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REPORTS

DATE:

MONITORING

ANNUAL MONITORING REPORTS

ENSR

Brown McCarroll and Oaks Hartline

Austin, Texas

Initial Groundwater Assessment Report Former Exxon Chemical Facility 1715 Dal Paso Street Hobbs, New Mexico

ENSR Consulting and Engineering

May 1994

Document Number 1009-005-105

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OIL CONSERVATION DIV.
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Brown McCarroll and Oaks Hartline
Austin, Texas

Initial Groundwater Assessment Report
Former Exxon Chemical Facility
1715 Dal Paso Street
Hobbs, New Mexico

ENSR Consulting and Engineering

May 1994

Document Number 1009-005-105

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EXECUTIVE SUMMARY

ENSR Consulting and Engineering (ENSR), in conjunction with its subcontractor, Harrison Drilling and Environmental Services, Inc., installed one groundwater monitor well in the area of the former Septic Tank-2, at the former Exxon facility located at 1715 Dal Paso Street, Hobbs, New Mexico.

Groundwater samples were collected from the monitor well and submitted for analytical evaluation. Test results were compared to New Mexico's standards for groundwater and showed concentrations of dissolved manganese slightly higher than the New Mexico standards.

These tasks were performed in response to the New Mexico Oil Conservation Division (OCD) request that Exxon Chemical Company determine whether or not past uses of a septic tank identified as Septic Tank-2 have impacted the underlying groundwater. The OCD's request followed ENSR's soil removal efforts, which included excavation of Septic Tank-2.

1.0 INTRODUCTION

1.1 Background

Exxon Chemical Company (Exxon) purchased the site at 1715 Dal Paso Street in Hobbs, New Mexico in 1987 from NL Industries, Inc. A site location map is shown on Figure 1-1. NL Treating Chemicals, a division of NL Industries, Inc., operated the site from 1969 to 1987. Previously, NL McCullough, another division of NL Industries, Inc., operated the site from the 1940s to 1969. NL Treating Chemicals and NL McCullough shared the site from 1969 to 1984.

The subject property covers approximately 7 acres in Lea County and consists of a fenced yard area adjacent to a vacant field extending north, south, and west from the fenced area. The fenced yard area contains three buildings and former storage areas for aboveground tanks and drums. The site plot plan is shown on Figure 1-2.

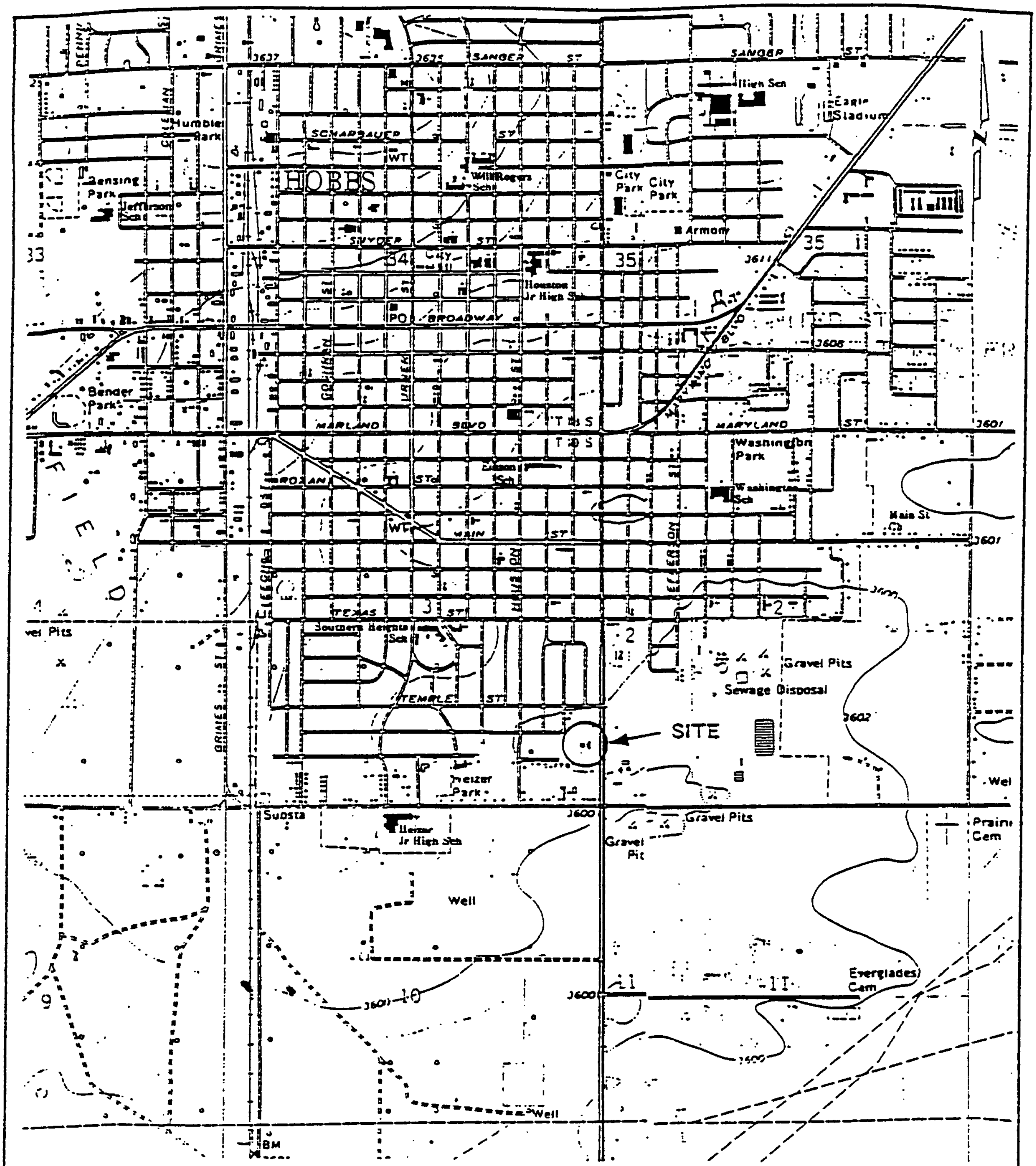
1.2 Previous Investigations and Field Activities

On behalf of Exxon, ENSR Consulting and Engineering (ENSR) conducted a Phase I Preliminary Assessment in 1991 at the Dal Paso site. Investigative activities included site visits, interviews with personnel that worked at the facility, facility records review, and state agency or EPA files research. The results were presented in a June 1992 report entitled Phase I Preliminary Assessment, Exxon Chemical Company Facility, 1715 Dal Paso Street, Hobbs, New Mexico.

The Preliminary Assessment revealed areas of the facility yard that required additional investigation. As a result, ENSR conducted a Phase II Site Inspection at the site in January 1992. The findings were presented in a June 1992 report entitled Phase II Site Inspection, Exxon Chemical Company Facility, 1715 Dal Paso Street, Hobbs, New Mexico.

During Site Inspection activities, soil contamination was encountered in the waste oil storage area and the truck washing storage area located behind the main building (Figure 1-2). Laboratory analysis indicated total petroleum hydrocarbon (TPH) levels above the New Mexico Oil Conservation Division (OCD) action level of 100 mg/kg as well as elevated levels of total lead in those areas.

In July and August of 1993, in accordance with an OCD-approved Work Plan, a Phase III Removal Action was performed in order to remove the impacted soil from behind the main building at the site. The results of the removal action are presented in ENSR's report entitled



0 2000 4000

SCALE IN FEET

REFERENCE: U.S.G.S. Quadrangle Map for Hobbs West and Hobbs East, New Mexico, Photorevised 1979.

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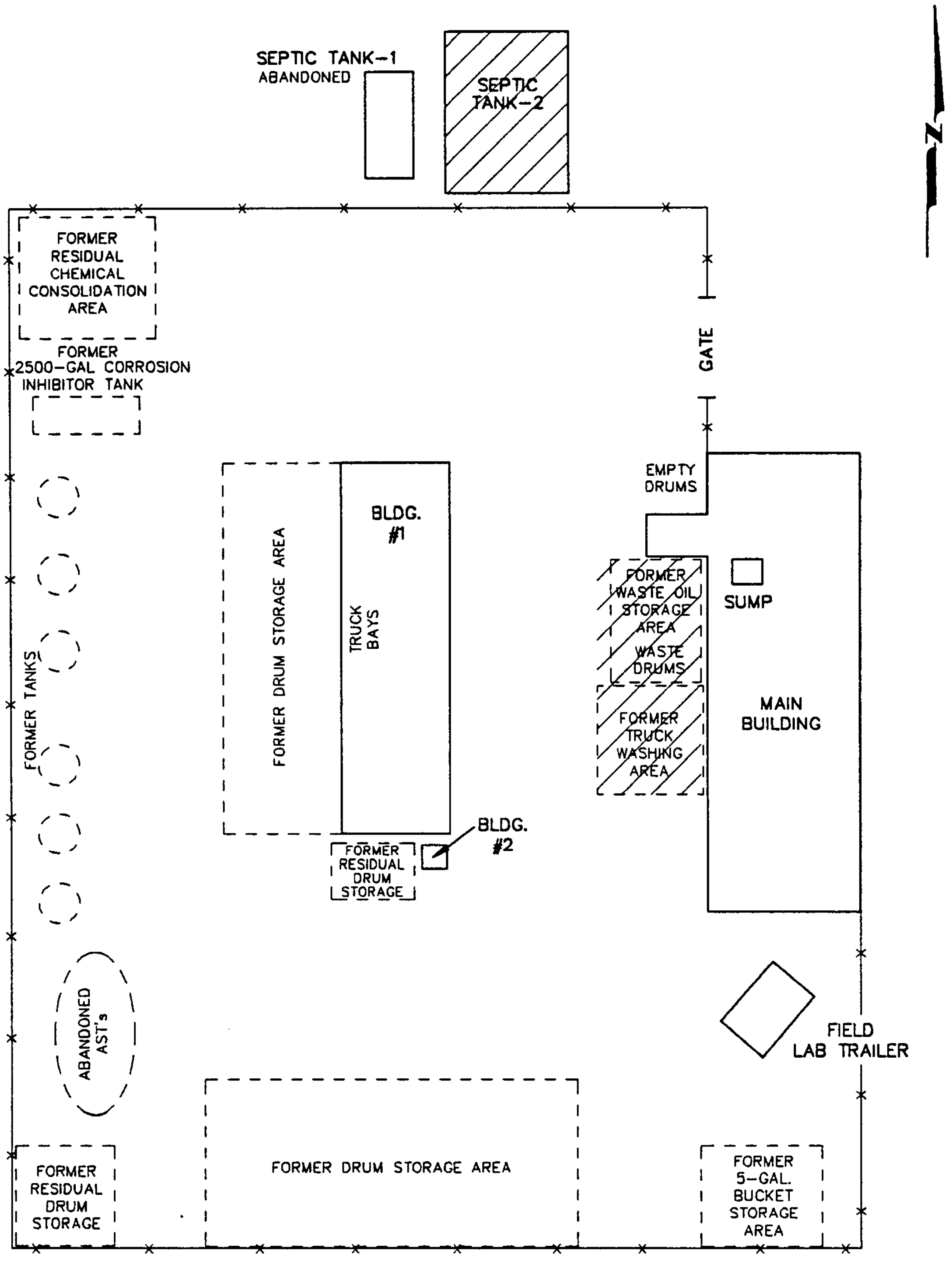
FIGURE 1-1
SITE LOCATION MAP
EXXON CHEMICAL COMPANY FACILITY
DAL PASO STREET SITE
HOBBS, NEW MEXICO

DRAWN BY: SJF	DATE: 1-20-94	PROJECT NUMBER: 1009-005-105
CHK'D.BY:	REVISED:	



LEGEND

▨ – PREVIOUSLY EXCAVATED AND BACKFILLED AREAS

NOT TO SCALE

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FIGURE 1-2
SITE PLOT PLAN
EXXON CHEMICAL COMPANY FACILITY
DAL PASO STREET SITE
HOBBS, NEW MEXICO

DRAWN: SJF/SH
DATE: 1-21-94
PROJECT NUMBER: 1009-005-105
APPV'D:
REVISED:

Approximately 51 cubic yards of soil were removed from the former waste oil storage area and the former truck washing area located behind the main building. Verification soil samples collected from the walls and bottom of the excavation indicated that TPH, benzene, toluene, ethylbenzene and xylenes (BTEX) and lead concentrations were below OCD cleanup levels. The area was then backfilled with clean soil and compacted. Waste characterization analysis indicated that the soils were nonhazardous for disposal purposes. The waste soil was transported to the Controlled Recovery, Inc. (CRI) disposal facility in Hobbs, New Mexico.

In addition to soil excavation activities behind the main building, an abandoned Septic Tank-1 (Figure 1-2) was cleaned out and backfilled with clean soil. Following backfilling activities, an exploratory trench was dug adjacent to Septic Tank - 1 to investigate the possible existence of a second septic tank at the facility. The subsurface investigation revealed the presence of the a second septic tank (Septic Tank - 2) and associated impacted soil. Approximately 1,037 cubic yards of waste soil were removed from the area and transported to CRI landfill.

The floor of the Septic Tank - 2 excavation was comprised of a dense layer of highly fractured caliche. Laboratory analysis of the fractured caliche indicated elevated concentrations of metals, and volatile and semivolatile organic compounds. However, due to the dense nature of the caliche floor, further excavation was not practical. Therefore, with the approval of the OCD, the excavation was terminated and back filled with clean soil and compacted.

1.3 Objective and Scope of Work

Based on the results of previous investigative and removal activities performed at the former Exxon Dal Paso Facility, the OCD requested that Exxon determine whether there have been any potential impacts on the underlying groundwater. In order to meet this objective, one monitor well was installed at the previous location of Septic Tank-2 and screened in the uppermost saturated zone underlying the excavation. Following development of the monitor well, the groundwater was sampled and submitted for analytical testing.

The following sections describe the procedures used to perform the above mentioned field activities which were carried out the week of March 14, 1994, and a resampling of the monitor well on April 25, 1994.

2.0 FIELD PROCEDURES

2.1 Monitor Well Installation

The monitor well was installed under direct supervision of an ENSR geologist using a truck-mounted drill rig utilizing the hollow-stem auger method of drilling. Total depth of the well was 58 feet below ground surface.

An initial borehole of 6-inch-diameter was advanced before installing the screen and casing. The screen was 15 feet in length and was constructed of machine slotted PVC, 2 inches in diameter. The casing above the screen was 45 feet in length and was constructed of 2-inch PVC. Once the well pipe was installed, a sand filter pack was installed between the pipe and annulus of the borehole. The filter back consisted of 20 to 40 sieve size quartz sand and extended to 3 feet above the top of the screen. A 3-foot bentonite seal was then installed above the filter pack. After allowing the bentonite to hydrate and form an adequate seal, the annulus was grouted to the surface with a concrete/bentonite slurry. The well was completed with a steel protective cover grouted in place and a 2 x 2-foot concrete pad at the base.

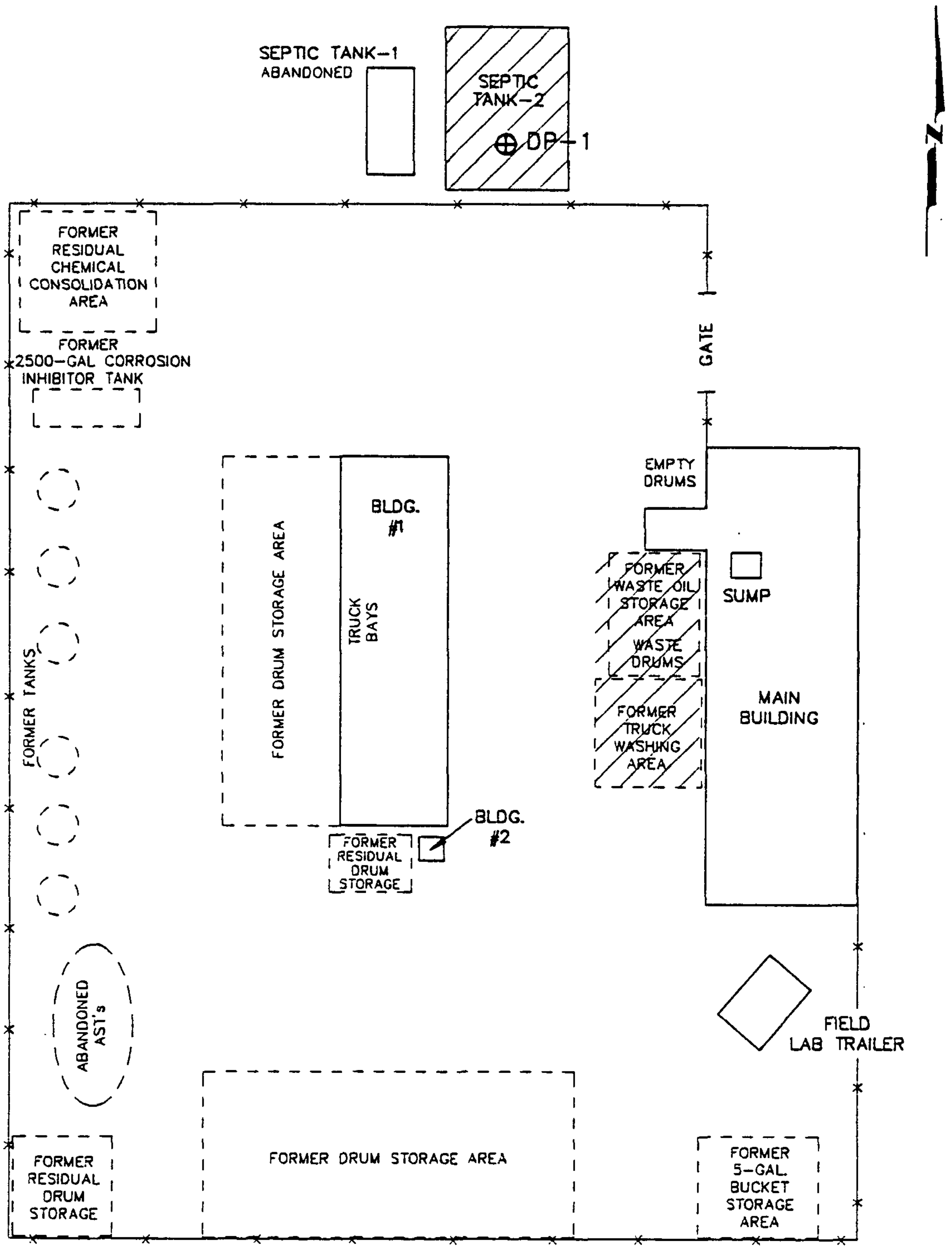
The borehole was logged by the geologist utilizing soil cuttings brought to the surface by the augers. The well was designated DP-1, and a boring log showing the lithology and well construction details is provided in Appendix A. Figure 2-1 provides the approximate location of monitor well DP-1.

Soil cuttings were placed of in 55-gallon drums and stored on site.

2.2 Well Development Procedures

At least 24 hours after well installation, the monitor well was developed by purging the well with a 2-inch submersible pump. The well was purged until the pH and specific conductivity had stabilized for three consecutive well volumes.

Groundwater purged from the well was also containerized in 55-gallon drums and left on site.



LEGEND

⊕ – MONTIOR WELL

▨ – PREVIOUSLY EXCAVATED AND BACKFILLED AREAS

NOT TO SCALE

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FIGURE 2-1
MONITOR WELL LOCATION
EXXON CHEMICAL COMPANY FACILITY
DAL PASO STREET SITE
HOBBS, NEW MEXICO

DRAWN: SJF/SH	DATE: 4-11-94	PROJECT NUMBER:
APPV'D:	REVISED:	1009-005-105

2.3 Well Sampling

Following development, a groundwater sample was collected for chemical analysis. Prior to sampling, three well volumes were removed from the well, recording pH, specific conductivity, and temperature between each volume. Groundwater was then collected with a disposable bailer and nylon cord. The groundwater was poured directly from the bailer into the appropriate sample jar. The samples were properly preserved, labeled, and placed in a cooler of ice. Chain of custody forms were filled out and sent with the samples to Environ Express Laboratories in La Porte, Texas. A duplicate sample of DP-1 was collected and labeled DP-100. The samples were analyzed for volatile organics (Method 8240), semivolatile organics (Method 8270), total metals (New Mexico's List), and dissolved metals. The initial sampling as described above was conducted on March 10, 1994.

A second sampling event was performed on April 25, 1994 in which one sample was collected and analyzed for dissolved metals and total dissolved solids (TDS).

3.0 ANALYTICAL RESULTS

The analytical results for samples collected on March 18, 1994, showed xylene (16 μg/l), 1,1-dichloroethane (17 μg/l),chloroform (13 μg/l), methylene chloride (6 μg/l), and naphthalene (10 μg/l). The results of the metals analysis indicate a slightly elevated concentration of dissolved manganese ranging from 0.4 mg/l to 0.5 mg/l (duplicate samples).

The results of the April 25 sampling event showed that all dissolved metal concentrations were below the New Mexico standards for groundwater with the exception of manganese (Mn) which had a reported concentration of 0.3 mg/L. The New Mexico standard for manganese in groundwater is 0.2 mg/l.

Table 3-1 summarizes the analytical results of the sample collected in April. The analytical report for this second sampling event provides more desirable detection limits than what was initially reported for March 1994.

Conclusions drawn regarding the constituents present in the groundwater are based on the results of both sampling events.

Complete laboratory reports are provided in Appendix B.

TABLE 3-1

Analytical Results for Groundwater
April 25, 1994
TDS and Dissolved Metals

Constituents	DP-1 (mg/l)	Method Detection Limit (mg/l)	New Mexico Standard[1,2] (mg/l)
TDS	1,161	10	10,000
Aluminum	<5.0	5.0	5.0
Arsenic	<0.1	0.1	0.1
Barium	<1.0	1.0	1.0
Boron	<0.75	0.75	0.75
Cadmium	<0.01	0.01	0.01
Chromium	<0.05	0.05	0.05
Cobalt	<0.05	0.05	0.05
Copper	<0.1	0.1	1.0
Iron	<1.0	1.0	1.0
Lead	<0.05	0.05	0.05
Manganese	0.3	0.2	0.2
Mercury	<0.002	0.002	.002
Nickel	<0.2	0.2	0.2
Selenium	<0.05	0.05	0.05
Silver	<0.05	0.05	0.05
Uranium	<5.0	5.0	5.0
Zinc	<10	10	10.0

[1] Part 3, Water Quality Control Section 3-103.A,B, and C.

[2] The standards provided are for groundwater with TDS <10,000 mg/L.

4.0 CONCLUSIONS

Dissolved manganese is the only parameter at Exxon's Dal Paso facility reported as having a concentration that exceeds the New Mexico groundwater standards. The concentrations reported for the Dal Paso site range from 0.3 mg/l to 0.5 mg/l, whereas the New Mexico standard for dissolved manganese is 0.2 mg/l.

According to Exxon, neither manganese nor products containing manganese were handled at the site. Therefore, ENSR suggests that background concentration levels (BCLs) for metals local to Exxon's Dal Paso site be obtained in order to further assess the concentration of manganese in the groundwater. Background concentrations will declare whether or not the concentration of manganese in the groundwater reflects normal site conditions.

