3R - 214

# GENERAL CORRESPONDENCE

YEAR(S):

2005 - 1995

NEW MEXICO ENERGY, MINERALS and
NATURAL RESOURCES DEPARTMENT

**BILL RICHARDSON**
Governor
**Joanna Prukop**
Cabinet Secretary

**Mark E. Fesmire, P.E.**
Director
**Oil Conservation Division**

September 6, 2005

Mr. Scott T. Pope
El Paso Corporation
2 North Nevada
Colorado Springs, CO 80903

**RE: SCOPE OF WORK FOR LINDRITH B #24 GROUNDWATER SITE**
**SAN JUAN COUNTY, NEW MEXICO**
**3R0214**

Dear Mr. Pope:

The New Mexico Oil Conservation Division (OCD) has reviewed El Paso Field Services' (EPFS) "*Scope Of Work For Lindrith B #24 Groundwater Site*" submitted on August 18, 2005. EPFS has proposed a geoprobe investigation of its Lindrith B #24 site in which it will advance 3 geoprobe borings to first ground water at locations west of its former pit. EPFS's work plan is approved with the following conditions:

1. EPNG must conduct all sampling and analysis activities using EPA approved methods and procedures including appropriate quality assurance/quality control (QA/QC).

2. EPNG must dispose of all wastes generated at an OCD approved facility or in an OCD approved manner.

3. EPNG's report and recommendations must be submitted to the OCD Santa Fe Office with a copy provided to the OCD Aztec Office no later than 45 days after the geoprobe borings have been installed and sampled.

4. If EPNG's ground water investigation detects contamination at concentrations that exceed the Water Quality Control Commission (WQCC) abatement standards specified at 20.6.2.3103 NMAC, then it must submit both a Stage 1 and Stage 2 Abatement Plan proposal within sixty (60) days of notifying OCD that it has discovered additional contamination, in accordance with Subsection E of 19.15.1.19 NMAC.

Please be advised that OCD's approval does not relieve EPNG of liability if contamination exists which is beyond the scope of the work plan, if the activities fail to adequately determine the extent of contamination; or if the activities fail to adequately remediate contamination related to EPNG's activities. In addition, OCD approval does not relieve EPNG of responsibility for compliance with any other federal, state, tribal or local laws and regulations.

If you have any questions, please call me at (505) 476-3488.

Sincerely,

Glenn von Gonten
Senior Hydrologist
Environmental Bureau

xc: Denny Foust, OCD Aztec District Office
Mr. Bill Liess, Bureau of Land Management
Mr. Mike Matush, New Mexico State Land Office
Mr. Bill Freeman, Navajo Nation EPA
Mr. Kurt Sandoval, Jicarilla Apache Tribe Environmental Protection Office

**Via UPS**

August 18, 2005

Mr. Glenn von Gonten
Senior Hydrologist
New Mexico Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

**RE: Scope of Work for Lindrith B #24 Groundwater Site**

Dear Mr. von Gonten;

El Paso Field Services (EPFS) has prepared this Scope of Work and Workplan for additional investigation at the Lindrith B#24 groundwater site near Farmington, New Mexico. This Workplan has been prepared in response to a letter from New Mexico Oil Conservation Division (NMOCD) to EPFS, dated July 18, 2005, in which NMOCD denied closure of the Lindrith B#24 site pending additional characterization of potential groundwater hydrocarbon contamination. This Scope of Work has been developed following the discussions held between EPFS and NMOCD at a meeting on August 3, 2005, and based on additional technical assessment of site data with regard to the potential for a hydrocarbon plume.

EPFS originally requested closure of the Lindrith B#24 site on February 4, 2005. This request was denied by NMOCD in a letter dated May 20, 2005, based on two requirements that (1) EPFS conduct a groundwater investigation to characterize the release from the Lindrith B#24 discharge pit and (2) that after it has defined the contaminant plume, it demonstrate that it is in compliance with the Water Quality Control Commission (WQCC) abatement standards for eight consecutive quarters. EPFS responded in a letter on June 23, 2005, in which EPFS provided additional rationale for the site characterization efforts at the site to date. EPFS also provided a copy of the 1995 EPFS Workplan with this letter, for which NMOCD approved the use of four consecutive quarters for site closures.

In the most recent letter from NMOCD, dated July 18, 2005, NMOCD rescinded its June 23, 2005 requirement of eight quarters, recognizing the approved, subsequent agreement of allowing four, consecutive quarters for closure. However, NMOCD reaffirmed the denial of EPFS's closure request "...and require[d] the EPFS implement a ground water investigation to determine the extent of the contamination." In a subsequent meeting between EPFS and NMOCD, held in the Santa Fe, New Mexico NMOCD offices on August 3, 2005, it was discussed that EPFS would investigate potential hydrocarbon contamination to the west of the former pit. This letter has been prepared to provide the scope of work and work details to fulfill NMOCD's requirement.

**Scope of Work:**

NMOCD's letter of July 18, 2005, requires that "EPFS must submit a ground water investigation plan to install a sufficient number of additional monitoring wells to delineate the downgradient extent of the ground water contamination from the Lindrith B#24 pit site... The purpose of the ground water investigation is for EPFS to demonstrate that it has adequately delineated and remediated the hydrocarbon contamination.... EPFS may wish to propose a investigative approach that relies on temporary well points and screening criteria."

Based on discussions with NMOCD, EPFS proposes to implement a geoprobe investigation at the site to confirm the presence or absence of hydrocarbon contamination in the groundwater to the west of EPFS' former pit. Based on historic groundwater flow maps, as well as the regional gradient of Largo wash, groundwater flow is expected to be to the southwest; however, there is some indication from original groundwater flow maps that flow may have been to the west as recently as August 2001 (2001 Groundwater Sites Annual Report). EPFS maintains that adequate characterization has been completed within the footprint, and to the southwest, of the former pit. Therefore, the investigation will be limited to the area west of the former pit.

The number and locations of the proposed geoprobe borings and associated groundwater samples are shown on the attached Figure 1. These locations are approximately 50-, 100- and 150-feet to the west of the footprint of the former EPFS pit. The targeted distances from the pit are based on the estimated travel time of groundwater from the former pit since the last time that the groundwater gradient suggested flow in this direction (August 2001). Based on a conservative estimate of saturated hydraulic conductivity of $1 \times 10^{-3}$ cm/sec for a poorly sorted, fine- to medium-grained sand (MW-1 boring; and Freeze and Cherry, 1979); an estimated porosity of 0.25 (Freeze and Cherry, 1979); and an estimated hydraulic gradient of 0.0065 ft/ft, which is the approximate gradient of Largo wash in the vicinity of the site (measured from the 7.5 minute USGS topographic digital data), the most likely estimate of groundwater flow velocity is approximately 27 feet per year. Based on this estimate, the calculated distance that groundwater would have traveled over four years is approximately 108 feet (Table 1). Therefore, the proposed borings have been placed between 50- and 150-feet to investigate this area.

It should further be noted that these estimates of groundwater travel time do not take into consideration any physical attenuation mechanisms or biodegradation of the hydrocarbons which typically result in significant reductions of hydrocarbon concentrations from the source area. Natural attenuation is applicable to both the dissolved phase in groundwater as well as free product. The reduction in concentration for dissolved constituents in groundwater is due primarily to a number of fate and transport processes including dilution, dispersion, sorption, volatilization, and biotic and abiotic transformations (Wiedemeier, T.H., Rifai, H. S., Newell, C. J., and Wilson, J. T., 1999, *Natural Attenuation of Fuels and Chlorinated Solvents in the Subsurface,* John Wiley & Sons, Inc. New York, NY, 617p.).

Evidence of natural attenuation at the site is demonstrated by site data collected between 2001 and 2004. During this period, the highest benzene concentration at MW-1 was measured in November 2001 at 280 µg/L, and free-product was detected in the well in August 2001 and August 2003. The estimated groundwater flow direction, based on data collected from August 2001 through 2004 was consistently to the southwest, from MW-1 towards MW-3. Based on the estimated flow velocity of 27 feet per year, groundwater from MW-1 would arguably have passed MW-3 during this period (the distance between MW-1 and MW-3 is approximately 80 feet). However, neither free-product nor benzene concentrations above the detection limit have been

detected in MW-3, indicating that natural attenuation mechanisms are affecting the hydrocarbon plume and limiting the nature and physical extent of these constituents.

The limited extent of hydrocarbons dissolved in groundwater is not unique to the subject site. The California Leaking Underground Fuel Tank (LUFT) Historical Case Analysis reported that plume lengths at 271 fuel hydrocarbon sites in California "change slowly and stabilize at relatively short distances from the release site" (usually less than 250 feet). Of these 271 plumes, 59 percent were stable, 33 percent were shrinking, and only 8 percent were growing (Rice, D.W., Dooher, B.P., Cullen, S.J., Everett, L.G., Kastenberg, W.E., Grose, R.D., and Marino, M.A., 1995, *Recommendations to Improve the Cleanup Process for California's Leaking Underground Fuel Tanks (LUFTs)*, report submitted to the California State Water Resources Control Board and the Senate Bill 1764 Leaking Underground Fuel Tank Advisory Committee, California Environmental Protection Department, Sacramento, CA, 20 pp.). It should be noted that the majority of sites studied by Rice et al. were associated with gasoline stations where benzene, toluene, ethylbenzene and total xylenes (BTEX) concentrations are expected to be elevated. Significantly elevated BTEX concentrations are not encountered at the subject site, and as such, the extent of BTEX constituents would be expected to be limited.

Mace et al. (1997) studied 217 fuel release sites in Texas as part of a Texas Bureau of Economic Geology investigation (Mace, R.E., Fisher, R.S., Welch, D.M., and Parra, S.P., 1997, *Extent, Mass, and Duration of Hydrocarbon Plumes from Leaking Petroleum Storage Tank Sites in Texas*, Bureau of Economic Geology Geological Circular 97-1, 52pp.). Mace et al. found that most benzene plumes (75 percent) are less than 250 feet long and have either stabilized or are decreasing in length and concentration.

As demonstrated by these technical reports, and based on the experience of EPFS with typical pit sites, these hydrocarbon plumes associated with the remediated pits typically do not extend far from the source areas. EPFS therefore maintains that the proposed area of investigation, to the west of the former pit, is appropriately located.

**Workplan:**

As discussed above, the fact that BTEX constituents have not been detected at well MW-3 strongly suggests that hydrocarbons are being naturally attenuated, and limited in concentration and extent near the former source; therefore, it follows that hydrocarbon contamination is unlikely to have migrated to the west of the pit. As such, EPFS feels that additional investigation of this site is not necessary; however, in the spirit of cooperation and in order to achieve a speedy closure of this site, EPFS will undertake an investigation of the area west of the pit at this site. The following is a brief description of the proposed field and laboratory investigations.

A geoprobe rig will be used to drive borings through the unconsolidated sediments to the depth of first groundwater (estimated approximately 25 to 30 feet below ground). The number and locations of the proposed geoprobe borings and associated groundwater samples are shown on the attached Figure 1. These locations are approximately 50-, 100- and 150-feet to the west of the footprint of the former EPFS pit. Temporary, PVC well points will be placed at the water table for the collection of groundwater samples. Groundwater samples will be collected using a mini-bailer or peristaltic pump and collected in VOA vials for transport to the analytical laboratory. Samples will be stored on ice and shipped to the laboratory within 48 hours of sample collection. All samples will be analyzed for BTEX constituents using method EPA M8021B.

EPFS maintains that the Scope of Work presented in this letter is adequate for determining whether hydrocarbon contamination has migrated to the west of the former pit, and whether EPFS has adequately delineated and remediated the hydrocarbon contamination at this site. If the groundwater samples collected from these borings indicate BTEX concentrations below the WQCC standards, EPFS will, at that time, re-submit the Lindrith B#24 site for closure.

This investigation is tentatively scheduled for October 2005, pending access agreements with landowners and other scheduling considerations. NMOCD will be notified one week prior to initiation of the field work. If you have any questions concerning this Scope of Work and/or Workplan, or require additional information please call me at (719) 520-4433.

Sincerely,

Scott T. Pope, P.G.
Project Manager

cc: Mr. Denny Foust, NMOCD Aztec District Office

| MW-1 | 2/23/04 | 6/03/04 | 8/19/04 | 11/29/04 |
|---|---|---|---|---|
| B | <1.0 | 7.1 | <1.0 | <1.0 |
| T | <1.0 | 8.7 | <1.0 | <1.0 |
| E | 23.9 | 48.6 | 14.8 | 5.7 |
| X | 81.5 | 20.4 | 45.2 | 10.0 |


## LEGEND

| | |
|---|---|
| MW-1 | Approximate Monitoring Well Location and Number |
| | Centerline of Road |
| | Fence Line |
| | Pipe Line |
| B | Benzene (µg/L) |
| T | Toluene (µg/L) |
| E | Ethylbenzene (µg/L) |
| X | Total Xylenes (µg/L) |
| GWEL | Groundwater Elevation (Feet Above Mean Sea Level Unless Noted Otherwise) |
| TOC | Top of Casing |
| NS | Not Sampled |
| NM | Not Measured |
| < | Not Detected. Value Shown is Detection Limit. |
| 5260 | Potentiometric Surface (November 2004) (Approximate & Assumed Where Dashed) |
| ▲ | Proposed Geoprobe® locations and groundwater samples (2005) |

N

0 80

SCALE: 1"=80'

LINDRITH B#24, METER 94967
2004

GROUNDWATER SITES
EL PASO FIELD SERVICES

FIGURE 1

**Table 1**
**Groundwater Travel Time Estimate**
**Lindrith B#24 Groundwater Site**
**El Paso Field Services - Groundwater Sites Project 2005**

| Sat. Hydraulic Conductivity | | Gradient | Porosity | Darcy velocity | | Plume Distance |
|---|---|---|---|---|---|---|
| K | K | i | n | q | q | *Assumes no attenuation |
| cm/sec | ft/day | ft/ft | | ft/day | ft/yr | ft (4 years) |
| 0.0001 | 0.283 | 0.0065 | 0.25 | 0.0074 | 2.7 | **11** |
| 0.001 | 2.83 | 0.0065 | 0.25 | 0.074 | 27 | **108** |
| 0.01 | 28.3 | 0.0065 | 0.25 | 0.74 | 269 | **1076** |

Range of hydraulic conductivity estimates ($1x10^{-2}$ to $1x10^{-4}$ cm/sec) based on a poorly sorted sand (Freeze and Cherry, 1979).
Hydraulic gradient calculated from USGS 7.5' topographic map.
Estimated gradient of Largo Wash in the vicinity of the site (60 ft / 9240 ft).
Plume distance does not take into consideration phyical attenuation mechanisms or biodegration of hydrocarbons.
The most recent event that groundwater flow was estimated to be toward the west was in August 2001 (4 years ago).

# NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

**BILL RICHARDSON**
Governor
**Joanna Prukop**
Cabinet Secretary

**Mark E. Fesmire, P.E.**
Director
**Oil Conservation Division**

July 18, 2005

Mr. Scott T. Pope
El Paso Corporation
2 North Nevada
Colorado Springs, CO 80903

**RE: EL PASO FIELD SERVICES LINDRITH B #24**
**SAN JUAN COUNTY, NEW MEXICO**
**CASE 3R0214**

Dear Mr. Pope:

The New Mexico Oil Conservation Division (OCD) has reviewed El Paso Field Services' (EPFS) letter of June 23, 2005, in which you request OCD to reconsider its denial of EPFS's closure request of February 4, 2005. At issue are OCD's two requirements that (1) EPFS conduct a ground water investigation to characterize the release from the Lindrith B#24 production pit and (2) that after it has defined the contaminate plume, it demonstrate that it is in compliance with the Water Quality Control Commission (WQCC) abatement standards specified at 20.6.2.3103 NMAC for eight (8) consecutive quarterly samples. Thank you for providing me with a copy of the 1995 workplan. With respect to the second issue, OCD acknowledges that it did grant approval in 1995 for the use of four quarters rather than eight quarters. OCD therefore, rescinds its June 23, 2005 requirement of eight quarters.

However, OCD does not accept EPFS's assertions that hydrocarbon-impacted ground water has not migrated away from the pit for several reasons. EPFS has never adequately characterized the release. For example, despite having BTEX concentrations that exceeded the WQCC abatement standards on many occasions, EPFS has never provided an isoconcentration map depicting the extent of the contamination. It appears from the data presented that ground water flow was predominately to the west from at least the time that the pit was closed (1995) through 2001. The unlined production pit was presumably installed in 1983 and OCD must assume that the release of hydrocarbons began shortly after the well was put on production in June 1984.

EPFS did remove a significant amount of contaminated soil from the pit in October 1994 and in again in August 1995. OCD assumes that hydrocarbons were released from the pit from approximately 1984 until 1994 and migrated downgradient.

Monitor well MW-1 was installed in 1997 in the former pit location. Despite EPFS's February 1998 proposal to install additional monitoring wells and OCD's July 1998 requirement that EPFS install downgradient and/or permanent monitor wells, EPFS did not install additional monitor wells in 1998. In July 1999 OCD reminded EPFS of its requirement that EPFS install additional monitoring wells and determine the extent of ground water contamination. EPFS installed MW-2 and MW-3 in October 1999 and noted that the ground water gradient was to the west in its 1999 Pit Project report. In its 2000 Pit Project report, EPFS again noted that the ground water gradient was to the west and referred to MW-2 as an upgradient well and MW-3 as an cross-gradient well. Not surprisingly, EPFS noted that BTEX had not been detected in either MW-2 or MW-3.

In July 2001, after reviewing EPFS's 2000 Pit Project report, OCD for a third time informed EPFS that it needed to define the extent of the release by adding additional monitor wells. EPFS apparently chose to interpret this requirement to mean that it would "complete" MW-2 and MW-3 as permanent monitoring wells, apparently by surveying the elevation of the wells. EPFS also noted in its 2001 Pit Project report that that *"No samples were collected from MW-2 or MW-3, since BTEX compounds have never been detected in these wells."* Figure 2 (August 2001) of EPFS's 2001 Pit Project report depicts ground water flow to the west using a ground water elevation that was corrected for the amount of product on the water table. OCD notes that this figure, the first provided by EPFS after it surveyed the wells, clearly depicts ground water flow to the west and that neither MW-2 nor MW-3 are appropriate downgradient wells.

Data provided by EPFS in its annual Pit Project reports for the next three years (2002 to 2004) depict ground water flow to the southwest. In its February 2005 Closure Report, EPFS reports that BTEX concentrations at MW-1 were below WQCC standard for all four quarters in 2004. Neither BTEX nor free product was detected at MW-2 and MW-3 from the single sample collected from these two wells in 2004. EPFS concludes by noting that it has demonstrated that it had removed most of the contaminated soil and there has been minimal impact to ground water at this site; therefore, EPFS requests OCD to approve closure of this site.

After careful review, OCD has decided that it cannot approve EPFS closure request. It does appear that EPFS did remove most of the contaminated soil from the pit. However, OCD must assume that ground water has been contaminated by a hydrocarbon plume that was released from the unlined production pit from 1984 until 1994. OCD must assume, based on the data submitted by EPFS, that the ground water gradient was originally to the west, down the axis of Largo Wash, and that the hydrocarbon plume released from the pit migrated west until 2002. By the time that the local ground water gradient migrated to the southwest in 2002, the majority of the ground water plume had apparently migrated away from the pit site. By not installing appropriate downgradient wells in a timely fashion, despite repeated directions from OCD to do so, EPFS failed to conduct a ground water investigation program that meets the appropriate performance standards. That is, EPFS has not yet adequately defined the site conditions at its former unlined production pit, nor has it delineated the extent of the contamination that was

released from the pit. Therefore, OCD must deny EPFS's closure request and require the EPFS implement a ground water investigation to determine the extent of the contamination.

EPFS must submit a ground water investigation plan to install a sufficient number of additional monitoring wells to delineate the downgradient extent of the ground water contamination from the Lindrith B #24 pit site by August 19, 2005. The purpose of the ground water investigation is for EPFS to demonstrate that it has adequately delineated and remediated the hydrocarbon contamination. EPFS should be prepared to install as many monitoring wells as needed to delineate the full extent of the BTEX plume to concentrations less than the WQCC Abatement Standards (20.6.2.3103 NMAC). After it has delineated the release, or demonstrated to OCD's satisfaction that there is no remaining hydrocarbon contamination in the ground water downgradient from the former pit, OCD will determine whether to require additional action from EPFS.

EPFS may wish to propose a investigative approach that relies on temporary well points and screening criteria. OCD is willing to meet with EPFS to discuss the required ground water investigation in detail.

If you have any questions, please call me at (505) 476-3488.

Sincerely,

Glenn von Gonten
Senior Hydrologist
Environmental Bureau

xc: Denny Foust, OCD Aztec District Office
Mr. Bill Liess, Bureau of Land Management
Mr. Mike Matush, New Mexico State Land Office
Mr. Bill Freeman, Navajo Nation EPA
Mr. Kurt Sandoval, Jicarilla Apache Tribe Environmental Protection Office

elpaso

Via Federal Express

RECEIVED
3R0214

JUN 24 2005

Oil Conservation Division
Environmental Bureau

June 23, 2005

Mr. Glenn von Gonten
New Mexico Oil Conservation Division
1220 St. Francis Dr.
Santa Fe, NM 87505

**RE: Closure Request for the Lindrith B #24**

Dear Mr. von Gonten;

El Paso Field Services (EPFS) has prepared this letter to provide a response and additional information to NMOCD with regard to EPFS' request for closure of the Lindrith B#24 site, submitted on February 4, 2005. EPFS has received NMOCD's response letter dated May 20, 2005, (received May 24, 2005) denying closure of the site for the following two reasons:

> (1) "EPFS has not complied with the OCD's written requirement of July 18, 2001, to "...install additional groundwater monitoring wells at these sites to monitor and determine the extent of groundwater contamination pursuant to their previously approved groundwater investigation plan."
>
> (2) "In addition, subsurface-water contamination abatement can not be considered complete until the responsible person has demonstrated compliance with the WQCC abatement standards specified at 20.6.2.3103 NMAC for eight consecutive quarterly samples."

With regard to NMOCD's first statement, EPFS did respond to the July 18, 2001, requirement by completing and surveying downgradient wells MW-2 and MW-3 as permanent monitoring wells in 2001, as stated in the 2001 Groundwater Sites Annual Report. Response to correspondence from OCD was commonly addressed in the annual reports as suggested by the case manager at that time. The August 2001 potentiometric surface map reflects the newly surveyed wells and shows groundwater flow to the west; however, free-product was present in MW-1 at that time, and, therefore, the groundwater level in that well was estimated based on a correction factor (0.80) to account for the estimated weight of the product on the water. Since 2002 (through 2004), all potentiometric surface maps generated when product was not present at the site (i.e., no groundwater elevation adjustments were made) indicated groundwater flow to the southwest from MW-1 toward MW-3 (see attached figures from 2002 – 2004 annual reports). Furthermore, Largo Wash is situated to the southwest of the site, and, therefore, groundwater flow in this direction would be expected. For these reasons, EPFS believes that groundwater flow at the site is to the southwest and that MW-3 is an appropriate

El Paso Corporation
PO Box 1087 Colorado Springs, Colorado 80944
tel 719.473.2300 fax 719.520.4318

downgradient well which has been utilized to define the extent of contamination from the former EPFS pit at this site.

With regard to NMOCD's second statement, EPFS refers NMOCD to the attached November 30, 1995, letter granting approval of the "Remediation Plan for Groundwater Encountered During Pit Closure Activities El Paso Natural Gas Company – El Paso Field Services Company (November 29, 1995, September 16, 1995)," which states *"When WQCC standards have been met as described in Section 1.2.2 for four consecutive quarters, the pit will be considered closed and the wells will be abandoned".*

In summary, as discussed in the Lindrith B#24 Closure Report, it has been demonstrated that the source material was removed from the former EPFS pit over ten years ago. Eight years of groundwater monitoring has demonstrated successful natural attenuation of hydrocarbon contamination in groundwater below the pit to levels below WQCC standards. Furthermore, a downgradient monitoring well, MW-3, provides evidence that hydrocarbon-impacted groundwater has not migrated away from the source. At a minimum, the same degradation rate inside the source area could be applied to any hydrocarbons that may have migrated away from the pit. Both monitoring wells MW-2 and MW-3 are positioned to intercept potential contamination migrating toward the only potential receptor in the area, Largo Wash. With consideration to the remoteness of the location, it may be concluded that this site does not present a significant risk to human health or the environment.

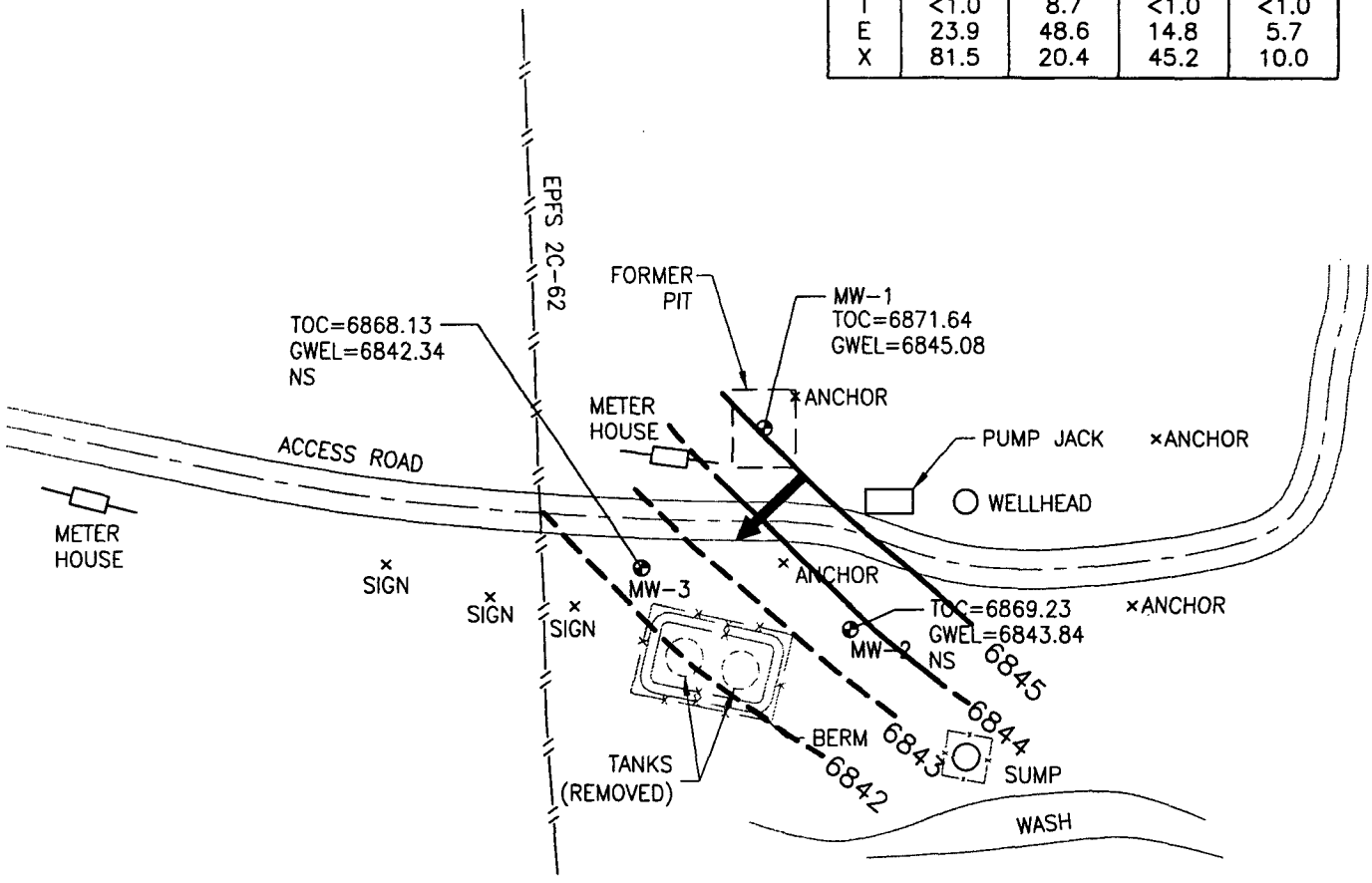
Based on the additional information supplied in this letter; extremely low risk, over ten years post source removal, and successful natural attenuation of impacted groundwater in the source area, EPFS requests reconsideration of closure of the Lindrith B#24 site. If you have any questions or require additional information, please call me at (719) 520-4433.

