

CARDINAL



SURVEYS COMPANY

TRAC III

File No. 8081

COMPANY PHILLIPS PETROLEUM COMPANYWELL PHILMEX #19FIELD VACUUM GRAYBURG SAN ANDRESCOUNTY LEA STATE NEW MEXICOLocation: 1980' FNL & 560' FEL

Other Services

Sec. 35 Twp. 17-S Rge. 33-EPermanent Datum: GL Elev.: 4116'Elev. KB 4127'Log Measured From KB, 11 Ft. Above Perm. DatumDF 4126'Drilling Measured From KBGL 4116'

Date	6-2-87			
Run No.	ONE			
Depth Driller	4618' PBD			
Top Logged Interval	4000'			
Bottom Logged Interval	4613'			
Depth Logger	4613'			
Type Fluid in Hole	OIL & WATER			
Max. Rec. Temp. Deg. F.				
Recorded By	SCOTT			
Witnessed By	CURRIE			
Tool Size	7/8"			
TOOL CONFIGURATION CCL/D/E/CAP/TEMP				

REPORTED PRODUCTION		PRCDUCTION TEST	Date
Oil	60 BPD	Water	
Water	100 BPD	Oil	
Gas	MCF	GOR	
Surface Pres Before	After		

CASING RECORD				TUBING RECORD			
Size	Wgt.	From	To	Size	Wgt.	From	To
8 5/8"	24#	SURFACE	1540'	2 3/8"		SURFACE	4176'
5 1/2"	17#	SURFACE	4800'				
				PUMP RECORD			
				Set At			

Dresser Atlas

COMPENSATED

Z-DENSILOG

COMPENSATED

NEUTRON

DRESSER

GAMMA RAY

FILE NO.

COMPANY PHILLIPS PETROLEUM COMPANY

API NO.

WELL PHILMEX NO. 21

30-025-29950

FIELD VACUUM (GB/SA)

COUNTY LEA STATE NEW MEXICO

LOCATION:

1980' FML & 1980' FEL

OTHER SERVICES

DLL/MLL/GR/

SEC 35 TWP 17-S RGE 33-E

PERMANENT DATUM GROUND LEVEL ELEV. 4119

ELEVATIONS

LOGGING MEASURED FROM K.B. 9.0 FT. ABOVE P.D.

KB 4128

DRILLING MEASURED FROM KELLY BUSHING

OF 4127

GL 4119

DATE	7/12/87		
RUN	1		
SERVICE ORDER	142697		
DEPTH-DRILLER	4800		
DEPTH-LOGGER	4731		
SECTION LOGGED INTERVAL	4187		
TOP LOGGED INTERVAL	SURFACE		
CASING - DRILLER	5 5/8 @ 1490		@
CASING - LOGGER	1486		
BIT SIZE	7 7/8		
TYPE FLUID IN HOLE	SALT GEL/STARCH		
DENSITY / VISCOSITY	12.1 33		
FLUID LOSS	9.0 18.0		
SOURCE OF SAMPLE	FLOWLINE		
RW AT MERS. TEMP.	.043 @ 76		@
RNF AT MERS. TEMP.	.237 @ 76		@
RMC AT MERS. TEMP.	XXX @ XX		@
SOURCE OF RNF / RMC	MERS XXXX		
RW AT BT	.032 @ 101		@
TIME SINCE CIRCULATION	7.2 HRS.		
MAX. REC. TEMP. DEG. F	121		
EQUIP. NO. / LOG	HL 5269 H0885		
RECORDED BY	ALEXANDER		
INTERPRETED BY	CLARKE		

Dresser Atlas

Z COMPENSATED DENSILOG® COMPENSATED NEUTRON GAMMA RAY

FILE NO.

COMPANY PHILLIPS PETROLEUM CO.

API NO.

38-025-29814

WELL PHILMEX NO. 19

FIELD VACUUM (GRAYBURG - S.A.)

COUNTY LEA STATE NEW MEXICO

FIELD PRINT

LOCATION:
1980' FNL & 560' FEL

SEC 35 TWP 17-S RGE 33-E

OTHER SERVICES

DLL/MLL-CAL/GR.
BHC-AL/GR/CAL

PERMANENT DATUM GROUND LEVEL ELEV. 4116

LOGGING MEASURED FROM K.B. 11 FT. ABOVE P.D.

