STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

September 25, 1990

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

Mr. W. Perry Pearce
Montgomery & Andrews
Attorneys at Law
P. O. Box 2307
Santa Fe, New Mexico

Re: CASE NO. 10053
ORDER NO. R-9288

Applicant:

Woodbine Petroleum Inc.

Dear Sir:

Enclosed herewith are two copies of the above-referenced Division order recently entered in the subject case.

Sincerely,

Florene Davidson

FLORENE DAVIDSON
OC Staff Specialist

Copy of order also sent to:

Hobbs OCD x
Artesia OCD x
Aztec OCD

Other

Memo

From 8/22/90

DAVID G. BOYER
Hydrogeologist

To David Catanach -

Please take administrative notice of this information for case # 10053, See esp. map p. 7.

Thx
Dave Boyer

Oil Conservation Division
P.O. Box 2088 Santa Fe, N.M. 87501

PHILLIPS PETROLEUM COMPANY
ODESSA, TEXAS 79762
4001 PENBROOK

NATURAL RESOURCES GROUP
Exploration and Production

File
Phill. Lusk

March 8, 1982

Lusk Gasoline ~~Plant~~
Discharge Plan

FROM EID FILE

Mr. Joe D. Ramey
New Mexico Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

Dear Mr. Ramey:

We have recently completed the drilling and sampling of four exploratory water wells, near our Lusk Plant facility, to determine if there is a need for groundwater protection in the area near our facility. The following actions were taken to determine this:

1. Information was secured from the State Engineers Office on the redbed depth in a Township area surrounding Lusk Plant.

2. The depth information was contoured by our geological section from which possible troughs and closures in the redbeds were isolated.

3. Four exploratory well locations were spotted where groundwater accumulation was possible. These locations were down dip from the plant and would be most susceptible to contamination from the plant.

4. The four exploratory wells were drilled. Wells #1 through #3 were drilled entirely with air. Well #4 was drilled with water to a depth of 220 feet due to hole condition. At this point casing was set, and the well was completed with air to a depth of 300 feet.

5. The four wells were allowed to stand overnight as there was not enough water upon completion for sampling. At time of sampling there was approximately 15 feet of water in Well #1, 5 feet of water in Well #2, 40 feet of water in Well #3 and 50 feet of water in Well #4.

doesn't agree w/ drillers log, be

Attached are the water analyses and drilling reports from these four wells. From these we do not feel that the subsurface water around Lusk Plant qualifies as "groundwater", per Section 1-101, Part M of the Water Quality Control Regulations, as sufficient amounts of water were not present to be utilized as a water supply.

unproven

It is our interpretation of the Water Control Regulations, Part 3, that if there is no "groundwater" to protect, we are not subject to filing a discharge plan.

If you have any questions regarding this matter, please contact Bob Stubbs at (915) 367-1302.

Very truly yours,

E. E. Clark
Manager, Permian Basin Region

RGS:jj
Attachments

P. O. BOX 1468
MONAHANS, TEXAS 79756
PHONE 943-3234 OR 563-1040

Martin Water Laboratories, Inc

709 W. INDIANA
MIDLAND, TEXAS 79701
PHONE 683-4521

RESULT OF WATER ANALYSES

LABORATORY NO. 282214

TO: Mr. Bob Stubbs
4001 Penbrook, Odessa, Texas

SAMPLE RECEIVED As listed

RESULTS REPORTED 2-18-82

COMPANY Phillips Petroleum Company LEASE Lusk Gas Plnat

FIELD OR POOL Lusk

SECTION ___ BLOCK ___ SURVEY ___ COUNTY Lea STATE NM

SOURCE OF SAMPLE AND DATE TAKEN:

NO. 1 Recovered water - taken from test hole #1 (approx. 15' water in hole). 2-10-82

NO. 2 Recovered water - taken from test hole #3 (approx. 40' water in hole). 2-10-82

NO. 3 Recovered water - taken from test hole #2 (approx. 5' water in hole). 2-12-82

NO. 4 Recovered water - taken from test hole #4 (approximately 50' water in hole). 2-13-8

