil Conservation Division (OCD) has received the Texaco Exploration and Production, Inc. (TEPI) "Final Investigation Report" dated May 27, 1997. The report was required as part of the approval of the "Comprehensive Facility Investigation Work Plan" dated February 10, 1997 as submitted by TEPI, and approved by the OCD as "Ground Water Delineation" on February 27, 1997. The purpose of the "Final Investigation Report" was to delineate and characterize the lateral and vertical extent of the groundwater contamination at the facility in a manner consistent with 20 NMAC 6.2., Subpart IV, 4106. On June 25, 1997 the OCD approved of this report subject to the following conditions:

**(From the June 25, 1997 from OCD to TEPI.)**

1. *TEPI will meet with the OCD on Tuesday, July 15, 1997 at 1:30 pm to discuss the findings of the "Final Investigation Report" and what options TEPI will be in the process of evaluating for "Groundwater" remediation at the site.*

2. *TEPI and OCD will establish timeliness for implementation of the remediation. The discussion will focus on submittal by TEPI for approval by the OCD of a "Groundwater Remediation" plan for the facility. This will be considered a modification to GW-004 pursuant to 20 NMAC 6.2, Subpart III, 3109. E. Upon submittal of the plan OCD will issue public notice pursuant to 20 NMAC 6.2, Subpart III, 3108 and a 30 day period for public comment will be allowed. After the 30 day comment period (if no protest from the public ) OCD will either approve or disapprove of the proposed modification for "Groundwater Remediation."*

Based upon the discussion at the July 15, 1997 between OCD and TEPI it was agreed that further delineation and investigation for the facility would be required. **TEPI will therefore submit to the OCD for review by September 23, 1997 a report outlining the results of the further delineation and investigation.** The report must include a finding regarding the metals situation in the groundwater and an updated timeline for the installation of pollution prevention equipment outlined in the December 6, 1996 from Mr. R.G. Bailey titled " North Plant Work Plan." **TEPI should also consider the removal of the free phase product encountered in MW-6 and MW-5.**

If you have any questions, please contact Mr. Roger Anderson by telephone at (505) 827-7152 or Mr. William Olson at (505) 827-7154.

Sincerely,

Patricio W. Sanchez
Petroleum Engineering Specialist
Environmental Bureau - OCD

c: OCD Hobbs District Office
Mr. Mark J. Larson, Project Manager - Highlander Environmental Corp.

P 326 936 640

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PS Form **3800**, April 1995

*Highlander Environmental Corp.*

*Midland, Texas*



June 25, 1997

Mr. Pat Sanchez
Oil Conservation Division
Energy, Minerals, and Natural Resources Department
State of New Mexico
2040 S. Pacheco
Santa Fe, New Mexico 87505

Re: EPA Region III Risk-Based Concentration Tables, May 16, 1997, Texaco Exploration and Production, Inc., Eunice, # 2 (North) Gas Plant, Eunice, New Mexico

Dear Mr. Sanchez:

Per our telephone conversation today, please find attached the EPA Region III Risk-Based Concentration Table (Attachment A), which identifies the risk-based concentration for dichlorodifluoromethane in tap water as 390 micrograms per liter (ug/L). EPA Region III has also classified dichlorodifluoromethane as a noncarcinogen compound.

Based on the EPA Region III risk-based concentration (390 ug/L), the levels of dichlorodifluoromethane reported in groundwater samples collected from monitor wells, and the water well at the Texaco Exploration and Production, Inc., Eunice # 2 (North) Gas Plant, Eunice, New Mexico on April 23, 1997 (6 ug/L to 98 ug/L), do not indicate a health risk. Please call if you have any questions.

Sincerely,
*Highlander Environmental Corp.*

Mark J. Larson
Project Manager/Senior Hydrogeologist



Encl.

cc: Mr. Robert Browning, Texaco Exploration and Production, Inc.

# ATTACHMENT A

# EPA REGION III RISK-BASED CONCENTRATION TABLE

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
Region III
841 Chestnut Street
Philadelphia, Pennsylvania 19107

April 19, 1996

SUBJECT: Risk-Based Concentration Table, January-June 1996

FROM: Roy L. Smith, Ph.D.
Office of RCRA
Technical & Program Support Branch (3HW70)

TO: RBC Table mailing list

Attached is the EPA Region III risk-based concentration (RBC) table, which we distribute semiannually to all interested parties.

*IMPORTANT MESSAGE*

*EPA Region III's Internet website now includes two versions of the RBC Table. (These can be found at* **http://www.epa.gov/reg3hwmd/riskmenu.htm?=Risk+Guidance.** *Once there, I suggest you set a bookmark to ease future access.) One version can be browsed on-line, and a second (identical) version in .ZIP format can be quickly downloaded. The cover memo and background information are also included in both formats.*

*We strongly encourage all RBC table users having Internet access to obtain the table electronically rather than on paper. In this way, users can access the most current RBC table immediately in a form that can be used directly for comparisons with data or risk estimates. This distribution method will also save hundreds of pounds of paper per year and cost substantially less.*

## CONTENTS, USES, AND LIMITATIONS OF THE RBC TABLE

The table contains reference doses and carcinogenic potency slopes (obtained from IRIS through April 1, 1996, HEAST through May 1995, the EPA-NCEA Superfund Health Risk Technical Support Center, and other EPA sources) for nearly 600 chemicals. These toxicity constants have been combined with "standard" exposure scenarios to calculate RBCs--chemical concentrations corresponding to fixed levels of risk (*i.e.*, a hazard quotient of one, or lifetime cancer risk of $10^{-6}$, whichever occurs at a lower concentration) in water, air, fish tissue, and soil.

The RBC table also includes soil screening levels (SSLs) for protection of groundwater and air. Most SSLs were obtained directly from EPA/OSWER's proposed SSL guidance document, to which we have added some additional SSLs based on the same methodology. Sources of SSLs are noted in the table. SSLs incorporate the same exposure assumptions as

*Sources: I=IRIS H=HEAST A=HEAST alternate W=Withdrawn from IRIS or HEAST E=EPA-NCEA Regional Support provisional value O=Other EPA documents.*

*Basis : C=carcinogenic effects N=noncarcinogenic effects E=EPA draft Soil Screening Level S=soil saturation concentration M=EPA MCL.*

| Contaminant | CAS | RfDo mg/kg/d | RfDi mg/kg/d | CPSo kg-d/mg | CPSi kg d/mg | V O C | Risk-Based Concentrations: Tap Water µg/L | Ambient Air µg/m3 | Fish mg/kg | Soil Ingestion: Industrial mg/kg | Soil Ingestion: Residential mg/kg | Soil Screening Levels-Transfers from Soil to: Air mg/kg | Groundwater mg/kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Copper and compounds | 7440508 | 4.00E-02 E | | | | | 1.50E+03 N | 1.50E+02 N | 5.40E+01 N | 8.20E+04 N | 3.10E+03 N | 0.00E+00 | 0.00E+00 |
| Crotonaldehyde | 123739 | 1.00E-02 W | | 1.90E+00 H | 1.90E+00 W | | 3.50E-02 C | 3.30E-03 C | 1.70E-03 C | 3.00E+00 C | 3.40E-01 C | 0.00E+00 | 0.00E+00 |
| Cumene | 98828 | 4.00E-02 I | 2.57E-03 H | | | | 1.50E+03 N | 9.40E+00 N | 5.40E+01 N | 8.20E+04 N | 3.10E+03 N | 8.10E+01 N | 6.50E+01 N |
| Cyanides: | 0 | | | | | | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Barium cyanide | 542621 | 1.00E-01 W | | | | | 3.70E+03 N | 3.70E+02 N | 1.40E+02 N | 2.00E+05 N | 7.80E+03 N | 0.00E+00 | 0.00E+00 |
| Calcium cyanide | 592018 | 4.00E-02 I | | | | | 1.50E+03 N | 1.50E+02 N | 5.40E+01 N | 8.20E+04 N | 3.10E+03 N | 0.00E+00 | 0.00E+00 |
| Chlorine cyanide | 506774 | 5.00E-02 I | | | | | 1.80E+03 N | 1.80E+02 N | 6.80E+01 N | 1.00E+05 N | 3.90E+03 N | 0.00E+00 | 0.00E+00 |
| Copper cyanide | 544923 | 5.00E-03 I | | | | | 1.80E+02 N | 1.80E+01 N | 6.80E+00 N | 1.00E+04 N | 3.90E+02 N | 0.00E+00 | 0.00E+00 |
| Cyanazine | 21725462 | 2.00E-03 H | | 8.40E-01 H | | | 8.00E-02 C | 7.50E-03 C | 3.80E-03 C | 6.80E+00 C | 7.60E-01 C | 0.00E+00 | 0.00E+00 |
| Cyanogen | 460195 | 4.00E-02 I | | | | | 1.50E+03 N | 1.50E+02 N | 5.40E+01 N | 8.20E+04 N | 3.10E+03 N | 0.00E+00 | 0.00E+00 |
| Cyanogen bromide | 506683 | 9.00E-02 I | | | | | 3.30E+03 N | 3.30E+02 N | 1.20E+02 N | 1.80E+05 N | 7.00E+03 N | 0.00E+00 | 0.00E+00 |
| Cyanogen chloride | 506774 | 5.00E-02 I | | | | | 1.80E+03 N | 1.80E+02 N | 6.80E+01 N | 1.00E+05 N | 3.90E+03 N | 0.00E+00 | 0.00E+00 |
| Free cyanide | 57125 | 2.00E-02 I | | | | | 7.30E+02 N | 7.30E+01 N | 2.70E+01 N | 4.10E+04 N | 1.60E+03 N | 0.00E+00 | 0.00E+00 |
| Hydrogen cyanide | 74908 | 2.00E-02 I | 8.57E-04 I | | | | 7.30E+02 N | 3.10E+00 N | 2.70E+01 N | 4.10E+04 N | 1.60E+03 N | 0.00E+00 | 0.00E+00 |
| Potassium cyanide | 151508 | 5.00E-02 I | | | | | 1.80E+03 N | 1.80E+02 N | 6.80E+01 N | 1.00E+05 N | 3.90E+03 N | 0.00E+00 | 0.00E+00 |
| Potassium silver cyanide | 506616 | 2.00E-01 I | | | | | 7.30E+03 N | 7.30E+02 N | 2.70E+02 N | 4.10E+05 N | 1.60E+04 N | 0.00E+00 | 0.00E+00 |
| Silver cyanide | 506649 | 1.00E-01 I | | | | | 3.70E+03 N | 3.70E+02 N | 1.40E+02 N | 2.00E+05 N | 7.80E+03 N | 0.00E+00 | 0.00E+00 |
| Sodium cyanide | 143339 | 4.00E-02 I | | | | | 1.50E+03 N | 1.50E+02 N | 5.40E+01 N | 8.20E+04 N | 3.10E+03 N | 0.00E+00 | 0.00E+00 |
| Thiocyanate | 0 | 2.00E-02 E | | | | | 7.30E+02 N | 7.30E+01 N | 2.70E+01 N | 4.10E+04 N | 1.60E+03 N | 0.00E+00 | 0.00E+00 |
| Zinc cyanide | 557211 | 5.00E-02 I | | | | | 1.80E+03 N | 1.80E+02 N | 6.80E+01 N | 1.00E+05 N | 3.90E+03 N | 0.00E+00 | 0.00E+00 |
| Cyclohexanone | 108941 | 5.00E+00 I | | | | ☒ | 3.00E+04 N | 1.80E+04 N | 6.80E+03 N | 1.00E+06 N | 3.90E+05 N | 0.00E+00 | 0.00E+00 |
| Cyclohexlamine | 108918 | 2.00E-01 I | | | | | 7.30E+03 N | 7.30E+02 N | 2.70E+02 N | 4.10E+05 N | 1.60E+04 N | 0.00E+00 | 0.00E+00 |
| Cyhalothrin/Karate | 68085858 | 5.00E-03 I | | | | | 1.80E+02 N | 1.80E+01 N | 6.80E+00 N | 1.00E+04 N | 3.90E+02 N | 0.00E+00 | 0.00E+00 |
| Cypermethrin | 52315078 | 1.00E-02 I | | | | | 3.70E+02 N | 3.70E+01 N | 1.40E+01 N | 2.00E+04 N | 7.80E+02 N | 0.00E+00 | 0.00E+00 |
| Cyromazine | 66215278 | 7.50E-03 I | | | | | 2.70E+02 N | 2.70E+01 N | 1.00E+01 N | 1.50E+04 N | 5.90E+02 N | 0.00E+00 | 0.00E+00 |
| Dacthal | 1861321 | 1.00E-02 I | | | | | 3.70E+02 N | 3.70E+01 N | 1.40E+01 N | 2.00E+04 N | 7.80E+02 N | 0.00E+00 | 0.00E+00 |
| Dalapon | 75990 | 3.00E-02 I | | | | | 1.10E+03 N | 1.10E+02 N | 4.10E+01 N | 6.10E+04 N | 2.30E+03 N | 0.00E+00 | 0.00E+00 |
| Danitol | 39515418 | 2.50E-02 I | | | | | 9.10E+02 N | 9.10E+01 N | 3.40E+01 N | 5.10E+04 N | 2.00E+03 N | 0.00E+00 | 0.00E+00 |
| DDD | 72548 | | | 2.40E-01 I | | | 2.80E-01 C | 2.60E-02 C | 1.30E-02 C | 2.40E+01 C | 2.70E+00 C | 3.70E+01 S | 7.00E-01 E |
| DDE | 72559 | | | 3.40E-01 I | | | 2.00E-01 C | 1.80E-02 C | 9.30E-03 C | 1.70E+01 C | 1.90E+00 C | 1.00E+01 S | 5.00E-01 E |
| DDT | 50293 | 5.00E-04 I | | 3.40E-01 I | 3.40E-01 I | | 2.00E-01 C | 1.80E-02 C | 9.30E-03 C | 1.70E+01 C | 1.90E+00 C | 8.00E+01 E | 1.00E+00 E |
| Decabromodiphenyl ether | 1163195 | 1.00E-02 I | | | | ☒ | 6.10E+01 N | 3.70E+01 N | 1.40E+01 N | 2.00E+04 N | 7.80E+02 N | 0.00E+00 | 0.00E+00 |
| Demeton | 8065483 | 4.00E-05 I | | | | | 1.50E+00 N | 1.50E-01 N | 5.40E-02 N | 8.20E+01 N | 3.10E+00 N | 0.00E+00 | 0.00E+00 |
| Diallate | 2303164 | | | 6.10E-02 H | | ☒ | 1.70E-01 C | 1.00E-01 C | 5.20E-02 C | 9.40E+01 C | 1.00E+01 C | 0.00E+00 | 0.00E+00 |
| Diazinon | 333415 | 9.00E-04 H | | | | | 3.30E+01 N | 3.30E+00 N | 1.20E+00 N | 1.80E+03 N | 7.00E+01 N | 5.40E+03 S | 2.80E+00 N |
| Dibenzofuran | 132649 | 4.00E-03 E | | | | | 1.50E+02 N | 1.50E+01 N | 5.40E+00 N | 8.20E+03 N | 3.10E+02 N | 1.20E+02 S | 1.20E+02 N |
| 1,4-Dibromobenzene | 106376 | 1.00E-02 I | | | | ☒ | 6.10E+01 N | 3.70E+01 N | 1.40E+01 N | 2.00E+04 N | 7.80E+02 N | 0.00E+00 | 0.00E+00 |
| 1,2-Dibromo-3-chloropropane | 96128 | | 5.71E-05 I | 1.40E+00 H | 2.42E-03 H | ☒ | 4.80E-02 C | 2.10E-01 N | 2.30E-03 C | 4.10E+00 C | 4.60E-01 C | 1.90E+00 N | 6.10E-04 M |
| 1,2-Dibromoethane | 106934 | | 5.71E-05 H | 8.50E+01 I | 7.70E-01 I | ☒ | 7.50E-04 C | 8.10E-03 C | 3.70E-05 C | 6.70E-02 C | 7.50E-03 C | 5.80E-03 C | 1.80E-04 M |
| Dibutyl phthalate | 84742 | 1.00E-01 I | | | | | 3.70E+03 N | 3.70E+02 N | 1.40E+02 N | 2.00E+05 N | 7.80E+03 N | 1.00E+02 E | 1.20E+02 E |
| Dicamba | 1918009 | 3.00E-02 I | | | | | 1.10E+03 N | 1.10E+02 N | 4.10E+01 N | 6.10E+04 N | 2.30E+03 N | 0.00E+00 | 0.00E+00 |
| 1,2-Dichlorobenzene | 95501 | 9.00E-02 I | 4.00E-02 A | | | ☒ | 2.70E+02 N | 1.50E+02 N | 1.20E+02 N | 1.80E+05 N | 7.00E+03 N | 3.00E+02 E | 6.00E+00 E |
| 1,3-Dichlorobenzene | 541731 | 8.90E-02 O | | | | ☒ | 5.40E+02 N | 3.20E+02 N | 1.20E+02 N | 1.80E+05 N | 7.00E+03 N | 0.00E+00 | 0.00E+00 |
| 1,4-Dichlorobenzene | 106467 | | 2.29E-01 I | 2.40E-02 H | | ☒ | 4.40E-01 C | 2.60E-01 C | 1.30E-01 C | 2.40E+02 C | 2.70E+01 C | 7.70E+03 E | 1.00E+00 E |
| 3,3'-Dichlorobenzidine | 91941 | | | 4.50E-01 I | | | 1.50E-01 C | 1.40E-02 C | 7.00E-03 C | 1.30E+01 C | 1.40E+00 C | 5.20E+01 S | 1.00E-02 E |
| 1,4-Dichloro-2-butene | 764410 | | | | 9.30E+00 H | ☒ | 1.10E-03 C | 6.70E-04 C | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Dichlorodifluoromethane | 75718 | 2.00E-01 I | 5.71E-02 A | | | ☒ | 3.90E+02 N | 2.10E+02 N | 2.70E+02 N | 4.10E+05 N | 1.60E+04 N | 3.70E+01 N | 7.50E+00 N |

