GW - 14

GENERAL CORRESPONDENCE

YEAR(S):

1996-1991

Feb. '91

↓

Nov. 96

NOTICE OF PUBLICATION

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

Notice is hereby given that pursuant to New Mexico Water Quality Control Commission Regulations, the following discharge plan renewal application has been submitted to the Director of the Oil Conservation Division, 2040 South Pacheco, Santa Fe, New Mexico 87505, Telephone (505) 827-7131:

(BW-005) - Jim's Brine Sales, Sammy Stoneman, (505) 748-1352, P.O. Box 1387, Artesia, New Mexico, 88211-1387 has submitted an application for renewal of its previously approved discharge plan for the Loco Hills Brine Station, located in the SE/4 SE/4 of Section 24, Township 18 South, Range 28 East, NMPM, Eddy County, New Mexico. Fresh water is injected to an approximate depth of 456 feet and brine water is extracted with an average total dissolved solids concentration of 300,000 mg/l. Ground water most likely to be affected by any accidental discharge is at a depth exceeding 225 feet and has a total dissolved solids content of 600 mg/l to 6,000 mg/l. The discharge plan addresses how spills, leaks, and other accidental discharges to the surface will be managed.

(GW-014) - Navajo Refining Company, David Griffin, (505) 748-3311, P.O. Box 159, Artesia, New Mexico, 88211-0159 has submitted an application for renewal of its previously approved discharge plan for the Lovington Refinery located in the SW/4 of Section 31, Township 16 South, Range 37 East; the SE/4 of Section 36, Township 16 South, Range 36 East; the NW/4 of Section 6, Township 17 South, Range 37 East; and the NE/4 of Section 1, Township 17 South, Range 36 East NMPM, Lea County, New Mexico. Approximately 101,000 gallons per day of treated refinery waste water with a total dissolved solids concentration of approximately 1,300 mg/l will undergo treatment in a USEPA regulated pretreatment unit prior to discharge to the City of Lovington publicly owned treatment works (POTW). Ground water most likely to be affected by an accidental discharge is at a depth of approximately 90 feet with a total dissolved solids concentration of approximately 500 mg/l. The discharge plan addresses how spills, leaks, and other accidental discharges to the surface will be managed.

(GW-252) - Rotary Wireline, Inc., Mickey Welborn, (505) 397-6302, P.O. Box 2135, Hobbs, New Mexico, 88241 has submitted a discharge plan application for the Rotary Wireline, Inc. facility located in the NW/4 NW/4 of Section 5, Township 19 South, Range 38 East, NMPM, Lea County, New Mexico. Approximately 42 gallons per day of waste water is discharged to the City of Hobbs publicly owned treatment works (POTW). Groundwater most likely to be affected by a spill, leak, or accidental discharge to the surface is at a depth of approximately 55 feet with a total dissolved solids concentration of approximately 1,100 mg/l. The discharge plan addresses how spills, leaks, and other accidental discharges to the surface will be managed.

(GW-253) - Sonny's Oilfield Services, Inc., Scotty Greenlee, (505) 393-4521, 816 Northwest County Road, Hobbs, New Mexico, 88240 has submitted a discharge plan application for the Sonny's Oilfield Services, Inc. facility located in the SE/4 NW/4 NW/4 of Section 32, Township 18 South, Range 38 East, NMPM, Lea County, New Mexico. Approximately 700 gallons per day of waste water is generated and disposed of at Parabo Disposal Facility, an offsite OCD permitted disposal facility. Groundwater most likely to be affected by a spill, leak, or accidental discharge to the surface is at a depth of approximately 50 feet with a total dissolved solids concentration of 40 mg/l to 1,000 mg/l. The discharge plan addresses how spills, leaks, and other accidental discharges to the surface will be managed.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. The discharge plan application may be viewed at the above address between 8:00 a.m. and 4:00 p.m., Monday through Friday. Prior to ruling on any proposed discharge plan or its modification, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which comments may be submitted to him and a public hearing may be requested by any interested person. Requests for a public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines there is significant public interest.

If no public hearing is held, the Director will approve or disapprove the proposed plan based on information available. If a public hearing is held, the Director will approve or disapprove the proposed plan based on the information in the discharge plan application and information submitted at the hearing.

GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 9th day of July 1996.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

S E A L

WILLIAM J. LEMAY, Director

NEW MEXICO ENERGY, MINERALS
& NATURAL RESOURCES DEPARTMENT

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

September 6, 1996

CERTIFIED MAIL
RETURN RECEIPT NO. P-288-258-846

Mr. Phillip Youngblood
Navajo Refining Company
P. O. Drawer 159
Artesia, New Mexico 88211-0159

Re: Inspection Report
Artesia and Lovington Refineries

Dear Mr. Youngblood:

The New Mexico Oil Conservation Division (OCD) would like to thank you and your staff for your cooperation during the July 29, 1996 to August 1, 1996 inspections of the Artesia and Lovington refineries. Comments from the inspections conducted are as follows:

1. Drum Storage: All drums that contain materials other than fresh water must be stored on an impermeable pad with curbing. All Empty drums should be stored on their sides with the bungs in and lined up on a horizontal plane. Chemicals in other containers such as sacks or buckets should also be stored on an impermeable pad with curbing.

   Artesia Refinery
   Numerous empty drums, and drums containing fluids were located throughout the refinery that were not properly stored (see pictures 1-15, 1-16,1-20, 2-4, 2-5 and 2-6).

2. Process Area: All process and maintenance areas which show evidence that leaks and spills are reaching the ground surface must be either paved and curbed or have some type of spill collection device incorporated into the design.

   Artesia Refinery
   Pump 104 show evidence of hydrocarbons reaching the ground surface (see picture 1-23).

   Wastes generated at the steam cleaner area are not being completely contained within the existing pad and curb containment (see picture 2-2).

Lovington Refinery
The crude off-loading area shows evidence that leaks and spills are reaching the ground surface (see picture 2-22).

3. Above Ground Tanks: All above ground tanks which contain fluids other than fresh water must be bermed to contain a volume of one-third more than the total volume of the largest tank or of all interconnected tanks. All new facilities or modifications to existing facilities must place the tank on an impermeable type pad within the berm.

Artesia Refinery
The diesel storage tank in picture 1-2 does not appear to have the required containment.

Lovington Refinery
The waste water skimmer tank does not appear to proper berming and containment (see picture 2-24).

4. Above Ground Saddle Tanks: Above ground saddle tanks must have impermeable type pad and curb containment unless they contain fresh water or fluids that are gases at atmospheric temperature and pressure.

Artesia Refinery
The above ground saddle tanks located in pictures 1-10, 1-16, 1-22 and 2-15 do not appear to have proper pad and curb containment.

Lovington Refinery
The above ground saddle tank located in picture 2-23 does not appear to have proper pad and curb containment.

5. Labeling: All drums, tanks and containers should be clearly labeled to identify their contents and other emergency information necessary if they were to rupture, spill, or ignite.

Artesia Refinery
Numerous containers were located throughout the refinery do not appear to be properly labeled (see pictures 1-3, 1-11, 1-15, 1-20, 1-22 and 2-15).

Lovington Refinery
Containers located in pictures 2-23 and 2-24 do not appear to be properly labeled.

6. Below Grade Tanks/Sumps: All below grade tanks, sumps, and pits must be approved by the OCD prior to installation or upon modification and must incorporate secondary containment and leak-detection into the design. All pre-existing sumps and below-grade

tanks must demonstrate integrity on an annual basis. Integrity tests include pressure testing to 3 pounds per square inch above normal operating pressure and/or visual inspection of cleaned out tanks and/or sumps.

Artesia Refinery
Sumps in pictures 1-1, 1-6, 1-8, 1-10 and 1-14 do not appear to have secondary containment. What is Navajo's schedule for inspection of sumps. Please respond to the OCD by September 30, 1996.

What is the status of the pit/sump in picture 1-21? Is it going to be closed? Please respond to the OCD by September 30, 1996.

What is the status of the asphalt API separator in picture 1-13? Please respond to the OCD by September 30, 1996.

Lovington Refinery
The pipeline terminal sump does not appear to have secondary containment (see picture 2-19).

7. Underground Process/Wastewater Lines: All underground process/wastewater lines must be tested to demonstrate their mechanical integrity at present and then every 5 years there after. Permittees may propose various methods for testing such as pressure testing to 3 pounds per square inch above normal operating pressure or other means acceptable to the OCD.

   Navajo is in the process of testing and repairing/replacing all below grade lines at both refineries.

8. Housekeeping: All systems designed for spill collection/prevention should be inspected frequently to ensure proper operation and to prevent overtopping or system failure.

9. Spill Reporting: All spills/releases shall be reported pursuant to OCD Rule 116 and WQCC 1203 to the appropriate OCD District Office.

10. Lead Contamination: At the Artesia refinery, signs indicating lead contamination are present between tanks 417 and 418. What is the purpose of these signs? Is lead contamination present beneath these signs? Please respond to the OCD by September 30, 1996.

Sample results from OCD sampling of both refineries is enclosed for your review. Please submit Navajo's sample results to the OCD by September 30, 1996.

Once again, thank you for your time during our recent visit to Navajo's refineries. If you have any questions, please call me at (505) 827-7155.

Sincerely,

Mark Ashley
Geologist

xc: OCD Artesia Office

TELEPHONE
(505) 748-3311

EASYLINK
62905278

ENAVAJO REFINING COMPANY

501 EAST MAIN STREET ◦ P. O. BOX 159
ARTESIA, NEW MEXICO 88211-0159

FAX
(505) 746-6410 ACCTG
(505) 746-6155 EXEC
(505) 748-9077 ENGR
(505) 746-4438 P / L

June 27, 1996

RECEIVED
JUN 2 8 1996
Environmental Bureau
Oil Conservation Division

Mr. Roger Anderson
Oil Conservation Division
Land Office Building
2040 S. Pacheco St.
Santa Fe, NM 87505-5472

Dear Mr. Anderson:

Enclosed please find two copies of Lea Refining Company's Discharge Plan Renewal. If after reviewing this document you need any further information or have questions, please contact me at 505-748-3311.

Sincerely,

David G. Griffin
Manager of Environmental
Affairs for Water and Waste

DGG/te

Encl.

5/92

State of New Mexico
Energy, Minerals and Natural Resources Department
OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, NM 87501

RECEIVED
JUN 28 1996
Environmental Bureau
Oil Conservation Division

DISCHARGE PLAN APPLICATION FOR NATURAL GAS PROCESSING PLANTS, OIL REFINERIES AND GAS COMPRESSOR STATIONS

(Refer to OCD Guidelines for assistance in completing the application.)

I. TYPE: OIL REFINERY - LEA REFINING COMPANY

II. OPERATOR: NAVAJO REFINING COMPANY

ADDRESS: 501 EAST MAIN ST. ARTESIA, NM 88210

CONTACT PERSON: DAVID GRIFFIN PHONE: (505) 748-3311

III. LOCATION: ___/4 ___/4 Section 36 Township 16S Range 36E
Submit large scale topographic map showing exact location.

IV. Attach the name and address of the landowner(s) of the disposal facility site.

V. Attach description of the facility with a diagram indicating location of fences, pits, dikes, and tanks on the facility.

VI. Attach a description of sources, quantities and quality of effluent and waste solids.

VII. Attach a description of current liquid and solid waste transfer and storage procedures.

VIII. Attach a description of current liquid and solid waste disposal procedures.

IX. Attach a routine inspection and maintenance plan to ensure permit compliance.

X. Attach a contingency plan for reporting and clean-up of spills or releases.

XI. Attach geological/hydrological evidence demonstrating that disposal of oil field wastes will not adversely impact fresh water. Depth to and quality of ground water must be included.

XII. Attach such other information as is necessary to demonstrate compliance with any other OCD rules, regulations and/or orders.

XIII. CERTIFICATION

I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

Name: DAVID GRIFFIN Title: MANAGER OF ENVIRONMENTAL AFFAIRS FOR WATER & WASTE

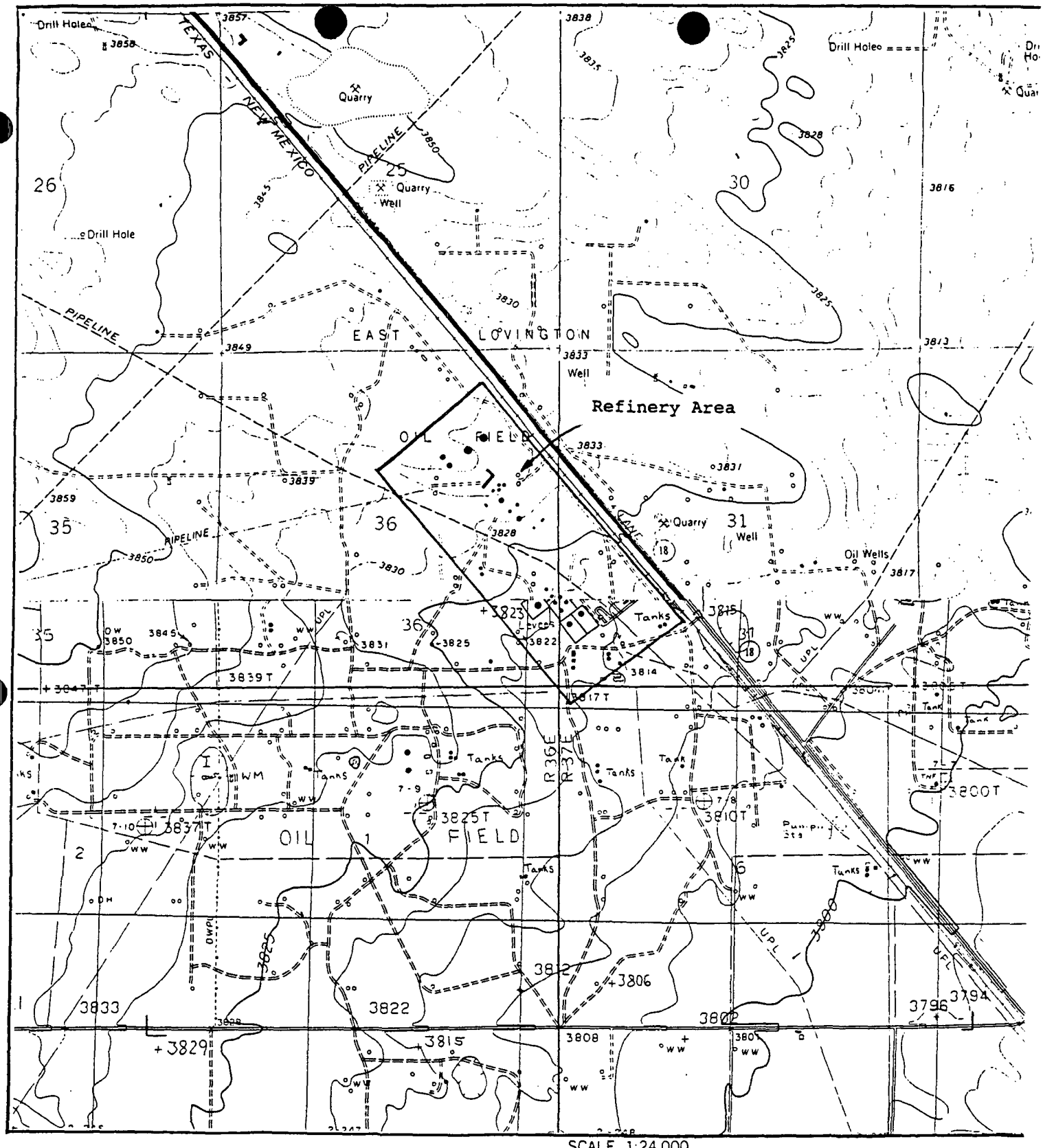
Signature: David L. Griffin Date: 6/27/96

DISTRIBUTION: Original and one copy to Santa Fe with one copy to appropriate Division District Office.

DISCHARGE PLAN APPLICATION

ATTACHMENT TO SECTION III

Facility Location Map



SCALE 1:24 000

1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

CONTOUR INTERVAL 5 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

MN
GN
0°55'
16 MILS
10½°
187 MILS

LOCATION MAP, LEA REFINERY, LOVINGTON, NEW MEXICO

DISCHARGE PLAN APPLICATION

ATTACHMENT TO SECTION IV

Landowner Name and Address:

City of Lovington,
New Mexico

DISCHARGE PLAN APPLICATION

ATTACHMENT TO SECTION V

Facility Description and Diagram

Attachment V. Facility Description

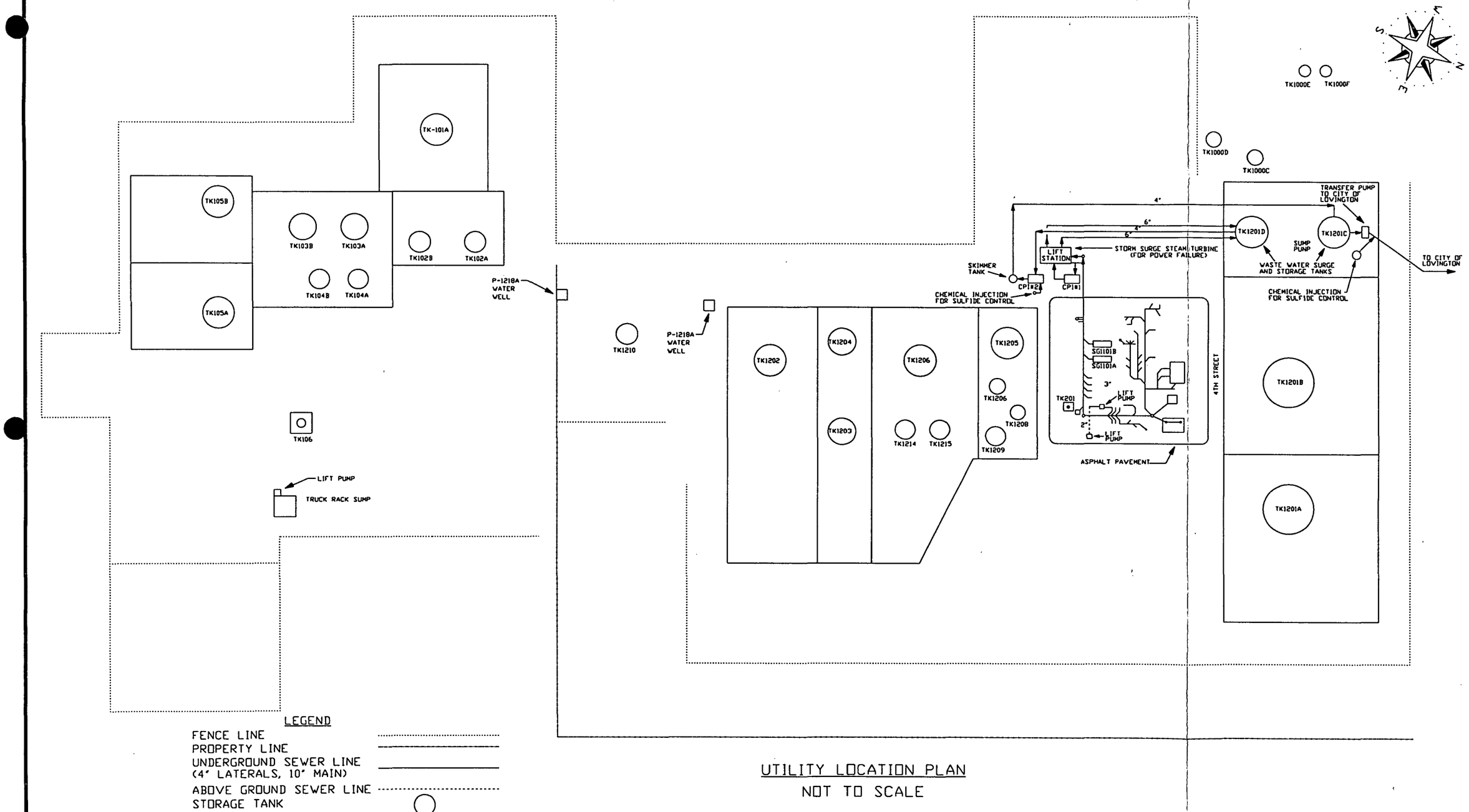
The Lea Refinery is located in Lea County, New Mexico, approximately five miles south of the City of Lovington on State Highway 18. The 600-acre site is located in a sparsely populated area surrounded by property used for oil and gas production and cattle grazing. A railroad spur and Highway 18 run along the east side of the facility, and no residences are located within a distance of 2 miles.

The refinery consists of a 4,000 square-foot block office building, a maintenance shop, a warehouse, a laboratory, storage buildings, a product terminal building, process units, crude and product storage tanks, truck and rail car loading and unloading racks, a cooling tower, a flare, steam boilers and a wastewater collection and primary treatment system.

Lea Refining Company is a subsidiary of Navajo Refining Company in Artesia. The Lea Refinery is operated as part of the refining complex in Artesia. Lea Refining only operates as a crude fractionation unit where all produced intermediate streams are sent to Navajo-Artesia for further processing into finished products. The light intermediates such as raw naphtha, kerosene, diesel and atmospheric gasoline (AGO) are transferred by pipeline, while the heavy vacuum gas oil (VGO) is trucked. The raw LPG is sold to a nearby gas plant and delivered by truck. A stream of light non-condensable gas consisting primarily of methane and ethane is sold by pipeline to an adjacent gas plant. Lea Refining ships out asphalt, primarily by railcar, to our Navajo Western Asphalt Company in Phoenix, Arizona.

The facility was constructed in 1973 by Walter Famariss for Southern Union Refining Company. The facility was operated between 1974 and 1984, at which time it became inactive. Southern Union subsequently sold the facility to Navajo Refining in 1988, and plant operations were resumed in 1991.

A site diagram, showing locations of various buildings, operational units, storage tanks, and fence and property lines, is enclosed in this section.



LEGEND

FENCE LINE .....

PROPERTY LINE _____

UNDERGROUND SEWER LINE (4" LATERALS, 10" MAIN) _____

ABOVE GROUND SEWER LINE .....

STORAGE TANK ○

UTILITY LOCATION PLAN

NOT TO SCALE

NOTES

REFERENCE DRAWINGS

NO.	REVISIONS	BY	CHK.	DATE	APPR	APPR
1	RE DRAWN	DLW	DGJ	6/27/96		DGJ

DRAWING TITLE

PLATE 1
LEA REFINING COMPANY
WASTE WATER COLLECTION
AND TREATMENT SYSTEM

NAVAJO REFINING CO.
ENGINEERING DEPARTMENT
P.O. DRAWER 159
ARTESIA, NEW MEXICO

DRAWN BY	CHK'D BY	SCALE
DLW	DGJ	NONE
DATE	APPR BY	DRAWING NUMBER / REV.
6/27/96	DGJ	1

DISCHARGE PLAN APPLICATION

ATTACHMENT TO SECTION VI

Sources, Quantities and Quality of Effluent and Waste Solids

Attachment VI. Sources, Quantities and Quality of Effluent and Waste Solids

Solid Wastes

In terms of types and quantities, the solid wastes generated at the Lea Refinery at this time are relatively limited in extent. The sole RCRA-listed hazardous waste managed at the facility is F037 (primary oil/water/solids separation sludge) which, for the most part, settles in the lift station in the wastewater treatment system (see Attachment VII, block flow diagram). Minor amounts of this waste are also generated in the Corrugated Plate Interceptors, or CPI units (described in Attachment VII). The sump, which is constructed of concrete, is chemically sealed to prevent leakage and inspected on a regular basis to check for the development of cracks. The CPI units are completely above ground and are therefore easy to visually inspect by operators as they make their rounds.

The facility generates approximately 50,000 lbs of F037 waste on an annual basis. All RCRA-listed hazardous waste is disposed off-site at RCRA-permitted facilities, as described in Attachment VIII of this Discharge Permit Application.

At present, quantities of three nonhazardous wastes are stockpiled at the site pending NMOCD approval for disposal at a permitted facility. These wastes and their respective annual generation rates include: asphalt - 60 yds^3; slop oil-contaminated soil - 80 yds^3; and crude-contaminated soil - 100 yds^3. Analytical data for the three wastes have previously been submitted to NMOCD in connection with their respective disposal permit requests.

Effluent Water

All process water used by the refinery is pretreated by reverse osmosis (RO). The RO units remove 90-95% of the total dissolved solids (TDS) from the water before sending it to service in the refinery. The RO units produce a reject water stream (concentrate) that comprises 30 to 40% by volume of the raw well water feed to the RO units. Reject water is generated at a rate of approximately 100 gpm (0.14 MGD).

The RO reject carries away naturally occurring dissolved minerals (primarily consisting of calcium salts and silica) which are originally present in the source water. The reject has been analyzed as required by NMOCD. The results are presented in the analytical results included in this Attachment. The analyses shows that naturally occurring dissolved constituents are concentrated by about a factor of 2.5 relative to their concentration in the raw feedwater. There is nothing in this water that prevents it from being used for waterflood injection in the oil field surrounding the refinery.

The major effluent source generated by the refinery consists of treated wastewater discharged from the facility wastewater treatment plant. Wastewater treatment system discharge rates may vary from approximately 56 to 140 gpm, with a typical average of 70 gpm. Treated wastewater consists of process wastewater (primarily desalter effluent), remediation groundwater from an onsite recovery well, crude tank draw water, process area sampling waste, stormwater waste in drains, and, on an infrequent basis, skimmed oil from the Truck Rack Sump (see Attachment V, facility diagram).

The refinery laboratory, which was extensively used by Southern Refining, no longer generates any wastewater, as Lea Refining relies on the Navajo-Artesia laboratory for most analyses.

The Truck Rack, which is located south of the refinery processing units, serves primarily as a system for the loading of gas oil that is too viscous for pipeline transport to the Artesia Refinery. It is also used as an alternate to the railcar loading rack for asphalt shipments. The associated sump collects stormwater runoff from the rack. The sump is approximately 25 feet in length on each side and 8 feet deep. When free oil is present within the sump it is vacuum-skimmed and sent for reprocessing. In addition, excessive quantities of stormwater generated by heavy precipitation are also vacuumed and put into the wastewater treatment system. However, introduction of wastewater into the refinery wastewater treatment system is infrequent, and does not contribute significantly to the total facility wastewater effluent volume.

The flow from the groundwater recovery well is designed to be 20 gpm, and consists of a variable mixture of hydrocarbons and water. This flow is directed into the refining process prior to the water becoming effluent. Further discussion of this remediation-generated flow is provided in Attachment VII.

A variable quantity of tank draw water is generated from crude and product storage tanks on a regular basis. Based on disposal manifests, an approximate average of 4,000 gallons/day of tank draw water are generated at the refinery.

Treated refinery effluent is sent directly to the City of Lovington publicly owned treatment works (POTW). Discharge of refinery wastewater to the Lovington POTW is regulated under the federal Pre-Treatment Regulations specified at 40 CFR parts 403 and 419.17. These regulations require that Navajo meet maximum discharge standards of 100 ppm oil and grease, 100 ppm ammonia and, for the portion of the effluent coming from the cooling towers, 1 ppm total chromium. In compliance with those regulations, Navajo collects and analyzes wastewater samples on a semi-annual basis.

In addition to federal pre-treatment standards, Navajo complies with a specification of 3 ppm sulfides, to prevent any problems from occurring in the Lovington POTW. Compliance testing for the 3 ppm sulfide standard is performed twice per shift (total of 4 times per day) by the operators on duty. To control excess sulfide, Navajo uses a Nalco chemical known as Sulfa-Check 2420 (see attached Material Safety Data Sheet). This chemical is basically a sodium nitrite oxidizing agent that is specific for sulfide oxidation. Navajo conducted tests on this oxidizer prior to switching from ferric chloride. Compared to ferric chloride, Sulfa-Check 2420 is much safer to transport and handle.

Wastewater treatment and disposal practices are described in detail in Attachments VII and VIII.

