AP - 35

STAGE 1 & 2 WORKPLANS

DATE: 7/3/2001

Navajo Refining Company
Hobbs North GSA 6" Gathering Line

Remediation/Cleanup Work Plan
Hobbs, Lea County, New Mexico

July 3, 2001

Prepared for:

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I. Purpose

The purpose of this work plan is to propose a plan for the cleanup of the pipeline leak that occurred on the Hobbs North GSA Unit 6-inch pipeline in the NE/4, NE/4, Section 5, T19S, R38E in Lea County, New Mexico. The location is within the City of Hobbs and several hundred feet northwest of the intersection of Rash and Humble streets in southwest Hobbs. This plan will allow closure in a manner that will protect the population, environment and groundwater of the area surrounding the subject location. The leak site is situated on a relatively level site (Figure 1, Vicinity Map).

II. Background

A pipeline leak occurred resulting in the discharge of an unknown quantity of crude oil on Friday, January 5, 2001. The leak was reported to the NMOCD District One office in Hobbs. Initial response at the time of the leak included excavation of the surface and subsurface material most impacted by the leak. Approximately 412 cubic yards of contaminated soil was removed an transported to Controlled Recovery Inc. (CRI), an NMOCD approved disposal facility, on January 9.

III. Contaminate and Size of Leak

Initial excavation of in the vicinity of the crude oil leak encompassed a volume of 51 ft. by 18 ft. by 13 ft. Navajo Refining Company has received notification from the Oil Conservation Division that the crude oil in this pipeline does not have to be subjected to the Toxic Leaching Characteristic Procedure (TCLP) for toxicity. No evidence of other contaminants was observed.

IV. Vertical and Horizontal Extent of Contamination

The initial vertical and horizontal extent of the contamination was determined by the excavation as described above and by follow-up drilling performed in February. Additional exploratory boreholes were drilled in May 2001. The soil boring locations are shown in Figure 2. Some boreholes are shallow due to drilling auger refusal in the heavily cemented caliche. Also, two boreholes (SB-5, SB-6) showed evidence of free product saturation at 20-25 ft.

Analyses of the soil samples collected from the sides and bottom of the excavation, and from boreholes are summarized in Table 1. The results of the soil boring program show detectable contamination in an area having a radius of approximately 25 to 30 ft. from the leak location and to a depth of 30-35 ft. in at least two boreholes. Further delineation will be determined by excavation at the time of cleanup as described in the Action Plan below.

V. Groundwater

Two groundwater monitor wells were installed at the site in February 2001. A third well was installed in May. The well locations were surveyed, depth-to-water measurements taken, and a groundwater potentiometric contour map drawn. Depth to water in the wells is approximately 35 ft. The map (Figure 3) shows groundwater flow direction to be southeasterly, which is the general direction of groundwater movement in the Hobbs area.

Following installation and development of the three wells, samples for benzene, toluene, ethylbenzene and xylenes (BTEX) were taken on June 1, 2001. These results are also shown on Figure 3. Well MW-1 shows benzene 0.26 mg/L which is in excess of the NM WQCC and NM OCD water quality standard of 0.010 mg/L. Ethylbenzene and total xylenes also exceed water quality standards. The analytical results of sampling of wells MW-2 and MW-3 are at or below sample detection limits for these constituents.

Although BTEX results from this well are highly elevated, the well is both upgradient and off-gradient from the leak location. Discussion with the land owner (Mr. Lewis Wright) revealed that an earlier leak in the area occurred in 1993 at a location 50 to 100 ft. north of MW-1. Therefore, it is unlikely that elevated sample results in MW-1 are a result of the current release.

VI. Soil Remediation Action Levels

Based on observations while drilling and results of the soil sampling, some highly contaminated soils remain at the site. However, most of the soil remaining within a 25 ft. radius of the leak area would be characterized by NMOCD guidelines (**"Guidelines for Remediation of Leaks, Spills and Releases"** *New Mexico Oil Conservation Division* - August 13, 1993) as Unsaturated Contaminated Soils. The guidelines include minimum cleanup criteria based on risk-based ranking criteria. Application of the NMOCD's ranking criteria for contaminated soils at this site is presented below.