NEW MEXICO ENERGY, MINERALS
& NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
2040 South Pacheco Street
Santa Fe, New Mexico 87505
(505) 827-7131

June 25, 1997

**CERTIFIED MAIL**
**RETURN RECEIPT NO. P-326-936-620**

Mr. Robert W. Browning
Texaco Exploration and Production, Inc.
P.O. Box 3109
Midland, Texas 79702

**RE: GROUND WATER DELINEATION**
**"FINAL INVESTIGATION REPORT"**
**EUNICE NORTH GAS PLANT**
**DISCHARGE PLAN GW-004**
**LEA COUNTY, NEW MEXICO**

Dear Mr. Browning:

The New Mexico Oil Conservation Division (OCD) has received the Texaco Exploration and Production, Inc. (TEPI) "Final Investigation Report" dated May 27, 1997. The report was required as part of the approval of the "Comprehensive Facility Investigation Work Plan" dated February 10, 1997 as submitted by TEPI, and approved by the OCD as "Ground Water Delineation" on February 27, 1997. The purpose of the "Final Investigation Report" was to delineate and characterize the lateral and vertical extent of the groundwater contamination at the facility in a manner consistent with 20 NMAC 6.2., Subpart IV, 4106.

Based on the information and documentation shown in the "Final Investigation Report" , **the report is hereby approved** subject to the following conditions:

1. TEPI will meet with the OCD on Tuesday, July 15, 1997 at 1:30 pm to discuss the findings of the "Final Investigation Report" and what options TEPI will be in the process of evaluating for "Groundwater" remediation at the site.

2. TEPI and OCD will establish timeliness for implementation of the remediation. The discussion will focus on submittal by TEPI for approval by the OCD of a "Groundwater Remediation" plan for the facility. This will be considered a modification to GW-004 pursuant to 20 NMAC 6.2, Subpart III, 3109. E. Upon submittal of the plan OCD will issue public notice pursuant to 20 NMAC 6.2, Subpart III, 3108 and a 30 day period for public comment will be allowed. After the 30 day comment period (if no protest from the public ) OCD will either approve or disapprove of the proposed modification for "Groundwater Remediation."

**Note: OCD approval of this report does not relieve TEPI from responsibility, should it at a later date be found that groundwater contamination is greater in lateral and vertical extent than shown in this report. Further OCD approval of this report does relieve TEPI from responsibility to comply with other federal, state, and local, rules and regulations that may apply.**

All OCD rules, regulations, and guidelines are available on the Internet at the following website address: **www.emnrd.state.nm.us/ocd/**

If you have any questions, please contact me by telephone at (505) 827-7156.

Sincerely,

Patricio W. Sanchez
Petroleum Engineering Specialist
Environmental Bureau - OCD

c: OCD Hobbs District Office

P 326 936 620

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| Postmark or Date | |

PS Form **3800**, April 1995

# FAX

**ATTENTION:** Mr. Pat Sanchez

**WITH:** State of New Mexico
Oil Conservation Div.
Santa Fe, New Mexico

**FAX NUMBER:** (505) 827-8177

---

**FROM:** Mark J. Larson
Project Manager

**WITH:** Highlander Environmental
Midland, Texas

**DATE:** June 25, 1997

**PAGES :** 4
(including cover)

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HIGHLANDER ENVIRONMENTAL CORP.
1910 N. BIG SPRING STREET
MIDLAND, TEXAS
(915) 682-4559
FAX (915) 682-3946

---

If this fax is illegible or if you have questions please call Mark J. Larson at (915) 682-4559.

*Highlander Environmental Corp.*
*Midland, Texas*

June 25, 1997

Mr. Pat Sanchez
Oil Conservation Division
Energy, Minerals, and Natural Resources Department
State of New Mexico
2040 S. Pacheco
Santa Fe, New Mexico 87505

Re: EPA Region III Risk-Based Concentration Tables, May 16, 1997, Texaco Exploration and Production, Inc., Eunice, # 2 (North) Gas Plant, Eunice, New Mexico

Dear Mr. Sanchez:

Per our telephone conversation today, please find attached the EPA Region III Risk-Based Concentration Table (Attachment A), which identifies the risk-based concentration for dichlorodifluoromethane in tap water as 390 micrograms per liter (ug/L). EPA Region III has also classified dichlorodifluoromethane as a noncarcinogen compound.

Based on the EPA Region III risk-based concentration (390 ug/L), the levels of dichlorodifluoromethane reported in groundwater samples collected from monitor wells, and the water well at the Texaco Exploration and Production, Inc., Eunice # 2 (North) Gas Plant, Eunice, New Mexico on April 23, 1997 (6 ug/L to 98 ug/L), do not indicate a health risk. Please call if you have any questions.

Sincerely,
*Highlander Environmental Corp.*

Mark J. Larson
Project Manager/Senior Hydrogeologist

Encl.

cc: Mr. Robert Browning, Texaco Exploration and Production, Inc.

# ATTACHMENT A

# EPA REGION III RISK-BASED CONCENTRATION TABLE

Sources: I=IRIS H=HEAST A=HEAST alternate W=Withdrawn from IRIS or HEAST E=EPA-NCEA Regional Support provisional value O=Other EPA documents.

Basis: C=carcinogenic effects N=noncarcinogenic effects E=EPA draft Soil Screening Level S=soil saturation concentration M=EPA MCL