REMARKS: Samples taken by Robert C. Middleton, Martin Water Labs., In

CHEMICAL AND PHYSICAL PROPERTIES

	NO. 1	NO. 2	NO. 3	NO. 4
Specific Gravity at 60° F.	1.0020	1.0012	1.0045	1.0016
pH When Sampled				
pH When Received	7.96	7.82	7.99	7.54
Bicarbonate as HCO_3	224	229	181	259
Supersaturation as $CaCO_3$				
Undersaturation as $CaCO_3$				
Total Hardness as $CaCO_3$	350	244	2,300	356
Calcium as Ca	62	54	560	82
Magnesium as Mg	47	26	219	36
Sodium and/or Potassium	131	26	296	43
Sulfate as SO_4	371	61	2,588	157
Chloride as Cl	45	34	75	51
Iron as Fe	0.50	5.7	0.63	0.17
Barium as Ba				
Turbidity, Electric				
Color as Pt				
Total Solids, Calculated	880	430	3,919	628
Temperature °F.				
Carbon Dioxide, Calculated				
Dissolved Oxygen, Winkler				
Hydrogen Sulfide	0.0	0.0	0.0	0.0
Resistivity, ohms/m at 77° F.	8.90	19.50	2.00	13.50
Suspended Oil	Hole #1	Hole #3	Hole #2	Hole #4
Filtrable Solids as mg/l				
Volume Filtered, ml				

Results Reported As Milligrams Per Liter

Additional Determinations And Remarks: The undersigned certifies the above to be true and correct to the best of his knowledge and belief.

Form No. 3

By _____

Waylan C. Martin, M. A.

Ed L. Reed and Associates, Inc.

Consulting Hydrologists

MIDLAND · CORPUS CHRISTI

TEXAS

ED L. REED, P.E.
CHAIRMAN OF THE BOARD
A. JOSEPH REED
PRESIDENT
CHESTER F. SKRABACZ
VICE PRESIDENT FIELD OPERATIONS
1109 N. BIG SPRING
MIDLAND, TEXAS 79701
915 682-0556

V. STEVE REED
EXECUTIVE VICE PRESIDENT
OIL INDUSTRIES BLDG.
SUITE 315
723 UPPER N. BROADWAY
CORPUS CHRISTI, TEXAS 78403
512-883-1353

December 30, 1982

Mr. J. W. Maharg
Engineering Director
Permian Basin Region
Phillips Petroleum Co.
Odessa, Texas

RE: Ground Water Monitoring Waiver
Lusk Gasoline Plant
Lea Co., New Mexico

Dear Mr. Maharg:

Submitted herewith is a discussion of the geology and ground water conditions in the vicinity of the Phillips Lusk gasoline plant to satisfy the U.S. EPA requirements for a groundwater monitoring waiver (Ref. 40CFR, Part 265.90 paragraph C). The plant is located near the north quarter corner of Section 19-19S-32E, Lea County, New Mexico.

The surface at the site and for several miles in all directions is covered with Quaternary to Recent alluvium (N. M. Bureau of Mines and Mineral Resources Ground Water Report 6, 1961, Plate 1). Near the site and to the southeast (down-gradient) this alluvial section ranges from 20 to about 50 feet in thickness (see logs of Test Holes 1 and 2 attached).

Underlying the Quaternary fill are red and gray clays and interbedded sands of Triassic age. Test Hole 2 at total depth of 350 is still in Triassic rocks. Based upon oil well data and a deep water well in the area it is believed that the Triassic sediments in the vicinity of the plant site are about 800 feet thick and rest unconformably upon the Rustler formation of upper Permian age.

Structurally the plant site is situated on the southwest flank of a broad regional northwest-southeast trending anticline. Locally, the eroded surface of the Triassic exhibits a southeast trending valley ending at Laguna Plata, a salt lake or playa with interior drainage both surface and subsurface. (See attached map.) The Triassic outcrops on the north side of Laguna Plata and salt water

springs with very high chlorides and sulfates discharge into the northeast side of the playa.

The Phillips Lusk plant generates a waste stream consisting primarily of cooling tower blow down water with minor amounts of salt water derived from stripper operations. An average 10,080 gallons of waste water are placed daily into an unlined surface pit covering 0.86 acres. At the normal water depth of 4 feet, the free board is 3 feet (see attached drawing).

The waste stream can be characterized as a brackish water containing moderately high chloride and sulfate levels (553 and 1011 mg/l respectively) and total dissolved solids under 3000 mg/l (see attached analyses). The only toxic element in the waste stream above toxicity limits is hexavalent chromium which is no longer being added to the cooling water. The sludge accumulated from past years of discharging cooling tower water treated with chromates has 0.5 ug/g soluble hexavalent chromium and the leachate extracted according to Appendix 11, EP Toxicity Test contains 0.025 mg/l hexavalent chromium. (See Key Laboratories report October 18, 1982 attached).

Ground water under and for several miles in all diretions from the Lusk plant site is contained in sandstones of the Dockum group, Triassic age. The Dockum is divided into the Chinle clays and shales underlain by the Santa Rosa formation, a sequence of red fine to medium grained sandstones. Minor amounts of water are found in the Chinle under water table conditions; the Santa Rosa generally contains producible water under artesian conditions.