ENSR Consulting & Engineering

SUBSURFACE EXPLORATION LOG

BORING NUMBER: DP-1

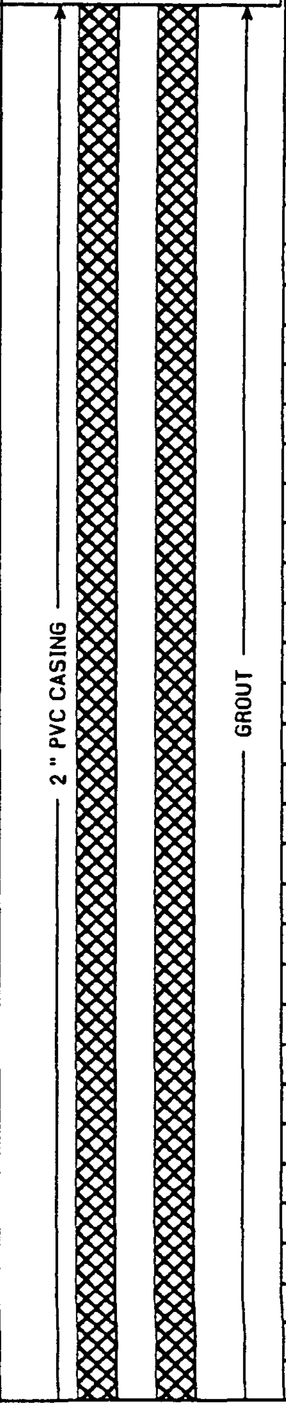
CLIENT: BROWN McCARROLL AND OAKS HARTLINE
JOB NUMBER: 1009-005-105
LOCATION: Exxon - Dal Paso
SURFACE ELEVATION:

GEOLOGIST: Shawn Eubanks
DATE DRILLED: 3/16/94
DRILLING COMPANY: Harrison Drilling
X - COORDINATE:

TOTAL DEPTH: 60 Feet
DRILLING METHOD: HSA
SAMPLE METHOD:
Y - COORDINATE:

DEPTH feet	SAMPLE NUMBER	TIME	PID (ppm)	BLOW COUNT	RECOVERY	SOIL CLASS.	GRAPHIC LOG	GEOLOGIC DESCRIPTION	DEPTH feet
								FILL, backfill from excavation activities, fine silty sand, loose, orange, dry	
5									5
10						FILL			10
15									15
								Gravelley SAND (SG), loose, hydrocarbon odor, damp	
20									20
25						SM		25' - silty sand (SM), loose, black, strong hydrocarbon odor	25
30								30' - color is lighter more gray, with gravel mix	30
								33 - 35' unconsolidated	
35									35

WELL DIAGRAM



SAMPLER TYPE

SS - SPLIT SPOON
ST - PRESSED SHELBY TUBE
RC - ROCK CORE
CC - CONTINUOUS CORE

BORING METHOD

HSA - HOLLOW STEM AUGER
CFA - CONTINUOUS FLIGHT AUGER
MDC - DRIVING CASING
MD - MUD DRILLING

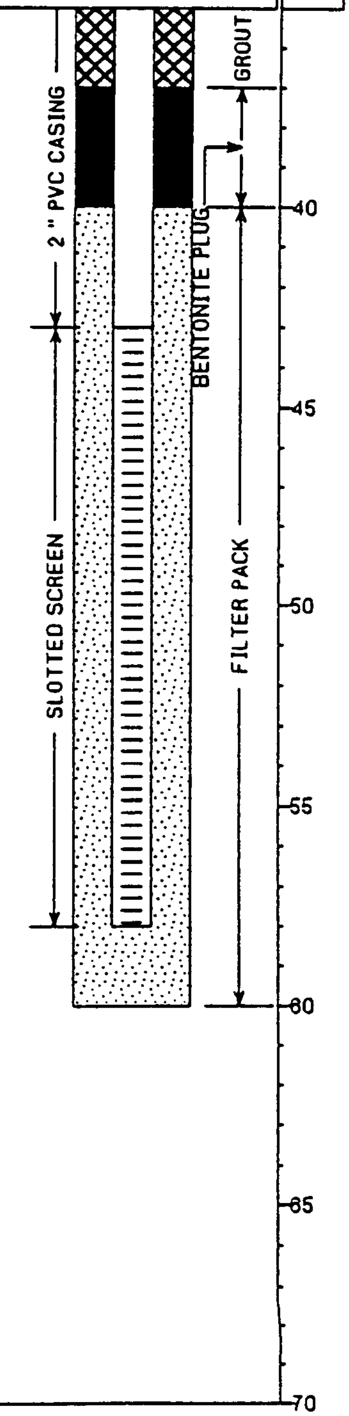
SUBSURFACE EXPLORATION LOG

BORING NUMBER: DP-1

CLIENT: BROWN McCARROLL AND OAKS HARTLINE	GEOLOGIST: Shawn Eubanks	TOTAL DEPTH: 60 Feet
JOB NUMBER: 1009-005-105	DATE DRILLED: 3/16/94	DRILLING METHOD: HSA
LOCATION: Exxon - Dal Paso	DRILLING COMPANY: Harrison Drilling	SAMPLE METHOD:
SURFACE ELEVATION:	X - COORDINATE:	Y - COORDINATE:

DEPTH feet	SAMPLE NUMBER	TIME	PID (ppm)	BLOW COUNT	RECOVERY	SOIL CLASS.	GRAPHIC LOG	GEOLOGIC DESCRIPTION
								37' - gray becoming lighter in color, still had rather strong hydrocarbon odor
40								
								43' - color becoming more natural (yellowish), silty sand still has slight odor
45								
						SM		47' - becoming moist
50								
55								
60								TERMINATED BORING AT 60 '
65								
70								

WELL DIAGRAM



SAMPLER TYPE

SS - SPLIT SPOON
ST - PRESSED SHELBY TUBE
RC - ROCK CORE
CC - CONTINUOUS CORE

BORING METHOD

HSA - HOLLOW STEM AUGER
CFA - CONTINUOUS FLIGHT AUGER
MDC - DRIVING CASING
MD - MUD DRILLING

APPENDIX B

LABORATORY REPORTS

Express Laboratories

401 North 11th • La Porte, Texas 77571

(713) 471-0951 • 1 (800) 880-0156 • FAX (713) 471-5821

ustomer: ENSR Sample ID: DP-1 Attn: S. EUBANKS

Client: EXXON - DAL PASO Proj. No: 1009005105

roj. Location: HOBBS, NM Environ ID: 25304

Sample Matrix: LIQUID Sample Depth: ____ Sampled: 03/ 18 / 94

eceived: 03/ 21 / 94 Reported: 03/ 28 / 94 Invoice No.: 4885

TOTAL RCRA METALS

Metals	Method	Results mg/l	Detection Limit mg/l
Aluminum	6010	55.1	0.1
Arsenic	6010	< 0.1	0.1
Barium	6010	0.5	0.1
Boron	6010	0.4	0.1
Cadmium	6010	< 0.1	0.1
Chromium	6010	< 0.1	0.1
Cobalt	6010	< 0.1	0.1
Copper	6010	< 0.1	0.1
Iron	6010	34.1	0.1
Lead	6010	< 0.1	0.1
Manganese	7470	0.6	0.01
Mercury	7470	< 0.01	0.01
Nickel	6010	< 0.1	0.1
Selenium	6010	< 0.1	0.1
Silver	6010	< 0.1	0.1
Uranium	6010	14.6	0.1
Zinc	6010	0.6	0.1

Analyst: A.R. Date Extracted: 03/25/94 Date Analyzed: 03/25/94 @ 14:12

John E. Keller

John E. Keller, Ph.D.

1009-005-105
DP-1
PAGE 1 of 1

Express Laboratories
401 North 11th • La Porte, Texas 77571
(713) 471-0951 • 1 (800) 880-0156 • FAX (713) 471-5821

Customer: ENSR Sample ID: DP-1 Attn: S. EUBANKS
Client: EXXON - DAL PASO Proj. No: 1009005105
roj. Location: HOBBS, NM Environ ID: 25304
Sample Matrix: LIQUID Sample Depth: Sampled: 03/ 18 / 94
eceived: 03/ 21 / 94 Reported: 03/ 28 / 94 Invoice No.: 4885

DISSOLVED METALS

Metals	Method	Results mg/l	Detection Limit mg/l
Aluminum	6010	0.2	0.1
Arsenic	6010	< 0.1	0.1
Barium	6010	0.3	0.1
Boron	6010	0.4	0.1
Cadmium	6010	< 0.1	0.1
Chromium	6010	< 0.1	0.1
Cobalt	6010	< 0.1	0.1
Copper	6010	< 0.1	0.1
Iron	6010	0.3	0.1
Lead	6010	< 0.1	0.1
Manganese	6010	0.4	0.1
Mercury	7470	< 0.01	0.01
Nickel	6010	< 0.1	0.1
Selenium	6010	< 0.1	0.1
Silver	6010	< 0.1	0.1
Uranium	6010	0.1	0.1
Zinc	6010	0.7	0.1

Analyst: A.R. Date Extracted: 03/31/94 Date Analyzed: 03/31/94 @ 13:01

John E. Keller
John E. Keller, Ph.D.

Express Laboratories
401 North 11th • La Porte, Texas 77571
(713) 471-0951 • 1 (800) 880-0156 • FAX (713) 471-5821

Customer: ENSR	Sample ID: DP-100	Attn: S. EUBANKS
lient: EXXON - DAL PASO		Proj. No: 1009005105
roj. Location: HOBBS, NM		Environ ID: 25305
Sample Matrix: LIQUID	Sample Depth:	Sampled: 03/ 18 / 94
eceived: 03/ 21 / 94	Reported: 03/ 28 / 94	Invoice No.: 4885

DISSOLVED METALS

Metals	Method	Results mg/l	Detection Limit mg/l
Aluminum	6010	0.2	0.1
Arsenic	6010	< 0.1	0.1
Barium	6010	0.3	0.1
Boron	6010	0.4	0.1
Cadmium	6010	< 0.1	0.1
Chromium	6010	< 0.1	0.1
Cobalt	6010	< 0.1	0.1
Copper	6010	< 0.1	0.1
Iron	6010	< 0.1	0.1
Lead	6010	< 0.1	0.1
Manganese	6010	0.5	0.1
Mercury	7470	< 0.01	0.01
Nickel	6010	< 0.1	0.1
Selenium	6010	< 0.1	0.1
Silver	6010	< 0.1	0.1
Uranium	6010	< 0.1	0.1
Zinc	6010	0.7	0.1

Analyst: A.R. Date Extracted: 03/25/94 Date Analyzed: 03/25/94 @ 14:12

John E. Keller

John E. Keller, Ph.D.

Express Laboratories

401 North 11th • La Porte, Texas 77571

(713) 471-0951 • 1 (800) 880-0156 • FAX (713) 471-5821

Customer: **ENSR**	Sample ID: **DP-1**		Environ ID: **25304**
Project: **Exxon - Dal Paso, Hobbs, NM, Proj. # 1009-005-105**			Matrix: **Liquid**
Date Sampled: **3/18/94**	Date Received: **3/21/94**		Date/Time Analyzed: **3/24/94 13:40**

EPA SW-846 Method 8240 - Total Volatiles

COMPOUNDS	CONCENTRATION (ug/l)	PQL (ug/l)	CAS #
Acetone	< 25	25	67-64-1
Benzene	< 5	5	71-43-2
Bromodichloromethane	< 5	5	75-27-4
Bromoform	< 5	5	75-25-2
Bromomethane	< 10	10	75-83-9
2-Butanone	< 10	10	78-93-3
Carbon disulfide	< 5	5	75-15-0
Carbon Tetrachloride	< 5	5	56-23-5
Chlorobenzene	< 5	5	108-90-7
Chloroethane	< 10	10	75-00-3
2-Chloroethyl vinyl ether	< 10	10	110-75-8
Chloroform	13	5	67-66-3
Chloromethane	< 10	10	74-87-3
Dibromochloromethane	< 5	5	124-48-1
1,1-Dichloroethane	17	5	75-34-3
1,2-Dichloroethane	< 5	5	107-06-2
1,1-Dichloroethene	< 5	5	75-35-4
1,2-Dichloroethene (total)	< 5	5	540-59-0
1,2-Dichloropropane	< 5	5	78-87-5
cis-1,3-Dichloropropene	< 5	5	10061-01-5
trans-1,3-Dichloropropene	< 5	5	10061-02-6
Ethylbenzene	< 5	5	100-41-4
2-Hexanone	< 10	10	591-78-6
4-Methyl-2-Pentanone	< 10	10	108-10-1
Methylene Chloride	6	5	75-09-2
Styrene	< 5	5	100-42-5
1,1,2,2-Tetrachloroethane	< 5	5	79-34-5
Tetrachloroethene	< 5	5	127-18-4
Toluene	< 5	5	108-88-3
1,1,1-Trichloroethane	< 5	5	71-55-6
1,1,2-Trichloroethane	< 5	5	79-00-5
Trichloroethene	< 5	5	79-01-6
Vinyl acetate	< 10	10	108-05-4
Vinyl chloride	< 10	10	75-01-4
m&p-Xylene	< 10	10	1330-20-7
o-Xylene	16	5	1330-20-7

SURROGATE RECOVERIES

SURROGATE	CONCENTRATION	% RECOVERY	RANGE
1,2-Dichloroethane-d4 (surr)	46	92	70-121
Toluene-d8 (surr)	53	106	81-117
4-Bromofluorobenzene (surr)	52	104	74-121

Carl Degner, GC/MS Analyst

John Keller, Laboratory Director

Express Laboratories

401 North 11th • La Porte, Texas 77571

(713) 471-0951 • 1 (800) 880-0156 • FAX (713) 471-5821

Customer:	**ENSR**	Sample ID:	**DP-1**	Environ ID:	**25304**
Project:	**Exxon - Dal Paso, Hobbs, NM, Proj. # 1009-005-105**			Matrix:	**Liquid**
Date Sampled:	**3/18/94**	Date Received:	**3/18/94**	Date Extracted:	**3/21/94**
		Concentration Factor:	**1000/1**	Date/Time Analyzed:	**3/24/94 18:33**

EPA SW-846 Method 8270 - Semivolatiles

COMPOUNDS	CONCENTRATION (ug/l)	PQL (ug/l)	CAS #
Acenaphthene	< 10	10	83-32-9
Acenaphthylene	< 10	10	208-96-8
Anthracene	< 10	10	120-12-7
Benzo[a]anthracene	< 10	10	56-55-3
Benzo[b]fluoranthene	< 10	10	205-99-2
Benzo[k]fluoranthene	< 10	10	207-08-9
Benzo[g,h,i]perylene	< 10	10	191-24-2
Benzo[a]pyrene	< 10	10	50-32-8
bis(2-Chloroethoxy)methane	< 10	10	111-91-1
bis(2-Chloroethyl)ether	< 10	10	111-44-4
bis(2-chloroisopropyl)ether	< 10	10	108-60-1
bis(2-Ethylhexyl)phthalate	< 10	10	117-81-7
4-Bromophenyl-phenylether	< 10	10	101-55-3
Butylbenzylphthalate	< 10	10	85-68-7
4-Chloroaniline	< 20	20	106-47-8
4-Chloro-3-methylphenol	< 20	20	59-50-7
2-Chloronaphthalene	< 10	10	91-58-7
2-Chlorophenol	< 10	10	95-57-8
4-Chlorophenyl-phenylether	< 10	10	7005-72-3
Chyrsene	< 10	10	218-01-9
Dibenz[a,h]anthracene	< 10	10	53-70-3
Dibenzofuran	< 10	10	132-64-9
Di-n-butylphthalate	< 10	10	84-74-2
1,2-Dichlorobenzene	< 10	10	95-50-1
1,3-Dichlorobenzene	< 10	10	541-73-1
1,4-Dichlorobenzene	< 10	10	106-46-7
3,3'-Dichlorobenzidine	< 20	20	91-94-1
2,4-Dichlorophenol	< 10	10	120-83-2
Diethylphthalate	< 10	10	84-66-2
2,4-Dimethylphenol	< 10	10	105-67-9
Dimethylphthalate	< 10	10	99-65-0
4,6-Dinitro-2-methylphenol	< 50	50	534-52-1
2,4-Dinitrophenol	< 50	50	51-28-5
2,4-Dinitrotoluene	< 10	10	121-14-2
2,6-Dinitrotoluene	< 10	10	606-20-2
Di-n-octylphthalate	< 10	10	117-84-0
Fluoranthene	< 10	10	206-44-0

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Customer: **ENSR** Sample ID: **DP-1** Environ ID: **25304**
Project: **Exxon - Dal Paso, Hobbs, NM, Proj. # 1009-005-105** Matrix: **Liquid**
Date Sampled: **3/18/94** Date Received: **3/18/94** Date Extracted: **3/21/94**
Concentration Factor: **1000/1** Date/Time Analyzed: **3/24/94 18:33**

EPA SW-846 Method 8270 - Semivolatiles

COMPOUNDS	CONCENTRATION (ug/l)	PQL (ug/l)	CAS #
Fluorene	< 10	10	86-73-7
Hexachlorobenzene	< 10	10	118-74-1
Hexachloroethane	< 10	10	67-72-1
Hexachlorocyclopentadiene	< 10	10	77-47-4
Indeno[1,2,3-cd]pyrene	< 10	10	193-39-5
Isophorone	< 10	10	78-59-1
2-Methylnaphthalene	< 10	10	91-57-6
2-Methylphenol	< 10	10	95-48-7
4-Methylphenol	< 10	10	106-44-5
Naphthalene	10	10	91-20-3
2-Nitroaniline	< 50	50	88-74-4
3-Nitroaniline	< 50	50	99-09-2
4-Nitroaniline	< 20	20	100-01-6
Nitrobenzene	< 10	10	98-95-3
2-Nitrophenol	< 10	10	88-75-5
4-Nitrophenol	< 50	50	100-02-7
n-Nitrosodiphenylamine	< 10	10	86-30-6
n-Nitroso-di-n-propylamine	< 10	10	621-64-7
Pentachlorophenol	< 50	50	87-86-5
Phenanthrene	< 10	10	85-01-8
Phenol	< 10	10	108-95-2
Pyrene	< 10	10	129-00-0
1,2,4-Trichlorobenzene	< 10	10	120-82-1
2,4,5-Trichlorophenol	< 10	10	95-95-4
2,4,6-Trichlorophenol	< 10	10	88-06-2

	SURROGATE RECOVERIES		
SURROGATE	CONCENTRATION	% RECOVERY	RANGE
Nitrobenzene-d5	39	78	35-114
2-Fluorobiphenyl	41	82	43-116
Terphenyl-d14	32	64	33-141
Phenol-d5	68	68	10-100
2-Fluorophenol	56	56	21-100
2,4,6-Tribromophenol	100	100	10-123

Carl Degner, GC/MS Analyst

John Keller
John Keller, Laboratory Director

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ustomer: ENSR Sample ID: DP-100 Attn: S. EUBANKS
Client: EXXON - DAL PASO Proj. No: 1009005105
roj. Location: HOBBS, NM Environ ID: 25305
Sample Matrix: LIQUID Sample Depth: Sampled: 03/ 18 / 94
eceived: 03/ 21 / 94 Reported: 03/ 28 / 94 Invoice No.: 4885

TOTAL RCRA METALS

Metals	Method	Results mg/l	Detection Limit mg/l
Aluminum	6010	92.0	0.1
Arsenic	6010	< 0.1	0.1
Barium	6010	0.6	0.1
Boron	6010	0.4	0.1
Cadmium	6010	< 0.1	0.1
Chromium	6010	< 0.1	0.1
Cobalt	6010	< 0.1	0.1
Copper	6010	< 0.1	0.1
Iron	6010	57.1	0.1
Lead	6010	< 0.1	0.1
Manganese	7470	0.9	0.01
Mercury	7470	< 0.01	0.01
Nickel	6010	< 0.1	0.1
Selenium	6010	< 0.1	0.1
Silver	6010	< 0.1	0.1
Uranium	6010	24.1	0.1
Zinc	6010	0.7	0.1

Analyst: A.R. Date Extracted: 03/25/94 Date Analyzed: 03/25/94 @ 14:12

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Customer:	**ENSR**	Sample ID:	**DP-100**	Environ ID:	**25305**
Project:	**Exxon - Dal Paso, Hobbs, NM, Proj. # 1009-005-105**			Matrix:	**Liquid**
Date Sampled:	**3/18/94**	Date Received:	**3/21/94**	Date/Time Analyzed:	**3/24/94 15:41**

EPA SW-846 Method 8240 - Total Volatiles

COMPOUNDS	CONCENTRATION (ug/l)	PQL (ug/l)	CAS #
Acetone	< 25	25	67-64-1
Benzene	< 5	5	71-43-2
Bromodichloromethane	< 5	5	75-27-4
Bromoform	< 5	5	75-25-2
Bromomethane	< 10	10	75-83-9
2-Butanone	< 10	10	78-93-3
Carbon disulfide	< 5	5	75-15-0
Carbon Tetrachloride	< 5	5	56-23-5
Chlorobenzene	< 5	5	108-90-7
Chloroethane	< 10	10	75-00-3
2-Chloroethyl vinyl ether	< 10	10	110-75-8
Chloroform	8	5	67-66-3
Chloromethane	< 10	10	74-87-3
Dibromochloromethane	< 5	5	124-48-1
1,1-Dichloroethane	10	5	75-34-3
1,2-Dichloroethane	< 5	5	107-06-2
1,1-Dichloroethene	< 5	5	75-35-4
1,2-Dichloroethene (total)	< 5	5	540-59-0
1,2-Dichloropropane	< 5	5	78-87-5
cis-1,3-Dichloropropene	< 5	5	10061-01-5
trans-1,3-Dichloropropene	< 5	5	10061-02-6
Ethylbenzene	< 5	5	100-41-4
2-Hexanone	< 10	10	591-78-6
4-Methyl-2-Pentanone	< 10	10	108-10-1
Methylene Chloride	9	5	75-09-2
Styrene	< 5	5	100-42-5
1,1,2,2-Tetrachloroethane	< 5	5	79-34-5
Tetrachloroethene	< 5	5	127-18-4
Toluene	< 5	5	108-88-3
1,1,1-Trichloroethane	< 5	5	71-55-6
1,1,2-Trichloroethane	< 5	5	79-00-5
Trichloroethene	< 5	5	79-01-6
Vinyl acetate	< 10	10	108-05-4
Vinyl chloride	< 10	10	75-01-4
m&p-Xylene	< 10	10	1330-20-7
o-Xylene	9	5	1330-20-7

SURROGATE RECOVERIES

SURROGATE	CONCENTRATION	% RECOVERY	RANGE
1,2-Dichloroethane-d4 (surr)	46	92	70-121
Toluene-d8 (surr)	53	106	81-117
4-Bromofluorobenzene (surr)	52	104	74-121

Carl Degner, GC/MS Analyst

John Keller, Laboratory Director

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Customer: **ENSR** Sample ID: **DP-100** Environ ID: **25305**
Project: **Exxon - Dal Paso, Hobbs, NM, Proj. # 1009-005-105** Matrix: **Liquid**
Date Sampled: **3/18/94** Date Received: **3/18/94** Date Extracted: **3/21/94**
Concentration Factor: **1000/1** Date/Time Analyzed: **3/24/94 19:06**