| Contaminant | CAS No. | RfD oral (mg/kg-d) | RfD inhal (mg/kg-d) | CPS oral (kg-d/mg) | CPS inhal (kg-d/mg) | C | Risk-Based Concentrations: Tap Water (µg/L) | Ambient Air (ug/m3) | Fish (mg/kg) | Soil Ingestion: Industrial (mg/kg) | Soil Ingestion: Residential (mg/kg) | Soil Screening Levels: Transfers from Soil to: Air (mg/kg) | Groundwater (mg/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Copper and compounds | 7440508 | 4.00E-02 E | | | | | 1.50E+03 N | 1.50E+02 N | 5.40E+01 N | 8.20E+04 N | 3.10E+03 N | 0.00E+00 | 0.00E+00 |
| Crotonaldehyde | 123739 | 1.00E-02 W | | 1.90E+00 W | 1.90E+00 W | | 3.50E-02 C | 3.30E-03 C | 1.70E-03 C | 3.00E+00 C | 3.40E-01 C | 0.00E+00 | 0.00E+00 |
| Cumene | 98828 | 4.00E-02 I | 2.57E-03 H | | | | 1.50E+03 N | 9.40E+00 N | 5.40E+01 N | 8.20E+04 N | 3.10E+03 N | 8.10E+01 N | 6.50E+01 N |
| Cyanides: | 0 | | | | | | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Barium cyanide | 542621 | 1.00E-01 W | | | | | 3.70E+03 N | 3.70E+02 N | 1.40E+02 N | 2.00E+05 N | 7.80E+03 N | 0.00E+00 | 0.00E+00 |
| Calcium cyanide | 592018 | 4.00E-02 I | | | | | 1.50E+03 N | 1.50E+02 N | 5.40E+01 N | 8.20E+04 N | 3.10E+03 N | 0.00E+00 | 0.00E+00 |
| Chlorine cyanide | 506774 | 5.00E-02 I | | | | | 1.80E+03 N | 1.80E+02 N | 6.80E+01 N | 1.00E+05 N | 3.90E+03 N | 0.00E+00 | 0.00E+00 |
| Copper cyanide | 544923 | 5.00E-03 I | | | | | 1.80E+02 N | 1.80E+01 N | 6.80E+00 N | 1.00E+04 N | 3.90E+02 N | 0.00E+00 | 0.00E+00 |
| Cyanazine | 21725462 | 2.00E-03 W | | 8.40E-01 W | | | 8.00E-02 C | 7.50E-03 C | 3.80E-03 C | 6.80E+00 C | 7.60E-01 C | 0.00E+00 | 0.00E+00 |
| Cyanogen | 460195 | 4.00E-02 I | | | | | 1.50E+03 N | 1.50E+02 N | 5.40E+01 N | 8.20E+04 N | 3.10E+03 N | 0.00E+00 | 0.00E+00 |
| Cyanogen bromide | 506683 | 9.00E-02 I | | | | | 3.30E+03 N | 3.30E+02 N | 1.20E+02 N | 1.80E+05 N | 7.00E+03 N | 0.00E+00 | 0.00E+00 |
| Cyanogen chloride | 506774 | 5.00E-02 I | | | | | 1.80E+03 N | 1.80E+02 N | 6.80E+01 N | 1.00E+05 N | 3.90E+03 N | 0.00E+00 | 0.00E+00 |
| Free cyanide | 57125 | 2.00E-02 I | | | | | 7.30E+02 N | 7.30E+01 N | 2.70E+01 N | 4.10E+04 N | 1.60E+03 N | 0.00E+00 | 0.00E+00 |
| Hydrogen cyanide | 74908 | 2.00E-02 I | 8.57E-04 I | | | | 7.30E+02 N | 3.10E+00 N | 2.70E+01 N | 4.10E+04 N | 1.60E+03 N | 0.00E+00 | 0.00E+00 |
| Potassium cyanide | 151508 | 5.00E-02 I | | | | | 1.80E+03 N | 1.80E+02 N | 6.80E+01 N | 1.00E+05 N | 3.90E+03 N | 0.00E+00 | 0.00E+00 |
| Potassium silver cyanide | 506616 | 2.00E-01 I | | | | | 7.30E+03 N | 7.30E+02 N | 2.70E+02 N | 4.10E+05 N | 1.60E+04 N | 0.00E+00 | 0.00E+00 |
| Silver cyanide | 506649 | 1.00E-01 I | | | | | 3.70E+03 N | 3.70E+02 N | 1.40E+02 N | 2.00E+05 N | 7.80E+03 N | 0.00E+00 | 0.00E+00 |
| Sodium cyanide | 143339 | 4.00E-02 I | | | | | 1.50E+03 N | 1.50E+02 N | 5.40E+01 N | 8.20E+04 N | 3.10E+03 N | 0.00E+00 | 0.00E+00 |
| Thiocyanate | 0 | 2.00E-02 E | | | | | 7.30E+02 N | 7.30E+01 N | 2.70E+01 N | 4.10E+04 N | 1.60E+03 N | 0.00E+00 | 0.00E+00 |
| Zinc cyanide | 557211 | 5.00E-02 I | | | | | 1.80E+03 N | 1.80E+02 N | 6.80E+01 N | 1.00E+05 N | 3.90E+03 N | 0.00E+00 | 0.00E+00 |
| Cyclohexanone | 108941 | 5.00E+00 I | | | | X | 3.00E+04 N | 1.80E+04 N | 6.80E+03 N | 1.00E+06 N | 3.90E+05 N | 0.00E+00 | 0.00E+00 |
| Cyclohexylamine | 108918 | 2.00E-01 I | | | | | 7.30E+03 N | 7.30E+02 N | 2.70E+02 N | 4.10E+05 N | 1.60E+04 N | 0.00E+00 | 0.00E+00 |
| Cyhalothrin/Karate | 68085858 | 5.00E-03 I | | | | | 1.80E+02 N | 1.80E+01 N | 6.80E+00 N | 1.00E+04 N | 3.90E+02 N | 0.00E+00 | 0.00E+00 |
| Cypermethrin | 52315078 | 1.00E-02 I | | | | | 3.70E+02 N | 3.70E+01 N | 1.40E+01 N | 2.00E+04 N | 7.80E+02 N | 0.00E+00 | 0.00E+00 |
| Cyromazine | 66215278 | 7.50E-03 I | | | | | 2.70E+02 N | 2.70E+01 N | 1.00E+01 N | 1.50E+04 N | 5.90E+02 N | 0.00E+00 | 0.00E+00 |
| Dacthal | 1861321 | 1.00E-02 I | | | | | 3.70E+02 N | 3.70E+01 N | 1.40E+01 N | 2.00E+04 N | 7.80E+02 N | 0.00E+00 | 0.00E+00 |
| Dalapon | 75990 | 3.00E-02 I | | | | | 1.10E+03 N | 1.10E+02 N | 4.10E+01 N | 6.10E+04 N | 2.30E+03 N | 0.00E+00 | 0.00E+00 |
| Danitol | 39515418 | 2.50E-02 I | | | | | 9.10E+02 N | 9.10E+01 N | 3.40E+01 N | 5.10E+04 N | 2.00E+03 N | 0.00E+00 | 0.00E+00 |
| DDD | 72548 | | | 2.40E-01 I | | | 2.80E-01 C | 2.60E-02 C | 1.30E-02 C | 2.40E+01 C | 2.70E+00 C | 3.70E+01 S | 7.00E-01 E |
| DDE | 72559 | | | 3.40E-01 I | | | 2.00E-01 C | 1.80E-02 C | 9.30E-03 C | 1.70E+01 C | 1.90E+00 C | 1.00E+01 S | 5.00E-01 E |
| DDT | 50293 | 5.00E-04 I | | 3.40E-01 I | 3.40E-01 I | | 2.00E-01 C | 1.80E-02 C | 9.30E-03 C | 1.70E+01 C | 1.90E+00 C | 8.00E+01 E | 1.00E+00 E |
| Decabromodipheayl ether | 1163195 | 1.00E-02 I | | | | X | 6.10E+01 N | 3.70E+01 N | 1.40E+01 N | 2.00E+04 N | 7.80E+02 N | 0.00E+00 | 0.00E+00 |
| Demeton | 8065483 | 4.00E-05 I | | | | | 1.50E+00 N | 1.50E-01 N | 5.40E-02 N | 8.20E+01 N | 3.10E+00 N | 0.00E+00 | 0.00E+00 |
| Diallate | 2303164 | | | 6.10E-02 W | | X | 1.70E-01 C | 1.00E-01 C | 5.20E-02 C | 9.40E+01 C | 1.00E+01 C | 0.00E+00 | 0.00E+00 |
| Diazinon | 333415 | 9.00E-04 N | | | | | 3.30E+01 N | 3.30E+00 N | 1.20E+00 N | 1.80E+03 N | 7.00E+01 N | 5.40E+03 S | 2.80E+00 N |
| Dibenzofuran | 132649 | 4.00E-03 E | | | | | 1.50E+02 N | 1.50E+01 N | 5.40E+00 N | 8.20E+03 N | 3.10E+02 N | 1.20E+02 S | 1.20E+02 N |
| 1,4-Dibromobenzene | 106376 | 1.00E-02 I | | | | X | 6.10E+01 N | 3.70E+01 N | 1.40E+01 N | 2.00E+04 N | 7.80E+02 N | 0.00E+00 | 0.00E+00 |
| 1,2-Dibromo-3-chloropropane | 96128 | | 5.71E-05 I | 1.40E+00 H | 2.42E-03 N | X | 4.80E-02 C | 2.10E-01 W | 2.30E-03 C | 4.10E+00 C | 4.60E-01 C | 1.90E+00 N | 6.10E-04 M |
| 1,2-Dibromoethane | 106934 | | 5.71E-05 W | 8.50E+01 I | 7.70E-01 I | X | 7.50E-04 C | 8.10E-03 C | 3.70E-05 C | 6.70E-02 C | 7.50E-03 C | 5.80E-03 C | 1.80E-04 M |
| Dibutyl phthalate | 84742 | 1.00E-01 I | | | | | 3.70E+03 N | 3.70E+02 N | 1.40E+02 N | 2.00E+05 N | 7.80E+03 N | 1.00E+02 E | 1.20E+02 E |
| Dicamba | 1918009 | 3.00E-02 I | | | | | 1.10E+03 N | 1.10E+02 N | 4.10E+01 N | 6.10E+04 N | 2.30E+03 N | 0.00E+00 | 0.00E+00 |
| 1,2-Dichlorobenzene | 95501 | 9.00E-02 I | 4.00E-02 A | | | X | 2.70E+02 N | 1.50E+02 N | 1.20E+02 N | 1.80E+05 N | 7.00E+03 N | 3.00E+02 E | 6.00E+00 E |
| 1,3-Dichlorobenzene | 541731 | 8.90E-02 O | | | | X | 5.40E+02 N | 3.20E+02 N | 1.20E+02 N | 1.80E+05 N | 7.00E+03 N | 0.00E+00 | 0.00E+00 |
| 1,4-Dichlorobenzene | 106467 | | 2.29E-01 I | 2.40E-02 H | | X | 4.40E-01 C | 2.60E-01 C | 1.30E-01 C | 2.40E+02 C | 2.70E+01 C | 7.70E+03 E | 1.00E+00 E |
| 3,3'-Dichlorobenzidine | 91941 | | | 4.50E-01 I | | | 1.50E-01 C | 1.40E-02 C | 7.00E-03 C | 1.30E+01 C | 1.40E+00 C | 5.20E+01 S | 1.00E-02 E |
| 1,4-Dichloro-2-butene | 764410 | | | | 9.30E+00 H | X | 1.10E-03 C | 6.70E-04 C | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Dichlorodifluoromethane | 75718 | 2.00E-01 I | 5.71E-02 A | | | X | 3.90E+02 N | 2.10E+02 N | 2.70E+02 N | 4.10E+05 N | 1.60E+04 N | 3.70E+01 N | 7.50E+00 N |

Texaco Exploration
and Production Inc

500 North Loraine
Midland TX 79701

P O Box 3109
Midland TX 79702

May 27, 1997



Mr. P. W. Sanchez
Petroleum Engineer - Environmental Bureau
State of New Mexico
Energy, Minerals and Natural Resources Department
Oil Conservation Division
2040 S. Pacheco
Santa Fe, New Mexico 87505

**RE: TEXACO EUNICE NO. 2 (NORTH) GAS PLANT**
**LEA COUNTY, NEW MEXICO**

Dear Pat,

As requested, please find attached a copy of the results of the comprehensive investigation of soils and groundwater at Texaco Exploration and Production, Inc.'s Eunice No. 2 (North) Gas Plant located in Eunice, Lea County, New Mexico. This workplan was prepared by Highlander Environmental Corp. at the request of Texaco.

Please be advised that Texaco and Highlander would like to meet with you in person to review the results of this investigation as well as to discuss any proposed future activities concerning remedial activities at the North Plant. It is suggested that this meeting be scheduled for the end of June or the first half of July.

Texaco reserves all rights it may have available to it in this matter, particularly as it may regard potential adverse environmental impacts at its site from third parties. As usual, Texaco appreciates your cooperation and assistance in these matters. Please contact me at (915) 688-4804 should you have questions or comments concerning this submittal. Otherwise, you may contact Mr. Tim Reed or Mark Larson with Highlander Environmental Corp. at (915) 682-4559.

Sincerely,

Robert W Browning

Robert W. Browning
Environmental Coordinator
Texaco Exploration & Production, Inc.

cc: Mr. Wayne Price
NMOCD District I - Hobbs, NM

## Pat Sanchez

**From:** Pat Sanchez
**Sent:** Thursday, March 13, 1997 1:13 PM
**To:** Wayne Price
**Cc:** Jerry Sexton
**Subject:** TEXACO EUNICE N. PLANT GW-004
**Importance:** High

MR. PRICE,

I RECEIVED A PHONE CALL FROM MR. ROBERT BROWNING WITH TEXACO TODAY REGARDING THE GROUNDWATER CONTAMINATION DELINEATION AT THE EUNICE N. PLANT GW-004. HE INDICATED THAT THEY WERE GOING TO PROBABLY BEGIN DRILLING ON MONDAY MARCH 31, 1997. PLEASE COORDINATE WITH MR. BROWNING SO THAT YOU MAY WITNESS THE DRILLING/SAMPLING. I WILL TRY TO MAKE ARRANGEMENTS SO THAT I MAY ALSO BE THERE ALONG WITH OTHER INSPECTIONS. HE INDICATED THAT HE THOUGHT THE WORK WOULD BE COMPLETED BY APRIL 8, 1997.

THANKS!!!!!!

## Pat Sanchez

**From:** Wayne Price
**Sent:** Friday, March 14, 1997 7:16 AM
**To:** Pat Sanchez
**Subject:** Registered: Wayne Price

Your message

To: Wayne Price
Subject: TEXACO EUNICE N. PLANT GW-004
Sent: 3/13/97 1:13:00 PM

was read on 3/14/97 7:16:00 AM

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
2040 S. PACHECO
SANTA FE, NEW MEXICO 87505
(505) 827-7131

February 27, 1997

**CERTIFIED MAIL**
**RETURN RECEIPT NO. P-288-258-776**

Mr. Robert W. Browning
Texaco Exploration and Production, Inc.
P.O. Box 3109
Midland, Texas 79702

**RE: GROUND WATER DELINEATION**
**EUNICE NORTH GAS PLANT**
**DISCHARGE PLAN GW-004**
**LEA COUNTY, NEW MEXICO**

Dear Mr. Browning:

The New Mexico Oil Conservation Division (OCD) has received the Texaco Exploration and Production, Inc. (TEPI) "Comprehensive Facility Investigation Work Plan" dated February 10, 1997. The work plan was required by the OCD on November 12, 1996 pursuant to 20 NMAC 6.2.3109.E. The purpose of the work plan is to delineate and characterize the lateral and vertical extent of the groundwater contamination at the facility in a manner consistent with 20 NMAC 6.2.4106.

Based on the site assessment work committed to in the "Comprehensive Facility Investigation Work Plan, **the work plan is hereby approved** subject to the following conditions:

1. TEPI will complete the work by April 28, 1997 and will submit a "Final site Investigation Report" by May 28, 1997 to the Santa Fe OCD Office for approval. The report will contain all the data gathered during the site investigation.

   **Note:** All groundwater and soil analysis submitted to the OCD will be originals and include the appropriate QA/QC documentation. All analytical methods will be EPA approved methods, such as those referenced in 20 NMAC 6.2.3107.B.

2. TEPI will notify the Santa Fe Office 72 hours in advance of any field activity at (505)-827-7156, and Mr. Wayne Price of the OCD Hobbs Office at (505)-393-6161.

3. The "Final Site Investigation Report" will be submitted in duplicate to the OCD Santa Fe Office and a copy to the OCD Hobbs District Office.

All OCD rules, regulations, and guidelines are available on the Internet at the following website address: **www.emnrd.state.nm.us/ocd/**

If you have any questions, please contact Pat Sanchez of my staff at (505) 827-7156.