DRILLING MEASURED FROM KELLY BUSHING

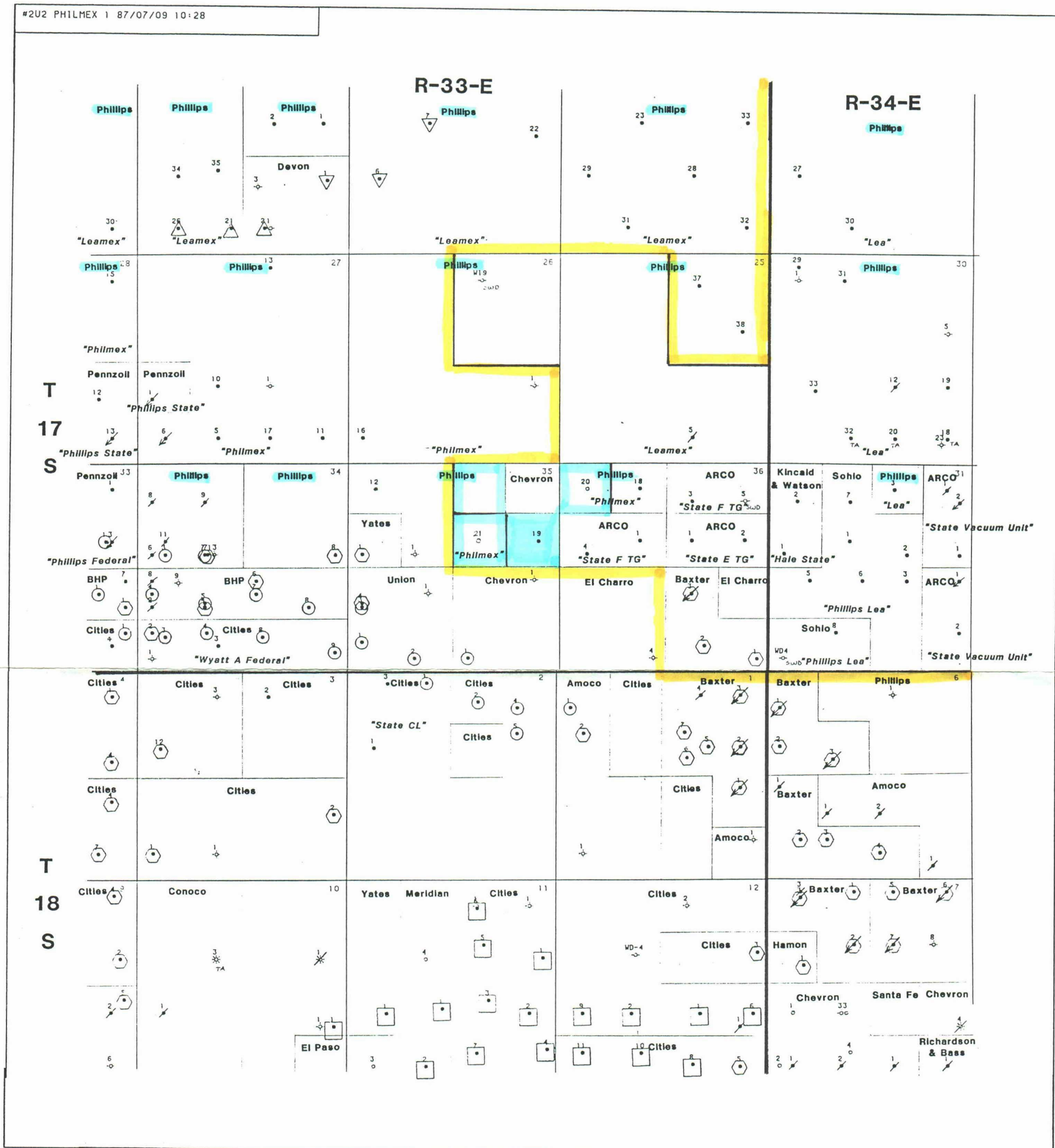
ELEVATIONS

KB 4127

OF 4126

QL 4116

DATE	1-21-87	
RUN	1	
SERVICE ORDER	131246	
DEPTH-DRILLER	4800	
DEPTH-LOGGER	4795	
BOTTOM LOGGED INTERVAL	4792	
TOP LOGGED INTERVAL	SURF	
CASING - DRILLER	8 5/8 @ 1540	@
CASING - LOGGER	1536	
BIT SIZE	7 7/8	
TYPE FLUID IN HOLE	SALT GEL/STARCH	
DENSITY / VISCOSITY	10+ 30	
PH / FLUID LOSS	7 20	
SOURCE OF SAMPLE	FLOWLINE	
RM AT MEAS. TEMP.	.041 @ 70	@
RMF AT MEAS. TEMP.	.034 @ 70	@
RMC AT MEAS. TEMP.	■ @ ■	@
SOURCE OF RMF / RMC	M ■	■
RM AT BHT	.028 @ 102	@
TIME SINCE CIRCULATION	4 HRS	
MAX. REC. TEMP. DEG. F	102	
EQUIP. NO. / LOC.	HL-6433 HOBBS	
RECORDED BY	VAUGHN	
WITNESSED BY	CURRIE	



WELL SYMBOL

Well Location ○
 Injection Well △
 P&A △
 SWD ○
 D&A ○

COMPLETION ZONE

Queen and/or Yates ○
 Grayburg/San Andres ●
 Paddock △
 Bone Springs □
 Abo ○
 Penn ▽

PHILLIPS PETROLEUM

PHILMEX LEASE
 VACUUM (GRAYBURG/SAN ANDRES) POOL
 LEA COUNTY, NEW MEXICO

DATE: 7/7/87

0 2,000 4,000
 SCALE (FEET)

Philmex Well No. 19
1980' FNL & 560' FEL of Section 35, T-17-S, R-33-E
Lea County, New Mexico

Well History

- 1/87 - Well is drilled to TD 4,800' on 1/21/87.
- 2/87-3/87 - Well is completed through perforations 4,335' to 4,670', 78' net, 111 holes. Perforations are acidized with 7,800 gallons of 15% NEFE HCl. Well is then fracture treated down casing with 74,000 gallons of gelled, crosslinked 2% KCl water containing 132,000 lbs of 20/40 mesh sand. Average pumping rate during the fracture treatment is 25 bbl/min at a maximum surface pressure of 2,500 psi. Well swab tests high water cut; therefore, a cast iron bridge plug is set at 4,618' to reduce water production.
- 3/87 - Initial Production test (pumping) is 80 BOPD, 175 BWPD, 500 GOR on 3/26/87.
- 5/87 - 20-30 Day Production test (pumping) is 104 BOPD, 155 BWPD, GOR 385 on 5/6/87.
- 5/87 - Well test (pumping) is 97 BOPD, 163 BWPD, 1067 GOR on 5/20/87, no production decline after 2 months.
- 6/87 - Production log is run to determine source of water on 6/2/87. Log shows 71% of total fluid production coming from high porosity basal Grayburg sand 4,540'-4,552'. Log also shows that at current production rates, fluid is being lost down hole to San Andres perforations.

