

CASE 2441: Application of WATER
FLOOD ASSOCIATES for waterflood
project in Maljamar & Robinson.

I have a pleasure in
 presenting to you
 a few minutes of
 my own work
 in the field of
 the history of the
 American people.

$$\frac{2 \times 6}{2} = 6$$

-asa / / 0.

2441

ation, Transcript,
all Exhibits, Etc.

GOVERNOR
EDWIN L. MECHEM
CHAIRMAN

State of New Mexico
Oil Conservation Commission



LAND COMMISSIONER
E. S. JOHNNY WALKER
MEMBER

STATE GEOLOGIST
A. L. PORTER, JR.
SECRETARY - DIRECTOR

P. O. BOX 871
SANTA FE

Kellahin & Fox
P. O. Box 1713
Santa Fe, New Mexico

December 13, 1961

Attention: Mr. Jason Kellahin

Gentlemen:

Enclosed herewith is Commission Order No. B-2130 entered in Case No. 2441, approving the Water Flood Associates-Maljamar-Robinson Water Flood Project.

According to our calculations, when all of the authorized injection wells have been placed on active injection, the maximum allowable which this project will be eligible to receive under the provisions of Rule 701-E-3 is 252 barrels per day.

Please report any error in this calculated maximum allowable immediately, both to the Santa Fe office of the Commission and the appropriate District proration office.

In order that the allowable assigned to the project may be kept current, and in order that the operator may fully benefit from the allowable provisions of Rule 701, it behooves him to promptly notify both of the aforementioned Commission offices by letter of any change in the status of wells in the project area, i.e., when active injection commences, when additional injection or producing wells are drilled, when additional wells are acquired through purchase or unitization, when wells have received a response to water injection, etc.

Your cooperation in keeping the Commission so informed as to the status of the project and the wells therein will be appreciated.

Very truly yours,

ALP/DSH/esr
Enclosure

A. L. PORTER, Jr.
Secretary-Director

cc: Oil Conservation Commission - Hobbs
Mr. J. E. Kopteina, Oil Conservation Commission - Santa Fe



STATE OF NEW MEXICO

STATE ENGINEER OFFICE

SANTA FE

S. E. REYNOLDS
STATE ENGINEER

November 28, 1961

ADDRESS CORRESPONDENCE TO:
STATE CAPITOL
SANTA FE, N. M.

Mr. A. L. Porter, Jr.
Oil Conservation Commission
Santa Fe, New Mexico

Dear Mr. Porter:

I have a letter from Mr. H. C. Porter, Engineer for Water Flood Associates, Inc., pertaining to a proposed water flood program on their leases in Sections 5, 6 and 7 in Township 17 South, Range 32 East. Enclosed with the letter is a print showing the limits of production and the initial injection pattern proposed. Also enclosed is Exhibit 3, a tabulation of casing program used in wells 1A, 2A, 3A, 3B, 4B, 5B, 6B and 7A. Although I do not have a copy of the application, I judge from the letter and the two enclosures that the proposed manner of injection will not constitute a threat of contamination to any fresh waters which may exist in this area and therefore offer no objection to the granting of the application.

Yours truly,

S. E. Reynolds
State Engineer

FEI/ma
cc-Mr. H. C. Porter
Mr. F. H. Hennighausen

By: *Frank E. Irby*
Frank E. Irby
Chief
Water Rights Division

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. 2441
Order No. R-2130

APPLICATION OF WATER FLOOD ASSOCIATES,
INC., FOR PERMISSION TO INSTITUTE A
WATERFLOOD PROJECT IN THE MALJAMAR AND
ROBINSON POOLS, LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on November 29, 1961, at Santa Fe, New Mexico, before Daniel S. Nutter, Examiner duly appointed by the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission," in accordance with Rule 1214 of the Commission Rules and Regulations.

NOW, on this 13th day of December, 1961, the Commission, a quorum being present, having considered the application, the evidence adduced, and the recommendations of the Examiner, Daniel S. Nutter, 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, Water Flood Associates, Inc., seeks permission to institute a waterflood project in the Maljamar and Robinson Pools in an area defined in pertinent part as the W/2 W/2 of Section 5, the E/2 SE/4 of Section 6, and the NE/4 NE/4 of Section 7, all in Township 17 South, Range 32 East, NMPM, Lea County, New Mexico, by the injection of water into the Mitchell Well No. 2, located in the SE/4 SE/4 of said Section 6, and the Mitchell Well No. 5, located in the SW/4 NW/4 of said Section 5.

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

(4) That the proposed waterflood project should be authorized and should be governed by the provisions of Rule 701 of the Commission Rules and Regulations, including those provisions regarding allocation of allowables.