Sincerely,

Roger C. Anderson
Environmental Bureau Chief

RCA/pws

c: Mr. Jerry Sexton, OCD Hobbs - District Supervisor
Mr. Wayne Price, OCD Hobbs - Environmental Engineer

P 288 258 276

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PS Form **3800**, April 1995

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
2040 S. PACHECO
SANTA FE, NEW MEXICO 87505
(505) 827-7131

November 12, 1996

**CERTIFIED MAIL**
**RETURN RECEIPT NO. P-288-258-679**

Mr. Robert W. Browning
Texaco Exploration and Production, Inc.
P.O. Box 3109
Midland, Texas 79702

**RE: DISCHARGE PLAN MODIFICATION FOR WATER POLLUTION**
**EUNICE NORTH GAS PLANT**
**DISCHARGE PLAN GW-004**
**LEA COUNTY, NEW MEXICO**

Dear Mr. Browning:

The New Mexico Oil Conservation Division (OCD) met with Texaco Exploration and Production, Inc. (TEPI) on November 5, 1996 to discuss the results of the recent TEPI Eunice #2 (North) Gas Plant soil and ground water investigations as contained in the following document:

- September 1996 "SUBSURFACE ENVIRONMENTAL ASSESSMENT, TEXACO EXPLORATION AND PRODUCTION, INC., EUNICE #2 (NORTH) GAS PLANT, LEA COUNTY, NEW MEXICO".

**As discussed in this meeting this report shows that:**

1. A number of current and past potential ground water contaminant source areas exist at the facility.

2. The monitor well MW-1 shows groundwater to be impacted at the water table.

Therefore, pursuant to WQCC regulation 3109.E, the OCD requires that TEPI modify the facility discharge plan to abate water pollution. As an initial action the OCD requires that TEPI submit a comprehensive facility investigation work plan to determine the extent of soil and ground water contamination related to TEPI's activities. Please use the Stage 1 WQCC Abatement Regulations (20 NMAC 6.2.4106) in preparation of the investigation work plan. The OCD requires that the work plan be submitted to the OCD by February 17, 1997. Please submit the work plan to the OCD Santa Fe Office and a copy to the OCD Hobbs District Office.

**Note:** All OCD rules, regulations, and guidelines are available on the Internet at the following website address: **www.emnrd.nm.us/ocd.htm**

If you have any questions, please contact Pat Sanchez of my staff at (505) 827-7156.

Sincerely,

Roger C. Anderson
Environmental Bureau Chief

RCA/pws

xc: Mr. Jerry Sexton, OCD Hobbs District Supervisor
Mr. Wayne Price, OCD Hobbs Office
Mr. Rodney G. Bailey, Texaco Exploration and Production, Inc.

PS Form **3800**, April 1995

US Postal Service
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P 288 258 679

Texaco Exploration
and Production Inc

500 North Loraine
Midland TX 79701

P O Box 3109
Midland TX 79702

February 10, 1997



Mr. P. W. Sanchez
Petroleum Engineer - Environmental Bureau
State of New Mexico
Energy, Minerals and Natural Resources Department
Oil Conservation Division
2040 S. Pacheco
Santa Fe, New Mexico 87505

**RE: TEXACO EUNICE NO. 2 (NORTH) GAS PLANT**
**LEA COUNTY, NEW MEXICO**

See "work Plan" from Highlander Environmental Corp. February 1997. N. Plant.

Dear Pat,

Submitted for your approval, please find attached a copy of the proposed comprehensive workplan for the further investigation of soils and groundwater at Texaco Exploration and Production, Inc.'s Eunice No. 2 (North) Gas Plant located in Eunice, Lea County, New Mexico. This workplan was prepared by Highlander Environmental Corp. at the request of Texaco.

Please be advised that Texaco will await your approval of this proposed workplan before further action is taken. Texaco reserves all rights it may have available to it in this matter, particularly as it may regard potential adverse environmental impacts at its site from third parties. As usual, Texaco appreciates your cooperation and assistance in these matters. Please contact me at (915) 688-4804 should you have questions or comments concerning this submittal. Otherwise, you may contact Mr. Tim Reed or Mark Larson with Highlander Environmental Corp. at (915) 682-4559.

Sincerely,

Robert W Browning



Robert W. Browning
Environmental Coordinator
Texaco Exploration & Production, Inc.

cc: Mr. Wayne Price
NMOCD District I - Hobbs, NM

William A. Smith - Larry Lehman
Texaco Eunice Gas Plant Complex

NEW MEXICO ENERGY, MINERALS
& NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
2040 South Pacheco Street
Santa Fe, New Mexico 87505
(505) 827-7131

November 12, 1996

**CERTIFIED MAIL**
**RETURN RECEIPT NO. P-288-258-680**

Mr. Robert W. Browning
Texaco Exploration and Production, Inc.
P.O. Box 3109
Midland, Texas 79702

**RE: DISCHARGE PLAN - SOURCE REMOVAL/POLLUTION PREVENTION**
**EUNICE NORTH GAS PLANT**
**DISCHARGE PLAN GW-004**
**LEA COUNTY, NEW MEXICO**

Dear Mr. Browning:

The New Mexico Oil Conservation Division (OCD) met with Texaco Exploration and Production, Inc. (TEPI) on November 5, 1996 to discuss the results of the recent TEPI Eunice #2 (North) Gas Plant soil and ground water investigations.

**As discussed in this meeting the following source removal/pollution prevention measures will be taken by TEPI in order to be in compliance with Discharge Plan GW-004 permit conditions.**

1. TEPI will prioritize which sumps and below grade areas pose the greatest possible threat to groundwater. This priority list will include a time line for sump replacement/repair, and will provide a generic design that TEPI will implement at the facility, as well as soil remedial options.

**Note:** The design of sumps and below-grade areas, must include secondary containment and leak detection, as well as a means of monitoring the secondary containment area. (OCD prefers line of site leak detection methods.)

2. TEPI will prioritize AST's (Above Ground Storage Tanks) which may pose the greatest threat to groundwater. This priority list will include a time line for AST inspection and/or possible AST replacement. The priority list will also include soil remedial options.

**Note:** The design of new/or replacement tanks will include the standard 1 1/3 berm for all AST's, as well as the tank must be set on an impermeable type surface/liner. (This does not apply to AST's which contain fresh water, or a volatile liquid such as LPG.) **Note2:** All saddle tanks will are required to be placed over an impermeable type pad/curb containment, excluding saddle tanks which contain fresh water or a volatile liquid such as LPG.

3. Below-grade waste water/effluent lines - TEPI will submit a time line/plan for testing and replacing the above mentioned. TEPI will also include a remedial option to address soil contamination.

4. Any sources/soils that are not exempt from RCRA subtitle C (40CFR261) will be properly characterized for the presence of hazardous characteristics/and constituents of concern.

The OCD requires that the four above listed items (compliance plan) be submitted to the OCD by December 17, 1996. Please submit the compliance plan to the OCD Santa Fe Office and a copy to the OCD Hobbs District Office.

**Note:** All OCD rules, regulations, and guidelines are available on the Internet at the following website address: **www.emnrd.nm.us/ocd.htm**

If you have any questions, please contact me at (505) 827-7156.

Sincerely,

Patricio W. Sanchez
Petroleum Engineering Specialist
Environmental Bureau, OCD

xc: Mr. Wayne Price, OCD Hobbs Office
Mr. Rodney G. Bailey, Texaco Exploration and Production, Inc.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

# MEMORANDUM OF MEETING OR CONVERSATION

| ☐ Telephone ☒ Personal | Time 1:00 PM | Date 11-5-96 |
|---|---|---|

| Originating Party | Other Parties |
|---|---|
| TEPI, Mr. Robert Browning/ Mr. Rodney Bailey | OCD - Bill Olson, Pat Sanchez, and Roger Anderson. |

Subject: Groundwater Irivestigations/ site Assessment(s). For TEPI N. & S. Eunice Gas Plants.

Discussion: (1) Discussed Source removal/Discharge Plan requirm i.e. AST, Drainlines, and impondment Integrity.

(2) Potential RCRA issues with metals - particula Hg. (Note: Cr in groundwater as well as Hydrocarbons.)

(3) Area Review of wells - 1 mile within the perimeter of the facilities. Locate these and provide in Stage 1.

(4) Background levels on metals need to be established- - through literature/and analysis.

(5) OCD - per 3109.E will require a D.P. Modificatia to address groundwater contamintion/Delineation/Remmediation.

Conclusions or Agreements: (A) TEPI agreed w/ (1) through (6), OCD will send (5) letter - stagered, S. Plant first, N. Plant Second. (B) OCD will send two seperate letters (Pat Sancha requiring implementation of Source removal/Pollution Prevention as agreed to by TEPI in the D.P. Renewals of GW-003 & GW-00

Distribution: File, Bill Olson, Wayne Price.

Signed: Patricia W. Sanchez

11-5-96

Review notes of TEPI
N. Eunice Gas Plant GW-004
"Subsurface Environmental Assessment"
September, 1996.

11-5-96

(1)

TEXACO "SUB. SURF. ENV. ASSESS."
Ennice N. Plant GW-004.

1.0 INTRODUCTION.

- Only comment - has Texaco performed an Area Review of Domestic water wells within 1 mile of the ~~property~~ perimeter of the site. ( Pg. 46 - 20 NMAC 6.2.4106.C.2. (May have already done in d.P. - Texaco needs to check.)

1.1 Purpose and Scope.

— Assessment also needs to address contaminants other than hydrocarbons.

1.2 Regulatory Agency Correspondence.

No comment

1.3 Previous Investigations:

— what is the Cr coming from pg. 3 of 22?

— 1,000 mg/kg not correct — groundwater at about 50' TPH at 226 mg/kg at 60'.

- use 100 mg/kg.

pg. 5 of 22 — was the mud additive used after Wayne Price left? Air drilling?

— Heaving contamination Throughout.

2.0 Site Setting.

2.1— what about other water wells within 1 mile of the perimeter of the site.

2.2 - Soils.

No comment.

2.2 - Geology -

No comment.

TEXACO N. Plant GW-004:

2.3 Groundwater.

Regional Flow West-Northwest to Southeast
- APPROX depth 53'

3.0 ENV. INVEST. AREAS.

3.1 North Sumps.
10' x 50'

Commingle - RECIP oil, salt water from water treating blowdown from boilers. - pumped to waste storage Area - Need to Sample Non-Exempt streams at the Point of Generation, prior to commingle with Exempt streams.

3.2 N. Sump of Engine Room
2.5' x 5.0'

3.3 S. Sump of Engine Room.
1.5' x 6.0'

* * } Both contain Non-Exempt Streams

3.4 Waste oil / Water Storage Area.
- If tanks are not on an impermeable liner, they need to be cleaned and emptied and checked for mech. integrity. - Commingled waste streams - all Non-EXEMPT streams need to be tested prior to commingling at the point of Generation.

3.5 Trash Pit

No Comment - see discharge Plan.

4.0 ENV. INVEST. ACT.

4.1 Hand Auger Soil Borings.

No Comment.

4.2 Rotary Drilled Soil Borings.

BH-1, BH-2 - North Sump.

(BH-1 through BH-8) drilled Near waste oil Area.

(3)

4.3 Soil Headspace Gas Survey

No Comment.

4.4 Soil Sampling And Analysis

No Comment

4.5 Groundwater Sampling And Analysis

MW #1 and MW-1

5.0 ENV. INVEST RESULTS.

5.1 Soil Analysis

6.0 Conclusion

(1) Use 100 mg/kg not 1,000. — delineate to clean sample.

(2) Caliche could be fractured — Not a good barrier.

(3) Look at levels —

(4) N.C. — Need to establish Gwnd. at Facility

(5) How does the analysis show this — do you have Mech. Int. tests that show Integrity

(6)

(7)

(8)

(9)

(10)

(11) Dichlorofluoromethane is a Toxic Pollutant sec Stig. Concen risk of $10^{-6}$ occurs at 1.9 mg/L This is a Toxic Pollutant

(12) 9 mg/L for Benzene — Look at Lab QA/QC.

(13)

Texaco N. Plant Gw-oom. 11-4-96

- Appendix A - "by Highlander Environmental"

I. INTRO.

- No comment.

II. Soil Assessment.

A. Auger Holes.

13 - Holes for vertical extent

12 - Holes for Horizontal extent.

Comment - only TPH, BTEX, PLB, Total Metals looked at - Were any solvents/degreasers used in the compressor building? And could any of these potentially of impacted the vadose zone as well?

III Soil Sample Results.

(A.) N. Side of compressor building.

-8 Auger holes for N. side. AH-1, AH-2, AH-3, AH-4, AH-5, AH-6, AH-7, AH-8. - for vertical extent of Hydrocarbon impact. Soil Samples did indicate TPH impact. Only trace amount of xylene, at 0.555 mg/kg (AH-5) and 0.211 mg/kg (AH-7) — what is source of the xylene? Waste Solvent?

-AH-4, AH-5, AH-6, AH-7 - Metals hits - what is the source of the Pb and Cr?

~~(B.) Side of comp building~~

NOTE: Based on the elevated levels of contaminats, A monitor well(s) needs to be Placed Near the compressor building

B. Southside Compressor building.

- 5 Auger holes AH-9, AH-10, AH-11, AH-12, and AH-13. for vertical extent.

AH-11, TPH of 2,390 mg/kg @ 3.5 (ft)

- ND on BTEX, did have OVM reading of 16 ppm - Again are there any other possible consituents Besides BTEX - other solvents that need to be analyzed for?

- What is the source of the Cr in the Soil?

III Conclusions.