Sincerely,

Scott T. Pope, P.G.
Principle Environmental Scientist
Environmental Remediation

cc: Mr. Denny Foust, OCD Aztec District Office w / attachments
Pam Anderson MWH w / out attachments
Scott Pope – Groundwater General File w / attachments
Lindrith file w / attachments

| MW-1 | 2/23/04 | 6/03/04 | 8/19/04 | 11/29/04 |
|---|---|---|---|---|
| B | <1.0 | 7.1 | <1.0 | <1.0 |
| T | <1.0 | 8.7 | <1.0 | <1.0 |
| E | 23.9 | 48.6 | 14.8 | 5.7 |
| X | 81.5 | 20.4 | 45.2 | 10.0 |




## LEGEND

| | |
|---|---|
| ⊕ MW-1 | Approximate Monitoring Well Location and Number |
| ——— -- ——— | Centerline of Road |
| ——— x ——— x ——— | Fence Line |
| ———//———//——— | Pipe Line |
| B | Benzene (µg/L) |
| T | Toluene (µg/L) |
| E | Ethylbenzene (µg/L) |
| X | Total Xylenes (µg/L) |
| GWEL | Groundwater Elevation (Feet Above Mean Sea Level Unless Noted Otherwise) |
| TOC | Top of Casing |
| NS | Not Sampled |
| NM | Not Measured |
| < | Not Detected. Value Shown is Detection Limit. |

5260 Potentiometric Surface (November 2004) (Approximate & Assumed Where Dashed)

N

0 80

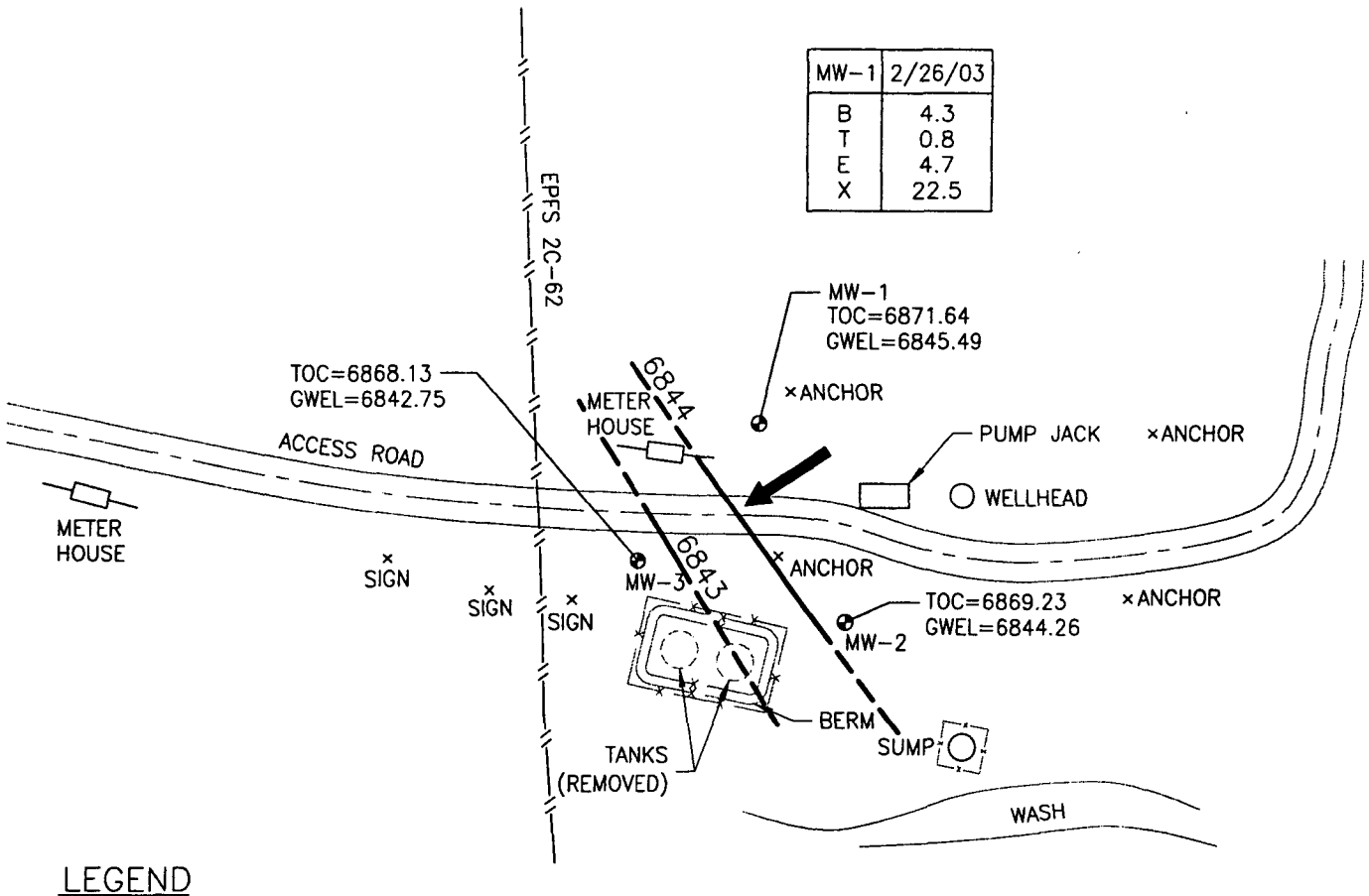
SCALE: 1"=80'

lindrithb24_2004.dwg

LINDRITH B#24, METER 94967
2004

GROUNDWATER SITES
EL PASO FIELD SERVICES

FIGURE 1




## LEGEND

| | |
|---|---|
| MW-1 | Approximate Monitoring Well Location and Number |
| ——— - ——— | Centerline of Road |
| ——x——x—— | Fence Line |
| ——//——//—— | Pipe Line |
| B | Benzene (µg/L) |
| T | Toluene (µg/L) |
| E | Ethylbenzene (µg/L) |
| X | Total Xylenes (µg/L) |
| GWEL | Groundwater Elevation (FT Above Mean Sea Level Unless Noted Otherwise) |
| TOC | Top of Casing |
| 6844 | Potentiometric Surface (Approximate & Assumed Where Dashed) |
| → | Direction of Groundwater Flow (Estimated) |

N

0 80

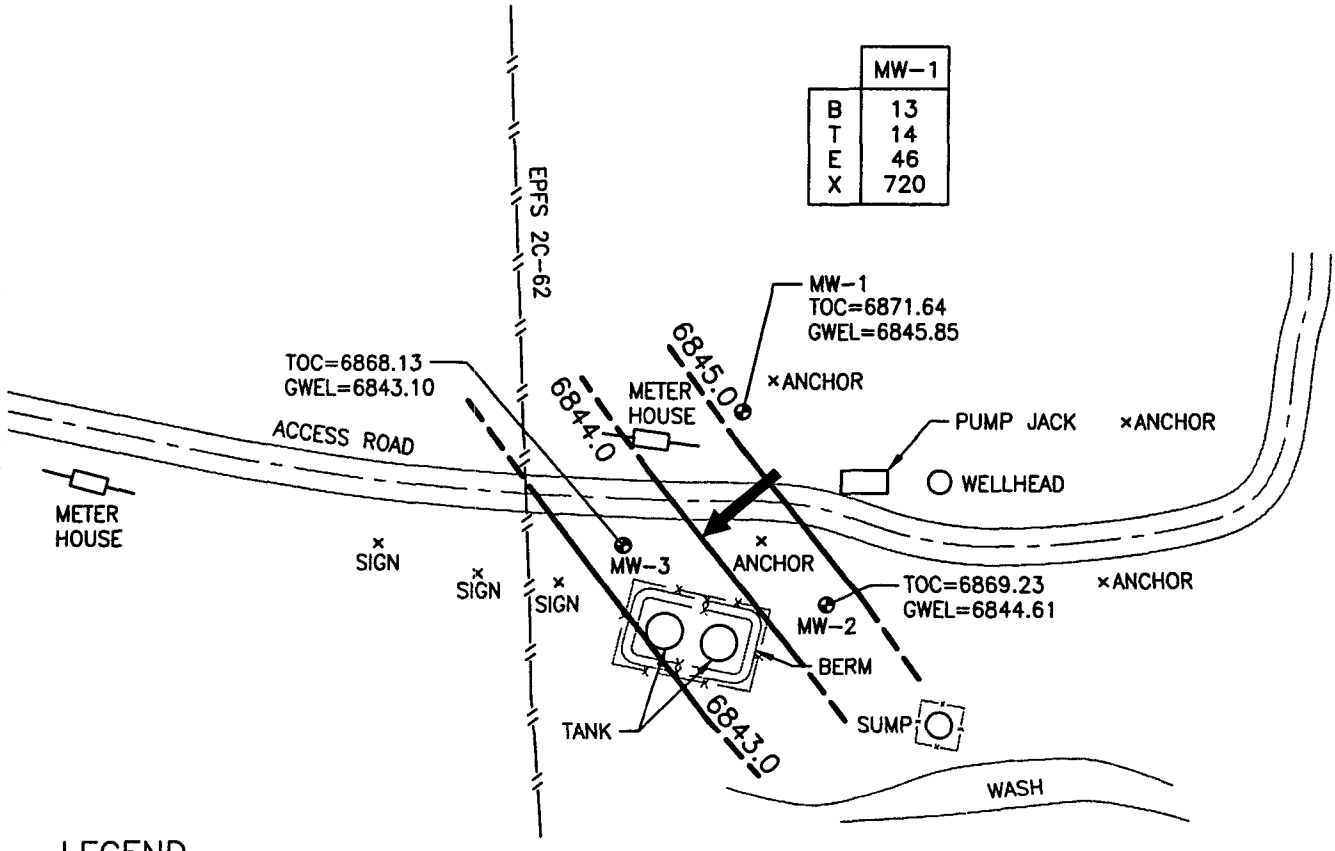
SCALE: 1"=80'

lindrithb24_03.dwg

LINDRITH B#24, METER 94967
FEBRUARY 2003

GROUNDWATER SITES
EL PASO FIELD SERVICES

FIGURE 1




## LEGEND

| | |
|---|---|
| ⊕ MW-1 | Approximate Monitoring Well Location and Number |
| ——— - ——— | Centerline of Road |
| —— x —— x —— | Fence Line |
| ——//——//—— | Pipe Line |
| B | Benzene (µg/L) |
| T | Toluene (µg/L) |
| E | Ethylbenzene (µg/L) |
| X | Total Xylenes (µg/L) |
| GWEL | Groundwater Elevation (FT Above Mean Sea Level Unless Noted Otherwise) |
| TOC | Top of Casing |
| 6846 | Potentiometric Surface (Approximate & Assumed Where Dashed) |
| ➡ | Direction of Groundwater Flow (Estimated) |

N

0 80

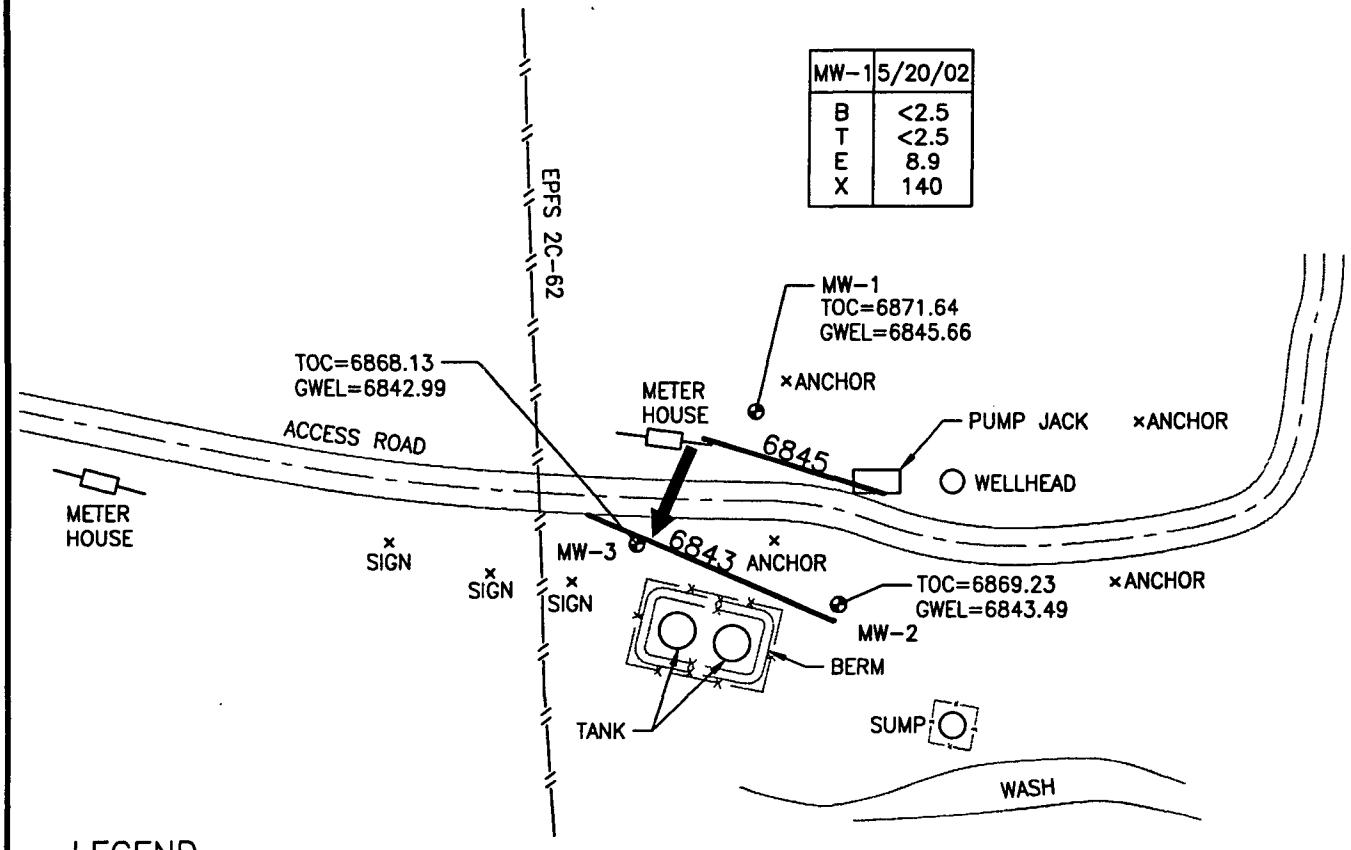
SCALE: 1"=80'

lindrithb24_02.dwg

LINDRITH NO.24, METER 94967
FEBRUARY, 2002

GROUNDWATER SITES
EL PASO FIELD SERVICES

FIGURE 1




## LEGEND

| | |
|---|---|
| MW-1 | Approximate Monitoring Well Location and Number |
| —— - —— | Centerline of Road |
| —— x —— x —— | Fence Line |
| ——//——//—— | Pipe Line |
| B | Benzene (µg/L) |
| T | Toluene (µg/L) |
| E | Ethylbenzene (µg/L) |
| X | Total Xylenes (µg/L) |
| GWEL | Groundwater Elevation (FT Above Mean Sea Level Unless Noted Otherwise) |
| TOC | Top of Casing |
| 6846 | Potentiometric Surface (Approximate & Assumed Where Dashed) |
| → | Direction of Groundwater Flow (Estimated) |