A test hole drilled by Phillips about 0.4 mile southeast of the plant site was completed at total depth 260 feet (3316 MSL) apparently still in Chinle sediments. Fifteen feet of Chinle water was found in the bottom of this test hole. The top of the Santa Rosa is probably twenty feet below the bottom of this test hole based upon the log of a second test hole drilled by Phillips at a location 0.7 miles southeast of the plant site. This second test, drilled to 350 feet may have found Santa Rosa sandstones at 280 feet but since the water level in this test hole is at 345 feet, only 5 feet above total depth, the exposed portion of the Santa Rosa is very tight.

Ground water in the vicinity of the site moves southeasterly toward Laguna Plata a depression with interior drainage. The salt springs at the northeast side of the playa are probably issuing from thin sands in the Chinle formation. The Santa Rosa piezometric surface forms a south-trending depression indicating discharge. However, since the pressure surface at the group of playas Laguna Plata, Laguna Gatuna and two smaller ones is well below the lake beds, it is believed that the Santa Rosa is discharging downward into the Rustler formation of upper Permian Age in the area of the playas (N. M. Bureau Mines Report 6, p 57). The Chinle water however probably does discharge for the most part into the playas.

The uppermost aquifer in this area is the Santa Rosa sandstone. The potential for migration of hazardous waste from the Lusk plant site

to the Santa Rosa is considered to be negligible. Seepage from the pond is calculated to average about 4 gallons per minute based upon an input rate of 7 gpm, surface area of 0.86 acre and a net evaporation rate of 5.375 feet per year. It is expected that this seepage will be into the Quaternary alluvium above the Triassic exemplified by the upper 52 feet in Test Hole 1.

For the most part, it is expected that the waste water will move southeasterly along the contact between the alluvium and the Triassic Chinle clays. Assuming a permeability of 2×10^{-3} cm/sec (42.4 gpd/ft^2) for the alluvium and a gradient at the basal contact of 9.5×10^{-3} ft/ft (50 ft/mi) the average flow velocity would be 98.3 feet per year requiring more than 200 years to reach Laguna Plata (4 miles distant).

Based upon permeability data secured recently from core tests in Sec. 16-17S-30E, about 15 miles to the northwest, it is believed that the average vertical permeability of the Chinle clays and shales is 10^{-7} cm/sec. Assuming a depth of water in the pond to be 4 feet, that the 52 feet of alluvium is saturated and 192 feet of clays lie above the first permeable sand the vertical velocity becomes 0.67 feet per year. It would require almost 300 years for the waste water to reach a depth of 244 feet.

Finally, if by some means presently unknown the waste stream should reach the aquifer at about 250 feet below the land surface, the velocity in a horizontal direction would be 19.6 feet per year based upon a permeability of 1×10^{-3} cm/sec (21 gpd/ft^2) and a hydraulic gradient of 3.8×10^{-3} ft/ft (20 ft/mi). This permeability has been found to be about average for the Dockum in West Texas and New Mexico. The nearest known water well to the site based upon records in the New Mexico State Engineers' office is in Sec. 34-19S-32E about 4 miles southeast (not considering the Capitan Reef well in Sec. 31-19S-32E). It would require 1078 years for water to move through the Santa Rosa sandstone from the plant site to the nearest uppermost aquifer.

As further and final evidence that ground water will not be affected by this waste disposal operation it should be noted that since a water supply could not be located at the plant site for operational purposes, water is obtained via pipe line from Tertiary Ogallala wells located about 20 miles to the east. It is my opinion based upon the hydrologic and geologic conditions surrounding the plant site that ground water will not be affected by the operation of the waste disposal pit serving the Phillips Lusk gasoline plant.

If you need further information regarding the hydrogeology of this area please advise.