Attachment VI

Lea Refinery

Reverse Osmosis Reject Water

Water Quality Analytical Data

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

July 25, 1994
Receiving Date: 06/30/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 07/05/94
Sampling Date: 06/28/94
Sample Condition: Intact & Cool
Sample Received by: McD
Project Name: Lea RO Reject

TA#	FIELD CODE	EC (uMHOS/cm)	COD (mg/L)	PHENOLS (mg/L)	NO3 (mg/L)	CHLORIDE (mg/L)	FLUORIDE (mg/L)	SULFATE (mg/L)	ALKALINITY (mg/L as CaCo3) HCO3	ALKALINITY (mg/L as CaCo3) CO3	TDS (mg/L)	CN- (mg/L)
T23022	Lea RO Reject	2,542	88	<0.1	6.0	553	1.8	196	219	---	2,372	<0.01
QC	Quality Control	1,235	54	0.79	1.0	500	2.03	20.7	---	---	---	0.036
% Precision		100	97	100	96	101	96	96	100	---	101	100
% Extraction Accuracy		---	114	98	100	97	87	109	---	---	---	88
% Instrument Accuracy		87	100	105	100	100	96	102	---	---	---	95
DETECTION LIMIT		---	5	0.1	0.1	1	0.1	1	10	---	---	0.01

METHODS: EPA 120.1, 420.2, 340.2, 375.4, 310.1, 335.2, 160.1, 353.3, 410.4, SM 4500 Cl-
QC: Blank Spiked with 500 mg/L CHLORIDE; 2.0 mg/L FLUORIDE; 20.0 mg/L SULFATE; 0.89 mg/L PHENOLS; 0.040 mg/L CYANIDE; 54.18 mg/L COD.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

7-25-94
Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

July 25, 1994
Receiving Date: 06/30/94
Sample Type: Water
Project No: NA
Project Location: NA

Analysis Date: 07/11/94
Sampling Date: 06/28/94
Sample Condition: Intact & Cool
Sample Received by: McD
Project Name: Lea RO Reject

TA#	Field Code	POTASSIUM (mg/L)	MAGNESIUM (mg/L)	CALCIUM (mg/L)	SODIUM (mg/L)
T23022	Lea RO Reject	5.6	43.5	304.1	153.0
QC	Quality Control	97.3	22.3	20.6	20.5
Detection Limit		0.1	0.1	0.05	0.1
% Precision		103	100	101	101
% Extraction Accuracy		106	92	88	98
% Instrument Accuracy		97	111	103	102

METHODS: EPA 200.7.
QC: Blank Spiked with 100.0 mg/L POTASSIUM; 20.0 mg/L MAGNESIUM, CALCIUM, SODIUM.

BS

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

7-25-94
Date

6701 Aberdeen Avenue
Lubbock, Texas 79424
806•794•1296
FAX 806•794•1298

Analytical Results for
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

July 25, 1994

Project Name: LEA RO Reject

SAMPLE #	FIELD CODE	Date of Receiving	Date of Analysis	BOD5 (mg/L)	TSS (mg/L)	pH (s.u.)	Cl2 (mg/L)	NH3-N (mg/L)
T23022	Lea RO Reject	06/30/94	07/01/94	<3	1	7.76	<0.1	<0.01

QUALITY CONTROL SUMMARY

BOD5 Precision = 98%
BOD5 Instrument Accuracy = 108%
TSS Precision = 99%
pH Precision = 100%

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

7-25-94
DATE

6701 Aberdeen Avenue
Lubbock, Texas 79424
806•794•1296
FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

T23022
Lea RO

July 25, 1994
Receiving Date: 06/30/94
Sample Type: Water
Sampling Date: 06/28/94
Sample Condition: Intact & Cool
Sample Received by: McD
Project Name: Lea RO Reject
Analysis Date: 07/17/94

EPA 625 (ppm)	DL	Reject	QC	%P	%EA	%IA
N-Nitrosodimethylamine	0.001	ND	0.454	NR	NR	91
Phenol	0.001	ND	0.485	96	88	97
bis(2-Chloroethyl)ether	0.005	ND	0.475	NR	NR	95
2-Chlorophenol	0.005	ND	0.510	96	101	102
1,3-Dichlorobenzene	0.001	ND	0.496	NR	NR	99
1,4-Dichlorobenzene	0.001	ND	0.494	98	106	99
1,2-Dichlorobenzene	0.001	ND	0.500	NR	NR	100
bis(2-chloroisopropyl)ether	0.005	ND	0.546	NR	NR	109
n-Nitrosodi-n-propylamine	0.001	ND	0.504	97	106	101
Hexachloroethane	0.001	ND	0.487	NR	NR	97
Nitrobenzene	0.001	ND	0.485	NR	NR	97
Isophorone	0.005	ND	0.459	NR	NR	92
2-Nitrophenol	0.005	ND	0.451	NR	NR	90
2,4-Dimethylphenol	0.005	ND	0.466	NR	NR	93
bis(2-Chloroethoxy)methane	0.001	ND	0.440	NR	NR	88
2,4-Dichlorophenol	0.005	ND	0.477	NR	NR	95
1,2,4-Trichlorobenzene	0.001	ND	0.472	100	110	94
Naphthalene	0.001	ND	0.450	NR	NR	90
Hexachlorobutadiene	0.001	ND	0.493	NR	NR	98
4-Chloro-3-methylphenol	0.005	ND	0.482	100	100	96
Hexachlorocyclopentadiene	0.001	ND	0.551	NR	NR	110
2,4,6-Trichlorophenol	0.005	ND	0.635	NR	NR	127
2-Chloronaphthalene	0.001	ND	0.485	NR	NR	97
Dimethylphthalate	0.001	ND	0.486	NR	NR	97
Acenaphthylene	0.001	ND	0.473	NR	NR	95
2,6-Dinitrotoluene	0.001	ND	0.592	NR	NR	118
Acenaphthene	0.001	ND	0.491	100	101	98
2,4-Dinitrophenol	0.005	ND	0.476	NR	NR	95
4-Nitrophenol	0.005	ND	0.448	100	84	90
2,4-Dinitrotoluene	0.001	ND	0.553	99	113	111

T23022
Lea RO

EPA 625 (ppm)	DL	Reject	QC	%P	%EA	%IA
Fluorene	0.001	ND	0.464	NR	NR	93
Diethylphthalate	0.001	ND	0.529	NR	NR	105
4-Chlorophenyl-phenylether	0.001	ND	0.522	NR	NR	104
4,6-Dinitro-2-methylphenol	0.001	ND	0.496	NR	NR	99
n-Nitrosodiphenylamine	0.001	ND	1.015	NR	NR	102
Diphenylhydrazine	0.005	ND	0.466	NR	NR	93
4-Bromophenyl-phenylether	0.001	ND	0.515	NR	NR	103
Hexachlorobenzene	0.001	ND	0.513	NR	NR	102
Pentachlorophenol	0.005	ND	0.486	99	95	97
Phenanthrene	0.001	ND	0.522	NR	NR	104
Anthracene	0.001	ND	0.507	NR	NR	101
Di-n-butylphthalate	0.001	0.004	0.491	NR	NR	98
Fluoranthene	0.001	ND	0.510	NR	NR	102
Benzidine	0.01	ND	0.558	NR	NR	102
Pyrene	0.001	0.004	0.499	99	124	112
Butylbenzylphthalate	0.001	ND	0.477	NR	NR	100
Benz[a]anthracene	0.001	ND	0.495	NR	NR	94
3,3-Dichlorobenzidine	0.001	ND	0.477	NR	NR	99
Chyrsene	0.001	ND	0.474	NR	NR	95
bis(2-Ethylhexyl)phthalate	0.001	0.001	0.480	NR	NR	96
Di-n-octlphthalate	0.001	ND	0.493	NR	NR	99
Benzo[b]fluoranthene	0.001	ND	0.459	NR	NR	92
Benzo[k]fluoranthene	0.001	ND	0.499	NR	NR	100
Benzo[a]pyrene	0.001	ND	0.487	NR	NR	97
Indeno[1,2,3-cd]pyrene	0.001	ND	0.451	NR	NR	90
Dibenz[a,h]anthracene	0.001	ND	0.430	NR	NR	86
Benzo[g,h,i]perylene	0.001	ND	0.422	NR	NR	84

ND = Not Detected

	% RECOVERY
2-Fluorophenol SURR	88
Phenol-d5 SURR	87
Nitrobenzene-d5 SURR	88
2-Fluorobiphenyl SURR	93
2,4,6-Tribromophenol SURR	87
Terphenyl-d14 SURR	99

METHODS: EPA 625.

Director, Dr. Blair Leftwich
Dr. Bruce McDonell

7-25-94
DATE

6701 Aberdeen Avenue
Lubbock, Texas 79424
806•794•1296
FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

July 25, 1994
Receiving Date: 06/30/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 07/13/94
Sampling Date: 06/28/94
Sample Condition: I & C
Sample Received by: McD
Project Name: Lea RO Reject

ORGANOCHLORINE INSECTICIDES (mg/L)	T23022 Lea RO Reject	Detection Limit	QC__	%P	%EA	%IA
a-BHC	ND	0.003	0.0006	100	93	80
b-BHC	ND	0.006	0.0008	90	120	107
g-BHC	ND	0.004	0.0009	88	119	120
s-BHC	ND	0.009	0.0008	94	119	107
Heptachlor	ND	0.003	0.0010	100	80	133
Aldrin	ND	0.004	0.0009	88	107	120
Heptachlor epoxide	ND	0.004	0.0009	86	125	120
Endosulfan-1	ND	0.005	0.0009	100	80	120
Endosulfan-2	ND	0.004	0.0008	90	125	107
DDE	ND	0.004	0.0007	80	125	93
Dieldrin	ND	0.002	0.0007	80	125	93
Endrin	ND	0.006	0.0007	93	80	93
DDD	ND	0.005	0.0006	88	119	80
Endrin Aldehyde	ND	0.01	0.0007	95	119	93
Endosulfan Sulphate	ND	0.05	0.0007	93	93	93
DDT	ND	0.005	0.0007	80	125	93
Methoxychlor	ND	0.01	0.0010	100	80	133
PCB's	ND	0.001	---	---	---	---
Chlordane	ND	0.0002	0.0021	100	105	105
Toxaphene	ND	0.005	0.0208	99	84	104

ND = Not Detected

METHODS: EPA 608.

7-28-94

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

DATE

6701 Aberdeen Avenue
Lubbock, Texas 79424
806•794•1296
FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

July 25, 1994
Receiving Date: 06/30/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 07/14/94
Sampling Date: 06/28/94
Sample Condition: I & C
Sample Received by: McD
Project Name: Lea RO Reject

EPA 624 Compounds (ppb)	T23022 Lea RO Reject	Detection Limit	QC	%P	%EA	%IA
Chloromethane	ND	1	67			134
Vinyl chloride	ND	2	55			110
Bromomethane	ND	1	51			102
Chloroethane	ND	1	59			118
1,1-Dichloroethene	ND	2	60	94	90	120
Methylene chloride	ND	1	51			102
trans-1,2-Dichloroethene	ND	1	54			108
1,1-Dichloroethane	ND	1	53			106
Chloroform	ND	1	52			104
1,1,1-Trichloroethane	ND	1	51			102
1,2-Dichloroethane	ND	2	46			92
Benzene	ND	0.2	63	104	142	126
Carbon Tetrachloride	ND	10	48			96
1,2-Dichloropropane	ND	2	41			82
Trichloroethene	ND	2	48	105	92	96
Bromodichloromethane	ND	1	53			106
trans-1,3-Dichloropropene	ND	2	46	94	80	92
Toluene	ND	0.5	52			104
1,1,2-Trichloroethane	ND	1	49			98
Dibromochloromethane	ND	1	52			104
Tetrachloroethene	ND	2	61			122
Chlorobenzene	ND	1	50	93	89	100
Ethylbenzene	ND	0.5	51			102
Bromoform	ND	1	43			86
1,1,2,2-Tetrachloroethane	ND	1	52			104
Acentonitrile	ND	30				
Acrylonitrile	ND	30				

NAVAJO REFINING
Project Location: Artesia, NM
Project Name: Lea RO Reject

EPA 624 Compounds (ppb)	T23022 Lea RO Reject	Detection Limit	QC	%P	%EA	%IA
1,2-Dichloroethene	ND	10				
Acrolein	ND	30				
2-Chloroethyl vinyl ether	ND	10				

	% RECOVERY
1,2-Dichloroethane-d4 SURR	100
Toluene-d8 SURR	120
4-Bromofluorobenzene SURR	99

*ND = Not Detected

METHODS: EPA 624.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

7-25-94
DATE

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

July 25, 1994
Receiving Date: 06/30/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 07/11/94
Sampling Date: 06/28/94
Sample Condition: Intact & Cool
Sample Received by: McD
Project Name: Lea RO Reject

TOTAL METALS

TA#	FIELD CODE	As (ppm)	Ba (ppm)	Cd (ppm)	Cr (ppm)	Hg (ppm)	Ni (ppm)	Be (ppm)	V (ppm)	B (ppm)	Cu (ppm)	Fe (ppm)
T23022	Lea RO Reject	<0.1	0.24	<0.01	<0.01	<0.001	0.05	<0.01	0.06	0.16	<0.05	0.08
QC	Quality Control	5.16	107.2	5.20	5.33	0.02	5.16	5.13	5.08	4.98	5.05	5.18
DETECTION LIMIT		0.1	0.05	0.01	0.01	0.001	0.05	0.01	0.05	0.05	0.05	0.05
% Precision		100	99	100	100	100	100	100	101	100	99	100
% Extraction Accuracy		99	113	96	103	100	95	95	95	97	95	98
% Instrument Accuracy		103	107	104	107	100	103	103	102	100	101	104

TA#	FIELD CODE	Zn (ppm)	Al (ppm)	Co (ppm)	Mn (ppm)	Mo (ppm)	U (ppm)	Pb (ppm)	Se (ppm)	Ag (ppm)
T23022	Lea RO Reject	<0.01	0.14	<0.05	<0.05	<0.05	<0.5	0.008	<0.001	0.001
QC	Quality Control	5.19	1.00	5.02	5.14	5.21	9.8	0.055	0.088	0.094
DETECTION LIMIT		0.01	0.08	0.05	0.05	0.05	0.5	0.001	0.001	0.001
% Precision		100	96	99	99	100	100	100	96	104
% Extraction Accuracy		99	94	91	98	97	96	94	96	96
% Instrument Accuracy		104	100	100	103	104	100	101	88	94

METHODS: EPA 200.7, 245.1, 239.2, 270.2, 272.2.
QC: Blank Spiked with 5.0 ppm As, Cd, Cr, Ni, Be, V, B, Cu, Fe, Zn, Co, Mn, Mo; 100 ppm Ba; 0.020 ppm Hg; 1.00 ppm Al; 9.8 ppm U; 0.050 ppm Pb; 0.100 ppm Se, Ag.

BS

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

7-25-94
DATE

Attachment VI

Lea Refinery

Sulfa-Check 2420

(Wastewater Sulfide Control Chemical)

Material Safety Data Sheets

NALCO/EXXON ENERGY CHEMICALS, L.P.
P.O. BOX 87, SUGARLAND, TEXAS 77487-0087
TELE 713 263 7000 FAX-IT-BACK 713 263 7245

DATE PREPARED: MAY 11, 1994
MSDS NO.: 72420000

SULFA-CHECK 2420

SECTION 1. CHEMICAL PRODUCT AND COMPANY INFORMATION

PRODUCT NAME: SULFA-CHECK 2420

CHEMICAL NAME:
Not Applicable: Blend

CHEMICAL FAMILY:
Inorganic Oxidizer for H2S

PRODUCT DESCRIPTION:
Clear Yellow Orange Liquid
Sulfur Odor

CONTACT ADDRESS:
NALCO/EXXON ENERGY CHEMICALS, L.P.
P.O. BOX 87, Sugar Land, Texas 77487-0087

** EMERGENCY TELEPHONE NUMBERS: (24 Hours) **
** CHEMTREC (800) 424-9300 **
** NALCO/EXXON ENERGY CHEMICALS (800) IM ALERT **

NON EMERGENCY TELEPHONE NUMBERS : (8am-5pm M-F)
FOR HEALTH AND SAFETY INFORMATION CALL : (713) 263-7000
FOR GENERAL PRODUCT INFORMATION CALL : (713) 263-7000

SECTION 2. COMPOSITION / INFORMATION ON INGREDIENTS

The composition of this mixture may be proprietary information. In the event of a medical emergency, compositional information will be provided to a physician or nurse.

Continues on page 2

NALCO/EXXON ENERGY CHEMICALS, L.P.
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SULFA-CHECK 2420

This product is hazardous as defined in 29 CFR1910.1200, based on the following compositional information:

OSHA HAZARD	COMPONENT
Eye and Skin Irritant	Sodium Nitrite, Polysulfide
Aersols Irritating to Eye and Respiratory Tract	Sodium Nitrite
Toxic Systemic via Ingestion and Inhalation	Sodium Nitrite

SECTION 3. HAZARDS IDENTIFICATION

POTENTIAL HEALTH EFFECTS

EYE CONTACT:
Irritating, and will injure eye tissue if not removed promptly.

SKIN CONTACT:
Irritating.
Frequent or prolonged contact may irritate and cause dermatitis.
May cause skin sensitization, an allergic reaction which becomes evident on reexposure to this material.
Sodium Nitrite - Concentrated aqueous solutions may cause irritation. Prolonged or repeated exposure can result in temporarily yellowing the skin.

INHALATION:
Vapors and/or aerosols which may be formed at elevated temperatures may be irritating to eyes and respiratory tract.

INGESTION:
Moderately toxic.
Irritating to mouth, throat and stomach. May cause gastric tract disorder and/or damage.
Sodium Nitrite - Swallowing the concentrted aqueous solution causes irritation of mouth, throat, and stomach along with flushed face, uneven heart action, dizziness, tremors and nausea. Large doses can lead to conversion of hemoglobin to methemoglobin, producing cyanosis, marked fall in blood pressure leading to collapse, coma, and possibly death.

CHRONIC EFFECTS
Sodium nitrite can form nitrosamine when formulated with amine compounds. Nitrosamines are carcinogenic in experimental animals.

Continues on page 3

NALCO/EXXON ENERGY CHEMICALS, L.P.
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SULFA-CHECK 2420

SECTION 4. FIRST AID MEASURES

EYE CONTACT:
Immediately flush eyes with large amounts of water for at least 15 minutes. Get prompt medical attention.
SKIN CONTACT:
Immediately flush with large amounts of water; use soap if available. Remove contaminated clothing, including shoes, after flushing has begun. If irritation persists, seek medical attention.
INHALATION:
Using proper respiratory protection, immediately remove the affected victim from exposure. Administer artificial respiration if breathing is stopped. Keep at rest. Call for prompt medical attention.
INGESTION:
If swallowed, and INDIVIDUAL IS CONSCIOUS, induce vomiting. Get prompt medical attention. DO NOT attempt to give anything by mouth to an unconscious person.

SECTION 5. FIRE FIGHTING PROCEDURES

FLASHPOINT: > 210 Deg F. METHOD: Tag CC
FLAMMABLE LIMITS: NOTE: Not Available
AUTOIGNITION TEMPERATURE: NOTE: Not Available
GENERAL HAZARD
Low Hazard. liquid can burn upon heating to temperatures at or above the flashpoint.
If thermally decomposed, flammable/toxic gases may be released.
Toxic gases will form upon combustion.
"Empty" containers retain product residue (liquid and/or vapor) and can be dangerous. *DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR* EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.
Empty drums should be completely drained, properly bunged and promptly returned to a drum reconditioner, or properly disposed of.

FIRE FIGHTING
Use water spray to cool fire exposed surfaces and to protect personnel.
Isolate "fuel" supply from fire.
Use alcohol type foam, dry chemical or water spray to extinguish fire.
Respiratory and eye protection required for fire fighting personnel.

Continues on page 4

NALCO/EXXON ENERGY CHEMICALS, L.P.
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SULFA-CHECK 2420

DECOMPOSITION PRODUCTS UNDER FIRE CONDITIONS
Smoke, Fumes, Carbon Monoxide, Carbon Dioxide and Nitrogen Oxides.

SECTION 6. ACCIDENTAL RELEASE MEASURES

LAND SPILL
Eliminate sources of ignition. Prevent additional discharge of material, if possible to do so without hazard. For small spills implement cleanup procedures; for large spills implement cleanup procedures and, if in public area, keep public away and advise authorities. Also, if this product is subject to CERCLA reporting (see Section 7) notify the National Response Center.
Prevent liquid from entering sewers, watercourses, or low areas. Contain spilled liquid with sand or earth.
Recover by pumping or with a suitable absorbent.
Consult an expert on disposal of recovered material and ensure conformity to local disposal regulations.

WATER SPILL
Prevent additional discharge of material, if possible to do so without hazard. Advise authorities.
Consult Health Information and Protection (Section 3) regarding possible hazards .
Consult an expert on disposal of recovered material and ensure conformity to local disposal regulations.

SECTION 7. STORAGE AND HANDLING

ELECTROSTATIC ACCUMULATION HAZARD:
Unknown, use proper grounding procedure
STORAGE TEMPERATURE, DEG F:
30 to 150
LOADING/UNLOADING TEMPERATURE, DEG F:
30 to 120
STORAGE/TRANSPORT PRESSURE, MMHG:
Atmospheric
LOADING/UNLOADING VISCOCITY, cST:
2.3 to 1.5
STORAGE AND HANDLING:
Keep container closed. Handle and open containers with care.

Continues on page 5

NALCO/EXXON ENERGY CHEMICALS, L.P.
P.O. BOX 87, SUGARLAND, TEXAS 77487-0087
TELE 713 263 7000 FAX-IT-BACK 713 263 7245

Store in a cool, well ventilated place away from incompatible materials.
Do NOT handle or store near an open flame, heat or other sources of ignition. Protect material from direct sunlight.
It is not known if this material is a static accumulator. Therefore, use proper grounding procedures.
Do NOT pressurize, cut, heat, or weld containers. Empty product containers may contain product residue. Do NOT reuse empty containers without commercial cleaning or reconditioning.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

Ventilation should be provided to control worker exposures and prevent health risk.

PERSONAL PROTECTION

For open systems where contact is likely, wear chemical resistant gloves, rubber boots, a chemical jacket, chemical goggles, and a face shield.
Where contact may occur, wear long sleeves, chemical resistant gloves, and a face shield.
Where overexposure by inhalation may occur and engineering, work practice or other means of exposure reduction are not adequate, approved respirators may be necessary.
All contact should be avoided by persons with known hypersensitivity to SODIUM CARBONATE.

EXPOSURE GUIDELINES:

No workplace exposure limits have been established for this product.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

SPECIFIC GRAVITY:	1.32 at 60
SOLUBILITY IN WATER, WT. % AT Deg F:	Soluble
VISCOSITY OF LIQUID, CST AT Deg F:	1.7 at 100 Cannon-Fenske
	1.4 at 150 Cannon-Fenske
SP. GRAV. OF VAPOR, at 1 atm (Air=1):	1.18
FREEZING/MELTING POINT, Deg F:	30 Pour Point
EVAPORATION RATE, n-Bu Acetate=1:	1.5 Calculated
BOILING POINT, Deg F:	208 Calculated IBP
pH:	12.8

Continues on page 6

NALCO/EXXON ENERGY CHEMICALS, L.P.
P.O. BOX 87, SUGARLAND, TEXAS 77487-0087
TELE 713 263 7000 FAX-IT-BACK 713 263 7245

SULFA-CHECK 2420

SECTION 10. STABILITY AND REACTIVITY

STABILITY:
Stable
HAZARDOUS POLYMERIZATION:
Will not occur
CONDITIONS TO AVOID INSTABILITY:
Temperatures over 180 F.
MATERIALS AND CONDITIONS TO AVOID INCOMPATIBILITY:
Strong acids and reducing agents, organics and heat, primary and secondary amines.
HAZARDOUS DECOMPOSITION PRODUCTS:
NO, NO2, H2S and NH3; Organic nitrates/nitrites (explosive); Nitrosoamines

SECTION 11. TOXICOLOGY INFORMATION

PLEASE CALL THE NON-EMERGENCY TELEPHONE NUMBER ON PAGE 1 IF INFORMATION IS REQUIRED.

SECTION 12. ECOLOGICAL INFORMATION

PLEASE CALL THE NON-EMERGENCY TELEPHONE NUMBER ON PAGE 1 IF INFORMATION IS REQUIRED.

SECTION 13. DISPOSAL CONSIDERATIONS

PLEASE REFER TO SECTIONS 5, 6 AND 15 FOR DISPOSAL AND REGULATORY INFORMATION.

SECTION 14. TRANSPORT INFORMATION

DEPARTMENT OF TRANSPORTATION (DOT):
DOT SHIPPING DESCRIPTION: OTHER REGULATED SUBSTANCES, LIQUID, N.O.S., (SODIUM NITRITE AQUEOUS SOLUTION), 9, NA 3082, III

SECTION 15. REGULATORY INFORMATION

TSCA:
Components of this product are listed on the TSCA Inventory.

Continues on page 7

NALCO/EXXON ENERGY CHEMICALS, L.P.
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SULFA-CHECK 2420

CERCLA:
If the reportable quantity of this product is accidentally spilled, the incident is subject to the provisions of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and must be reported to the National Response Center by calling 800-424-8802.
The reportable spill quantity of this product is 264 pounds.
It contains:
Sodium Nitrite.

SARA TITLE III:
Under the provisions of Title III, Sections 311/312 of the Superfund Amendments and Reauthorization Act, this product is classified into the following hazard categories:
Immediate health, Delayed Health.
This information may be subject to the provisions of the Community Right-to-Know Reporting Requirements (40 CFP 370) if threshold quantity criteria are met.
This product does not contain Section 313 Reportable Ingredients.

SECTION 16. OTHER INFORMATION

NOTES:
Sodium Nitrite -
Skin Contact:
Concentrated aqueous solution may cause irritation. Prolonged or repeated exposure can result in temporarily yellowing the skin.
Ingestion: Swallowing the concentrated aqueous solution causes irritation of mouth, throat, and stomach along with flushed face, uneven heart action, dizziness, tremors and nausea. Large doses can lead to conversion of hemoglobin to methemoglobin, producing cyanosis, marked fall in blood pressure leading to collapse, coma, and possibly death.
Chronic Effects of Exposure:
Under certain conditions, nitrites may react with secondary amines to form carcinogenic nitrosamines.
Medical Conditions Generally Aggravated by Exposure: Pre-existing cardiovascular or bone marrow diseases.
Carcinogenicity: This material is not considered to be a carcinogen by the National Toxicology Program, the International Agency for Research on Cancer, or the Occupational Sagety and Health Administration.
Other Data: Sodium Nitrite is an animal mutagenic and tumorigenic agent. Absorption of sodium nitrite can cause methemoglobinemia. Death may occur w there has been about 80% conversion of hemoglobin to methemoglobin. Systems include intense cyanosis, nausea, vertigo, vomiting, collapse, spasms of

Continues on page 8

NALCO/EXXON ENERGY CHEMICALS, L.P.
P.O. BOX 87, SUGARLAND, TEXAS 77487-0087
TELE 713 263 7000 FAX-IT-BACK 713 263 7245

SULFA-CHECK 2420

intestinal tract with pain, coma, convulsions and death.

HAZARD RATING SYSTEMS:
This information is for people trained in:
National Paint & Coatings Association's (NPCA)
Hazardous Materials Identification System (HMIS)
National Fire Protection Association (NFPA 704)
Identification of the Fire Hazards of Materials

	NPCA-HMIS	NFPA 704
HEALTH	2	2
FLAMMABILITY	1	1
REACTIVITY	0	0

KEY
4 = Severe
3 = Serious
2 = Moderate
1 = Slight
0 = Minimal

REVISION SUMMARY:
Since September 11, 1993 this MSDS has been revised in Section(s):
3, 4, 5, 6, 7, 8, 9

REFERENCE NUMBER: HDHA-A-11690
SUPERSEDES ISSUE DATE: September 11, 1993

This information relates to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is to the best of our knowledge and belief, accurate and reliable as of the date compiled. However, no representation, warranty or guarantee is made as to its accuracy, reliability or completeness. It is the users responsibility to satisfy himself as to the suitability and completeness of such information for his own particular use. We do not accept liability for any loss or damage that may occur from the use of this information nor do we offer warranty against patent infringement.

LAST PAGE

DISCHARGE PLAN APPLICATION

ATTACHMENT TO SECTION VII

Liquid and Solid Waste Transfer and Storage Procedures

Attachment VII. Liquid and Solid Waste Transfer and Storage Procedures

Solid Waste

Navajo maintains two water-tight, 20-cubic yard rolloff bins on refinery property for temporary storage of hazardous and nonhazardous solid wastes. The rolloffs are clearly labeled as either hazardous or nonhazardous. Wastes are sent to the rolloffs as necessary by means of lugger buckets. In addition, hydrocarbon-contaminated soil is currently stockpiled on plastic sheeting at two locations within the refinery pending NMOCD approval for their disposal.

Disposal practices for hazardous and nonhazardous solid wastes are described in Attachment VIII.

Effluent Water

Tank draw water is collected in galvanized metal sumps located within the firewalls of the tanks, where it is routinely removed by vacuum truck to the refinery waste water treatment system, as described in Attachment VIII.

RO reject water is piped directly to a facility located west of the refinery which is owned and operated by Greenhill Petroleum (Greenhill's offices are located approximately one mile north of the refinery). The RO reject is subsequently used for enhanced oil recovery operations, and displaces drinking-quality water formerly purchased from the City of Lovington. This disposal practice is authorized by NMOCD under separate permit.