Production History

<u>Month</u>	<u>Oil (bbl)</u>	<u>Water (bbl)</u>	<u>Gas (mcf)</u>
March	1129	2469	355
April	2718	5944	1333
May	2725	4060	1926
June	2165	3638	2590

Philmex Well No. 19
1980' FNL & 560' FEL of Section 35, T-17-S, R-33-E
Lea County, New Mexico

Estimation of maximum production rate using Productivity Index.

I. Equation: Productivity Index (PI) = $\frac{q}{(Pr - Pwf)}$

Where q = Production rate
 Pr = Reservoir pressure
 Pwf = Bottom hole pressure while producing

II. Production data:

- A. Latest test (5/20/87): 97 BOPD, 163 BWPD, GOR = 1067
- B. Surface flowline pressure: 110 psi.
- C. Offset injection pressure: 1450 psi (surface) -
 ARCO State Vacuum Unit

III. Calculation:

- A. $q = 97 + 163 = 260$ BPD total fluid
- B. $Pr = 1450 \text{ psi} + (0.45 \text{ psi/ft} \times 4550 \text{ ft}) = 3498 \text{ psi}$
- C. $Pwf =$
 $110 \text{ psi} + \{((97/260)0.375 + (163/260)0.450)\text{psi/ft} \times 4550 \text{ ft}\}$
 $= 2030 \text{ psi}$
- D. $PI = 260 \text{ BPD} / (3498 \text{ psi} - 2030 \text{ psi}) = 0.18 \text{ BPD/psi}$
- E. Maximum Production Rate using $Pwf = 100 \text{ psi}$
 $q(\text{max}) = 0.18 \times (3498 - 100) = 611 \text{ BPD}$
(with current WOR = 1.68, maximum oil production = 228 BOPD)

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE No. 3459
Order No. R-3129

APPLICATION OF PENNZOIL COMPANY
FOR A WATERFLOOD PROJECT, LEA
COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on September 28, 1966, at Santa Fe, New Mexico, before Examiner Elvis A. Utz.

NOW, on this 4th day of October, 1966, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Pennzoil Company, seeks permission to institute a waterflood project in the Maljamar (Grayburg-San Andres) Pool by the injection of water into the Grayburg-San Andres formation through eight injection wells in Sections 28 and 33, Township 17 South, Range 33 East, NMPM, Lea County, New Mexico.

(3) That the wells in the project area are in an advanced state of depletion and should properly be classified as "stripper" wells.

(4) That the proposed waterflood project should result in the recovery of otherwise unrecoverable oil, thereby preventing waste.

CASE No. 3459
Order No. R-3129

(5) That the applicant further seeks the establishment of an administrative procedure whereby additional wells and leases operated by the applicant could be included in the waterflood project area.

(6) That the subject application should be approved and the project should be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

IT IS THEREFORE ORDERED:

(1) That the applicant, Pennzoil Company, is hereby authorized to institute a waterflood project in the Maljamar (Grayburg-San Andres) Pool by the injection of water into the Grayburg-San Andres formation through the following-described wells in Township 17 South, Range 33 East, NMPM, Lea County, New Mexico:

Phillips Federal Well No. 2Y, located 330 feet from the North line and 1650 feet from the East line of Section 33

Phillips Federal Well No. 3, located 1980 feet from the North line and 660 feet from the East line of Section 33

Phillips State Well No. 2, located 1980 feet from the South line and 660 feet from the West line of Section 28

Phillips State Well No. 4, located 330 feet from the North line and 330 feet from the West line of Section 28

Phillips State Well No. 6, located 2310 feet from the North line and 1980 feet from the West line of Section 28

Phillips State Well No. 8, located 660 feet from the South line and 1980 feet from the West line of Section 28

Phillips State Well No. 10, located 1650 feet from the South line and 1650 feet from the East line of Section 28

Phillips State Well No. 13, located 660 feet from the South line and 660 feet from the East line of Section 28

CASE No. 3459
Order No. R-3129

(2) That the subject waterflood project is hereby designated the Pennzoil Maljamar Waterflood Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations; provided, however, that the Secretary-Director of the Commission may approve expansion of said waterflood project to include additional injection wells and leases as may be necessary to complete an efficient waterflood injection pattern.

(3) That monthly progress reports of the waterflood project herein authorized shall be submitted to the Commission in accordance with Rules 704 and 1120 of the Commission Rules and Regulations.

(4) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

JACK M. CAMPBELL, Chairman

GUYTON B. HAYS, Member

A. L. PORTER, Jr., Member & Secretary

S E A L

esr/

MALAGA-DELAWARE POOL
Eddy County, New Mexico

Order No. R-112, November 20, 1951, Establishing Pool, as Amended by Order No. R-170, July 16, 1952; Order No. R-197, October 20, 1952; Order No. R-3195, March 1, 1967; Order No. R-4232, January 1, 1972; Order No. R-8229, June 1, 1986.

T-24-S, R-28-E SE/4, E/2 SW/4 Sec. 12; E/2, E/2 W/2 Sec. 13; N/2, NW/4 SW/4 Sec. 24.
T-24-S, R-29-E Sec. 7; W/2 Sec. 18.

WEST MALAGA POOL
(DELAWARE)
(Abandoned)
Eddy County, New Mexico

Order No. R-197, October 20, 1952, Establishing Pool.

T-24-S, R-27-E SW/4 Sec. 15; SE/4 Sec. 16; NE/4 Sec. 21; NW/4 Sec. 22.