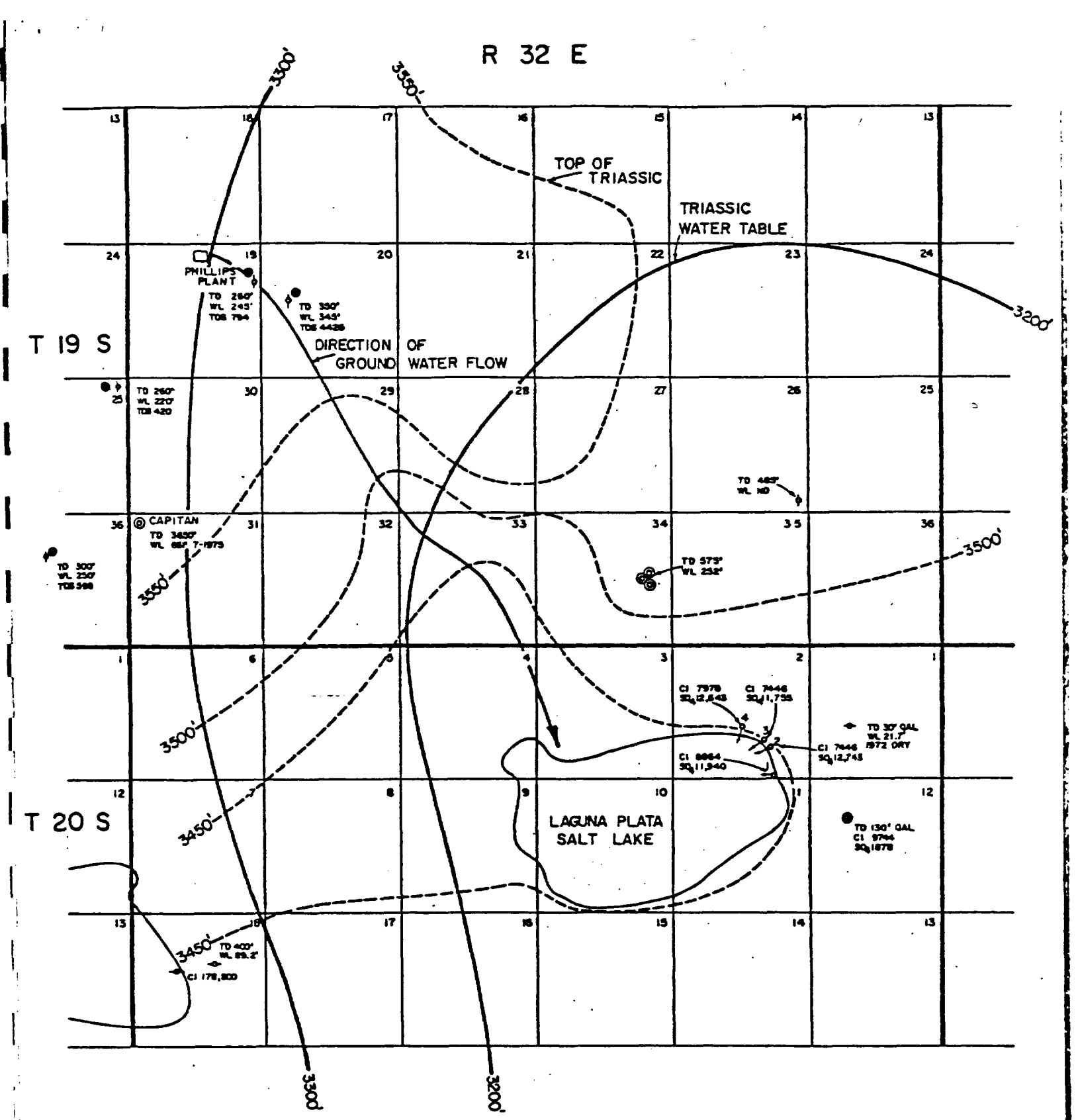
Very truly yours,

ED L. REED & ASSOCIATES, INC.

Ed L. Reed

Ed L. Reed, P. E.

ELR:lb



LEGEND

- WINDMILL OR DOMESTIC WELL
- TEST HOLE, ABANDONED WINDMILL OR DOMESTIC WELL
- MUNICIPAL, INDUSTRIAL, OR IRRIGATION WELL
- ABANDONED MUNICIPAL, INDUSTRIAL, OR IRRIGATION WELL
- WL WATER LEVEL
- TD TOTAL DEPTH
- SO_4 SULFATE CONCENTRATION IN MILLIGRAMS PER LITER
- Cl CHLORIDE
- TDS TOTAL DISSOLVED SOLIDS

SCALE

0 1 mile

N

LEA COUNTY, NEW MEXICO	DATE 12-1982
PHILLIPS PETROLEUM COMPANY	
LUSK PLANT AREA	
	P.REED

ED L. REED & ASSOCIATES, INC.

P. O. BOX 1468
MAHANS, TEXAS 79756
943-3234 OR 563-1040

709 W. INDIA
MIDLAND, TEXAS
PHONE 683-4

To: Mr. Bob Stubbs
4001 Penbrook
Odessa, TExas

Laboratory No. 282215
Sample received 2-10-82
Results reported 2-18-82

Company: Phillips Petroleum Company

County: Lea, NM

Lease: Lusk Gas Plant

Subject: To make determinations listed on water from test hole #1. Sample taken by Robert C. Middleton, Martin Water Labs., Inc. on 2-10-82