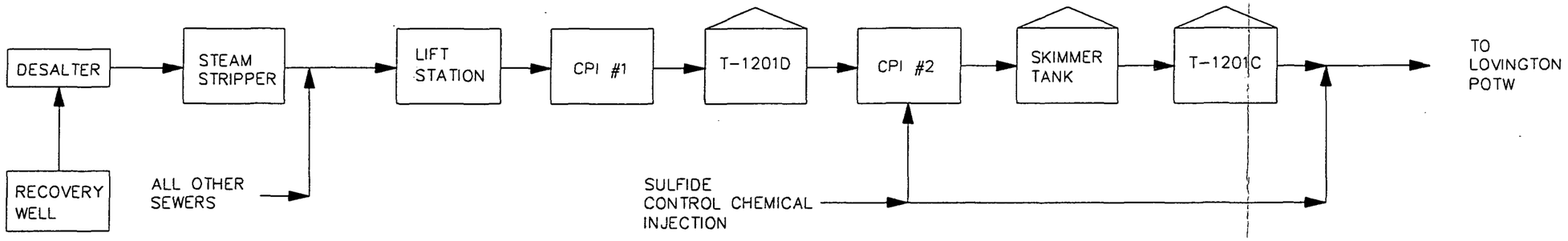
A block flow diagram of the facility wastewater treatment system is included in this Attachment. In brief, oily wastewater from the refinery process sewers discharge to a lift station sump from which it is pumped to the adjacent Corrugated Plate Interceptor No.1 (CPI-1). Separated oil is skimmed off the unit and pumped to slop oil storage from which it is re-introduced into the refining process. Separated water is sent to Tank 1201D for temporary storage and separated solids are drawn off to temporary hazardous waste storage. The water from Tank 1201D is then routed to Corrugated Plate Interceptor No. 2 (CPI-2), where any residual skimmed oil is again routed to temporary storage prior to reprocessing, and any residual solids join those collected from CPI-1. Treated wastewater from CPI-2 is pumped to the Skimmer Tank, and lastly to Tank T-1201C. Both ahead of Tank 1201C and after it, a Nalco

sulfide control chemical (discussed in Attachment VI) is added to the effluent stream to control sulfide to 3 ppm or less. It is then pumped to the City of Lovington treatment facility for further treatment (as further discussed in Attachment VIII).

Under NMOCD authority, Lea Refining is remediating a groundwater contamination problem that resulted from a failure of a junction box in the sewer system. The junction box has been replaced by a new box with secondary containment as per NMOCD directive. The remediation program will generate a mixed-phase flow of groundwater and free-phase hydrocarbons from a recovery well installed at the site of the leak. This flow, which is designed to be approximately 20 gpm, will be pumped to the desalter. In the desalter, the hydrocarbon portion will join the crude oil being desalted and the water portion will augment the desalting function prior to being discharged to a steam stripper. The stripped desalter effluent then discharges to the sewer system.

WASTE WATER TREATMENT BLOCK FLOW DIAGRAM

LEA REFINING CO.



NOTE:
CPI IS A CORRUGATED PLATE INTERCEPTOR-
AN ABOVE GROUND TYPE OF
OIL/WATER/SOLIDS SEPARATOR.

DGJ
06-25-96 REV.0

ATTACHMENT TO SECTION VIII

Liquid and Solid Waste Disposal Procedures

Attachment VIII. Liquid and Solid Waste Disposal Procedures

Solid Wastes

RCRA-listed hazardous wastes (F037 -primary oil/water/solids separation sludge) is periodically shipped to Navajo's Artesia refinery, where it is treated at a waste processing operation located at the wastewater treatment plant. This processing operation is owned and operated by Scaltech, Inc. Under RCRA regulations, the Scaltech operation is considered to be a part of the wastewater treatment system, and therefore does not require a RCRA treatment permit. Scaltech processes the sludges to remove most of the water and oil, which is returned to the API separator. Then, a low-value oil (slurry bottoms) generated within the refinery is added to the waste, thus producing a hazardous waste fuel that is transported by truck or railcar to RCRA-permitted cement kilns located in Texas, Missouri and Mississippi.

As discussed in Attachment VI of this Discharge Permit Application, Navajo is currently awaiting NMOCD approval for the disposal of quantities of three nonhazardous wastes (asphalt, slop oil-contaminated soil, and crude-contaminated soil) at an NMOCD-permitted disposal facility (CRI Inc., located near Hobbs, New Mexico).

Effluent Water

As discussed in Section VII, RO reject water is used as injection water for oilfield production operations, as specified under separate NMOCD permit. This RO reject water directly displaces drinking-quality water which was formerly purchased from the City of Lovington.

Wastewater treatment system effluent is directed to the City of Lovington POTW. The effluent is pumped directly to the POTW via a 35,000 ft, 6-inch diameter HDPE line. The effluent pipeline is equipped with a pig launcher and catcher system to maintain line flow capacity. The line is pigged on an as-needed basis (typically about 2-4 times per year).

Refinery effluent is commingled with city sanitary wastewater prior to final treatment. The Lovington POTW discharge is regulated under permit authorized by the Groundwater Bureau of the New Mexico Environment Department.

ATTACHMENT TO SECTION IX

Routine Inspection and Maintenance Plan

Attachment IX. Routine Inspection and Maintenance Plan

Navajo conducts a routine inspection program for facility tank farm areas in order to prevent inadvertent discharges of product, wastes or wastewater to the environment. The tank farm inspections are documented on Daily Tank Gauge Report and Tank Farm Inspection Report forms, which are maintained at the refinery main office.

Navajo has also initiated a more comprehensive monthly inspection program for all facility tank farm areas. The following general observational criteria are included in the inspection program:

- condition of fittings, pumps, pump seals, valves, and piping;
- indication of tank leakage or damage to tank foundations;
- sump contents and fill levels;
- damage to dikes; and
- evidence of sewer lines backing up due to clogging.

The facility Safety Coordinator is responsible for the monthly tank farm inspections. Formal inspection forms are used to document the monthly inspections, which are maintained in the office of the Lea Refinery Safety Supervisor.

All pump units within the refinery are subject to a routine program of inspection and maintenance provided by experienced personnel, and maintenance records for each pump unit are kept on file at the refinery.

In addition, the refinery operates on a 24 hour per day basis, and is therefore under the continuous observation of experienced staff. Any minor releases are controlled using industry-standard practices (temporary earthen berms, absorbent pigs, etc.).

The refinery is designed to prevent the uncontrolled runoff of stormwater resulting from normal precipitation events. Process and loading areas are paved and bermed, and stormwater from these areas is diverted to the wastewater treatment system via a separate storm sewer network.. Storm sewer water goes to Tank 1201 D via a large-capacity steam turbine-driven pump. This tank has sufficient storm surge capacity (3.3 million gallons) to handle the vast majority of storm events. In the remote event that further surge capacity is needed, capacity in Tank 1201-C (also 3.3 million gallons) is also be available for that purpose.

Refinery tank farm areas are bermed to contain any stormwater which falls within their perimeter. In addition, a network of berms has been installed around the entire refinery property. These berms are designed to contain all runon/runoff resulting from a 100 year storm event (6 inches of precipitation in 24 hours).

ATTACHMENT TO SECTION X

Release Contingency Plan

Attachment X. Release Contingency Plan

In accordance with the federal Oil Pollution Act (OPA) and 40 CFR Part 112, Navajo has prepared a Facility Response Plan (FRP). This document assists facility personnel in preparation and response to discharges originating from the facility, and defines organizational lines of responsibility, procedures for notification, activation and mobilization, and ensure compliance with applicable federal and state regulations.

The FRP contains prioritized procedures for facility personnel to mitigate or prevent discharges of all potential chemicals of concern that could result from any of the following scenarios:

- equipment failure;
- tank overfill/failure;
- piping rupture/leak; and
- explosion and/or fire.

In addition, Section 2.2 of the Navajo FRP specifically details NMOCD spill notification requirements to be performed in accordance with Section 116 of NMOCD regulations. In the event of a "major" release, NMOCD will be notified as soon as possible after discovery of the event, either by telephone or in person at the NMOCD District Office ("immediate notification").

The requirement for immediate notification subsequent to a major release will be triggered when:

- a release of 25 or more barrels of crude oil or condensate (none of which reaches a water course) occurs; or
- a release of 1 or more barrels of crude oil or condensate reaches a watercourse or enters a stream or lake.

A written report ("subsequent notification") shall also be submitted in duplicate to the NMOCD District Office within 10 days of the release event. The relevant information will be submitted using a standard notification form, which will provide the following information:

- location of the incident (quarter-quarter, section, township range, and direction and location from nearest town or landmark);
- nature and quantity of the release;
- general prevailing conditions in the area of release;
- remedial actions taken and planned; and
- description of the area (soils, land use, proximity to watercourses, etc.).

Finally, subsequent notification (as described above) will also be provided to the NMOCD District Office in the event of any release of between 5 to 25 barrels of crude oil or condensate.

ATTACHMENT TO SECTION XI

Geology, Hydrology and Groundwater Quality

Attachment XI. Geology, Hydrology and Groundwater Quality

Geology

The refinery is located in the Eastern Plains of New Mexico at an elevation of approximately 3,800 feet above sea level. The site is underlain by rocks ranging in age from Precambrian to Recent. The thick subsurface deposits of Precambrian to Permian rocks have produced large quantities of oil and gas. Pre-Tertiary bedrock typically strikes northerly to northeasterly, and dips easterly to southeasterly at 1 to 5 degrees.

Above the Permian, to a depth extending within about 255 of the surface, are the impermeable Red Beds of the Triassic Rockum Group. The Red Beds are in turn overlain by the Ogallala Formation, which ranges from a depth of about 90 to 255 feet in the vicinity of the refinery. The Ogallala consists of dense, fine to medium-grained sand, possessing various degrees of cementation and very little fines (silts and clays). The upper part of the formation grades into caliche. In the vicinity of the refinery, the caliche is massive and well-hardened from ground surface to a depth of approximately 14 feet.

Hydrogeology

In Lea County, potable water is produced from three units, the Triassic Dockum Group, the Tertiary Ogallala Formation, and the Quaternary to Recent Alluvium. Water quality and availability are generally better in the Ogallala and alluvium deposits, and a large share of the area groundwater is produced from these units.

The most productive Triassic aquifer is the Santa Rosa Redstone, which supplies water to western Lea County. Groundwater is recharged to this aquifer along outcrops subparrallel to the Lea-Eddy county line east of the refinery, and flows southwesterly along the structural dips of the beds. The unit has relatively low porosity, and yields are typically low.

Overlying the Mesozoic units is the Ogallala Formation, which is the major regional aquifer. This formation consists of calcareous, unconsolidated sands with local caliche beds. The Ogallala Formation ranges from 100 to 250 feet in thickness, with a saturated thickness of

25 to 175 feet. The unit is highly porous and permeable, and depths to water may be as shallow as 20 feet in some areas.

The shallowest aquifer underlying the facility is the Ogallala Formation and/or younger alluvial deposits. The water table is encountered at a depth of about 90 feet beneath the facility, and is dropping at an average rate of about 1 foot per year due to water extraction exceeding recharge. The decline of the aquifer is primarily caused by extensive pumping or irrigation water, particularly across the border in Texas.

Groundwater

At the refinery, the water table is encountered within the Ogallala formation at a depth of about 90 feet. Groundwater flow is consist with the overall regional gradient, moving towards the southeast at an estimated velocity ranging from 0.7 to 2.1 feet/day. Groundwater quality is generally good, with few exceedances of New Mexico Water Quality Control Commission standards having been reported for groundwater samples obtained at the facility. In the vicinity of the refinery, TDS concentrations average about 500 to 1,000 milligrams/liter.

ATTACHMENT TO SECTION XII

Additional Information

Attachment XII. Additional Information

No additional information has been identified for this section of the permit application.

NEW MEXICO ENERGY, MINERALS
& NATURAL RESOURCES DEPARTMENT

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

April 10, 1996

CERTIFIED MAIL
RETURN RECEIPT NO. Z-765-962-940

Mr. David Griffin
Navajo Refining Company
P. O. Drawer 159
Artesia, New Mexico 88211-0159

RE: Discharge Plan GW-014 Renewal
Lea Refinery
Lea County, New Mexico

Dear Mr. Griffin:

On October 30, 1991, the groundwater discharge plan, GW-014, for the Navajo Refining Company (Navajo) Lea Refinery located in the SW/4 of Section 31, Township 16 South, Range 37 East, and the SE/4 of Section 36, Township 16 South, Range 36 East, and the NW/4 of Section 6, Township 17 South, Range 37 East, and the NE/4 of Section 1, Township 17 South, Range 36 East, NMPM, Lea County, New Mexico, was approved by the Director of the New Mexico Oil Conservation Division (OCD). This discharge plan was required and submitted pursuant to Water Quality Control Commission (WQCC) regulations and was approved for a period of five years. The approval will expire on October 30, 1996.

If the facility continues to have potential or actual effluent or leachate discharges and wishes to continue operation, the discharge plan must be renewed. **Pursuant to Section 3106.F., if an application for renewal is submitted at least 120 days before the discharge plan expires (on or before June 30, 1996), then the existing approved discharge plan for the same activity shall not expire until the application for renewal has been approved or disapproved.** The OCD is reviewing discharge plan submittals and renewals carefully and the review time can extend for several weeks to months. Please indicate whether Navajo has made, or intends to make, any changes in the system, and if so, please include these modifications in the application for renewal.

The discharge plan renewal application for the **Lea Refinery** is subject to WQCC Regulation 3114. Every billable facility submitting a discharge plan for renewal will be assessed a fee equal to the filing fee of $50 plus a flat fee of $3,910.00 for oil refineries.

The $50 filing fee is to be submitted with the discharge plan renewal application and is nonrefundable. The flat fee for an approved discharge plan renewal may be paid in a single payment due at the time of approval, or in equal annual installments over the duration of the discharge plan - with the first payment due the at the time of approval. Please make all checks payable to: **NMED-Water Quality Management** and addressed to the OCD Santa Fe Office.

Please submit the original discharge plan renewal application and one copy to the OCD Santa Fe Office and one copy to the OCD Hobbs District Office. **Note that the completed and signed application form must be submitted with your discharge plan renewal request.**

If Navajo no longer has any actual or potential discharges and a discharge plan is not needed, please notify this office. If Navajo has any questions, please do not hesitate to contact Mark Ashley at (505) 827-7155.

Sincerely,

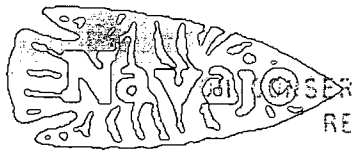
Roger C. Anderson
Environmental Bureau Chief

RCA/mwa

xc: OCD Hobbs Office

TELEPHONE
(505) 748-3311

EASYLINK
62905278



NAVAJO REFINING COMPANY

501 EAST MAIN STREET ◦ P. O. BOX 159
ARTESIA, NEW MEXICO 88211-0159

FAX
(505) 746-6410 ACCTG
(505) 746-6155 EXEC
(505) 748-9077 ENGR
(505) 746-4438 P / L

October 26, 1995

Mark Ashley
Geologist
Environmental Bureau
Oil Conservation Division
2040 S. Pacheco St.
Santa Fe, NM 87505-5472

RE: CLEAN-OUT BOX AT LEA REFINING CO., LEA COUNTY NM

Dear Mark,

Enclosed is a copy of the drawing of the revised clean-out box at Lea Refining. As a you can see, we now have secondary containment and the lid can be lifted to check the annulus for leaks. However, we would like to bring to your attention the fact that the influent through the primary containment is hot. We are sure this will lead to condensation and some water in the secondary containment. This should be easy enough to distinguish from an oily leak.

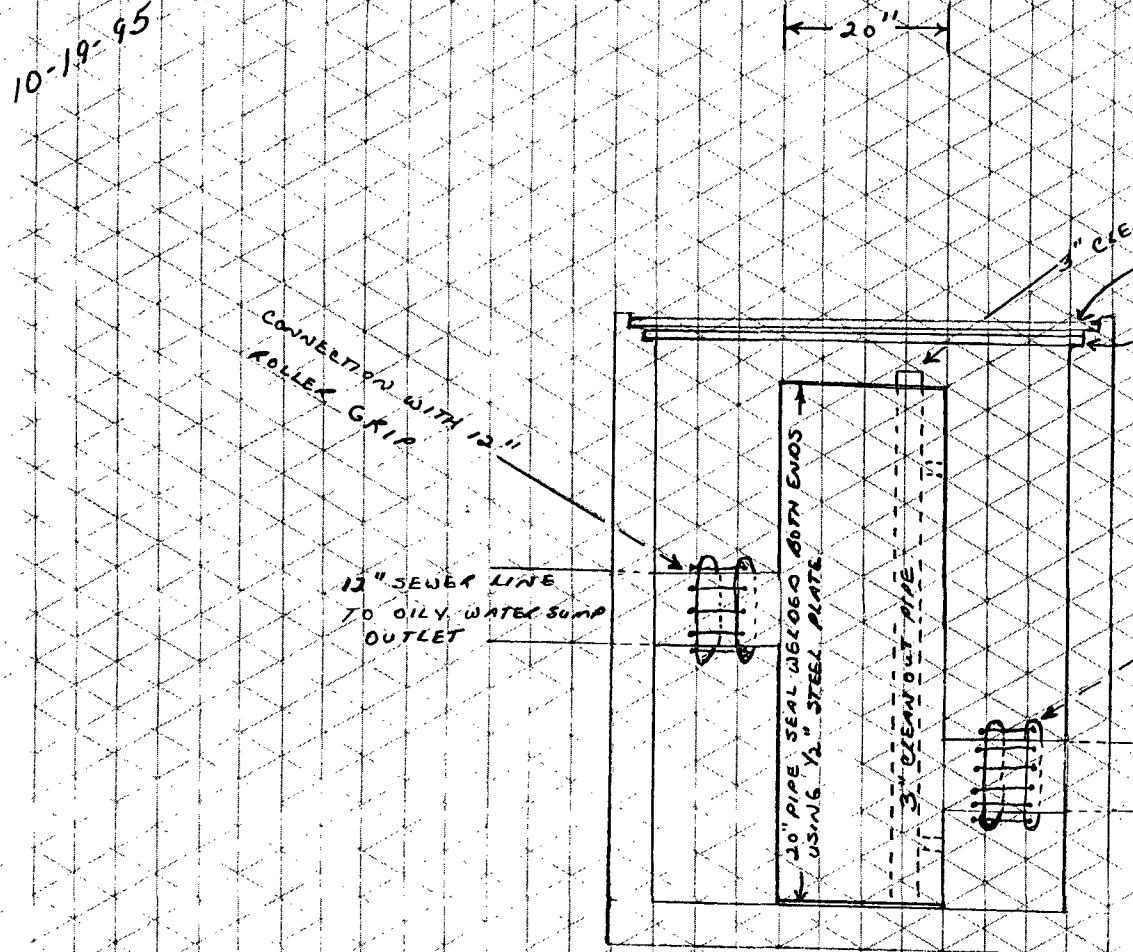
I hope this addresses your concerns and we are sorry for any oversights on our part. If you have any questions, please call me at 505-748-3311.

Sincerely,
NAVAJO REFINING COMPANY

Darrell Moore
Sr. Environmental Specialist

Encl.

10-19-95



SECONDARY CONTAINMENT BOX IS 5'-0" X 5'-0" X 8'-4 3/4" IN HEIGHT. WALLS AND FLOOR ARE 6" THICK- REINFORCED CONCRETE. ½" COVERS ARE REMOVEABLE FOR INSPECTION.

FLOW WILL BE THROUGH A 20" DIAMETER PIPE. PIPE WILL BE SEAL WELDED BOTTOM END USING ½" STEEL PLATE. AN INLET AND OUTLET NOZZLE TO BE WELDED TO 20" PIPE AND ATTACHED TO INLET AND OUTLET SEWER LINES WITH ROLLER GRIPS. A 3" CLEANOUT PIPE TO BE INSTALLED. THREADED AND CAPPED NOZZLE TO BE WELDED TO TOP OF 20" PIPE.

CRA
10-19-95

TELEPHONE
(505) 748-3311

EASYLINK
62905278

Navajo REFINING COMPANY

501 EAST MAIN STREET ◦ P. O. BOX 159
ARTESIA, NEW MEXICO 88211-0159

FAX
(505) 746-6410 ACCTG
(505) 746-6155 EXEC
(505) 748-9077 ENGR
(505) 746-4438 P / L

RECEIVED
'95 JAN 9 AM 8 52

January 3, 1995

Mr. Roger Anderson
Oil Conservation Division
Environmental Bureau
Land Office Bldg.
P.O. Box 2088
Santa Fe, NM 87501

RE: Modification to Discharge Plan, Lea Refining Co., Lea County, New Mexico

Dear Roger,

As you are aware, Lea Refining Company is currently using a reverse osmosis process to treat our feed water into the plant. The reject water off of this unit is presently being sent to the City of Lovington's publicly owned treatment works(POTW). In order to halt this unnecessary treatment of perfectly good water, we have entered into a tentative agreement with Greenhill Petroleum to beneficially use this water as makeup for their secondary recovery efforts in the vicinity of the refinery.

To facilitate this project, Navajo is now seeking a modification to our discharge plan to allow us to discharge the above referenced waters through a 4" poly pipe to Greenhill's battery which is located approximately one mile southwest of the refinery. According to the agreement, Navajo is responsible for the piping within our fences and Greenhill is responsible from our fence to the battery. The piping will be engineered so that in the event of a problem where Greenhill could not take the water, it could be diverted back to Lovington's POTW. Volumes will run about 175000 gallons a day or 120 gallons a minute.

I have enclosed the analysis of the reject water for your review. We would like to start construction of the pipeline as soon as possible. To that end, if you agree with this proposal, we would appreciate it if you could give us verbal approval pending written approval. Let me know if there is anything we can do to speed this process along. Thank you for your time in this matter.

Sincerely,

Darrell Moore

Darrell Moore
Environmental Specialist

Encl.

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

July 25, 1994
Receiving Date: 06/30/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

Analysis Date: 07/11/94
Sampling Date: 06/28/94
Sample Condition: Intact & Cool
Sample Received by: McD
Project Name: Lea RO Reject

TOTAL METALS

TA#	FIELD CODE	As (ppm)	Ba (ppm)	Cd (ppm)	Cr (ppm)	Hg (ppm)	Ni (ppm)	Be (ppm)	V (ppm)	B (ppm)	Cu (ppm)	Fe (ppm)
T23022	Lea RO Reject	<0.1	0.24	<0.01	<0.01	<0.001	0.05	<0.01	0.06	0.16	<0.05	0.08
QC	Quality Control	5.16	107.2	5.20	5.33	0.02	5.16	5.13	5.08	4.98	5.05	5.18
DETECTION LIMIT		0.1	0.05	0.01	0.01	0.001	0.05	0.01	0.05	0.05	0.05	0.05
% Precision		100	99	100	100	100	100	100	101	100	99	100
% Extraction Accuracy		99	113	96	103	100	95	95	95	97	95	98
% Instrument Accuracy		103	107	104	107	100	103	103	102	100	101	104

TA#	FIELD CODE	Zn (ppm)	Al (ppm)	Co (ppm)	Mn (ppm)	Mo (ppm)	U (ppm)	Pb (ppm)	Se (ppm)	Ag (ppm)
T23022	Lea RO Reject	<0.01	0.14	<0.05	<0.05	<0.05	<0.5	0.008	<0.001	0.001
QC	Quality Control	5.19	1.00	5.02	5.14	5.21	9.8	0.055	0.088	0.094
DETECTION LIMIT		0.01	0.08	0.05	0.05	0.05	0.5	0.001	0.001	0.001
% Precision		100	96	99	99	100	100	100	96	104
% Extraction Accuracy		99	94	91	98	97	96	94	96	96
% Instrument Accuracy		104	100	100	103	104	100	101	88	94

METHODS: EPA 200.7, 245.1, 239.2, 270.2, 272.2.
QC: Blank Spiked with 5.0 ppm As, Cd, Cr, Ni, Be, V, B, Cu, Fe, Zn, Co, Mn, Mo; 100 ppm Ba; 0.020 ppm Hg; 1.00 ppm Al; 9.8 ppm U; 0.050 ppm Pb; 0.100 ppm Se, Ag.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

7-25-94
DATE

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

July 25, 1994
Receiving Date: 06/30/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 07/05/94
Sampling Date: 06/28/94
Sample Condition: Intact & Cool
Sample Received by: McD
Project Name: Lea RO Reject

TA#	FIELD CODE	EC (uMHOS/cm)	COD (mg/L)	PHENOLS (mg/L)	NO3 (mg/L)	CHLORIDE (mg/L)	FLUORIDE (mg/L)	SULFATE (mg/L)	ALKALINITY (mg/L as CaCo3) HCO3	ALKALINITY (mg/L as CaCo3) CO3	TDS (mg/L)	CN- (mg/L)
T23022	Lea RO Reject	2,542	88	<0.1	6.0	553	1.8	196	219	---	2,372	<0.01
QC	Quality Control	1,235	54	0.79	1.0	500	2.03	20.7	---	---	---	0.036
% Precision		100	97	100	96	101	96	96	100	---	101	100
% Extraction Accuracy		---	114	98	100	97	87	109	---	---	---	88
% Instrument Accuracy		87	100	105	100	100	96	102	---	---	---	95
DETECTION LIMIT		---	5	0.1	0.1	1	0.1	1	10	---	---	0.01

METHODS: EPA 120.1, 420.2, 340.2, 375.4, 310.1, 335.2, 160.1, 353.3, 410.4, SM 4500 Cl-
QC: Blank Spiked with 500 mg/L CHLORIDE; 2.0 mg/L FLUORIDE; 20.0 mg/L SULFATE; 0.89 mg/L PHENOLS; 0.040 mg/L CYANIDE; 54.18 mg/L COD.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

2-25-94
Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

July 25, 1994
Receiving Date: 06/30/94
Sample Type: Water
Project No: NA
Project Location: NA

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

Analysis Date: 07/11/94
Sampling Date: 06/28/94
Sample Condition: Intact & Cool
Sample Received by: McD
Project Name: Lea RO Reject

TA#	Field Code	POTASSIUM (mg/L)	MAGNESIUM (mg/L)	CALCIUM (mg/L)	SODIUM (mg/L)
T23022	Lea RO Reject	5.6	43.5	304.1	153.0
QC	Quality Control	97.3	22.3	20.6	20.5
Detection Limit		0.1	0.1	0.05	0.1
% Precision		103	100	101	101
% Extraction Accuracy		106	92	88	98
% Instrument Accuracy		97	111	103	102

METHODS: EPA 200.7.
QC: Blank Spiked with 100.0 mg/L POTASSIUM; 20.0 mg/L MAGNESIUM, CALCIUM, SODIUM.