EPA SW-846 Method 8270 - Semivolatiles

COMPOUNDS	CONCENTRATION (ug/l)	PQL (ug/l)	CAS #
Acenaphthene	< 10	10	83-32-9
Acenaphthylene	< 10	10	208-96-8
Anthracene	< 10	10	120-12-7
Benzo[a]anthracene	< 10	10	56-55-3
Benzo[b]fluoranthene	< 10	10	205-99-2
Benzo[k]fluoranthene	< 10	10	207-08-9
Benzo[g,h,i]perylene	< 10	10	191-24-2
Benzo[a]pyrene	< 10	10	50-32-8
bis(2-Chloroethoxy)methane	< 10	10	111-91-1
bis(2-Chloroethyl)ether	< 10	10	111-44-4
bis(2-chloroisopropyl)ether	< 10	10	108-60-1
bis(2-Ethylhexyl)phthalate	< 10	10	117-81-7
4-Bromophenyl-phenylether	< 10	10	101-55-3
Butylbenzylphthalate	< 10	10	85-68-7
4-Chloroaniline	< 20	20	106-47-8
4-Chloro-3-methylphenol	< 20	20	59-50-7
2-Chloronaphthalene	< 10	10	91-58-7
2-Chlorophenol	< 10	10	95-57-8
4-Chlorophenyl-phenylether	< 10	10	7005-72-3
Chrysene	< 10	10	218-01-9
Dibenz[a,h]anthracene	< 10	10	53-70-3
Dibenzofuran	< 10	10	132-64-9
Di-n-butylphthalate	< 10	10	84-74-2
1,2-Dichlorobenzene	< 10	10	95-50-1
1,3-Dichlorobenzene	< 10	10	541-73-1
1,4-Dichlorobenzene	< 10	10	106-46-7
3,3'-Dichlorobenzidine	< 20	20	91-94-1
2,4-Dichlorophenol	< 10	10	120-83-2
Diethylphthalate	< 10	10	84-66-2
2,4-Dimethylphenol	< 10	10	105-67-9
Dimethylphthalate	< 10	10	99-65-0
4,6-Dinitro-2-methylphenol	< 50	50	534-52-1
2,4-Dinitrophenol	< 50	50	51-28-5
2,4-Dinitrotoluene	< 10	10	121-14-2
2,6-Dinitrotoluene	< 10	10	606-20-2
Di-n-octylphthalate	< 10	10	117-84-0
Fluoranthene	< 10	10	206-44-0

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Customer: **ENSR** Sample ID: **DP-100** Environ ID: **25305**

Project: **Exxon - Dal Paso, Hobbs, NM, Proj. # 1009-005-105** Matrix: **Liquid**

Date Sampled: **3/18/94** Date Received: **3/18/94** Date Extracted: **3/21/94**

Concentration Factor: **1000/1** Date/Time Analyzed: **3/24/94 19:06**

EPA SW-846 Method 8270 - Semivolatiles

COMPOUNDS	CONCENTRATION (ug/l)	PQL (ug/l)	CAS #
Fluorene	< 10	10	86-73-7
Hexachlorobenzene	< 10	10	118-74-1
Hexachloroethane	< 10	10	67-72-1
Hexachlorocyclopentadiene	< 10	10	77-47-4
Indeno[1,2,3-cd]pyrene	< 10	10	193-39-5
Isophorone	< 10	10	78-59-1
2-Methylnaphthalene	< 10	10	91-57-6
2-Methylphenol	< 10	10	95-48-7
4-Methylphenol	< 10	10	106-44-5
Naphthalene	11	10	91-20-3
2-Nitroaniline	< 50	50	88-74-4
3-Nitroaniline	< 50	50	99-09-2
4-Nitroaniline	< 20	20	100-01-6
Nitrobenzene	< 10	10	98-95-3
2-Nitrophenol	< 10	10	88-75-5
4-Nitrophenol	< 50	50	100-02-7
n-Nitrosodiphenylamine	< 10	10	86-30-6
n-Nitroso-di-n-propylamine	< 10	10	621-64-7
Pentachlorophenol	< 50	50	87-86-5
Phenanthrene	< 10	10	85-01-8
Phenol	< 10	10	108-95-2
Pyrene	< 10	10	129-00-0
1,2,4-Trichlorobenzene	< 10	10	120-82-1
2,4,5-Trichlorophenol	< 10	10	95-95-4
2,4,6-Trichlorophenol	< 10	10	88-06-2

	SURROGATE RECOVERIES		
SURROGATE	CONCENTRATION	% RECOVERY	RANGE
Nitrobenzene-d5	38	76	35-114
2-Fluorobiphenyl	38	76	43-116
Terphenyl-d14	32	64	33-141
Phenol-d5	61	61	10-100
2-Fluorophenol	50	50	21-100
2,4,6-Tribromophenol	85	85	10-123

Carl Degner, GC/MS Analyst

John Keller, Laboratory Director

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Customer: **ENSR** Sample ID: **DP-DW** Environ ID: **25306**

Project: **Exxon - Dal Paso, Hobbs, NM, Proj. # 1009-005-105** Matrix: **Liquid**

Date Sampled: **3/18/94** Date Received: **3/21/94** Date/Time Analyzed: **3/24/94 16:12**

EPA SW-846 Method 8240 - Total Volatiles

COMPOUNDS	CONCENTRATION (ug/l)	PQL (ug/l)	CAS #
Acetone	< 25	25	67-64-1
Benzene	< 5	5	71-43-2
Bromodichloromethane	< 5	5	75-27-4
Bromoform	< 5	5	75-25-2
Bromomethane	< 10	10	75-83-9
2-Butanone	< 10	10	78-93-3
Carbon disulfide	< 5	5	75-15-0
Carbon Tetrachloride	< 5	5	56-23-5
Chlorobenzene	< 5	5	108-90-7
Chloroethane	< 10	10	75-00-3
2-Chloroethyl vinyl ether	< 10	10	110-75-8
Chloroform	< 5	5	67-66-3
Chloromethane	< 10	10	74-87-3
Dibromochloromethane	< 5	5	124-48-1
1,1-Dichloroethane	< 5	5	75-34-3
1,2-Dichloroethane	< 5	5	107-06-2
1,1-Dichloroethene	< 5	5	75-35-4
1,2-Dichloroethene (total)	< 5	5	540-59-0
1,2-Dichloropropane	< 5	5	78-87-5
cis-1,3-Dichloropropene	< 5	5	10061-01-5
trans-1,3-Dichloropropene	< 5	5	10061-02-6
Ethylbenzene	< 5	5	100-41-4
2-Hexanone	< 10	10	591-78-6
4-Methyl-2-Pentanone	< 10	10	108-10-1
Methylene Chloride	< 5	5	75-09-2
Styrene	< 5	5	100-42-5
1,1,2,2-Tetrachloroethane	< 5	5	79-34-5
Tetrachloroethene	< 5	5	127-18-4
Toluene	< 5	5	108-88-3
1,1,1-Trichloroethane	< 5	5	71-55-6
1,1,2-Trichloroethane	< 5	5	79-00-5
Trichloroethene	< 5	5	79-01-6
Vinyl acetate	< 10	10	108-05-4
Vinyl chloride	< 10	10	75-01-4
m&p-Xylene	< 10	10	1330-20-7
o-Xylene	< 5	5	1330-20-7

SURROGATE RECOVERIES

SURROGATE	CONCENTRATION	% RECOVERY	RANGE
1,2-Dichloroethane-d4 (surr)	46	92	70-121
Toluene-d8 (surr)	53	106	81-117
4-Bromofluorobenzene (surr)	51	102	74-121

Carl Deaner, GC/MS Analyst

John Keller, Laboratory Director

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Customer:	ENSR	Sample ID:	DP-1-CUT	Attn:	S. EUBANKS
lient:	EXXON - DAL PASO			Proj. No:	1009005105
Proj. Location:	HOBBS, NM			Environ ID:	25307
Sample Matrix:	SOIL	Sample Depth:		Sampled:	03/ 18 / 94
eceived:	03/ 21 / 94	Reported:	03/ 28 / 94	Invoice No.:	4885

Test Method 418.1	Result PPM (mg/kg)	Blank PPM (mg/kg)	Detection Limit PPM (mg/kg)
Petroleum Extractables	1,443	< 10	10

nalyst: J.M. Date Extracted: 03/21/94 Date Analyzed: 03/22/94 @ 11:00
Standard : 418.1 - 6.5.1

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1009-005-105
TRIP BLANK
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ustomer:	ENSR	Sample ID:	TRIP BLANK	Attn:	S. EUBANKS
Client:	EXXON - DAL PASO			Proj. No:	1009005105
roj. Location:	HOBBS, NM			Environ ID:	25310
Sample Matrix:	LIQUID	Sample Depth:		Sampled:	/ /
eceived:	03/ 21 / 94	Reported:	03/ 28 / 94	Invoice No.:	4885

Test Method 5030/8020	Result PPB (ug/l)	Blank PPB (ug/l)	Detection Limit PPB (ug/l)
Benzene	< 1	< 1	1
Toluene	< 1	< 1	1
Ethylbenzene	< 1	< 1	1
Xylenes	< 3	< 3	3

nalyst: J.M. Date Extracted: 03/23/94 Date Analyzed: 03/23/94 @ 19:20
Standard : 8020 - 5.2

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John E. Keller, Ph.D.

ENVIRON QUALITY CONTROL REPORT

ANALYSIS: TPH	METHOD: 418.1	MATRIX: SOIL
ANALYST: J.M.	DETECTION LIMIT: 10	UNITS: PPM (mg/kg)
DATE: 03/22/94	SAMPLES IN SET: 10	FREQUENCY: 1/20

SAMPLES:	25296-25298, 25300, 25307, 25309, 25320-25321
	25334-25335

MATRIX SPIKE [MS] ANALYSIS

SAMPLE ID	[A] SAMPLE ANALYSIS PPM mg/kg	[B] SPIKE ADDED PPM mg/kg	[C] MS TOTAL PPM mg/kg	[D] MS ANALYSIS PPM mg/kg	[E] RECOVERY %
MATRIX	< 10	500	500	457	91

MATRIX DUPLICATE [MD] ANALYSIS

SAMPLE ID	[F] ORIG. SAMPLE ANALYSIS PPM mg/kg	[G] MD ANALYSIS PPM mg/kg	[H] RELATIVE DIFFERENCE %
MATRIX	457	411	11

MS TOTAL [C] = [A] + [B]

SAMPLE ANALYSIS [A] = [F + G] / 2

% RECOVERY [E] = 100 * ¦[D - A]¦ / [B]

% RELATIVE DIFFERENCE [H] = 200 * ¦[F - G]¦ / [F + G]

ND = NONE DETECTED WHEN ANALYZED

John E. Keller

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ENVIRON QUALITY CONTROL REPORT

ANALYSIS: LEAD (TOTAL)	METHOD: 6010	MATRIX: WATER
ANALYST: A. ROEHRICK	DETECTION LIMIT: 1	UNITS: PPM (mg/l)
DATE: 03/22/94	SAMPLES IN SET: 5	FREQUENCY: 1/20

SAMPLES:	25293, 25304-25305, 25308, 25314

MATRIX SPIKE [MS] ANALYSIS

SAMPLE ID	[A] SAMPLE ANALYSIS PPM mg/kg	[B] SPIKE ADDED PPM mg/kg	[C] MS TOTAL PPM mg/kg	[D] MS ANALYSIS PPM mg/kg	[E] RECOVERY %
MATRIX	< 0.1	10.0	10.0	9.0	90.0

MATRIX DUPLICATE [MD] ANALYSIS

SAMPLE ID	[F] ORIG. SAMPLE ANALYSIS PPM mg/kg	[G] MD ANALYSIS PPM mg/kg	[H] RELATIVE DIFFERENCE %
MATRIX	9.0	9.0	0.0

MS TOTAL [C] = [A] + [B]

SAMPLE ANALYSIS [A] = [F + G] / 2

% RECOVERY [E] = 100 * ¦[D - A]¦ / [B]

% RELATIVE DIFFERENCE [H] = 200 * ¦[F - G]¦ / [F + G]

ND = NONE DETECTED WHEN ANALYZED

John E. Keller

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ENVIRON QUALITY CONTROL REPORT

ANALYSIS:TOTAL CHROMIUM	METHOD: 3010/7190	MATRIX: WATER
ANALYST: A. ROEHRICK	DETECTION LIMIT: 1	UNITS: PPM (mg/l)
DATE: 03/22/94	SAMPLES IN SET: 3	FREQUENCY: 1/20

SAMPLES:	25304-25305, 25308

MATRIX SPIKE [MS] ANALYSIS

SAMPLE ID	[A] SAMPLE ANALYSIS PPM .mg/kg	[B] SPIKE ADDED PPM mg/kg	[C] MS TOTAL PPM mg/kg	[D] MS ANALYSIS PPM mg/kg	[E] RECOVERY %
MATRIX	< 0.1	10.0	10.0	9.0	90.0

MATRIX DUPLICATE [MD] ANALYSIS

SAMPLE ID	[F] ORIG. SAMPLE ANALYSIS PPM mg/kg	[G] MD ANALYSIS PPM mg/kg	[H] RELATIVE DIFFERENCE %
MATRIX	9.0	9.0	0.0

MS TOTAL [C] = [A] + [B]

SAMPLE ANALYSIS [A] = [F + G] / 2

% RECOVERY [E] = 100 * ¦[D - A]¦ / [B]

% RELATIVE DIFFERENCE [H] = 200 * ¦[F - G]¦ / [F + G]

ND = NONE DETECTED WHEN ANALYZED

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DP-1
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Customer: ENSR Sample ID: DP-1 Attn: S. EUBANKS

Client: EXXON - ENSR Proj. No: 1009006105

Proj. Location: HOBBS, NM Environ ID: 26145

Sample Matrix: LIQUID Sample Depth: ______ Sampled: 04/ 25 / 94

Received: 04/ 26 / 94 Reported: 05/ 03 / 94 Invoice No.: 5075

Test Method 160.1	Result PPM (mg/l)	Blank PPM (mg/l)	Detection Limit PPM (mg/l)
Total Dissolved Solids	1,161	< 10	10

Analyst: J.M. Date Extracted: 04/29/94 Date Analyzed: 04/29/94 @ 14:00
tandard : 160.1

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ustomer: ENSR Sample ID: DP-1 Attn: S. EUBANKS
Client: EXXON - ENSR Proj. No: 1009006105
roj. Location: HOBBS, NM Environ ID: 26145
Sample Matrix: LIQUID Sample Depth: Sampled: 04/ 25 / 94
Received: 04/ 26 / 94 Reported: 05/ 03 / 94 Invoice No.: 5075

DISSOLVED METALS

Metals	Method	Results mg/l	Regulation Limit mg/l
Aluminum	6010	< 5.0	5.0
Arsenic	6010	< 0.1	0.1
Barium	6010	< 1.0	1.0
Boron	6010	< 0.75	0.75
Cadmium	6010	< 0.01	0.01
Chromium	6010	< 0.05	0.05
Cobalt	6010	< 0.05	0.05
Copper	6010	< 0.1	1.0
Iron	6010	< 1.0	1.0
Lead	6010	< 0.05	0.05
Manganese	6010	0.3	0.2
Mercury	7470	< 0.002	0.002
Molybdenum	6010	< 1.0	1.0
Nickel	6010	< 0.2	0.2
Selenium	6010	< 0.05	0.05
Silver	6010	< 0.05	0.05
Uranium	6010	< 5.0	5.0
Zinc	6010	< 10.0	10.0

Analyst: A.R. Date Extracted: 05/02/94 Date Analyzed: 05/02/94 @ 12:17

John E. Keller

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ENVIRON QUALITY CONTROL REPORT

ANALYSIS: LEAD (TOTAL)	METHOD: 6010	MATRIX: WATER
ANALYST: A. ROEHRICK	DETECTION LIMIT: 1	UNITS: PPM (mg/l)
DATE: 05/02/94	SAMPLES IN SET: 2	FREQUENCY: 1/20

SAMPLES:	26144-26145

MATRIX SPIKE [MS] ANALYSIS

SAMPLE ID	[A] SAMPLE ANALYSIS PPM mg/kg	[B] SPIKE ADDED PPM mg/kg	[C] MS TOTAL PPM mg/kg	[D] MS ANALYSIS PPM mg/kg	[E] RECOVERY %
MATRIX	< 0.1	5.0	5.0	4.9	99.0

MATRIX DUPLICATE [MD] ANALYSIS

SAMPLE ID	[F] ORIG. SAMPLE ANALYSIS PPM mg/kg	[G] MD ANALYSIS PPM mg/kg	[H] RELATIVE DIFFERENCE %
MATRIX	4.9	4.7	4.2

MS TOTAL [C] = [A] + [B]

SAMPLE ANALYSIS [A] = [F + G] / 2

% RECOVERY [E] = 100 * |[D - A]| / [B]

% RELATIVE DIFFERENCE [H] = 200 * |[F - G]| / [F + G]

ND = NONE DETECTED WHEN ANALYZED

John E. Keller

JOHN KELLER, Ph.D

ENVIRON QUALITY CONTROL REPORT

ANALYSIS: TOTAL CHROMIUM	METHOD: 3010/7190	MATRIX: WATER
ANALYST: A. ROEHRICK	DETECTION LIMIT: 1	UNITS: PPM (mg/l)
DATE: 05/02/94	SAMPLES IN SET: 2	FREQUENCY: 1/20

SAMPLES:	26144-26145

MATRIX SPIKE [MS] ANALYSIS

SAMPLE ID	[A] SAMPLE ANALYSIS PPM mg/kg	[B] SPIKE ADDED PPM mg/kg	[C] MS TOTAL PPM mg/kg	[D] MS ANALYSIS PPM mg/kg	[E] RECOVERY %
MATRIX	< 0.1	2.5	2.5	2.1	83.0

MATRIX DUPLICATE [MD] ANALYSIS

SAMPLE ID	[F] ORIG. SAMPLE ANALYSIS PPM mg/kg	[G] MD ANALYSIS PPM mg/kg	[H] RELATIVE DIFFERENCE %
MATRIX	2.1	2.1	0.0

MS TOTAL [C] = [A] + [B]

SAMPLE ANALYSIS [A] = [F + G] / 2

% RECOVERY [E] = 100 * |[D - A]| / [B]

% RELATIVE DIFFERENCE [H] = 200 * |[F - G]| / [F + G]

ND = NONE DETECTED WHEN ANALYZED

John E. Keller

JOHN KELLER, Ph.D

Brown McCarroll & Oaks Hartline

Austin, Texas

ENSR

Removal Action Workplan for Facility Owned by Exxon Chemical Company in Hobbs, New Mexico (1715 Dal Paso Street)

ENSR Consulting and Engineering

February 1993

Document Number 1009-005-120

RECEIVED

FEB 16 1993

OIL CONSERVATION DIV.
SANTA FE

Brown McCarroll & Oaks Hartline
Austin, Texas

Removal Action Workplan for Facility Owned by Exxon Chemical Company in Hobbs, New Mexico
(1715 Dal Paso Street)

ENSR Consulting and Engineering

February 1993

Document Number 1009-005-120

CONTENTS

CONTENTS
(Cont'd)

1.0 INTRODUCTION

1.1 Purpose

This workplan has been prepared to describe the soil removal action planned for the Exxon Chemical Company (Exxon) facility located at 1715 Dal Paso Street, Hobbs, New Mexico (Site, Property, or Facility).

1.2 Site Investigation History

A Phase I Preliminary Assessment (PA) was conducted by ENSR Consulting and Engineering (ENSR) between August 27 and September 6, 1991, at the Exxon Facility at 1715 Dal Paso Street, Hobbs, New Mexico. The PA activities included site visits, interviews with personnel who worked at the Facility, Facility records review, and state agency and EPA files research. Because this PA identified areas which appeared to require additional investigation, a Phase II Site Inspection (SI) was subsequently conducted by ENSR in January 1992.

The SI identified two areas of soil contamination: one area with elevated levels of lead, and one area with Total Petroleum Hydrocarbons (TPH) above the state action limit. Both areas were later resampled in-situ for waste characterization. Waste characterization sample analysis (for RCRA hazardous waste characteristics) indicated that, for waste disposal purposes, the soils are nonhazardous.

The two areas of soil contamination are:

- the waste oil storage area (lead and TPH), and
- the truck washing area (lead).

The two areas are limited in size and are immediately adjacent to each other. For the purpose of this workplan, as well as Site cleanup activities, the two areas will be regarded as a single excavation. The amount of contaminated soil to be excavated from the two areas has been estimated to be approximately 30 to 50 cubic yards.

The State of New Mexico Oil Conservation Division's (OCD) cleanup standards for hydrocarbon contaminated soils are as follows:

- TPH - 100 ppm (EPA 8015(m), EPA 418.1)
- BETX (total) - 100 ppm (TCLP, 8020)

The EPA regulatory limit for TCLP lead is 5 ppm.

1.3 Background Facility Information

Exxon purchased the Site at 1715 Dal Paso Street, Hobbs, New Mexico from NL Treating Chemicals Co. (NL Treating) in 1987. NL operated the Site from 1969 to 1987. NL McCullough operated the Site from the 1940s to 1969 and shared the Property with NL Treating from 1969 to 1984.

The Property covers approximately 7 acres in Lea County. The Site consists of a fenced yard adjacent to Dal Paso Street and a vacant field extending north, south, and west of the fenced area. The fenced yard contains three buildings and storage areas for aboveground tanks and drums. A trailer is located just outside the fenced area adjacent to the main building on Dal Paso Street. The buildings inside the fenced yard include:

- the main building, which contains a storage area and office space,

- a building which encloses truck bays and storage space (designated as Building No. 1 in the PA report), and

- a small building (designated as Building No. 2 in the PA report) used for past storage of radioactive materials for well logging sources.