DETERMINATION	MG/L
A. Human Health Standards	
Arsenic, as As	0.000
Barium, as Ba	0.0
Cadium, as Cd	0.00
Chromium, as Cr	0.04
Cyanide, as CN	0.0
Fluoride, as F	1.2
Lead, Pb	0.0
Total Mercury, as Hg	0.000
Nitrate, as N	1.1
Selenium, as Se	0.00
Silver, as Ag	0.00
B. Other Standards for Domestic Water Supply	
Chloride, as Cl	45
Copper, as Cu	0.00
Iron, as Fe	0.50
Manganese, as Mn	0.00
Phenols	0.0
Sulfate, as SO_4	371

DETERMINATION	MG/L
Total Dissolved Solids	794
Zinc, as Zn	0.00
pH	7.96

C. Standards for Irrigation Use

Aluminum, as Al	0.00
Boron, as B	0.0
Cobalt, as Co	0.00
Molybdenum, as Mo	0
Nickel, as Ni	0.0

narks: The undersigned certifies the above to be true and correct to the best of s knowledge and belief.

Waylan C. Martin, M. A.

P. O. BOX 1468
NAHANS. TEXAS 79756
943-3234 OR 563-1040

709 W. INDIAN
MIDLAND. TEXAS
PHONE 683-45

To: Mr. Bob Stubbs
4001 Penbrook
Odessa, Texas

Laboratory No. 282219
Sample received 2-12-82
Results reported 2-18-82

Company: Phillips Petroleum Company
County: Lea, NM
Field: Lusk
Lease: Lusk Gas Plant

Subject: To make determinations listed on water from test hole #2. Sample taken by Robert C. Middleton, Martin Water Labs., Inc. 2-12-82.

DETERMINATION	MG/L
A. Human Health Standards	
Arsenic, as As	0.000
Barium, as Ba	0.0
Cadmium, as Cd	0.00
Chromium, as Cr	0.04
Cyanide, as CN	0.0
Fluoride, as F	0.8
Lead, as Pb	0.0
Total Mercury, as Hg	0.000
Nitrate, as N	3.4
Selenium, as Se	0.00
Silver, as Ag	0.00
B. Other Standards for Domestic Water Supply	
Chloride, as Cl	75
Copper, as Cu	0.00
Iron, as Fe	0.63
Manganese, as Mn	0.00
Phenols	0.0
Sulfate, as SO_4	2,588

DETERMINATION	MG/L
Total Dissolved Solids, Evaporated	4,426
Zinc, as Zn	0.00
pH	7.99

C. Standards for Irrigation Use

Aluminum, as Al	0.00
Boron, as B	0.0
Cobalt, as Co	0.00
Molybdenum, as Mo	0
Nickel, as Ni	0.0

Remarks: The undersigned certifies the above to be true and correct to the best of his knowledge and belief.

Waylan C. Martin, M. A.

P. O. BOX 1468
AHANS, TEXAS 79756
43-3234 OR 563-1040

WATER CONSULTANTS SINCE 1953
BACTERIAL AND CHEMICAL ANALYSES

709 W. INDIAN
MIDLAND, TEXAS 7
PHONE 683-452

To: Mr. Bob Stubbs
4001 Penbrook
Odessa, Texas

Laboratory No. 282218
Sample received 2-10-82
Results reported 2-18-82

Company: Phillips Petroleum Company
County: Lea, NM
Field: Lusk
Lease: Lusk Gas Plant

Subject: To make determinations listed on water from test hole #3. Sample taken by Robert C. Middleton, Martin Water Labs., Inc. 2-10-82.

DETERMINATION	MG/L
A. Human Health Standards	
Arsenic, as As	0.000
Barium, as Ba	0.0
Cadmium, as Cd	0.00
Chromium, as Cr	0.04
Cyanide, as CN	0.0
Fluoride, as F	0.8
Lead, as Pb	0.0
Total Mercury, as Hg	0.000
Nitrate, as N	5.7
Selenium, as Se	0.00
Silver, as Ag	0.00
B. Other Standards for Domestic Water Supply	
Chloride, as Cl	34
Copper, as Cu	0.00
Iron, as Fe	5.7
Manganese, as Mn	0.00
Phenols	0.0
Sulfate, as SO_4	61

DETERMINATION	MG/L
Total Dissolved Solids, Evaporated	420
Zinc, as Zn	0.00
pH	7.82

C. Standards for Irrigation Use

Aluminum, as Al	0.00
Boron, as B	0.0
Cobalt, as Co	0.00
Molybdenum, as Mo	0
Nickel, as Ni	0.0

Remarks: The undersigned certifies the above to be true and correct to the best of his knowledge and belief.

Waylan C. Martin, M. A.