-2-

CASE No. 2441
Order No. R-2130

IT IS THEREFORE ORDERED:

(1) That the applicant, Water Flood Associates, Inc., is hereby authorized to institute a waterflood project in the Maljamar and Robinson Pools in an area defined in pertinent part as the W/2 W/2 of Section 5, the E/2 SE/4 of Section 6, and the NE/4 NE/4 of Section 7, all in Township 17 South, Range 32 East, NMPM, Lea County, New Mexico, by the injection of water into the Mitchell Well No. 2, located in the SE/4 SE/4 of said Section 6, and the Mitchell Well No. 5, located in the SW/4 NW/4 of said Section 5.

(2) That the operation of the waterflood herein authorized shall be governed by Rule 701 of the Commission Rules and Regulations, including those provisions regarding allocation of allowances.

(3) That monthly progress reports of the waterflood project herein authorized shall be submitted to the Commission in accordance with Rule 704 and Rule 1119 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.

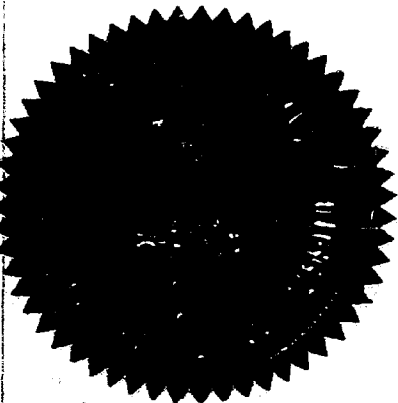
STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

E. L. Mechem

EDWIN L. MECHEM, Chairman

E. S. Walker
E. S. WALKER, Member

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



est/

Case 2441

WATER FLOOD ASSOCIATES, INC.

301 BOOKER BLDG.
ARTESIA, NEW MEXICO

P. O. BOX 376

PHONE SA 6-6032

OCTOBER 28, 1961

*Log in for
Hearing*

NEW MEXICO OIL CONSERVATION COMMISSION
POST OFFICE BOX 871
SANTA FE, NEW MEXICO

GENTLEMEN:

PLEASE ACCEPT THIS LETTER AS THE APPLICATION OF WATER-FLOOD ASSOCIATES, INC. FOR AN ORDER AUTHORIZING A WATER-FLOOD PROJECT IN THE NORTH MALJAMAR AND ROBINSON POOLS, LEA COUNTY, NEW MEXICO. PLEASE SCHEDULE THIS MATTER FOR HEARING BEFORE AN EXAMINER AT THE EARLIEST CONVENIENT DATE.

WE PROPOSE TO INSTITUTE A WATER-FLOOD PROJECT IN THE ~~NORTH~~ MALJAMAR AND ROBINSON POOLS, WITH A PROJECT AREA CONSISTING OF OUR MITCHELL 1 AND 2, MITCHELL 3 AND 4, MITCHELL 5 AND 6 LEASES COMPRISING W/2 SW/4 AND W/2 NW/4 SECTION 5; AND E/2 SE/4 SECTION 6; AND NE/4 NE/4 SECTION 7; ALL IN T17S, R32E, NMPM, LEA COUNTY, NEW MEXICO

WE PROPOSE TO INJECT WATER INTO THE GRAYBURG AND LOVINGTON FORMATIONS THROUGH THE FOLLOWING DESCRIBED WELLS AS SHOWN ON THE ATTACHED PLAT.

MITCHELL NO. 2 P SECTION 6, T17S, R32E

MITCHELL NO. 5 E SECTION 5, T17S, R32E

THE REQUEST FOR THIS PROJECT IS MADE SUBJECT TO ADMINISTRATIVE APPROVAL UNDER RULE 701.