BS

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

7-25-94
Date

6701 Aberdeen Avenue
Lubbock, Texas 79424
806•794•1296
FAX 806•794•1298

Analytical Results for
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

July 25, 1994

Project Name: LEA RO Reject

SAMPLE #	FIELD CODE	Date of Receiving	Date of Analysis	BOD5 (mg/L)	TSS (mg/L)	pH (s.u.)	Cl2 (mg/L)	NH3-N (mg/L)
T23022	Lea RO Reject	06/30/94	07/01/94	<3	1	7.76	<0.1	<0.01

QUALITY CONTROL SUMMARY

BOD5 Precision = 98%
BOD5 Instrument Accuracy = 108%
TSS Precision = 99%
pH Precision = 100%

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

7-25-94
DATE

6701 Aberdeen Avenue
Lubbock, Texas 79424
806•794•1296
FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

July 25, 1994
Receiving Date: 06/30/94
Sample Type: Water
Sampling Date: 06/28/94
Sample Condition: Intact & Cool
Sample Received by: MCD
Project Name: Lea RO Reject
Analysis Date: 07/17/94

T23022
Lea RO

EPA 625 (ppm)	DL	Reject	QC	%P	%EA	%IA
N-Nitrosodimethylamine	0.001	ND	0.454	NR	NR	91
Phenol	0.001	ND	0.485	96	88	97
bis(2-Chloroethyl)ether	0.005	ND	0.475	NR	NR	95
2-Chlorophenol	0.005	ND	0.510	96	101	102
1,3-Dichlorobenzene	0.001	ND	0.496	NR	NR	99
1,4-Dichlorobenzene	0.001	ND	0.494	98	106	99
1,2-Dichlorobenzene	0.001	ND	0.500	NR	NR	100
bis(2-chloroisopropyl)ether	0.005	ND	0.546	NR	NR	109
n-Nitrosodi-n-propylamine	0.001	ND	0.504	97	106	101
Hexachloroethane	0.001	ND	0.487	NR	NR	97
Nitrobenzene	0.001	ND	0.485	NR	NR	97
Isophorone	0.005	ND	0.459	NR	NR	92
2-Nitrophenol	0.005	ND	0.451	NR	NR	90
2,4-Dimethylphenol	0.005	ND	0.466	NR	NR	93
bis(2-Chloroethoxy)methane	0.001	ND	0.440	NR	NR	88
2,4-Dichlorophenol	0.005	ND	0.477	NR	NR	95
1,2,4-Trichlorobenzene	0.001	ND	0.472	100	110	94
Naphthalene	0.001	ND	0.450	NR	NR	90
Hexachlorobutadiene	0.001	ND	0.493	NR	NR	98
4-Chloro-3-methylphenol	0.005	ND	0.482	100	100	96
Hexachlorocyclopentadiene	0.001	ND	0.551	NR	NR	110
2,4,6-Trichlorophenol	0.005	ND	0.635	NR	NR	127
2-Chloronaphthalene	0.001	ND	0.485	NR	NR	97
Dimethylphthalate	0.001	ND	0.486	NR	NR	97
Acenaphthylene	0.001	ND	0.473	NR	NR	95
2,6-Dinitrotoluene	0.001	ND	0.592	NR	NR	118
Acenaphthene	0.005	ND	0.491	100	101	98
2,4-Dinitrophenol	0.005	ND	0.476	NR	NR	95
4-Nitrophenol	0.001	ND	0.448	100	84	90
2,4-Dinitrotoluene			0.553	99	113	111

T23022
Lea RO

EPA 625 (ppm)	DL	Reject	QC	%P	%EA	%IA
Fluorene	0.001	ND	0.464	NR	NR	93
Diethylphthalate	0.001	ND	0.529	NR	NR	105
4-Chlorophenyl-phenylether	0.001	ND	0.522	NR	NR	104
4,6-Dinitro-2-methylphenol	0.001	ND	0.496	NR	NR	99
n-Nitrosodiphenylamine	0.001	ND	1.015	NR	NR	102
Diphenylhydrazine	0.005	ND	0.466	NR	NR	93
4-Bromophenyl-phenylether	0.001	ND	0.515	NR	NR	103
Hexachlorobenzene	0.001	ND	0.513	NR	NR	102
Pentachlorophenol	0.005	ND	0.486	99	95	97
Phenanthrene	0.001	ND	0.522	NR	NR	104
Anthracene	0.001	ND	0.507	NR	NR	101
Di-n-butylphthalate	0.001	0.004	0.491	NR	NR	98
Fluoranthene	0.001	ND	0.510	NR	NR	102
Benzidine	0.01	ND	0.558	NR	NR	102
Pyrene	0.001	0.004	0.499	99	124	112
Butylbenzylphthalate	0.001	ND	0.477	NR	NR	100
Benz[a]anthracene	0.001	ND	0.495	NR	NR	94
3,3-Dichlorobenzidine	0.001	ND	0.477	NR	NR	99
Chyrsene	0.001	ND	0.474	NR	NR	95
bis(2-Ethylhexyl)phthalate	0.001	0.001	0.480	NR	NR	96
Di-n-octlphthalate	0.001	ND	0.493	NR	NR	99
Benzo[b]fluoranthene	0.001	ND	0.459	NR	NR	92
Benzo[k]fluoranthene	0.001	ND	0.499	NR	NR	100
Benzo[a]pyrene	0.001	ND	0.487	NR	NR	97
Indeno[1,2,3-cd]pyrene	0.001	ND	0.451	NR	NR	90
Dibenz[a,h]anthracene	0.001	ND	0.430	NR	NR	86
Benzo[g,h,i]perylene	0.001	ND	0.422	NR	NR	84

ND = Not Detected

	% RECOVERY
2-Fluorophenol SURR	88
Phenol-d5 SURR	87
Nitrobenzene-d5 SURR	88
2-Fluorobiphenyl SURR	93
2,4,6-Tribromophenol SURR	87
Terphenyl-d14 SURR	99

METHODS: EPA 625.

Director, Dr. Blair Leftwich
Dr. Bruce McDonell

7-25-94
DATE

6701 Aberdeen Avenue
Lubbock, Texas 79424
806•794•1296
FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

July 25, 1994
Receiving Date: 06/30/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 07/13/94
Sampling Date: 06/28/94
Sample Condition: I & C
Sample Received by: McD
Project Name: Lea RO Reject

ORGANOCHLORINE INSECTICIDES (mg/L)	T23022 Lea RO Reject	Detection Limit	QC	%P	%EA	%IA
a-BHC	ND	0.003	0.0006	100	93	80
b-BHC	ND	0.006	0.0008	90	120	107
g-BHC	ND	0.004	0.0009	88	119	120
s-BHC	ND	0.009	0.0008	94	119	107
Heptachlor	ND	0.003	0.0010	100	80	133
Aldrin	ND	0.004	0.0009	88	107	120
Heptachlor epoxide	ND	0.004	0.0009	86	125	120
Endosulfan-1	ND	0.005	0.0009	100	80	120
Endosulfan-2	ND	0.004	0.0008	90	125	107
DDE	ND	0.004	0.0007	80	125	93
Dieldrin	ND	0.002	0.0007	80	125	93
Endrin	ND	0.006	0.0007	93	80	93
DDD	ND	0.005	0.0006	88	119	80
Endrin Aldehyde	ND	0.01	0.0007	95	119	93
Endosulfan Sulphate	ND	0.05	0.0007	93	93	93
DDT	ND	0.005	0.0007	80	125	93
Methoxychlor	ND	0.01	0.0010	100	80	133
PCB's	ND	0.001	---	---	---	---
Chlordane	ND	0.0002	0.0021	100	105	105
Toxaphene	ND	0.005	0.0208	99	84	104

ND = Not Detected

METHODS: EPA 608.

7-20-94

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

DATE

6701 Aberdeen Avenue
Lubbock, Texas 79424
806•794•1296
FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

July 25, 1994
Receiving Date: 06/30/94
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Analysis Date: 07/14/94
Sampling Date: 06/28/94
Sample Condition: I & C
Sample Received by: McD
Project Name: Lea RO Reject

EPA 624 Compounds (ppb)	T23022 Lea RO Reject	Detection Limit	QC	%P	%EA	%IA
Chloromethane	ND	1	67			134
Vinyl chloride	ND	2	55			110
Bromomethane	ND	1	51			102
Chloroethane	ND	1	59			118
1,1-Dichloroethene	ND	2	60	94	90	120
Methylene chloride	ND	1	51			102
trans-1,2-Dichloroethene	ND	1	54			108
1,1-Dichloroethane	ND	1	53			106
Chloroform	ND	1	52			104
1,1,1-Trichloroethane	ND	1	51			102
1,2-Dichloroethane	ND	2	46			92
Benzene	ND	0.2	63	104	142	126
Carbon Tetrachloride	ND	10	48			96
1,2-Dichloropropane	ND	2	41			82
Trichloroethene	ND	2	48	105	92	96
Bromodichloromethane	ND	1	53			106
trans-1,3-Dichloropropene	ND	2	46	94	80	92
Toluene	ND	0.5	52			104
1,1,2-Trichloroethane	ND	1	49			98
Dibromochloromethane	ND	1	52			104
Tetrachloroethene	ND	2	61			122
Chlorobenzene	ND	1	50	93	89	100
Ethylbenzene	ND	0.5	51			102
Bromoform	ND	1	43			86
1,1,2,2-Tetrachloroethane	ND	1	52			104
Acentonitrile	ND	30				
Acrylonitrile	ND	30				

NAVAJO REFINING
Project Location: Artesia, NM
Project Name: Lea RO Reject

EPA 624 Compounds (ppb)	T23022 Lea RO Reject	Detection Limit	QC	%P	%EA	%IA
1,2-Dichloroethene	ND	10				
Acrolein	ND	30				
2-Chloroethyl vinyl ether	ND	10				

	% RECOVERY
1,2-Dichloroethane-d4 SURR	100
Toluene-d8 SURR	120
4-Bromofluorobenzene SURR	99

*ND = Not Detected

METHODS: EPA 624.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

7-25-94
DATE

STATE OF NEW MEXICO
ENVIRONMENT DEPARTMENT

May 19, 1993

Mr. William R. Koym
SLCU/Law Department
The Travelers Companies
1201 Louisiana, Suite 3300
Houston, TX 77002

Dear Mr. Koym:

I am referring your letter, dated May 7, 1993, regarding Southern Union Company Lovington Refinery to the Surface Water Bureau and the Hazardous and Radioactive Materials Bureau of the Environment Department, and to the Oil Conservation Division of Energy and Minerals Department for their response to you.

The Ground Water Protection and Remediation Bureau does not have a record on the Southern Union Company Lovington Refinery.

If you have any questions, please contact Jim Piatt of Surface Water Bureau, (505) 827-0187, Benito Garcia of Hazardous and Radioactive Materials Bureau (505) 827-4300, and Roger Anderson of the Oil Conservation Division, (505) 827-5800.

Sincerely,

Dennis McQuillan for

Steve Cary, Chief
Ground Water Protection
and Remediation Bureau

cc: Jim Piatt, Surface Water Bureau
Benito Garcia, Hazardous and Radioactive Materials Bureau
Roger Anderson, Oil Conservation Division

Harold Runnels Building
1190 St. Francis Drive
P.O. Box 26110
Santa Fe, NM 87502
(505) 827-2850
FAX (505) 827-2836

RECEIVED

MAY 14 1993

GROUND WATER BUREAU

The Travelers

The Travelers Companies
1201 Louisiana Suite 3300
Houston, TX 77002

Special Liability Coverage Unit
Law Department

May 7, 1993

Steve Cary, Bureau Chief
Groundwater Protection and
Remediation Bureau
Environmental Improvement Division
1190 St. Francis Drive, Room North 2261
Santa Fe, New Mexico 87502

Site : Southern Union Company
Lovington Refinery
Location : Lovington, NM

Dear Mr. Cary:

Under the Freedom of Information Act of your state I am requesting access to and copies of information regarding the above site located in Lovington, New Mexico. I would ask that you have a department-wide search for all material that is public record for this facility and that material be made available to me for my review.

My goal is to develop a clear chronological picture of the problems that have transpired at this site starting in 1973 until the site was purchased by Holly Corporation/Navaho Refining Company in 1989.

If you deny any or all parts of this request, please cite each specific exemption you think justifies your refusal to release the information and notify me of appeal procedures available under the law.

After this letter has been assigned to the appropriate project manager, please ask that manager to contact me so that arrangements can be made for me to visit your office for the purpose of reviewing the above file. If there are questions concerning this request, please contact me at (713) 650-8766.

Sincerely,

William R. Koym

William R. Koym
SLCU/Law Department
Houston, Texas

WRK:vmw/scary.bk

State of New Mexico

ENVIRONMENT DEPARTMENT

BRUCE KING
GOVERNOR

JUDITH M. ESPINOSA
SECRETARY

RON CURRY
DEPUTY SECRETARY

February 10, 1993

Mrs. Buck Whitaker
901 East Avenue R
Lovington, New Mexico 88260

Re: Navajo Refinery's Lea Facility at Lovington, NM

Dear Mrs. Whitaker:

Thank you for your letter of January 20, 1993, concerning the Lea Refinery industrial waste discharge through the City of Lovington's collection system to the City's wastewater treatment plant.

I understand that a direct pipeline from the refinery to the wastewater treatment plant is under construction right now, and should be placed in service sometime this month. This should resolve the problems you mentioned of refinery waste odors and excessive flows in the collection system, as the line does not go through the City. This effort towards a voluntary resolution to the problems is to be commended. However, there may still be problems with the refinery wastes at the wastewater treatment plant, which the City of Lovington is responsible for and will have to resolve.

The US Environmental Protection Agency is involved with this situation, and has staff assigned to evaluate Navajo Refinery's compliance status under the federal Clean Water Act. The Surface Water Quality Bureau assists the US Environmental Protection Agency in their efforts towards the resolution of this problem.

Harold Runnels Building • 1190 St. Francis Drive • P.O. Box 26110 • Santa Fe, New Mexico 87502
(505) 827-2850 FAX (505) 827-2836

Thank you for expressing your concerns. I hope this information will be beneficial to you. If we can be of further assistance, please call Ann Young of my staff at (505) 827-2823.

Sincerely,

Jim Piatt
Chief
Surface Water Quality Bureau

pc: Bob Carter, City Manager, City of Lovington
David Griffin, Superintendent of Environmental Affairs and Quality Control, Navajo Refining Company
Garry McCaslin, Manager, NMED District IV, Roswell
Tom Burt, Carlsbad Office, NMED
Myra Myers, Hobbs Office, NMED
Robert Garcia, Ground Water Protection and Remediation Bureau, NMED
Bill Olsen, Oil Conservation Division

NOTICE OF PUBLICATION

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

Notice is hereby given that pursuant to New Mexico Water Quality Control Commission Regulations, the following discharge plan applications and renewal applications have been submitted to the Director of the Oil Conservation Division, State Land Office Building, P. O. Box 2088, Santa Fe, New Mexico 87504-2088, Telephone (505) 827-5800:

(GW-85) - Union Oil Company of California, DBA UNOCAL, Glen O. Papp, District Production Engineer, 3300 North Butler, Suite 200, Farmington, New Mexico 87401, has submitted a discharge plan application for its Navajo Compressor Station located in the NW/4, NW/4, Section 7, Township 25 North, Range 10 West, NMPM, San Juan County, New Mexico. Approximately 4 gallons per day of washdown water and natural gas liquids will be collected in a double lined pond equipped with leak detection prior to disposal at an OCD approved offsite disposal facility. Groundwater most likely to be affected by an accidental discharge is at a depth in excess of 100 feet with a total dissolved solids concentration of approximately 700 mg/l. The discharge plan addresses how spills, leaks and other accidental discharges to the surface will be managed.

(GW-86) - BCO, Inc., Elizabeth B. Keeshan, President, 135 Grant, Santa Fe, New Mexico, 87501, has submitted a discharge plan application for its North Lybrook Compressor Station located in the SE/4 SE/4, Section 2, Township 23 North, Range 7 West, NMPM, Rio Arriba County, New Mexico. Approximately 14 gallons per day of wastewater will be stored in an above-ground fiberglass tank prior to disposal in an OCD approved offsite disposal facility. Groundwater most likely to be affected by an accidental discharge is at a depth of approximately 225 feet with a total dissolved solids concentration of approximately 1470 mg/l. The discharge plan addresses how spills, leaks and other accidental discharges to the surface will be managed.

(GW-75) - HOMCO International, Inc., Robert J. Meddler, Director, Environmental and Safety, P. O. Box 2442, Houston, Texas 77252, has submitted a discharge plan application for its Hobbs service facility located in Section 29, Township 18 South, Range 38 East, NMPM, 3000 West County Road, Lea County, New Mexico. Approximately 800 gallons per day of wastewater are presently stored in an above ground storage tank prior to disposal in an OCD approved offsite disposal facility. Proposed modifications include the installation of a wastewater recycling system. Unrecyclable wastes will be stored in below grade concrete sump equipped with leak detection prior to disposal at an OCD approved offsite disposal facility. Groundwater most likely to be affected by an accidental discharge is in the Ogallala aquifer at a depth of 55 feet with a total dissolved solids concentration ranging fro 300 mg/l of 700 mg/l. The discharge plan addresses how spills, leaks and other accidental discharges to the surface will be managed.

(GW-72) - The Western Company of North America, Ron McKeel, Director, Real Estate and Facilities, 515 Post Oak Blvd., Suite 915, Houston, Texas 77027, has submitted a discharge plan application for its Hobbs service facility located in the NE/4, Section 20, Township 18 South, Range 38 East, NMPM, Lea County, New Mexico. Approximately 3350 gallons per day of wastewater with a total dissolved solids concentration of 3942 mg/l is stored in below grade fiberglass tanks prior to disposal at an OCD approved offsite disposal facility. Groundwater most likely to be affected by an accidental discharge is in the Ogallala aquifer at a depth of approximately 55 feet with a total dissolved solids concentration of ranging from 300 mg/l to 700 mg/l. The discharge plan addresses how spills, leaks and other accidental discharges to the surface will be managed.

(GW-76) - Star Tool Company, David T. Taylor, Vice President, P. O. Box 2008, Hobbs, New Mexico 88240, has submitted a discharge plan application for its Hobbs service facility located in the NE/4 NW/4, Section 32, Township 18 South, Range 38 East, NMPM, Lea County, New Mexico. Approximately 10 gallons per day of wastewater are currently stored in unlined pits prior to disposal at an OCD approved offsite disposal facility. Proposed modifications include the installation of a wastewater recycling system. Unrecyclable wastes will be collected in above ground tanks prior to disposal at an OCD approved offsite disposal facility. Groundwater most likely to be affected by an accidental discharge is at a depth of 44 feet with a total dissolved solids concentration ranging from 300 mg/l to 700 mg/l. The discharge plan addresses how spills, leaks and other accidental discharges to the surface will be managed.

(GW-73) - Dowell Schlumberger, Inc., M. L. Wood Jr., Environmental Coordinator, 1105 West Bender Street, Hobbs, New Mexico 88240, has submitted a discharge plan application for its Hobbs service facility located in the NE/4 NE/4, Section 28, Township 18 South, Range 38 East, NMPM, Lea County, New Mexico. Approximately 2200 gallons per day of wastewater is stored in above grade tanks and lined pits prior to disposal at an OCD approved offsite disposal facility. Proposed modifications include the installation of a wastewater recycling system and closure of all surface impoundments. Wastes not recyclable will be disposed of at an OCD approved offsite disposal facility. Groundwater most likely to be affected by an accidental discharge is at a depth of 68 feet with a total dissolved solids concentration ranging from 300 mg/l to 700 mg/l. The discharge plan addresses how spills, leaks and other accidental discharges to the surface will be managed.

(GW-14) - Navajo Refining Company, David G. Griffin, Superintendent, Environmental Affairs, P. O. Box 159, Artesia, New Mexico 88210, has submitted a discharge plan renewal application for its Lovington Refinery located in the SW/4, Section 31, Township 16 South, Range 37 East; the SE/4 of Section 36, Township 16 South, Range 36 East; the NW/4 of Section 6, Township 17 South, Range 37 East; and the NE/4 of Section 1, Township 17 South, Range 36 East, NMPM, Lea County, New Mexico. Approximately 175,000 gallons per day of process wastewater with a total dissolved solids concentration of 1300 mg/l will undergo treatment in a USEPA regulated pretreatment unit prior to discharge to the City of Lovington sanitary sewer system. Groundwater most likely to be affected by an accidental discharge is at a depth ranging from 60 feet to 80 feet with a total dissolved solids concentration of 450 mg/l. The discharge plan addresses how spills, leaks and other accidental discharges to the surface will be managed.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. The discharge plan application may be viewed at the above address between 8:00 a.m. and 5:00 p.m., Monday through Friday. Prior to ruling on any proposed discharge plan or its modification, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which comments may be submitted to him and public hearing may be requested by any interested person. Requests for public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines there is significant public interest.

If no public hearing is held, the Director will approve or disapprove the proposed plan based on information available. If a public hearing is held, the Director will approve or disapprove the proposed plan based on information in the plan and information submitted at the hearing.

GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 5th day of August, 1991.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

WILLIAM J. LEMAY, Director

S E A L

July 17, 1991

TO BE PUBLISHED ON OR BEFORE JULY 27, 1991

PUBLIC NOTICE

NEW MEXICO ENVIRONMENT DEPARTMENT

Notice is hereby given that, pursuant to New Mexico Water Quality Control Commission Regulations, the following proposed discharge plans have been submitted for approval to the New Mexico Environment Department. The information in this notice generally has been supplied by the applicant and may or may not have been confirmed by the Environment Department.

DP-87 CITY OF LOVINGTON, Bob Carter, City Manager, P.O. Box 1269, Lovington, NM 88260, proposes to modify its discharge plan for the discharge of up to 1.5 million gallons per day (MGD) of treated municipal effluent to a land application site. The facility is located in Lovington in Section 10, 11 and 14, T16S, R36E, Lea County. The proposed modification is for addition of 0.17 MGD to the treatment plant from the Navajo refinery. The estimated quality of the waste water from the refinery is: COD, 1056 milligrams per liter (mg/l); CL, 505 mg/l; TKN, 20 mg/l; SO_4, 292 mg/l and TDS, 1300 mg/l. It is estimated that additional 50 to 120 acres of cropland will be needed at the land application site for the additional flow from the refinery. Ground water below the site is at a depth of approximately 60 feet and has a total dissolved solids concentration of approximately 700 mg/l.

DP-398 EILEEN ACRES MOBILE HOME PARK, James L. Wimberly, Owner, P.O. Box 130, Alto, NM 88312, (505) 336-4377, proposes to renew its discharge plan for the disposal of up to 41,300 gallons per day of domestic sewage effluent from a package waste water treatment plant. The facility is located near La Luz on U.S. 54 in the NE 1/4 of Section 33, T15E, R10E, Otero County. The effluent will be irrigated using sprinklers onto 5.6 acres of bermuda grass. Ground water below the site is at a depth of approximately 230 feet and has a total dissolved solids concentration of approximately 1,800 milligrams per liter.

DP-419 US INTERIOR - CHACO CULTURE NATIONAL PARK, Bonnie Winslow, Acting Superintendent, St. Rt. 4, Box 6500, Bloomfield, NM 87513, proposes to renew its discharge plan which allows the discharge of up to 15,000 gallons per day of domestic sewage. The facility is located approximately 40 miles south of Bloomfield in Section 21, T21N, R10W, San Juan County. Domestic septage and reject water from a reverse osmosis unit is pumped to a series of synthetically-lined sewage lagoons for evaporation.

July 17, 1991

TO BE PUBLISHED ON OR BEFORE JULY 27, 1991

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NEW MEXICO ENVIRONMENT DEPARTMENT

Notice is hereby given that, pursuant to New Mexico Water Quality Control Commission Regulations, the following proposed discharge plans have been submitted for approval to the New Mexico Environment Department. The information in this notice generally has been supplied by the applicant and may or may not have been confirmed by the Environment Department.

DP-87 CITY OF LOVINGTON, Bob Carter, City Manager, P.O. Box 1269, Lovington, NM 88260, proposes to modify its discharge plan for the discharge of up to 1.5 million gallons per day (MGD) of treated municipal effluent to a land application site. The facility is located in Lovington in Section 10, 11 and 14, T16S, R36E, Lea County. The proposed modification is for addition of 0.17 MGD to the treatment plant from the Navajo refinery. The estimated quality of the waste water from the refinery is: COD, 1056 milligrams per liter (mg/l); CL, 505 mg/l; TKN, 20 mg/l; SO_4, 292 mg/l and TDS, 1300 mg/l. It is estimated that additional 50 to 120 acres of cropland will be needed at the land application site for the additional flow from the refinery. Ground water below the site is at a depth of approximately 60 feet and has a total dissolved solids concentration of approximately 700 mg/l.

DP-398 EILEEN ACRES MOBILE HOME PARK, James L. Wimberly, Owner, P.O. Box 130, Alto, NM 88312, (505) 336-4377, proposes to renew its discharge plan for the disposal of up to 41,300 gallons per day of domestic sewage effluent from a package waste water treatment plant. The facility is located near La Luz on U.S. 54 in the NE 1/4 of Section 33, T15E, R10E, Otero County. The effluent will be irrigated using sprinklers onto 5.6 acres of bermuda grass. Ground water below the site is at a depth of approximately 230 feet and has a total dissolved solids concentration of approximately 1,800 milligrams per liter.

DP-419 US INTERIOR - CHACO CULTURE NATIONAL PARK, Bonnie Winslow, Acting Superintendent, St. Rt. 4, Box 6500, Bloomfield, NM 87513, proposes to renew its discharge plan which allows the discharge of up to 15,000 gallons per day of domestic sewage. The facility is located approximately 40 miles south of Bloomfield in Section 21, T21N, R10W, San Juan County. Domestic septage and reject water from a reverse osmosis unit is pumped to a series of synthetically-lined sewage lagoons for evaporation.

Ground water below the site is at a depth of approximately 925 feet and has a total dissolved solids concentration of approximately 1,800 milligrams per liter.

DP-429 LOS COLONIAS MOBILE HOME PARK, Elbert D. Martinez, Owner, 2801 Vail Avenue, Redondo Beach, CA 90278-1530, proposes to renew its discharge plan which allows for the discharge of 7,500 gallons per day of domestic waste water into a septic tank-leach field system located 4 miles northwest of Taos in Section 30, T26, R13E, Taos County. Ground water below the site is at a depth of approximately 60 feet and has a total dissolved solids concentration of approximately 300 mg/l.

DP-587 IDEAL MOBILE HOME PARK, LeRoy Huebner, Owner, 120 E. 1st, Clovis, NM 88101, proposes to modify its discharge plan which allows the discharge of up to 6,000 gallons per day of domestic sewage to a series of evaporation lagoons. The facility is located approximately 8 miles northwest of Clovis in the SW 1/4, Section 6, T3N, R35E, Curry County. The modification consists of constructing a series of concrete sewage lagoons for treatment and evaporation of domestic waste from the Ideal Mobile Home Park. Excess clarified sewage supernate will be used to irrigate range land and ornamental trees on property adjacent to the mobile home park owned by Mr. and Mrs. Wall and Mr. Tommie Tucker. Ground water below the site is at a depth of approximately 400 feet and has a total dissolved solids concentration of approximately 300 milligrams per liter.

CORRECTION: DP-810 RANCHO ENCANTADO In the public notice published on or before July 5, 1991, the location should have been Section 7, T18N, R10E. The complete, corrected notice follows:

DP-810 RANCHO ENCANTADO, John T. Egan, Route 4, Box 57C, Santa Fe, NM 87501, proposes to discharge approximately 50,000 gallons per day of treated sewage effluent from a resort community. The facility is located approximately 2.5 miles north of Tesuque in the SW 1/4, SW 1/4, SE 1/4 of Section 7, T18N, R10E, Santa Fe County. The sewage will be treated using a package treatment plant which will facilitate nitrogen removal. The total nitrogen after treatment is estimated to be 10 milligrams per liter (mg/l). The treated effluent will be discharged to a leach field. Ground water below the site is at a depth of approximately 170-300 feet and has a total dissolved solids concentration of approximately 300 mg/l.

DP-811 CONTRACT CARRIERS, Mike Harris, Controller, 830 Broadway Blvd., NE, Albuquerque, NM 87102, proposes to discharge 21,600 gallons per day of spray aerated, oxygenated water from a contaminated monitor well to a bioremediation infiltration bed. The facility is located in Albuquerque in the SW 1/4 of NE 1/4 of SE 1/4, Section 17, T10N, R3E, Bernalillo County. The discharge will establish a biologically active zone in the vadose zone between the infiltration system and the water table, thus

remediating the gasoline contaminated soils. Ground water below the site is at a depth of approximately 45 feet and has a total dissolved solids concentration of approximately 500 milligrams per liter.

DP-812 DONA ANA COUNTY LIQUID WASTE FACILITY, Frank Steele, Director, Environmental Services Department, Dona Ana County, 2025 E. Griggs Avenue, Las Cruces, NM 88001, proposes to discharge up to 30,000 gallons per day for a 5-day week of liquid waste to two geosynthetically lined, total retention/evaporation ponds. The ponds will be constructed with leachate collection systems. The facility is located about 1 1/2 miles northeast of the Interstate I-10 Mesquite Interchange in Section 32, T24S, R3E, Dona Ana County. Ground water below the site is at a depth of approximately 250 feet and has a total dissolved solids concentration of approximately 300-400 milligrams per liter.

DP-813 CANYON KIDS CLUB DAY CARE CENTER, Vincent Botarelli, Property Owner, P.O. Box 939, Idaho Springs, CO 80452, proposes to discharge 2,300 gallons per day of domestic sewage from a day care center. The facility is located in Tijeras in Section 22, T10N, R5E, Bernalillo County. Domestic sewage from the day care center will be discharged to a septic tank-leach field system. Ground water below the site is at a depth of approximately 70 feet and has a total dissolved solids concentration of approximately 400 milligrams per liter.

DP-814 BAYO WASTE WATER TREATMENT PLANT, Paul Pizzoli, Director of Gas, Water, Sewer Operations, Department of Public Utilities, County of Los Alamos, 901 Trinity Drive, P.O. Box 1057, Los Alamos, NM 87544, proposes to discharge 800,000 gallons per day of treated effluent from the Bayo Waste Water Treatment Plant. The effluent will be stored in a lined lagoon and used to irrigate the County golf course and ballfields located 1 mile northeast of Los Alamos on North Mesa in Section 4, T19N, R6E, Los Alamos County. Ground water below the discharge site is at a depth of approximately 850 feet and has a total dissolved solids concentration of approximately 250 mg/l.

Any interested person may obtain further information from the Ground Water Section of the Environment Department, telephone (505) 827-2906, and may submit written comments to the Ground Water Section, Environment Department, P.O. Box 26110, Santa Fe, NM 87502. Prior to ruling on any proposed discharge plan or its modification, the Environment Department will allow thirty (30) days after the date of publication of this notice to receive written comments and during which a public hearing may be requested by any interested person. Requests for public hearing shall set forth the reasons why the hearing should be held. A hearing will be held if the Environment Department determines that there is significant public interest.

TELEPHONE
(505) 748-3311

Navajo REFINING COMPANY
501 EAST MAIN STREET • P. O. DRAWER 159
ARTESIA, NEW MEXICO 88210

EASYLINK
62905278
FAX
(505) 746-6410

July 9, 1991

Mr. David G. Boyer, Chief
Environmental Bureau
Oil Conservation Division
310 Old Santa Fe Trail, Room 206
Santa Fe, NM 87501

RE: LEA REFINING COMPANY DISCHARGE PLAN

Dear Mr. Boyer:

Enclosed are three (3) copies of Lea Refining Company's Discharge Plan submittal. Navajo would like to restart the Lea Refinery in Lovington, NM in October of this year. Your prompt review of this application will be greatly appreciated.