Past activities at the Site included:

- storage of oilfield chemicals and construction equipment;

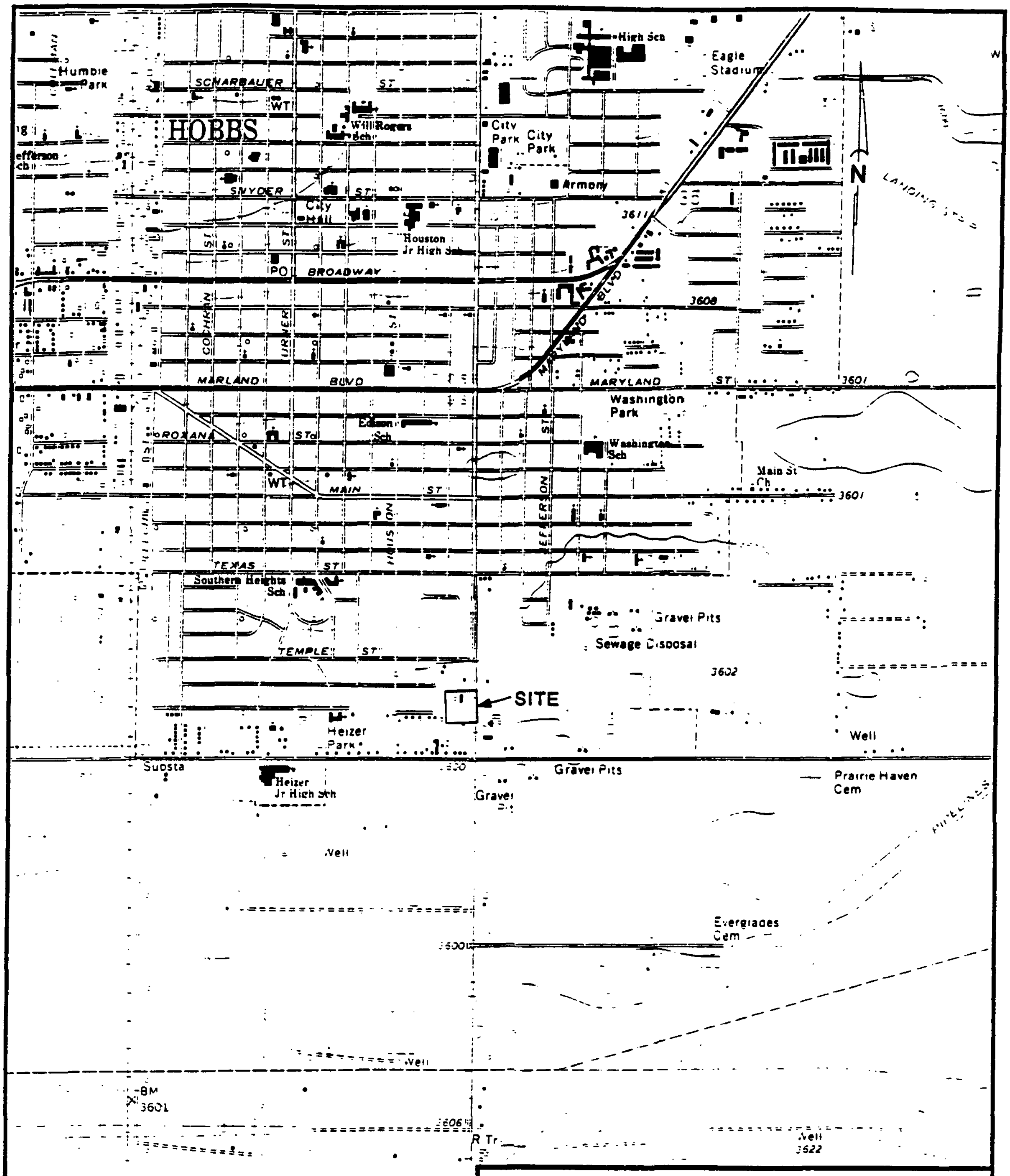
- loading and unloading of oilfield chemicals and construction equipment from service trucks;

- maintenance of service trucks, including washing, oil changes, fueling, etc.; and

- consolidation of oilfield chemical drum residues for reuse or shipment to NL Treating in Houston, Texas.

The Property location is shown on Figure 1-1. The Property boundaries are shown on Figure 1-2 and a Site Plot Plan is shown on Figure 1-3. Exxon currently uses the Property for administrative purposes only. With the exception of the office trailer, the Property and buildings are currently vacant and unused.

NL Treating used the Property as a storage yard for chemicals used in oil and gas production. NL McCullough used the Property to store materials and equipment used in the oil well service industry.



0 2000 4000

SCALE IN FEET

REFERENCE: U.S.G.S. Quadrangle Map for
Hobbs, New Mexico
1979.

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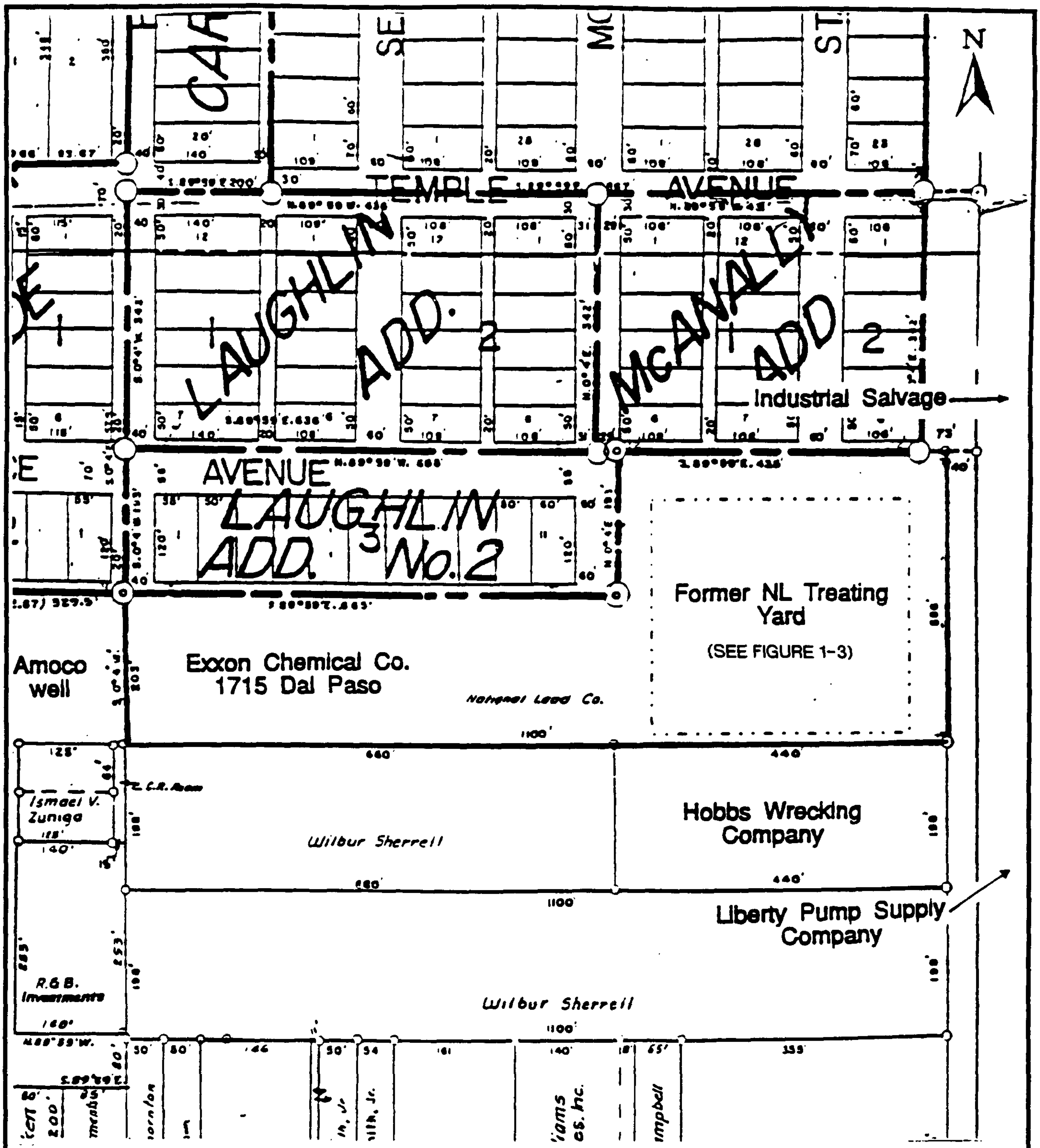
FIGURE 1-1
PROPERTY LOCATION
CHEMICAL DISTRIBUTION COMPANY
HOBBS, NEW MEXICO

DRAWN BY: S. GHANI	DATE: 10-19-92	PROJECT NUMBER:
CHK'D.BY:	REVISED:	1009-001-150

TOPO



REFERENCE: Commercial Appraisal Report for Exxon Company, U.S.A. May 9, 1989.

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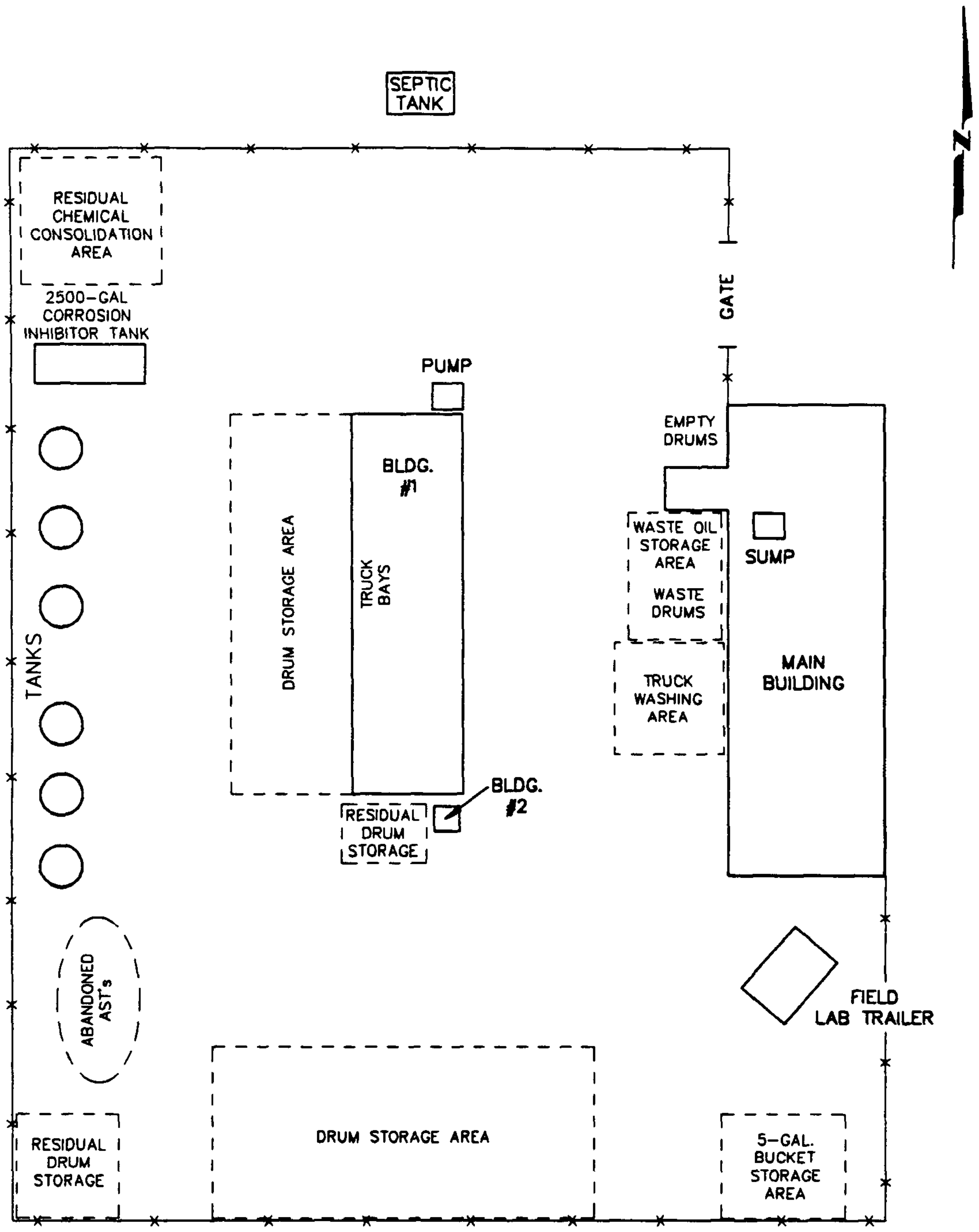
FIGURE 1-2
PROPERTY BOUNDARIES
1715 DAL PASO
HOBBS, NEW MEXICO

DRAWN BY: S. GHANI	DATE: 10-19-92	PROJECT NUMBER: 1009-001-150
CHK'D.BY:	REVISED:	

TOPO



NOT TO SCALE

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FIGURE 1-3
FENCED YARD AREA PLOT PLAN
CHEMICAL DISTRIBUTION FACILITY
HOBBS, NEW MEXICO

DRAWN: SJF/SH	DATE: 6-9-92	PROJECT NUMBER:
APPV'D:	REVISED: 01-25-93	1009-001-150

2.0 REMOVAL ACTION

2.1 Mobilization

Prior to initiating earthwork activities, a pre-construction meeting will be conducted at the Site and will involve participation by the following:

- Exxon Facility Manager (Mr. Ken Favers);
- Consultant (ENSR Consulting and Engineering) representative; and
- Contractor (to be selected) representative.

During this meeting, ENSR's representative will discuss details of this workplan and the accompanying health and safety plan, to ensure complete understanding of the project scope, work, and health/safety issues. Mobilization of equipment and personnel onto the Site will be authorized by ENSR only after completion of the pre-construction meeting.

2.2 Site Drainage Control

Site drainage control is not expected to be a problem because of the area's sparse rainfall. In the event of rain, however, a berm will be constructed around the excavation. This berm will divert stormwater away from the excavation. The berm will be approximately 6 inches above grade and will be constructed of clean backfill soil.

2.3 Removal of Contaminated Soil

Contaminated soils will be excavated from the waste oil storage area and the truck washing area. Figure 1-3 shows the location to be excavated.

Excavated soils will be temporarily stockpiled, as necessary, on plastic sheeting adjacent to the excavated areas. All stockpiled soils will be covered with plastic sheeting and secured with sand bags or their equivalent at the end of each day.

The depth of the excavation will be dependent upon the depth of contamination indicated by previous soil sample analysis, as well as the depth of physical evidence of contamination. Confirmation samples will be collected from the excavation walls and floor to confirm the successful cleanup of all soils with contamination above cleanup levels. Sampling procedures are described more fully in Section 3.0 of this report.

An organic vapor meter (OVM) or equivalent photoionization detector (PID) will be used to screen soils as the excavation progresses. The screening will involve a random check of soils to be accomplished by holding the PID probe near (i.e., 1/2 inch from) the ground surface. Confirmation samples will be taken when both visual examination and PID readings demonstrate conditions comparable to those known for uncontaminated soils. Confirmation samples will be taken according to the sampling procedures described in Section 3.0.

A daily log book, describing all activities of the day, will be kept.

No visitors will be permitted on Site at anytime during remediation activities, except for representatives of the OCD conducting official business.

2.4 Field Screening, Head Space

When visual, olfactory and PID readings (as described above) indicate that the contaminated soil has been removed, samples will be taken for field screening by head space analysis.

Head space analysis will be performed on the soil by taking approximately 5 to 6 ounces of soil and placing it in an 8-ounce, straight-side glass container. The container will be covered with aluminum foil and allowed to sit until a constant temperature is achieved (1 to 2 hours), after which time, the head space in the sample container will be analyzed with a PID. PID readings and other observations, such as color, debris, or other significant factors, will be recorded.

2.5 Disposal of Contaminated Soils

Previous in-situ sampling of the soils to be excavated determined that these soils are nonhazardous. Details of the in-situ waste characterization sampling are discussed in Section 3.1 of this report. If necessary, excavated soil will be stored on site prior to manifesting and shipment to an authorized landfill for proper disposal.

2.6 Backfilling the Excavation

Clean off-site fill material will be brought to the Site and stockpiled nearby. After confirmation sampling in each excavation area has indicated successful cleanup for that area, the stockpiled backfill material will be placed in the excavation in approximately 9 to 12 inch lifts and will be uniformly compacted. Backfilled areas will be brought up to approximately 3 inches above original grade to allow for short-term consolidation effects.

A sample of the backfill will be taken at the rate of one sample per 50 per cubic yards and tested for TPH and BETX to ensure the use of clean backfill material.

2.7 Air Monitoring

Air monitoring will be not conducted during removal actions because volatile emissions are expected to be minimal.

2.8 Confirmation Sampling

Confirmation sampling will be conducted after soil excavation to verify that all soil containing contamination above the OCD cleanup criteria has been removed. Details regarding the confirmation sampling is discussed further in Section 3.0.

2.9 Monitoring Wells

Results of the PA and SI indicate that groundwater monitoring is not necessary at this Site. The groundwater depth is estimated to be approximately 40 to 60 feet below grade. Groundwater, therefore, should not have been affected by surface contamination at the Site.

2.10 Demobilization

Following final backfilling and compaction of the excavation, the undercarriage, drive train, and bucket of the excavation equipment will be scraped clean of any remaining soils. These soils will be disposed of with the excavated soils. Before allowing any equipment to leave the Site, all equipment will be examined for soils adhering to the undercarriage, and, if found, will be properly removed and disposed of.

3.0 SOIL SAMPLING PROGRAM

3.1 Confirmation Sample Collection

The purpose of the confirmation sampling program is to ensure that the goals of the removal action have been met. The Site will be cleaned up until the sampling program indicates, with reasonable confidence, that the concentrations of the contaminants across the Site are less than the cleanup standards.

The cleanup standards for this Site (set by the state of New Mexico OCD) are as follows:

- TPH - 100 ppm (using EPA Methods 8015(m), EPA 418.1)
- BETX (total) - 100 ppm (TCLP, EPA 8020)

The EPA regulatory limit for TCLP lead is 5 ppm.

Following completion of the excavation, confirmation soil samples will be analyzed for TPH, BETX (benzene, ethylbenzene, toluene, and xylene) and TCLP lead. For each newly exposed depth, the base and sidewalls will be field screened using PID methods to determine whether target levels of cleanup have been achieved. If PID analyses indicate probable attainment of target levels at the newly exposed depth, confirmation soil sampling will be conducted for the area.

The confirmation samples will be collected from the excavation walls and the excavation floor. A maximum of nine composite samples is anticipated, although the actual number of samples will be determined by the size of the excavation. A single sidewall confirmation sample will cover no more than 20 feet of sidewall length. If the sidewall is more than 20 feet, but less than 40 feet long, the sidewall will be divided in half, and one sample for each half will be collected. The longest sidewall is not anticipated to be more than 40 feet long. Each floor verification sample will be collected for no more than 100 square feet. Each confirmation sample will be composited in a stainless steel mixing bowl, and will consist of at least five grab samples collected from the wall or floor area being sampled.

After field screening and sample analysis confirm that constituents of concern in the soil are below the OCD cleanup standards, soil removal will be halted and backfilling of the excavation will commence.

Table 3-1 summarizes the details of confirmation soil sampling and associated Quality Assurance. Section 6.0 provides details of the Quality Assurance Project Plan for this removal action.

TABLE 3-1

Estimated Number of Confirmation and Quality Assurance Samples

Confirmation Samples	
Scope: 1 excavation x 9 samples, plus backfill sampling	
Analysis	Number of Samples
TPH Method: 8015(m) Gasoline Diesel and Naptha Ranges	10 samples (includes one sample of backfill soil)
BETX Method: TCLP or 8020	10 samples (includes one sample of backfill soil)
Lead Method: TCLP	10 samples (includes one sample of backfill soil)

QA/QC Samples	
Analysis	Number of Samples
TPH (Soil) Method: 8015(m)	1 Duplicate
BETX (Soil) Method: TCLP, 8020	1 Duplicate
Lead (Soil) Method: TCLP	1 Duplicate
TPH (Liquid) Method: 8015(m)	1 Equipment Blank
BETX (Liquid) Method: TCLP, 8020	1 Trip Blank 1 Equipment Blank

3.2 In-situ Waste Disposal Sample Collection

A representative in-situ composite sample of the waste soils requiring disposal was collected and analyzed for toxicity characteristics as described in 40 CFR Part 261 (TCLP metals, TCLP volatiles, TCLP semi-volatiles, corrosivity, and reactivity). Each waste disposal sample was collected as a 5-point composite for each estimated 50 cubic yards of waste soil.

3.3 Soil Sampling Equipment

The following sampling equipment will be used for collecting soil samples during removal activities:

- health and safety equipment as specified by health and safety plan,
- PID instrument,
- sample bottles,
- ice chests for sample storage and transport,
- field log book,
- plot plan,
- supply of plastic trash bags,
- supply of heavy duty plastic sheeting,
- stainless steel mixing bowls,
- stainless steel hand trowels and spatulas,
- 100-foot tape measure,
- potable water supply,
- supply of deionized water with plastic squeeze bottle,
- powdered non-phosphate detergent,
- supply of paper towels,
- scrub brushes,
- sample labels,
- chain-of-custody forms, and
- hammer.

3.4 Sample Collection Procedures

Soil samples will be collected according to the following procedures:

1. Itemize and assemble sampling equipment.

2. Using stainless steel hand trowel or spatula, collect soil sample.
3. Place sample in stainless steel mixing bowl and quickly homogenize the sample and distribute to sample bottles.
4. Decontaminate all sample equipment.
5. Place all trash (i.e., spent gloves, paper towels, plastic sheeting, etc.) in plastic trash bags.
6. Note sample location in field log book by measuring distance from Property boundaries.
7. Move to next sample location.

3.5 Sample Preservation and Shipment

Table 3-2 identifies the types of sampling containers and preservatives that will be used for the collection and transportation of soil samples. Sample bottles, shipping containers, chain-of-custody forms, labels, and preservatives will be provided by the laboratory. Soil samples will be preserved and shipped according to the following procedures:

1. After each sample has been collected and placed in an appropriate bottle and after any appropriate preservative has been added, the sample bottle will be labeled, wrapped with plastic bubble-packing material, and placed in an ice chest for transport to an authorized laboratory. Each ice chest will contain either ice, blue ice, or similar coolant.
2. All samples will be transported to the laboratory at the end of the sampling day during which they were collected.
3. A chain-of-custody form will accompany the samples at all times after the sample has been collected and until it reaches the laboratory.

TABLE 3-2

Sample Containers and Preservatives
Removal Work Plan
Exxon Chemical Facility
Hobbs, New Mexico

Parameter	Sample Matrix	Sample Containers	Preservative	Holding Time
TPH	Soil	8 oz. glass	4°C	Indefinite
BETX	Soil	4 oz. glass	4°C	14 days
TPH	Liquid	16 oz. glass	4°C	Indefinite
BETX	Liquid	40 ml VOA x 3	4°C	14 days

3.6 Decontamination Procedures

Sample collection equipment (i.e., stainless steel trowel, stainless steel mixing bowl, etc.) will be decontaminated as follows:

1. In a 5-gallon plastic bucket, prepare a mixture of potable water and powdered non-phosphate detergent.
2. Fill another 5-gallon plastic bucket with deionized water.
3. Place the equipment to be cleaned in the potable water/non-phosphate detergent mixture, and using a scrub brush, thoroughly clean the equipment.
4. Then, thoroughly rinse the equipment in the 5-gallon bucket containing the deionized water.
5. Dry equipment with paper towel.
6. Wrap equipment in plastic or aluminum foil until ready to use again.
7. Place all trash (i.e., paper towels, plastic sheeting, aluminum foil, etc.) in a plastic trash bags.

4.0 FIELD RECORDS AND DOCUMENTATION

4.1 Field Log Book

A daily log will be maintained. Each day, all activities (including sampling notes) will be recorded in a hard-cover, bound, field log book with numbered pages. Each page will be signed and dated by the sampler(s).