Martin Water Laboratories, Inc.
WATER CONSULTANTS SINCE 1953
BACTERIAL AND CHEMICAL ANALYSES
P. O. BOX 1468
MIDLAND, TEXAS 79706
PHONE 683-4234 OR 563-1040
709 W. INDIANA
MIDLAND, TEXAS 79701
PHONE 683-4521

To: Mr. Bob Stubbs
4001 Penbrook
Odessa, Texas

Laboratory No. 282217
Sample received 2-13-82
Results reported 2-18-82

Company: Phillips Petroleum Company
County: Lea,NM
Field: Lusk
Lease: Lusk Gas Plant

Subject: To make determinations listed on water form test hole #4. Sample taken by Robert C. Middleton, Martin Water Labs., Inc. on 2-13-82.

DETERMINATION	MG/L
A. Human Health Standards	
Arsenic, as As	0.000
Barium, as Ba	0.0
Cadmium, as Cd	0.00
Chromium, as Cr	0.02
Cyanide, as CN	0.0
Fluoride, as F	1.0
Lead, as Pb	0.0
Total Mercury, as Hg	0.000
Nitrate, as N	3.4
Selenium, as Se	0.00
Silver, as Ag	0.00
B. Other Standards for Domestic Water Supply	
Chloride, as Cl	51
Copper, as Cu	0.00
Iron, as Fe	0.17
Manganese, as Mn	0.00
Phenols	0.0
Sulfate, as SO_4	157

DETERMINATION	MG/L
Total Dissolved Solids, Evaporated	598
Zinc, as Zn	0.00
pH	7.54

C. Standards for Irrigation Use

Aluminum, as Al	0.00
Boron, as B	0.0
Cobalt, as Co	0.00
Molybdenum, as Mo	0
Nickel, as Ni	0.0

Remarks: The undersigned certifies the above to be true and correct to the best of his knowledge and belief.

Waylan C. Martin, M. A.

P. O. BOX 1468
AHANS, TEXAS 79756
63-3234 OR 563-1040

WATER CONSULTANTS SINCE 1953
BACTERIAL AND CHEMICAL ANALYSES

709 W. INDIAN
MIDLAND, TEXAS
PHONE 683-45

To: Mr. Bob Stubbs
4001 Penbrook
Odessa, Texas

Laboratory No. 282220
Sample received 2-12-82
Results reported 2-18-82

Company: Phillips Petroleum Company
County: Lea, NM
Field: Lusk
Lease: Lusk Gas Plant

Subject: To make determinations listed on water from storage tank @ plant (used to drill test hole #4). Sample taken by Robert C. Middleton, Martin Water Labs., Inc. on 2-12-82.

Ogallala Water Co #

DETERMINATION	MG/L
A. Human Health Standards	
Arsenic, as As	0.000
Barium, as Ba	0.0
Cadmium, as Cd	0.00
Chromium, as Cr	0.02
Cyanide, as CN	0.0
Fluoride, as F	0.4
Lead, as Pb	0.0
Total Mercury, as Hg	0.000
Nitrate, as N	3.4
Selenium, as Se	0.00
Silver, as Ag	0.00
B. Other Standards for Domestic Water Supply	
Chloride, as Cl	57
Copper, as Cu	0.00
Iron, as Fe	0.11
Manganese, as Mn	0.00
Phenols	0.0
Sulfate, as SO_4	26

DETERMINATION	MG/L
Total Dissolved Solids, Evaporated	348
Zinc, as Zn	0.00
pH	8.19

C. Standards for Irrigation Use

Aluminum, as Al	0.00
Boron, as B	0.0
Cobalt, as Co	0.00
Molybdenum, as Mo	0
Nickel, as Ni	0.0

Remarks: The undersigned certifies the above to be true and correct to the best of his knowledge and belief.

Waylan C. Martin, M. A.

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well Phillips Petroleum Owner's Well No. _____

Street or Post Office Address P.O.Box 2130

City and State Hobbs, NM 88240

Well was drilled under Permit No. Test hole for EPA and is located in the: #1 1200'N 300'E

a. ____ ¼ ____ ¼ ____ ¼ ____ ¼ of Section 19 Township 19S Range 32E N.M.P.M.

b. Tract No. _____ of Map No. _____ of the _____

c. Lot No. _____ of Block No. _____ of the _____
Subdivision, recorded in Lea County.

d. X= _____ feet, Y= _____ feet, N.M. Coordinate System _____ Zone in the _____ Grant.

(B) Drilling Contractor Larry's Drilling License No. WD882

Address 2601 W. Bender, Hobbs, NM 88240

Drilling Began 2-8-82 Completed 2-9-82 Type tools cri-cone Size of hole 4 3/4 in.

Elevation of land surface or _____ at well is _____ ft. Total depth of well 260 ft.