If you have any questions concerning the application please give me a call at 748-3311, ext. 223.

Sincerely,

David G. Griffin
Supt. of Environmental Affairs
& Quality Control

DGG/pb

enclosure

NAVAJO REFINING COMPANY
GROUND WATER DISCHARGE PLAN
LEA REFINERY, LOVINGTON, NEW MEXCIO

July 9, 1991

Prepared For:

New Mexico Oil Conservation Division

P.O. Box 2088

Santa Fe, New Mexico 87501-2088

RECEIVED

JUL 10 1991

OIL CONSERVATION DIV.
SANTA FE

David G. Griffin
Supt. Environmental Affairs
& Quality Control

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1.0 EXECUTIVE SUMMARY:

Navajo Refining Company (Navajo) proposes to renew Discharge Plan GW-14, originally issued by the New Mexico Oil Conservation division (NMOCD) to the Southern Union Refining Company, for the Lea Refinery, located approximately five (5) miles Southeast of Lovington, New Mexico.

The Lea Refinery is a crude-oil refining facility with a rated capacity of 37,000 barrels per stream day. The refinery will produce finished petroleum products, as well as feedstocks for Navajo's Artesia, New Mexico refinery.

Water for all on-site uses will be produced from two (2) wells at the facility, and the normal refining processes will discharge an average of 121 gallons per minute of wastewater. Wastewater, treated to remove free-phase and dissolved hydrocarbons, will have a total dissolved solids content of approximately 1,300 milligrams per liter (mg/l). Following treatment the wastewater will be pumped approximately 20,000 ft. by pipeline do discharge into the gathering system for the City of Lovington (POTW). Lea Refining's effluent will make up approximately 20% of the total wastewater treated by the City. The treated water from the city POTW is used for agricultural irrigation.

The only wastewater that will be disposed of on-site is sanitary sewage, which is treated in septic tanks. The wastewater collection and treatment system is fully enclosed. Two (2) wastewater storage tanks with a capacity of 3.3 million gallons each are available to contain all process effluent in the case of an emergency or scheduled maintenance.

The site is underlain by the Ogallala Aquifer. Ground water most likely to be impacted by any release is at a depth of 60 to 80 feet, and has a TDS of 450 mg/l.

2.0 LOCATION, PURPOSE, RESPONSIBLE PARTIES AND BACKGROUND:

2.1 LOCATION:

The Lea Refinery is located in Lea County, New Mexico, approximately 5 miles Southeast of Lovington, along New Mexico Highway 18. The site occupies approximately 600 acres in the SW quarters of Section 31, T. 16 S., R. 37 E.; the SE quarters of Section 36, T. 16 S., R 36 E.; the NW quarters of Section 6, T. 176 S., R 37 E.; and the NE quarters of Section 1, T. 17 S., R. 36 E. (Figure 2-1). Wastewater will be discharged to the City of Lovington POTW in compliance with a pre-treatment program administered by Region VI EPA.

2.2 PURPOSE:

Pursuant to Section 3-102 of the New Mexico Water Quality Control Commission (NMWQCC) Regulations (1988), Navajo Refining Company (Navajo) is required to submit a Discharge Plan for wastewater produced by the Lea Refinery.

It is the intent of Navajo to recondition and restart the Lea Refinery, previously owned by Southern Union Company. This document constitutes Navajo's application to revise and renew Discharge Plan GW-14, originally issued to Southern Union Company.

2.3 RESPONSIBLE PARTIES:

All inquiries concerning this Discharge Plan should be directed to:

Navajo Refining Company
Attn: Mr. David Griffin
P.O. Box 159
501 East Main Street
Artesia, New Mexico 88210
(505) 748-3311

2.4 BACKGROUND:

The present Refinery, then known as the Lovington Refinery, was constructed in 1973-1974 by corporations controlled by Mr. Walter Famariss. At that time, Southern Union Company also constructed product storage and shipping facilities on the South side of the refinery.

In 1975, the Refinery was purchased by Southern Union Oil Products Company, which was subsequently merged into Southern Union Refining Company. The refinery was operated until 1984, when it was mothballed in anticipation of a future restart.

A Discharge Plan was prepared for the facility by G. A. Baca and Associates, Ltd. (Baca, 1981) and approved by NMOCD as Discharge Plan GW-14.

Navajo Refining Company has purchased the facility and is in the process of reconditioning the refinery. Restart of petroleum processing is anticipated in the Fall of 1991.

The Refinery has a rated capacity of 37,000 barrels per stream day (BPSD). Navajo will operate the refinery to produce primarily feedstocks for its Artesia refinery.

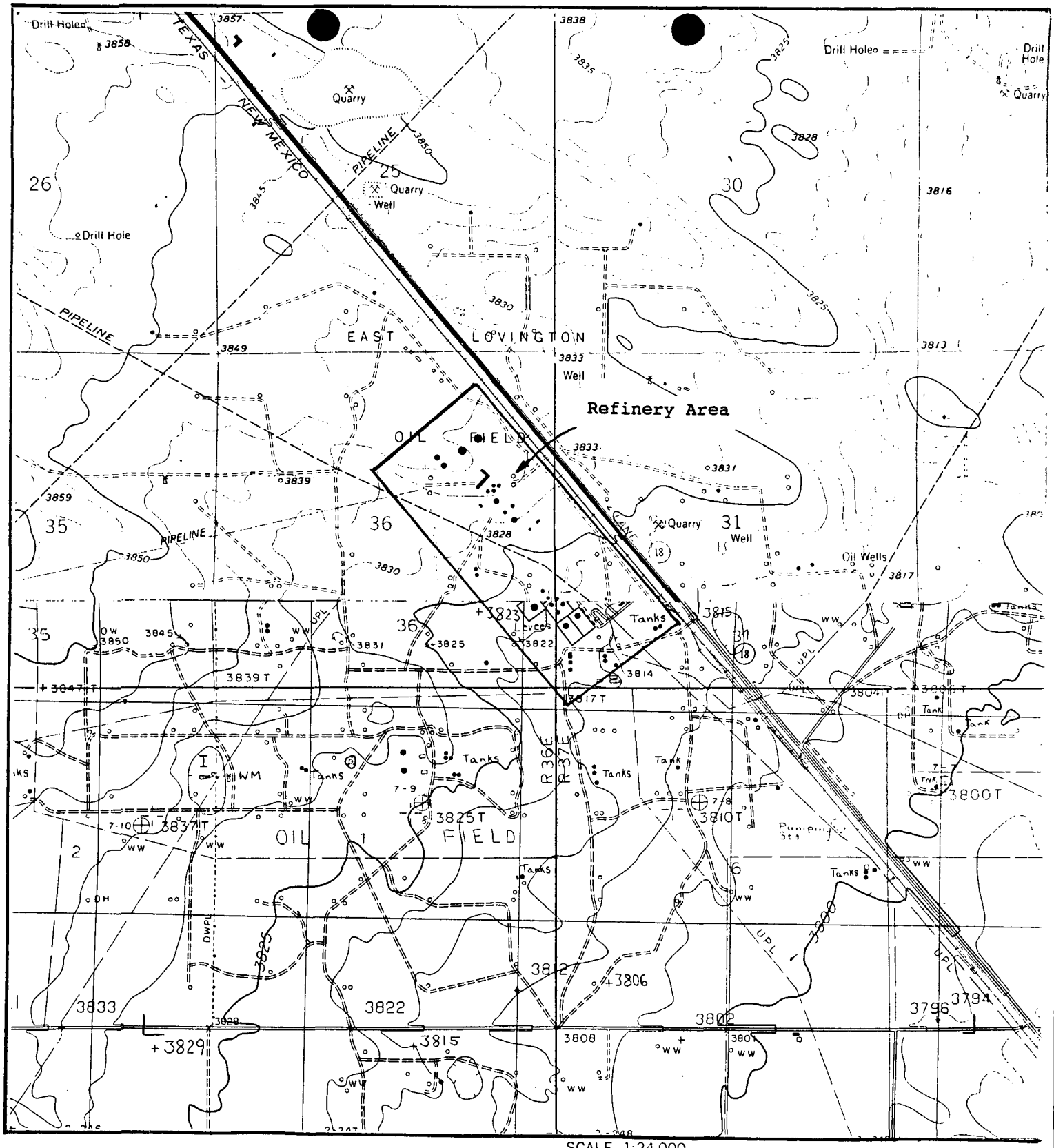


Figure 2-1. LOCATION MAP, LEA REFINERY, LOVINGTON, NEW MEXICO

3.0 ENVIRONMENTAL SETTING AND CONDITIONS:

The Lea Refinery is situated in the Eastern Plains of New Mexico, at an elevation of approximately 3,800 feet above mean sea level (MSL). The topography is quite flat, and the climate is arid to semiarid. The site is underlain by aeolian and fluvial sands of the Tertiary Ogallala Formation, which hosts the principal shallow, regional aquifer. Groundwater most likely to be affected by refinery discharges is at depths of 60 to 80 feet, and has an average total dissolved solids (TDS) content of 450 milligrams per liter (mg/l).

3.1 Regional and Local Hydrogeology:

3.3.1 Regional Hydrogeology:

Lea County is in the Western part of the Permian Basin area of New Mexico and West Texas, and is underlain by rocks ranging in age from Precambrian to Recent (Table 3-1). The thick subsurface deposits of Precambrian to Permianage rocks have produced large quantities of oil and gas, and contain ground water in the form of brines with TDS contents of over 40,000 mg/l. No significant quantities of potable water are produced from any units older than the Triassic. Pre-Tertiary bedrock typically strikes Northerly to Northeasterly, and dips Easterly to Southeasterly at 1 to 5 degrees (Nicholson and Clebsch, 1961).

In Lea County, potable water is produced from three (3) units, the Triassic Dockum Group, the Tertiary Ogallala Formation, and Quaternary to Recent alluvium. Water quality and availability are generally better in the Ogallala and alluvial deposits, and a large proportion of the area's ground water is produced form these units.

The most productive Triassic aquifer is the Santa Rosa Sandstone, which supplies water to Western Lea County. Ground water is recharged to this aquifer along outcrops subparallel to the Lea-Eddy county line east of the Refinery, and flows southwesterly, generally along the structural dip of the beds. This unit has relatively low porosity and permeability, and well yields are typically low.

Overlying the Mesozoic units is the Ogallala Formation, which is the major regional aquifer. This formation consists of calcareous, unconsolidated sands with local caliche beds. The Ogallala Formation ranges from 100 to 250 feet in thickness, with a saturated thickness of 25 to 175 feet. The unit is quite porous and permeable, and depths to water may be as shallow as 20 feet in some areas.

Important quantities of ground water are also found in thicker deposits of alluvium, located in stream valleys and other topographic lows. The Ogallala and the Alluvium are essentially in hydraulic connection, and ground water is freely exchanged between these aquifers. Ground water from all aquifers is used for irrigation, oil and natural gas processing, public water supplies, stock watering, and rural domestic consumption.

3.3.2 Local Hydrogeology:

The shallowest aquifer underlying the Lea Refinery is hosted by the Ogallala Formation and/or younger alluvial deposits. Ground water lies at depths of 60 to 80 feet under unconfined conditions. In 1988, Pilko and Associates performed a ground water study at the facility, including the installation and sampling of 14 temporary monitor wells (Pilko and Associates, 1989). Copies of lithologic logs for these wells are attached as Appendix A. The wells have since been plugged and abandoned.

Table 3-1 Stratigraphic units in southern Lea County

Geologic age	Geologic unit	Thickness (ft)	General character	Water-bearing properties
Cenozoic Quaternary — Recent and Pleistocene	Sand	0–30±	Dune sand, unconsolidated stabilized to drifting, semiconsolidated at depth; fine- to medium-grained.	Above the zone of saturation, hence, does not yield water to wells. Aids recharge to underlying formations by permitting rapid infiltration of rainwater.
	Alluvium	0–400±	Channel and lake deposits; alternating thickbedded calcareous silt, fine sand, and clay; thickest in San Simon Swale; less than 100 feet thick in most places.	Saturated and highly permeable in places in east end of Laguna Valley. Forms continuous aquifer with Ogallala formation. Wells usually yield less than 30 gpm. Locally above the water table.
Cenozoic Tertiary — Pliocene	Ogallala	0–300±	Semiconsolidated fine-grained calcareous sand capped with thick layer of caliche: contains some clay, silt, and gravel.	Major water-bearing formation of the area. Unsaturated in many localities, such as north side of Grama Ridge, west side of Eunice Plain, Antelope Ridge area, and Rattlesnake Ridge. Greatest saturated thickness along east side of Eunice Plain, west of Monument Draw, where wells yield up to 30 gpm. Highest yields, up to 700 gpm, obtained from wells along south edge of Eunice Plain, east of Jal.
Mesozoic Cretaceous	Undifferentiated	35±	Small isolated and buried residual blocks of limestone, about 3 miles east of Eunice.	Possibly small isolated bodies of water locally.
Mesozoic Triassic — Dockum group	Chinle formation	0–1,270±	Claystone, red and green; minor fine-grained sandstones and siltstones; underlies all of eastern part of southern Lea County area; thins westward; absent in extreme west.	Yields small quantities of water from sandstone beds. Yields are rarely over 10 gpm. Water has high sulfate content.
	Santa Rosa sandstone	140–300±	Sandstone, chiefly red but locally white, gray, or greenish-gray; fine- to coarse-grained; exposed in extreme west; underlies Cenozoic rocks in western part of area, and is present at depth in eastern part.	Yields small quantities of water over most of the area. Some wells are reported to yield as much as 100 gpm. Water has high sulfate content.
Paleozoic Permian or Triassic	Undifferentiated	90–400+	Siltstone, red, shale, and sandstone; present at depth under all of southern Lea County.	No wells are known to be bottomed in the red beds. Probably can yield very small quantities of high-sulfate water.
Paleozoic Ordovician through Permian		6,500–17,000±	Thick basin deposits ranging in character from evaporites to coarse clastics; thinnest on the east side of the area over the Central basin platform, thickest toward the southwest.	No presently usable water supply available from these rocks. Source of highly mineralized oil-field waters.
Precambrian			Granite, granodioritic and other igneous and metamorphic rocks; complex structure.	Not hydrologically significant.

TABLE 3-2 SUPPLY WATER ANALYSES

PARAMETER	CONCENTRATION (mg/l)	STANDARD (mg/l)
Arsenic	0.01	0.1
Barium	0.3	1.0
Cadmium	<0.001	0.01
Chromium	0.001	0.05
Cyanide	<0.1	0.2
Fluoride	1.0	1.6
Lead	<0.001	0.05
Mercury	<0.0004	0.002
Nitrate (NO^3 as N)	3.5	10.0
Selenium	<0.01	0.05
Silver	<0.01	0.05
Uranium	<0.5	5.0
Radium-226 (pCi/l)	<0.6	30 pCi/l
Radium-228 (pCi/l)	4.2	Combined
Chloride	79.0	250
Copper	0.002	1.0
Iron	0.02	1.0
Manganese	0.002	0.2
Phenols	<0.001	0.005
Sulfate	74.5	600
Total Dissolved Solids	453.0	1000
Zinc	<0.01	10
pH	7.1	6 to 9
Aluminum	<0.1	5.0
Boron	0.2	0.75
Cobalt	<0.01	0.05
Molybdenum	0.001	1.0
Nickel	<0.01	0.2

Based on the logs of these wells, subsurface materials above the water table consist of fine-grained sand with local seams of caliche and silt.

Measurements of water levels in these monitor wells indicate a southeasterly flow direction with a water-table gradient of 0.002 ft/ft (Figure 3-1). Analyses (September, 1981) of water from the refinery supply wells (Table 3-2) indicate that the water quality is within primary drinking-water standards, with a total dissolved solids content of 453 mg/l. The Lea Refinery and the City of Lovington draw their water from wells completed in this shallow aquifer.

Refinery water is drawn from two wells, located near the refinery office (Figure 3-1). The northern well is completed at a depth of 235 feet, and the southern well at 248 feet. Both wells were drilled to the top of a locally continuous clay strata, which is the base of the local shallow aquifer. The casings of both wells are perforated from 78 to 228 feet, and both pumps are set at 175 feet. At the time of the Pilko studies, the refinery wells had not been pumped for approximately 4 years, therefore the water table shown in Figure 3-1 shows no effects from these wells.

3.3.3 Local Wells and Water Usage:

All water wells registered with the New Mexico State Engineer's Office (NMSEO) that lie within 1 mile of the Refinery boundary are shown in Figure 3-2. Well locations shown on Figure 3-2 are taken from the legal descriptions in the well logs, and are at best accurate to the nearest quarter section. Where possible, well locations have been identified by their correspondence to well symbols on the topographic base map. Also, features identified as water wells or windmills on the topographic map have been identified, even if they were not listed in the NMSEO records. It is possible that additional unmapped or unregistered wells exist.

There are no perennial streams or permanent bodies of surface water within one mile of the facility. Surface water does accumulate in several intermittent lakes or playas to the northwest and east of the site. The southeasterly slope of the land's surface (see Figure 3-1) will prevent any potential release of wastewater or stormwater from reaching these areas.

3.4 SURFACE DRAINAGE AND FLOODING POTENTIAL:

Annual rainfall in the Lovington area averages 14 inches per year, most of which falls as late summer and autumn rains. The local topography is relatively flat, and slopes to the southeast at approximately 25 feet per mile (see Figure 3-1). There is no well-integrated, natural drainage system in the area; surface runoff is controlled by small arroyos and swales which drain to the southeast along the general topographic slope.

The refinery's tanks are bermed to contain any stormwater which falls within the area immediately surrounding the tank perimeters, and the same berms serve to prevent run-on of off-site stormwater. Process and loading areas are paved and bermed, and stormwater from these areas is diverted to the wastewater treatment system (see Section 4.4.3). Table 3-3 shows the estimated maximum rainfall events for 2, 5, 10, 25, 50 and 100-year storm events (United States Department of Agriculture, 1973). This table also includes a calculated total discharge per acre in gallons for each event.

293-3A
11-30-89

STATE HIGHWAY 18

TEXAS & NEW MEXICO RAILROAD

PROPERTY LINE

TK-1000A
TK-1000B
TW-8
TW-14
TK-1201A
7
LAB
5
TW-6
TW-9
34
35
32
31
TW-5
3 & TW-2
SEPARATOR
COOLING TOWER
ADMIN. BLDG.
TW-7A
39
H-101
H-102
TK-501
TK-1209
TK-1214
TK-1208
TK-1216
TK-1207
TK-1205
TK-1206
TK-1203
TK-1204
TK-1202
TW-10
TW-11
MAINTENANCE WAREHOUSE
FIRE PUMP HOUSE
TK-1210
NORTH WELL
SOUTH WELL
TK-1201B
38
33
32
TK-1201C
TK-1201D
6
SEPARATOR
37
36
4
DRUM STORAGE
TW-13
TK-104A
TK-104B
TK-105A
TK-103A
TK-103B
TK-105B
TK-102A
TK-102B
TK-1000C
TK-1000F
TK-1000E
FLARE
2 & TW-1
POND
TW-4
TW-12
TK-101A
35
TW-3

LEGEND

- SAMPLE LOCATION
- SAMPLE LOCATION & TEMPORARY WELL LOCATION
- TEMPORARY WELL LOCATION FINAL STUDY – SOUTHERN UNION
- TEMPORARY WELL LOCATION FINAL STUDY – HOLLY CORPORATION
- PLANT WATER WELLS
- —33— WATER LEVEL ELEVATION (RELATIVE TO AN ASSUMED ELEVATION, JANUARY 1989)
- DIRECTION OF GROUNDWATER FLOW

0 250 500

SCALE IN FEET

Figure 3-1.

SOUTHERN UNION REFINERY
WATER LEVEL CONTOUR MAP

PILKO & ASSOCIATES, INC.

TABLE 3-3 24-HOUR PRECIPITATION EVENTS

EVENT FREQUENCY (YEARS)	PRECIPITATION (INCHES)	GALLONS PER ACRE
2	2.6	70,800
5	3.4	92,500
10	4.0	109,000
25	4.8	131,000
50	5.0	136,000
100	6.0	163,000

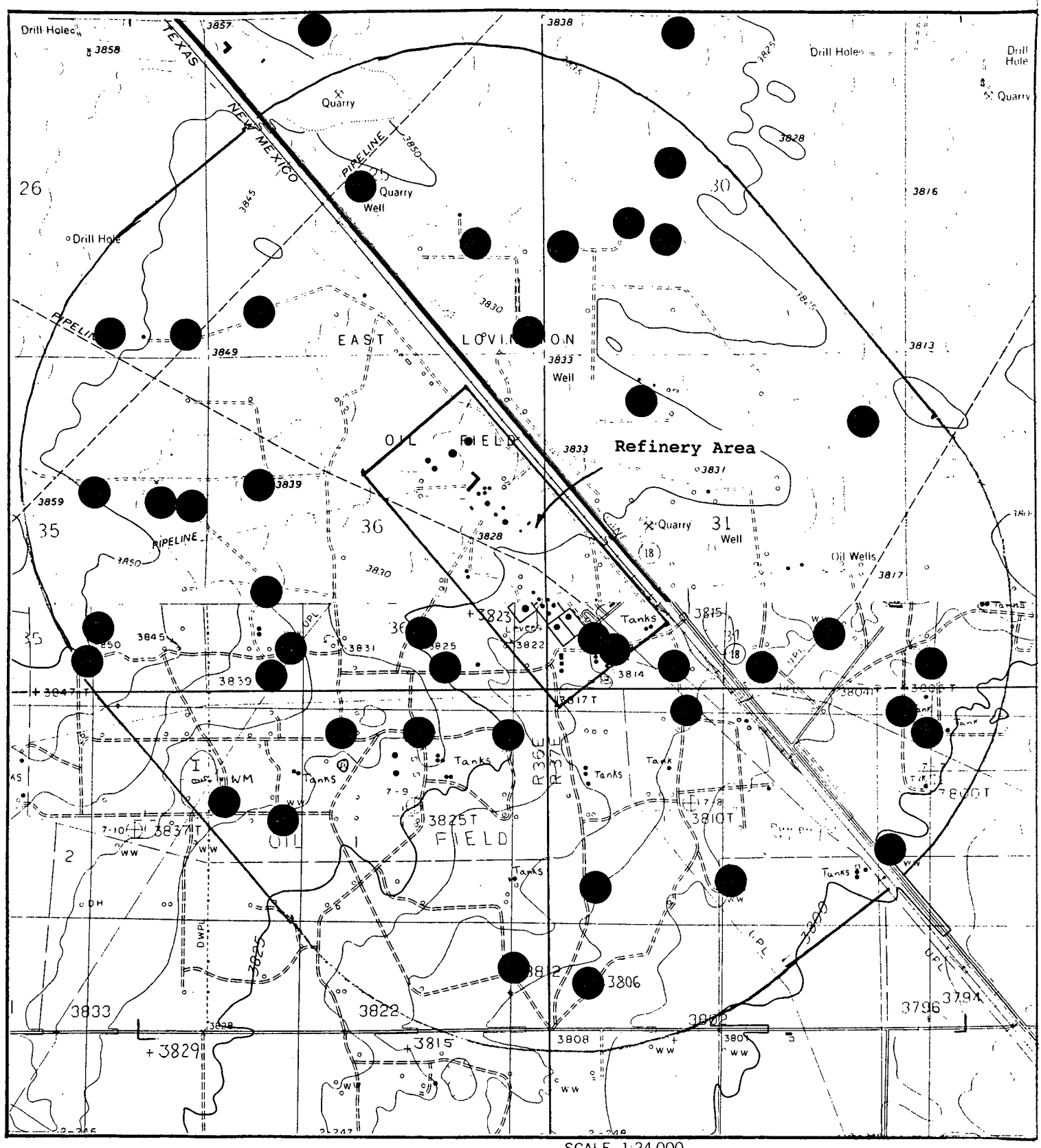


Figure 3-2. WATER WELLS IN ONE-MILE RADIUS OF LEA REFINERY

4.0 PROCESS DESCRIPTION AND WASTEWATER GENERATION:

4.1 WATER SUPPLY AND TREATMENT:

The Lea Refinery uses approximately 111,500,000 gallons of water per year (gpy). Approximately 42% of this water (47,000,000 gpy) is lost to evaporation, and the remaining 58% is disposed of in the City of Lovington POTW. Figure 4-1 is a flow diagram which illustrates the water flow and water balance at the refinery. Plate 1 shows the locations of the major features of the water-supply and wastewater management systems.

4.1.1 Water Supply:

Water is supplied by 2 wells completed in the local Ogallala Aquifer. Together, these wells extract approximately 212 gallons per minute (gpm) on a yearly average. Water chemistry is shown in Table 3-2. Water is held in Tank 1210 (Plate 1) prior to distribution to sanitary, fire protection, water treatment and cooling systems. Water for steam generation and Merox processing is processed through a demineralizer; all other processes use untreated water.

4.1.2 Water Treatment:

Prior to use in the boilers and Merox process, water is treated in a full demineralization process. The water first passes through a cation zeolite catalyst where all cations are exchanged for hydrogen ions (H^+). The water then passes through a decarbonator stripper where CO_2 is stripped from the water prior to entering the anion catalyst part of the process. In the anion section all remaining anions (Ci^- & $SO_4^=$, etc.) are exchanged for hydronium ions (OH^-). The hydrogen ions (H^+) and the hydronium ions (OH^-) combine to make water (H_2O). The cation zeolite catalyst is regenerated with hydrochloric acid (HCl) and the anion zeolite catalyst is regenerated with sodium hydroxide (NaOH). The waste from regeneration of the zeolite catalyst goes directly to sewer. The waste acid from the cation units and the waste caustic from the anion units will neutralize each other in Tank 1201D. These regenerate waste streams do not pass through the refinery oil-water separator (Corrugated Plate Separator #1) since they contain no oil and potentially could affect the efficiency of the separator due to differences in pH. Based on the manufacturer's specifications and projected demineralized water demand, the waste water generated should average about 8 gpm, although the waste is actually generated only when zeolite units are regenerated.

4.2 COOLING AND STEAM GENERATION PROCESSES:

Refining processes require heating and cooling of process units to achieve optimum operating temperatures. Temperature control is achieved by circulation of steam or cooling water, as appropriate to the process. Steam is also used as an energy source for vacuum jets, to operate turbine pump, and for wastewater stripping. Steam production and cooling systems generate wastewater in the form of blowdown water (as described below), which is rejected to maintain the correct TDS in the boilers and cooling towers.

4.2.1 Cooling Towers:

The refinery cooling needs are met by a 10,000 gpm recirculating cooling tower, which draws approximately 130 gpm of water during average operation. of this 130 gpm, 90 gpm is lost to evaporation and 40 gpm is rejected as blowdown. Chemical additives employed to prevent fouling and corrosion are listed in Table 4-1, and Material Safety Data Sheets are included as Appendix B. None of these chemicals or their ingredients are

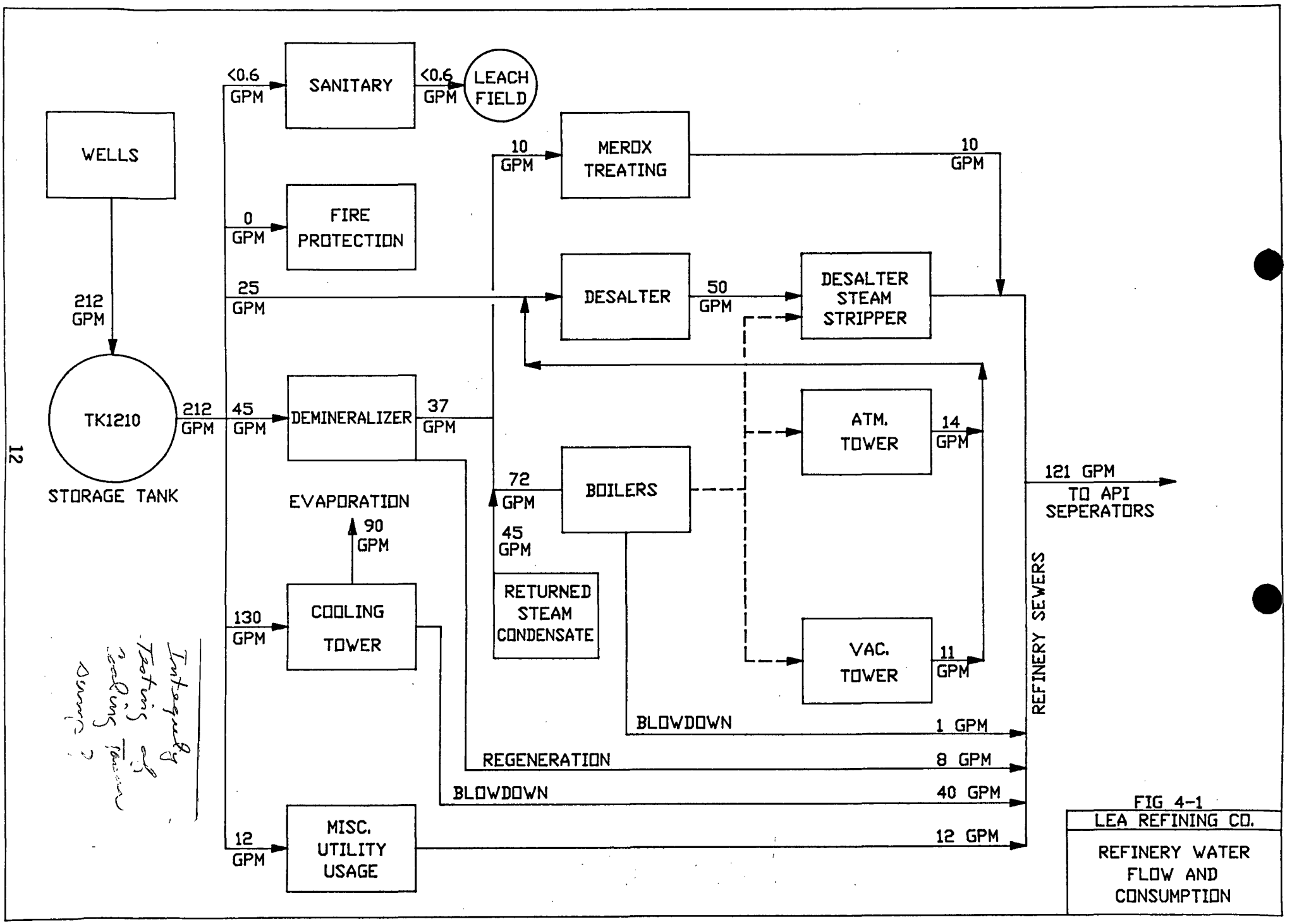


FIG 4-1
LEA REFINING CO.
REFINERY WATER FLOW AND CONSUMPTION

listed as carcinogenic under OSHA Standards (40 CFR 1910.1200). This table also includes a calculation of the loading of these chemicals in the blowdown waste stream. These additives increase the wastewater TDS by approximately 46 ppm.