A. N. side compressor.

1. No comment.
2. No comment.
3. Elevated cont. (TPH) - Monitor well needed.
4. No comment.
5. ~~No comment~~ Why are PCB's being looked at?
6. What is the source of the Xylene? OVM did indicate a hit - other vol/semi-vol than BTEX? (such a a solvent?)
7. No comment
8. What is the source of the Metals? (Constituents of used lube oil - corrosion inhibitors?)
9. What is the source of the Hg (0.34 mg/kg) (MCL for Hg in terms of TCLP is 0.2 mg/kg - A TCLP test for mercury should probably be ran.)
10. What is the source of the Cr?

(3)

Texaco N. Plant GW-004.

Appendix A

B. Southside Compressor.

1. No comment.
2. How does Texaco propose to delineate?
3. No comment.
4. What other potential Vol/Semi vol. - - i.e. Solvents?
5. No comment.
6. Cr at 32.6 mg/kg (AH-10) > How does
   Cr at 20.7 mg/kg (AH-11) > Texaco propose
   to address this. (TCLP for Cr at 5.0 mg/kg)

- Is this RCRA exempt Cr? GW standard for Cr is 0.05 mg/L.

OVERALL - It Appears Texaco Needs to evaluate the Groundwater Near the compressor building. Also, need to look at process to determine the Regulatory Status of Hg and Cr. Also, need to look at process to determine if other Vol/Semi-vol besides BTEX need to be looked at - i.e. Solvents., Also, what is the Source of the xylene on the N. side.

See well - 3103, NAPL cannot be present on groundwater - TPH levels that are elevated may form a NAPL in the Transition Zone of Groundwater level and Vadose Zone.

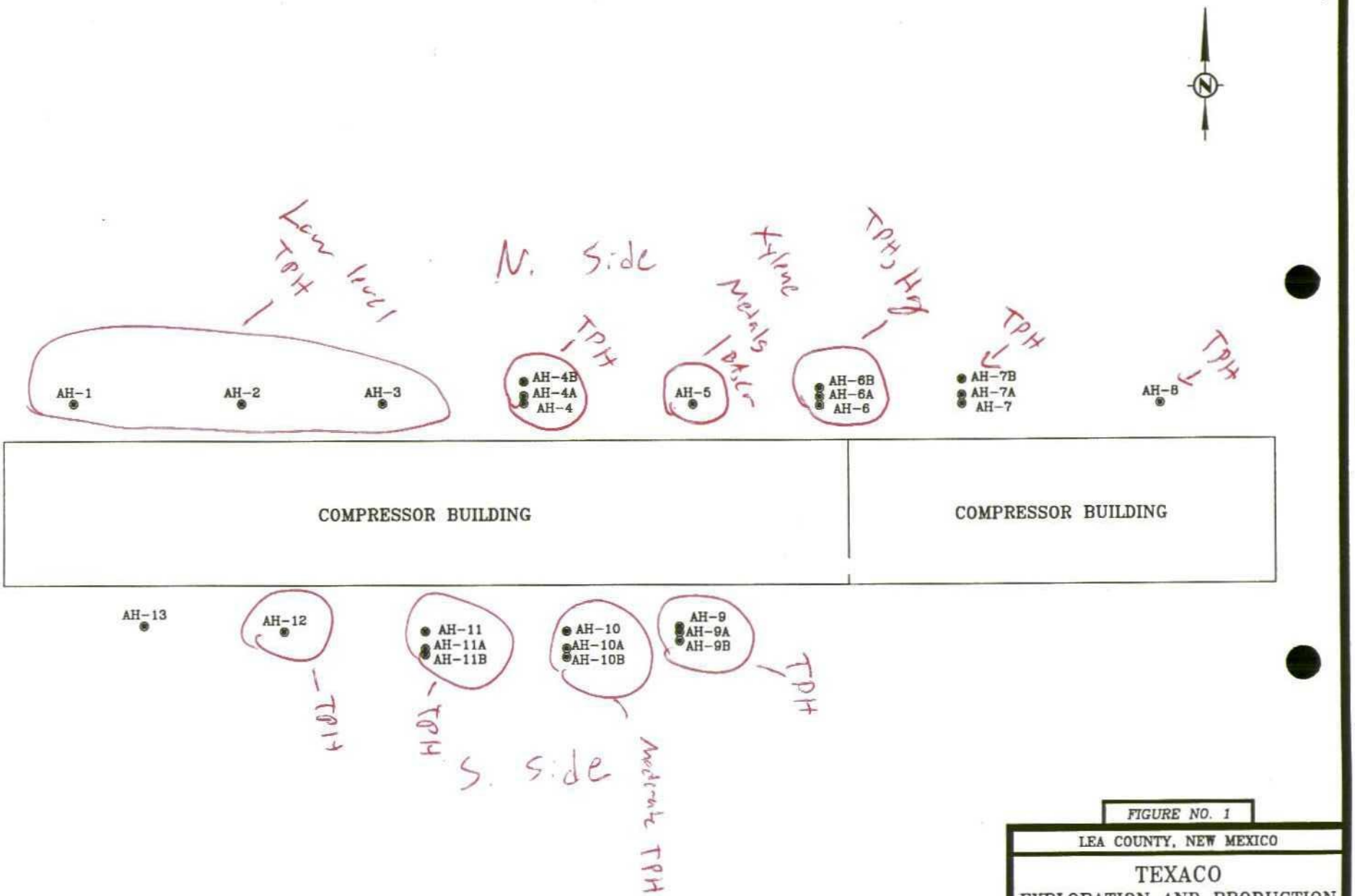



FIGURE NO. 1

LEA COUNTY, NEW MEXICO

TEXACO
EXPLORATION AND PRODUCTION

EUNICE #2 (NORTH) GAS PLANT
PLANT COMPRESSOR BUILDING
SITE PLAN

DATE: 11/1/95
DWN. BY: R.C.P.
FILE:

NOT TO SCALE

HIGHLANDER ENVIRONMENTAL
MIDLAND, TEXAS

## Soil Sample Analysis
## for TPH, BTEX, and PCB's
## (concentration in mg/kg)

| Sample I.D. | Depth | OVM | TPH | B | T | E | X | PCB |
|---|---|---|---|---|---|---|---|---|
| AH-1 | *1.0-1.4 | 0 | 76 | - | - | - | - | - |
| | 2.0-2.4 | 0 | - | - | - | - | - | - |
| AH-2 | *1.0-1.4 | 0 | 60 | - | - | - | - | - |
| | 2.0-2.4 | 0 | - | - | - | - | - | - |
| | 4.0-4.5 | 0 | - | - | - | - | - | - |
| AH-3 | 0-0.5 | 6 | - | - | - | - | - | - |
| | *1.0-1.4 | 0 | 95 | - | - | - | - | - |
| | 2.0-2.5 | 0 | - | - | - | - | - | - |
| | 2.5-3.0 | 0 | - | - | - | - | - | - |
| | 4.0-4.5 | 0 | - | - | - | - | - | - |
| AH-4 | 0-0.5 | 15 | - | - | - | - | - | - |
| | 3.5-4.0 | 91 | - | - | - | - | - | - |
| | *4.0-4.5 | 167 | 142,000 | <0.05 | <0.05 | <0.05 | <0.05 | - |
| | 6.0-6.5 | 59 | 7,210 | - | - | - | - | - |
| | 8.0-8.5 | 16 | 1,300 | - | - | - | - | - |
| | 9.0-9.5 | 6 | - | - | - | - | - | - |
| | *10-10.5 | 8 | 226 | <0.05 | <0.05 | <0.05 | <0 05 | - |
| | 11.0-11.5 | 7 | - | - | - | - | - | - |
| | *12.0-12.5 | 6 | 261 | - | - | - | | - |
| AH-5 | *0.5-1.0 | 63 | - | <0.05 | <0.05 | <0.05 | 0.555 | - |
| | *2.0-2.5 | 1 | <5 | <0.05 | <0.05 | <0.05 | <0.05 | - |
| | *4.0-4.5 | 0 | <5 | - | - | - | - | - |
| | 5.0-5.5 | 0 | - | - | - | - | - | - |

* Samples Selected for analysis

## Soil Sample Analysis
## for TPH, BTEX, and PCB's
## (concentration in mg/kg)

| Sample ID | Depth | OVM | TPH | B | T | E | X | PCB |
|---|---|---|---|---|---|---|---|---|
| AH-6 | 1.6-2.4 | 6 | - | - | - | - | - | - |
| | *3.2-3.9 | 31 | - | <0.05 | <0.05 | <0.05 | <0.05 | <0.25 |
| | *6.3-6.8 | 1 | 1,450 | <0.05 | <0.05 | <0.05 | <0.05 | - |
| | *8.0-8.5 | 1 | 1,210 | - | - | - | - | - |
| AH-7 | 1.0-1.5 | 13 | - | - | - | - | - | <0.25 |
| | 3.0-3.5 | 45 | - | - | - | - | - | - |
| | *5.0-5.5 | 112 | 37,000 | <0.05 | <0.05 | <0.05 | <0.05 | - |
| | 7.0-7.5 | 39 | - | - | - | - | - | - |
| | 8.0-8.5 | 8 | - | - | - | - | - | - |
| | *10.0-10.5 | 14 | 13,900 | - | - | - | - | - |
| | *12.0-12.5 | 49 | - | <0.05 | <0.05 | <0.05 | 0.211 | - |
| | *13.0-13.5 | 50 | 4,670 | - | - | - | - | - |
| | *15.0-15.5 | 315/334 | 420 | <0.05 | <0.05 | <0.05 | <0.05 | - |
| AH-8 | *1.0-1.5 | 0 | 859 | - | - | - | - | - |
| | *3.0-3.5 | 0 | 2,770 | - | - | - | - | - |
| AH-9 | *0-0.5 | 15 | 56,910 | - | - | - | - | - |
| | *2.0-2.5 | 0 | 9 | - | - | - | - | - |
| AH-10 | 0-0.5 | 14 | - | - | - | - | - | <0.25 |
| | 1.0-1.5 | 3 | - | - | - | - | - | - |
| | *2.0-2.5 | 6 | 469 | - | - | - | - | - |
| | 2.5-3.0 | 6 | - | - | - | - | - | - |
| | *4.0-4.5 | 16 | 589 | <0.05 | <0.05 | <0.05 | <0.05 | - |
| | 5.5-6.0 | 3 | - | - | - | - | - | - |
| | *8.0-8.5 | 6 | <4.81 | - | - | - | - | - |

* Samples Selected for analysis

## Soil Sample Analysis
## for TPH, BTEX, and PCB's
## (concentration in mg/kg)

| Sample ID | Depth | OVM | TPH | B | T | E | X | PCB |
|---|---|---|---|---|---|---|---|---|
| AH-11 | 0-0.5 | 13 | - | - | - | - | - | <0.25 |
| | 1.0-1.5 | 3 | - | - | - | - | - | - |
| | *2.0-2.5 | 0 | 296 | - | - | - | - | - |
| | 3.0-3.5 | 1 | - | - | - | - | - | - |
| | *3.5-4.0 | 0 | 2,390 | - | - | - | - | - |
| AH-12 | *0.5-1.0 | 0 | 2,540 | - | - | - | - | - |
| | *1.5-2.0 | 0 | 77 | - | - | - | - | - |
| AH-13 | *0.5-1.0 | 0 | 90 | - | - | - | - | - |
| | *2.5-3.0 | 0 | 146 | - | - | - | - | - |
| AH-4A | 3.0-3.5 | 61 | - | - | - | - | - | - |
| AH-4B | *3.7-4.2 | 0 | 173 | - | - | - | - | - |
| AH-6A | 3.0-3.5 | 11 | - | - | - | - | - | - |
| AH-6B | *3.0-3.5 | 0 | <5 | - | - | - | - | - |
| AH-7A | - | - | - | - | - | - | - | - |
| AH-7B | *3.0-3.5 | 0 | <5 | - | - | - | - | - |
| AH-9A | *3.0-3.5 | 0 | 8 | - | - | - | - | - |
| AH-10A | - | - | - | - | - | - | - | - |
| AH-10B | *3.0-3.3 | 0 | 13 | - | - | - | - | - |
| AH-11A | *2.0-2.5 | 0 | <5 | - | - | - | - | - |

* Samples Selected for analysis

**Soil Sample Analysis**
**for Total Metals**
**(concentrations in mg/kg)**

| Sample I.D. | Depth | As | Ba | Cd | Cr | Pb | Se | Ag | Hg |
|---|---|---|---|---|---|---|---|---|---|
| AH-4 | 0-0.5 | <20 | 25.8 | <2 | 24.1 | <10 | <20 | <5 | <0.25 |
| AH-5 | 0-0.5 | <20 | 1,900 | 2.7 | 1,580 | 64.4 | <20 | <5 | <0.25 |
| AH-6 | 3.2-3.9 | <20 | 41.3 | <2 | 24.8 | <10 | <20 | <5 | 0.34 |
| AH-7 | 1.0-1.5 | <20 | 98.9 | <2 | 64.9 | <10 | <20 | <5 | <0.25 |
| AH-10 | 0-0.5 | <20 | 46.4 | <2 | 32.6 | <10 | <20 | <5 | <0.25 |
| AH-11 | 0-0.5 | <20 | 38.7 | <2 | 20.7 | <10 | <20 | <5 | <0.25 |

TEXACO - N. Plant GW-004

APPENDIX B.

- Lab Copies - Reports - "Trace Analysis"

(1) MW-1 Benzene mg/kg < 50 MDL - Note at a depth of 55'-57' - MDL Not low enough, MCL for Groundwater is 10 mg/kg. (WRCC 3103-00?)

- see Green Tab. Append B No. 1.

- see Green Tab Append. B No. 2 - what is 317 [mg/kg] under Xylene.