The field data indicates that the interval between the leak and the water table does not exceed 50 ft. Therefore, 20 points would be assigned to the site as a result of this criterion. Also, based on State Engineer records, water wells are located within 1,000 ft. of the site and an additional 20 points would be assigned to the site. Further, there are no surface water bodies within 1,000 ft. of the site (0 points). The results were compared to the contaminate levels specified in the guidelines:

Depth to Ground Water:	20 points
Distance to Well Head or Water Source:	20 points
Distance to Surface Water/Waterways:	0 points
Total Score:	40 points

Applying the ranking criteria specified in the NMOCD Guidelines to this site results in cleanup levels of 10 mg/Kg benzene, 50 mg/Kg total BTEX and 100 ppm TPH.

Additional site characterization will be performed as part of the proposed remediation/closure plan presented below. All samples will be collected with adherence to the SOPs found in **Environmental Protection Agency, 1984, Characterization of Hazardous Waste Site - A Methods Manual: Vol. II.** These samples will be representative of the contamination levels and will be analyzed for BTEX and Total Petroleum Hydrocarbons (TPH) content using EPA methods SW-846 8021-B, and EPA method 8015 (modified), respectively.

VII. Action Plan

Additional Excavation

Due to the proximity of groundwater at 35 feet, additional excavation will be conducted at the leak site, and material will be excavated both horizontally and vertically for the removal of contaminated soils. Excavation will be somewhat difficult due to the depth which may be required to remove the soils, and the known subsurface occurrence at 15 to 25 ft. of heavily cemented caliche. Further complicating the effort is the presence in the immediate area of the Navajo pipeline, an Equilon pipeline, a power pole supporting a high voltage power line, and a chain-link fence surrounding an Oxy-Permian production site immediately to the west of the leak. The power pole and fence will be relocated prior to excavation, and the all buried utilities and pipelines located through the New Mexico One Call service prior to further excavation.

The excavated material will be segregated on site with contaminated soils transported to CRI for disposal. Based on the drilling results, the cemented caliche will need to be broken for removal and will not likely require disposal unless free product is encountered in joints and fractures. Further, if soils are found to be excessively moist or saturated, they will be placed on plastic and mixed with drier contaminated material prior to transport. On-site field-testing will be conducted to ensure the removal of said soils to below the NMOCD requirements for TPH levels. The bottom and sides of the hole will be sampled at the final excavation depths. These samples will be tested for TPH with a third party laboratory for confirmation of the contamination levels present.

Excavation Closure

Once the results of the test samples for the final excavation are received and confirmation of the excavated area soils' results is obtained, the excavation will be backfilled with the clean material segregated on site and with soil already stockpiled on site by the land owner. A closure report for the soils investigation and evacuation will be prepared and filed with the NMOCD.

Follow-up Groundwater Investigation

Following removal of the contaminated soil and evaluation of the actual horizontal and vertical extent of the contamination, the need for additional groundwater investigation will be evaluated. That could include location of additional monitor wells and preparation of a clean-up/remediation plan for groundwater. At the very least, an additional round of groundwater elevation measurements and sampling (for BTEX and other WQCC constituents) will be conducted before making a decision on action to be taken. The situation is complicated by the discovery of elevated BTEX concentrations in the upgradient/off-gradient monitor well. Based on current information, that contamination appears unrelated to the current leak, but more will be known following the planned excavation.