N

0 80

SCALE: 1"=80'

lindrithb24_02.dwg

LINDRITH NO.24, METER 94967
MAY, 2002

GROUNDWATER SITES
EL PASO FIELD SERVICES

FIGURE 2

NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
2040 S. Pacheco
Santa Fe, New Mexico 87505

November 30, 1995

CERTIFIED MAIL
RETURN RECEIPT NO. Z-765-962-517

Ms. Leslie Ann Allen
El Paso Field Services
P.O. Box 1492
El Paso, Texas 79978

**RE: SAN JUAN BASIN GROUND WATER INVESTIGATION WORK PLAN**

Dear Ms. Allen:

The New Mexico Oil Conservation Division (OCD) has completed a review of El Paso Field Service's (EPFS) November 29, 1995 "REMEDIATION PLAN FOR GROUNDWATER ENCOUNTERED DURING PIT CLOSURE ACTIVITIES/EL PASO NATURAL GAS COMPANY-EL PASO FIELD SERVICES COMPANY" and September 16, 1995 "REMEDIATION PLAN FOR GROUNDWATER ENCOUNTERED DURING PIT CLOSURE ACTIVITIES/EL PASO NATURAL GAS COMPANY-EL PASO FIELD SERVICES COMPANY". These documents contain EPFS's generic work plan for investigation and remediation of contaminated ground related to the former use of unlined pits in the San Juan Basin of Northwestern New Mexico.

The above referenced work plan is approved with the following conditions:

1. EPFS will conduct all sampling and analysis activities using EPA approved procedures.

2. The OCD will not consider ground water actions at a site to be terminated unless all ground water contaminant concentrations (including cations/anions related to disposal practices) are either below WQCC standards or below background levels.

3. All wastes generated will be disposed of at an OCD approved facility or in an OCD approved manner.

4. EPFS will submit semi-annual reports on investigation/remedial activities to the OCD by April 1 and October 1 of each respective year. The reports will present the information on each site as a separate case. Each case will contain:

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

   b. The laboratory analytic results of soil and water sampling.

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

   d. A geologic log and completion diagram for each well.

   e. The disposition of all wastes generated.

5. EPFS will notify the OCD at least 48 hours in advance of all scheduled activities such that the OCD has the opportunity to witness the events and/or split samples.

6. All documents submitted for approval will be submitted to the OCD Santa Fe Office with copies provided to the OCD Aztec Office.

Please be advised that OCD approval does not relieve EPFS of liability if contamination exists which is beyond the scope of the work plan, if the activities fail to adequately determine the extent of contamination or if the activities fail to adequately remediate contamination related to EPFS's activities. In addition, OCD approval does not relieve EPFS 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) 827-7154.

Sincerely,

William C. Olson
Hydrogeologist
Environmental Bureau

cc: Denny Foust, OCD Aztec District Office
Ray Powell, NM State Land Commissioner
Bill Liess, BLM Farmington District

**El Paso Field Services**

P. O. BOX 1492
EL PASO, TEXAS 79978
PHONE: 915-541-2600

**Via Facsimile**

November 29, 1995

Mr. William Olsen
New Mexico Oil Conservation Division
2040 South Pacheco
Santa Fe, New Mexico 87505

**Subject: Remediation Plan for Groundwater Encountered During Pit Closure Activities/El Paso Natural Gas Company-El Paso Field Services Company**

Dear Mr. Olsen:

El Paso Field Services (EPFS) submits the enclosed amendment to the previously proposed remediation plan for closure of pits where groundwater is encountered. The previously proposed plan was submitted by letter dated September 16, 1995. The enclosed amendment modifies the September 16 plan and becomes part of that plan.

The enclosed amendment reflects the conclusions reached during our telephone conversation November 7, 1995. It is our understanding that the enclosed amendment will allow our proposed plan to be approved.

Thank you for you assistance in reviewing our proposed plan. If you have any questions regarding the amendment, please contact me at 915-541-2524.

Sincerely,

Leslie Ann Allen
Senior Environmental Scientist
El Paso Field Services Company

Enclosure (1)

cc: Denny Foust, NMOCD, Aztec

via e-mail: John A. Lambdin
Sandra D. Miller
Nancy K. Prince

file: NMOCD2.doc

**AMENDMENT NO. 1**

**EL PASO NATURAL GAS COMPANY**
**EL PASO FIELD SERVICES COMPANY**

**REMEDIATON PLAN**
**FOR GROUNDWATER ENCOUNTERED**
**DURING PIT CLOSURE ACTIVITIES**

El Paso Natural Gas Company amends the original remediation plan submitted to NMOCD September 16, 1995 with the following:

**Section 1.2.1 Preliminary Investigation** of the plan is amended to specify that:

- Groundwater quality will be assessed either through use of a temporary well point (i.e. RECON) or installation of a monitoring well.

- Groundwater sampling locations will either be within the pit or directly adjacent and downgradient to the pit.

- If necessary, additional wells will be placed as appropriate on a case-by-case basis to determine extent of contamination.

- Groundwater will be sampled for the following analytical parameters:

    1. **Major Cations and Major Anions:** Analysis for major cations and major anions will not be conducted if El Paso is able to demonstrate that groundwater impact by major cations and major anions, presently listed in the WQCC standards, is unlikely at a location. Analysis of major cations and major anions, presently listed in the WQCC standards, will only be conducted at locations where El Paso is unable to demonstrate contamination to be unlikely and where TDS exceeds 1,000 mg./l.

    2. **Benzene, Toluene, Ethyl Benzene, Total Xylenes (BTEX)**

    3. **Polyaromatic Hydrocarbons (PAH):** A water sample will only be analyzed for PAH if evidence of a sheen or free phase is noted.

    4. **Metals:** Metals analysis will not be conducted if El Paso is able to demonstrate that groundwater impact by metals is unlikely using site specific soils analysis, gas production data, historical analytical data, or other means. Analysis for arsenic, barium, cadmium, chromium, lead, total mercury, selenium, and silver will only be conducted at locations where El Paso is unable to demonstrate that metals contamination is unlikely.

**Section 1.2.2 If Groundwater is Clean** of the plan is revised to read: " If the groundwater sample collected can be demonstrated to have levels of BTEX, and/or levels of PAH and/or levels of metals, when analyzed according to Section 1.2.1, less than the standards set forth in paragraph 3-103 of Water Quality Control Commission regulations ("WQCC standards"), then the well will be abandoned according to NMED guidance documents as soon as practical."

**Section 5 Groundwater Monitoring** is revised to read: "EPNG will monitor any well which exhibits contamination quarterly for at least one year. LNAPL removal will be implemented again if LNAPLs reappear as a measurable layer during the monitoring period. When WQCC standards have been met as described in Section 1.2.2 for four consecutive quarters, the pit will be considered closed and the wells will be abandoned. At any site where concentrations have leveled off for four consecutive quarters, but WQCC standards have not been met, closure of the pit will be handled on a case-by-case basis with NMOCD."

**El Paso Field Services**

P. O. BOX 1492
EL PASO, TEXAS 79978
PHONE: 915-541-2600

September 16, 1995

Mr. William Olsen
New Mexico Oil Conservation Division
2040 South Pacheco
Santa Fe, New Mexico 87505

**Subject: Remediation Plan for Groundwater Encountered During Pit Closure Activities/El Paso Natural Gas Company-El Paso Field Services Company**

Dear Mr. Olsen:

El Paso Field Services (EPFS) submits the enclosed proposed remediation plan for closure of pits where groundwater is encountered. Included with the plan is a list of pit closure sites where El Paso has encountered groundwater. The list is current as of August 31, 1995. The proposed remediation plan will apply to all pit closure sites where groundwater is encountered, including future sites not presently shown on the attached list.

Sandra Miller, Nancy Prince, and I would like to meet with you late this month or early in November to discuss the proposed remediation plan. I will be contacting you in the next few days to schedule a meeting.

I enjoyed meeting you last week at the NMOGA meeting in Santa Fe and look forward to working with you on the enclosed plan. I can be reached at 915-541-2524 if you have any questions.

Sincerely,

Leslie Ann Allen

Leslie Ann Allen
Senior Environmental Scientist
El Paso Field Services

Enclosures (2)

cc: Denny Foust, NMOCD, Aztec

via e-mail: Sandra D. Miller
Nancy K. Prince

file: NMOCD1.doc

**EL PASO NATURAL GAS COMPANY**
**EL PASO FIELD SERVICES COMPANY**

# REMEDIATION PLAN FOR GROUNDWATER ENCOUNTERED DURING PIT CLOSURE ACTIVITIES

El Paso Natural Gas Company (EPNG) is closing all pits in the San Juan Basin in accordance with the Pit Closure Plan submitted to NMOCD on July 28, 1993. These closures include sampling pit soils and removing contaminated soil in groundwater vulnerable areas. In some locations groundwater was encountered during the closure activities. In addition, at locations inside the groundwater vulnerable zone (GVZ) where soil samples failed the criteria established in the NMOCD Pit Closure Guidance, a single boring has been advanced to determine potential impact on groundwater.

This Remediation Plan addresses cases where groundwater was encountered either during the initial closure activities (Phase I) or during the followup investigations inside the GVZ (Phase II). All pits where groundwater is encountered will be assessed and remediated according to options outlined below.

## 1.0 Investigation

1.1 Pits where groundwater was encountered during Phase I closure activities.
A preliminary investigation has been conducted with a RECON ® soil vapor survey. Further investigation will be recommended as needed according to the procedures outlined below.

1.2 Pits inside vulnerable zone where soil samples failed NMOCD criteria (Phase II).

1.2.1 Preliminary Investigation
A preliminary investigation will be conducted with soil boring and temporary monitoring well installation according to NMOCD Pit Closure Guidance after removal of source. The purpose is to determine if groundwater has been impacted.

If it is obvious during the boring operation that a source of contamination still remains and groundwater is less than 20', then no temporary monitoring well will be installed. The stained soil will be removed according to the approved Pit Closure Plan. Fertilizer will be added prior to backfill to enhance the natural attenuation process. Groundwater quality will then be assessed either through soil vapor surveys or monitoring well installation.

If groundwater is encountered, a soil sample will be collected from immediately above the water table and submitted for analysis. A temporary monitoring well will also be completed, developed, and sampled for BTEX and TDS. Wells will be 4-inch diameter PVC set with 5 feet of screen above the water table and 10 feet of screen beneath the water table. Sand pack, bentonite seal, and grout will be used to complete the wells which will be fitted with locking caps and padlocks.

The boring will be advanced and soil samples collected at five foot intervals until either field screening indicates that the soil is clean, groundwater is encountered, or auger refusal is reached.

If auger refusal is due to cobbles at shallow depths, and there is reason to believe that groundwater exists at less than 20 feet below the surface at the site, then groundwater quality will be assessed by soil vapor surveys or trenching with a backhoe.

If auger refusal due to cobbles encountered at greater depths, and contamination appears at the refusal depth, groundwater quality will be assessed on a site by site basis.

1.2.2 If Groundwater is Clean

If the groundwater sample collected contains levels of BTEX less than the standards presently set forth in paragraph 3-103 o Water Quality Control Commission regulations ("WQCC standards"), then the well will be abandoned according to NMED guidance documents as soon as practical..

1.2.3 If Groundwater Exceeds WQCC Standards

If the sample is above WQCC standards, further investigation and/or remediation will be conducted. The vertical and horizontal extent of contaminated groundwater will be investigated by soil vapor surveys and/or monitoring well installation. If continued monitoring of the temporarily installed well is required, concrete pads, bumpers etc. will be added as needed to secure the well location. Surface and top of casing elevations will be surveyed as necessary to determine groundwater flow direction.

## 2.0 Risk assessment

At pits near residential areas when WQCC standards have been exceeded, a water well survey will be conducted. If this survey indicates that a water supply well is within 1000 feet, then the flow direction will be determined, and the extent of contamination in the direction of that receptor will be determined.

If potential receptors are not present, and if concentrations of dissolved phase hydrocarbons are low, EPNG may petition for closure by natural attenuation on a site by site basis. Such a petition might include an evaluation of risk demonstrating that the remaining contaminants do not pose a threat to fresh water supplies, public health and the environment in accordance with NMOCD Pit Closure Guidance.

## 3.0 Remedial Design

An individual remedial plan will be developed for each location. This plan will include the remedial method selected, schedule of activities, and future monitoring requirements. Boring logs from nearby wells will be used to support remedial design as appropriate. These plans will be submitted with semi-annual reports (see Section 6.0 below), and will not be submitted for

individual approval. NMOCD District and State offices will be notified prior to initiation of any significant activities.
The following methods will be considered during the remedial design:

3.1 Separate light non-aqueous phase liquid (LNAPL) hydrocarbons
LNAPL removal will be implemented if LNAPLs appear as a measurable layer. Removal will be achieved by way of skimmer pumps (either automatic or manual). Other methods may be proposed on a site by site basis. Some proposed alternatives are listed on the attached table. Any recovered LNAPL will be considered to be exploration and production waste exempt from regulation under subtitle C of RCRA. Recovered LNAPL will be either retained for future use or disposed of in accordance with NMOCD requirements.