VERY TRULY YOURS,

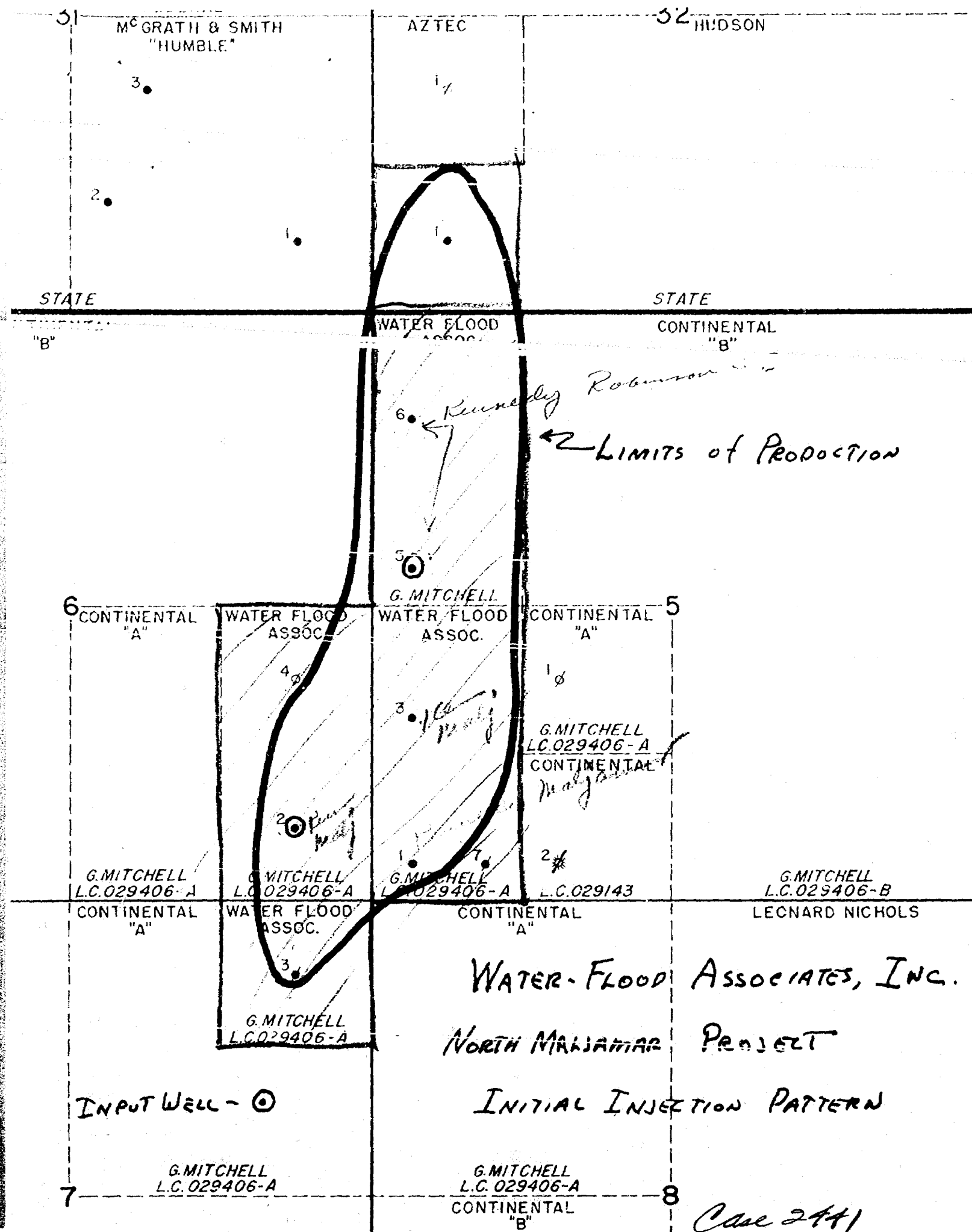
WATER FLOOD ASSOCIATES, INC.

Harold C. Porter
HAROLD C. PORTER,
ENGINEER

HCP/KH

ATTACHMENTS

*Robert
Maitland
11/16/61*



DOCKET: EXAMINER HEARING - WEDNESDAY - NOVEMBER 29, 1961

9 A.M. - OIL CONSERVATION COMMISSION CONFERENCE ROOM
STATE LAND OFFICE BUILDING - SANTA FE, NEW MEXICO

The following cases will be heard before Daniel S. Nutter, Examiner, or
Elvis A. Utz, as alternate examiner:

Cases listed on this docket after Case 2444 will not be heard before 1 P.M.

- CASE 2434: Application of Amerada Petroleum Corporation for a dual completion and a 160-acre non-standard gas proration unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks permission to complete its State DA Well No. 1 located in Unit L, Section 16, Township 21 South, Range 37 East, Lea County, New Mexico, as a dual completion (conventional) in the Eumont Gas Pool and the Drinkard Pool, with the production of oil from the Drinkard zone to be through a string of 2 3/8-inch tubing and the production of gas from the Eumont zone to be through the tubing-casing annulus. Applicant further seeks the establishment of a 160-acre non-standard gas proration unit in the Eumont Gas Pool, comprising the N/2 S/2 of said Section 16, said unit to be dedicated to said State DA Well No. 1.
- CASE 2435: Application of Cities Service Oil Company for a triple completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks permission to complete its Hodges "B" Well No. 3, located in Unit L of Section 1, Township 25 South, Range 37 East, Lea County, New Mexico, as a triple completion (conventional) in undesignated Blinebry and Drinkard pools and in the Fusselman formation adjacent to the North Justis-Fusselman pool, with the production of oil from the Blinebry and Drinkard zones to be through parallel strings of 2 1/16-inch tubing and the production of oil from the Fusselman zone to be through a parallel string of 2 3/8-inch tubing.
- CASE 2436: Application of Hudson & Hudson for two unorthodox oil well locations, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of two unorthodox oil well locations in the Maljamar Pool, one well to be located within 100 feet and not less than 25 feet of the Southeast corner of Unit J, Section 24, Township 17 South, Range 31 East, Eddy County, New Mexico, and one well to be located within 100 feet and not less than 25 feet of the Northwest corner of Unit O in said Section 24.