VIII. Work Plan Tables

Table 1. Results of Soils Testing, Navajo Hobbs North GSA 6" Gathering Line Leak

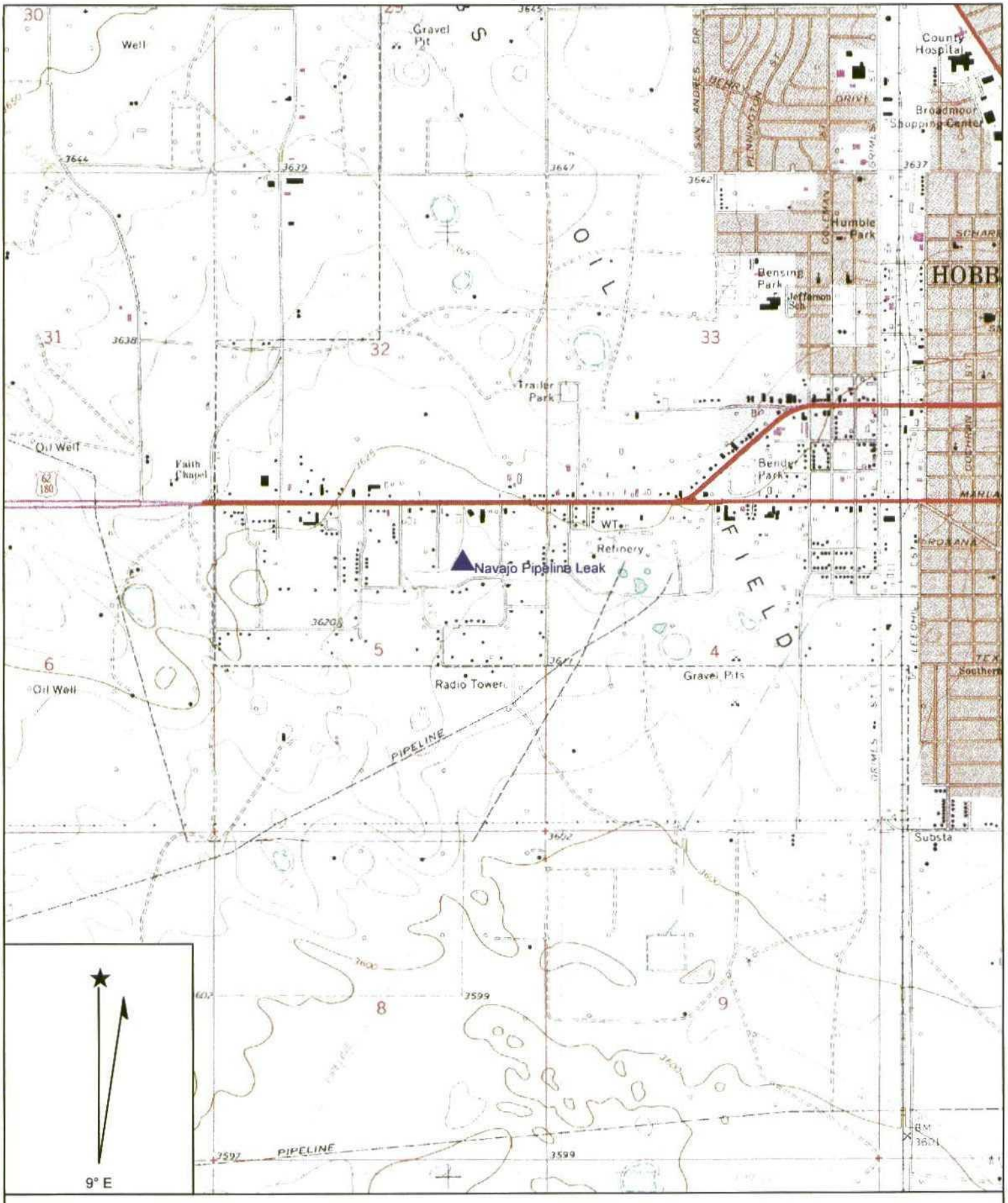
Sample Location and Depth	Sample Date	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethyl-benzene (mg/Kg)	Total Xylenes (mg/Kg)	Total BTEX (mg/Kg)	GRO (mg/Kg)	DRO (mg/Kg)	TPH (mg/Kg)
W. Wall, South	01/08/01	1.42	3.42	9.71	54.9	69	3,390	13,800	17,190
W. Wall, North	01/08/01	NS	NS	NS	NS	NS	3,660	15,600	19,260
East Wall	01/08/01	4.09	6.75	16.4	103	130	5,730	33,500	39,230
Spill, New Surface	01/08/01	3.63	<2.00	2.27	42.5	48.4	2,480	7,780	10,260
Bottom, North	01/08/01	6.30	8.00	15.5	90.7	121	4,400	8,200	12,600
Bottom, South	01/08/01	NS	NS	NS	NS	NS	3,230	7,000	10,230
SB-1, 5 ft.	02/19/01	<0.005	0.006	0.009	0.10	0.115	<50	353	353
SB-1, 10 ft.	02/19/01	<0.005	0.006	<0.005	0.02	0.026	<50	<50	<100
SB-1, 15 ft.	02/19/01	<0.005	<0.005	<0.005	<0.015	<0.030	<50	237	237
SB-1, 18 ft.	02/19/01	0.021	0.824	2.45	15.7	19.0	672	2,530	3,202
SB-1, 20 ft.	02/19/01	<0.005	0.127	1.60	10.7	12.4	439	3,190	3,629
SB-1, 24 ft.	02/19/01	0.009	0.395	1.42	8.19	10.0	833	3,710	4,543