MALJAMAR GRAYBURG-SAN ANDRES POOL
Eddy and Lea Counties, New Mexico

Order No. 850, January 1, 1950, Redefining Pool, as Amended by Order No. R-136, March 20, 1952; Order No. R-197, October 20, 1952; Order No. R-511, July 21, 1954; Order No. R-738, January 9, 1956; Order No. R-787, April 16, 1956; Order No. R-1089, November 27, 1957; Order No. R-1143, March 25, 1958; Order No. R-1160, April 22, 1958; Order No. R-1248, September 29, 1958; Order No. R-1324, January 21, 1959; Order No. R-1340, February 23, 1959; Order No. R-1397, May 18, 1959; Order No. R-1488, September 22, 1959; Order No. R-1840, January 1, 1961; Order No. R-1907, April 1, 1961; Order No. R-1981, June 1, 1961; Order No. R-2187, March 1, 1962; Order No. R-2221, May 1, 1962; Order No. R-2469, May 1, 1963; Order No. R-2569, October 1, 1963; Order No. R-2726, July 1, 1964; Order No. R-2781, November 1, 1964; Order No. R-3731, May 1, 1969; Order No. R-3853, November 1, 1969; Order No. R-3895, January 1, 1970; Order No. R-3948, May 1, 1970; Order No. R-3979, July 1, 1970; Order No. R-4063, December 1, 1970; Order No. R-4146, June 1, 1971; Order No. R-4464, February 1, 1973; Order No. R-4486, March 1, 1973; Order No. R-4604, August 1, 1973; Order No. R-5081, September 1, 1975; Order No. R-5215, June 1, 1976; Order No. R-5338, January 1, 1977; Order No. R-5456, July 1, 1977; Order No. R-5781, September 1, 1978; Order No. R-6005, June 1, 1979; Order No. R-6169, November 1, 1979; Order No. R-6274, March 1, 1980; Order No. R-6576, February 1, 1981; Order No. R-6623, April 1, 1981; Order No. R-7114, November 1, 1982; Order No. R-7279, June 1, 1983; Order No. R-7322, August 1, 1983; Order No. R-7396, December 1, 1983; Order No. R-7917, June 1, 1985; Order No. R-8125, February 1, 1986; Order No. R-8193, April 1, 1986.

T-16-S, R-32-E SE/4 Sec. 30; Secs. 31, 32; S/2 Sec. 33; SW/4 Sec. 34; SW/4 Sec. 35.

T-17-S, R-31-E S/2 Sec. 13; Secs. 24, 25; N/2 NE/4 Sec. 36.

T-17-S, R-32-E W/2 Sec. 1; Secs. 2 through 5; N/2, SE/4 Sec. 6; E/2 Sec. 7; Secs. 8 through 36.

T-17-S, R-33-E W/2 Sec. 4; Secs. 7, 8, 9; SE/4, W/2 Sec. 10; S/2 Sec. 11; W/2 Sec. 13; Secs. 14 through 21; N/2, SW/4 Sec. 22; NE/4 Sec. 23; Sec. 24; NE/4 Sec. 25; SW/4 Sec. 26; Secs. 27 through 30; N/2 Sec. 31; Secs. 32, 33; N/2, NW/4 & S/2 SW/4 Sec. 34; NW/4 Sec. 35.

T-18-S, R-32-E NW/4 Sec. 2; Secs. 4, 5.

T-18-S, R-33-E NW/4 Sec. 2; N/2 Sec. 3; N/2 Sec. 4.

MALJAMAR-STRAWN POOL
Lea County, New Mexico

Order No. R-511, July 21, 1954, Establishing Pool, as Amended by Order No. R-2201, April 1, 1962; Order No. R-6698, June 1, 1981.

T-17-S, R-32-E S/2 Sec. 16; SE/4 Sec. 17; E/2 Sec. 20; Sec. 21; NW/4 Sec. 22; W/2 Sec. 28.

SOUTH MALJAMAR POOL
(GRAYBURG)
Lea County, New Mexico

Order No. 850, January 1, 1950, Redefining Pool.

T-18-S, R-32-E SW/4 Sec. 14; S/2 Sec. 15; Sec. 22; W/2 Sec. 23.

SOUTH MALJAMAR-YATES POOL
Lea County, New Mexico

Order No. R-1017, June 28, 1957, Establishing Pool.

T-18-S, R-32-E NW/4 Sec. 13.

NORTH MASON-DELAWARE POOL
Eddy and Lea Counties, New Mexico

Order No. R-571, January 13, 1955, Establishing Pool, as Amended by Order No. R-842, July 9, 1956; Order No. R-853, August 10, 1956; Order No. R-571-A, September 13, 1956; Order No. R-933, December 28, 1956; Order No. R-944, January 16, 1957; Order No. R-1079, October 29, 1957; Order No. R-1397, May 18, 1959; Order No. R-3342, December 1, 1967; Order No. R-3367, February 1, 1968; Order No. R-3895, January 1, 1970; Order No. R-5056, August 1, 1975; Order No. R-6838, December 1, 1981; Order No. R-7248, April 1, 1983; Order No. R-7279, June 1, 1983; Order No. R-7714, November 1, 1984.

T-26-S, R-31-E E/2 Sec. 24; Secs. 25, 26; Partial Secs. 35, 36.
T-26-S, R-32-E SE/4 Sec. 7; S/2 Sec. 8; SW/4 Sec. 9; S/2, NE/4 Sec. 18; NE/4, W/2 Sec. 19; W/2, NE/4 Sec. 30.

MESCALERO-DEVONIAN POOL
Lea County, New Mexico

Order No. R-236, December 24, 1952, Establishing Pool, as Amended by Order No. R-286, March 10, 1953; Order No. R-641, June 13, 1955; Order No. R-1824, November 21, 1960.

T-10-S, R-32-E Sec. 22; E/2, NW/4 Sec. 27.