CASE 2437: Application of J. C. Williamson for a dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks permission to complete its Westates-Federal Well No. 6, located in Unit D of Section 1, Township 25 South, Range 37 East, Lea County, New Mexico, as a dual completion (conventional) in the McKee and Ellenburger formations with the production of oil from both zones to be through parallel strings of 2 3/8-inch tubing.

CASE 2438: Application of Texaco Inc. for a triple completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks permission to complete its V. M. Henderson Well No. 6, located in Unit C of Section 30, Township 21 South, Range 37 East, Lea County, New Mexico, as a triple completion in the Paddock, Blinebry Gas, and Drinkard Pools with the production of oil from the Drinkard formation to be through a tapered string of tubing of 2 1/16-inch and 1 1/4-inch diameter and from the Paddock formation to be through a parallel string of 2 1/16-inch tubing and the production of gas from the Blinebry formation to be through the tubing-casing annulus.

CASE 2421: (Cont.)
Application of Texaco Inc. for approval of a unit agreement and for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Northeast Caprock (Queen) Unit Agreement, covering 1360 acres, more or less, in Township 12 South, Range 32 East, Caprock Queen Pool, Lea County, New Mexico. Applicant further seeks authority to institute a unit-wide waterflood by the injection of water into the Queen formation through 19 wells located within said unit.

CASE 2439: Application of Sunray Mid-Continent Oil Company for a 67.04-acre non-standard oil proration unit and an unorthodox well location, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks the establishment of 67.04-acre non-standard oil proration unit in the Totah-Gallup Oil Pool, comprising Lots 2, 3 and 4 of Section 14, Township 29 North, Range 14 West, San Juan County, New Mexico, said unit to be dedicated to a well to be located at an unorthodox location 330 feet from the North line and 2510 feet from the West line of said Section 14.

CASE 2440: Application of Socony Mobil Oil Company for permission to transfer allowables, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks permission to shut-in the Boulder-Apache Well No. 12-14, located in Section 14, Township 28 North, Range 1 West, Boulder-Mancos Oil Pool, Rio Arriba County, New Mexico, and transfer its allowable to the Boulder-Apache Well No. 23-14 located in said Section 14 for the purpose of conducting interference tests.

CASE 2441: Application of Water Flood Associates, Inc., for a waterflood project in the Maljamar and Robinson Pools, Lea County, New Mexico. Applicant, in the above-styled cause, seeks permission to institute a waterflood project in the Maljamar and Robinson Pools in portions of Sections 5, 6 and 7, all in Township 17 South, Range 32 East, Lea County, New Mexico.

CASE 2442: Application of El Paso Natural Gas Company for a dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks permission to complete its Mescalero Ridge Unit Well No. 1, located in Unit D of Section 21, Township 19 South, Range 34 East, Lea County, New Mexico, as a dual completion (conventional) in the Bone Springs and Morrow formations, with the production of oil from the Bone Springs zone to be through a string of 2 3/8-inch tubing and the production of gas from the Morrow zone to be through a parallel string of 2 1/16-inch tubing.

CASE 2443: Application of Gulf Oil Corporation for an 80-acre non-standard gas proration unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the establishment of an 80-acre non-standard gas proration unit in the Eumont Gas Pool, comprising the E/2 NE/4 of Section 34, Township 19 South, Range 36 East, Lea County, New Mexico, said unit to be dedicated to the J. W. Smith Well No. 2, located 660 feet from the North and East lines of said Section 34.

The following cases will not be heard before 1 P.M.

CASE 2444: Application of Aztec Oil & Gas Company for an exception to Rule 309-A, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Rule 309-A to permit the Totah-Gallup oil production from three wells on

applicant's Hagood Federal Lease, located in Section 19, Township 29 North, Range 13 West, San Juan County, New Mexico, to be transported prior to measurement on said lease to applicant's Smith "C" Lease, located in Section 18, Township 29 North, Range 13 West.

CASE 2445: Application of Southwest Production Company for an order extending the Flora Vista-Mesaverde Pool, San Juan County, New Mexico, and establishing special rules and regulations in said pool. Applicant, in the above-styled cause, seeks an order extending the Flora Vista-Mesaverde Pool to include Sections 22, 23, 26 and 27, all in Township 30 North, Range 12 West, San Juan County, New Mexico, and establishing special rules and regulations including a provision for 320-acre spacing units in said pool.