SB-2, 10 ft.	02/27/01	<0.005	0.005	<0.005	<0.015	0.005	<50	<50	<100
SB-2, 20 ft.	02/27/01	<0.005	<0.005	<0.005	<0.015	<0.030	<50	<50	<100
SB-2, 30 ft.	02/27/01	<0.005	<0.005	<0.005	<0.015	<0.030	<50	<50	<100
SB-2, 40 ft.	02/27/01	<0.005	<0.005	<0.005	<0.015	<0.030	<50	<50	<100
SB-3, 10 ft.	02/27/01	<0.005	<0.005	<0.005	<0.015	<0.030	<50	<50	<100
SB-3, 20 ft.	02/27/01	<0.005	<0.005	<0.005	<0.015	<0.030	<50	128	128
SB-3, 30 ft.	02/27/01	<0.005	<0.005	<0.005	<0.015	<0.030	<50	<50	<100
SB-4, 10 ft.	02/27/01	<0.005	<0.005	<0.005	<0.015	<0.030	<50	<50	<100
SB-4, 20 ft.	02/27/01	0.038	<0.005	0.029	<0.015	0.067	<50	<50	<100
SB-4, 30 ft.	02/27/01	<0.005	<0.005	<0.005	<0.015	<0.030	<50	<50	<100
SB-4, 40 ft.	02/27/01	<0.005	<0.005	<0.005	<0.015	<0.030	<50	<50	<100
SB-5, 10 ft.	05/08/01	NS	NS	NS	NS	NS	NS	NS	1,680
SB-5, 15 ft.	05/08/01	NS	NS	NS	NS	NS	NS	NS	1,900
SB-5A, 10 ft.	05/24/01	<0.025	0.35	0.535	<0.025	0.885	64.7	668	733
SB-5A, 15 ft.	05/24/01	0.17	0.395	0.942	3.57	5.08	38.2	236	274
SB-5A, 20 ft.	05/24/01	0.783	0.701	2.56	12.4	16.4	148	2,100	2,248
SB-5A, 30 ft.	05/24/01	8.81	9.72	19.7	66.3	105	904	3,520	4,424
SB-5A, 35 ft.	05/24/01	0.23	0.424	1.32	3.75	5.72	54.6	80	135