APPLICATION OF PHILLIPS PETROLEUM
COMPANY TO EXPAND ITS MALJAMAR
PHILMEX WATER FLOOD PROJECT IN THE
MALJAMAR POOL IN LEA COUNTY,
NEW MEXICO.

ORDER WFX NO. 439

ADMINISTRATIVE ORDER
OF THE OIL CONSERVATION COMMISSION

Under the provisions of Rule 701 of the Commission Rules and Regulations, Phillips Petroleum Company has made application to the Commission on May 24, 1976, for permission to expand its Maljamar Philmex Water Flood Project in the Maljamar Pool, Lea County, New Mexico.

NOW, on this 2nd day of June, 1976, the Secretary-Director finds:

1. That application has been filed in due form.
2. That satisfactory information has been provided that all offset operators have been duly notified of the application.
3. That all such offset operators have waived objection to the proposed injection well.
4. That the proposed injection well, applicants Philmex Well No. 6, located in Unit M of Section 27, Township 17 South, Range 33 East, NMPM, is to be a substitute well for the previously authorized injection well, the Philmex Well No. 5, located in Unit N of said Section 27.
5. That the proposed expansion of the above-referenced water flood project will not cause waste nor impair correlative rights.
6. That the application should be approved.

IT IS THEREFORE ORDERED:

(1) That the applicant, Phillips Petroleum Company, be and the same is hereby authorized to inject water into the Grayburg-San Andres formations through plastic-lined tubing set in a packer at approximately 4200 feet in the following described well for purposes of secondary recovery, to wit:

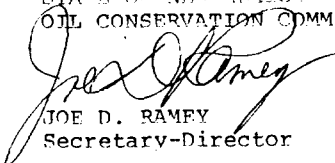
Phillips Petroleum Company Philmex Well No. 6,
located in Unit M of Section 27, Township 17
South, Range 33 East, NMPM, Maljamar Grayburg-
San Andres Pool, Lea County, New Mexico.

(2) That the previous approval for injection into applicant's Philmex Well No. 5, located in Unit N of said Section 27, is hereby put in abeyance.

(3) That this injection well shall be operated in conformance with the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION


JOE D. RAMEY
Secretary-Director

SEAL

(3) That monthly progress reports of the waterflood project herein authorized shall be submitted to the Commission in accordance with Rules 704 and 1120 of the Commission Rules and Regulations.

(4) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

MALJAMAR GRAYBURG-SAN ANDRES POOL
(Phillips Maljamar Philmex Waterflood)
Lea County, New Mexico

Order No. R-3668, Authorizing Phillips Petroleum Company to Institute a Waterflood Project in the Maljamar Grayburg-San Andres Pool, Lea County, New Mexico, January 24, 1969.

Application of Phillips Petroleum Company
for a Waterflood Project, Lea County, New Mexico.

CASE NO. 4035
Order No. R-3668

ORDER OF THE COMMISSION

BY THE COMMISSION: This cause came on for hearing at 9 a.m. on January 22, 1969, at Santa Fe, New Mexico, before Examiner Elvis A. Utz.

NOW, on this 24th day of January, 1969, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:
(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Phillips Petroleum Company, seeks permission to institute a waterflood project in the Maljamar Grayburg-San Andres Pool by the injection of water into the Grayburg-San Andres formations through its Philmex Well No. 5, located in Unit N of Section 27, Township 17 South, Range 33 East, NMPM, Lea County, New Mexico.

(3) That the wells in the project area are in an advanced state of depletion and should properly be classified as "stripper" wells.

MALJAMAR GRAYBURG-SAN ANDRES POOL (PHILLIPS
MALJAMAR PHILMEX WATERFLOOD)
FIELD - Cont'd.)

(4) That the proposed waterflood project should result in the recovery of otherwise unrecoverable oil, thereby preventing waste.

(5) That the subject application should be approved and the project should be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

IT IS THEREFORE ORDERED:

(1) That the applicant, Phillips Petroleum Company, is hereby authorized to institute a waterflood project in the Maljamar Grayburg-San Andres Pool by the injection of water into the Grayburg-San Andres formations through its Philmex Well No. 5, located in Unit N of Section 27, Township 17 South, Range 33 East, NMPM, Lea County, New Mexico.

(2) That the subject waterflood project is hereby designated the Phillips Maljamar Philmex Waterflood Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

(3) That monthly progress reports of the waterflood project herein authorized shall be submitted to the Commission in accordance with Rules 704 and 1120 of the Commission Rules and Regulations.

(4) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

LANGLIE-MATTIX POOL
(Texaco Langlie-Mattix Fristoe "A" Waterflood)
Lea County, New Mexico

Order No. R-3625, Authorizing Texaco Inc. to Institute a Waterflood Project in the Queen Formation in the Langlie-Mattix Pool, Lea County, New Mexico, December 9, 1968.

Application of Texaco Inc. for a Dual Completion
and Water Injection, Lea County, New Mexico.

CASE NO. 3982
Order No. R-3625

ORDER OF THE COMMISSION

BY THE COMMISSION: This cause came on for hearing at 9 a.m. on December 2, 1968, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 9th day of December, 1968, the Commission, a quorum being present, having considered the testimony, the

(3) That monthly progress reports of the waterflood project herein authorized shall be submitted to the Commission in accordance with Rules 704 and 1120 of the Commission Rules and Regulations.

(4) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

MALJAMAR GRAYBURG-SAN ANDRES POOL
(Phillips Maljamar Philmex Waterflood)
Lea County, New Mexico

Order No. R-3668, Authorizing Phillips Petroleum Company to Institute a Waterflood Project in the Maljamar Grayburg-San Andres Pool, Lea County, New Mexico, January 24, 1969.