The log book will contain the following information for each soil sample location:

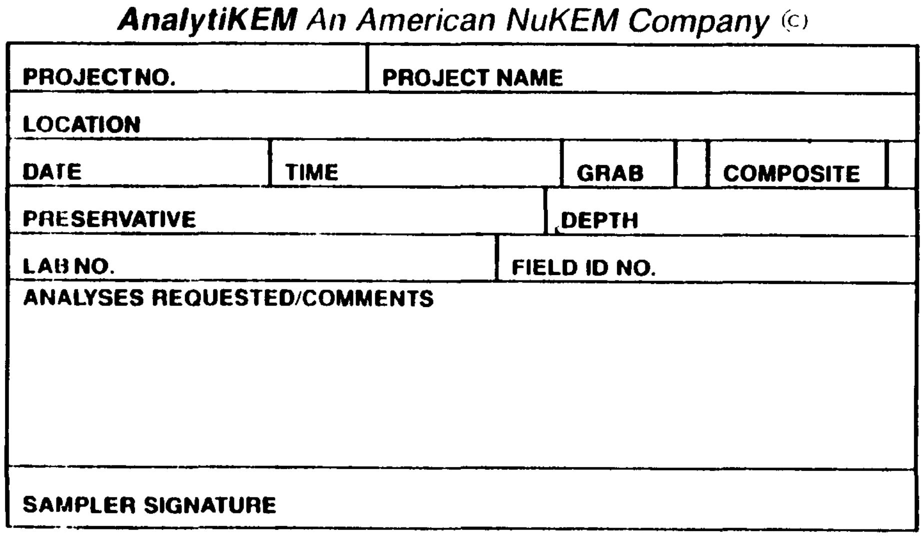
- a sketch of the area under investigation;
- soil sample location, including sample number and measured distances from southern and eastern property line to soil sample location;
- date, time of day, weather conditions, and sampler(s) name(s);
- procedures and equipment used in collecting soil samples;
- descriptions of soil type and field screening observations;
- types of sample containers used and sample identification;
- parameters requested for analysis; and
- decontamination procedure.

4.2 Sample Labels

All sample bottles will be identified with labels containing the following information:

- Site location,
- sample location (soil sample number),
- sample number,
- date and time of sample collection,
- sample method (grab or composite),
- parameters for analysis,

SAMPLE LABEL



***AnalytiKEM** An American NuKEM Company* ©

PROJECT NO. PROJECT NAME

LOCATION

DATE TIME GRAB ☐ COMPOSITE ☐

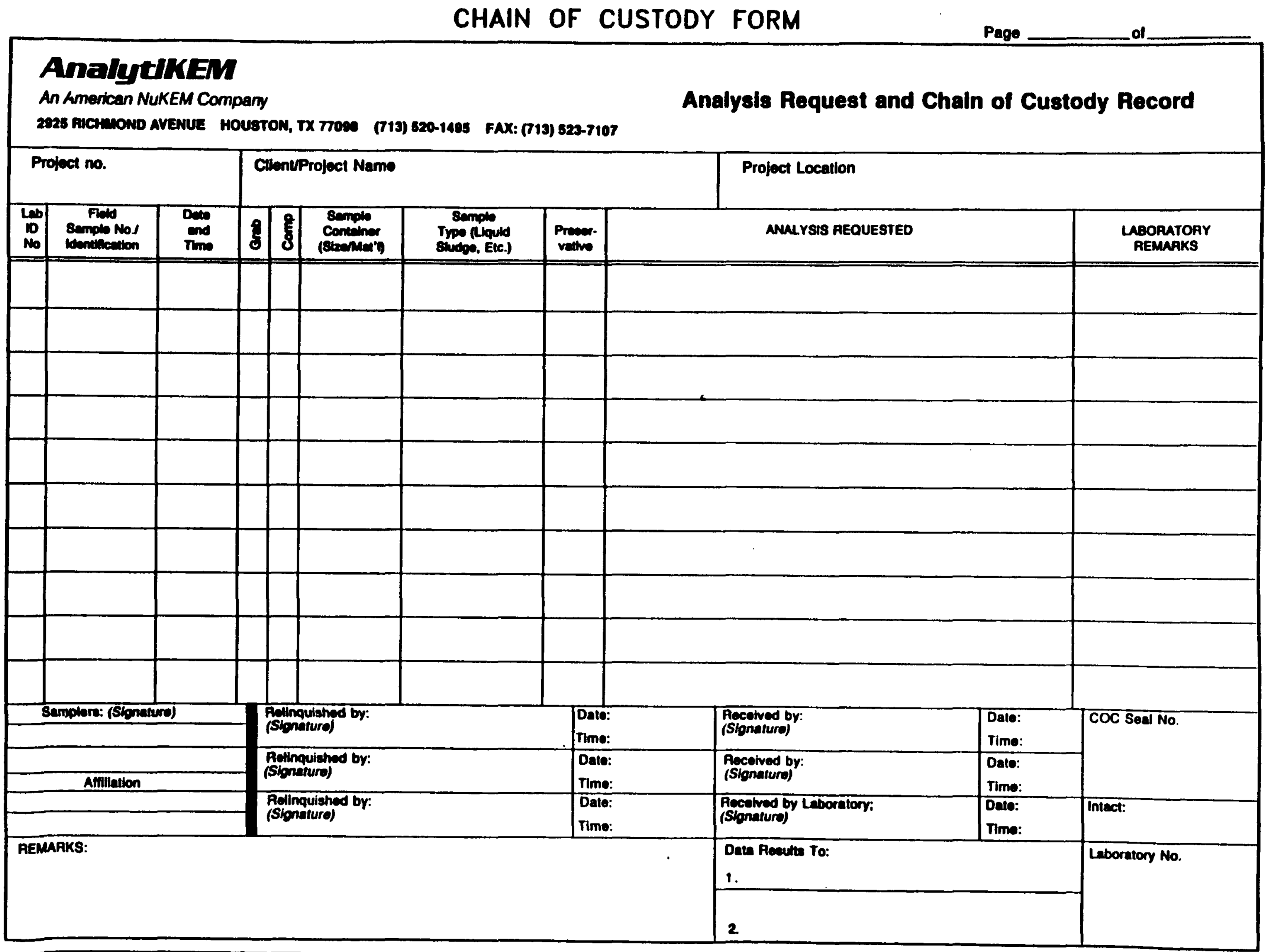
PRESERVATIVE DEPTH

LAB NO. FIELD ID NO.

ANALYSES REQUESTED/COMMENTS

SAMPLER SIGNATURE

FIGURE 4-1



CHAIN OF CUSTODY FORM

Page ________ of ________

AnalytiKEM
An American NuKEM Company
2925 RICHMOND AVENUE HOUSTON, TX 77098 (713) 520-1495 FAX: (713) 523-7107

Analysis Request and Chain of Custody Record

Project no.	Client/Project Name	Project Location

Lab ID No	Field Sample No./ Identification	Date and Time	Grab	Comp	Sample Container (Size/Mat'l)	Sample Type (Liquid Sludge, Etc.)	Preser-vative	ANALYSIS REQUESTED	LABORATORY REMARKS

Samplers: *(Signature)*	Relinquished by: *(Signature)*	Date: Time:	Received by: *(Signature)*	Date: Time:	COC Seal No.
	Relinquished by: *(Signature)*	Date: Time:	Received by: *(Signature)*	Date: Time:	
Affiliation	Relinquished by: *(Signature)*	Date: Time:	Received by Laboratory: *(Signature)*	Date: Time:	Intact:
REMARKS:			Data Results To: 1. 2.		Laboratory No.

FIGURE 4-2

5.0 REPORT ON REMOVAL ACTIVITIES

After laboratory analytical reports have been received and reviewed by ENSR, a Phase III report will be prepared detailing the removal action. The report will provide the following information:

- Facility history and description,
- summary of previous investigations,
- objectives and scope of work,
- description of activities completed,
- amount of soils excavated and disposed of off site,
- results of laboratory analysis of excavated soils, and
- conclusions.

All laboratory analytical packages, related to removal action sampling, will be provided as an appendix to the Phase III report.

6.0 QUALITY ASSURANCE PROJECT PLAN

6.1 Quality Assurance Goals

The purpose of this Quality Assurance Project Plan (QAPP) is to ensure that all data generated during the soil removal activities at Exxon's Hobbs, New Mexico Site will be of sufficient quality to verify that the project objectives have been accomplished. The quality of the data can be defined in terms of completeness, accuracy and precision, comparability, representativeness, and traceability. These terms are defined below; the manner by which each will be achieved is described.

Completeness is the adequacy in quantity of valid measurements to prevent misinterpretation and to meet the needs of the sampling and analysis program. Completeness will be addressed in two ways:

- In the design of the confirmation sampling program, by selection of sufficient sampling sites and measurement parameters; and
- In the implementation of the confirmation sampling program by maximizing successful sample collection and analysis and completion of corresponding field and laboratory documentation.

Accuracy is the agreement between a measurement and the true value. **Precision** is the degree of variability among individual measurements of the same Property under similar conditions.

Comparability represents the extent to which comparisons among different measurements of the same quantity or quality will yield valid conclusions. Comparability will be achieved through the use of standard techniques to collect and analyze the samples and by reporting analytical results in appropriate units.

Representativeness is the extent to which discrete measurements accurately describe a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness will be optimized through the informed selection of sampling sites, the proper collection and handling of samples, and the extraction and analysis of samples within the required holding times.

Traceability is the extent to which data can be substantiated by hard-copy documentation. Documentation will exist in two forms: (1) that which links quantitation to authoritative standards, and (2) that which explicitly describes the history of each sample from collection to analysis.

This QAPP describes the sampling and analytical procedures, documentation, quality control requirements, audits, and quality assurance responses that will be employed during the soil removal at Exxon's Hobbs, New Mexico Site, to ensure quality, as defined above.

6.2 Project Organization and Responsibilities

Responsibilities of key personnel in the project organization are described below:

- Project Manager: The Project Manager will have overall responsibility for technical, financial, and scheduling matters. Additional responsibilities will include communication with the Site owner, authorization of revisions to the project plans, and review and approval of project deliverables.

- Project Geologist: The Project Geologist will be primarily responsible for the coordination and implementation of the field program. Additional responsibilities will include procuring and monitoring subcontractors; communicating field activity information to the Project Manager; maintaining field records; issuing and tracking field equipment; and ensuring that the proper sample collection, handling, and chain-of-custody procedures are used.

- Laboratory Manager: The Laboratory Manager will be responsible for overall management of laboratory operations to meet project commitments, including scheduling personnel and physical resources.

- Laboratory Quality Control (QC) Officer: The primary responsibility of the Laboratory QC Officer will be to maintain the laboratory QC program. The Laboratory QC Officer will be responsible for maintaining standards and traceability documentation and will perform analytical data validation.

- Field Supervisor: The primary responsibility of the Field Supervisor will be the coordination and effective use of all subcontractor personnel and equipment to meet the needs of the project. The Field Supervisor will also be responsible for ensuring that all drilling, well construction, and equipment decontamination procedures are performed in accordance with the project work plan and this QAPP.

- Project QA Officer: The Project QA Officer will be responsible for the review and approval of the QAPP and any necessary revisions to the plan. The QA Officer will also be responsible for conducting any audits mandated by this QAPP or warranted in his/her judgement, and for reporting any conditions adverse to quality to the Project Manager.

- Project Health and Safety (H&S) Manager: The Project H&S Manager will be responsible for reviewing and approving the project-specific H&S plan, monitoring H&S activities to ensure compliance with the H&S plan, and notifying personnel of any changes in procedures.

6.3 Subcontractors

Subcontractor quality control is that system of activities which ensures that products or services obtained from subcontractors fulfill the needs of the project. AnalytiKEM Laboratories, Inc. of Houston, Texas and Environ Express of LaPorte, Texas will provide analytical services.

A written agreement will be established with each subcontractor. The agreement will identify the scope, technical specifications, and the schedule of the work to be performed.

All subcontractors will be required to follow the procedures of this QAPP. The Project Geologist will monitor subcontractors to evaluate their adherence to the project plans. Inspections may include, as appropriate:

- procedures,
- type and condition of equipment,
- calibration procedures,
- personnel qualifications, and
- documentation.

The results of these inspections will be documented and included in the project files.

6.4 Project Communications and Records

The Project Manager will be responsible for ensuring that project records are complete, traceable, and secure. Original incoming materials will be placed in the project central file upon receipt. All outgoing materials must be reviewed and approved by the Project Manager prior to release. Copies of outgoing documents will be maintained in the project file.

The project file will include the following materials, as appropriate:

- project proposal;
- work, QA, and H&S Plans, including revisions;
- contracts, including subcontract agreements;
- field records;
- sample chain-of-custody forms;
- analytical data;
- correspondence;
- memos;
- telephone logs;
- maps, drawings, and photographs;
- numerical analyses;
- audits and corrective action requests;
- technical and peer reviews; and
- reports.

Upon project completion, records will be maintained in a secure location for a period of at least five years.

6.5 Field Sampling Activities

This section describes specific activities aimed at the prevention and early detection of circumstances that could adversely affect the quality of each field program task.

6.5.1 Training

Prior to the commencement of field work, all field personnel, including subcontractors, will be given instructions specific to the soil removal activities at the Site. The instructions will cover the following areas:

- project organization and lines of communication and authority,
- description of the Site,
- overview of the project,
- documentation requirements,
- personal protection,
- decontamination procedures, and
- emergency procedures.

To reduce bias in the laboratory, field blanks and duplicates/replicates will not be identified as such on sample labels or chain-of-custody forms. The field notebook, however, will identify all quality control samples.

6.7 Documentation of Removal Action Field Activities

The Project Geologist will document all field activities for the removal action in a field log book. The log book will be kept in the ENSR project files after completion of the removal action.

6.8 Maintenance and Calibration of Equipment

All field measurement equipment will be calibrated, operated, and maintained in accordance with the manufacturers' instructions.

The Project Geologist will be responsible for the issuance and control of field measurement equipment. All field calibrations will be documented in the field notebook. Equipment problems, including the corrective action taken, will also be noted in the field records.

6.9 Sample Control and Chain of Custody

Successful analysis depends on the capability to produce valid data and to demonstrate such validity. In addition to proper sample collection and handling, appropriate sample identification and chain-of-custody procedures are necessary to help support the validity of the data.

Sampling kits will be prepared by the Environ Express or AnalytiKEM Laboratories Sample Custodian. The sampling kits will be packaged in coolers and will include the chain-of-custody forms, appropriate sample containers, preservatives, and trip blanks.

6.10 Laboratory Analysis

Sample analysis will be performed by AnalytiKEM Laboratories, Inc. of Houston, Texas and Environ Express of LaPorte, Texas. The following is a description of the overall quality control procedures which will be incorporated into the analyses of samples associated with this project.

6.10.1 Sample Receipt and Storage

All samples submitted to the laboratory for analysis will be accompanied by chain-of-custody documentation. The Laboratory Sample Custodian will complete each chain-of-custody record by signing and dating it. All samples will be inspected for:

- intact air-tight seal,
- evidence of breakage or damage,
- intact chain-of-custody seal,
- completeness of accompanying records, and
- adequateness of preservation.

Any discrepancies or problems should be communicated immediately to the Project Geologist.

After inspection, each sample will be logged in and assigned a unique laboratory sample identification number. Information entered into the logging system for each sample will include:

- field sample identification number,
- laboratory sample identification number,
- date received,
- project identification,
- date and time of collection,
- sample type,
- condition of sample (from inspection),
- analyses sought, and
- assigned storage area.

All samples will be stored at 4°C in a secure location until analysis.

6.11 Documentation

All analytical results will be thoroughly documented in ink and in reproduction quality. Duplicate records will be kept whenever practical. Project records will be maintained in a secure area.

For each analytical result, including all blanks, spikes, calibration standards, and samples, supporting documentation will be maintained that includes at least the following:

- complete chain-of-custody records for the sample;

- records of traceability to Certified Reference Materials for all analytical standards, spikes, and balance calibration weights;

- records of all sample preparation and analysis, including weights and volumes of samples, solvents, reagents, dilution ratios, standards, etc. maintained in laboratory notebooks and/or on formalized data sheets, and reviewed by a supervisor or quality control officer; and

- documentation of all manual calculations in reproduction quality.

6.12 Data Validation

Data validation is a process of review of the analytical results and documentation against established criteria. The Laboratory Quality Control Officer will be responsible for performing the validation.

6.12.1 Statistical Evaluation

The precision and accuracy of all data will be computed and compared to the laboratory control limits as part of the data validation process. Precision will be determined from the analytical results of duplicate samples; accuracy will be computed from spike recoveries..

The results of all other quality control checks will be reviewed in terms of the following criteria:

- Method blank values should contain less than five times the detection limit concentration of common laboratory contaminants and no detectable levels of other target analytes.

- The daily calibration curves should be linear over their entire range, and all samples analyzed should be within that range.

- Instrument performance checks, including check standards, should meet method criteria.

If any of the above criteria are not met, the appropriate corrective action will be taken.

6.12.2 Documentation Review

For each batch of analyses, supporting documentation will be reviewed by the Laboratory Quality Control Officer for completeness, traceability, correctness, and legibility.

6.13 Quality Assurance Response

A quality assurance response will be required whenever an out-of-control or potential out-of-control event is noted. Control limits and the appropriate responses are defined in the analytical method. Complete documentation of responses will be included in the laboratory project files.

6.14 Reporting Requirements

A summary of the analytical results will be submitted to the Project Manager. The report will include the following:

- letter of transmittal, indicating the laboratory management's approval of the data as presented;
- sample chain-of-custody records;
- sample receipt checklist, indicating the condition of each sample upon receipt in the laboratory;
- summary of methodologies;
- analytical results for each sample;
- results of all quality control analyses; and
- discussion of any incidents of nonconformance or out-of-control events.

6.15 Numerical Analysis and Peer Review

6.15.1 Numerical Analysis

All numerical analyses and records of calculations will be legible, reproduction-quality, and complete enough to permit logical reconstruction by a qualified individual other than the originator. Each record will include the project name, signature of the originator, and date of origin. Records of all final calculations will be maintained in the project files.

All calculations will be verified by a qualified person other than the originator. Verification will consist of a thorough check of the calculations for the following:

- appropriateness of method,
- appropriateness of assumptions,
- correctness of calculations,
- completeness of references, and
- completeness of records.

6.15.2 Peer Review

All reports will be reviewed prior to transmittal to ensure consistency with the project objectives and appropriateness of interpretations, conclusions, and recommendations. The review will be conducted by an ENSR staff member whose professional qualifications are at least equivalent to those of the originator.

6.16 Quality Assurance Audits and Responses

An audit of this project for conformance with this QAPP will be conducted at the request of the Project Manager or at the discretion of the Project QA Officer. The audit may include observations of procedures, discussions with project personnel, and review of field documentation.

If quality deficiencies are observed that warrant immediate attention, quality assurance response requests will be issued to the Project Manager. The Response Form is a multicopy form used for recording responses to quality assurance deficiency notifications. The QA Officer will retain one copy of the form when it is issued. The Project Manager will complete and sign the form when a quality assurance response has been implemented, and will return the original to the QA Officer to close the loop.

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Hartline

Austin, Texas

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Monitor Well Installation and Sampling Draft Work Plan

Former Exxon Chemical Facility
1715 Dal Paso Street
Hobbs, Mew Mexico

ENSR Consulting and Engineering

January 1994

Document Number 1009-005-105

Brown McCarroll & Oaks Hartline
Austin, Texas

Monitor Well Installation and Sampling
Draft Work Plan

Former Exxon Chemical Facility
1715 Dal Paso Street
Hobbs, New Mexico

ENSR Consulting and Engineering

January 1994

Document Number 1009-005-105

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LIST OF FIGURES

EXECUTIVE SUMMARY

The purpose of this Work Plan is to comply with the New Mexico Oil Conservation Division (OCD) request that Exxon Chemical Company install one monitor well adjacent to Septic Tank - 2 excavation at the former Exxon facility located at 1715 Dal Paso Street in Hobbs, New Mexico. The scope of work provides for the installation of one permanent monitoring well and collection and analysis of a groundwater sample to determine if the soil contmaination has impacted the underlying groundwater. The results of the sampling will be submitted to the OCD in a separate technical report.

1.0 INTRODUCTION

1.1 Background

Exxon Chemical Company (Exxon) purchased the site at 1715 Dal Paso Street in Hobbs, New Mexico in 1987 from NL Industries, Inc. A site location map is shown on Figure 1-1. NL Treating Chemicals, a division of NL Industries, Inc., operated the site from 1969 to 1987. Previously, NL McCullough, another division of N.L. Industries, Inc., operated the site from the 1940s to 1969. NL Treating Chemicals and NL McCullough shared the site from 1969 to 1984.

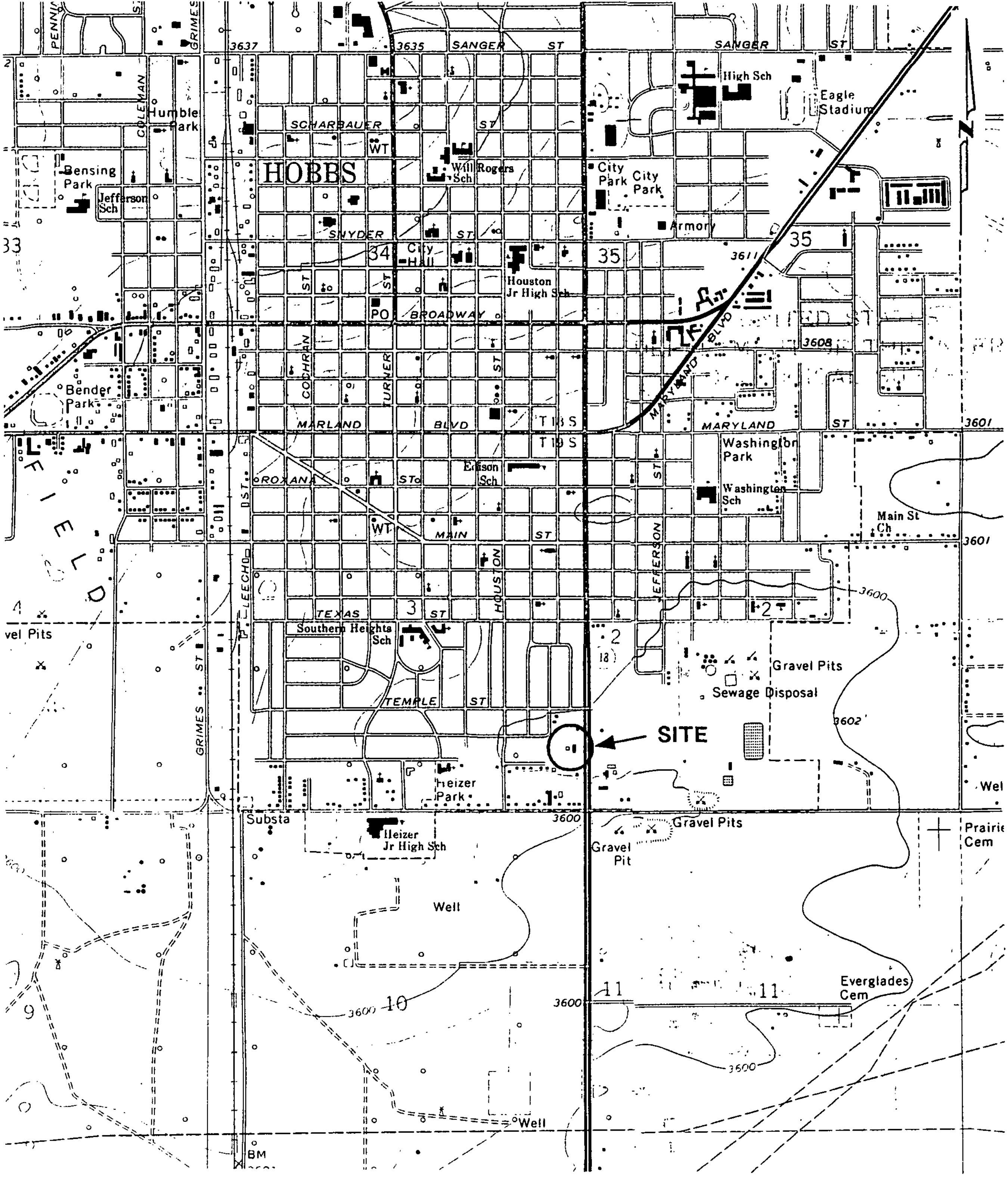
The subject property covers approximately 7 acres in Lea County and consists of a fenced yard area adjacent to a vacant field extending north, south, and west from the fenced area. The fenced yard area contains three buildings and former storage areas for aboveground tanks and drums. The site plot plan is shown on Figure 1-2.