CASE 2446: Application of Southwest Production Company for an order pooling all mineral interests in the Basin-Dakota Gas Pool in the E/2 of Section 22, Township 30 North, Range 12 West, San Juan County, New Mexico. Interested parties include Roy Rector and O. G. Shelby, both of Flora Vista, New Mexico, and Myron T. Dale, address unknown.

CASE 2446: (Cont.)
Application of Southwest Production Company for an order pooling all mineral interests in an undesignated Mesaverde gas pool in the E/2 of Section 22, Township 30 North, Range 12 West, San Juan County, New Mexico.

CASE 2447: Application of Humble Oil & Refining Company for approval of a pressure maintenance project in the Cha Cha-Gallup Oil Pool, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks permission to institute a pressure maintenance project in the Cha Cha-Gallup Oil Pool by the injection of water into certain wells located on the Navajo Indian Reservation in Sections 13 through 29 and 33 through 36, Township 29 North, Range 14 West, San Juan County, New Mexico. Applicant further seeks the promulgation of special rules and regulations governing said project.

CASE 2448: Application of Pan American Petroleum Corporation for a pressure maintenance project, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks permission to institute a pressure maintenance project on its C. J. Holder,

State Holder Oil Unit, State "CA", State Oil Unit and Gallegos Canyon Unit Leases, San Juan County, New Mexico, in the Cha Cha-Gallup Oil Pool with water injection initially to be through five wells located in Sections 8 and 16, Township 28 North, Range 13 West, and Section 23, Township 28 North, Range 12 West, and requests adoption of special rules to govern the operation of said project.

CASE 2449:

Application of Pan American Petroleum Corporation for a pressure maintenance project, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks permission to institute a pressure maintenance project on its Navajo tribal "H" and Gallegos Canyon Unit Leases, San Juan County, New Mexico, in the Totah-Gallup Oil Pool with water injection initially to be through five wells located in Section 35, Township 29 North, Range 13 West, Section 12, Township 28 North, Range 13 West, and Sections 13 and 24, Township 29 North, Range 14 West, and requests adoption of special rules to govern the operation of said project.

APPLICATION FOR WATER FLOOD

NORTH MALJAMAR - ROBINSON POOLS
LEA COUNTY, NEW MEXICO

TO THE

NEW MEXICO OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

BY

WATER FLOOD ASSOCIATES, INC.
301 BOOKER BLDG.
ARTESIA, NEW MEXICO

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
Appl EXHIBIT NO. B
CASE NO. 2441

WATER FLOOD ASSOCIATES, INCORPORATED
FORT WORTH, TEXAS

WATER FLOOD ASSOCIATES, INC.
APPLICATION FOR WATER - FLOOD
NORTH MALJAMAR AND ROBINSON POOLS

LOCATION

THE APPLICATION IS MADE FOR THE WATER-FLOOD ASSOCIATES, INC. LEASES IN THE NORTH MALJAMAR AND ROBINSON POOLS, LEA COUNTY, NEW MEXICO. THE LOCATION OF LEASES IS SHOWN ON AREA MAP, APPENDIX X, AS FOLLOWS:

MITCHELL 1 & 2 LEASE SW/4 SW/4 SECTION 5;
SE/4 SE/4 SECTION 6; AND NE/4 NE/4 SECTION
7, T17S, R32E.

MITCHELL 3 & 4 LEASE NW/4 SW/4 SECTION 5
AND NE/4 SE/4 SECTION 6, T17S, R32E.

MITCHELL 5 & 6 LEASE W/2 NW/4 SECTION 5,
T17S, R32E.

THE PROJECT AREA INCLUDES 280 ACRES ON WHICH THERE ARE FIVE PRODUCING OIL WELLS, TWO PLUGGED AND ABANDONED WELLS, AND ONE DRY HOLE.

GEOLOGY

OIL PRODUCTION IS FROM ZONES 5 AND 6 OF THE GRAYBURG FORMATION AND ZONES 7 AND 8 OF THE SAN ANDRES FORMATION, GUADALUPE SERIES OF THE PERMIAN SYSTEM. THE RESERVOIR IS AN ELONGATED STRATIGRAPHIC TRAP CONTROLLED BY PERMEABILITY PINCH-OUTS AND DEFINED BY DRY HOLES AND PLUGGED WELLS. LIMITS OF PRODUCTION ARE SHOWN AS APPENDIX VI. ZONES OF COMPLETION ON EACH INDIVIDUAL WELL ARE SHOWN AS APPENDIX XI.