Prior to the 1984 shutdown, chromium compounds were used as corrosion and biological control agents in the cooling towers. Soils in the vicinity of the cooling towers that exhibited elevated chromium levels have been excavated and removed to a permitted disposal facility. No chromium compounds will be used

TABLE 4-1 COOLING TOWER AND BOILER ADDITIVES

COOLING TOWERS		
ADDITIVE	**USAGE IN GAL/YEAR**	**FUNCTION**
Unichem 1300	2200	Scale Control
Unichem 512	520	Biocide
Unichem 570	520	Biocide
Chlorine Tablets	175	Bacteria Control
TOTAL GALLONS/YEAR	3415	
TDS LOADING* (ppm)	46	
BOILERS AND WATER TREATMENT		
ADDITIVE	**USAGE GAL/YEAR**	**FUNCTION**
Unichem 3030	2550	Corrosion Control
Unichem 3140	1800	Oxygen Scavenger
Unichem 3235	1800	Neutralizing Amine
Unichem 3510	730	Corrosion Control
Unichem 3310	185	Corrosion Control
Unichem 4500	96	Zeolite Cleaner
TOTAL GALLONS/YEAR	7161	
TDS LOADING* (ppm)	97	
* TDS Loading based on 74,000,000 gallons/year of wastewater discharge.		

4.2.2 Steam Generation:

Steam is expected to be produced at a rated capacity of 36,000 pounds per hour (lb/hr), using both fired boilers and waste-heat recovery. The steam is used for general process heating, fractionation stripping and vacuum-jet motive steam. Steam generation consumes an annual average of 25 gpm of treated water, along with an estimated 45 gpm of returned steam condensate. Only steam from non-contact process heating is condensed and recycled into the boiler makeup water. Contact steam, from the stripping and vacuum-jet processes, may contain hydrocarbons and is therefor routed to the desalter prior to stripping for benzene removal and discharge to the oily sewer system. Since such high purity water is used to make steam only a very small amount of boiler blowdown will occur. This is estimated to be only 1 gpm or perhaps less.

A number of chemicals are used to prevent scaling and corrosion, and to maintain boiler water at an optimal pH of 11.0. These are listed in Table 4-1, and Material Safety Data Sheets are included as Appendix B. None of these chemicals or their ingredients are listed as carcinogenic under OSHA Standards (40 CFR 1910.1200).

Boiler blowdown water has traces of TDS, as well as traces of additive chemicals. Table 4-1 also includes a calculation of the approximate loading of these chemicals in the final waste stream. In total, boiler additives increase the TDS of the wastewater by approximately 100 ppm by volume.

4.3 PETROLEUM REFINING PROCESSES:

Treated water from the demineralizer is used for Merox treating; most other refining processes that consume water use it in the form of steam except desalting, which uses a combination of raw water makeup and condensed contact waters. All process wastewaters are routed to the wastewater treatment system prior to discharge to the Lovington POTW.

4.3.1 Desalting:

Crude oil feedstocks contain sodium, magnesium and calcium salts, primarily as chlorides, as well as minor amounts of suspended solids. In the desalting process, water is mixed with the crude oil to dissolve these salts and to scavenge the suspended solids. The water is removed by settling in the presence of an electric field. Conditioning chemicals and their levels of usage are listed in Table 4-2.

This process consumes approximately 50 gpm of water, and produces an equal quantity of wastewater. This wastewater has elevated TDS in the form of salts, spent treatment chemicals (approximately 175 ppm) and small amounts of dissolved and suspended hydrocarbons.

TABLE 4-2 DESALTER AND MEROX ADDITIVES

DESALTER		
ADDITIVE	**USAGE GALLONS/YEAR**	**FUNCTION**
Petrolite 7140	3650	Demulsifier
Petrolite 7210	730	Wetting Agent
Petrolite 4030	9125	Antifoulant
Petrolite 1202	2190	Film Control
Petrolite 1100	912	Neutralizer
TOTAL GALLONS/YEAR	12,957	
TDS LOADING* (ppm)	175	
MEROX ADDITIVE		
ADDITIVE	**USAGE**	**FUNCTION**
Sodium Hydroxide	128 tons/year	REAGENT
UOP Merox FB	85 gal/year	CATALYST
TDS LOADING* (ppm)	418 mg/l	
* TDS loading based on 74,000,000 gallons/year of wastewater discharge		

4.3.2 Merox Treating:

The Merox process uses a proprietary catalyst to convert mercaptans, which are corrosive and cause odor problems, into disulfides that can be returned to the products (naphtha and kerosene). Mercaptans are extracted with sodium hydroxide and then oxidized by air injection in the presence of the catalyst. Treated water is used to wash excess sodium hydroxide from the product stream, and the water is separated by settling.

This process consumes approximately 10 gpm of treated water. The wastewater contains rejected sodium hydroxide which increases the TDS and the pH, traces of spent catalytic reagent (see Table 4-2), and small amounts of dissolved and suspended hydrocarbons.

4.3.3 Atmospheric Fractionation, Stabilization and Vacuum Distillation:

These processes separate the various petroleum fractions from crude oil by distillation, either at atmospheric pressure or under vacuum. Steam is used for either direct (contact) or indirect (non-contact) heating, and for vacuum generation by jetting.

Wastewater is generated by condensation of steam in the presence of crude oil and products. The atmospheric tower produces approximately 14 gpm, and the vacuum jets approximately 11 gpm. These wastewaters have elevated TDS, and also contain dissolved and suspended hydrocarbons, but are of sufficient quality to serve as makeup to the desalter, thus reusing and conserving water in the process.

4.4 OTHER WASTEWATER STREAMS:

4.4.1 Sanitary Sewers:

The refinery sanitary sewers produce approximately 0.6 gpm of wastewater. This stream is not commingled with process wastewater, and is routed to onsite septic systems with buried leach fields. The sanitary system is separate from the process and loading area drains, and receives no non-sanitary discharges.

4.4.2 Fire Protection:

Fire protection water is taken from the main water holding tanks, prior to the treatment system. In normal operations this system neither consumes water nor generates wastewater. Relatively minor amounts of water may be discharged to grade during periodic system testing; this water will enter the wastewater treatment and disposal system in the paved process areas, or infiltrate and evaporate in the unpaved areas.

4.4.3 Storm Water:

Based on an average annual rainfall of 14 inches per year, runoff will average approximately 381,000 gallons per year, or 1044 gpd (0.73 gpm) for the paved process areas and 285,750 gallons per year (0.54 gpm) from the loading-rack area. Combined, this represents only 1% of total wastewater production.

The paved process and loading-rack areas are drained by separate storm-sewer networks that are connected to the wastewater treatment and disposal system (Plate 1). Stormwater from these, areas may contain hydrocarbons, and will not be allowed to discharge to grade. Primary storm surge capacity is provided by the bermed, paved areas, and discharge to the separators will be regulated by several mechanisms to prevent releases.

The 100-year storm event (6 inches in 24 hours) will produce a total of approximately 300,000 gallons of runoff from the process and loading areas, or about 1.5 times the normal daily discharge. Surge-control capacity for the process areas is provided by the bermed, paved areas and by pumpage to the first of two (2) 3.3 million-gallon holding tanks, adequate to contain approximately 20 times the 100-year maximum daily precipitation. In the loading-rack area, the paved areas will retain the storm surge until it can be safely pumped to the treatment system. In both the process and loading-rack areas, the stormwater that will accumulate in the paved areas can be safely drained and treated in a matter of hours.

PROCESS AREAS:

Paved process areas have an area of approximately 1 acre. For individual storm events, each inch of rainfall will produce approximately 27,225 gallons of runoff per acre (assuming 100% runoff). The storm sewers are designed for a rainfall rate of 1.5 inches per hour, or 40,838 gallons per hour (680 gpm). Because this flow will exceed the capacity of the oil-water separator, a steam-powered pump operated by a high-low level switch has been installed in the collection sump that feeds the separator (see Section 5.2). This pump has a capacity of 1000 gpm, and the excess wastewater will be passed through a 6" inch line to the 3.3-million-gallon holding tank (Tank 1201 D; Plate 1). If rainfall exceeds the 1.5-inch-per-hour capacity of the sewer system, it will accumulate and be held in the paved areas until it drains.

If process units produce 121 gpm, and the storm sewers contribute 680 gpm, the total flow to the sump will be 801 gpm. The emergency removal capacity will be the sum of the normal separator capacity of 300 gpm, plus the pump capacity of 1000 gpm, for a total of 1300 gpm. Thus the system has a safety factor of 499 gpm, or 162%.

The estimated 100-year storm event for the Lovington area is 6 inches in a 24hour period. This would produce approximately 163,350 gallons of water in the 1-acre process area. Berms around the process areas will contain the water for the 4 hours required for the sewer system to drain this amount of water.

LOADING RACK AREA:

A paved area of approximately 0.75 acres, located south of the refinery, is used as a truck-loading rack. This area is also equipped with a storm-sewer system, a sump and a pump to transfer any collected water or spillage to the refinery oil-water separator system.

The loading area will produce approximately 20,400 gallons of runoff per inch of rainfall, and the sewer system also has a capacity of 1.5 inches of rain per hour, or 30,628 gallons per hour (510 gpm). As is the case in the process area, the average depth of retained water in a 100-year storm event will be 6 inches. This represents a volume of 122, 500 gallons. The paved and bermed area will be drained at a rate which will not exceed the capacity of the sump and transfer pump.

TANK-BERM AREA:

Areas surrounding the crude oil and product storage tanks are surrounded by berms which are designed to retain the tank volume plus a safety factor of one third; these berms also prevent inflow or runoff of stormwater. Direct precipitation will accumulate inside the berms, where it will normally be dispersed by evaporation and infiltration. If floating hydrocarbons are noted on stormwater inside tank berms, the oily water will be removed by vacuum truck and transported to the separator.

4.4.4 Tank Drains:

Tanks used to store crude oil and products accumulate small volumes of water from condensation and separation of water contained in the hydrocarbons. This water is periodically drained into small holding tanks, collected by vacuum trucks, and discharged to the separator. Quantities of this wastewater are difficult to estimate, but are typically on the order of 500 to 1000 gallons per day (0.25 to 0.5 percent of total wastewater).

5.0 WASTEWATER CHARACTERISTICS, TREATMENT AND DISPOSAL:

5.1 WASTEWATER CHARACTERISTICS:

Table 5-1 presents the results of an analysis of a wastewater sample collected and analyzed in September, 1981. The chemistry of the wastewater which will be produced following restart should be quite similar, as no major process changes will be made. Chromium, which was present in the 1981 wastewater, will not be used as a cooling tower additive, therefore it should be absent from wastewater produced in the new operations.

After process operations resume, regular sampling and analysis will be performed to assure that wastewater meets all standards for discharge to the Lovington POTW. The methods, parameters and monitoring schedule are discussed in Section 6.2.

5.2 WASTEWATER COLLECTION:

Refinery wastewater will be collected by the system shown in Plate 1, which also shows the stormwater sewer system. Process wastewater is routed according to the flow diagram (Figure 5-1).

Wastewater flow is buffered by a 3.3-million-gallon storage tank, which can contain approximately 16 days of normal wastewater production (Tank 1201 D; see Plate 1). This tank will be used to control stormwater surges or upsets in the treatment system, so that secondary separation and additional holding capacity in Tank 1201C will assure that discharge will not exceed pre-treatment standards (40 CFR 419.17) or the capacity of the Lovington POTW to treat the effluent.

5.2.1 Process Areas:

Wastewater from process operations and sewers is first routed to a collection sump, equipped with high-low level sensors which activate the oily-water pumps. These pumps convey the oily wastewater to an oil-water separator. The oily phase is then pumped to the slop-oil recovery system. Clear water is diverted to a second sump, also equipped with level sensors. Pumps then transport the clear water to Tank 1201D.

5.2.2 Loading Rack Area:

Stormwater and washdown water from the loading rack also flows to a collection sump by gravity. This sump contains high-low sensors, which operate a pump that transfers the water to the refinery separator.

Existing sumps inspected yearly for integrity ✓

TABLE 5-1 WASTEWATER CHEMISTRY

PARAMETER	CONCENTRATION (mg/l)	STANDARD (mg/l)
Arsenic	0.1	0.1
Barium	0.5	1.0
Cadmium	<0.001	0.01
Chromium	0.053	0.05
Cyanide	0.26	0.2
Fluoride	1.7	1.6
Lead	0.005	0.05
Mercury	<0.0009	0.002
Nitrate (NO3 as N)	0.8	10.0
Selenium	<0.01	0.05
Silver	<0.01	0.05
Uranium	14.0	5.0
Radium-226 (pCi/l)	<0.6	30 pCi/l
Radium-228 (pCi/l)	3.1	Combined
Chloride	505	250
Copper	0.005	1.0
Iron	4.6	1.0
Manganese	0.002	0.2
Phenols	0.327	0.005
Sulfate	292	600
Total Dissolved Solids	1300	1000
Zinc	0.1	10
pH	9.8	6 to 9
Aluminum	<0.1	5.0
Boron	2.0	0.75
Cobalt	<0.01	0.05
Molybdenum	<0.001	1.0
Nickel	<0.01	0.2
Benzene	1.0	0.01
Ethylbenzene	<1.0	0.75

5.3 WASTEWATER TREATMENT:

All oily wastewater from the refinery and the loading rack discharge to a sump ahead of Corrugated Plate Separator #1 (CPS) as shown on Figure 5-1. There are two sets of pumps located at this sump and under normal flow conditions one set of pumps (main and spare) lifts the oily water into the CPS.

A corrugated plate separator consists of a pack of parallel corrugated plates that act to separate oil, water and sediment in the feed water. The separated oil is skimmed off the unit and pumped to slop oil storage from which it will be reprocessed in he refinery. The sediment, in the form of an oily sludge, settles in a sump at the bottom of the unit where it is pumped into an elevated above ground storage tank. The accumulated sludge will be properly manifested offsite for hazardous waste incineration. The clear water exits the separator into a sump where the demineralizer regeneration waste combines with it. The clear water is then pumped to tank 1201D.

In the event of a power failure, the pumps that charge the separator will not operate. As the level in the oily water sump rises a steam driven pump will come on and begin transferring the wastewater directly to Tank 1201D. Due to the infrequent occurrence of powerfailures and the large capacity (is long holding time) of Tank 1201D, the occasional transfer of unseparated wastewater should not effect the quality of the final discharge. The steam turbine pump also serves as a large capacity pump needed during storm events. The corrugated plate separator can only process 300 ppm, therefore storm flows in excess of 300 gpm will be transferred directly to Tank 1201D by the turbine pump.

Water in Tank 1201D will gravity feed into a second corrugated plate separator (CPS #2) where any remaining oil and sludge will be drawn off to their respective storage and handling systems. After this secondary separator step, the water will be lifted into Tank 1201C, where it will be held until rateably pumped the 3.7 miles to Lovington. The City of Lovington has a sewer main on the South end of town that will receive the refinery effluent and transfer it to the treatment works.

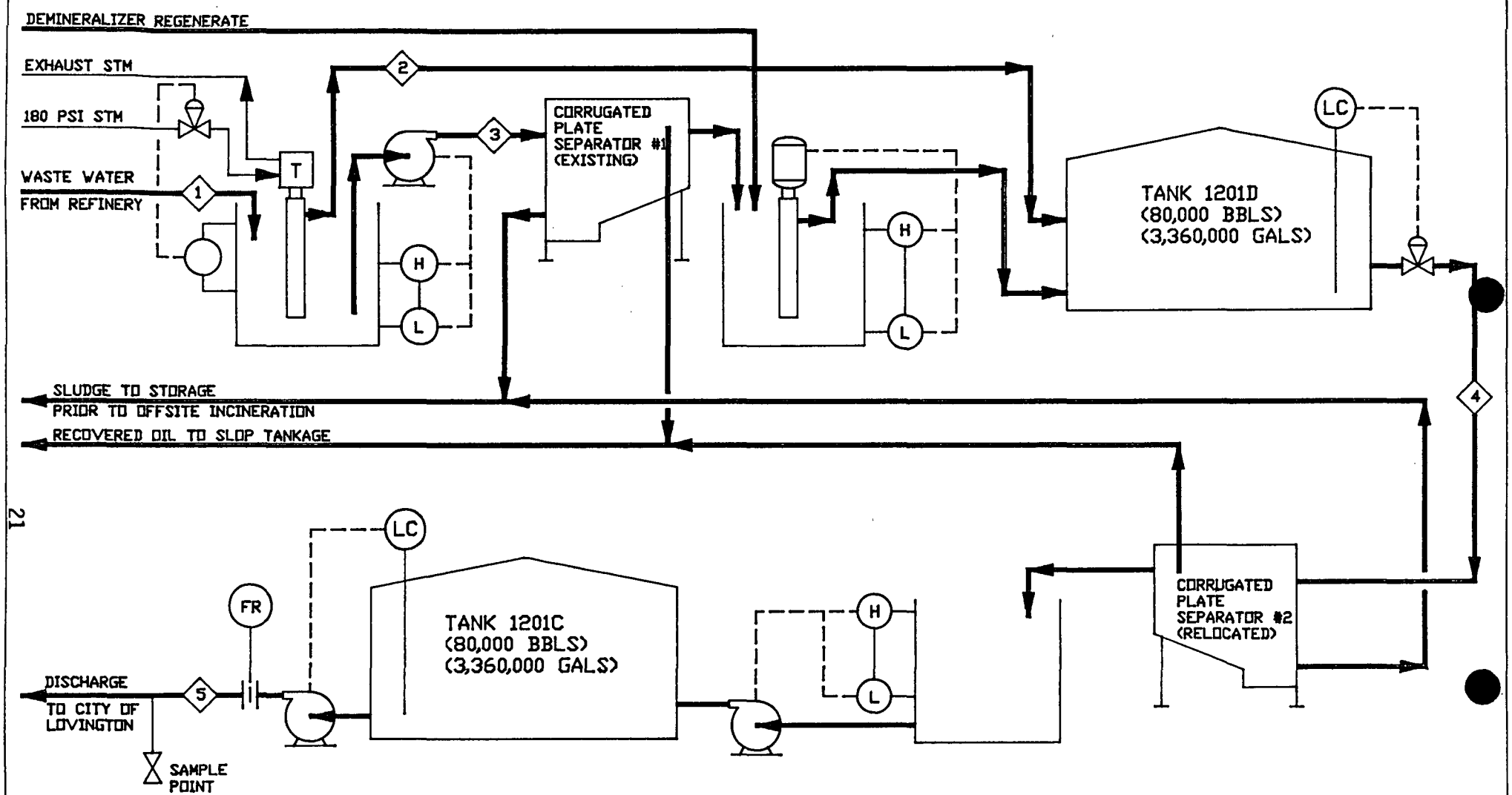
5.4 WASTEWATER DISPOSAL:

Treated wastewater from the refinery will be pumped approximately 20,000 ft. through a HDPE pipeline that ties into the City of Lovington sanitary sewer system. This pipeline will be equipped with a pig launcher and catcher system so that the capacity of the line can be maintained in the unexpected event of any settling or precipitation restricting the flow. It is not anticipated that the line will be pigged more than just a few times a year.

Waste water line constructed to ensure integrity (ie testing ports or double wall, etc)

Once the refinery effluent enters the Lovington sewer system it will be commingled with the city sanitary wastewater and processed through the city POTW. All treated effluent from the city is stored and used for irrigation of a 640 acre farm which borders the treatment plant. Navajo contracted the consulting firm of Parkhill, Smith and Cooper (PSC) in El Paso, Texas to evaluate the addition of the refinery effluent to the city POTW. Their study indicates that no detrimental effects on treatment or final disposal will occur due to the refinery effluent. PSC is preparing a permit modification for submittal by the City of Lovington to NMEID Groundwater Bureau supporting these findings.

Discharge of the refinery effluent to the City of Lovington will be directly regulated by EPA Region VI in Dallas, Texas under the Federal Pre-treatment Regulations (40 CFR 403 and 40 CFR 419.17). These pre-treatment regulations require, among other things, that Navajo meet maximum discharge standards of 100 ppm oil and grease, 100 ppm ammonia and 1 ppm total chromium. The pre-treatment regulations require Navajo to sample and analyze the effluent twice a year to demonstrate compliance.



	1	2	3	4	5
FLOW RATE	COMBINED WASTE WATER FROM REFINERY & TERMINAL	STORM SURGE POWER FAILURE PUMP DISCHARGE	CHARGE TO CORRUGATER PLATE SEPARATOR #1	CHARGE TO CORRUGATER PLATE SEPARATOR #2	CHARGE TO LOVINGTON POTW
MAX.	1000 GPM	1000 GPM	300 GPM	300 GPM	300 GPM
AVG.	121 GPM	0 GPM	121 GPM	121 GPM	121 GPM

FIG 5-1

LEA REFINING CO.

FLOW DIAGRAM FOR WASTER WATER PRETREATMENT PRIOR TO DISCHARGE TO LOVINGTON POTW

5.5 OTHER WASTES:

The Refinery will also generate solid wastes and potentially hazardous wastes. Solid wastes (domestic and industrial trash) are collected in dumpsters and transported to a landfill by a local contractor.

Wastes which are hazardous will be collected at their points of generation, properly containerized manifested, and transported to a licensed treatment, storage and disposal facility in accordance with the regulations of the Resource Conservation and Recovery Act (RCRA) . At no time will the Refinery facility be used for the treatment, storage or disposal of hazardous wastes.

Hazardous wastes will include separator sludges, sludge from cleaning heat exchangers, slop oil emulsion solids and possibly waste or off-specification chemicals. All of these wastes will be managed under RCRA regulations, in accordance with the rules applicable to generators of those wastes (40 CFR 260-262).

6.0 MONITORING, REPORTING AND OTHER REQUIREMENTS:

6.1 GROUND WATER AND VADOSE-ZONE MONITORING:

Because no wastewater will be disposed of on site, no ground water or vadose zone monitoring is proposed.

6.2 EFFLUENT MONITORING:

Effluent monitoring and reporting requirements under EPA's Pre-treatment Program are found in 40 CFR 403.12. Section 403.12.b.4 requires flow measurement that will show average daily and maximum daily flow in gallons per day discharged to the POTW. Navajo will install a flow recorder on the pipeline to Lovington to comply with this requirement.

Protocols for sample collection and analysis are given in Section 403.12.b.5 and require that 24 hour composite samples be collected for analysis. Table 6-1 identifies the sampling schedule and analytical methods. In addition to the categorical standards given in 40 CFR 419.17 for oil and grease, ammonia and chromium, Navajo will be analyzing wastewater samples for pH, sulfide and BTEX. Reporting requirements under Section 403.12.e require the above analyses to be done twice a year for reporting in June and December of each year. Additionally Navajo must analyze and report to EPA within 90 days of startup to demonstrate initial compliance.

6.3 LEAK DETECTION, SPILL PREVENTION AND CONTINGENCY PLANS:

Prior to the restart of the refinery, all process and wastewater tanks, lines and appurtenances will be inspected and tested according to manufacturer's and industry standards. Repair will be performed as necessary to assure safe and efficient operation before processing begins.

The refinery will operate on a 24-hour schedule, and will be under the continuous observation and supervision of experienced staff. Any significant problems with the wastewater system will be immediately reported to the plant operator, who will issue a work order for prompt repair.

6.3.1 Wastewater Systems:

A key part of release prevention are the two (2) 3.3 million gallon holding tanks (1201C and 1201 D; Plate 1). These tanks can hold up to 37 days of wastewater production, or

40 times the 100-year storm runoff for the process areas. Secondary containment for effluents will be provided by the paved process areas, which are bermed to prevent inflow from adjacent areas, as well as to prevent release of wastewater to grade.

Before reaching the collection sumps, wastewater will flow by gravity through the refinery sewer system. All sewer lines will be cleaned and inspected prior to process startup. If blockage or flow problems are noted during operation, vacuum trucks or portable pumps will be used to convey wastewater to the treatment system until repairs can be made.

Pumps and pressurized lines will convey untreated wastewater, recovered slop oil and treated wastewater through the rest of the collection and treatment system. These lines will be inspected and tested prior to use.

6.3.2 Process, Loading and Tank Areas:

Any spill or other release in the process areas or loading racks will be controlled and retained by the pavement and berms. Lost materials will be recovered by the separators and returned to the appropriate part of the

TABLE 6-1 WASTEWATER SAMPLING SCHEDULE AND MEHTODS

PARAMETER	SAMPLING INTERVAL	EPA METHOD
Oil & Grease	1 Every 6 Months	413.1
Ammonia	1 Every 6 Months	350.1, 350.2 or 350.3
Chromium	1 Every 6 Months	218.1 or 218.2
pH	1 Every 6 Months	9040
Sulfide	1 Every 6 Months	376.1 or 376.2
BTEX	1 Every 6 Months	602 or 8020

Treatment and process chemicals (see Section 4.0) will be stored in approved containers in the paved process areas. Regular inspection of these containers will detect any releases. If a release is noted, it will be cleaned up in accordance with safety and environmental concerns identified in the manufacturer's MSDS data (Appendix B).

Cleanup wastes will be recycled or disposed of in accordance with manufacturer's instructions and/or applicable regulations.

Potential spills of products or feedstocks outside the paved areas will be controlled by industry-standard practices. In general, these releases will be controlled by temporary earth berms or other emergency structures until the materials are recovered by vacuum truck or other methods. Any impacted soils or other materials will be removed to the extent practical. Analyses (by methods described in SW-846 for the appropriate parameters) to determine their contents and regulatory status will be done and then the waste will be properly disposed of.

In the event of fire or explosion, quantities of fire-fighting water and other chemicals may be used. In the paved areas, these will be collected by the sewers and transported to the normal wastewater treatment system. In the tank areas, these wastewaters will be retained by the tank berms, removed by vacuum truck or temporary pumps, and discharged to the wastewater system.

6.4 REPORTING AND RECORD KEEPING:

All records pertaining to wastewater analyses and volumes, and any other aspects of Discharge Plan compliance, will be maintained at the Lea Refinery office for a period of 5 years.

Results of monitoring activities (wastewater volumes and analyses) will be reported to the NMOCD on a semiannual basis.

7.0 REFERENCES CITED:

G. A.. Baca and Associates, Ltd., 1981, Southern Union Refining Company Lovington Refinery Waste Water Discharge Plan; G. A.. Baca and Associates, Ltd., 36 p. with Plate.

New Mexico Water Quality Control Commission Regulations (as Amended Through November 25, 1988); New Mexico Water Quality Control Commission, Santa Fe, New Mexico, 91 p.

Nicholson, A. and Clebsch, A., 1961, Geology and Ground-Water Conditions in Southern Lea County, New Mexico; New Mexico Bureau of Mines and Mineral Resources Ground Water Report 6, 123 p.

Pilko and Associates, Inc., 1989, Groundwater Monitoring Well Installation, Sampling, and Analysis of Lovington, New Mexico Refinery (Prepared for Holly Corporation); Pilko and Associates, Inc., Houston, Texas, 8 p. with Appendices.

U.S. Department of Agriculture Soil Conservation Service, 1973, Peak Rates of Discharge for Small Watersheds; Engineering Manual for Conservation Practices, Chapter 2, U.S. Department of Agriculture, Washington, D.C., 32 p.