Table 1. Results of Soils Testing, Navajo Hobbs North GSA 6" Gathering Line Leak

Sample Location and Depth	Sample Date	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethyl-benzene (mg/Kg)	Total Xylenes (mg/Kg)	Total BTEX (mg/Kg)	GRO (mg/Kg)	DRO (mg/Kg)	TPH (mg/Kg)
SB-6, 10 ft.	05/24/01	<0.013	<0.013	0.185	0.498	0.683	4.4	<50	4.4
SB-6, 15 ft.	05/24/01	0.0947	<0.013	0.305	1.02	1.420	16	105	121
SB-6, 20 ft.	05/24/01	<0.025	0.494	1.65	8.76	10.90	73	2,320	2,393
SB-6, 25 ft.	05/24/01	3.74	7.62	12.9	48.1	72.4	578	11,400	11,978
SB-6, 30 ft.	05/24/01	<0.025	0.415	1.09	4.82	6.33	52.5	2,330	2,383
SB-6, 35 ft.	05/24/01	0.11	0.236	0.633	3.3	4.28	24.6	402	427
SB-7, 5 ft.	05/24/01	<0.025	<0.025	<0.025	<0.025	<0.100	<2.5	<50	<52.5
SB-7, 10 ft.	05/24/01	<0.013	<0.013	0.191	0.52	0.711	6.3	<50	6.3
SB-8, 5 ft.	05/25/01	<0.013	<0.013	<0.013	<0.013	<0.052	<1.3	<50	<51.3
SB-9, 5 ft.	05/25/01	<0.013	<0.013	<0.013	<0.013	<0.052	<1.3	<50	<51.3
SB-9, 10 ft.	05/25/01	<0.013	<0.013	<0.013	<0.013	<0.052	<1.3	<50	<51.3
SB-10, 10 ft.	05/25/01	<0.013	<0.013	<0.013	0.489	0.489	<1.3	<50	<51.3
SB-10, 15 ft.	05/25/01	<0.013	<0.013	<0.013	<0.013	<0.052	<1.3	<50	<51.3
SB-10, 20 ft.	05/25/01	<0.013	<0.013	<0.013	0.485	0.485	<1.3	<50	<51.3
SB-10, 25 ft.	05/25/01	<0.013	<0.013	<0.013	<0.013	<0.052	<1.3	<50	<51.3
SB-10, 30 ft.	05/25/01	<0.013	0.182	0.182	0.488	0.852	<1.3	<50	<51.3
SB-10, 35 ft.	05/25/01	<0.013	<0.013	<0.013	0.488	0.488	<1.3	<50	<51.3
SB-10, 40 ft.	05/25/01	<0.013	0.182	<0.013	0.487	0.669	<1.3	<50	<51.3
SB-11, 10 ft.	05/24/01	<0.013	<0.013	<0.013	0.492	0.492	4.0	<50	4.0
SB-11, 15 ft.	05/24/01	<0.013	<0.013	0.194	0.508	0.702	1.68	<50	1.68
SB-12, 5 ft.	05/25/01	<0.013	<0.013	<0.013	<0.013	<0.052	<1.3	<50	<51.3
Notes:									
NS - Not sampled									
Samples in January, February 2001 collected by Environmental Technology Group, Inc., Hobbs.									
Samples in May 2001 collected by Safety and Environmental Solutions, Inc., Hobbs.									
Auger refusal in SB-5 at 15 ft. with Giddings drill rig, moved over to SB-5A to start drilling with Atkins rig.									
BTEX analyses by SW-846 method 8021-B; Jan-Feb 2001 by Cardinal Laboratories, Hobbs, NM; all other analyses by TraceAnalysis, Lubbock, TX.									
TPH analyses by EPA method 8015 (modified); Jan-Feb 2001 by Cardinal Laboratories, Hobbs, NM; SB-5 samples in field by SESI									
	(using EPA method 418.1); all other analyses by TraceAnalysis, Lubbock, TX.								
TPH GRO range: C_6-C_{10} Cardinal Laboratories, C_6-C_{12} TraceAnalysis									
TPH Diesel range: >C_{10}-C_{28} Cardinal Laboratories, >C_{12}-C_{28} TraceAnalysis									