WELL COMPLETION DATA

DETAILS OF WELL COMPLETION ARE SHOWN AS APPENDIX III. THE WELLS WERE DRILLED BY CABLE TOOLS. SURFACE CASING WAS SET INTO THE SALT SECTION (OCHOA SERIES) AND CEMENTED WITH 50 SACKS. THE LONG STRING WAS SET ABOVE THE PAY SECTIONS AND CEMENTED WITH 100 SACKS OF CEMENT. GENERAL PRACTICE WAS TO DRILL THE PAY ZONES AND STIMULATE PRODUCTION BY MEANS OF A NITRO-GLYCERIN SHOT. DETAILS OF WELL STIMULATIONS ARE SHOWN IN APPENDIX IV.

ANY SHALLOW WATER WHICH MIGHT BE PRESENT IN THE AREA ARE PROTECTED BY TWO STRINGS OF CASING AND TWO CEMENT JOBS. CALCULATED TOPS OF CEMENT ARE SHOWN AS APPENDIX V.

PRIMARY PRODUCTION HISTORY

MITCHELL No. 1 WAS DRILLED IN MARCH, 1927, AND WAS THE DISCOVERY WELL. THE WELL POTENTIAL FOR ONE HUNDRED BARRELS OF OIL PER DAY. THIS WELL HAS PRODUCED 160,000 BARRELS OF OIL. RECOVERY BY WELL IS SHOWN IN APPENDIX IV. ADDITIONAL DEVELOPMENT DID NOT OCCUR UNTIL 1940 WHEN WELL No. 2 WAS DRILLED. ADDITIONAL WELLS WERE DRILLED THROUGH 1953. COMPLETION DATES ARE SHOWN IN APPENDIX III. THERE ARE PRESENTLY FIVE PRODUCING WELLS WHICH HAVE PRODUCED 311596 BARRELS OF OIL.

WATER FLOOD ASSOCIATES, INC.
APPLICATION FOR WATER-FLOOD CONTD.

PAGE - 2

PRESENT PRODUCTION IS LESS THAN 2 BARRELS PER WELL PER DAY. THE WELLS PRODUCE NO SIGNIFICANT AMOUNTS OF WATER. THE PRODUCING GAS-OIL RATIO IS LESS THAN 50 CUBIC FEET PER BARREL. THE WELLS ARE IN A DEPLETED STATE AND NEAR THEIR PRIMARY ECONOMIC LIMIT.

GRAPHIC PRODUCTION DATA IS SHOWN AS APPENDIX I.

WATER FLOOD PATTERN

APPLICATION IS MADE TO CONVERT WELL NO. 2, P SECTION 0, AND WELL NO. 5, E SECTION 5 TO WATER INJECTION. THIS WILL PROVIDE AN EFFICIENT SWEEP OF THE RESERVOIR CONSIDERING THE PERMEABILITY BARRIERS AS SHOWN IN APPENDIX VI. THE CONVERSION OF THESE WELLS WILL PREVENT WASTE OF A NATURAL RESOURCE BY THE RECOVERY OF OIL BY SECONDARY METHODS WHICH COULD NEVER BE RECOVERED BY PRIMARY PRODUCING METHODS. ADDITIONAL WELLS MAY BE REQUESTED AS INPUT WELLS IN FUTURE. APPLICATION IS MADE FOR APPROVAL FOR ADMINISTRATIVE PROCEDURE FOR EXPANDING THE PROGRAM UNDER RULE 701.

RESERVOIR DATA

VERY LITTLE RESERVOIR DATA IS AVAILABLE. NO ELECTRICAL OR RADIOACTIVE TYPE LOGS HAVE BEEN RUN. CABLE TOOL SAMPLE ANALYSES HAVE SHOWN THE PRODUCTIVE ZONES TO BE ZONES 5, 6, 7 AND 8 OF THE GRAYBURG-SAN ANDRES FORMATIONS. NO DATA IS AVAILABLE TO DETERMINE NET PAY THICKNESS, POROSITY OR PERMEABILITIES. THE PRODUCED OIL IS ABOUT 35° API GRAVITY. NONE OF THE WELLS PRODUCE SIGNIFICANT QUANTITIES OF WATER AND THERE ARE NO HIGH GAS-OIL RATIOS; THEREFORE IT MUST BE CONCLUDED THAT THE RESERVOIR IS THE TYPICAL VOLUMETRIC TYPE AND THAT THE PRODUCING MECHANISM WAS THE EXPANSION OF SOLUTION GAS. NO SECONDARY GAS CAP IS IN EVIDENCE.

COMPARING THE RESERVOIR TO SIMILAR ONES IN THE SAME FORMATIONS IN THE AREA, IT IS REASONABLE TO ESTIMATE THAT LESS THAN 17% OF THE OIL ORIGINALLY IN PLACE HAS BEEN RECOVERED BY PRIMARY MEANS.