U.S. Code of Federal Regulations, Section 40 (Protection of the Environment), as revised 1990; U.S. Environmental Protection Agency, Washington, D.C.

U.S. Environmental Protection Agency, 1986-1991, Test Methods for Evaluating Solid Waste (SW-846), Third Edition, U.S. Environmental Protection Agency. Washington, D.C.

APPENDIX A

293-1

LOG & AS-BUILT DIAGRAM

GEOLOGIST: Darryl Carlson
DRILLER: Southwest Engineering
DRILLING METHOD: Hollowstem Auger

COMPLETION DATE: 11-9-88
TOP OF CASING ELEV.: 114.4'
GROUND SURFACE ELEV.: 98.6'

GEOLOGIC LOG	SAMPLE TYPE / BLOWS/FOOT	LOG DEPTH IN FEET	WATER LEVEL	AS BUILT
				8" PVC Slip-on Cap
GROUND SURFACE		0		
Borehole previously sampled 0'-15'				Natural Soil Backfill
		10		
Dense, tan, fine SAND (Sa)				15.0 ft.
-slight chemical odor		20		
-slight chemical odor				
-with thin cemented seam at 30', and slight odor		30		2-in. I.D. Schedule 40 PVC Casing
-with thin cemented seam at 35'-36', chemical odor slightly stronger at 32'-35'				
-questionable odor at 40'		40		Bentonite Powder
-no detectable odor at 45'				
-no detectable odor at 50'		50		
-no detectable odor at 55'				
-weakly cemented 58'-60' no detectable odor at 60'		60		
-weakly cemented seams at 61', 63', 65', no detectable odor at 65'				
-with numerous cemented seams 65'-70', no detectable odor at 70'		70		Bentonite Pellet Seal 73.0 ft. 75.0 ft.
-with fewer cemented seams moist with no detectable odor at 75'				Sand Filter 77.2 ft.
-no detectable odor at 80' saturated below 81'		80		0.010" Slotted Screen
-no detectable odor at 85'				87.2 ft.
Total Depth = 90 ft.		90		2-in. I.D. PVC Plug 90.0 ft.

PILKO & ASSOCIATES, INC.

TW-1
Southern Union Refinery
Overflow Pond

Job No. 293
Nov., 1988
Page 1 of 1

LOG & AS-BUILT DIAGRAM

GEOLOGIST: Darryl Carlson
DRILLER: Southwest Engineering
DRILLING METHOD: Hollowstem Auger

COMPLETION DATE: 11-10-88
TOP OF CASING ELEV.: 100.0'
GROUND SURFACE ELEV.: 84.7'

GEOLOGIC LOG	SAMPLE TYPE	BLOWS/FOOT	LOG DEPTH IN FEET	WATER LEVEL	AS BUILT
GROUND SURFACE			0		PVC Slip-on Cap
Borehole previously sampled 0'-15'			10		Natural Soil Backfill — 10.0 ft.
Dense, tan, fine SAND (Sa) -damp, fuel odor (kerosene?) 15'-20' -fuel odor 20'-25' -fuel odor 25'-30' -light gray, slightly silty and weakly cemented 28'-34' -slight fuel odor 30'-32' -no detectable odor 32'-35' -tan below 35' -no detectable odor 35'-40' -no detectable odor 40'-45' -light gray and weakly cemented 44'-46' -no detectable odor 45'-50' -no detectable odor 50'-55' -weakly cemented 58'-60' -no detectable odor 55'-60' -weakly cemented 63'-65' -no detectable odor 60'-65' -moist below 65' -no detectable odor 65'-70' -wet at 70' -no detectable odor 70'-75'			20 30 40 50 60 70		2-in. I.D. Schedule 40 PVC Casing Bentonite Powder Bentonite Pellet Seal — 61.5 ft. / 63.5 ft. Sand Filter — 69.5 ft. 0.010" Slotted Screen 79.5 ft. 2-in. I.D. PVC Plug
Total Depth = 80 ft.			80 90		

PILKO & ASSOCIATES, INC.

TW-2
Southern Union Refinery
API Truck Rack

Job No. 293
Nov., 1988
Page 1 of 1

7599-2

LOG & AS-BUILT DIAGRAM

GEOLOGIST: Darryl Carlson
DRILLER: Southwest Engineering
DRILLING METHOD: Hollowstem Auger

COMPLETION DATE: 1-20-89
TOP OF CASING ELEV.: 115.85'
GROUND SURFACE ELEV.: Not Determined

GEOLOGIC LOG	SAMPLE TYPE	BLOWS/FOOT	LOG DEPTH IN FEET	WATER LEVEL	AS BUILT
GROUND SURFACE			0		PVC Slip-on Cap
Hard, tan and light gray cemented sand					
Dense, tan fine sand			10		Bentonite Powder
-with thin cemented seams 16 to 18 ft.			20		20.0 ft.
-with occasional weakly cemented seams 20 to 25 ft.					
-weakly cemented 30 to 40 ft.			30		2-in. I.D. Schedule 40 PVC Casing
			40		Natural Soil Backfill
			50		
-with occasional thin cemented seams 58 to 60 ft.			60		Bentonite Pellet Seal 61.0 ft. 63.0 ft.
-with occasional thin cemented seams 55 to 72 ft.					Sand Filter
			70		0.010" Slotted Screen 75.0 ft
-saturated below 80 ft.			80		
-no odor or stain 0 to 89 ft.					85.0 ft. 2-in. I.D. PVC Plug 89.0 ft.
Total Depth = 89 ft.			90		

PILKO & ASSOCIATES, INC.

TW-3
Southern Union Refinery
New Mexico

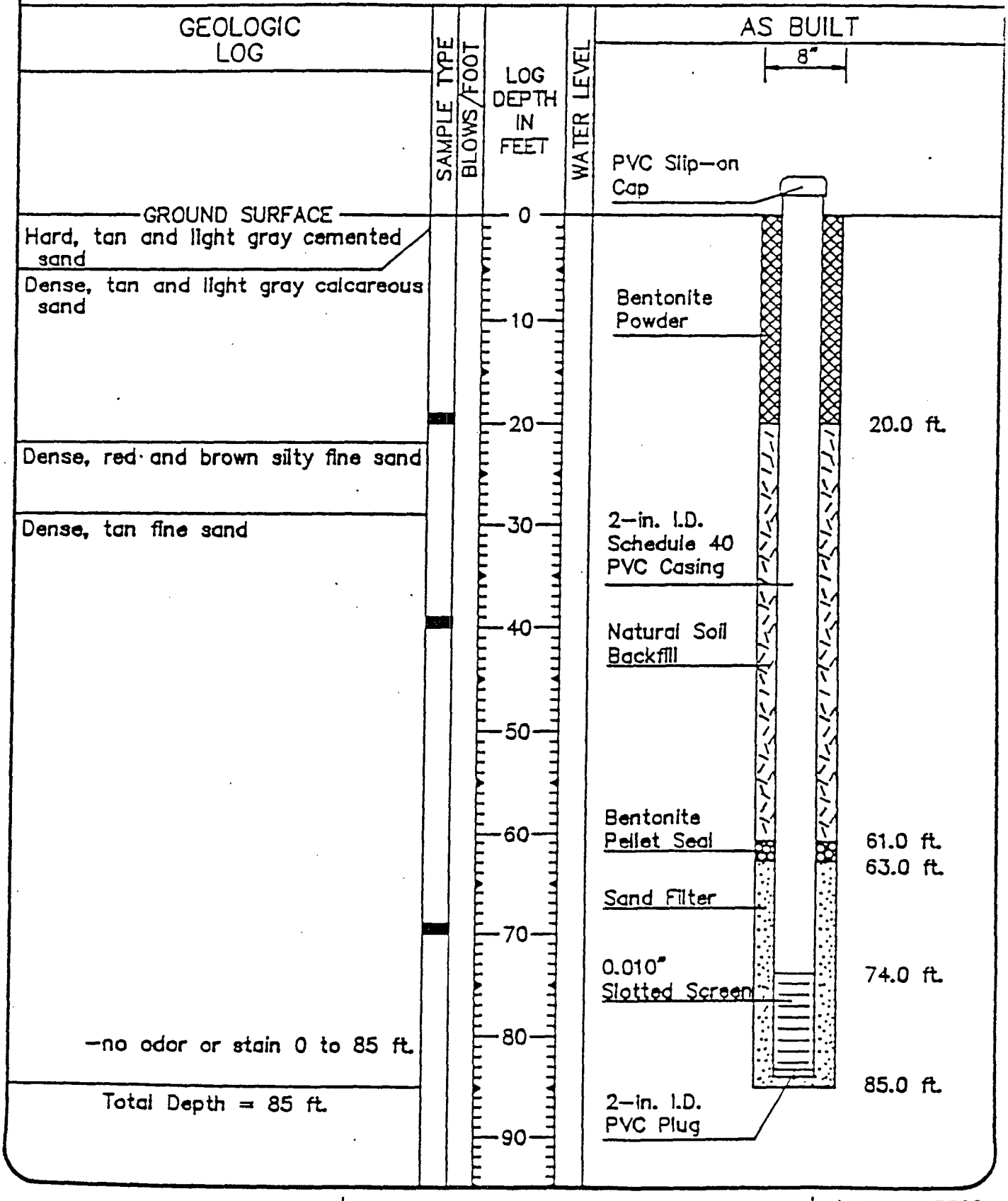
Job No.: 7599
Jan., 1989
Page 1 of 1

7599-1

LOG & AS-BUILT DIAGRAM

GEOLOGIST: Darryl Carlson
DRILLER: Southwest Engineering
DRILLING METHOD: Hollowstem Auger

COMPLETION DATE: 1-21-89
TOP OF CASING ELEV.: 109.76'
GROUND SURFACE ELEV.: Not Determined



PILKO & ASSOCIATES, INC.

TW-4
Southern Union Refinery
New Mexico

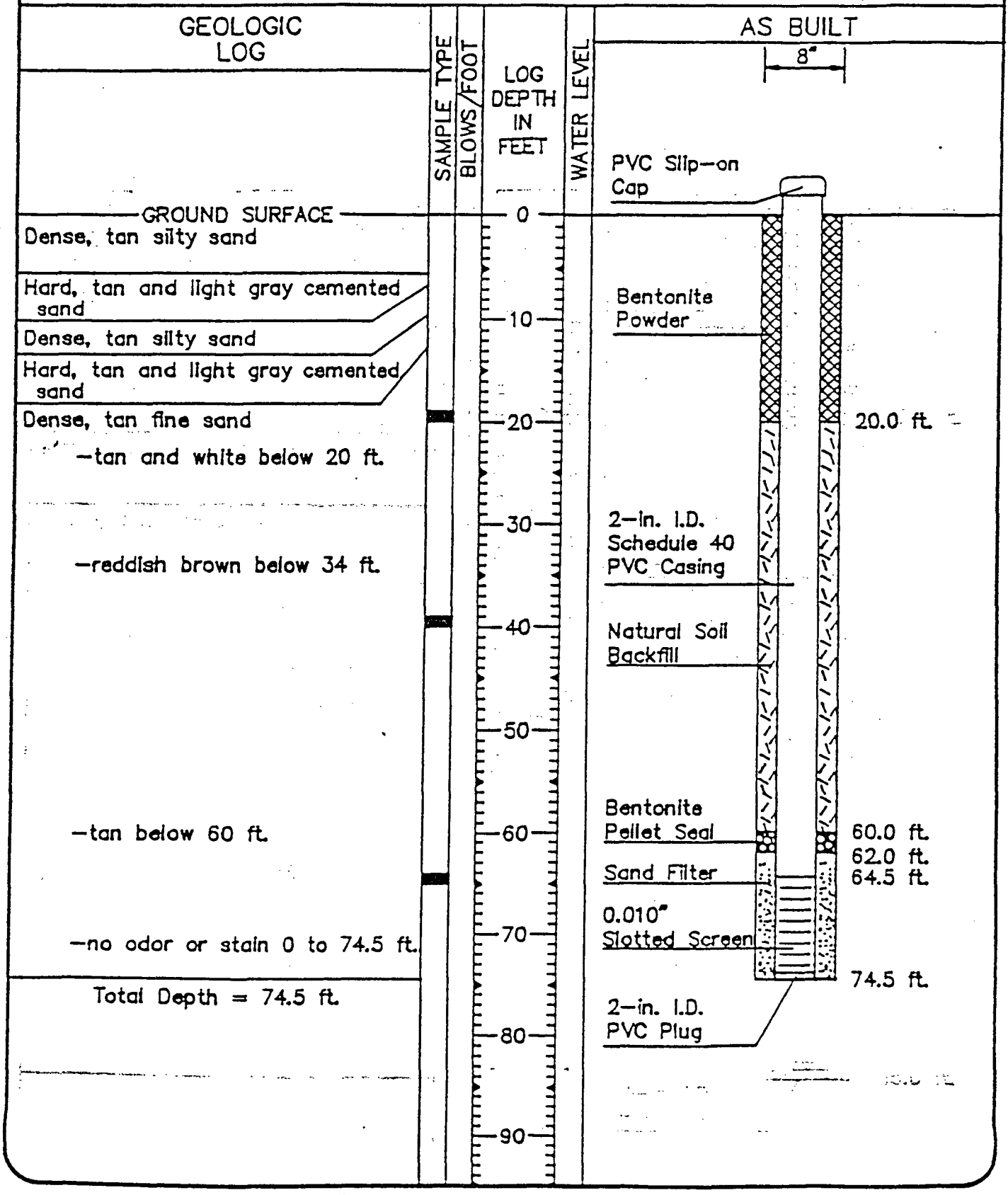
Job No.: 7599
Jan., 1989
Page 1 of 1

7599-3

LOG & AS-BUILT DIAGRAM

GEOLOGIST: John Buchanan
DRILLER: Southwest Engineering
DRILLING METHOD: Hollowstem Auger

COMPLETION DATE: 1-16-89
TOP OF CASING ELEV.: 98.73'
GROUND SURFACE ELEV.: Not Determined



PILKO & ASSOCIATES, INC.

TW-5
Southern Union Refinery
New Mexico

Job No.: 7599
Jan., 1989
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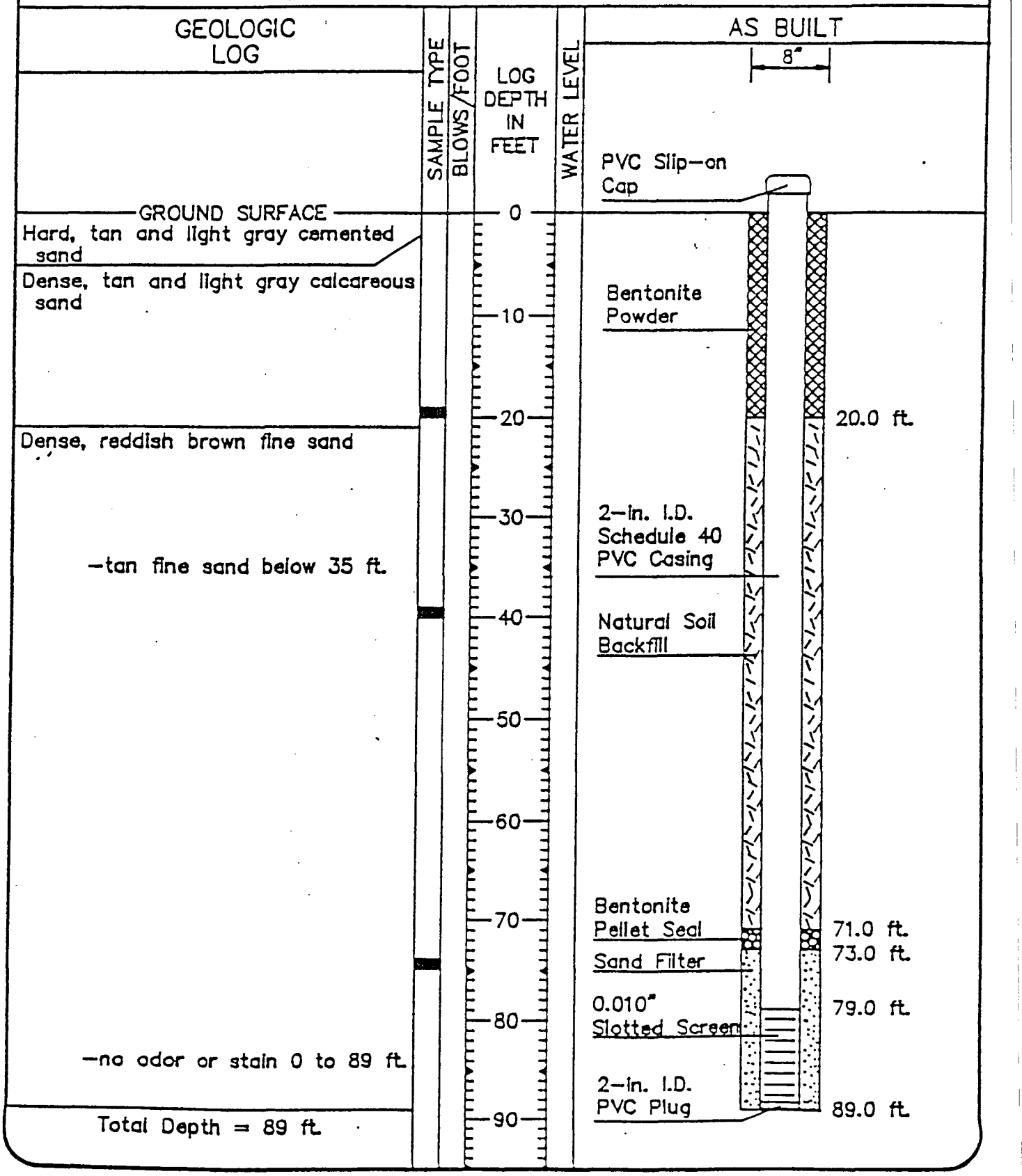
7599-4

LOG & AS-BUILT DIAGRAM

GEOLOGIST: John Buchandn
DRILLER: Southwest Engineering
DRILLING METHOD: Hollowstem Auger

COMPLETION DATE: 1-19-89
TOP OF CASING ELEV.: 115.90'
GROUND SURFACE ELEV.: Not Determined



PILKO & ASSOCIATES, INC.

TW-6
Southern Union Refinery
New Mexico

Job No.: 7599
Jan., 1989
Page 1 of 1

7599-12

LOG & AS-BUILT DIAGRAM

GEOLOGIST: Darryl Carlson
DRILLER: Southwest Engineering
DRILLING METHOD: Hollowstem Auger

COMPLETION DATE: 1-14-89
TOP OF CASING ELEV.: None
GROUND SURFACE ELEV.:

GEOLOGIC LOG	SAMPLE TYPE	BLOWS/FOOT	LOG DEPTH IN FEET	WATER LEVEL	AS BUILT
GROUND SURFACE			0		
Hard, tan and light gray cemented sand					
Dense, tan fine sand			10		
-with occasional weakly cemented seams 15 to 20 ft.			20		
-with occasional thin weakly cemented seams 30 to 32 ft.			30		
-with numerous thin weakly cemented seams 40 to 53 ft.			40		
			50		
-weakly cemented 60 to 85 ft. -occasional ferrous stains from naturally occuring nodules			60		
			70		
-no odor or stain 0 to 95 ft.			80		
-moist 80 to 85 ft. -saturated below 85 ft. -with occasional thin weakly cemented seams below 85 ft.			90		
Total Depth = 95 ft.					

Note: This location was abandoned due to the loss of 45 ft. of auger. A well was installed at location TW-7A, approx. 20 ft. west. The borehole was backfilled with soil to 20 ft. and bentonite powder to the surface.

PILKO & ASSOCIATES, INC.

TW-7
Southern Union Refinery
New Mexico

Job No.: 7599
Jan., 1989
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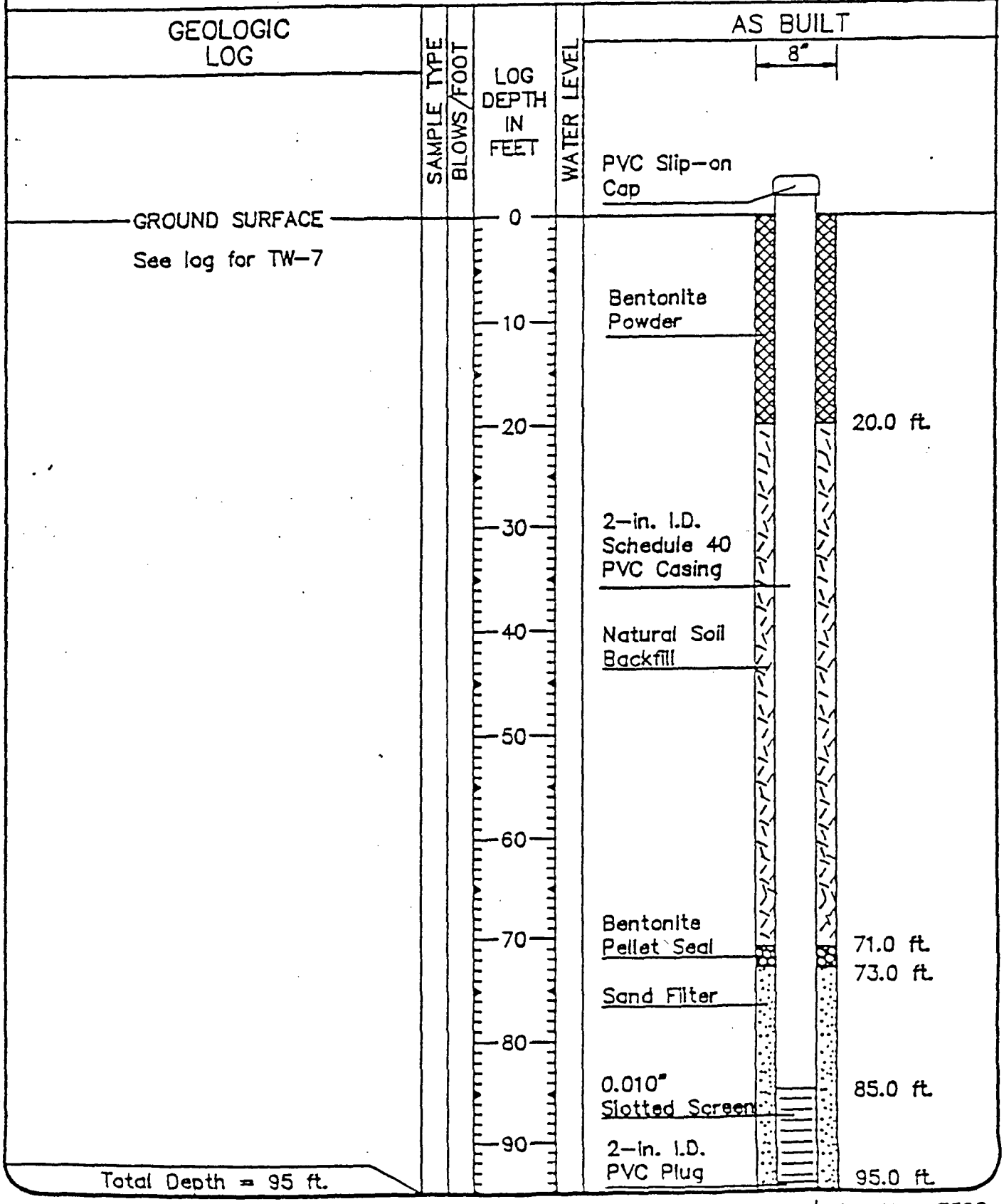
7599-13

LOG & AS-BUILT DIAGRAM

GEOLOGIST: Darryl Carlson
DRILLER: Southwest Engineering
DRILLING METHOD: Hollowstem Auger

COMPLETION DATE: 1-20-89
TOP OF CASING ELEV.: 121.98'
GROUND SURFACE ELEV.: Not Determined



PILKO & ASSOCIATES, INC.

TW-7A
Southern Union Refinery
New Mexico

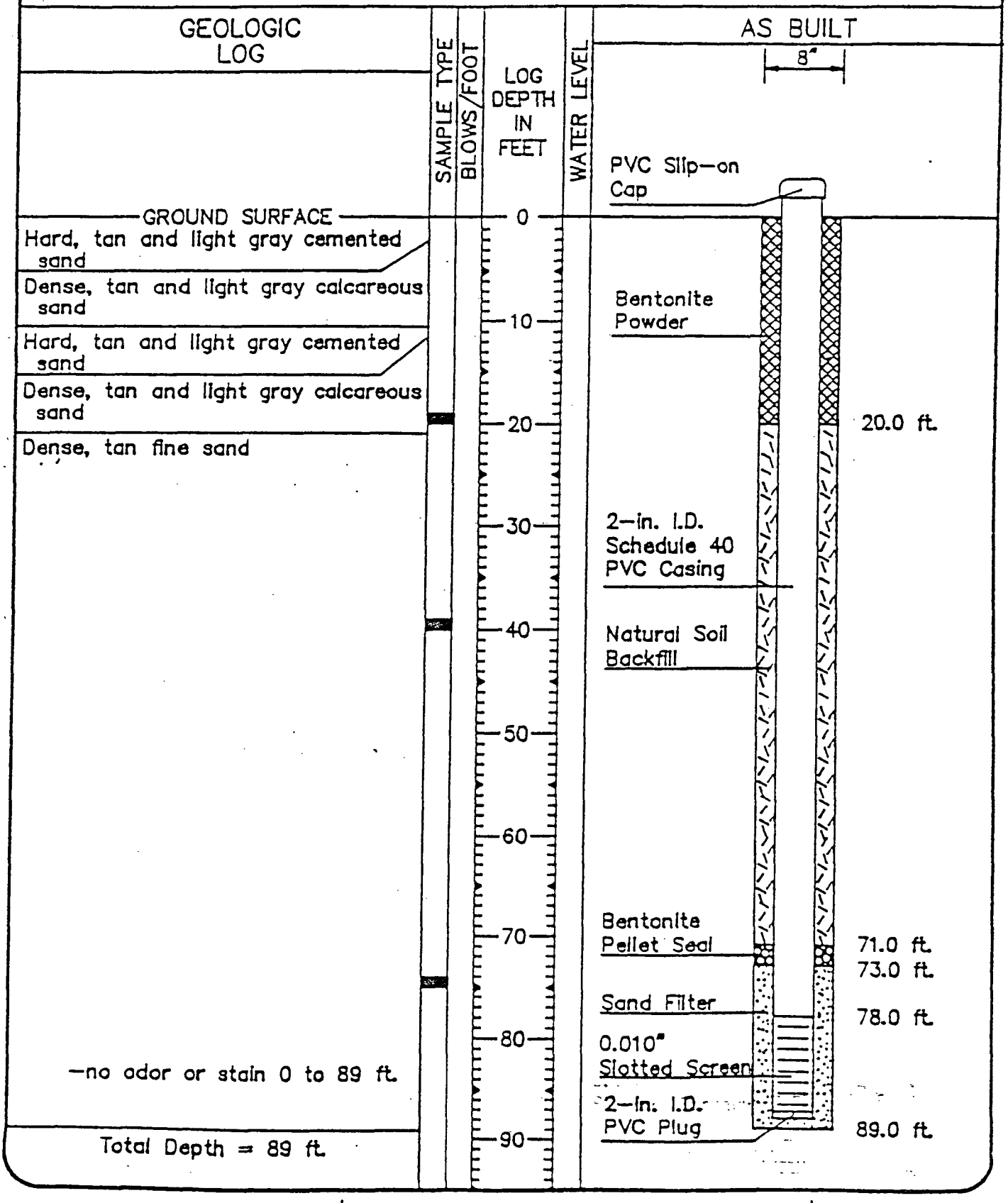
Job No.: 7599
Jan., 1989
Page 1 of 1

7599-5

LOG & AS-BUILT DIAGRAM

GEOLOGIST: John Buchanan
DRILLER: Southwest Engineering
DRILLING METHOD: Hollowstem Auger

COMPLETION DATE: 1-26-89
TOP OF CASING ELEV.: 113.64'
GROUND SURFACE ELEV.: Not Determined



PILKO & ASSOCIATES, INC.