1.2 Previous Investigations and Field Activities

On behalf of Exxon, ENSR Consulting and Engineering (ENSR) conducted a Phase I Preliminary Assessment in 1991 at the Dal Paso site. Investigative activities included site visits, interviews with personnel that worked at the facility, facility records review, and state agency or EPA files research. The results were presented in a June 1992 report entitled Phase I Preliminary Assessment, Exxon Chemical Company Facility, 1715 Dal Paso Street, Hobbs, New Mexico.

The Preliminary Assessment revealed areas of the facility yard that required additional investigation. As a result, ENSR conducted a Phase II Site Inspection at the site in January 1992. The findings were presented in a June 1992 report entitled Phase II Site Inspection, Exxon Chemical Company Facility, 1715 Dal Paso Street, Hobbs, New Mexico.

During Site Inspection activities, soil contamination was encountered in the waste oil storage area and the truck washing storage area located behind the main building (Figure 1-2). Laboratory analysis indicated total petroleum hydrocarbon (TPH) contamination above the New Mexico Oil Conservation Division (OCD) action level of 100 mg/kg as well as elevated levels of total lead in those areas.



0 2000 4000

SCALE IN FEET

REFERENCE: U.S.G.S. Quadrangle Map for
Hobbs West and Hobbs East,
New Mexico, Photorevised 1979.

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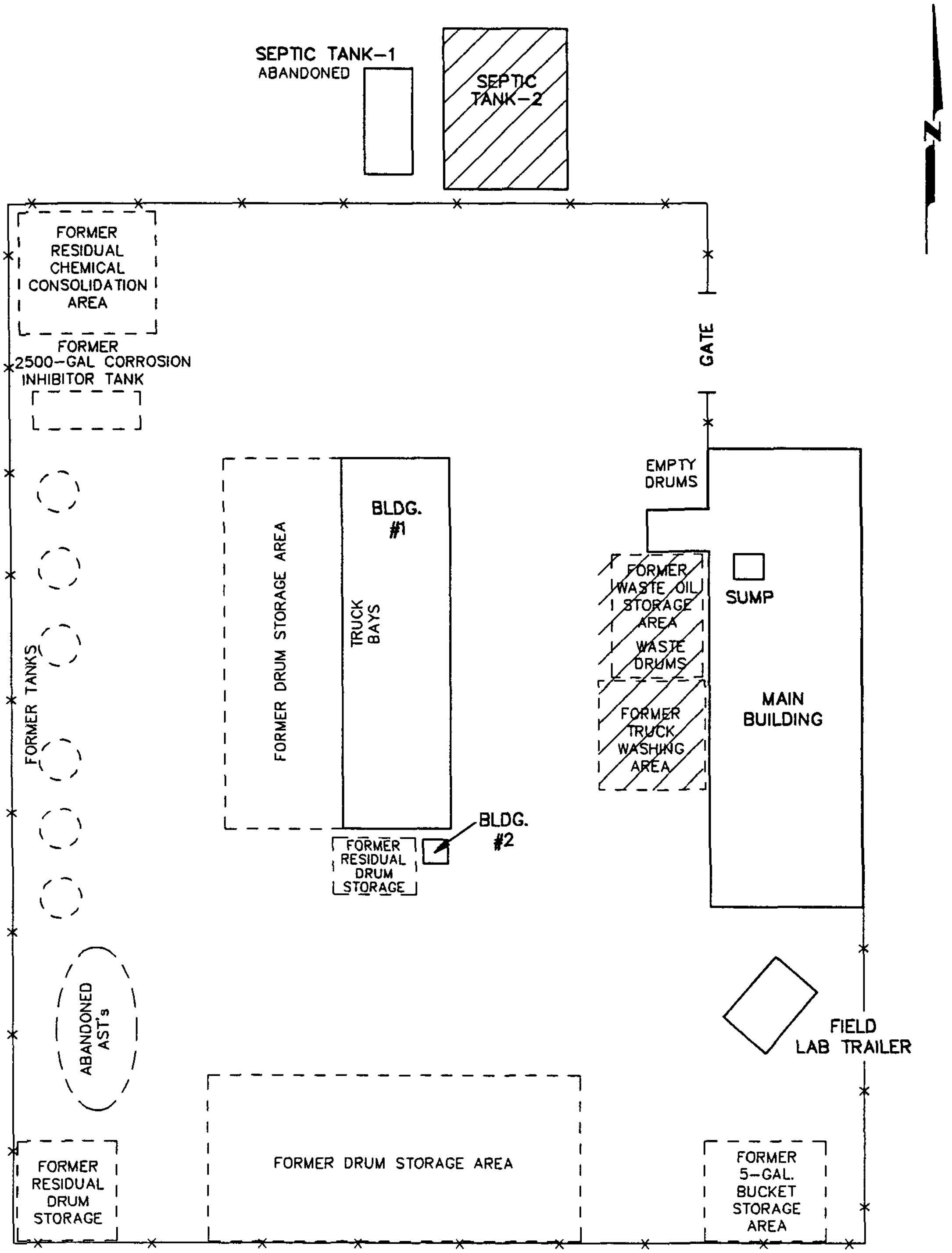
FIGURE 1-1
SITE LOCATION MAP
EXXON CHEMICAL COMPANY FACILITY
DAL PASO STREET SITE
HOBBS, NEW MEXICO

DRAWN BY: SJF	DATE: 1-20-94	PROJECT NUMBER: 1009-005-105
CHK'D.BY:	REVISED:	

TOPO



LEGEND

▨ – PREVIOUSLY EXCAVATED AND BACKFILLED AREAS

NOT TO SCALE

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FIGURE 1-2
SITE PLOT PLAN
EXXON CHEMICAL COMPANY FACILITY
DAL PASO STREET SITE
HOBBS, NEW MEXICO

DRAWN: SJF/SH	DATE: 1-21-94	PROJECT NUMBER:
APPV'D:	REVISED:	1009-005-105

In July and August of 1993, in accordance with an OCD-approved Work Plan, a Phase III Removal Action was performed in order to remove the contaminated soil from behind main building at the site. The results of the removal action are presented in ENSR's report entitled Phase III Removal Action Report, Exxon Chemical Company Facility, 1715 Dal Paso Street, Hobbs, New Mexico.

Approximately 51 cubic yards of soil were removed from the former waste oil storage area and the former truck washing area located behind the main building. Verification soil samples collected from the walls and bottom of the excavation indicated that TPH, benzene, toluene, ethylbenzene and xylenes (BTEX) and lead concentrations were below OCD cleanup levels. The area was then backfilled with clean soil and compacted. Waste characterization analysis indicated that the soils were nonhazardous for disposal purposes. The contaminated soil was transported to the Controlled Recovery, Inc. (CRI) disposal facility in Hobbs, New Mexico.

In addition to soil excavation activities behind the main building, an abandoned Septic Tank-1 (Figure 1-2) was cleaned out and backfilled with clean soil. Following backfilling activities, an exploratory trench was dug adjacent to Septic Tank - 1 to investigate the possible existence of a second septic tank at the facility. The subsurface investigation revealed the presence of the a second septic tank (Septic Tank - 2) and associated contaminated soil. Approximately 1,037 cubic yards of contaminated soil were removed from the area and transported to CRI landfill.

The floor of the Septic Tank - 2 excavation was comprised of a dense layer of highly fractured caliche. Laboratory analysis of the fractured caliche indicated elevated concentrations of metals, and volatile and semivolatile organic compounds. However, due to the dense nature of the caliche floor, further excavation was not practical. Therefore, with the approval of the OCD, some of the contaminated caliche was left in place and the excavation was back filled with clean soil and compacted.

1.3 Purpose of Work Plan

Based on the results of the Removal Action activities, the OCD requested that Exxon install one monitor well adjacent to the Septic Tank - 2 excavation area to detect any potential impacts on underlying groundwater. The purpose of this work plan is to identify the location of the permanent monitor well and describe the well installation and sampling procedures that will be used. This information is provided in the following sections.

2.0 SCOPE OF WORK

Based on the results of previous investigative and removal activities performed at the former Exxon Facility located at 1715 Dal Paso Street, in Hobbs, New Mexico, the New Mexico Oil Conservation Division (OCD) has requested the installation of one monitor well directly adjacent to the Septic Tank - 2 excavation to determine whether there have been any potential impacts on underlying groundwater.

The proposed scope of work includes the following activities:

- Preparation of site Health and Safety Plan;
- Installation of one permanent monitor well;
- Groundwater sampling and analysis; and
- Preparation and submittal of a technical report.

The following sections outline the procedures for each of the activities listed above.

2.1 Site Health and Safety Plan

Prior to conducting the field activities, a site specific Health and Safety Plan (HASP) will be prepared by qualified ENSR personnel and will include the following:

- Purpose and Compliance Requirements,
- Facility Background,
- Scope of Work,
- Training Requirements,
- Medical Surveillance,
- Potential Hazards,
- Personal Protection Hazards,
- Hazard Control Procedures, and
- Emergency References and Action Plan.

The HASP will be reviewed by the ENSR Regional Health and Safety manager and the ENSR Project Manager and copies will be distributed to each member of the on-site field team. A signature page will be included in the plan which must be signed by each member of the field team prior to beginning on-site activities. Signing this sheet documents that the person has read and understands the requirements of the site specific HASP.

In addition, a copy of the HASP will be provided for any subcontractor who will be performing work at the site. The work will not begin until the subcontractors have returned a signed and dated signature page to ENSR.

2.2 Monitor Well Installation

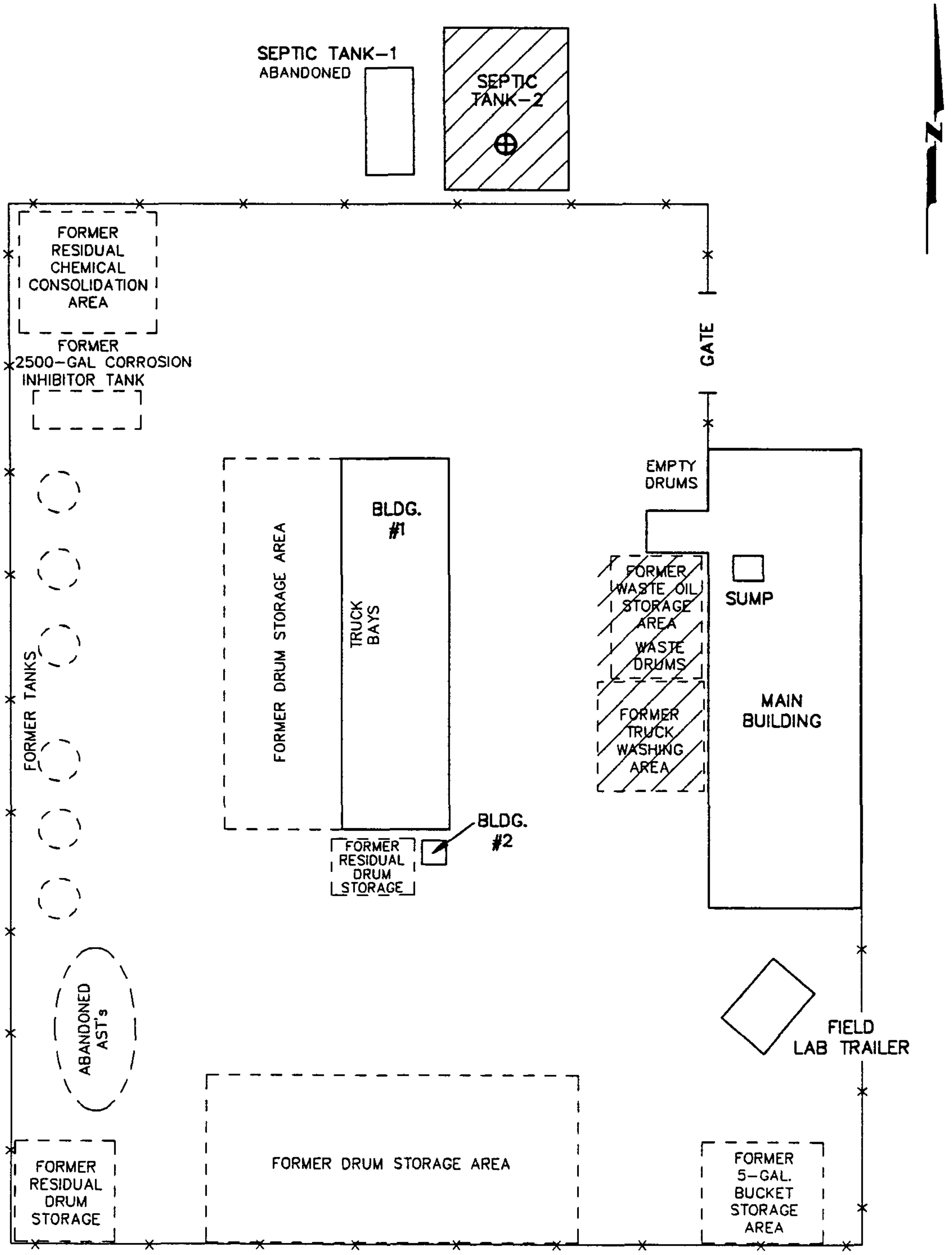
On behalf of Exxon, ENSR will supervise the installation of one monitor well at the previous location of Septic Tank - 2 (Figure 2-1). The monitor well will be installed using hollow stem auger drilling techniques and the borehole will be logged by inspecting the cuttings brought to the surface by the augers. Soil samples will not be collected during the drilling of the monitor well.

Based on previous subsurface investigations performed at the site and discussions with the OCD, the shallow water-bearing unit is expected to be encountered at approximately 100 to 120 feet below ground surface. Therefore, the maximum depth of the monitor well will be approximately 130 feet below ground surface.

Following drilling activities, 2-inch diameter PVC casing and well screen (0.010-inch slot size) will be placed into the boring. The screened interval will span the upper 15 feet of the uppermost water-bearing unit encountered during drilling. A high quartz content sand will be placed as filter pack in the annular space to approximately 2 feet above the screened interval. A 2 foot bentonite seal will be placed above the filter pack and a small amount of water will be added to hydrate the seal. The remaining annular space will be filled with a cement/bentonite grout mixture.

The well will be completed at approximately 2 feet above ground surface with an outer protective casing fitted with a locking cap. The inner well casing will also be secured with a casing cap. The generalized monitor well construction is shown on Figure 2-2.

The soil cuttings removed from the borings will be containerized in 55-gallon drums. A composite soil sample will be collected and analyzed for Total Petroleum Hydrocarbons (TPH). The cuttings will then be disposed of appropriately.



LEGEND

⊕ - PROPOSED MONTIOR WELL

▨ - PREVIOUSLY EXCAVATED AND BACKFILLED AREAS

NOT TO SCALE

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FIGURE 2-1
PROPOSED MONITOR WELL LOCATION
EXXON CHEMICAL COMPANY FACILITY
DAL PASO STREET SITE
HOBBS, NEW MEXICO

DRAWN: SJF/SH	DATE: 1-21-94	PROJECT NUMBER: 1009-005-105
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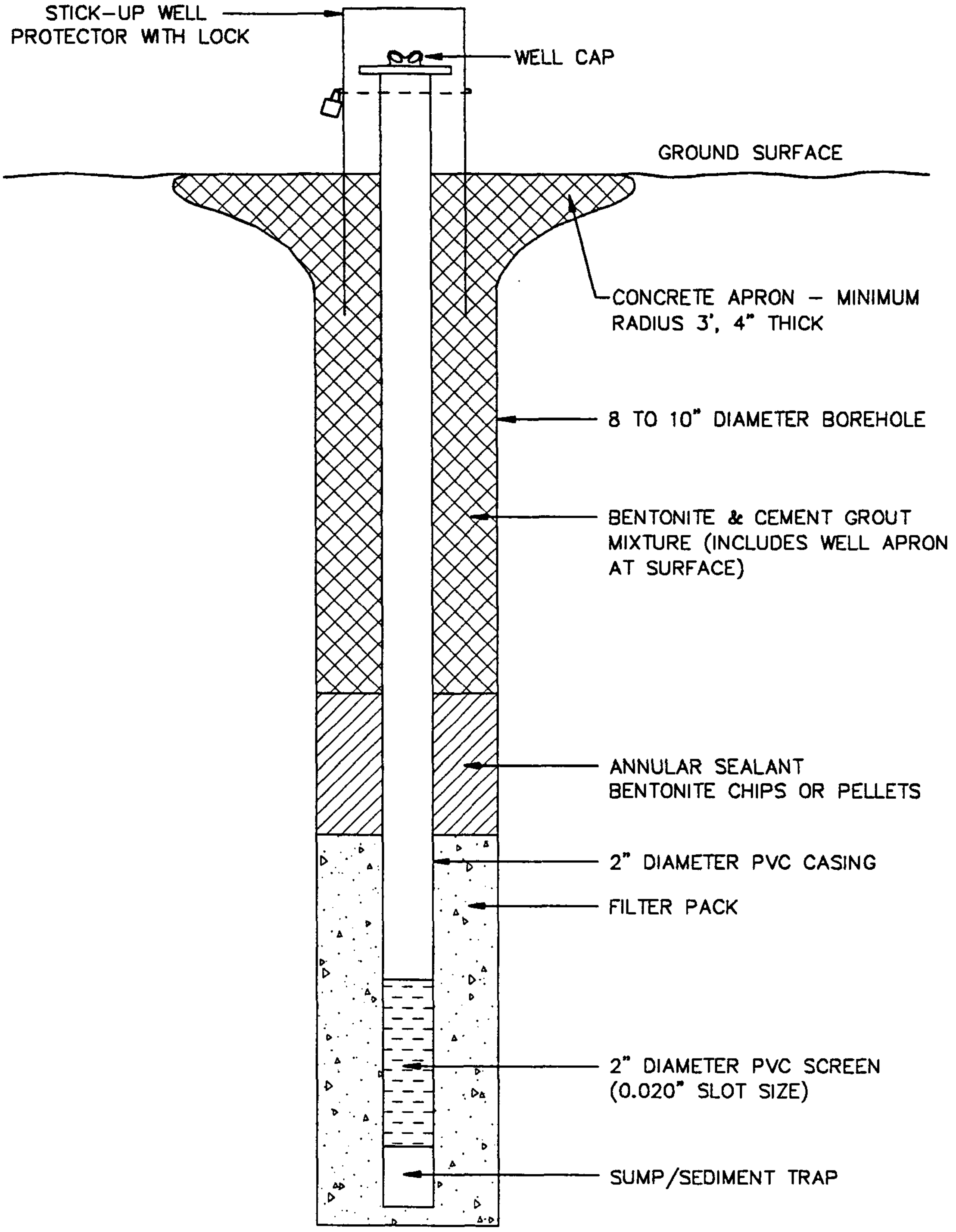

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FIGURE 2-2

GENERALIZED MONITOR WELL DESIGN

EXXON CHEMICAL COMPANY FACILITY
DAL PASO STREET SITE
HOBBS, NEW MEXICO

DRAWN BY: SG/SH	DATE: 1-21-94	PROJECT NUMBER:
CHK'D.BY:	REVISED:	1009-005-105

The drill rig used for the monitor well installation will arrive at the site in clean condition with decontaminated augers. Any additional equipment that may come into contact with the groundwater during the field activities will be decontaminated prior to use at the site.

2.3 Well Development, Sampling and Analysis

Following well installation, the monitor well will be developed until the pH and specific conductivity stabilize for three consecutive well volumes and the well is free of residual sediment left from drilling activities. At least 12 hours after well development, a groundwater sample will be collected using a new disposable bailer and new nylon cord. Sampling personnel will wear new plastic gloves during sampling activities. The groundwater will be poured directly from the bailer into appropriate sample containers, preserved as necessary, labeled, packaged and transported to an analytical laboratory along with completed chain-of-custody documentation. The sample will be analyzed for:

- Volatile Organic Compounds - U.S. EPA Method 8240
- Semivolatile Organic Compounds - U.S. EPA Method 8270
- Total RCRA Metals - U.S. EPA Method 6000, and
- Total Petroleum Hydrocarbons (TPH) - U.S. EPA Method 8015.

For quality assurance and control, a duplicate groundwater sample will be collected and submitted for the same analysis.

2.4 Technical Report

Upon completion of the outlined monitor well installation and sampling, a technical report will be submitted to the OCD. At a minimum the report will include the following:

- Descriptions of methods used and observations made while installing and sampling the monitor well;

- Figures showing the well construction and location; and

- The complete laboratory report with a summary of the analytical results.

Brown McCarroll and Oaks Hartline

Austin, Texas

ENSR

Engineering Evaluation/Cost Analysis Report for Exxon Chemical Company Facility 1715 Dal Paso Street Hobbs, New Mexico

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November 1992

Document Number 1009-001-150

Brown McCarroll and Oaks Hartline
Austin, Texas

Engineering Evaluation/Cost Analysis Report
Exxon Chemical Company Facility
1715 Dal Paso Street, Hobbs, New Mexico

ENSR Consulting and Engineering

November 1992

Document Number 1009-001-150

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(Cont'd)

APPENDICES

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EXECUTIVE SUMMARY

The purpose of this report is to compare removal action alternatives for hydrocarbon-contaminated soils at the former Exxon Chemical Company facility at 1715 Dal Paso Street in Hobbs, New Mexico.

The following removal alternatives were considered:

1. Excavation with disposal of soils at a nearby landfill.
2. Excavation, on-site treatment of soils by thermal desorption, and placement of treated soils as fill material on site.
3. Excavation, on-site treatment of soils using biological technology, and subsequent placement of soils as fill material on site.
4. Concrete capping of the contaminated area.
5. Vapor extraction of contaminated soils.
6. Chemical fixation of contaminants in soils.
7. Excavation, soil washing to extract contaminants from the soil, and replacement of treated soils as fill material on site.
8. Vitrification (fired in a furnace of kiln)
9. No action

Option Number 1 has been selected as the best alternative based on reduction of long term risk to groundwater and surface water, timeliness, feasibility, compliance with regulations, and cost of implementation. Option 1 is also the only alternative that will remove the lead soil contamination at the site.

1.0 INTRODUCTION

1.1 General

This report presents an Engineering Evaluation/Cost Analysis (EE/CA) of removal action alternatives for the hydrocarbon and lead contaminated soil located on the property owned by Exxon Chemical Company and located at 1715 Dal Paso Street in Hobbs, New Mexico. ENSR Consulting and Engineering (ENSR) prepared this EE/CA pursuant to 40 CFR 300.415(b)(4).