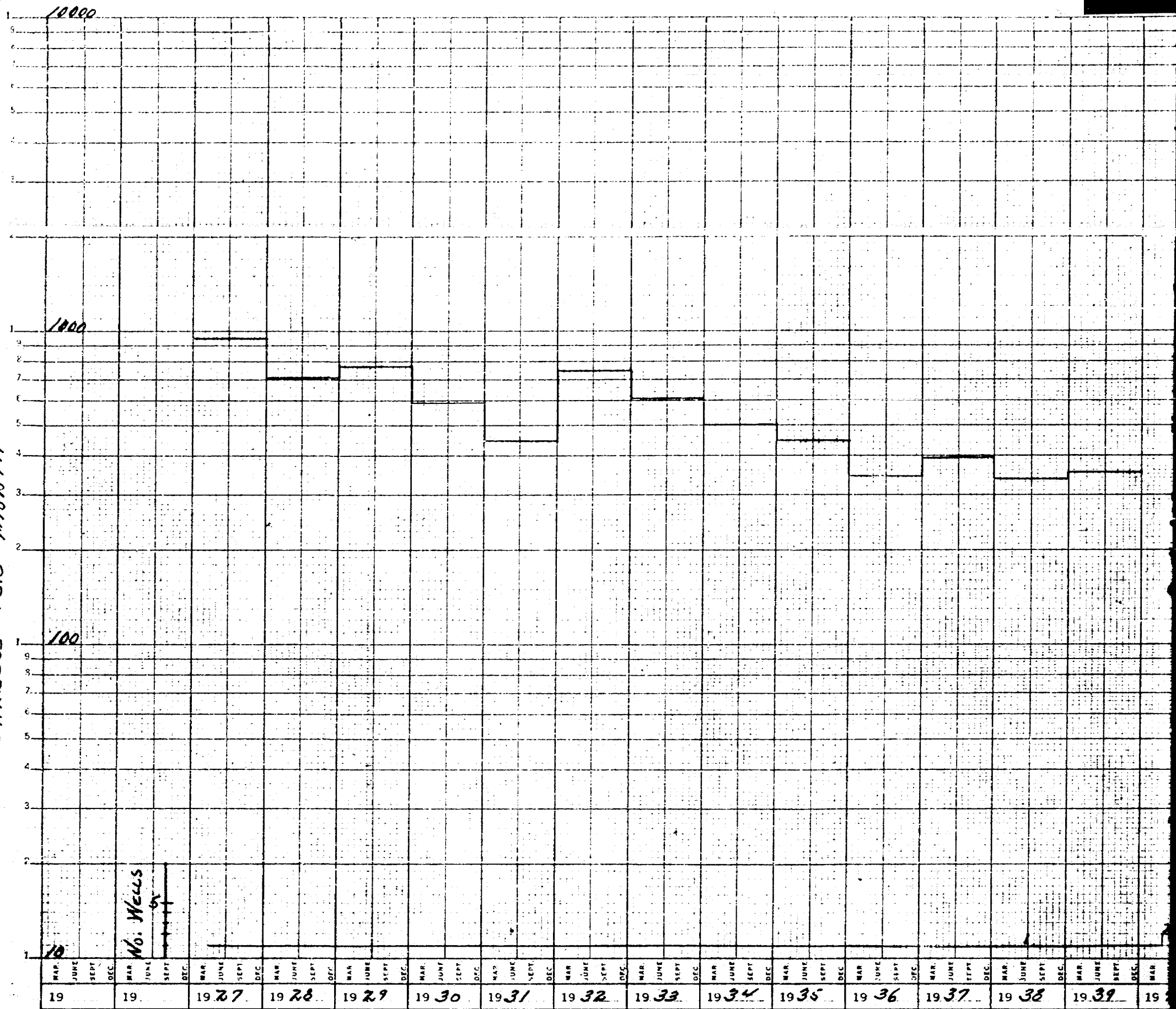
WATER-FLOOD PERFORMANCE

ANTICIPATED WATER INJECTION RATES ARE 500 BARRELS PER WELL PER DAY AT A WELL HEAD PRESSURE OF 2000 PSI. IT IS ESTIMATED THAT 3,000,000 BARRELS OF WATER WILL BE INJECTED DURING THE LIFE OF THE PROJECT. THE PROJECT LIFE IS ESTIMATED TO BE 10 YEARS. IT IS ESTIMATED THAT THE WATER FLOOD OIL RECOVERABLE IS 480,000 BARRELS, OR 1.5 TIMES THE PRIMARY RECOVERY.