3.2 Dissolved phase hydrocarbons
EPNG proposes to treat groundwater contaminated with dissolved phase hydrocarbons with fertilizer, hydrogen peroxide, natural air, or other in-situ method to enhance the natural attenuation process. Other methods may be proposed on a site by site basis. Table 1 lists some proposed alternatives.

## 4.0 Remediation

Remedial activities at groundwater sites will be conducted on an on-going basis, in conjunction with pit closure activities as appropriate. Potential remedial alternatives are listed in the attached table "San Juan Basin Pits Groundwater Remedial Alternatives".

## 5.0 Groundwater Monitoring

EPNG will monitor any well which exhibits contamination quarterly for at least one year. LNAPL removal will be implemented again if LNAPLs reappear as a measurable layer during the monitoring period. When WQCC standards have been met, or when concentrations have leveled off (an asymptotic limit has been reached) for four consecutive quarters, the pit will be considered closed and the wells will be abandoned.

## 6.0 Reporting

Notification will continue to be made to NMOCD when groundwater is encountered during pit remediation as per the approved Pit Closure Plan.

Twice a year, a summary of groundwater remediation activities will be submitted to District and Santa Fe offices. This summary will include soil boring logs, monitoring well completion diagrams, analytical data, groundwater elevation data, any risk analysis, and type of remediation method used if remediation is required for each location at which contaminated groundwater has been encountered.

## 7.0 Schedule

Groundwater investigation and remediation activities will begin as soon as practical at each site. Priorities will be assigned based upon the results of risk assessment and field considerations.

# SAN JUAN BASIN PITS GROUNDWATER REMEDIAL ALTERNATIVES

| TECHNOLOGY | POWER | LENGTH | PROS | CONS | EFFECTIVENESS | COSTS | O&M LABOR | TIME FOR IMPLEMENTATION | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|
| **WATER REMOVAL** | | | | | | | | | |
| PUMP AND TREAT | ELECTRIC | YEARS | NO DISPOSAL | TIME/MAINTENANCE/WEATHER | PARTIAL | MEDIUM | HIGH | LONG | Removal of the water and treat in various ways |
| VACUUM ASST. PUMPING | ELECTRIC | MEDIUM | CLEAN SOILS AND GW | MAINTENANCE/WEATHER | GOOD | HIGH | HIGH | LONG | This would be used in conjunction with p[illegible] and treat to speed the process up and also clean the soil. |
| **WATER TREATMENT AFTER REMOVAL** | | | | | | | | | |
| AIR STRIPPING | ELECTRIC | YEARS | CLEAN WATER | AIR TREATMENT/WEATHER | GOOD | HIGH | HIGH | LONG | This may be a treatment method used in conjunction with pump and treat |
| CARBON ADSORPTION | ELECTRIC | LONG | CLEAN WATER | MAINTENANCE/WEATHER | GOOD | MEDIUM | MEDIUM | LONG | This is another form of water treatment for water not product used in conjunction with pump and treat |
| ULTRAVIOLET OXIDIZATION | ELECTRIC | MEDIUM | NO DISPOSAL | CHEMICAL HANDLING | GOOD | MEDIUM | HIGH | LONG | This is a water only treatment process and would need to be used with pump and treat technology. |
| **WATER TREATMENT WITHOUT REMOVAL** | | | | | | | | | |
| IN-SITU BIOREMEDIATION | NONE | MEDIUM | NO DISPOSAL | DOESN'T ALWAYS WORK | GOOD | MEDIUM | LOW | MEDIUM | This would entail adding microbes to the w[illegible] through the wel[illegible] |
| **PRODUCT REMOVAL** | | | | | | | | | |
| PASSIVE PRODUCT REMOVAL | NONE | LONG | LOW COST | LABOR INTENSIVE | LOW | LOW | MEDIUM | SHORT | These would be using petro traps for product only removal |
| ACTIVE PRODUCT REMOVAL | ELECTRIC | LONG | AUTOMATED | EXPENSIVE | GOOD | HIGH | HIGH | LONG | As opposed to the passive this would involve the use of a skimmer pump for product only. |
| BELT SKIMMERS | ELECTRIC | LONG | NO GW DISPOSAL | MAINTENANCE | GOOD | MEDIUM | HIGH | MEDIUM | These would be used only for product removal |
| OTHER | | | | | | | | | |

# El Paso Natural Gas Co.
## Pit Closure and Remediation Project
## Groundwater Sites Update as of 8/31/95

| Meter # | Location/Line Name | Project Phase | Action due to GW Encountered | Unit | Sec. | T. | R. | |
|---|---|---|---|---|---|---|---|---|
| 93296 | Gallegos Canyon Unit 188E | Phase I | RECON Soil/Gas and Water Survey | B | 30 | 29 | 12 | |
| 93357 | Johnson #1E | Phase I | RECON Soil/Gas and Water Survey | P | 21 | 31 | 13 | |
| 71676 | Turner #1A | Phase I | RECON Soil/Gas and Water Survey | K | 34 | 31 | 11 | |
| 94984 | Anderson Gas Com A#1 PC | Phase I | RECON Soil/Gas and Water Survey | C | 28 | 29 | 10 | |
| 95136 | Trujillo Gas Com A#1 | Phase I | RECON Soil/Gas and Water Survey | C | 28 | 29 | 10 | |
| 94879 | Sanchez Gas Com C#1 | Phase I | RECON Soil/Gas and Water Survey | A | 28 | 29 | 10 | |
| 75220 | Sanchez Gas Com B#1 | Phase I | RECON Soil/Gas and Water Survey | G | 28 | 29 | 10 | |
| 95210 | Anderson Gas Com A#1 CH | Phase I | RECON Soil/Gas and Water Survey | C | 28 | 29 | 10 | |
| 95726 | Candelaria Gas Com C #1 | Phase I | RECON Soil/Gas and Water Survey | C | 27 | 29 | 10 | |
| 72387 | Grace Pearce #1 | Phase I | RECON Soil/Gas and Water Survey | O | 22 | 29 | 11 | |
| 75323 | Green Com #1 | Phase I | RECON Soil/Gas and Water Survey | E | 36 | 29 | 9 | |
| 93196 | Candado 23 CH & MV | Phase I | RECON Soil/Gas and Water Survey | B | 9 | 26 | 7 | |
| LD153 | Trunk 2B Drip X-1 | Phase I | RECON Soil/Gas and Water Survey | J | 1 | 27 | 11 | |
| 93790 | Chacon Amigos #6 | Phase I | RECON survey to be performed. | C | 11 | 22 | 3 | Jicarilla site |
| 73003 | Ona McGee #1 | Phase I | RECON survey to be performed. | P | 4 | 30 | 11 | |
| 93793 | Canyon Largo Unit #302 | Phase II | Excavate additional soil & resample. | J | 3 | 24 | 6 | |
| 94768 | Federal 6 #32 | Phase II | Excavate additional soil & resample. | G | 6 | 26 | 7 | |
| 89039 | Marshall 'B' #1J | Phase II | Excavate additional soil & resample. | O | 14 | 27 | 9 | |
| 94495 | Miles Federal #1E | Phase II | Excavate additional soil & resample. | N | 5 | 26 | 7 | |
| 94967 | Lindrith B#24 | Phase II | Excavate additional soil & resample. | N | 9 | 24 | 3 | |
| 70079 | Harrington #1 | Phase II | Excavate additional soil & resample. | M | 31 | 27 | 7 | |
| 95156 | Canyon Largo Unit #336 | Phase II | Excavate additional soil & resample. | C | 24 | 25 | 6 | |
| 70327 | Gartner LS#7 | Phase II | Excavate additional soil & resample. | K | 26 | 30 | 8 | |
| 94298 | Valdez Gas Unit A1E | Phase II | Excavate additional soil & resample. | G | 24 | 29 | 11 | |
| 74692 | Lindrith Unit #23 | Phase II | Excavate additional soil & resample. | D | 9 | 24 | 3 | |
| 72265 | San Juan 28-6 #79 MV | Phase II | Excavate additional soil & resample. | M | 11 | 27 | 6 | |
| LD104 | 2C-22 #3 Line Drip | Phase II | Excavate additional soil & resample. | G | 13 | 24 | 6 | |
| 90862 | Hammond #92 | Phase II | Excavate additional soil & resample. | O | 25 | 27 | 8 | |
| 93828 | Jacques 3 PC | Phase II | Excavate additional soil & resample. | E | 25 | 30 | 9 | |

| Meter # | Location/Line Name | Project Phase | Action due to GW Encountered | Unit | Sec. | T. | R. |
|---|---|---|---|---|---|---|---|
| LD019 | Howell #3 (Line Drip) | Phase II | Excavate additional soil & resample. | C | 3 | 27 | 8 |
| 74289 | Cutler #2 | Phase II | Excavate additional soil & resample. | A | 14 | 24 | 6 |
| 93788 | Canyon Largo Unit 304 | Phase II | Excavate additional soil & resample. | C | 11 | 24 | 6 |
| 93590 | Canyon Largo Unit #298 | Phase II | Excavate additional soil & resample. | A | 3 | 24 | 6 |
| 70613 | Burroughs Com #1 | Phase II | Excavate additional soil & resample. | H | 36 | 27 | 8 |
| 72405 | Hammond #7 | Phase II | Excavate additional soil & resample. | G | 26 | 27 | 8 |
| 74943 | New Mexico Com G1 | Phase II | Excavate additional soil & resample. | P | 36 | 30 | 10 |
| LD094 | K 17 Line Drip | Phase II | Excavate additional soil & resample. | C | 26 | 27 | 8 |
| 94899 | Valdes #2 | Phase II | Excavate additional soil & resample. | G | 24 | 29 | 11 |
| 75212 | Graham # 53 | Phase II | Monitor Well Set | L | 10 | 27 | 8 |
| 94925 | Federal R #2 | Phase II | Monitor Well Set | P | 15 | 27 | 8 |
| 70595 | Hammond Fed. #1 | Phase II | Monitor Well Set | L | 25 | 27 | 8 |
| 89232 | Johnston Federal #6A | Phase II | Monitor Well Set | F | 35 | 31 | 9 |
| LD077 | Lat. 2C-55 Line Drip | Phase II | Monitor Well Set | F | 17 | 25 | 7 |
| 94180 | Salazar "G" 34-1 | Phase II | Monitor Well Set | K | 34 | 25 | 6 |
| 93388 | Horton 1-E | Phase II | Monitor Well Set | H | 28 | 31 | 9 |
| 97213 | Hamner #9 | Phase II | Monitor Well Set | A | 20 | 29 | 9 |
| 70753 | Usselman Gas Com No. 1 | Phase II | Monitor Well Set | B | 4 | 31 | 10 |
| 87640 | Canada Mesa #2 | Phase II | Monitor Well Set | I | 24 | 24 | 6 |
| 87493 | W. D. Heath B #5 | Phase II | Monitor Well Set | M | 31 | 30 | 9 |
| 89620 | Sandoval A1A | Phase II | Monitor Well Set | C | 35 | 30 | 9 |
| LD102 | 2C-22 #1 Line Drip | Phase II | Monitor Well Set | N | 35 | 24 | 6 |
| 70286 | Sheets Well No. 2 | Phase II | Monitor Well Set | H | 28 | 31 | 9 |
| 70194 | Johnston Federal #4 | Phase II | Excavate additional soil & resample. | H | 33 | 31 | 9 |
| 93780 | Argo #1E | Phase II | Excavate additional soil & resample. | N | 18 | 27 | 10 |
| 93262 | Krause WN Federal #1E | Phase II | Excavate additional soil & resample. | C | 32 | 28 | 11 |

Notes:

1. Phase II sites are those in which soil samples failed remediation criteria. A borehole was then drilled in order to prove no impact to groundwater.
2. On sites where groundwater was encountered during the drilling of the borehole the following practice is implemented: 1) groundwater > 20', monitor wells to be installed, developed, and sampled;
   2) groundwater < 20', return to site to excavate additional soil.

# NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

**BILL RICHARDSON**
Governor
**Joanna Prukop**
Cabinet Secretary

**Mark E. Fesmire, P.E.**
Director
**Oil Conservation Division**

May 20, 2005

Mr. Scott T. Pope
El Paso Corporation
2 North Nevada
Colorado Springs, CO 80903

**RE: EL PASO FIELD SERVICES LINDRITH B #24**
**SAN JUAN COUNTY, NEW MEXICO**
**CASE 3R0214**

Dear Mr. Pope:

The New Mexico Oil Conservation Division (OCD) has reviewed El Paso Field Services (EPFS) "*Closure Request for the Lindrith B #24*" submitted on February 4, 2005. EPFS requests written approval by the OCD of the closure of the Lindrith B #24 pit site in located in Unit N, Section 9, Township 24 North, Range 3 West, San Juan County, New Mexico. The OCD must deny EPFS's request because EPFS has not complied with the OCD's written requirement of July 18, 2001 to "*...install additional ground water monitoring wells at these sites to monitor and determine the extent of ground water contamination pursuant to their previously approved ground water investigation plan.*" In addition, subsurface-water contamination abatement can not be considered complete until the responsible person has demonstrated compliance with the Water Quality Control Commission (WQCC) abatement standards specified at 20.6.2.3103 NMAC for eight (8) consecutive quarterly samples (see OCD Rule 19.B.4). EPFS's closure request incorrectly refers to "four consecutive quarters."

EPFS must submit a plan to install a sufficient number of additional monitoring wells to delineate the downgradient extent of the ground water contamination at the Lindrith B #24 pit site within thirty (30) days of your receipt of this letter. Review of Annual Ground Water Monitoring Reports for this site indicates that MW-2 and MW-3 were installed in locations that have often been side gradient, rather than downgradient. Therefore, additional downgradient monitoring wells are required and should be should be installed west of the former pit site. After EPFS has installed the new monitoring wells, EPFS must monitor the new monitoring wells, as well as the present three monitor wells quarterly for at least one year for BTEX. EPFS must

recover any free-product. The purpose of the additional monitoring wells is for EPFS to demonstrate that it has adequately delineated and remediated the BTEX contamination. EPFS should be prepared to install as many monitoring wells as needed to delineate the full extent of the BTEX plume to concentrations less than the WQCC Abatement Standards (20.6.2.3103 NMAC).