1.2 Basis of EE/CA

ENSR has conducted a removal investigation and prepared this Engineering Evaluation/Cost Analysis to:

- Evaluate commonly utilized methods of removing or treating hydrocarbons in soil;
- Reduce the list of viable removal options for detailed review; and
- Select a removal plan for the Hobbs, New Mexico site based on:
    - logistical limitations of conducting removal action on site;
    - ability to implement the selected removal action on a timely schedule;
    - operational monitoring and maintenance requirements;
    - post removal monitoring and maintenance; and
    - costs of removal action.

The goals of this evaluation process are to select the best available technology encompassing acceptable engineering principals and to propose a removal action plan which has both present and long-term effectiveness for the subject site.

2.0 SITE CHARACTERIZATION

2.1 Site Description

The subject property covers approximately 7 acres in Lea County and consists of a fenced yard area adjacent to Dal Paso Street and a vacant field extending north, south, and west of the fenced area. The fenced area contains three buildings and storage areas for aboveground tanks and drums. A trailer is located just outside the fenced area adjacent to the main building on Dal Paso Street. The buildings inside the fenced area are:

- the main building containing a storage area and office space on the east,
- a building containing truck bays and storage space (Building No. 1) just west of the main building, and
- a small building (Building No. 2) southeast of Building No. 1 used for storage of radioactive materials.

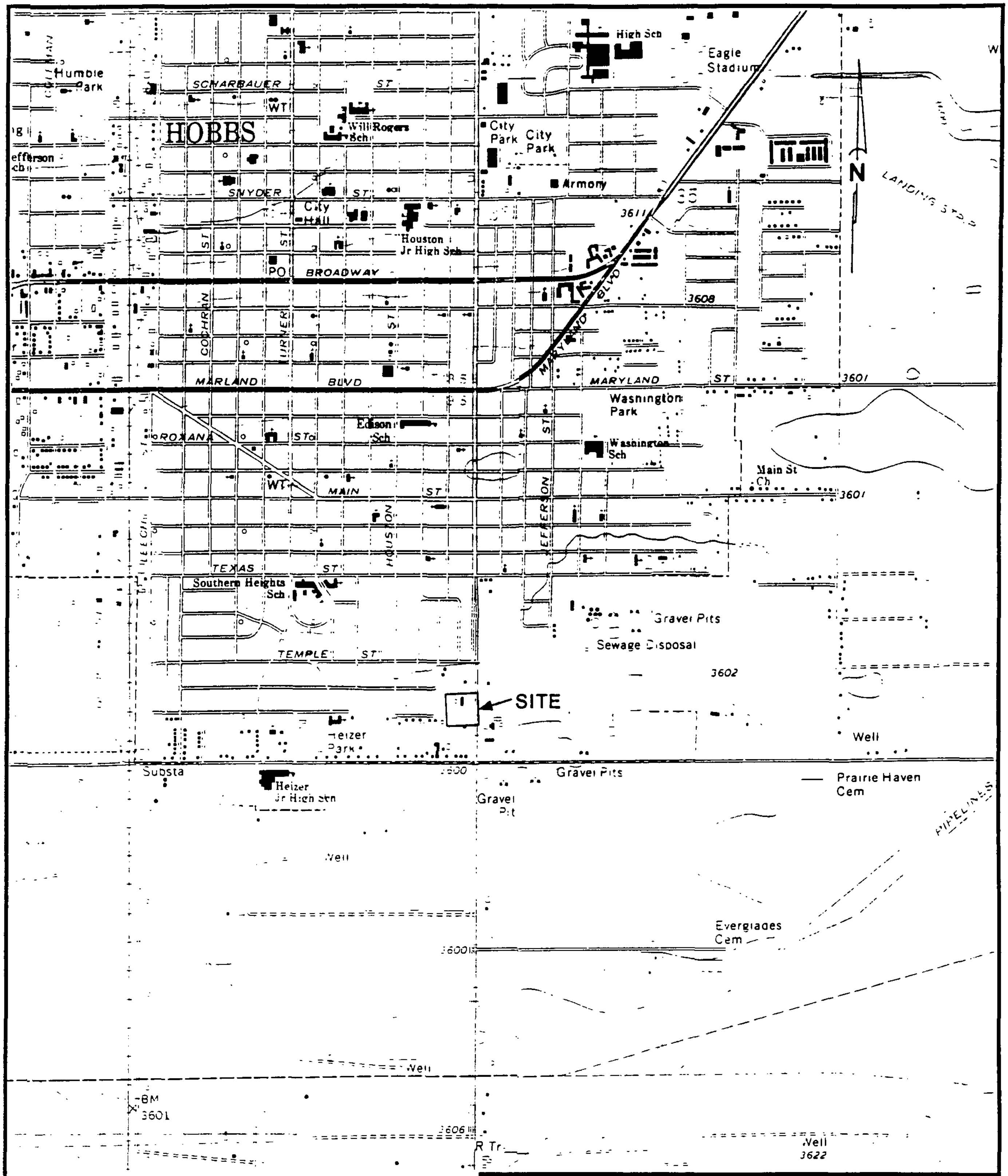
Figure 2-1 presents a map showing the property boundaries. Figure 2-2 presents a site plot plan of the inner fenced yard area.

2.2 Site Background

The site is currently occupied by Exxon Chemical Company (Exxon), who purchased the property in 1987 from NL Treating Chemical Co. NL Treating operated the site from 1969 to 1987. The NL Treating operation involved oil field chemicals distribution, storage and truck maintenance from 1969-1984. In 1984 NL Treating moved storage operations off site, but resumed storage in 1985. Reportedly NL Treating shared the yard with NL McCullough from 1969 to 1984. NL McCullough, an oil well (logging) service company, had owned and occupied the property since the 1940s.

Past activities at the site included:

- storage of oilfield chemicals and equipment;
- loading and unloading of chemicals and equipment from service trucks;



REFERENCE: U.S.G.S. Quadrangle Map for
Hobbs, New Mexico
1979.

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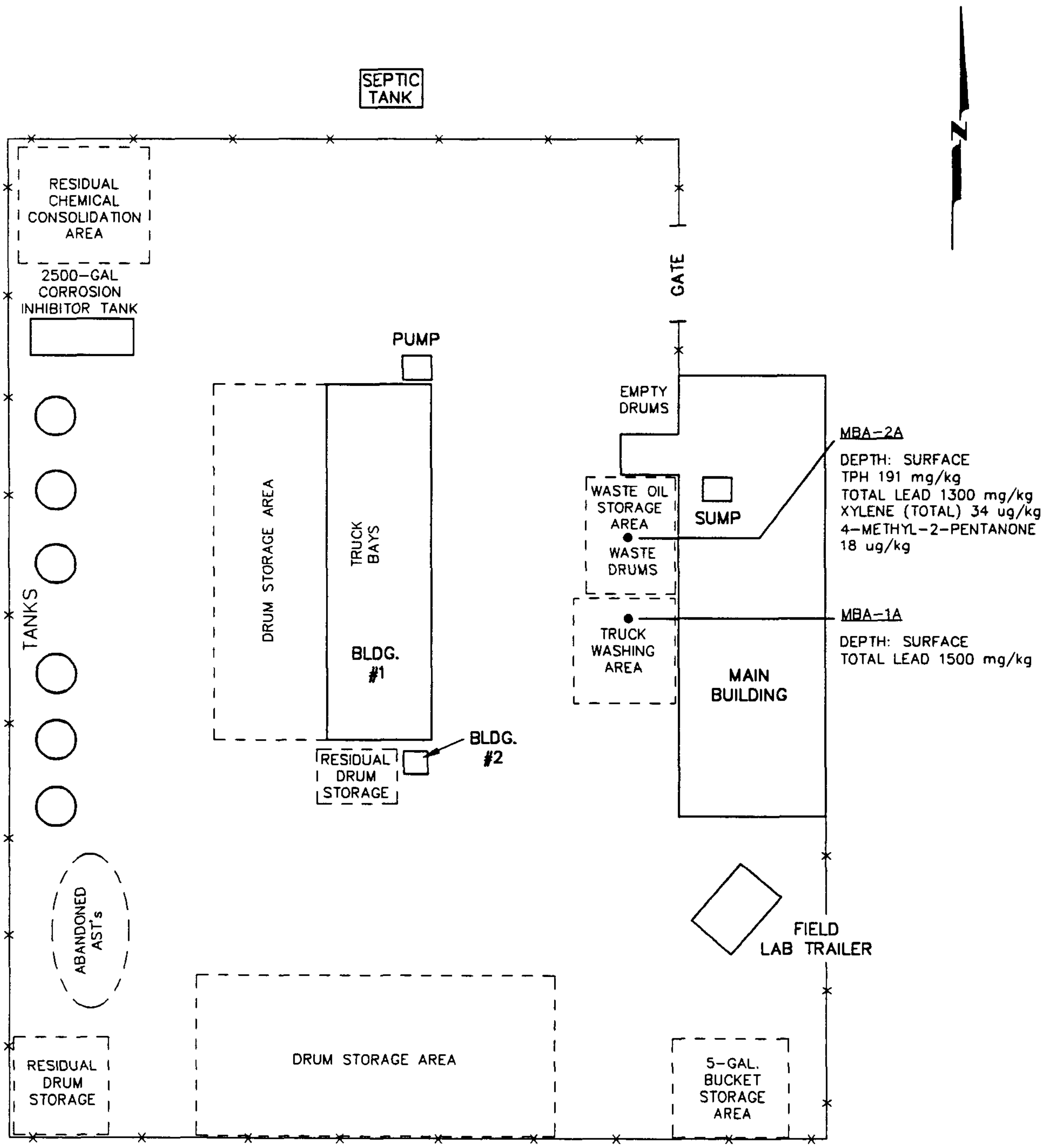
FIGURE 2-1
PROPERTY LOCATION
CHEMICAL DISTRIBUTION COMPANY
HOBBS, NEW MEXICO

DRAWN BY: S. GHANI	DATE: 10-19-92	PROJECT NUMBER:
CHK'D.BY:	REVISED:	1009-001-150



MBA-2A
DEPTH: SURFACE
TPH 191 mg/kg
TOTAL LEAD 1300 mg/kg
XYLENE (TOTAL) 34 ug/kg
4-METHYL-2-PENTANONE 18 ug/kg

MBA-1A
DEPTH: SURFACE
TOTAL LEAD 1500 mg/kg

NOT TO SCALE

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FIGURE 2-2
SITE PLOT PLAN
CHEMICAL DISTRIBUTION FACILITY
HOBBS, NEW MEXICO

DRAWN: SJF/SG/SH	DATE: 11-9-92	PROJECT NUMBER: 1009-001-160
APPV'D:	REVISED:	

- maintenance of service trucks, including washing, oil changes, fueling, etc; and
- consolidation of drum residues and drum recycling. Drum residues were shipped to NL in Houston, Texas via NL in Odessa, Texas, for reuse.

No underground storage tanks (USTs) are known to have been on the property. Reportedly, NL McCullough maintained a gasoline aboveground storage tank and fuel pump at the northeast corner of Building No. 1.

Exxon currently uses the property for administrative purposes only. With the exception of the office trailer, the property and buildings are currently vacant and unused.

2.3 Analytical Data

For the purpose of previous investigations the facility was divided into an inner fenced yard area containing the facility buildings and abandoned storage tanks, etc. and an outer vacant field that surrounds the fenced area to the north, south, and west.

A sampling program was conducted on site by ENSR to delineate the nature and extent of the site's soil contamination and to determine if the contamination was a potential threat to groundwater.

Soil samples were collected from areas displaying physical evidence of contamination, areas suspected to be impacted from past facility operations, and from grid points within a 100' grid system established across the entire site. The samples were collected from the soil surface to a maximum depth of 8 feet at the base of the former septic tank.

The depth of sampling varied with the depth of physical evidence of contamination or the depth of a suspected source of contamination (i.e., septic tank). If no physical evidence of soil contamination was present at a given area, a sample would be collected at the soil surface only. If physical evidence of contamination was present, samples were collected within the contaminated soil and from the visually clean soil below to confirm the depth of contamination.

The samples were primarily analyzed for Total Petroleum Hydrocarbons (TPH), pH, and Total RCRA Metals. Selected samples were additionally analyzed for Target Compound List (TCL) volatile organics (EPA Method 8240) and TCL semivolatile organics (EPA Method 8270) in areas displaying physical evidence of soil contamination and/or from process areas suspected of being contaminated. These analytical parameters were selected to more fully characterize the nature of the soil contamination at the site.

Physical and analytical evidence indicated hydrocarbon and/or lead soil contamination existed in the following two areas:

- Waste oil storage area - located directly behind and adjacent to the main building. The concrete slab and caliche surface pad in this area are heavily oil stained. Surface sample MBA-2A analysis indicated a TPH concentration of 191 mg/kg and a total lead concentration of 1300 mg/kg. Analysis of sample MBA-2B collected at a depth of two feet was below detection limit for TPH and had a total lead concentration of 10 mg/kg. Visual staining did not exist below a depth of six inches.

- Truck washing area - located directly behind the main building adjacent to and just south of the waste oil storage area. A yellow surface stain of unknown origin exists in this area. Analysis of surface sample MBA-1A revealed a total lead concentration of 1500 mg/kg. Sample MBA-1B collected at a depth of one foot was below detection limit for total lead. Both samples were below detection limit for TPH. The yellow stain exists at the surface only.

The above two areas are shown on Figure 2-2.

2.4 Site Conditions That Justify a Removal Action

The following conditions at the subject site warrant the proposed removal action:

- Potential exposure to nearby human populations, animals, or the food chain from pollutants or contaminants.

- Potential contamination of drinking water supplies. (Water supply wells are known to exist on site and in the immediate vicinity.)

- Weather conditions that may cause pollutants or contaminants to migrate or be released (stormwater infiltration may cause migration of contaminants).

The following health effect information is provided for the contaminants of concern at the subject site.

> <u>Lead</u> - a soft, blue-gray metal and a cumulative poison. The main routes of exposure are inhalation and ingestion of lead-contaminated materials. Chronic lead exposure may result in red blood cell damage, weakness, lassitude,

anoxeria, numbness and tingling of extremities, visual and central nervous system damage. TLV - 0.15 mg/m^3.

Petroleum hydrocarbons (TPH) - Volatile components are not likely to be encountered at levels that make vapor inhalation a concern. However, inhalation of contaminated soil dust and contact with contaminated soil may be a concern.

3.0 IDENTIFICATION OF REMOVAL ACTION OBJECTIVES

3.1 Statutory Limits on Removal Actions

This removal action is wholly funded by a Potentially Responsible Party (PRP). Therefore, no statutory limitations apply.

3.2 Removal Action Scope

Upon discovery of soil contamination at the site, Exxon contacted the State of New Mexico Oil Conservation Division (OCD). On July 31, 1992 detailed site information and analytical data were presented in a meeting with Mr. Roger C. Anderson and other representatives of the OCD. Based upon the information and data submitted, the OCD stated that a removal action was appropriate to clean up contaminated soil that contains contaminants in excess of state cleanup levels or above EPA Regulatory limits. The OCD requested that a workplan be prepared describing the removal action once a removal alternative has been chosen.

The scope of this project is to address the site conditions that justify a removal action. To that end, the goal of the project is to clean up the site to the contaminant levels set by the New Mexico Oil Conservation Division. (The cleanup level for lead has not yet been established by the OCD.)

The areas to be addressed at the site are the truck washing area and the adjacent waste oil storage area, both of which are located directly behind the main building. For the purpose of this removal action, the two areas will be addressed in a single excavation. The TPH and lead contaminated soils will be removed to a depth of 2 feet (as indicated by previous sample analysis) or until verification sampling indicates all contaminated soil above the cleanup criteria have been removed.

3.3 Removal Action Schedule

The threat of contamination appears limited to soil, and therefore is not viewed as requiring immediate removal. However, these contaminated soils may pose a threat to groundwater if left in place. The Removal Action Workplan which will be submitted to the OCD will be revised as necessary following the 30-day comment period required for this document. The field work involved in the removal action will take approximately one week to complete. Weather conditions may affect the work schedule. The removal action at the site is scheduled to take place in January 1993.

3.4 Applicable or Relevant and Appropriate Requirements (ARARs)

The New Mexico Oil Conservation Division (OCD) is considered the lead agency and has oversight for the Hobbs, New Mexico site.

The following are the clean up levels to be used in the removal action:

TPH: Maximum TPH concentration is set at 100 ppm using EPA analytical Modified Method 8015. The TPH cleanup level has been set by the OCD.

Lead: The proposed cleanup criteria for total lead will be the local background levels as seen in the yard grid samples collected in the vacant lot area of the facility to the west of the fenced yard area. The background total lead concentrations from the yard grid samples ranged from below detection limit to 110 ppm.

These cleanup levels are considered chemical-specific and location specific ARARs for the site. Based on the cleanup levels approximately 50 cubic yards of soil will require remediation.

All applicable or relevant and appropriate federal and state requirements are also considered ARARs for this site. Such ARARs will be attained to the extent practicable considering the requirements of the situation.

4.0 IDENTIFICATION OF REMOVAL ACTION ALTERNATIVES

This section addresses the screening and assessment of removal action alternatives for the cleanup of contaminated soils at the Exxon Chemical facility on Dal Paso Street in Hobbs, New Mexico. The primary objective of this section of the EE/CA is to develop a range of removal action options that will be analyzed more fully in the detailed analysis section of this report. Appropriate removal action alternatives may include complete elimination or destruction of contaminants at the site; reduction of contamination concentrations to acceptable levels; or prevention of exposure to contaminants by engineering or institutional controls; or some combination of the above.

Nine removal action alternatives were screened on the basis of technical feasibility, cost effectiveness, risk to the environment, timeliness and consistency with agency guidelines. Removal action alternatives for the lead and hydrocarbon contaminated soils include the following:

1. Excavation with disposal of soils at a nearby landfill.
2. Excavation, on-site treatment of soils by thermal desorption.
3. Excavation ,on-site treatment of soils using biological technology.
4. Concrete capping of the contaminated area.
5. Vapor extraction of contaminated soils.
6. Chemical fixation of contaminants in soils.
7. Excavation, soil washing to extract contaminants from the soil.
8. Vitrification (fired in a furnace of kiln)
9. No action

Table 4-1 presents each alternative and the criteria upon which each was screened. Three of the nine removal alternatives were selected for detailed evaluation and are discussed in Section 5.0 of this report.

The following is a brief explanation regarding the non-selection of the six remaining removal action alternatives.

- Concrete capping of the contamination is not a long-term solution to the on-site contamination problem; it does not remove the threat of groundwater contamination.
- Vapor extraction is not applicable to the lead contaminated soils at the site. Site-specific ARARs would not be achieved.
- Chemical fixation of contaminants in soil would greatly increase the volume of soils on site requiring disposal of treated material. In addition, the long-term reliability of the technology is not certain.
- Soil washing of excavated soils to extract contaminants is not cost effective and treatment units are not readily available.
- Vitrification is an energy intensive process which requires very high levels of heat and is therefore very costly.
- The "no action" alternative is not a long-term solution to the on-site contamination. Groundwater may be at risk of contamination if a removal action is not performed at the site.

The three removal action alternatives selected for evaluation are discussed in detail in Sections 5.1 through 5.3 of this report. The best alternative for the facility is to excavate and dispose of contaminated soils in a suitable landfill as described in Section 5.1.

TABLE 4-1

Screening of Removal Alternatives
Exxon Chemical Company
Hobbs, New Mexico

Alternative	Remedial Approach (P) Physical (C) Chemical (B) Biological	Need for Additional Studies (Y/N)	Meets or Exceeds Acceptable Clean-up Criteria (Y/N)	Will Contaminant Be Destroyed? (Y/N)	Subcontractor Required? (Y/N)	Evaluation Rating Category					Totals
						A	A	B	B	A	
						Time	Practicality	Long Term Liability Risk	Operating Complexity	Prospect for Achieving Project Goals	
1. Excavation, Landfill	P	N	Y	N	Y	4	4	4	4	4	20
2. Excavation, Thermal Desorption	P	Y	N	N	Y	2	0	1	3	0	6
3. Excavation, Biotreatment	B	Y	N	N	Y	1	0	1	2	0	4
4. Concrete Capping	P	Y	N	N	Y	4	0	1	4	0	9
5. Vapor Extraction	P	Y	N	N	Y	1	0	1	2	0	4
6. Chemical Fixation	C	Y	N	N	Y	2	0	1	2	0	5
7. Excavation, Soil Washing	C	Y	N	N	Y	2	0	1	1	0	4
8. Vitrification	P	Y	N	N	Y	3	0	1	2	0	6
5. No Action	P	N	N	N	N	5	0	0	5	0	10

Category Rating:

A - 0-unacceptable; 1-poor; 2-fair; 3-average; 4-good; 5-excellent.
B - 1-high; 2-med-high; 3-med; 4-med-low; 5-low

5.0 ANALYSIS OF REMOVAL ACTION ALTERNATIVES

An analysis of the three selected removal action alternatives for the hydrocarbon-contaminated soils has been performed for the Exxon Chemical Company property located in Hobbs, New Mexico. A summary of each alternative's detailed evaluation criteria is presented in Section 6.0, including Table 6-1, of this report. A detailed analysis of each alternative is presented in parts 5.1 to 5.3 of this section and consists of the following components:

- Effectiveness:
  - protectiveness of the community and workers
  - threat reduction
  - time until protection achieved
  - compliance with ARARs
  - environmental impacts
  - potential exposure to remaining risks
  - long-term reliability
- Implementability:
  - technical feasibility, including ability to construct and operate
  - compliance with ARARs
  - ability to meet processes efficiencies/performance goals
  - demonstrated performance of technology
  - environmental conditions
  - availability of equipment and materials
  - administrative feasibility of obtaining appropriate permits and coordinating actions
- Total Cost of the Alternative

5.1 Alternative 1 - Excavation and Landfilling

Alternative 1 involves excavation of the lead- and hydrocarbon-contaminated soils on the subject site and subsequent disposal at a nearby landfill. This alternative provides for an efficient removal action of the estimated 50 cubic yards of soil requiring removal. It is a direct, straightforward approach to removal action.

5.1.1 Effectiveness

Protection of the community during both the short-term and long-term periods is achieved through this option. Although contaminated soils are removed from the site, precautionary measures will be taken to protect the community. These measures include:

- limited site access during removal action activities;
- tarping of transport vehicles during shipment;
- shipment manifesting; and
- final disposal in a designated landfill.

Potential exposure pathways for workers include ingestion or inhalation of dust particles as soil is removed and transferred to the transport vehicles, or direct contact with contaminated soil. Worker exposure during removal activities can be minimized with appropriate personal protective equipment. Exposure to persons working near or passing by the area will be minimized by control of the removal action to prevent excessive dust. This will be described in detail in the work plan.

Landfilling provides a timely method of remedial action for lead and hydrocarbon contaminated soils. Implementation of this alternative is anticipated to be 1 week, and therefore, does not involve a lengthy process to achieve clean-up goals.