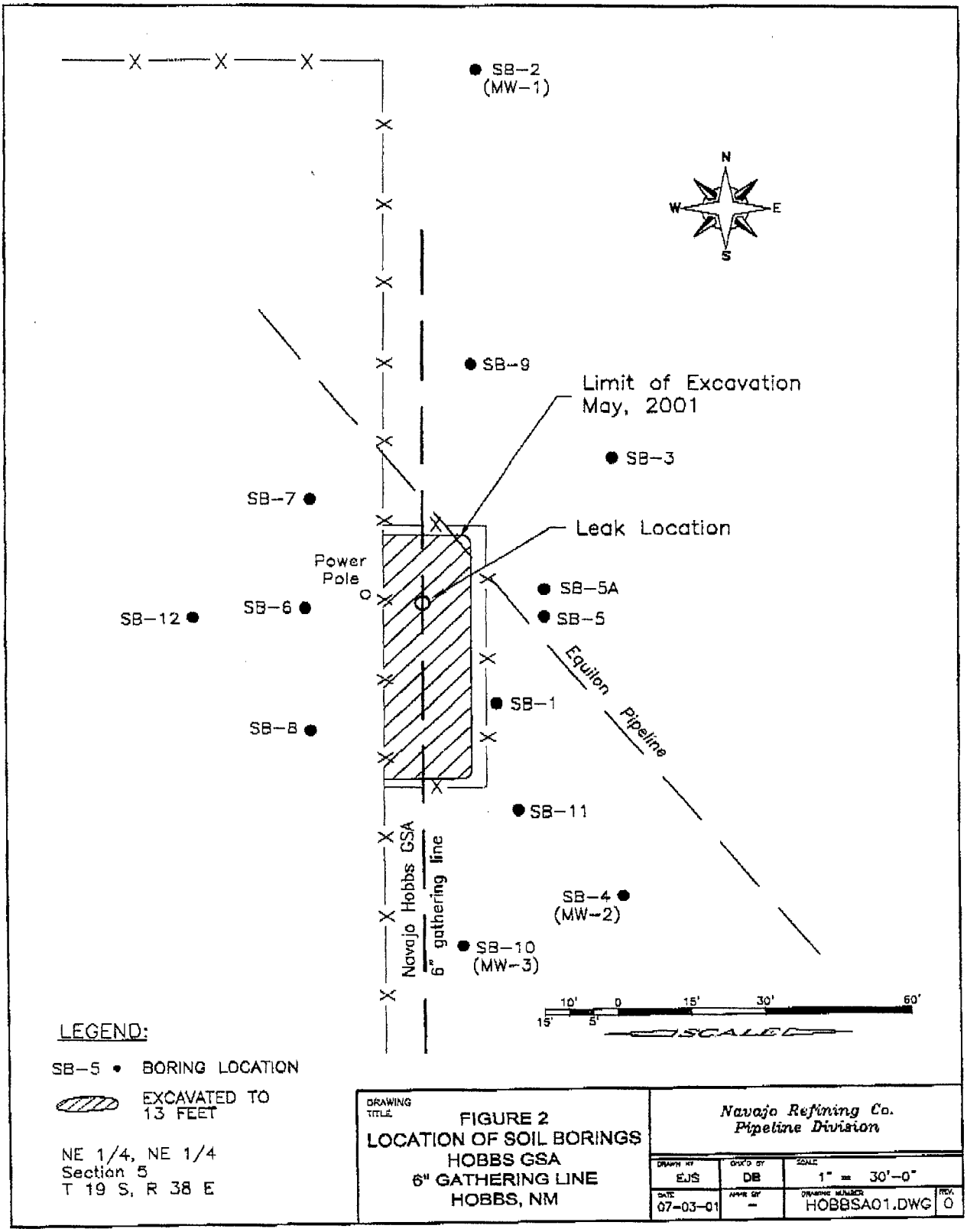
IX. Work Plan Maps and Figures

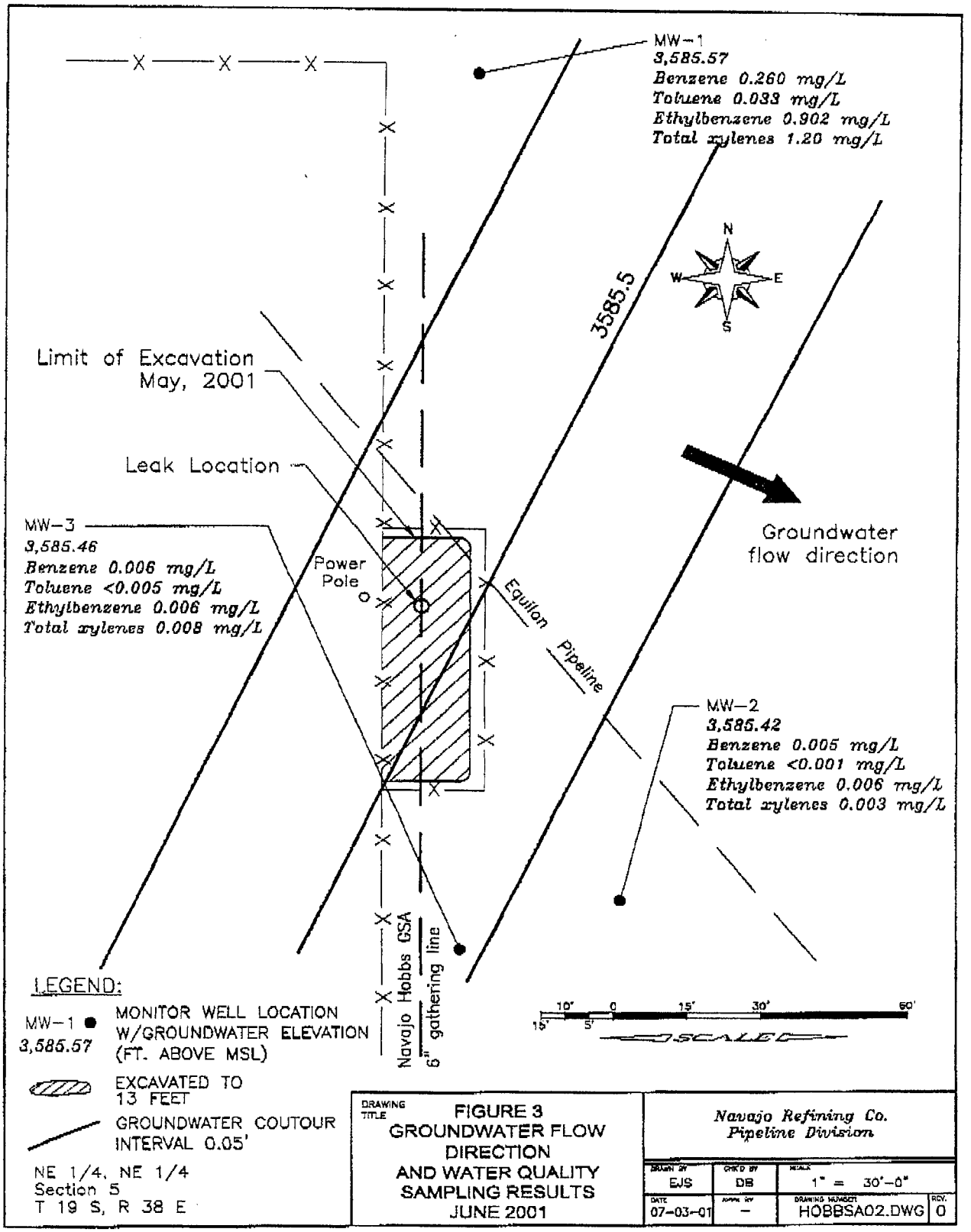
Figure 1. Vicinity Map



Name: HOBBS WEST
Date: 7/7/2001
Scale: 1 inch equals 2000 feet

Location: 032° 41' 31.7" N 103° 09' 49.8" W
Caption: Figure 1. Vicinity Map


SB-2
(MW-1)
N
W
E
S
SB-9
Limit of Excavation
May, 2001
SB-3
SB-7
Leak Location
Power
Pole
SB-5A
SB-12
SB-6
SB-5
Equilon
Pipeline
SB-1
SB-8
SB-11
Navajo Hobbs GSA
6" gathering line
SB-4
(MW-2)
SB-10
(MW-3)
10' 0 15' 30' 60'
15' 5'
SCALE
LEGEND:
SB-5 • BORING LOCATION
EXCAVATED TO
13 FEET
NE 1/4, NE 1/4
Section 5
T 19 S, R 38 E
DRAWING TITLE
FIGURE 2
LOCATION OF SOIL BORINGS
HOBBS GSA
6" GATHERING LINE
HOBBS, NM
Navajo Refining Co.
Pipeline Division
DRAWN BY EJS
CHK'D BY DB
SCALE 1" = 30'-0"
DATE 07-03-01
APPR BY -
DRAWING NUMBER HOBBSA01.DWG
REV. 0


MW-1
3,585.57
Benzene 0.260 mg/L