- " Green Tab Append B No. 3 - Depth - 50'-52' for "BH-1" appears very close to (possibly in) Groundwater - also, does Texaco propose to address the tentatively ~~Identified~~ Identified Compounds, for "Toxic Pollutant" potential? - No statement Regarding "Toxic Pollutants in Report."

- Green Tab Append. B No. 4 - Benzene looks high 5.68 mg/kg Note: BH-2 50-52'

Toluene at 27.4 mg/kg, Ethylbenzene 14.4 mg/kg, m&p Xylene 21.5 mg/kg, o-Xylene 7.98 mg/kg

Total = 76.96 mg/kg

- Green Tab Append B No. 5 - see Xylene, BH-6

BTEX Maybe greater than 50 mg/kg.

B = 1.310 mg/kg EB = 30.7 mg/kg * - Exceeds range of Method.

m&p-X = 14.7 mg/kg. BTEX ≥ 46.71 mg/kg

- BH-2 50'-52' - Diesel 2 where did this come from.

BH-1 (10-12') Napthalene at 9.46 [mg/kg]
(WRCC - Napthalene standard = 0.03 mg/L in groundwater.)
2-Methylnapthalene at 37.54 mg/kg.
Anthracene at 7.02 mg/kg.
- Also look at Tentative list.
(APPEND - B - Tab No. 6)

MW-1 - Appendix B - Tab. No. 7
- Note accuracy on Benzene - 90%
QA/QC $\frac{9 \text{ mg/L}}{0.90} = 10 \text{ mg/L}$
- This analysis right on the standard for Benzene. Well needs to be purged 3-volumes and sampled (Send samples to two different labs.) Also, may want to use method 602 From 40CFR 136. And method 502.2 - for Volatile organic compounds.

SW-846 - 8020
40CFR136 - Method 602
SDW - Method 502.2

- look at cr analysis shows. 0.82 mg/L.
- WRCC is 0.05 mg/L
water well No. 1 - also elevated Cl⁻
- ~~why was BETX not sampled.~~
Dichlorodifluoromethane 113 ug/L - Toxic pollutant (see 1161_TT)
- Need to check Tent. Compounds and see if they are on Toxic pollutant list WRCC 1161.TT.

Texaco - N. Plant.

## APPENDIX - C Review -

- Note: Logs, and Groundwater depths.

BH-1 50-52' - Groundwater Indicated.
- see green tab. Appendix B - No. 3, Groundwater contamination.

BH-2 50-52' - Groundwater Indicated.
- see green tab Appendix B - No. 4 Groundwater Contamination.

MW-1 55-57' - Groundwater Indicated
- see green tab Appendix B No. 1
Note: MDL for Benzene only 50 ug/kg.

Based on the depths to groundwater -
- It appears that groundwater has been impacted.

* Texaco needs to propose a groundwater Remediation/delineation Plan.
- OCD will send a letter requiring Texaco to delineate contamination and look all possible sources and eliminate them.

APPENDIX - D - well construction.

- No comment.

APPENDIX - E

- No comment.

MA

* photo

4-2-96 TEXACO - Conklin, N

Rodney Bailey, Wayne Price, Chris E

No water samples; possibly no wells to sample

WORK PLAN

* DRAIN LINES - not tested; condit of app

JUNK YARD - SW corner of facility

- * "Coarse beads" piled up on plastic 10z and spilling off on to ground
- * Dirt piles w/ concrete blocks piled. Appears to contain TPH
- * Selectox - waste beads stored in drums. Can't seem to dispose of it. ASK FOR MSDS & get rid of.
- * depression area appears to be old pit. Check old photos.
- * Activated Alumina waste stored in lg. bags

+

INLET SCRUBBER

OIL RECOVERY & WASTE WATER SYS. evidence of tank overflow. Grossly stained soils. Investigate +

FLARE PIT - flare too hot to enter. Texaco says no old sump in there.

+ investigate

1' 1"

PERIMETER COMPRESSOR PADS

storing waste generated from investig. on these pads. Do con water in 2 drums labelled properly. Soil pile (< 1yd) on pad

ENGINE ROOMS - floor drains throughout. Some obvious leaks on outside of building. Floor drains are essentially one large sump. REQUIRE TEST. Associated sumps TEST

WATER WELL on immediate N side of facility. Use it for process.

* Require sample

LUBE OIL STORAGE - excellent

PERMIT SUMP - all drips, waste liquids etc. (except engine room sumps & inlet scrubb) go to this sump. Pump in below grade lines around N perimeter NEEDS MIT also lines

## Pat Sanchez

**From:** Wayne Price
**Sent:** Monday, November 04, 1996 3:48 PM
**To:** Pat Sanchez
**Cc:** Jerry Sexton
**Subject:** Texaco-North Eunice Plant Subsurface Environmental Assessment.
**Importance:** High

Dear Pat,

Per your request I have the following comments:

Texaco should install sufficient number of monitor wells to properly delineate the ground water contamination through out the plant area. They should also do an area of review of one mile radius and possibly further on off-site down gradient wells due to the chrome contamination. Chrome could be a serious public health threat to the citizens of Eunice, NM. If Texaco employees are using this water then a health advisory should be issued.

Page 5 of 22 second sentence indicates "Mud additives were used during drilling of the monitor well". I was present at the time of the drilling until they reached ground water. I did not witness any mud additives being used. They used dry Air drilling techniques.

Texaco should submit a remediation plan for all of the vadose zone contamination on site. Monitor wells should be installed in these areas to determine the effectiveness of Texaco's vertical extent of various soil borings which might have missed ground water contamination in those areas.

It should be pointed out the MW-1 vertical extent of the soils indicated no problem until the capillary fringe of ground water was reached. The same scenario can be applied to all of the soil borings which did not go to the ground water. Otherwords spatial variations in the physical properties of the underling soils can be substantial and unknown, thus leading to errors in the delineated search.

Texaco should determine the original source of the chrome and mercury contamination. This could be RCRA Hazardous Waste.

Texaco should install perimeter monitor wells to determine if contaminates have left the site.

Where ground water is effected Texaco should submit a remediation plan.

## Pat Sanchez

**From:** Wayne Price
**Sent:** Thursday, October 17, 1996 12:56 PM
**To:** Pat Sanchez
**Subject:** Registered: Wayne Price

Your message

To: Wayne Price
Subject: Texaco North Plant GW-004
Sent: 10/17/96 9:43:00 AM

was read on 10/17/96 12:56:00 PM

## Pat Sanchez

**From:** Pat Sanchez
**Sent:** Thursday, October 17, 1996 9:43 AM
**To:** Wayne Price
**Subject:** Texaco North Plant GW-004
**Importance:** High
**Sensitivity:** Confidential

Mr. Price I a begining to go through the report submitted to OCD Dated September 26, 1996. I hope to be done reviewing the report today or by mid morning tommorrow please provide your comments by 2:00 pm tommorrow Thanks!

Texaco Exploration
and Production Inc

P.O. Box 3109
Midland, TX 79702

September 26, 1996



Mr. Pat Sanchez
Environmental Bureau
New Mexico Oil Conservation Division
2040 S. Pacheco
Santa Fe, New Mexico 87505

Re: Subsurface Environmental Assessment
Texaco Exploration and Production, Inc.
Eunice No. 1 (South) Gas Plant and
Eunice No. 2 (North) Gas Plant
Lea County, New Mexico

Dear Mr. Sanchez,

As requested, please find enclosed copies of the subsurface environmental assessments conducted at the referenced facilities. Texaco Exploration and Production, Inc. (TEPI) has retained the services of Highlander Environmental Corp., Midland, Texas to conduct the investigations that were required by the NMOCD following its review of the Groundwater Discharge Plans (GW-003 and GW-004).

It is TEPI's desire that following your review of the report, that representatives of TEPI, Highlander and the NMOCD can meet at your office to further review the contents of these reports and discuss future remedial activities. Based on current scheduling difficulties, it is anticipated that this meeting would take place during the month of November.

Please feel free to contact me at (915) 688-4804 or Messrs. Tim Reed or Ike Tavarez (Highlander Environmental) at (915) 682-4559 should you have questions or desire additional information concerning this matter.

Robert W. Browning
EH&S Professional - Environmental

cc: Wayne Price
NMOCD - District I
Hobbs, New Mexico

Texaco Exploration and Production Inc
P O Box 1929
Eunice NM 88231 1929



Date: May 17, 1996

CERTIFIED MAIL
RETURN RECEIPT

William J. LeMay
Energy Minerals and Natural Resources Dept.
Oil Conservation Division
2040 S. Pacheco
Santa Fe. New Mexico, 87505



RE: Discharge Plan Renewal GW-004
Eunice #2 (North) Gas Plant
Lea County, New Mexico

Attached is a signed copy of the conditions of approval on renewal of the Eunice North Gas Plants Discharge Plan. As per my telephone conservation with Chris Eustice on 5-17-96 clarification on the following issues were addressed:

Item #3: Soil testing around the "Waste Water and Slop Oil Area" will consist of votatiles, semi-volatiles and eight RCRA metals.

Item #4: The North plant flare does not contain an inactive sump/pit. This sump/pit is located at the South plant emergency flare area. This reference will be changed to the South plant conditions of approval.

Item #5: The water sample from the well located at the North facility will be obtained by pumping the water from the well rather than bailing. Also the metals testing will of consist of the eight RCRA metals.

Item #13: The tank inspection requirement will only apply to tanks sitting on the ground. If the tank is on any type of stand off the ground, leaks should be noted and the tank will be repaired.

On behalf of Texaco and the Eunice Plants, I wish to thank the OCD for their cooperation during this discharge plan review.

Sincerely,

Rodney Bailey

Rodney Bailey
Eunice complex

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
2040 S. PACHECO
SANTA FE, NEW MEXICO 87505
(505) 827-7131

May 1, 1996

CERTIFIED MAIL
RETURN RECEIPT NO.P-269-269-389

Mr. Rodney Bailey
Texaco Exploration and Production, Inc.
PO Box 1929
Eunice, New Mexico 88231-1929

**RE: Discharge Plan Renewal GW-004**
**Eunice #2 (North) Gas Plant**
**Lea County, New Mexico**

Dear Mr. Bailey:

The Ground Water Discharge Plan (GW-004) for Texaco Exploration and Production, Inc.'s (Texaco) Eunice #2 (North) Gas Plant located in the NE/4 SE/4 of Section 28, Township 21 South, Range 37 East, NMPM, Lea County, New Mexico, is hereby approved under the conditions contained in the enclosed attachment. The ground water discharge plan consists of the original discharge plan as approved March 16, 1981, and renewed on May 23, 1986 and May 24, 1991, and the renewal application dated February 14, 1996. Enclosed are two copies of the conditions of approval. **Please sign and return one copy to the New Mexico Oil Conservation Division (OCD) Santa Fe Office** within five working days of receipt of this letter.

The discharge plan was submitted pursuant to Section 3106 of the New Mexico Water Quality Control Commission Regulations. It is approved pursuant to Section 3109.A. Please note Sections 3109.E and 3109.F. which provide for possible future amendments or modifications of the plan. Please be advised the approval of this plan does not relieve Texaco of liability should their operation result in pollution of surface water, ground water or the environment.

Please be advised that all exposed pits, including lined pits and open tanks (tanks exceeding 16 feet in diameter), shall be screened, netted or otherwise rendered nonhazardous to wildlife including migratory birds.

Please note that Section 3104 of the regulations require "When a facility has been approved, discharges must be consistent with the terms and conditions of the plan". Pursuant to Section 3107.C. Texaco is required to notify the Director of any facility expansion, production increase, or process modification that would result in any change in the discharge of water quality or volume.

Pursuant to Section 3109.G.4., this plan is for a period of five (5) years. This approval will expire on March 16, 2001, and Texaco should submit an application in ample time before this date.

The discharge plan application for the Texaco Eunice #2 (North) Gas Plant is subject to WQCC Regulation 3114 discharge plan fee. Every billable facility submitting a discharge plan renewal will be assessed a fee equal to the filing fee of fifty ($50) dollars plus the flat fee of one thousand six hundred sixty-seven dollars and fifty cents ($1,667.50) for renewal approval of gas processing plant discharge plans.

The Oil Conservation Division (OCD) has not received Texaco's fifty dollar ($50.00) filing fee. The flat fee for an approved discharge plan may be paid in a single payment at the time of approval, or in equal installments over the duration of the plan, with the first payment due at the time of approval. **The filing fee and the flat fee (total payment or the first installment) are due upon receipt of this letter.**

Please make all checks payable to: **NMED - Water Quality Management** and send to the OCD Santa Fe Office.

On behalf of the staff of the OCD, I wish to thank Texaco for their cooperation during this discharge plan review.

Sincerely,

William J. LeMay
Director

WJL/cee
Attachment

cc: OCD Hobbs Office

Is your RETURN ADDRESS completed on the reverse side?

**SENDER:**
- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "*Return Receipt Requested*" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
MR. RODNEY BAILEY
TEXACO E & P
PO BOX 1429
Eunice, NM 88231-19

4a. Article Number
P 269 269 389

4b. Service Type
☐ Registered ☐ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery
MAY 13 1996

8. Addressee's Address *(Only if requested and fee is paid)*

5. Received By: *(Print Name)*
C R JACKSON

6. Signature: *(Addressee or Agent)*
X

PS Form **3811**, December 1994

Domestic Return Receipt

Thank you for using Return Receipt Service.