If you have any questions, please call me at (505) 476-3488.

Sincerely,

Glenn von Gonten
Senior Hydrologist
Environmental Bureau

xc: Denny Foust, OCD Aztec District Office
Mr. Bill Liess, Bureau Of Land Management
Mr. Mike Matush, New Mexico State Land Office
Mr. Bill Freeman, Navajo Nation EPA
Mr. Kurt Sandoval, Jicarilla Apache Tribe Environmental Protection Office

3RP 214

elpaso

**Via Federal Express**

February 04, 2005

Mr. Ed Martin
New Mexico Oil Conservation Division
1220 St. Francis Dr.
Santa Fe, NM 87504

**RE: Closure Request for the Lindrith B #24**

Dear Mr. Martin;

El Paso Field Services (EPFS) hereby requests written approval of the closure of the Lindrith B #24 site. The enclosed report details investigation, remedial action, monitoring and the most recent closure sampling at the site. Documentation supporting previous monitoring performed at the site has been submitted in earlier Annual Reports.

If you have any questions concerning the enclosed closure report or require additional information please call me at (719) 520-4433.

Sincerely,

Scott T. Pope, P.G.
Senior Environmental Scientist

Attachments: as stated

cc: Mr. Donald Candelaria c/o Mr. Robert Sherman, EPC - Farmington; **Fed Ex**

EL PASO ENERGY

FEB 2 2 2000

OIL CONSERVATION DIVISION

**Certified Mail: #Z 213 707 662**

February 17, 2000

Mr. William C. Olson
New Mexico Oil Conservation Division
2040 S. Pacheco
Santa Fe, NM 87504

RE: Corrected Request for Extension for 2000 Pit Project Annual Groundwater Report

Dear Mr. Olson:

Please except this request for extension with the dates corrected to reflect the current year.

The pit project annual groundwater report is due to you on March 1, 2000. Pursuant to our February 8, 2000 telephone conversation, El Paso Field Services (EPFS) hereby requests a one-month extension to the submittal date. EPFS will submit the pit project annual report to your office by April 3, 2000.

If you have any questions or require any additional information, please contact me at (505) 599-2124.

Sincerely,

Scott T. Pope P.G.
Environmental Scientist

xc: Mr. Denny Foust, NMOCD – Aztec

El Paso Energy Corporation 614 Reilly Avenue Farmington, New Mexico 87401 Phone (505) 325-2841 Fax (505) 599-2119

EL PASO
FIELD SERVICES

FEB 1 0 2000

**Certified Mail: #Z 387 666 326**

February 8, 1999

Mr. William C. Olson
New Mexico Oil Conservation Division
2040 S. Pacheco
Santa Fe, NM 87504

RE: 2000 Pit Project Annual Groundwater Report

Dear Mr. Olson:

The pit project annual groundwater report is due to you on March 1, 1999. Pursuant to our February 8, 1999 telephone conversation, El Paso Field Services (EPFS) hereby requests a one-month extension to the submittal date. EPFS will submit the pit project annual report to your office by April 3, 1999.

If you have any questions or require any additional information, please contact me at (505) 599-2124.

Sincerely,

Scott T. Pope P.G.
Environmental Scientist

xc: Mr. Denny Foust, NMOCD – Aztec

El Paso Field Services Company 614 Reilly Avenue Farmington, New Mexico 87401 Phone (505) 325-2841 Fax (505) 599-2235

EL PASO
FIELD SERVICES



Bill Olson
New Mexico Oil Conservation Commission
2040 South Pacheco Street
Santa Fe, New Mexico 87505

Date: June 2, 1997

Subject: Semi-Annual El Paso Field Services Pit Project Groundwater Report

Mr. Olson,

El Paso Field Services (EPFS) has encountered groundwater at various locations while investigating and or remediating exempt hydrocarbon unlined pits. The enclosed list includes all locations which are in this category. Please find enclosed, the locations and status of each individual pit.

These pits are being remediated according to the "EPFS Remediation Plan for Groundwater Encountered During Pit Closure Activities" dated November 29,1995.

EPFS requests that future reports for this project be submitted on a yearly basis to begin December 1, 1997 which will include soil boring logs, monitoring well completion diagrams, analytical data, groundwater elevation data, any risk analysis and type of remediation method.

For questions regarding this report please contact Ricky Cosby at (505)599-2158.

Ricky D. Cosby
Compliance Specialist

cc: Denny Foust - Aztec District

El Paso Field Services
Pit Project Ground Water Report

| Location/Line Name | LTR | Sec | TN | RG | Monitor Well Status | Status | Depth to GW | Product Level |
|---|---|---|---|---|---|---|---|---|
| MCGRATH #1 | F | 07 | 30 | 11 | +1 | GW encountered during drilling activities, MW results below standards, Develop Closure Plan | 17' | No |
| Mae Gail Com #1 | E | 24 | 29 | 11 | | PZ1 in center of pit below standards. All other samples below standards. Develop Closure Plan | 0.5'-6' | No |
| NM COM G1 | P | 36 | 30 | 10 | | MW1 was removed during site re-excavation, PZ1 installed with samples below standards. Develop Closure Plan. | 17'-18' | No |
| MARY ACKROYD #1 | J | 18 | 30 | 11 | | Geoprobe samples all below standards. Develop Closure Plan. | 3'-6' | No |
| JACQUEZ #3 | E | 25 | 30 | 09 | -1 | MW1 removed during re-excavation. 3 piezos and 1 probehole around pit all below standards. Operator has placed a production tank over the pit location. Develop Closure Plan. | 13'-15' | No |
| SALAZAR G 34-1 | K | 34 | 25 | 06 | +1 | MW1 results all below standards. Develop Closure Plan. | 35' | No |
| ANDERSON GAS COM A#1 PC | C | 28 | 29 | 10 | | PH4 in center of pit is below standards. All of PH's around pit below standards. Develop Closure Plan. | 5'-9' | No |
| GALLEGOS CANYON UT 145 E | D | 26 | 29 | 12 | | PZ1 in center of pit below standards. | 6'-9' | No |
| JOHNSTON FEDERAL #3A | I | 12 | 30 | 09 | +1 | Develop Closure Plan. 4 clean quarters. | 67.5' | No |
| FLORANCE #1 | J | 08 | 30 | 11 | +1 | MW1 installed 05/07/97. Develop and sample MW1. | 14' | No |
| DE-NA-HAZ-ZA #1 | D | 18 | 26 | 08 | +1 | MW1 installed 05/06/97. Develop and sample MW1. | 14' | No |
| Ramenta Et Al #1 | J | 13 | 27 | 09 | +1 | MW1 installed 05/06/97. Develop and sample MW1. | 5'-9' | No |
| HAMMOND 41 A | O | 25 | 27 | 08 | +1 | MW1 installed 05/05/97. Develop and sample MW1. | 15'-24' | No |
| VALDEZ GAS UNIT A #1E CH | G | 24 | 29 | 11 | -1, +1 | MW1 installed 05/07/97. Develop and sample MW1. | 11'-12' | No |

| Location/Line Name | LTR | Sec | TN | RG | Monitor Well Status | Status | Depth to GW | Product Level |
|---|---|---|---|---|---|---|---|---|
| GALLEGOS CANYON COM A142E | G | 25 | 29 | 12 | +1 | MW1 Developed and sampled 03/10/97. Evaluate Data. | 13' | No |
| GALLEGOS CANYON UT D#160 | I | 27 | 29 | 12 | +1 | MW1 Developed and sampled 03/10/97. Evaluate Data. | 19.1' | No |
| HARRINGTON #1 | M | 31 | 27 | 07 | +1 | MW1 Developed and sampled 04/02/97. Evaluate Data. | 13' | No |
| Turner A1 "PM" (Pit #2) | G | 34 | 31 | 11 | +1 | MW1 Developed and sampled 03/12/97. Evaluate Data. | 2.3'--2.5' | No |
| TURNER #1A (Pit #1) | K | 34 | 31 | 11 | +1 | Same as Above | 5' | No |
| SAN JUAN 28-6 UNIT #79 MV | M | 11 | 27 | 06 | +1 | MW1 Developed and sampled 04/14/97. Evaluate Data. | 30' | No |
| KNIGHT #1 | A | 05 | 30 | 13 | +4 | Installed Oxegenate Socks 11/25/96. Geoprobe 02/25/97. Evaluate Data. | 22'-25' | No |
| Ohio C. Govt. #3 | P | 26 | 28 | 11 | | Install MW1 and sample quarterly. | 6'-16' | No |
| NICKLES #1 | K | 11 | 31 | 13 | +1 | MW1 Developed and sampled 03/28/97. Evaluate Data. | 12'-15' | No |
| BUD-DOS-PAH #1 | M | 19 | 26 | 08 | | Soil Boring 02/19/97. Operator has placed a compressor over excavated pit area. Evaluate Data. | 13' | No |
| SANCHEZ GAS COM B#1 | G | 28 | 29 | 10 | +1 | MW1 Developed and sampled 03/11/97. Evaluate Data. | 6'-9' | No |
| GE-ELE-GU-LITH-E #2 | L | 07 | 26 | 08 | | Soil Boring 02/20/97. Operator has placed a compressor over excavated pit area. Evaluate Data. | 13' | No |
| JOHN CHARLES #8 | B | 13 | 27 | 09 | +1 | MW1 Developed and sampled 03/13/97. Evaluate Data. | 19' | No |
| CANDADO 23 MV | B | 09 | 26 | 07 | +1 | MW1 Developed and sampled 04/16/97. Evaluate Data. | 6'-9' | No |

| Location/Line Name | LTR | Sec | Tn | RG | Monitor Well Status | Status | Depth to GW | Product Level |
|---|---|---|---|---|---|---|---|---|
| GALLEGOS CANYON UNIT 188E | B | 30 | 29 | 12 | +1 | MW1 Developed and sampled 04/03/97. Evaluate Data. | 3'-5' | No |
| JOHNSON #1E | P | 21 | 31 | 13 | +1 | MW1 Developed and sampled 03/28/97. Evaluate Data. | 3'-9' | No |
| MILES FEDERAL #1E | N | 05 | 26 | 07 | +1 | MW1 Developed and sampled 04/02/97. Evaluate Data. | 13.5'-30' | No |
| TRUJILLO GAS COM A#1 | C | 28 | 29 | 10 | +1 | MW1 Developed and sampled 04/03/97. Evaluate Data. | 3'-9' | No |
| ANDERSON GAS COM A#1 CH | C | 28 | 29 | 10 | +1 | MW1 Developed and sampled 03/11/97. Evaluate Data. | 5'-9' | No |
| TRUNK D LINE DRIP (LOOPD8) | F | 20 | 28 | 08 | +1 | MW1 Developed and sampled 03/31/97. Evaluate Data. | 10.8'-24' | No |
| K-31 LINE DRIP | N | 16 | 25 | 06 | +1 | MW1 Developed and sampled 04/16/97. Evaluate Data. | 18'-24' | No |
| K-17 LINE DRIP | C | 26 | 27 | 08 | +1 | MW1 Developed and sampled 03/31/97. Evaluate Data. | 17.8'-27' | No |
| TRUNK 2B DRIP X-1 | J | 01 | 27 | 11 | +1 | MW1 Developed and sampled 03/11/97. Evaluate Data. | 6'-10' | No |
| Trujillo Gas Com #1 PC | M | 21 | 29 | 10 | | Install MW1 | 4' | No |
| OHIO C GOVERNMENT #3 TD | P | 26 | 28 | 11 | | Install MW1 | 6'-16' | No |
| LINDRITH B #24 | N | 09 | 24 | 03 | | Install MW1 | 21'-27' | No |
| K - 51 Line Drip | A | 34 | 26 | 06 | | Install MW1 | 10' | No |
| Mesa CPD | C | 04 | 29 | 14 | +1 | Install well points around pit and sample. MW1 needs 3 more clean quarters. | 3'-6.5' | No |
| STANDARD OIL COM #1 | N | 36 | 29 | 09 | +1 | Install well points on four sides of pit to establish gradient. | 20.89' | No |
| W.D. HEATH B#5 | M | 31 | 30 | 09 | +1 | Install well points on four sides of pit to establish gradient. | 30'-36' | No |
| CANYON LARGO UNIT 304 | C | 11 | 24 | 06 | +1 | Install downgradient well points and sample. | 17.5'-18' | No |

| Location/Line Name | LTR | Sec | TN | RG | Monitor Well Status | Status | Depth to GW | Product Level |
|---|---|---|---|---|---|---|---|---|
| K-27 LINE DRIP | E | 04 | 25 | 06 | +1 | Establish gradient with well points. | 40' | No |
| LAT 0-21 LINE DRIP | O | 12 | 30 | 09 | +1 | Establish gradient with well points. | 33'-36' | No |
| Trunk D loop Line Drip | I | 33 | 28 | 08 | +1 | Establish gradient with well points. | 33'-36' | No |
| Bisti Flare Pit | C | 21 | 12 | 26 | | Establish GW gradient | 15' | No |
| LAT L-40 LINE DRIP | H | 13 | 28 | 04 | +1 | Install downgradient well points and sample. | 40' | No |
| HAMNER #9 | A | 20 | 29 | 09 | +1 | Establish gradient with well points. | 29'-31' | No |
| GARTNER LS #7 | K | 26 | 30 | 08 | | NMOCD Closure Approved | NA | No |
| HAMMOND FED #1 | L | 25 | 27 | 08 | +1 | NMOCD Closure Approved | NA | No |
| BURROUGHS COM #1 | H | 36 | 27 | 08 | | NMOCD Closure Approved | NA | No |
| CLEVELAND #6 | B | 21 | 27 | 09 | +1 | NMOCD Closure Approved | NA | No |
| CHARLEY PAH 4 | K | 12 | 27 | 09 | | NMOCD Closure Approved | NA | No |
| GRACE PEARCE #1 | O | 22 | 29 | 11 | | NMOCD Closure Approved | NA | No |
| HAMMOND #7 | G | 26 | 27 | 08 | | NMOCD Closure Approved | NA | No |
| ONA MCGEE #1 | P | 04 | 30 | 11 | | NMOCD Closure Approved | NA | No |
| CUTLER #2 | A | 14 | 24 | 06 | | NMOCD Closure Approved | NA | No |
| LINDRITH UNIT #23 | D | 09 | 24 | 03 | | NMOCD Closure Approved | NA | No |
| GREEN COM #1 | E | 36 | 29 | 09 | | NMOCD Closure Approved | NA | No |
| HAMMOND FED #5 | D | 25 | 27 | 08 | +1 | NMOCD Closure Approved | NA | No |
| FLORA VISTA #1 | F | 22 | 30 | 12 | | NMOCD Closure Approved | NA | No |
| MARSHALL B #1J | O | 14 | 27 | 09 | | NMOCD Closure Approved | NA | No |
| HAMMOND #92 | O | 25 | 27 | 08 | | NMOCD Closure Approved | NA | No |
| PRICE #3 | A | 15 | 28 | 08 | | NMOCD Closure Approved | NA | No |