Completed well is ☐ shallow ☐ artesian. Test hole Depth to water upon completion of well 245 ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet Top	Depth in Feet Bottom	Length (feet)	Type of Shoe	Perforations From	Perforations To

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement

Section 5. PLUGGING RECORD

Plugging Contractor _____

Address _____

Plugging Method _____

Date Well Plugged _____

Plugging approved by:

_____
State Engineer Representative

No.	Depth in Feet Top	Depth in Feet Bottom	Cubic Feet of Cement
1			
2			
3			
4			

FOR USE OF STATE ENGINEER ONLY

Date Received

Quad _____ FWL _____ FSL _____

File No. _____ Use _____ Location No. _____

0	4	4	blow sand
4	10	6	caliche
10	30	20	sand.
30	52	22	sand & gravel
52	60	8	redbed
60	61	1	clay gray
61	105	44	redbed
105	115	10	gray clay & rock
115	117	2	sand, black rock
117	152	35	gray clay & rock
152	162	10	red clay
162	230	68	red clay, layers of gray and brown dry clay
230	240	10	red clay
240	244	4	gray green clay
244	260	16	redbed

Section 7. REMARKS AND ADDITIONAL INFORMATION

idersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above ed hole.

Driller

UCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the appropriate district office State Engineer. All sections, except Section 5, shall be answered as completely and accurately as possible when any well is repaired or deepened. When this form is used as a plugging record, only Section 1(a) and Section 5 need be completed.

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well Phillips Petroleum Company Owner's Well No. CP639 (explorator

Street or Post Office Address Room 401, 4001 Penbrook St.

City and State Odessa, Texas

Well was drilled under Permit No. CP-639 (exploratory) and is located in the: #2 2400'N 1200'W

a. ____ ¼ ____ ¼ ____ ¼ ____ ¼ of Section 20 Township 19S Range 32S N.M.P.M.

b. Tract No. ____ of Map No. ____ of the ____

c. Lot No. ____ of Block No. ____ of the ____

Subdivision, recorded in ____ Lea ____ County.

d. X= ____ feet, Y= ____ feet, N.M. Coordinate System ____ Zone in the ____ Grant.

(B) Drilling Contractor Larry's Drilling License No. WD882

Address 2601 W. Bender Hobbs, NM 88240

Drilling Began 2-9-82 Completed 2-10-82 Type tools tri-cone Size of hole 4-3/4 in.

Elevation of land surface or ____ at well is ____ ft. Total depth of well 350 ft.

Completed well is ☐ shallow ☐ artesian. test hole Depth to water upon completion of well 345 ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet Top	Depth in Feet Bottom	Length (feet)	Type of Shoe	Perforations From	Perforations To

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement

Section 5. PLUGGING RECORD

Plugging Contractor Phillips Petroleum Company

Address Room 401, 4001 Penbrook, Odessa, Tx 79762

Plugging Method Filled hole from 350' (TD) to surface with sand

Date Well Plugged February 11, 1982

Plugging approved by:

State Engineer Representative

No.	Depth in Feet Top	Depth in Feet Bottom	Cubic Feet of Cement
1	Surface	350'	sand fill
2			
3			
4			

FOR USE OF STATE ENGINEER ONLY

Date Received

Quad ____ FWL ____ FSL ____

File No. ____ Use ____ Location No. ____

0	10	10	blow sand
10	20	10	caliche
20	50	30	red sand
50	80	30	red clay
80	85	5	gray clay
85	100	15	red, gray, green clay
100	135	35	red dirt
135	170	35	gray hard clay
170	174	4	red clay & rock
174	235	61	gray hard clay
235	237	2	red clay
237	250	13	gray clay
250	280	30	red bed some gravel
280	310	30	gray rock
310	335	25	white rock red bed
335	350	15	red bed

Section 7. REMARKS AND ADDITIONAL INFORMATION

Plugging report

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

W. C. Heller - Sr. Engineering Specialist
Operator: Phillips Petroleum Company

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the appropriate district office of the State Engineer. All sections, except Section 5, shall be answered as completely and accurately as possible when any well is drilled, repaired or deepened. When this form is used as a plugging record, only Section 1(a) and Section 5 need be completed.

STATE ENGINEER OFFICE

(wp)

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well Phillips Petroleum Company Owner's Well No. CP-642 (explorato

Street or Post Office Address Room 401, 4001 Penbrook St.

City and State Odessa, TX 79762

Well was drilled under Permit No. CP-642 (Exploratory) and is located in the: #3-450' N 600'E

a. ____ ¼ ____ ¼ ____ ¼ ____ ¼ of Section 25 Township 19S Range 31E N.M.P.M.

b. Tract No. ____ of Map No. ____ of the ____

c. Lot No. ____ of Block No. ____ of the ____
Subdivision, recorded in Eddy County.

d. X= ____ feet, Y= ____ feet, N.M. Coordinate System ____ Zone in the ____ Grant.