ATTACHMENT TO THE DISCHARGE PLAN GW-004 APPROVAL
TEXACO EXPLORATION AND PRODUCTION, INC.
EUNICE #2 (NORTH) GAS PLANT
DISCHARGE PLAN REQUIREMENTS
(May 1, 1996)

1. Fee Payment: The $50 filing fee and the $1,667.50 flat fee shall be paid upon receipt of this letter.

2. Junk Yard Area: This area was noted during inspection for having numerous piles of waste being stored on the ground. **Texaco will submit a work plan for identifying and disposing of the waste piles.** NOTE. All non-exempt wastes must be characterized for hazardous constituents and characteristics and submitted to the OCD for approval prior to disposal.

   An old "trash collection pit" is also present in the junk yard area. **Texaco will submit a work plan to close this pit within 60 days from receipt of this approval.**

3. Waste Water and Slop Oil Area: This area was noted during inspection for having numerous tank over flows and drips. **Texaco will provide a work plan and schedule to investigate the extent of contamination associated with the continuous drips and leaks at the slop tanks within 60 days from receipt of this approval.**

4. Flare Area: This area was noted during inspection as having an inactive sump/pit associated with liquids recovery going to the flare. **Texaco will submit to the OCD a closure plan and schedule to investigate the extent of contamination around this sump/pit within 60 days from receipt of this approval.**

5. Water Sample: **Texaco will sample the water well located at the facility for major cations/anions; purgable aromatic and halogenated volatile organics; polynuclear aromatic hydrocarbons and heavy metals.** The analytical results will be submitted to the OCD Santa Fe Office within 120 days from receipt of this approval.

6. Compressor Building: This area was discussed during the inspection as being investigated for subsurface contamination and the future installation of a ground water monitor well. **Texaco will submit to the OCD a work plan and past result(s) for any work associated with investigating the extent of contamination around the building within 60 days from receipt of this approval.**

7. Texaco Commitments: Texaco will abide by all the commitments submitted in the discharge plan application dated February 14, 1996.

8. Drum Storage: All drums containing materials other than fresh water must be stored on pad and curb type containment. **All empty drums will be stored on their sides with the bungs in place and lined up on a horizontal plane.** Chemical(s) stored in any other containers such as buckets and sacks must be stored on pad and curb type containment.

   **NOTE: During the facility inspection it was noted that empty drums are stored all around the Junk Yard Area. Texaco needs to properly store and/or dispose of all empty drums.**

9. Process Areas: All process and maintenance areas which show evidence that leaks and spills are reaching the ground surface must be either paved and curbed or have some type of spill collection device (i.e. drip pan) incorporated into the design.

10. Above Ground Tanks: All above ground tanks which contain fluids other than freshwater must be bermed to contain a volume of one and one-third (1-1/3) more than the total volume of the largest tank within the berm or of all interconnected tanks. **All new or replacement tanks will be placed on an impermeable liner.**

11. Saddle Tanks: All saddle tanks will be placed on pad and curb type containment unless they contain fresh water or liquids that are gases at atmospheric temperature and pressure.

12. Tank Labeling: All tanks must be clearly labeled to identify their contents and other emergency information necessary if the tank(s) were to rupture, spill and/or ignite.

13. Tank Inspection: All tanks will be cleaned out and visually inspected prior to renewal of the discharge plan.

14. Below Grade Tanks/Sumps: All pre-existing sumps and below grade tanks must demonstrate integrity on an annual basis. Integrity tests include pressure testing to 3 pounds per square inch above normal operating pressure or other means acceptable to the OCD. **All testing will be documented and recorded for a period of five (5) years and the records made available to the OCD inspectors upon request.** All below grade tanks, sumps and pits must be approved by the OCD prior to installation and must incorporate secondary containment and leak detection into the design.

15. Underground Process/Wastewater Lines: **All underground process/wastewater pipelines must be tested to demonstrate their mechanical integrity at present and then every five years there after. All testing will be documented and recorded for a period of five (5) years and the records made available to the OCD inspectors upon request.** Permittee may propose various methods for testing such as pressure testing to 3 pounds per square inch above normal operating pressure or other means acceptable to the OCD.

16. Spill Reporting: All spills and/or leaks will be reported to the OCD District Office pursuant to WQCC Rule 1203 and OCD Rule 116.

17. Housekeeping: All systems designed for spill collection/prevention will be inspected daily to ensure proper operation, prevent overtopping and/or system failure.

18. Transfer of Discharge Plan: The OCD will be notified prior to the transfer of ownership, control or possession of a facility with an approved discharge plan. A written commitment to comply with the terms and conditions of the previously approved discharge plan must be submitted by the purchaser and approved by the OCD prior to transfer.

19. OCD Inspections: Additional requirements may be placed on the facility based upon results from OCD inspections.

20. Closure: The OCD will be notified when operations of the facility are discontinued for a period in excess of six months. Prior to closure of the facility a closure plan will be submitted for approval by the Director. Closure and waste disposal will be in accordance with the statutes, rules and regulations in effect at the time of closure.

21. Conditions Accepted by:

Larry Fogi — Company Representative

5/17/96 — Date

OPERATING UNIT MANAGER — Title

Texaco Exploration
and Production Inc

500 North Loraine
Midland TX 79701

P O Box 3109
Midland TX 79702



July 2, 1996



Mr. Chris Eustace
Geologist
New Mexico Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico, 87504-2088

**Re: Attachments to Discharge Plans GW-003 and GW-004**
**Texaco E&P, Inc. Eunice No. 1 and No. 2 Gas Plants**
**Lea County, New Mexico.**

Fax by
Mail on
8-15-96

Dear Mr. Eustace,

As requested in your correspondence dated April 15, 1996 and May 1, 1996, please find attached Texaco Exploration and Production, Inc.'s (TEPI) proposed work plan(s) to address the special provisions found in the Attachments to the Discharge Plans GW-003 and GW-004 Approval notification letters. You will note that TEPI has retained the services of Highlander Environmental Corp., Midland, Texas, to assist in the development and implementation of these plans. In addition to the utilization of an outside consultant, TEPI has assembled a project team consisting of environmental professionals, engineering/facilities support as well as involving plant maintenance/operations personnel in order to address each of the items noted in the above referenced correspondence.

You will be pleased to know that Mr. Rodney Bailey, Environmental, Health and Safety Coordinator for the Eunice Gas Plants has been aggressive in addressing many of the issues you raised not only through your correspondence but also during your site visit earlier in the year. This includes the scheduling of asbestos removal for July 10, 1996, the removal and disposal of some of the RCRA exempt waste materials located in the Junk Yard area, removal of some miscellaneous junk/surplus materials as well as other housekeeping related issues.

You will recall that in your approval letters, it was stated that all underground process/wastewater lines at both plants would be tested immediately in order to demonstrate mechanical integrity. A review of the drain systems at both plants indicates that the drain lines are not equipped so that this is possible without a major modification to the current system. Additionally, it is suspected that some of the lines may not be able to demonstrate integrity at this time due to age and the unknown condition of the lines. Therefore, please be advised that TEPI is proposing the replacement of most, if not all of the underground process/wastewater lines at both plants. This will be done in conjunction with the modifications to the below grade tanks/sumps which is outlined in the attached work plan. Be assured that the new drain system will incorporate the

necessary equipment/connections needed to conduct mechanical integrity testing on a five year cycle.

Texaco is prepared to begin sampling activities around the Jet Turbine Skid, Waste Water/Slop Oil area and various sumps, pits etc. in order to define the horizontal and vertical extent of the the hydrocarbon impacted soils at these locations. Based on previous telephone conversations between you and Rodney Bailey as well as our own conversations, **it is TEPI's understanding that we have your verbal approval to begin such investigation work on the condition that we conduct no remedial activities until such time as we have received written approval from your office of the attached work plan.** In addition to the previously mentioned asbestos removal to be conducted on July 10, 1996, TEPI will begin drilling the required groundwater monitoring well at the North Gas Plant on July 22, 1996. TEPI is now in receipt of your written approval for the installation of the subject well. Following the completion of the installation of the monitoring well, TEPI plans to utilize the services of the water well drilling rig, where feasible, to conduct sampling at some of the above referenced locations.

As usual, TEPI appreciates your cooperation and assistance in this matter. Please feel free to contact me at (915) 688-4804 or Rodney Bailey at (505) 394-2516 should you have questions or comments concerning this matter.

Robert W. Browning
EH&S Professional - Environmental
Texaco Exploration and Production, Inc.

Attachments

cc: Wayne Price
NMOCD District I
Hobbs, New Mexico

Highlander Environmental Corp.
Midland, Texas

Rec. by
PWB on
6-15-96

June 17, 1996

Mr. Chris E. Eustice
Geologist
New Mexico Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico, 87504-2088

Re: Work Plan Attachments to Discharge Plans GW-003 dated April 15, 1996 and GW-004 dated May 1, 1996 for the Texaco Eunice #1 and #2 Gas Plants.

Dear Mr. Eustice:

Highlander Environmental Corp. has been retained By Texaco Exploration and Production, Inc. to prepare and implement the above mentioned work plans. Please review the attached work plans at your earliest convenience. If you have any questions or comments, please advise.

Very truly yours,

Tim Reed

Timothy M. Reed, REM
Vice President

306 W. Wall • Suite 320 • Midland, Texas 79701 • (915) 682-4559 • Fax (915) 682-394

**WORK PLAN**
**ATTACHMENT TO DISCHARGE PLAN GW-004**
**DISCHARGE PLAN REQUIREMENTS**
**TEXACO EXPLORATION AND PRODUCTION, INC.**
**EUNICE #2 (NORTH) GAS PLANT**

The following items were stated as attachments requiring work plans for the discharge plan approval:

1. **Item #2 Junk Yard Area** - The junk yard area will be inspected for material found on the ground. The waste in this area will be characterized. The RCRA exempt soil stockpiles have been analyzed and disposed of properly. The identified SRU catalyst material, while RCRA exempt, will be segregated by hazardous category and will be properly stored pending disposal. Non-hazardous catalyst material will be disposed of at a NMOCD approved facility. Other catalyst material will be disposed of at an approved hazardous disposal facility. A contractor has been selected for the removal of the asbestos material identified in the junk yard. The trash pit area will be investigated by installing one hand boring in the center of the trash pit. The soil sample will preserved for analysis of volatile organics, semi-volatile organics, and total (RCRA 8) metals.

2. **Item #3 Waste Water and Slop Oil Area** -The most heavily contaminated areas inside the waste water and slop oil area dike will be evaluated for the extents of contamination. Boreholes will be placed using either hand/power auger equipment or air rotary rig, if accessible. During borehole placement, the samples extracted will be visually inspected for obvious contamination and lithologic description. The samples will be split and a portion placed into a laboratory prepared container which will then be immediately chilled to 4°C. The soil samples selected will be analyzed for volatile organics, semi-volatile organics and total (RCRA 8) metals.

   The other portion of the sample will be placed into a resealable plastic bag and the volatile organics allowed to concentrate in the headspace of the bag. After a sufficient amount of time for volatilization has elapsed, the concentration in the headspace will be measured using a Thermo 580-B Organic Vapor Meter (OVM). Borings will be advanced until visual and OVM readings have indicated clean native soil, or until auger refusal or depth forces cessation of the borehole advancement. All cuttings generated will be placed on plastic for later disposal and all boreholes will be properly plugged.

3. **Item #4 Flare Area** - There is no Flare Area sump located at this facility. The flare area sump is located at the Eunice #1 plant and the discussion is included

on the work plan for that facility.

4. **Item #5 Water Sample** - A water sample will be taken from the facility water well and analyzed for major anions/cations, purgable aromatic and halogenated volatile organics, polynuclear aromatic hydrocarbons and RCRA metals. The water sample will be taken by first allowing the pump to run for approximately 30 minutes prior to sampling. The sample will be taken as close to the source as possible and before the water reaches any treating equipment. The samples will be placed into laboratory prepared sampling containers and will be properly preserved.

5. **Item #6 Compressor Building** - The subsurface soil around the compressor building have been assessed and a work plan has been submitted to the OCD for review for the installation of a monitor well at the site. An assessment report will be submitted to the OCD after the completion of the monitor well. The approval for the monitor well installation is pending at this time.

6. **Item #14 Below Grade Tanks/Sumps** - The additional sumps in the plant will be evaluated for leakage by excavating trenches down beside the sumps to a depth below the bottom of the sump. The integrity of the sumps will be visually inspected and soil samples taken for OVM screening. If it appears that any leakage has occurred, soil samples will selected and analyzed for volatile organics, semi-volatile organics and total (RCRA 8) metals. If it is determined that no leakage has occurred, the sump will be removed and replaced with a double walled fiberglass tank equipped with leak detection. If it is determined that the sump has leaked, then the site will be evaluated to determine the extent of contamination and the best treatment method for that soil prior to removal of the sump for replacement with the double walled tank previously mentioned. It is imperative that the sump down time be kept to a minimum as these tanks are used in the daily operations of the facility.

The inspection, removal and replacement of the jacket water storage system is not included in this work plan. This storage contains only non-contact cooling water maintained at a pH of 7 by the addition of small quantities of corrosion inhibitors and does not appear to pose any possible threat to subsurface soils or ground water. Copies of the MSDS sheets for the corrosion inhibitors are attached to this work plan. The quantities of the two additives in use in the system are 200-400 ppm of UI 2310 (15 gallons / system) and less than 5 ppm of TH 3737 (1 gallon / system).