| Location/Line Name | LTR | Sec | TN | RG | Monitor Well Status | Status | Depth to GW | Product Level |
|---|---|---|---|---|---|---|---|---|
| KRAUSE WN FEDERAL #1E | C | 32 | 28 | 11 | | NMOCD Closure Approved | NA | No |
| CANYON LARGO UNIT #298 | A | 03 | 24 | 06 | | NMOCD Closure Approved | NA | No |
| ARGO #1E | N | 18 | 27 | 10 | | NMOCD Closure Approved | NA | No |
| CANYON LARGO UNIT #302 | J | 03 | 24 | 06 | | NMOCD Closure Approved | NA | No |
| FEDERAL 6 #32 CH | G | 06 | 26 | 07 | | NMOCD Closure Approved | NA | No |
| SANCHEZ GAS COM C#1 | A | 28 | 29 | 10 | | NMOCD Closure Approved | NA | No |
| VALDEZ #2 | G | 24 | 29 | 11 | -1 | NMOCD Closure Approved | NA | No |
| FEDERAL R #2 | P | 15 | 27 | 08 | +1 | NMOCD Closure Approved | NA | No |
| CANYON LARGO UNIT #336 | C | 24 | 25 | 06 | | NMOCD Closure Approved | NA | No |
| CANDELARIA GAS COM C #1 | C | 27 | 29 | 10 | | NMOCD Closure Approved | NA | No |
| HOWELL #3 | C | 03 | 27 | 08 | | NMOCD Closure Approved | NA | No |
| LAT 2C-55 LINE DRIP | F | 17 | 25 | 07 | +1 | NMOCD Closure Approved | NA | No |
| HORTON 1-E | H | 28 | 31 | 09 | +1 | MW1 above B standards. Inject nutrient slurry in corners of pit. | 5.3' | No |
| LAT 3B-39 | M | 10 | 29 | 09 | +1 | MW1 above B standards. Inject nutrient slurry in corners of pit. | 31'-36' | No |
| JOHNSTON FEDERAL #4 | H | 33 | 31 | 09 | +3 | Determine Remedial Design Options. | 48.94'--50.38' | Yes |
| STATE GAS COM N #1 | H | 16 | 31 | 12 | +4 | Determine Remedial Design Options. | 75.66'--76.90' | Yes |
| COLDIRON COM A#1 | K | 02 | 30 | 11 | +1 | Determine Remedial Design Options. | 35.4' | Yes |
| JOHNSTON FEDERAL #6A | F | 35 | 31 | 09 | +4 | Determine Remedial Design Options. | 40'-44.6' | Yes |
| JAMES F. BELL #1E | P | 10 | 30 | 13 | +4 | Determine Remedial Design Options. | 23.5'-24.5' | Yes |
| CANADA MESA #2 | I | 24 | 24 | 06 | +1 | Determine Remedial Design Options. | 30' | Yes |

| Location/Line Name | LTR | Sec | TN | RG | Monitor Well Status | Status | Depth to GW | Product Level |
|---|---|---|---|---|---|---|---|---|
| FIELDS A #7A | E | 34 | 32 | 11 | +4 | Confirm groundwater gradient. Initiate product removal from MW4. | 21.8'-28.8' | Yes |
| FOGELSON 4-1 COM #14 | P | 04 | 29 | 11 | +1 | Re-excavate site. Evaluate operators open pits as sources of contamination. | 31'-36' | No |
| SANDOVAL GAS COM A 1A | C | 35 | 30 | 09 | +1 | Refusal with Geoprobe. Re-excavate pit and re-install MW1. | 35' | No |
| MILES FEDERAL 1A (CH) | F | 05 | 26 | 07 | +1 | Evaluate Data. Sandstone refusal at 25'. | 29' | Yes |
| SHEETS #2 | H | 28 | 31 | 09 | +4 | Sample Quarterly. Steady drop in B analysis through 4 quarters. | 46.3'--50.31' | No |
| JENNAPAH #1 | H | 36 | 28 | 09 | +1 | Sample Quarterly. Develop and Sample MW1 03/13/97. | 20' | No |
| FLORANCE C LS 7 | F | 30 | 28 | 08 | +1 | Sample Quarterly. Need 2 more clean quarters. | 40' | No |
| GRAHAM #53 | L | 10 | 27 | 08 | +1 | Sample Quarterly. Need 3 more clean samples | 28.33' | No |
| MILES FEDERAL 1 A MV | F | 05 | 26 | 07 | +1 | Sample Quarterly. Need 2 more clean quarters. | 27.8' | No |
| LAT. H-37 DRIP Y-3 | F | 01 | 31 | 13 | +4 | Sample Quarterly. Remove socks. 4 clean quarters with ORB socks. | 24.5'-25' | No |
| 2C-22 #1 LINE DRIP | N | 35 | 24 | 06 | +1 | Develop Closure Plan. 4 clean quarters. | 28.8' | No |
| 2C-22 #3 LINE DRIP | G | 13 | 24 | 06 | +1 | Sample Quarterly. Need 3 more clean quarters. | 14'-24' | No |
| 2C - 45 Line Drip | P | 13 | 25 | 06 | +1 | Sample Quarterly. Need 3 more clean quarters. | 42.2' | No |
| USSELMAN GAS COM #1 | B | 04 | 31 | 10 | +1 | Sample Quarterly. Need 2 more clean quarters | 10' | No |
| **Note:** | | | | | | | | |
| MW = Monitor Well | | | | | | | | |
| PZ = Piezometer | | | | | | | | |
| BH = Bore Hole | | | | | | | | |

1995

**El Paso Field Services**

P. O. BOX 1492
EL PASO, TEXAS 79978
PHONE: 915-541-2600

**Via Facsimile**

November 29, 1995

Mr. William Olsen
New Mexico Oil Conservation Division
2040 South Pacheco
Santa Fe, New Mexico 87505

**Subject: Remediation Plan for Groundwater Encountered During Pit Closure Activities/El Paso Natural Gas Company-El Paso Field Services Company**

Dear Mr. Olsen:

El Paso Field Services (EPFS) submits the enclosed amendment to the previously proposed remediation plan for closure of pits where groundwater is encountered. The previously proposed plan was submitted by letter dated September 16, 1995. The enclosed amendment modifies the September 16 plan and becomes part of that plan.

The enclosed amendment reflects the conclusions reached during our telephone conversation November 7, 1995. It is our understanding that the enclosed amendment will allow our proposed plan to be approved.

Thank you for you assistance in reviewing our proposed plan. If you have any questions regarding the amendment, please contact me at 915-541-2524.

Sincerely,

Leslie Ann Allen
Senior Environmental Scientist
El Paso Field Services Company

Enclosure (1)

cc: Denny Foust, NMOCD, Aztec

via e-mail: John A. Lambdin
Sandra D. Miller
Nancy K. Prince

file: NMOCD2.doc

**AMENDMENT NO. 1**

**EL PASO NATURAL GAS COMPANY**
**EL PASO FIELD SERVICES COMPANY**

**REMEDIATON PLAN**
**FOR GROUNDWATER ENCOUNTERED**
**DURING PIT CLOSURE ACTIVITIES**

El Paso Natural Gas Company amends the original remediation plan submitted to NMOCD September 16, 1995 with the following:

**Section 1.2.1 Preliminary Investigation** of the plan is amended to specify that:

- Groundwater quality will be assessed either through use of a temporary well point (i.e. RECON) or installation of a monitoring well.

- Groundwater sampling locations will either be within the pit or directly adjacent and downgradient to the pit.

- If necessary, additional wells will be placed as appropriate on a case-by-case basis to determine extent of contamination.

- Groundwater will be sampled for the following analytical parameters:

    1. **Major Cations and Major Anions:** Analysis for major cations and major anions will not be conducted if El Paso is able to demonstrate that groundwater impact by major cations and major anions, presently listed in the WQCC standards, is unlikely at a location. Analysis of major cations and major anions, presently listed in the WQCC standards, will only be conducted at locations where El Paso is unable to demonstrate contamination to be unlikely and where TDS exceeds 1,000 mg./l.

    2. **Benzene, Toluene, Ethyl Benzene, Total Xylenes (BTEX)**

    3. **Polyaromatic Hydrocarbons (PAH):** A water sample will only be analyzed for PAH if evidence of a sheen or free phase is noted.

    4. **Metals:** Metals analysis will not be conducted if El Paso is able to demonstrate that groundwater impact by metals is unlikely using site specific soils analysis, gas production data, historical analytical data, or other means. Analysis for arsenic, barium, cadmium, chromium, lead, total mercury, selenium, and silver will only be conducted at locations where El Paso is unable to demonstrate that metals contamination is unlikely.

**Section 1.2.2 If Groundwater is Clean** of the plan is revised to read: " If the groundwater sample collected can be demonstrated to have levels of BTEX, and/or levels of PAH and/or levels of metals, when analyzed according to Section 1.2.1, less than the standards set forth in paragraph 3-103 of Water Quality Control Commission regulations ("WQCC standards"), then the well will be abandoned according to NMED guidance documents as soon as practical."

**Section 5 Groundwater Monitoring** is revised to read: "EPNG will monitor any well which exhibits contamination quarterly for at least one year. LNAPL removal will be implemented again if LNAPLs reappear as a measurable layer during the monitoring period. When WQCC standards have been met as described in Section 1.2.2 for four consecutive quarters, the pit will be considered closed and the wells will be abandoned. At any site where concentrations have leveled off for four consecutive quarters, but WQCC standards have not been met, closure of the pit will be handled on a case-by-case basis with NMOCD."

**El Paso**
**Field Services**

P. O. BOX 1492
EL PASO, TEXAS 79978
PHONE: 915-541-2600

September 16, 1995

Mr. William Olsen
New Mexico Oil Conservation Division
2040 South Pacheco
Santa Fe, New Mexico 87505

**Subject: Remediation Plan for Groundwater Encountered During Pit Closure Activities/El Paso Natural Gas Company-El Paso Field Services Company**

Dear Mr. Olsen:

El Paso Field Services (EPFS) submits the enclosed proposed remediation plan for closure of pits where groundwater is encountered. Included with the plan is a list of pit closure sites where El Paso has encountered groundwater. The list is current as of August 31, 1995. The proposed remediation plan will apply to all pit closure sites where groundwater is encountered, including future sites not presently shown on the attached list.

Sandra Miller, Nancy Prince, and I would like to meet with you late this month or early in November to discuss the proposed remediation plan. I will be contacting you in the next few days to schedule a meeting.

I enjoyed meeting you last week at the NMOGA meeting in Santa Fe and look forward to working with you on the enclosed plan. I can be reached at 915-541-2524 if you have any questions.

Sincerely,

Leslie Ann Allen

Leslie Ann Allen
Senior Environmental Scientist
El Paso Field Services

Enclosures (2)

cc: Denny Foust, NMOCD, Aztec

via e-mail: Sandra D. Miller
Nancy K. Prince

file: NMOCD1.doc

**EL PASO NATURAL GAS COMPANY**
**EL PASO FIELD SERVICES COMPANY**

# REMEDIATION PLAN FOR GROUNDWATER ENCOUNTERED DURING PIT CLOSURE ACTIVITIES

El Paso Natural Gas Company (EPNG) is closing all pits in the San Juan Basin in accordance with the Pit Closure Plan submitted to NMOCD on July 28, 1993. These closures include sampling pit soils and removing contaminated soil in groundwater vulnerable areas. In some locations groundwater was encountered during the closure activities. In addition, at locations inside the groundwater vulnerable zone (GVZ) where soil samples failed the criteria established in the NMOCD Pit Closure Guidance, a single boring has been advanced to determine potential impact on groundwater.

This Remediation Plan addresses cases where groundwater was encountered either during the initial closure activities (Phase I) or during the followup investigations inside the GVZ (Phase II). All pits where groundwater is encountered will be assessed and remediated according to options outlined below.

## 1.0 Investigation

1.1 Pits where groundwater was encountered during Phase I closure activities.
A preliminary investigation has been conducted with a RECON ® soil vapor survey. Further investigation will be recommended as needed according to the procedures outlined below.

1.2 Pits inside vulnerable zone where soil samples failed NMOCD criteria (Phase II).

1.2.1 Preliminary Investigation
A preliminary investigation will be conducted with soil boring and temporary monitoring well installation according to NMOCD Pit Closure Guidance after removal of source. The purpose is to determine if groundwater has been impacted.

If it is obvious during the boring operation that a source of contamination still remains and groundwater is less than 20', then no temporary monitoring well will be installed. The stained soil will be removed according to the approved Pit Closure Plan. Fertilizer will be added prior to backfill to enhance the natural attenuation process. Groundwater quality will then be assessed either through soil vapor surveys or monitoring well installation.

If groundwater is encountered, a soil sample will be collected from immediately above the water table and submitted for analysis. A temporary monitoring well will also be completed, developed, and sampled for BTEX and TDS. Wells will be 4-inch diameter PVC set with 5 feet of screen above the water table and 10 feet of screen beneath the water table. Sand pack, bentonite seal, and grout will be used to complete the wells which will be fitted with locking caps and padlocks.

The boring will be advanced and soil samples collected at five foot intervals until either field screening indicates that the soil is clean, groundwater is encountered, or auger refusal is reached.

If auger refusal is due to cobbles at shallow depths, and there is reason to believe that groundwater exists at less than 20 feet below the surface at the site, then groundwater quality will be assessed by soil vapor surveys or trenching with a backhoe.