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Southern Union Refinery
New Mexico

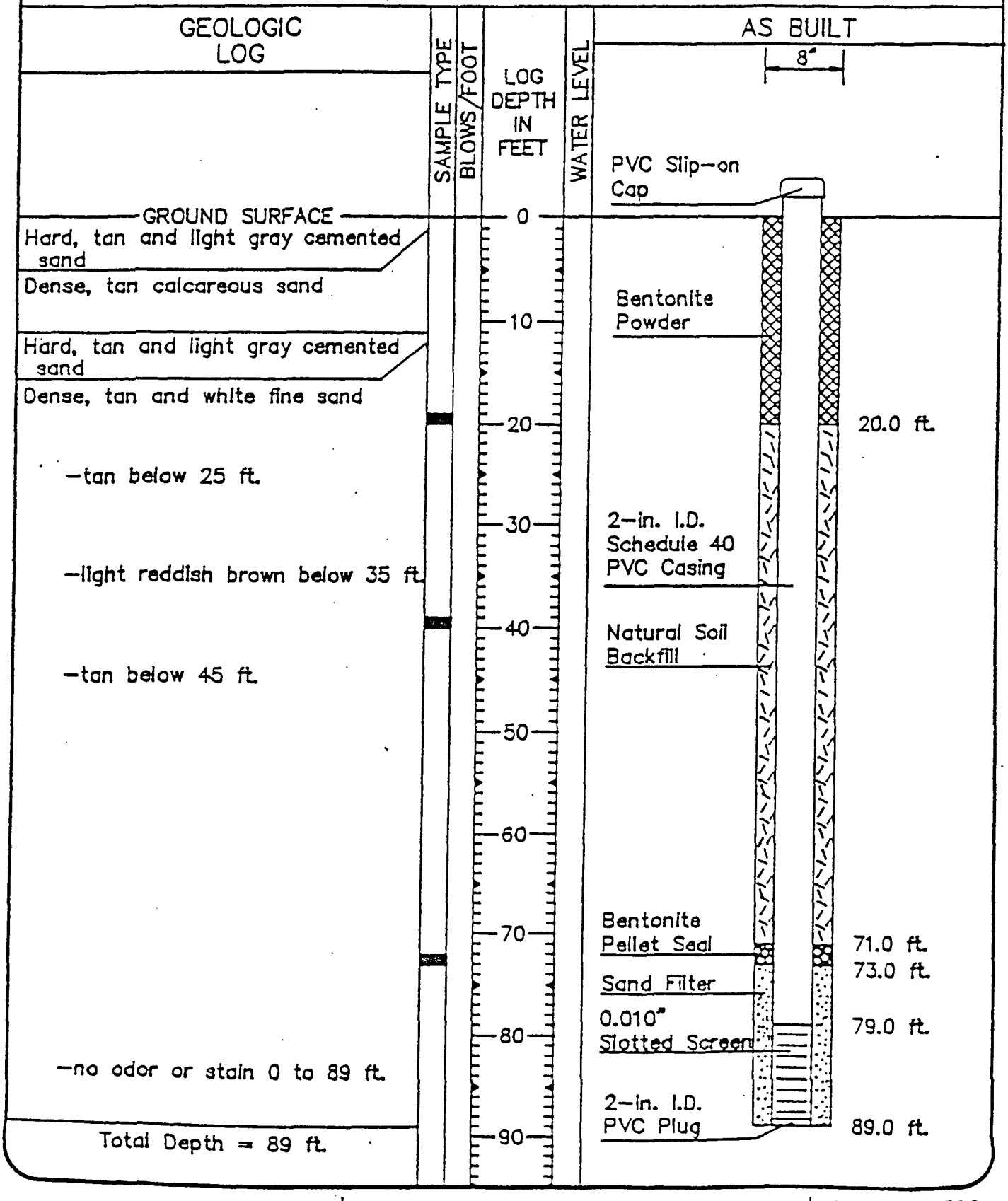
Job No.: 7599
Jan., 1989
Page 1 of 1

7599-6

LOG & AS-BUILT DIAGRAM

GEOLOGIST: John Buchanan
DRILLER: Southwest Engineering
DRILLING METHOD: Hollowstem Auger

COMPLETION DATE: 1-21-89
TOP OF CASING ELEV.: 113.88'
GROUND SURFACE ELEV.: Not Determined



PILKO & ASSOCIATES, INC.

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Southern Union Refinery
New Mexico

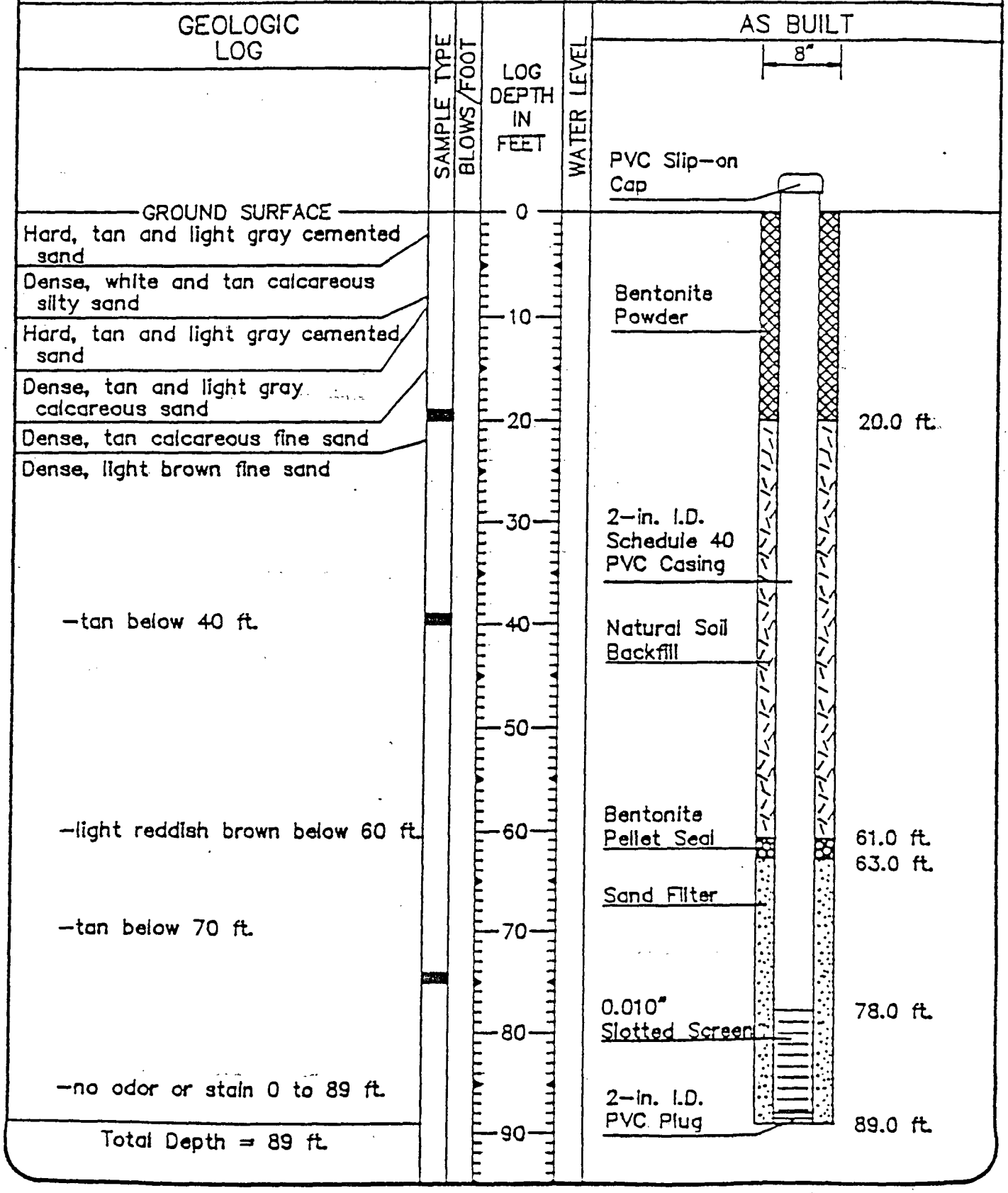
Job No.: 7599
Jan., 1989
Page 1 of 1

7599-7

LOG & AS-BUILT DIAGRAM

GEOLOGIST: Darryl Carlson
DRILLER: Southwest Engineering
DRILLING METHOD: Hollowstem Auger

COMPLETION DATE: 1-21-89
TOP OF CASING ELEV.: 111.48'
GROUND SURFACE ELEV.: Not Determined



PILKO & ASSOCIATES, INC.

TW-10
Southern Union Refinery
New Mexico

Job No.: 7599
Jan., 1989
Page 1 of 1

LOG & AS-BUILT DIAGRAM

GEOLOGIST: Darryl Carlson
DRILLER: Southwest Engineering
DRILLING METHOD: Hollowstem Auger

COMPLETION DATE: 1-21-89
TOP OF CASING ELEV.: 103.88'
GROUND SURFACE ELEV.: Not Determined

GEOLOGIC LOG

GROUND SURFACE

Hard, tan and light gray cemented sand

Dense, tan and light gray calcareous sand

Dense, light brown calcareous silty fine sand

Dense, light brown silty fine sand

—weakly cemented 35 to45 ft.

—with weakly cemented seams 45 to 50 ft.

Dense, tan fine sand

—weakly cemented 56 to 63 ft.

—cemented 63 to 68 ft.

—moist below 69 ft.

—no odor or stain 0 to 79.5 ft.

Total Depth = 79.5 ft.

SAMPLE TYPE | BLOWS/FOOT | LOG DEPTH IN FEET | WATER LEVEL

0
10
20
30
40
50
60
70
80
90

AS BUILT

8"

PVC Slip-on Cap

Bentonite Powder

15.0 ft.

2-in. I.D. Schedule 40 PVC Casing

Natural Soil Backfill

Bentonite Pellet Seal

61.0 ft.

63.0 ft.

Sand Filter

69.5 ft.

0.010" Slotted Screen

2-in. I.D. PVC Plug

79.5 ft.

PILKO & ASSOCIATES, INC.

TW-11
Southern Union Refinery
New Mexico

Job No.: 7599
Jan., 1989
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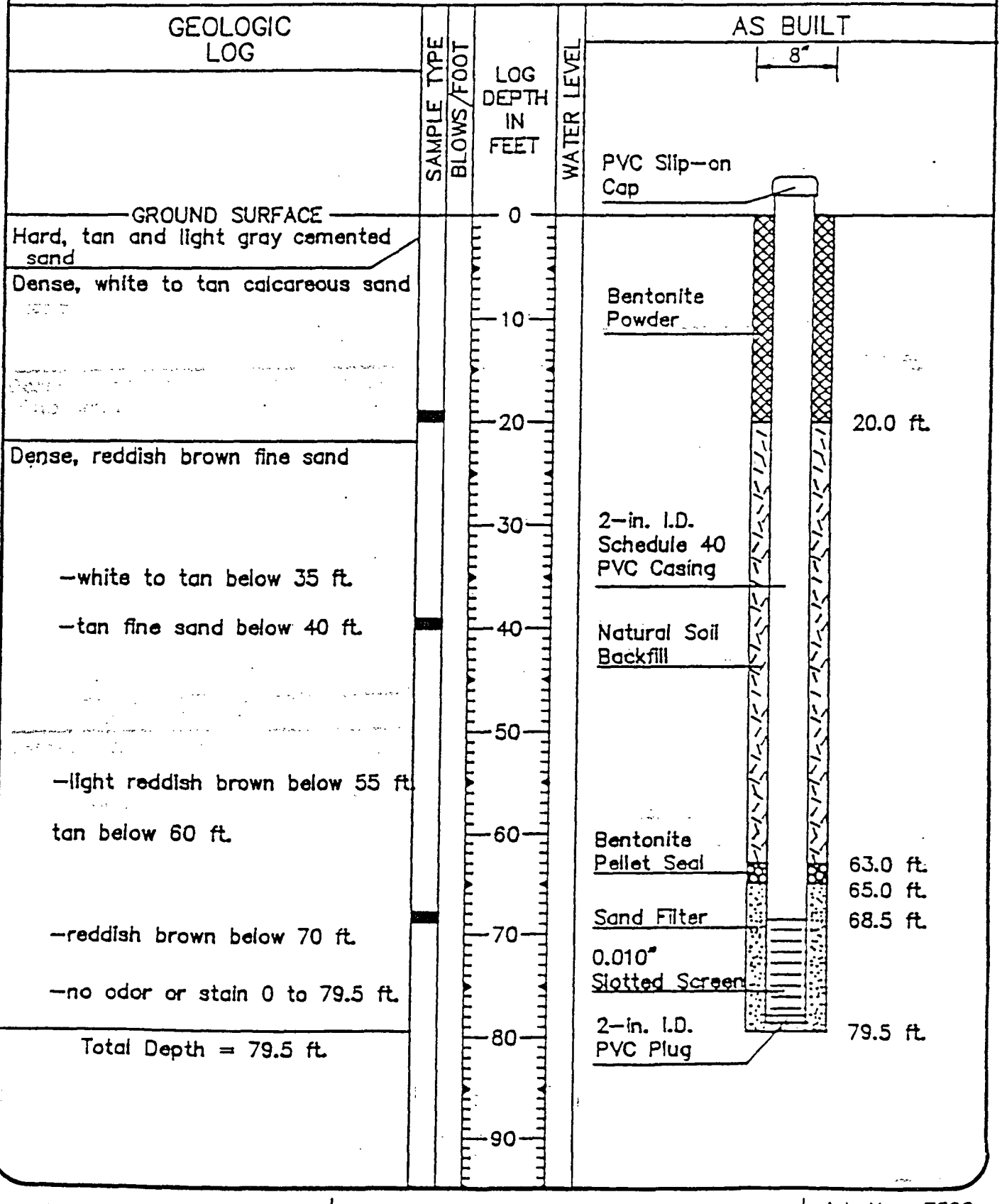
7599-9

LOG & AS-BUILT DIAGRAM

GEOLOGIST: Darryl Carlson
DRILLER: Southwest Engineering
DRILLING METHOD: Hollowstem Auger

COMPLETION DATE: 1-19-89
TOP OF CASING ELEV.: 104.01'
GROUND SURFACE ELEV.: Not Determined



PILKO & ASSOCIATES, INC.

TW-12
Southern Union Refinery
New Mexico

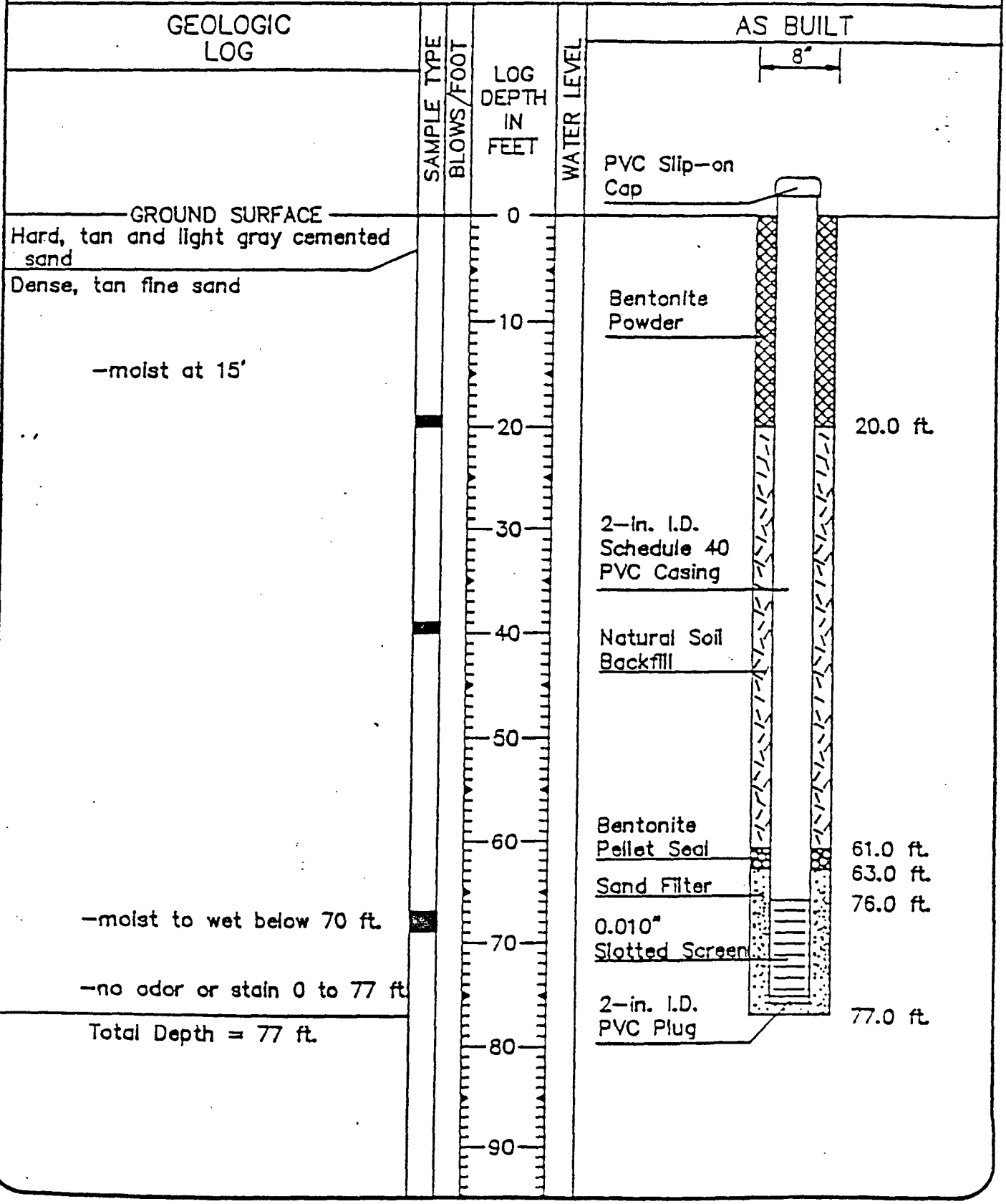
Job No.: 7599
Jan., 1989
Page 1 of 1

7599-10

LOG & AS-BUILT DIAGRAM

GEOLOGIST: John Buchanan
DRILLER: Southwest Engineering
DRILLING METHOD: Hollowstem Auger

COMPLETION DATE: 1-17-89
TOP OF CASING ELEV.: 99.30'
GROUND SURFACE ELEV.: Not Determined



PILKO & ASSOCIATES, INC.

TW-13
Southern Union Refinery

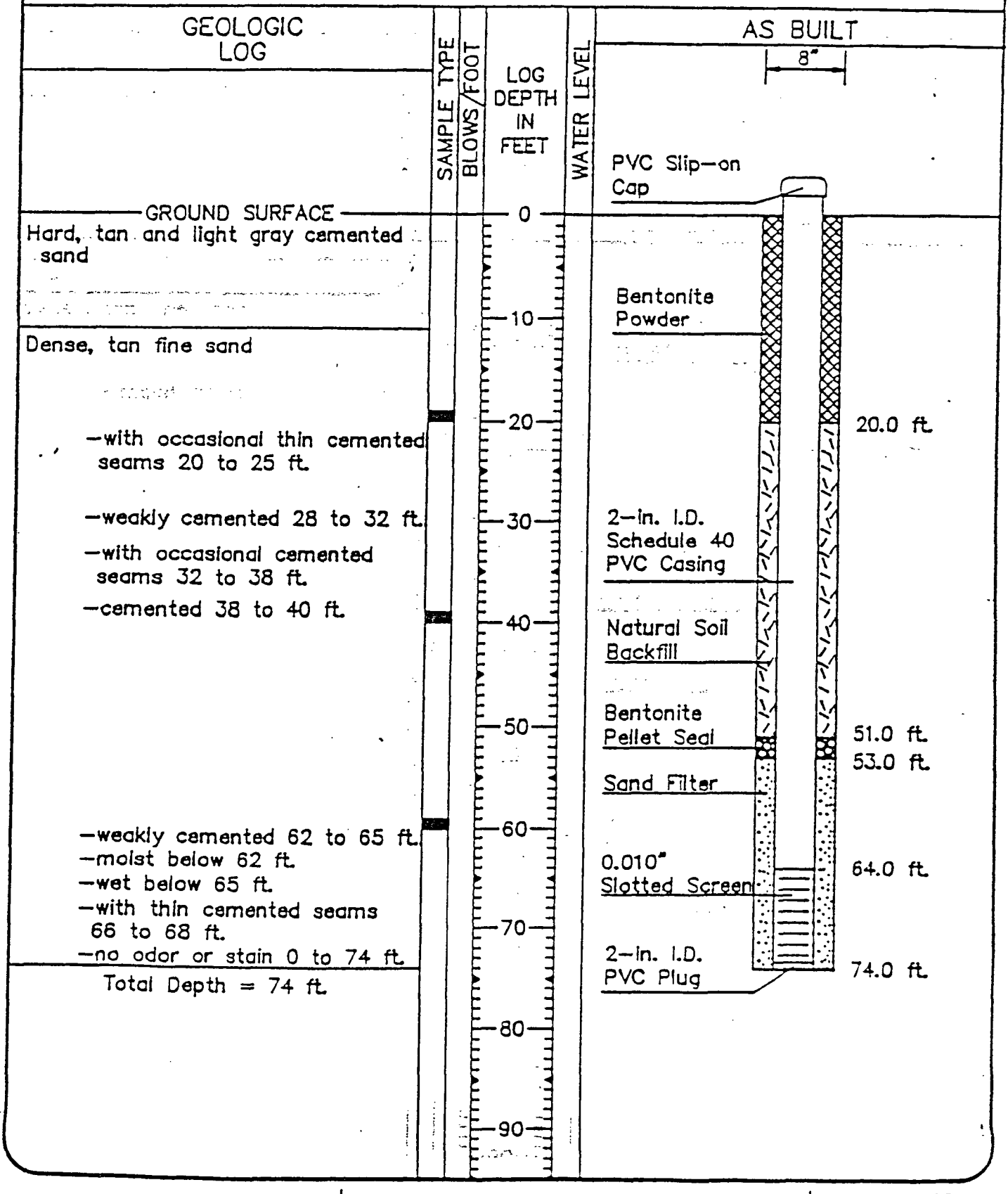
Job No.: 7599
Jan., 1989

7599-11

LOG & AS-BUILT DIAGRAM

GEOLOGIST: Darryl Carlson
DRILLER: Southwest Engineering
DRILLING METHOD: Hollowstem Auger

COMPLETION DATE: 1-16-89
TOP OF CASING ELEV.: 96.00'
GROUND SURFACE ELEV.: Not Determined



PILKO & ASSOCIATES, INC.

TW-14
Southern Union Refinery
New Mexico

Job No.: 7599
Jan., 1989
Page 1 of 1

State of New Mexico
ENVIRONMENT DEPARTMENT
Harold Runnels Building
1190 St. Francis Drive, P.O. Box 26110
Santa Fe, New Mexico 87502
(505) 827-2850

BRUCE KING
GOVERNOR

JUDITH M. ESPINOSA
SECRETARY

RON CURRY
DEPUTY SECRETARY

M E M O R A N D U M

TO: David Boyer, OCD

FROM: Louis W. Rose, Deputy General Counsel, NMED LW

DATE: May 20, 1991

RE: **Southern Union Refinery, Lovington**

Attached is a copy of a letter I received from a law firm in New York concerning the Southern Union Refinery site in Lovington. It appears that the records she seeks are probably in your files, not NMED's. In my response I have advised her to contact you directly.

Enclosure

cc: Ron Curry, Deputy Secretary
Kathleen Sisneros, Director, W&WMD

6/14/91
Sent list of Division researchers to her by mail. DJB

MOUND, COTTON & WOLLAN
COUNSELLORS AT LAW

ONE BATTERY PARK PLAZA
NEW YORK, NY 10004

(212) 804-4200

TELEX: 64-9063
FAX: (212) 344-8066

71 STEVENSON STREET
SAN FRANCISCO, CA 94105
(415) 882-4177

LONGBOW HOUSE
14-20 CHISWELL STREET
LONDON EC1Y 4TY
(071) 638-3688

WRITER'S DIRECT DIAL
(212) 804- 4270

May 13, 1991

CERTIFIED MAIL, RETURN RECEIPT REQUESTED

Mr. Lou Rose, Esq.
Department of Environment
P.O. Box 26110
Santa Fe, New Mexico 87502

Re: Southern Union Lovington,
New Mexico Refinery
Our File No.: 383.39

Dear Mr. Rose:

Pursuant to the Freedom of Information Act, we request that your provide us with all documentation in your possession relating to the contamination and clean-up of the Southern Union Lovington, New Mexico Refinery located in Lovington, New Mexico. This request encompasses but is not limited to governmental records relating to the discovery of the contamination, extent of the clean-up and progress of the clean-up.

We believe the responsive documents will be voluminous and therefore request a list identifying the documents before they are copied. If this is not possible, kindly provide us with an estimate as to the number of boxes or quantity of documents. Should you need any further information, do not hesitate to contact me at the above direct-dial number. If I am unavailable, please speak with the attorney handling this matter, Jeffrey B. Gold.

Thank you in advance for your prompt assistance in this matter.

Very truly yours,

MOUND, COTTON & WOLLAN

Lisa Panebianco
Legal Assistant

LP:vr

State of New Mexico
ENVIRONMENT DEPARTMENT
Harold Runnels Building
1190 St. Francis Drive, P.O. Box 26110
Santa Fe, New Mexico 87502
(505) 827-2850

BRUCE KING
GOVERNOR

JUDITH M. ESPINOSA
SECRETARY

RON CURRY
DEPUTY SECRETARY

May 20, 1991

Lisa Panebianco
Mound, Cotton & Wollan
One Battery Park Plaza
New York, New York 10004

Re: Southern Union Refinery, Lovington

Dear Ms. Panebianco:

I am in receipt of your May 13, 1991 letter requesting copies of "all documentation in [NMED's] possession relating to the contamination and clean-up of the Southern Union . . . Refinery located in Lovington, New Mexico." That letter requests the documentation pursuant to the federal Freedom of Information Act. Please be advised that the federal FOIA does not apply to records held by the State of New Mexico. Under New Mexico law, § 14-2-1 NMSA 1978, only New Mexico citizens have a right of access to public documents held by this agency.

The Department is willing, however, to review its files to determine if such records exist and to notify you if records are found. I have provided several of the Department's bureaus with a copy of your letter and have asked them to identify any such records. If the documents exist, I will so notify you and attempt to provide you with an estimate of the volume of documents involved.

I suspect that any contamination at the refinery site, if it is being remediated, is being done under the auspices of the Oil Conservation Division of the Energy, Minerals and Natural Resources Department. I have also sent a copy of your letter to David Boyer, OCD's chief environmental person. You may wish to contact him at Post Office Box 2088, Santa Fe, N.M. 87504-2088 or call him at (505) 827-5812.

If you need any further information, please contact me.

Sincerely,

LOUIS W. ROSE
Deputy General Counsel

cc: Ron Curry, Deputy Secretary
Kathleen Sisneros, Director, W&WMD
David Boyer, OCD, EMNRD

James C. Hunter
Monteverde Environmental Consultants, Inc.
1930 Menaul, N.E., Suite 219
Albuquerque, New Mexico 87112
505 296-9261

February 27, 1991

Mr. David Boyer
New Mexico Energy and Minerals Department
Oil Conservation Commission
P.O. Box 2088
Santa Fe, New Mexico 87501

RE: DISCHARGE PLAN GW-14, NOTICE OF INTENT TO RENEW, LEA REFINERY, LOVINGTON, NEW MEXICO

Dear Mr. Boyer:

As we discussed in our meeting of February 19, 1991, I am transmitting to you Navajo Refining Company's notice of their intent to renew Discharge Plan GW-14 for the Lea Refinery in Lovington, New Mexico.

Please contact me at 505-296-9261, or 291-9301 if you have any questions or require additional information.

Sincerely,
MONTEVERDE ENVIRONMENTAL CONSULTANTS, INC.

James C. Hunter, R.G.

Enclosure

cc: Mr. David Griffin, Navajo Refining Company

Under Section 3-108 of the New Mexico Water Quality Control Commission Regulations, Navajo Refining Company (Navajo) hereby notifies the New Mexico Oil Conservation Commission of its intent to renew Discharge Plan GW-14 for the Lea Refinery in Lovington, New Mexico.

Inquiries concerning this Discharge Plan may be directed to:

Mr. David Griffin
Navajo Refining Company
P.O. Box 159
Artesia, New Mexico 88210

The location of the discharge will be:

Lea Refinery
Section 1, T. 17 S., R. 36 E.
Lea County, New Mexico

The Lea Refinery is a crude oil refining facility that has a rated process capacity of 37,500 barrels of oil per day. The refinery was constructed in 1974, processed petroleum products until 1984, and has been shut down since 1984. Navajo intends to recondition and restart the refinery, and to produce petroleum products for sale as well as feedstocks for its Artesia, New Mexico facility.

The Lea Refinery will produce approximately 200,000 gallons per day of wastewater that will be disposed of in 1 or 2 off-site Class I injection wells, operated by Araho, Inc. and located in Section 1, T. 17 S., R. 36 E. These wells will inject wastewater into either the Abo Formation at a depth of approximately 8000 feet, and/or the Fusselman Formation at a depth of approximately 11,000 feet. Natural waters in these formations are brines, with total dissolved solids (TDS) contents in excess of 40,000 milligrams per liter (mg/l).

Wastewater with an average TDS content of 1300 mg/l will be generated by water treatment, cooling and steam generation, crude oil desalting, stripping, and other refining processes. Prior to discharge to the injection well, the wastewater will be treated to remove free hydrocarbons and any potentially hazardous levels of organic constituents.

Groundwater in the shallowest aquifer under the refinery is at depths ranging from 60 to 80 feet, and has an average TDS of 450 mg/l.