Toluene 0.033 mg/L
Ethylbenzene 0.902 mg/L
Total xylenes 1.20 mg/L
N
W
E
S
3585.5
Limit of Excavation
May, 2001
Leak Location
MW-3
3,585.46
Benzene 0.006 mg/L
Toluene <0.005 mg/L
Ethylbenzene 0.006 mg/L
Total xylenes 0.008 mg/L
Power Pole
Equilon Pipeline
Groundwater flow direction
MW-2
3,585.42
Benzene 0.005 mg/L
Toluene <0.001 mg/L
Ethylbenzene 0.006 mg/L
Total xylenes 0.003 mg/L
Navajo Hobbs GSA 6" gathering line
LEGEND:
MW-1 ● 3,585.57
MONITOR WELL LOCATION W/GROUNDWATER ELEVATION (FT. ABOVE MSL)
EXCAVATED TO 13 FEET
GROUNDWATER COUTOUR INTERVAL 0.05'
NE 1/4, NE 1/4
Section 5
T 19 S, R 38 E
10' 0 15' 30' 60'
15' 5'
SCALE
DRAWING TITLE
FIGURE 3
GROUNDWATER FLOW DIRECTION AND WATER QUALITY SAMPLING RESULTS
JUNE 2001
Navajo Refining Co.
Pipeline Division
DRAWN BY EJS
CHK'D BY DB
SCALE 1" = 30'-0"
DATE 07-03-01
APPR. BY -
DRAWING NUMBER HOBBSA02.DWG
REV. 0