If auger refusal due to cobbles encountered at greater depths, and contamination appears at the refusal depth, groundwater quality will be assessed on a site by site basis.

1.2.2 If Groundwater is Clean

If the groundwater sample collected contains levels of BTEX less than the standards presently set forth in paragraph 3-103 o Water Quality Control Commission regulations ("WQCC standards"), then the well will be abandoned according to NMED guidance documents as soon as practical..

1.2.3 If Groundwater Exceeds WQCC Standards

If the sample is above WQCC standards, further investigation and/or remediation will be conducted. The vertical and horizontal extent of contaminated groundwater will be investigated by soil vapor surveys and/or monitoring well installation. If continued monitoring of the temporarily installed well is required, concrete pads, bumpers etc. will be added as needed to secure the well location. Surface and top of casing elevations will be surveyed as necessary to determine groundwater flow direction.

## 2.0 Risk assessment

At pits near residential areas when WQCC standards have been exceeded, a water well survey will be conducted. If this survey indicates that a water supply well is within 1000 feet, then the flow direction will be determined, and the extent of contamination in the direction of that receptor will be determined.

If potential receptors are not present, and if concentrations of dissolved phase hydrocarbons are low, EPNG may petition for closure by natural attenuation on a site by site basis. Such a petition might include an evaluation of risk demonstrating that the remaining contaminants do not pose a threat to fresh water supplies, public health and the environment in accordance with NMOCD Pit Closure Guidance.

## 3.0 Remedial Design

An individual remedial plan will be developed for each location. This plan will include the remedial method selected, schedule of activities, and future monitoring requirements. Boring logs from nearby wells will be used to support remedial design as appropriate. These plans will be submitted with semi-annual reports (see Section 6.0 below), and will not be submitted for

individual approval. NMOCD District and State offices will be notified prior to initiation of any significant activities.
The following methods will be considered during the remedial design:

3.1 Separate light non-aqueous phase liquid (LNAPL) hydrocarbons
LNAPL removal will be implemented if LNAPLs appear as a measurable layer. Removal will be achieved by way of skimmer pumps (either automatic or manual). Other methods may be proposed on a site by site basis. Some proposed alternatives are listed on the attached table. Any recovered LNAPL will be considered to be exploration and production waste exempt from regulation under subtitle C of RCRA. Recovered LNAPL will be either retained for future use or disposed of in accordance with NMOCD requirements.

3.2 Dissolved phase hydrocarbons
EPNG proposes to treat groundwater contaminated with dissolved phase hydrocarbons with fertilizer, hydrogen peroxide, natural air, or other in-situ method to enhance the natural attenuation process. Other methods may be proposed on a site by site basis. Table 1 lists some proposed alternatives.

## 4.0 Remediation

Remedial activities at groundwater sites will be conducted on an on-going basis, in conjunction with pit closure activities as appropriate. Potential remedial alternatives are listed in the attached table "San Juan Basin Pits Groundwater Remedial Alternatives".

## 5.0 Groundwater Monitoring

EPNG will monitor any well which exhibits contamination quarterly for at least one year. LNAPL removal will be implemented again if LNAPLs reappear as a measurable layer during the monitoring period. When WQCC standards have been met, or when concentrations have leveled off (an asymptotic limit has been reached) for four consecutive quarters, the pit will be considered closed and the wells will be abandoned.

## 6.0 Reporting

Notification will continue to be made to NMOCD when groundwater is encountered during pit remediation as per the approved Pit Closure Plan.

Twice a year, a summary of groundwater remediation activities will be submitted to District and Santa Fe offices. This summary will include soil boring logs, monitoring well completion diagrams, analytical data, groundwater elevation data, any risk analysis, and type of remediation method used if remediation is required for each location at which contaminated groundwater has been encountered.

## 7.0 Schedule

Groundwater investigation and remediation activities will begin as soon as practical at each site. Priorities will be assigned based upon the results of risk assessment and field considerations.

# SAN JUAN BASIN PITS GROUNDWATER REMEDIAL ALTERNATIVES

| TECHNOLOGY | POWER | LENGTH | PROS | CONS | EFFECTIVENESS | COSTS | O&M LABOR | TIME FOR IMPLEMENTATION | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|
| **WATER REMOVAL** | | | | | | | | | |
| PUMP AND TREAT | ELECTRIC | YEARS | NO DISPOSAL | TIME/MAINTENANCE/WEATHER | PARTIAL | MEDIUM | HIGH | LONG | Removal of the water and treat in various ways |
| CUUM ASST. PUMPING | ELECTRIC | MEDIUM | CLEAN SOILS AND GW | MAINTENANCE/WEATHER | GOOD | HIGH | HIGH | LONG | This would be [redacted] conjunction wi[redacted] and treat to speed t[redacted] process up and also clean the soil. |
| **WATER TREATMENT AFTER REMOVAL** | | | | | | | | | |
| AIR STRIPPING | ELECTRIC | YEARS | CLEAN WATER | AIR TREATMENT/WEATHER | GOOD | HIGH | HIGH | LONG | This may be a treatment method used in conjunction with pump and treat |
| ARBON ADSORPTION | ELECTRIC | LONG | CLEAN WATER | MAINTENANCE/WEATHER | GOOD | MEDIUM | MEDIUM | LONG | This is another form of water treatment for water not product used in conjunction with pump and treat |
| ULTRAVIOLET OXIDIZATION | ELECTRIC | MEDIUM | NO DISPOSAL | CHEMICAL HANDLING | GOOD | MEDIUM | HIGH | LONG | This is a water only treatment process and would need to be used with pump and treat technology. |
| **WATER TREATMENT WITHOUT REMOVAL** | | | | | | | | | |
| SITU BIOREMEDIATION | NONE | MEDIUM | NO DISPOSAL | DOESN'T ALWAYS WORK | GOOD | MEDIUM | LOW | MEDIUM | This would ent[redacted]ng microbes to t[redacted] through the wel[redacted] |
| **PRODUCT REMOVAL** | | | | | | | | | |
| PASSIVE PRODUCT REMOVAL | NONE | LONG | LOW COST | LABOR INTENSIVE | LOW | LOW | MEDIUM | SHORT | These would be using petro traps for product only removal |
| ACTIVE PRODUCT REMOVAL | ELECTRIC | LONG | AUTOMATED | EXPENSIVE | GOOD | HIGH | HIGH | LONG | As opposed to the passive this would involve the use of a skimmer pump for product only. |
| BELT SKIMMERS | ELECTRIC | LONG | NO GW DISPOSAL | MAINTENANCE | GOOD | MEDIUM | HIGH | MEDIUM | These would be used only for product removal |
| OTHER | | | | | | | | | |

# El Paso Natural Gas Co.
## Pit Closure and Remediation Project
## Groundwater Sites Update as of 8/31/95

| Meter # | Location/Line Name | Project Phase | Action due to GW Encountered | Unit | Sec. | T. | R. | |
|---|---|---|---|---|---|---|---|---|
| 93296 | Gallegos Canyon Unit 188E | Phase I | RECON Soil/Gas and Water Survey | B | 30 | 29 | 12 | |
| 93357 | Johnson #1E | Phase I | RECON Soil/Gas and Water Survey | P | 21 | 31 | 13 | |
| 71676 | Turner #1A | Phase I | RECON Soil/Gas and Water Survey | K | 34 | 31 | 11 | |
| 94984 | Anderson Gas Com A#1 PC | Phase I | RECON Soil/Gas and Water Survey | C | 28 | 29 | 10 | |
| 95136 | Trujillo Gas Com A#1 | Phase I | RECON Soil/Gas and Water Survey | C | 28 | 29 | 10 | |
| 94879 | Sanchez Gas Com C#1 | Phase I | RECON Soil/Gas and Water Survey | A | 28 | 29 | 10 | |
| 75220 | Sanchez Gas Com B#1 | Phase I | RECON Soil/Gas and Water Survey | G | 28 | 29 | 10 | |
| 95210 | Anderson Gas Com A#1 CH | Phase I | RECON Soil/Gas and Water Survey | C | 28 | 29 | 10 | |
| 95726 | Candelaria Gas Com C #1 | Phase I | RECON Soil/Gas and Water Survey | C | 27 | 29 | 10 | |
| 72387 | Grace Pearce #1 | Phase I | RECON Soil/Gas and Water Survey | O | 22 | 29 | 11 | |
| 75323 | Green Com #1 | Phase I | RECON Soil/Gas and Water Survey | E | 36 | 29 | 9 | |
| 93196 | Candado 23 CH & MV | Phase I | RECON Soil/Gas and Water Survey | B | 9 | 26 | 7 | |
| LD153 | Trunk 2B Drip X-1 | Phase I | RECON Soil/Gas and Water Survey | J | 1 | 27 | 11 | |
| 93790 | Chacon Amigos #6 | Phase I | RECON survey to be performed. | C | 11 | 22 | 3 | Jicarilla site |
| 73003 | Ona McGee #1 | Phase I | RECON survey to be performed. | P | 4 | 30 | 11 | |
| 93793 | Canyon Largo Unit #302 | Phase II | Excavate additional soil & resample. | J | 3 | 24 | 6 | |
| 94768 | Federal 6 #32 | Phase II | Excavate additional soil & resample. | G | 6 | 26 | 7 | |
| 89039 | Marshall 'B' #1J | Phase II | Excavate additional soil & resample. | O | 14 | 27 | 9 | |
| 94495 | Miles Federal #1E | Phase II | Excavate additional soil & resample. | N | 5 | 26 | 7 | |
| 94967 | Lindrith B#24 | Phase II | Excavate additional soil & resample. | N | 9 | 24 | 3 | |
| 70079 | Harrington #1 | Phase II | Excavate additional soil & resample. | M | 31 | 27 | 7 | |
| 95156 | Canyon Largo Unit #336 | Phase II | Excavate additional soil & resample. | C | 24 | 25 | 6 | |
| 70327 | Gartner LS#7 | Phase II | Excavate additional soil & resample. | K | 26 | 30 | 8 | |
| 94298 | Valdez Gas Unit A1E | Phase II | Excavate additional soil & resample. | G | 24 | 29 | 11 | |
| 74692 | Lindrith Unit #23 | Phase II | Excavate additional soil & resample. | D | 9 | 24 | 3 | |
| 72265 | San Juan 28-6 #79 MV | Phase II | Excavate additional soil & resample. | M | 11 | 27 | 6 | |
| LD104 | 2C-22 #3 Line Drip | Phase II | Excavate additional soil & resample. | G | 13 | 24 | 6 | |
| 90862 | Hammond #92 | Phase II | Excavate additional soil & resample. | O | 25 | 27 | 8 | |
| 93828 | Jacques 3 PC | Phase II | Excavate additional soil & resample. | E | 25 | 30 | 9 | |

| Meter # | Location/Line Name | Project Phase | Action due to GW Encountered | Unit | Sec. | T. | R. |
|---|---|---|---|---|---|---|---|
| LD019 | Howell #3 (Line Drip) | Phase II | Excavate additional soil & resample. | C | 3 | 27 | 8 |
| 74289 | Cutler #2 | Phase II | Excavate additional soil & resample. | A | 14 | 24 | 6 |
| 93788 | Canyon Largo Unit 304 | Phase II | Excavate additional soil & resample. | C | 11 | 24 | 6 |
| 93590 | Canyon Largo Unit #298 | Phase II | Excavate additional soil & resample. | A | 3 | 24 | 6 |
| 70613 | Burroughs Com #1 | Phase II | Excavate additional soil & resample. | H | 36 | 27 | 8 |
| 72405 | Hammond #7 | Phase II | Excavate additional soil & resample. | G | 26 | 27 | 8 |
| 74943 | New Mexico Com G1 | Phase II | Excavate additional soil & resample. | P | 36 | 30 | 10 |
| LD094 | K 17 Line Drip | Phase II | Excavate additional soil & resample. | C | 26 | 27 | 8 |
| 94899 | Valdes #2 | Phase II | Excavate additional soil & resample. | G | 24 | 29 | 11 |
| 75212 | Graham # 53 | Phase II | Monitor Well Set | L | 10 | 27 | 8 |
| 94925 | Federal R #2 | Phase II | Monitor Well Set | P | 15 | 27 | 8 |
| 70595 | Hammond Fed. #1 | Phase II | Monitor Well Set | L | 25 | 27 | 8 |
| 89232 | Johnston Federal #6A | Phase II | Monitor Well Set | F | 35 | 31 | 9 |
| LD077 | Lat. 2C-55 Line Drip | Phase II | Monitor Well Set | F | 17 | 25 | 7 |
| 94180 | Salazar "G" 34-1 | Phase II | Monitor Well Set | K | 34 | 25 | 6 |
| 93388 | Horton 1-E | Phase II | Monitor Well Set | H | 28 | 31 | 9 |
| 97213 | Hamner #9 | Phase II | Monitor Well Set | A | 20 | 29 | 9 |
| 70753 | Usselman Gas Com No. 1 | Phase II | Monitor Well Set | B | 4 | 31 | 10 |
| 87640 | Canada Mesa #2 | Phase II | Monitor Well Set | I | 24 | 24 | 6 |
| 87493 | W. D. Heath B #5 | Phase II | Monitor Well Set | M | 31 | 30 | 9 |
| 89620 | Sandoval A1A | Phase II | Monitor Well Set | C | 35 | 30 | 9 |
| LD102 | 2C-22 #1 Line Drip | Phase II | Monitor Well Set | N | 35 | 24 | 6 |
| 70286 | Sheets Well No. 2 | Phase II | Monitor Well Set | H | 28 | 31 | 9 |
| 70194 | Johnston Federal #4 | Phase II | Excavate additional soil & resample. | H | 33 | 31 | 9 |
| 93780 | Argo #1E | Phase II | Excavate additional soil & resample. | N | 18 | 27 | 10 |
| 93262 | Krause WN Federal #1E | Phase II | Excavate additional soil & resample. | C | 32 | 28 | 11 |

Notes:

1. Phase II sites are those in which soil samples failed remediation criteria. A borehole was then drilled in order to prove no impact to groundwater.
2. On sites where groundwater was encountered during the drilling of the borehole the following practice is implemented: 1) groundwater > 20', monitor wells to be installed, developed, and sampled;
   2) groundwater < 20', return to site to excavate additional soil.