The actions described in this option mitigate the threats identified in Sections 2.4 and 3.0 of this report. It is anticipated that soils would be removed in layers in each of the specified areas, to a depth where TPH and lead concentration levels meet the required clean-up criteria. Confirmation sampling would be performed prior to backfilling the excavated area. The actions of this alternative allow compliance with the chemical-specific ARARs identified in Section 3.4 of this report. Environmental impacts are minimized in regard to implementing this removal action. Clean backfill soils are to be placed on site in the excavated areas. Off-site disposal eliminates the potential for future on-site exposure to contaminants and affords an effective solution in terms of long-term reliability.

Off-site landfilling of the hydrocarbon and lead contaminated soils is easily facilitated for this site, and is considered by OCD as an appropriate, effective removal action.

5.1.2 Implementability

The area of concern contains approximately 50 cubic yards of lead and hydrocarbon contaminated soil. This proposed alternative allows the soils to be excavated, removed from the site, with tentative disposal in the nearby CRI Landfill located west of Hobbs, New Mexico. The soils would be excavated from the area of concern. A staging area would be designated for stockpiling excavated soils. Additional sampling and analysis, if required, could be performed at this stage. All soils designated for disposal would be properly manifested for transport to the landfill. The CRI Landfill is a permitted facility. Triassic Age shales which are virtually impermeable underlie the landfill preventing vertical seepage of waters from the site into underlying non potable freshwater sands. Surface water flow is minimal due to the dry climate and low humidity. The landfill, therefore, has a very low potential for adversely impacting groundwater.

Implementation of this removal action alternative does not require engineering design or construction of remediation equipment. Excavation with off-site landfill disposal is a direct, straight forward approach for removal action.

Schedule delays are not anticipated, however unanticipated interruptions to the proposed schedule can occur. Potential schedule delays include inclement weather and mechanical failure of removal or transport equipment. Other difficulties, specific to this alternative, which could be encountered include inability to reach targeted clean-up levels through excavation of contaminated soils although the likelihood of this is considered very low.

It is anticipated that excavation will enable clean up according to the ARARs discussed in Section 3.4 of this report. Off-site landfilling provides physical removal of contaminated soils to a specified, contained location. The removal action is designed to prevent the need for removal restarts to address the same contamination threats. Landfilling non-hazardous soils is commonly approved by regulatory agencies. Permits would not be required for soil removal at the site. All soil shipments would be manifested so that each shipment is tracked from the site to its final destination.

Equipment, materials, and personnel would be readily available locally, and during the anticipated project time schedule. The landfill is within a reasonable distance (approximately 1.5 hours from the site). Upon disposal of soils in the landfill, clean backfill soil from soil pits in the Hobbs area would be transported to the site. The excavation area would then be backfilled and compacted with the clean soil.

This alternative should be publicly acceptable as it allows contaminated soils to be permanently removed from the site and placed at CRI or a similar landfill. This is a good long-term solution for the site because:

- no future environmental endangerment would occur to at the site;
- the work can be accomplished in a timely manner;
- no operational maintenance of a treatment system is required; and
- post-removal site control measures should not be required.

5.1.3 Total Cost

The following table indicates approximate costs for implementing Alternative 1. These include excavation of contaminated soil, transport of contaminated soil and backfill material, backfill operations, purchase of backfill material, associated labor costs, project management and other miscellaneous costs associated with implementing this alternative.

ALTERNATIVE 1 - ESTIMATED COSTS

Task	Approximate Cost ($ per cubic yard)	Total Cost ($)
Excavate, Backfill and Compact Hole with Clean Soil	14.30	715
Verification Sampling		3264
Backfill Material	5.75	345
Transport	10.60	1375
Disposal Fees	27.00	1890
Project Management		16610
ESTIMATED TOTAL		24199

5.2 Alternative 2 - Excavation and Thermal Desorption

Alternative 2 involves thermal desorption, a low-temperature treatment for excavated soils. Incineration would be used in conjunction with the soil treatment to destroy volatile contaminants released from the heated soils. This alternative would not eliminate the lead contamination within the soil.

5.2.1 Effectiveness

Short-term and long-term protection of the community is not achieved through this option. Because of the lead contamination, the actions of this alternative will not allow compliance with the chemical-specific ARARs identified in Section 3.4 of this report. Environmental impacts are not minimized in regard to implementing this removal action. Lead contamination is not destroyed or removed; therefore, treated soils can not be used as backfill for the excavated areas. Destruction of hydrocarbon contaminants alone does not eliminate the potential for future on-site exposure. This appears to be an ineffective solution in terms of long-term reliability.

The use of this alternative provides only a partially effective alternate to consumptive use of landfills and does not provide for the final destruction of all contaminants.

5.2.2 Implementability

It is anticipated that excavation and thermal desorption could not enable complete clean up according to the ARARs discussed in Section 3.4 of this report. The thermal desorption process provides destruction/elimination of hydrocarbon contaminants in the soil but not the lead. The removal action is designed to prevent the need for removal restarts to address the same contamination threats only if the contaminants are hydrocarbon compounds.

This alternative may not be publicly acceptable as it does not provide for elimination of all of the contaminants from the soils. This is not an effective long-term solution for the site removal action since there would be future environmental endangerment at the site.

5.2.3 Total Cost

Although Alternative 2 is not a viable option, the following table indicates approximate costs for implementation of the alternative. These costs will be used only for comparison to the other alternatives investigated. The estimated costs include:

- excavation of contaminated soil;
- mobilization/demobilization of equipment;
- soil treatment by thermal desorption/incineration system, backfill material and fill operations;
- project management, engineering and design; and other miscellaneous costs associated with implementing this alternative.

ALTERNATIVE 2 - ESTIMATED COSTS

Task	Approximate Cost ($ per cubic yard)	Total Cost ($)
Preliminary Soil Testing		10,000
Excavate, Backfill, and Compact Hole with Clean Soil	14.30	715
Mobilization/Demobilization of Treatment System		10,000
Soil Treatment by Low Temp Desorption System	65.00	3,250
Verification Sampling		3,000
Project Management, Engineering and Design		16,610
ESTIMATED TOTAL		43,575

5.3 Alternative 3 - Excavation and Biological Treatment

Biological treatment technologies, which use naturally occurring microbes to destroy organic contaminants in the soil, can be applied ex-situ (soils are excavated and treated on site). This alternative would incorporate a bioremediation system to treat excavated soils on site. Aboveground treatment of the soils allows better control of materials and treatment agents, and therefore residual concentrations of organic contaminants are generally lower than if the soils are treated in place. However, this alternative does not eliminate lead contamination in the soil.

5.3.1 Effectiveness

Biological treatment does not provide a timely method of removal action in comparison to the other removal action alternatives investigated for this site. Primarily because biological treatment will not remove or destroy lead contamination, considerable time may be involved in performing a treatability study prior to beginning removal activities and achieving a steady optimum operation following start up. Permitting for the system could delay start up by as long as 3 to 6 months. Biological treatment of the soils in the area of concern could be expected to last in excess of one year.

Environmental impacts are partially minimized in regard to implementing this removal action. Hydrocarbon contaminants are destroyed but is not lead; therefore, treated soils cannot be used as backfill for the excavated areas. Additionally, the potential for future on-site exposure is not eliminated. This appears to be an ineffective solution in terms of long-term reliability.

5.3.2 Implementability

It is anticipated that excavation and biodegradation can not enable clean up according to the ARARs discussed in Section 3.4 of this report. The biodegradation process provides destruction/elimination of hydrocarbon contaminants in the soil but not lead. The removal action is designed to prevent the need for removal restarts to address the same contamination threats.

This alternative involves a process whereby organic contaminants only are destroyed. Application of the technology may not be publicly acceptable since the process only partially destroys the contaminants, thus the potential future exposure to contaminants (lead) remains.

5.3.3 Total Cost

Although this alternative is not a viable option, the following table indicates approximate costs for implementing Alternative 3 and was constructed for comparison use only. These include:

- excavation of contaminated soil;
- mobilization/demobilization of equipment;
- treatment of soils by bioremediation;
- backfill operations;
- project management, engineering and design; and other miscellaneous costs associated with implementing this alternative.

ALTERNATIVE 3 - ESTIMATED COSTS

Task	Approximate Cost ($ per cubic yard)	Total Cost ($)
Perform Treatability Study		15,000
Excavate, Backfill, and Compact Hole with Clean Soil	14.30	715
Mobilization/Demobilization of Treatment Equipment		5,000
Soil Bioremediation	120.00	6000
Treatment Verification Sampling		3000
Project Management, Engineering and Design		20,000
ESTIMATED TOTAL		49,715

6.0 COMPARATIVE ANALYSIS

The purpose of the comparative analysis is to present a qualitative assessment of strengths and weaknesses of each alternative relative to the others. Table 6-1, following Section 6.0, presents a summary of the alternatives and evaluation criteria.

Alternative 1 - Excavation and Off-Site Landfilling

The following points summarize the technical, environmental, health risk, and institutional aspects of performing the excavation and off-site landfilling removal action alternative.

Strengths	Weaknesses
• No engineering design or construction of remedial system. • No post-removal monitoring. • Low cost. • Reduces/eliminates stormwater erosion of contaminated soil. • Timely resolution. • Ability to achieve chemical-specific ARARs.	• Contaminants are not destroyed. • Maintain a level of liability for contaminated soil at landfill. • Purchase backfill.

Alternative 2 - Excavation and On-Site Thermal Treatment

The following points summarize the technical, environmental, health risk, and institutional aspects of performing the excavation and on-site thermal treatment removal action alternative.

Strengths	Weaknesses
• Hydrocarbon contaminants are destroyed.	• Will not eliminate lead contamination in soil. • Requires additional analytical data. • Considerable operating and maintenance required. • High cost. • Requires landfill disposal • Purchase backfill

- Maintains a level of liability for contaminated soil on site.

Alternative 3 - Excavation and On-Site Biological Treatment

The following points summarize the technical, environmental, health risk, and institutional aspects of performing the excavation and on-site biological treatment removal action alternative.

Strengths

- Hydrocarbon contaminants are destroyed.

Weaknesses

- Will not eliminate lead contamination in soil.
- Treatability study required.
- High cost.
- Extensive permitting.
- Extensive design, engineering and construction.
- Lengthy start-up period prior to stabilization.
- Extensive operating and maintenance required.
- Landfill disposal still required.
- Purchase backfill
- Maintains a level of liability for contaminated soil on site.

TABLE 6-1

Summary of Detailed Removal Alternatives
Exxon Chemical Company
Hobbs, New Mexico

Removal Action Alternative	Technical Considerations	Environmental Considerations	Human Health	Institutional	Time-Frame/ Schedule	Cost Estimate (x $1000)	
						Construction and Materials	PM/E&D
1. Excavation of Soil Transport - Landfill Disposal - Backfill with Clean Soil	-no post removal monitoring, -reduces/eliminates on-site and off-site environmental liabilities, -cost effective, -no engineering design or construction required, -does not destroy contamination.	-protective of the environment, -potential exposure to lead contaminated soil and dust during exposure, -reduces the potential for contaminants to leach into groundwater,	-reduces and/or eliminates future contact with contaminated soil. -as soil is removed and treated, dust may be generated that may be inhaled on ingested. -reduces and/or eliminates amount of infiltration to the groundwater.	-approved by regulatory agencies for previous sites.	1 week	7.6	16.6

TABLE 6-1 (Cont'd)

Summary of Detailed Removal Alternatives
Exxon Chemical Company
Hobbs, New Mexico

Removal Action Alternative	Technical Considerations	Environmental Considerations	Human Health	Institutional	Time-Frame/ Schedule	Cost Estimate (x $1000)	
						Construction and Materials	PM/E&D
2. Excavation of soil - On-site thermal desorption - Backfill with clean soil	-moderate design, engineering and construction required. -extensive operating and maintenance required as well as additional laboratory analysis. -not cost effective. -cannot use treated soil as backfill -will still need to dispose of soil at landfill	-potential exposure to hydrocarbon contaminated air emissions during implementation, -hydrocarbon contaminants are destroyed. -Lead remains in soil.	-as soil is removed dust may be generated that may be inhaled or ingested. Does not eliminate future contact with contaminated soil.	-approved by regulatory agencies on other occasions for other facilities.	1 week	27	16.6

TABLE 6-1 (Cont'd)

Summary of Detailed Removal Alternatives
Exxon Chemical Company
Hobbs, Mexico

Removal Action Alternative	Technical Considerations	Environmental Considerations	Human Health	Institutional	Time-Frame/ Schedule	Cost Estimate	(x $1000)
						Construction and Materials	PM/E&D
3. Excavation of soil - On-site Bioremediation - Backfill with clean soil.	-moderate design, engineering and construction required, -treatability study required, -not cost effective. -considerable start-up time required to stabilize system, -extensive operating and maintenance required as well as periodic laboratory analysis of samples. -cannot use treated soil as backfill. -will still need to dispose of soil at landfill	-potential exposure to hydrocarbon contaminated air emissions during implementation, -Hydrocarbon contaminants are destroyed. Lead contamination remains in soil	-as soil is removed hydrocarbon and lead contaminated dust may be may be generated that may be inhaled or ingested. -Does not eliminate future contact with contaminated soil.	-approved by regulatory agencies, on other occasions for other facilities. -extensive permitting requirements	1 week	29.7	20

7.0 PROPOSED REMOVAL ACTION

Excavation and landfilling (Alternative 1, Section 3) is recommended for the Hobbs, New Mexico. This alternative adequately meets the removal action goals set for the site.

Excavation with landfill disposal is the most feasible alternative for soils at this site. This alternative:

- requires no engineering design, construction or permitting of a treatment system;
- reduces/eliminates on-site and off-site environmental liabilities;
- reduces/eliminates potential stormwater erosion of hydrocarbon- and lead-contaminated materials;
- reduces/eliminates potential for future exposure to contaminants on site;
- reduces/eliminates the potential for contaminants to leach into groundwater; and
- provides a cost effective remedial action.

The selection of the excavation and landfilling option incurs minimal costs as compared to other alternatives. This alternative provides the best combination of positive corrective actions with the minimal number of adverse impacts and is considered to be the most cost-effective method of remediating the site. This alternative is the only effective method of removing the lead contaminated soil.

APPENDIX A

ANALYTICAL RESULTS

Analytical Test Results
Site Inspection
Exxon Chemical Americas
Hobbs, NM
Dal Paso Site

Sample I.D.	Location	Depth	TPH 8015 (M) (mg/kg)	Total Metals (mg/kg)								pH	Detected Total Volatiles Code(ug/kg)	Detected Total Semivolatiles Code(ug/kg)
				Ag	As	Ba	Cd	Cr	Hg	Pb	Se			
YS-1A	Yard Grid Sample	Surface	BDL	BDL	9.8	89	BDL	8.0	BDL	31	0.3	7.99		
YS-2A	Yard Grid Sample	Surface	BDL	BDL	9.9	120	BDL	7.0	BDL	BDL	BDL	8.12		
YS-3A	Yard Grid Sample	Surface	BDL	BDL	3.1	120	BDL	6.2	BDL	24	BDL	7.64		
YS-4A	Yard Grid Sample	Surface	BDL	BDL	2.4	110	BDL	15	BDL	9.9	BDL	7.65		
YS-5A	Yard Grid Sample	Surface	BDL	BDL	1.1	73	BDL	7.8	BDL	8	BDL	7.87		
YS-6A	Yard Grid Sample	Surface	BDL	BDL	1.1	110	BDL	6.6	BDL	21	BDL	7.72		
YS-7A	Yard Grid Sample	Surface	BDL	BDL	1.2	63	BDL	7.9	BDL	6	BDL	7.98		
YS-8A	Yard Grid Sample	Surface	BDL	BDL	1.0	58	BDL	7.6	BDL	BDL	BDL	7.99		
YS-9A	Yard Grid Sample	Surface	BDL	BDL	1.6	100	BDL	6.1	BDL	8.4	BDL	7.84		
YS-10A	Yard Grid Sample	Surface	BDL	BDL	0.8	71	BDL	5.9	BDL	8.2	BDL	8.07		
YS-11A	Yard Grid Sample	Surface	BDL	BDL	0.8	91	BDL	5.7	BDL	14	BDL	7.97		
YS-12A	Yard Grid Sample	Surface	BDL	BDL	4.0	3800	BDL	15	BDL	37	0.4	7.77		
YS-13A	Yard Grid Sample	Surface	BDL	BDL	2.0	330	BDL	16	BDL	110	BDL	7.57		
YS-14A	Yard Grid Sample	Surface	BDL	BDL	1.4	140	BDL	8.1	BDL	21	BDL	7.96		
YS-15A	Yard Grid Sample	Surface	BDL	BDL	1.2	130	BDL	7.4	BDL	24	BDL	7.79		
YS-16A	Yard Grid Sample	Surface	BDL	BDL	12	110	BDL	10	BDL	120	BDL	7.78		
YS-17A	Yard Grid Sample	Surface	BDL	BDL	1.3	160	BDL	8	BDL	35	BDL	7.83		
YS-18A	Yard Grid Sample	Surface	BDL	BDL	4.1	3100	BDL	24	0.6	110	BDL	7.85		
YS-19A	Yard Grid Sample	Surface	BDL	BDL	1.8	140	BDL	10	BDL	21	BDL	7.92		
YS-20A	Yard Grid Sample	Surface	BDL	BDL	2.1	170	BDL	8.4	BDL	38	BDL	7.79		
YS-21A	Yard Grid Sample	Surface	BDL	BDL	1.7	220	BDL	9.8	BDL	86	BDL	8.01		
YS-22A	Yard Grid Sample	Surface	BDL	BDL	2.4	180	BDL	14	BDL	45	BDL	7.80		
YS-23A	Yard Grid Sample	Surface	BDL	BDL	2.4	130	BDL	12	BDL	19	BDL	8.18		
YS-24A	Yard Grid Sample	Surface	BDL	BDL	2.1	82	BDL	9.8	BDL	9.9	BDL	8.06		
LD-1A	Loading Dock Area	Surface	BDL	BDL	2.7	250	BDL	7.0	BDL	130	0.3	8.99		
AST-1A	Above Ground Storage Tank Area	Surface	BDL	BDL	1.2	94	BDL	7.9	BDL	8.3	BDL	7.59		
SPT-1A	Septic Tank Area	8'	BDL	BDL	2.2	96	BDL	9.5	BDL	BDL	BDL	8.31		
MBA-1A		Surface	BDL	1.5	6.0	380	3.6	59	0.3	1500	0.8	8.47		
MBA-1B		1'	BDL	BDL	2.7	190	BDL	5.1	BDL	BDL	BDL	8.76		
MBA-2A		Surface	191	BDL	4.4	350	BDL	32	BDL	1300	BDL	8.71	1(30)(B), 2(16), 3(34), 5(18)	None Detected
MBA-2B		2'	BDL	BDL	1.5	62	BDL	10	BDL	10	BDL	8.20		
Sump 1B	Sump Area	5'	BDL	BDL	6.5	95	BDL	13	BDL	BDL	BDL	8.05		
Sump 2B	Sump Area	5'	BDL	BDL	4.3	96	BDL	12	BDL	BDL	BDL	8.22		
YS-15X	QA/QC Samples	Surface	BDL	BDL	1.2	110	BDL	8	BDL	20	BDL	7.80		
YS-22X	QA/QC Samples	Surface	BDL	BDL	2.5	180	BDL	14	BDL	46	BDL	7.82		
Trip Blank	QA/QC Sample												1(22)(B), 2(5)	
Equipment Blank	QA/QC Sample			BDL	0.005	0.002	BDL	0.2	BDL	0.02	BDL	1.64	1(7)(B), 4(10)	None Detected

LEGEND

BDL = Below analytical detection limit

Blank cells indicate that the sample was not analyzed for that parameter.

COMPOUND CODE FOR VOLATILES

1) Acetone
2) Methylene Chloride
3) Xylene (total)
4) Bromoform
5) 4-methyl-2-pentanone

Summary of Analytical Results
In-Situ Waste Classification Samples
Exxon Chemical Company Facility
1715 Dal Paso Street
Hobbs, New Mexico
Date Sampled: 9-3-92

Analytical Parameters	Regulatory Threshold Limit	Sample ID: DP-1 Depth: 0'-2'		Sample ID: DP-2 Depth: 6'-8'	
TCLP Semivolatiles (µg/l)		**Level Detected**	**Detection Limit**	**Level Detected**	**Detection Limit**
1,4-Dichlorobenzene	7,500	<13	13	<10	10
2-Methylphenol	200,000	<13	13	<10	10
4-Methylphenol	200,000	<13	13	<10	10
3-Methylphenol	200,000	<13	13	<10	10
Hexachloroethane	3,000	<13	13	<10	10
Nitrobenzene	2,000	<13	13	<10	10
Hexachlorobutadiene	500	<13	13	<10	10
2,4,6-Trichlorophenol	2,000	<13	13	<10	10
2,4,5-Trichlorophenol	400,000	<66	66	<50	50
2,4-Dinitrotoluene	130	<13	13	<10	10
Hexachlorobenzene	130	<13	13	<10	10
Pentachlorophenol	100,000	<66	66	<50	50
TPH		34	25	<25	25
RCRA Characteristics					
pH	2<pH<12.5	8.57 units	0.01 units	8.13 units	0.01 units
Corrosivity	>6.35 MMPY	Unable to analyze due to matrix		Unable to analyze due to matrix	
Ignitability	<140°F	Unable to analyze due to matrix		Unable to analyze due to matrix	
Reactivity - HCN - H_2S	 250 mg/kg 500 mg/kg	 <0.40 mg/kg 245 mg/kg	 0.40 mg/kg 20 mg/kg	 <0.40 mg/kg 146 mg/kg	 0.40 mg/kg 20 mg/kg

Summary of Analytical Results
In-Situ Waste Classification Samples
Exxon Chemical Company Facility
1715 Dal Paso Street
Hobbs, New Mexico
Date Sampled: 9-3-92

Analytical Parameters	Regulatory Threshold Limit	Sample ID: DP-1 Depth: 0'-2'		Sample ID: DP-2 Depth: 6'-8'	
TCLP Metals (mg/l)		**Level Detected**	**Detection Limit**	**Level Detected**	**Detection Limit**
Arsenic	5.0	<0.2	0.2	<0.2	0.2
Barium	100.0	1.2	0.5	1.2	0.5
Cadmium	1.0	<0.010	0.010	<0.010	0.010
Chromium	5.0	<0.05	0.05	<0.05	0.05
Lead	5.0	0.1	0.02	0.02	0.02
Mercury	0.2	<0.001	0.001	<0.001	0.001
Selenium	1.0	<0.2	0.2	<0.2	0.2
Silver	5.0	<0.01	0.01	<0.01	0.01
TCLP Volatiles (μg/l)					
Pyridine	5,000	<13	13	<10	10
Vinyl Chloride	200	<10	10	<10	10
1,1-Dichloroethene	700	<5	5	<5	5
Chloroform	6,000	<5	5	<5	5
1,2-Dichloroethane	500	<5	5	<5	5
Methyl Ethyl Ketone	200,000	<10	10	<10	10
Carbon Tetrachloride	500	<5	5	<5	5
Trichloroethene	500	<5	5	<5	5
Benzene	500	<5	5	<5	5
Tetrachloroethene	700	<5	5	<5	5
Chlorobenzene	100,000	<5	5	<5	5