NEW MEXICO ENERGY, MINERALS
& NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
2040 South Pacheco Street
Santa Fe, New Mexico 87505
(505) 827-7131

June 27, 1996

**CERTIFIED MAIL**
**RETURN RECEIPT NO. P-176-013-155**

Mr. Robert Browning
Texaco Exploration and Production, Inc.
P.O. Box 3109
Midland, Texas 79702

**Re: Contamination Investigation**
**(GW-004) North Eunice Gas Plant**
**Lea County, New Mexico**

Dear Mr. Browning:

The New Mexico Oil Conservation Division has completed a review of Texaco Exploration and Production, Inc.'s April 18, 1996 "MONITOR WELL WORK PLAN, TEXACO EXPLORATION AND PRODUCTION, INC., NORTH EUNICE GAS PLANT, LEA COUNTY, NEW MEXICO". This document contains Texaco Exploration and Production, Inc.'s work plan for investigation of the extent of soil contamination related to the North Eunice Gas Plant in Lea County, New Mexico.

The above work plan is approved with the following conditions:

1. All wastes generated associated with proposed activities will be disposed of at an New Mexico Oil Conservation Division approved facility.

2. All soil samples for verification of completion of remedial activities will be sampled and analyzed for benzene, toluene, ethylbenzene, xylene (BTEX), and total petroleum hydrocarbons using EPA approved methods.

3. Texaco Exploration and Production, Inc. will notify the Environmental Bureau Chief of the New Mexico Oil Conservation Division Santa Fe Office and the New Mexico Oil Conservation Division Hobbs Office within 24 hours of discovery of ground water contamination.

4. All monitor wells will be constructed as set out below:

   a. A minimum of 15 feet of well screen will be installed with at least 10 feet of well screen below the water table and 5 feet of well screen above the water table.

   b. An appropriately sized gravel pack will be set around the well screen from the bottom of the hole to 2-3 feet above the top of the well screen.

   c. A 2-3 foot bentonite plug will be placed above the gravel pack.

d. The remainder of the hole will be sealed with cement containing 3-5% bentonite.

5. Texaco Exploration and Production, Inc. will sample ground water from all monitor wells and have analyzed for concentrations of benzene, ethylbenzene, toluene, xylene and total petroleum hydrocarbons using EPA approved methods.

6. Texaco Exploration and Production, Inc. will submit a report on the investigation to the New Mexico Oil Conservation Division by September 1, 1996. The report will contain:

   a. A description of all activities which occurred during the investigation, conclusions and recommendations.

   b. A summary of the laboratory analytical results of water quality sampling of the monitor well(s) and bore holes.

   c. A water table elevation map using the water table elevation of the ground water in all monitor wells and bore holes.

   d. A geologic log and as built well completion for all monitor wells.

7. Texaco Exploration and Production, Inc. will notify the New Mexico Oil Conservation Division at least one week in advance of all scheduled activities to allow the opportunity to witness the events and or split samples.

8. All original documents submitted for approval will be submitted to the New Mexico Oil Conservation Division Santa Fe Office with copies provided to the New Mexico Oil Conservation Division Hobbs District Office.

Please be advised that New Mexico Oil Conservation Division approval does not relieve Texaco Exploration and Production, Inc. of liability should the investigation activities determine that contamination exists which is beyond the scope of the work plan, or, if the activities fail adequately to determine the extent of contamination related to Texaco Exploration and Production, Inc. activities. In addition, New Mexico Oil Conservation Division approval does not relieve Texaco Exploration and Production, Inc. of responsibility for compliance with any other federal, state or local laws and/or regulations.

If you have any questions please call me at (505) 827-7153.

Sincerely,

Chris Eustice
Geologist
cc: Mr. Wayne Price, New Mexico Oil Conservation Division Hobbs Office

Texaco Exploration
and Production Inc

500 North Loraine
Midland TX 79701

P O Box 3109
Midland TX 79702

April 18, 1996

23 1996

Mr. Chris E. Eustice
Geologist, Environmental Bureau
New Mexico Oil Conservation Division
2040 S. Pacheco
Santa Fe, New Mexico 87505

**Re: Monitor Well Work Plan**
**Texaco North Eunice Gas Plant**
**Lea County, New Mexico**

Dear Chris,

As requested, please find enclosed Texaco Exploration and Production, Inc.'s proposed work plan for the installation of one monitor well in association with the soil assessment activities that have been previously conducted at the North Eunice Gas Plant, Lea County, New Mexico. This plan was prepared by Highlander Environmental, Midland, Texas, at the request of Texaco.

You will recall that the assessment activities were initiated at the request of the NMOCD District I office in Hobbs. It was their desire that Texaco investigate the vertical and horizontal extent of the hydrocarbon impact on the soil on the north and south sides of the plant compressor building. As explained in the proposed work plan, due to the presence of overhead, surface and underground lines, Texaco has completed, to the best of its ability, the soil assessment phase of this investigation.

Texaco respectfully requests an expeditious review of this proposal in as much as we are prepared to begin this work immediately upon receipt of your approval. Upon completion of the installation of this monitor well and the receipt of all analytical data, a formal report summarizing the assessment activities will be submitted to you for review.

Please contact me at (915) 688-4804 should you have questions or desire additional information related to this proposal. Thank you for prompt review and assistance in this matter.

Robert W Browning

Robert W. Browning
EH&S Professional - Environmental
Texaco Exploration & Production

RWB/

Enclosure

cc w/o enclosure: Terry Frazier

cc w/ enclosure: Charlie Adkison - Rodney Bailey

Jerry Sexton
District Supervisor
NMOCD - District I
Hobbs, New Mexico

*Highlander Environmental Corp.*

*Midland, Texas*

April 17, 1996

Robert W. Browning
Texaco Exploration and Production, Inc.
500 North Loraine Street
P.O. Box 3109
Midland, Texas 79702-3109

Re: **Work Plan for Texaco North Eunice Gas Plant, Eddy County, New Mexico**

**Proposed Activity** : Installation of one monitor well at the Texaco North Eunice Gas Plant.

**Goal Proposed Activity**

Highlander Environmental has completed a soil assessment at the Texaco North Eunice Gas Plant. Hand borings were installed on the north and south sides of the compressor building to define the extents of hydrocarbon impact. Hand borings were installed due to the overhead, surface, and under ground piping located around the compressor building which limited access to any type of drilling rig. The results of the soil investigation showed one of the areas had contamination extending to a depth of 15.0 feet below surface. Hand borings could not be advanced deeper due to a dense caliche layer encountered at 15.0 feet below surface.

A water level measurement was collected from a water well located north of the compressor building and measured 53.55' below ground level. The top impacted soils around the compressor building are proposed to be removed. In order to attempt to leave the deeper impacted soil in place, a monitor well is proposed to confirm the ground water has not been impacted. Due to the drilling accessibility next to the compressor building, one down gradient monitor well will be installed at the site approximately 50' south of the compressor building.

**Monitor Well Installation and Completion**

A monitor well will installed using an air rotary rig to assess the ground water down gradient of the compressor building. The monitor well will be installed down gradient to a total depth of approximately 68 feet below surface. Two soil samples will be collected from the monitor well during the borehole construction. The monitor well will be completed with 4 inch schedule 40 flush joint PVC casing and 20.0 feet of 0.035 mill slotted screen. The completion will include extending the screen 5' above the top of the water table as to account for the

seasonal fluctuation and 15' below the water table. The annulus will be gravel packed from the bottom of the well with 10-20 brady gravel. A bentonite plug will be set at 2-3 feet above the screen and the casing grouted to surface with 5% bentonite added to the grout. The monitor well will be completed with an above grade completion. The monitor well will be completed as per the OCD guidelines.

The monitor well will be properly developed and purged prior to sampling. All the drill cuttings will be placed on plastic.

## Sampling Procedure

During the drilling of the monitor well, discrete soil samples will be collected at five foot depth intervals to evaluate the subsurface conditions. All the samples will be collected with a splitspoon or core barrel sampler.

Each soil sample collected will be immediately sealed in clean, glass sample jar with zero head space and immediately placed in a cooler and chilled. All samples collected for potential laboratory analysis will be preserved according to EPA standards and, will be analyzed within the holding requirements. The soil samples will be analyzed for Total Petroleum Hydrocarbon (TPH) by method EPA 418.1 and Benzene, Toluene, Ethylbenzene and Xylene (BTEX) by method SW-846, 5030/8050. A portion of the sample will be field screened for organic vapor to provide support data to determine which samples will be selected for analysis. The soil samples will be properly logged by our geologist for lithologic description.

Prior to water sampling, a static ground water level will be measured from the well. A disposable bailer will be lowered in the well to check the presence of phase separated hydrocarbon (PSH). The monitor well will be purged by removing 3 casing volumes from the well. After purging, the wells will be sampled for Total Petroleum Hydrocarbon (TPH) by method EPA 418.1 and Benzene, Toluene, Ethylbenzene and Xylene (BTEX) by method SW-846, 5030/8050. The groundwater samples will be placed into a laboratory prepared bottles with zero headspace and placed into a cooler and chilled. All samples will be analyzed within the standard holding times.

## Reporting of Activities

A final report of the soil and ground water assessment will be submitted to the Oil Conservation Division for review after the completion of the monitor well and sample analysis received.

## Waste Management

The soil drill cuttings will be place on plastic and covered onsite. The purge ground water will be placed into drums and left onsite. The disposal of the drill cuttings and purged water will be determined after evaluating the soil sample results.

## Attachment

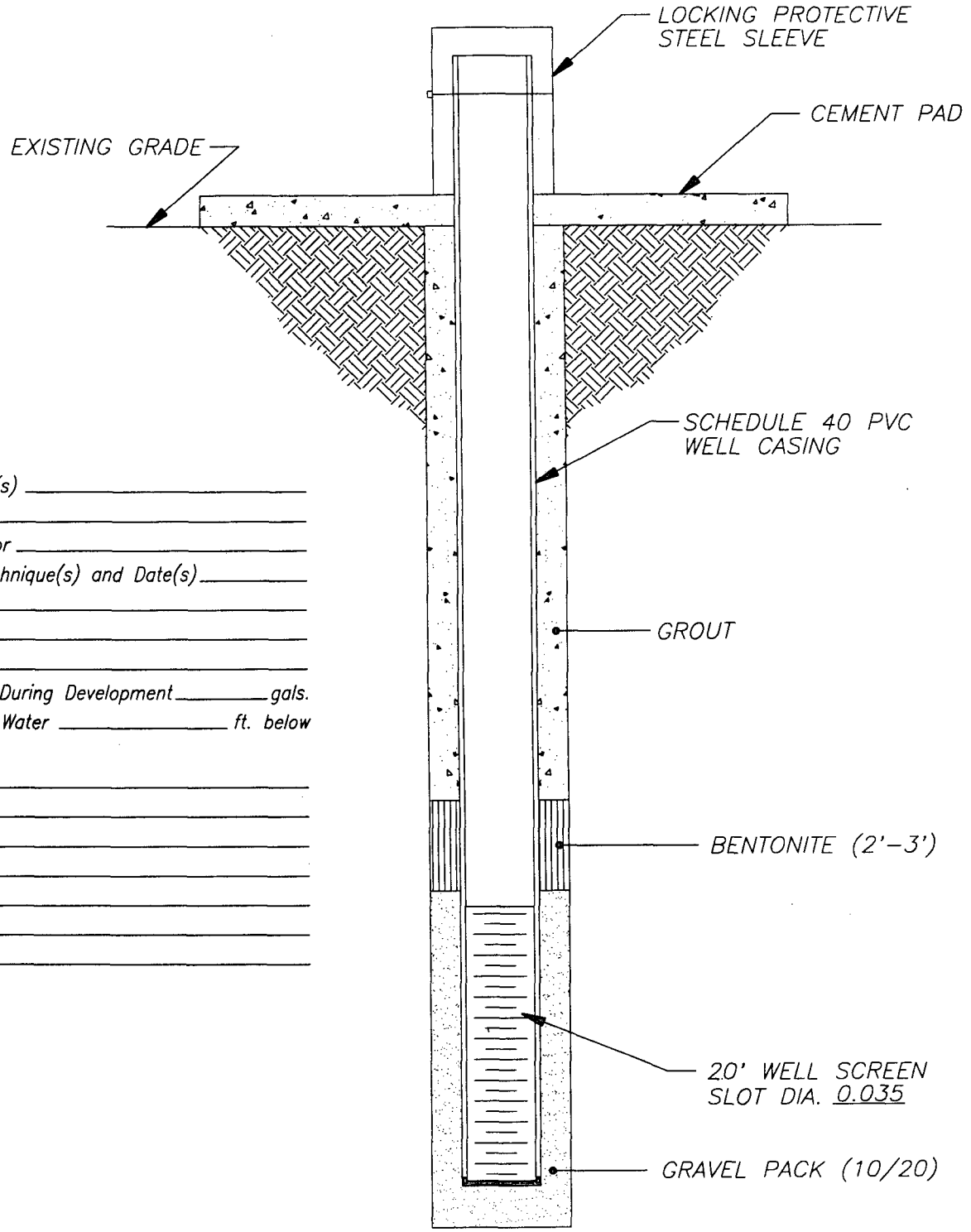
Typical monitor well construction

If you have any questions or need additional information please call.

Very truly yours,

Ike Tavarez
Geologist

# TYPICAL
# WELL CONSTRUCTION LOG




*Installation Date(s)* _____

*Drilling Method* _____

*Drilling Contractor* _____

*Development Technique(s) and Date(s)* _____

_____

_____

_____

*Water Removed During Development* _____ *gals.*

*Static Depth to Water* _____ *ft. below Ground Level*

*Well Purpose* _____

_____

*Remarks* _____

_____

_____

_____

_____

| DATE: | | WELL NO. |
|---|---|---|
| *Highlander Environmental* | CLIENT:<br>PROJECT:<br>LOCATION: | MW |