Application of Phillips Petroleum Company
for a Waterflood Project, Lea County, New Mexico.

CASE NO. 4035
Order No. R-3668

ORDER OF THE COMMISSION

BY THE COMMISSION: This cause came on for hearing at 9 a.m. on January 22, 1969, at Santa Fe, New Mexico, before Examiner Elvis A. Utz.

NOW, on this 24th day of January, 1969, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Phillips Petroleum Company, seeks permission to institute a waterflood project in the Maljamar Grayburg-San Andres Pool by the injection of water into the Grayburg-San Andres formations through its Philmex Well No. 5, located in Unit N of Section 27, Township 17 South, Range 33 East, NMPM, Lea County, New Mexico.

(3) That the wells in the project area are in an advanced state of depletion and should properly be classified as "stripper" wells.

MALJAMAR GRAYBURG-SAN ANDRES POOL (PHILLIPS MALJAMAR PHILMEX WATERFLOOD)
FIELD - Cont'd.)

(4) That the proposed waterflood project should result in the recovery of otherwise unrecoverable oil, thereby preventing waste.

(5) That the subject application should be approved and the project should be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

IT IS THEREFORE ORDERED:

(1) That the applicant, Phillips Petroleum Company, is hereby authorized to institute a waterflood project in the Maljamar Grayburg-San Andres Pool by the injection of water into the Grayburg-San Andres formations through its Philmex Well No. 5, located in Unit N of Section 27, Township 17 South, Range 33 East, NMPM, Lea County, New Mexico.

(2) That the subject waterflood project is hereby designated the Phillips Maljamar Philmex Waterflood Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

(3) That monthly progress reports of the waterflood project herein authorized shall be submitted to the Commission in accordance with Rules 704 and 1120 of the Commission Rules and Regulations.

(4) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

LANGLIE-MATTIX POOL
(Texaco Langlie-Mattix Fristoe "A" Waterflood)
Lea County, New Mexico

Order No. R-3625, Authorizing Texaco Inc. to Institute a Waterflood Project in the Queen Formation in the Langlie-Mattix Pool, Lea County, New Mexico, December 9, 1968.

Application of Texaco Inc. for a Dual Completion and Water Injection, Lea County, New Mexico.

CASE NO. 3982
Order No. R-3625

ORDER OF THE COMMISSION

BY THE COMMISSION: This cause came on for hearing at 9 a.m. on December 2, 1968, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 9th day of December, 1968, the Commission, a quorum being present, having considered the testimony, the

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(GLOBAL SURVEY UNIT - Cont'd.)

(3) That the unit operator shall file with the Commission an executed original or executed counterpart of the unit agreement within 30 days after the effective date thereof; that in the event of subsequent joinder by any party or expansion or contraction of the unit area, the unit operator shall file with the Commission within 30 days thereafter counterparts of the unit agreement reflecting the subscription of those interests having joined or ratified.

(4) That this order shall become effective upon the approval of said unit agreement by the Commissioner of Public Lands for the State of New Mexico and the Director of the United States Geological Survey; that this order shall terminate ipso facto upon the termination of said unit agreement; and that the last unit operator shall notify the Commission immediately in writing of such termination.

(5) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE VACUUM UNIT
Lea County, New Mexico

Order No. R-5294, Approving the State Vacuum Unit Agreement,
Lea County, New Mexico, September 28, 1976.

Application of Atlantic Richfield Company for
Approval of the State Vacuum Unit Agreement,
Lea County, New Mexico.

CASE NO. 5761
Order No. R-5294

ORDER OF THE COMMISSION

BY THE COMMISSION: This cause came on for hearing at 9 a.m. on September 15, 1976, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 28th day of September, 1976, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Atlantic Richfield Company, seeks approval of the State Vacuum Unit Agreement covering 800 acres, more or less, of State lands described as follows:

LEA COUNTY, NEW MEXICO
TOWNSHIP 17 SOUTH, RANGE 34 EAST, NMPM
Section 29: SW/4 SW/4
Section 31: E/2 E/2
Section 32: W/2, SE/4, W/2 NE/4, and SE/4 NE/4

(3) That approval of the proposed unit agreement should promote the prevention of waste and the protection of correlative rights within the unit area.

IT IS THEREFORE ORDERED:

(1) That the State Vacuum Unit Agreement is hereby approved.

(2) That the plan contained in said unit agreement for the development and operation of the unit area is hereby approved in principle as a proper conservation measure; provided, however, that notwithstanding any of the provisions contained in said unit agreement, this approval shall not be considered as waiving or relinquishing, in any manner, any right, duty, or obligation which is now, or may hereafter be, vested in the Commission to supervise and control operations for the exploration and development of any lands committed to the unit and production of oil or gas therefrom.

(3) That the unit operator shall file with the Commission an executed original or executed counterpart of the unit agreement within 30 days after the effective date thereof; that in the event of subsequent joinder by any party or expansion or contraction of the unit area, the unit operator shall file with the Commission within 30 days thereafter counterparts of the unit agreement reflecting the subscription of those interests having joined or ratified.

(4) That this order shall become effective upon the approval of said unit agreement by the Commissioner of Public Lands for the State of New Mexico; that this order shall terminate ipso facto upon the termination of said unit agreement; and that the last unit operator shall notify the Commission immediately in writing of such termination.

(5) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

VACUUM POOL
(ARCO State Vacuum Unit Waterflood)
Lea County, New Mexico

Order No. R-5295, Authorizing Atlantic Richfield Company to Institute a Waterflood Project on its State Vacuum Unit in the Grayburg-San Andres Formation in the Vacuum Pool, Lea County, New Mexico, October 12, 1976.