(B) Drilling Contractor Larry's Drilling License No. WD882

Address 2601 W. Bender Hobbs, NM

Drilling Began 2-10-82 Completed 2-11-82 Type tools tri-cone Size of hole 4-3/4 in.

Elevation of land surface or ____ at well is ____ ft. Total depth of well 260 - 10 ft.

Completed well is ☐ shallow ☐ artesian. test hole Depth to water upon completion of well 220' ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet Top	Depth in Feet Bottom	Length (feet)	Type of Shoe	Perforations From	Perforations To

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement

Section 5. PLUGGING RECORD

ging Contractor Phillips Petroleum Company

ess Room 401, 4001 Penbrook St., Odessa, TX 79762

ging Method Sand fill from 260' (TD) to surface

Well Plugged February 12, 1982

ging approved by:

State Engineer Representative

No.	Depth in Feet Top	Depth in Feet Bottom	Cubic Feet of Cement
1	surface	260	sand fill
2			
3			
4			

FOR USE OF STATE ENGINEER ONLY

Received

Quad ____ FWL ____ FSL ____

0	2	2	blow sand
2	12	10	caliche
12	36	24	sand
36	60	24	caliche
60	94	34	red dirt hard
94	102	8	gray clay & rock
102	114	12	red dirt
114	116	2	gray rock
116	130	14	red bed
130	168	38	gray rock
168	172	4	red bed
172	180	8	gray rock
180	210	30	red bed
210	223	13	gray rock
223	235	12	damp red bed
235	240	5	gray rock
240	260	20	red bed

Section 7. REMARKS AND ADDITIONAL INFORMATION

Plugging record

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

W. J. Mueller - Sr. Engineering Specialist
Operator: Phillips Petroleum Company

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the appropriate district office of the State Engineer. All sections, except Section 5, shall be answered as completely and accurately as possible when any well is drilled, repaired or deepened. When this form is used as a plugging record, only Section 1(a) and Section 5 need be completed.

STATE ENGINEER OFFICE (Logs)

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well Phillips Petroleum Company Owner's Well No. CP641 (Explorator
Street or Post Office Address Room 401, 4001 Penbrook St.
City and State Odessa, Texas 79762

Well was drilled under Permit No. CP-641 and is located in the: #4 1600' FNL 1600' FWL

a. ____ ¼ ____ ¼ ____ ¼ ____ ¼ of Section 36 Township 14S Range 31E N.M.P.M.

b. Tract No. ____ of Map No. ____ of the ____

c. Lot No. ____ of Block No. ____ of the ____
Subdivision, recorded in Eddy County.

d. X= ____ feet, Y= ____ feet, N.M. Coordinate System ____ Zone in the ____ Grant.

(B) Drilling Contractor Larry's Drilling License No. WD882

Address 2601 W. Bender Hobbs, NM 88240

Drilling Began 2-11-82 Completed 2-12-82 Type tools ____ Size of hole 4 ¾ in.

Elevation of land surface or ____ at well is ____ ft. Total depth of well 300 ft.

Completed well is ☐ shallow ☐ artesian. test hole Depth to water upon completion of well 50 / 250 ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet Top	Depth in Feet Bottom	Length (feet)	Type of Shoe	Perforations From	Perforations To
9½ x 5½	160PVC					–		
			0	220'				

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement

Section 5. PLUGGING RECORD

Plugging Contractor Phillips Petroleum Company
Address Room 401, 4001 Penbrook St., Odessa, TX 79762
Plugging Method Sand fill, CIBP, cement
Date Well Plugged February 13, 1982
Plugging approved by:
State Engineer Representative

No.	Depth in Feet Top	Depth in Feet Bottom	Cubic Feet of Cement
1	120	300	sand fill
2	120'		CIBP
3	110'±	120	1sx reg cement
4	10'	110±	sand fill
	Surface	10'	1 sx reg cement

FOR USE OF STATE ENGINEER ONLY

Date Received

Quad ____ FWL ____ FSL ____

-	1	1	topsoil
1	2	1	caliche
2	18	16	white sand
18	40	22	brown sand
40	100	60	brown sand & gravel
100	182	82	brown sand gravel
182	200	18	brown clay gravel
200	292	92	brown clay
292	300	8	red bed

Section 7. REMARKS AND ADDITIONAL INFORMATION

ging report

ndersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above bed hole.

J. K. Mueller - Sr. Engineering Specialist
Operator: Phillips Petroleum Company

UCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the appropriate district office State Engineer. All sections, except Section 3, shall be answered as completely and accurately as possible when any well is repaired or deepened. When this form is used as a plugging record, only Section 1(a) and Section 5 need be completed.