Application of Atlantic Richfield Company for a Waterflood Project, Lea County, New Mexico.

CASE NO. 5762
Order No. R-5295

ORDER OF THE COMMISSION

BY THE COMMISSION: This cause came on for hearing at 9 a.m. on September 15, 1976, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 12th day of October, 1976, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Atlantic Richfield Company, seeks authority to institute a waterflood project on its State Vacuum Unit, Vacuum Pool, by the injection of water into the Grayburg-San Andres formation through 11 injection wells located in Unit M of Section 29, Units A and I of Section 31 and Units C, E, G, I, K, M, N, and O of Section 32, all in Township 17 South, Range 34 East, NMPM, Lea County, New Mexico.

(3) That the wells in the project area are in an advanced state of depletion and should properly be classified as "stripper" wells.

(4) That the proposed waterflood project should result in the recovery of otherwise unrecoverable oil, thereby preventing waste.

(5) That the Cole Darden Oil Company Hale State Well No. 1 in Unit A, Section 31, Township 17 South, Range 34 East, NMPM, Lea County, New Mexico, was not plugged and abandoned in a manner such as to assure that water injected through said State Vacuum Unit injection wells will not migrate from the Grayburg-San Andres formation to other formations or the surface.

(6) That injection pressure around said Cole Darden Oil Company Hale State Well No. 1 should be limited to prevent such migration.

(7) That the operator should take all steps necessary to ensure that the injected water enters only the proposed injection interval and is not permitted to escape to other formations or onto the surface from injection, production, or plugged and abandoned wells.

(8) That the subject application should be approved and the project should be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

IT IS THEREFORE ORDERED:

(1) That the applicant, Atlantic Richfield Company, is hereby authorized to institute a waterflood project on its State Vacuum Unit, Vacuum Pool, by the injection of water into the Grayburg-San Andres formation, through the following-described wells in Township 17 South, Range 34 East, NMPM, Lea County, New Mexico:

State Vacuum Unit Well No.	Unit	Section	Township	Range
1	M	29	17S	34E
2	A	31	17S	34E
4	C	32	17S	34E
7	E	32	17S	34E
9	G	32	17S	34E
11	I	31	17S	34E
13	K	32	17S	34E
15	I	32	17S	34E
17	M	32	17S	34E
19	O	32	17S	34E
21	N	32	17S	34E

(2) That injection into each of said wells should be through internally coated tubing, set in a packer which shall be located as near as practicable to the uppermost perforation, or in the case of an open-hole completion, to the casing shoe; that the casing-tubing annulus of each injection well shall be tested for leaks, be loaded with an inert fluid and equipped with an approved pressure gauge or attention-attracting leak detection device, and that the injection wells or system shall be equipped in such a manner as to limit wellhead pressure to no more than 860 psi.

(3) That the Secretary-Director of the Commission may administratively authorize a pressure limitation in excess of 860 psi upon a showing by the operator that such higher pressure will not result in fracturing of the confining strata.

(4) That there shall be no injection under pressure into the Cole Darden Oil Company Hale State Well No. 1 in Unit A of Section 31, Township 17 South, Range 32 East, NMPM, Lea County, New Mexico, or into any well on said 40-acre tract or any 40-acre tract directly or diagonally offsetting said well, until said well has been reentered and replugged in accordance with a Commission approved plugging program or said well has been equipped in such a manner as to monitor for leaks below the salt section.

(5) That the operator shall immediately notify the supervisor of the Commission's Hobbs district office of the failure of the tubing or packer in any of said injection wells, the leakage of water or oil from around any producing wells, the leakage of water or oil from any plugged and abandoned wells within the project area and shall take such timely steps as may be necessary or required to correct such failure or leakage.

(6) That the subject waterflood project is hereby designated the ARCO State Vacuum Unit Waterflood Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

(7) That monthly progress reports of the waterflood project herein authorized shall be submitted to the Commission in accordance with Rules 704 and 1120 of the Commission Rules and Regulations.

(8) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

VACUUM GRAYBURG-SAN ANDRES POOL
Lea County, New Mexico

Order No. 850, January 1, 1950, Redefining Pool, as Amended by Order No. R-55, March 29, 1951; Order No. R-393, November 24, 1953; Order No. R-584, February 16, 1955; Order No. R-641, June 13, 1955; Order No. R-691, October 13, 1955; Order No. R-763, March 14, 1956; Order No. R-1042, August 29, 1957; Order No. R-1059, September 30, 1957; Order No. R-2101, November 1, 1961; Order No. R-2363, December 1, 1962; Order No. R-2527, August 1, 1963; Order No. R-5063, July 1, 1975; Order No. R-5838, November 1, 1978; Order No. R-6657, May 1, 1981; Order No. R-7114, November 1, 1982; Order No. R-7419, January 1, 1984; Order No. R-8451, June 1, 1987.

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T-16-S, R-34-E SE/4 Sec. 33.
T-17-S, R-33-E W/2, SE/4 Sec. 25; NE/4 Sec. 26; NE/4 Sec. 35;
N/2, SE/4 Sec. 36.
T-17-S, R-34-E S/2 Sec. 1; Secs. 2 through 36.
T-17-S, R-35-E Sec. 7; Secs. 18 through 36.
T-17-S, R-36-E W/2 Sec. 19; NW/4 Sec. 29; N/2 Sec. 30; S/2 Sec.
31; SW/4 Sec. 32.
T-18-S, R-34-E Secs. 1 through 5; Secs. 11, 12.
T-18-S, R-35-E NE/4 Sec. 2; Secs. 3 through 7.
T-18-S, R-36-E NE/4 Sec. 6.

GRAYBURG-SAN

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SOUTH VACUUM-BONE SPRINGS POOL
Lea County, New Mexico

Order No. R-1221, July 21, 1958, Establishing Pool, as Amended by Order No. R-1324, January 21, 1959; Order No. R-2781, November 1, 1964; Order No. R-3709, April 1, 1969.

T-18-S, R-35-E NW/4, S/2 Sec. 22; Sec. 27.

ool, as Amended by
o. R-142, April 11,
No. R-1042, August
ler No. R-1397, May
er No. R-1999, July
er No. R-2241, June
Order No. R-5015,
Order No. R-6368,
1, 1981; Order No.
November 1, 1982;
-7372, November 1,
Order No. R-8065,

SOUTH VACUUM-DEVONIAN POOL
Lea County, New Mexico

Order No. R-1143, March 25, 1958, Establishing Pool, as Amended by Order No. R-1238, August 14, 1958; Order No. R-1248, September 29, 1958; Order No. R-1312, December 24, 1958; Order No. R-1424, June 18, 1959; Order No. R-1633, March 18, 1960.

SE/4 Sec. 22; SW/4
NE/4 NE/4 Sec. 32;

Sec. 3; SE/4, E/2
5; NE/4 Sec. 16.

T-18-S, R-35-E NE/4 Sec. 21; W/2, SE/4 Sec. 22; W/2 Sec. 26;
Sec. 27; N/2 Sec. 34; SE/4, N/2 Sec. 35.

WEST MALAGA POOL
(DELAWARE)
(Abandoned)
Eddy County, New Mexico

Order No. R-197, October 20, 1952, Establishing Pool.

T-24-S, R-27-E SW/4 Sec. 15; SE/4 Sec. 16; NE/4 Sec. 21;
NW/4 Sec. 22.

Order No. 850,
T-18-S, R-32-E
23.

MALJAMAR GRAYBURG-SAN ANDRES POOL
Eddy and Lea Counties, New Mexico

Order No. 850, January 1, 1950, Redefining Pool, as Amended by
Order No. R-136, March 20, 1952; Order No. R-197, October 20,
1952; Order No. R-511, July 21, 1954; Order No. R-738, January
9, 1956; Order No. R-787, April 16, 1956; Order No. R-1089,
November 27, 1957; Order No. R-1143, March 25, 1958; Order No.
R-1160, April 22, 1958; Order No. R-1248, September 29, 1958;
Order No. R-1324, January 21, 1959; Order No. R-1340, February
23, 1959; Order No. R-1397, May 18, 1959; Order No. R-1488,
September 22, 1959; Order No. R-1840, January 1, 1961; Order
No. R-1907, April 1, 1961; Order No. R-1981, June 1, 1961; Order
No. R-2187, March 1, 1962; Order No. R-2221, May 1, 1962; Order
No. R-2469, May 1, 1963; Order No. R-2569, October 1, 1963;
Order No. R-2726, July 1, 1964; Order No. R-2781, November 1,
1964; Order No. R-3731, May 1, 1969; Order No. R-3853,
November 1, 1969; Order No. R-3895, January 1, 1970; Order No.
R-3948, May 1, 1970; Order No. R-3979, July 1, 1970; Order No.
R-4063, December 1, 1970; Order No. R-4146, June 1, 1971; Order
No. R-4464, February 1, 1973; Order No. R-4486, March 1, 1973;
Order No. R-4604, August 1, 1973; Order No. R-5081, September
1, 1975; Order No. R-5215, June 1, 1976; Order No. R-5338,
January 1, 1977; Order No. R-5456, July 1, 1977; Order No.
R-5781, September 1, 1978; Order No. R-6005, June 1, 1979;
Order No. R-6169, November 1, 1979; Order No. R-6274, March 1,
1980; Order No. R-6576, February 1, 1981; Order No. R-6623,
April 1, 1981; Order No. R-7114, November 1, 1982; Order No.
R-7279, June 1, 1983; Order No. R-7322, August 1, 1983; Order
No. R-7396, December 1, 1983; Order No. R-7917, June 1, 1985;
Order No. R-8125, February 1, 1986; Order No. R-8193, April
1, 1986.

T-16-S, R-32-E SE/4 Sec. 30; Secs. 31, 32; S/2 Sec. 33; SW/4
Sec. 34; SW/4 Sec. 35.

T-17-S, R-31-E S/2 Sec. 13; Secs. 24, 25; N/2 NE/4 Sec. 36.

T-17-S, R-32-E W/2 Sec. 1; Secs. 2 through 5; N/2, SE/4 Sec.
6; E/2 Sec. 7; Secs. 8 through 36.

T-17-S, R-33-E W/2 Sec. 4; Secs. 7, 8, 9; SE/4, W/2 Sec.
10; S/2 Sec. 11; W/2 Sec. 13; Secs. 14 through 21; N/2, SW/4
Sec. 22; NE/4 Sec. 23; Sec. 24; NE/4 Sec. 25; SW/4 Sec. 26;
Secs. 27 through 30; N/2 Sec. 31; Secs. 32, 33; N/2, NW/4 &
S/2 SW/4 Sec. 34; NW/4 Sec. 35.

T-18-S, R-32-E NW/4 Sec. 2; Secs. 4, 5.

T-18-S, R-33-E NW/4 Sec. 2; N/2 Sec. 3; N/2 Sec. 4.

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Order No. R-10

T-18-S, R-32-E

NO
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Order No. R-5
Amended by O
August 10, 1956
No. R-933, Dec
1957; Order No.
18, 1959; Order
February 1, 196
R-5056, August
Order No. R-72
Ord

T-26-S, R-31-F
T-26-S, R-32-F
NE/4 Sec. 18;

Order No. R-2
Amended by O
June 13, 1

T-10-S, R-32-