WATER SOURCE

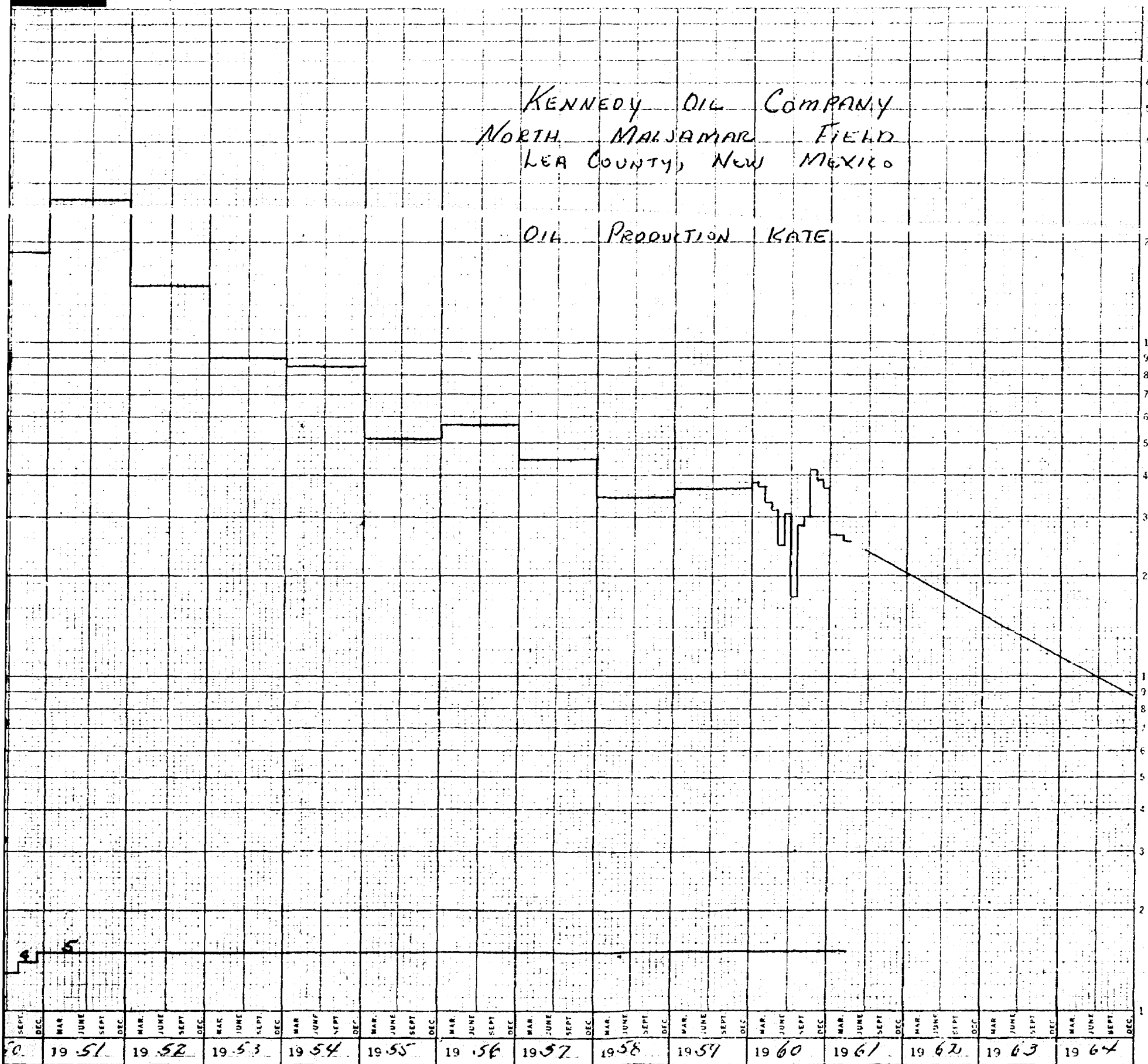
WATER IS AVAILABLE FOR WATER-FLOODING FROM TWO COMMERCIAL PIPELINE COMPANIES. BOTH THESE PIPELINES ARE NEAR THE PROPERTY. BOTH COMPANIES HAVE AGREED TO SELL WATER FOR THE PROJECT. COPIES OF THESE LETTERS ARE SHOWN AS APPENDIX V AND VI. -A

BARRELS PER MONTH



KENNEDY OIL COMPANY
NORTH MALJAMAR FIELD
LEA COUNTY, NEW MEXICO

OIL PRODUCTION RATE



WATER FLOOD ASSOCIATES, INC.

KENNEDY NORTH MALJAMAR PROJECT
PRODUCTION HISTORY

YEAR	BARRELS	YEAR	BARRELS
1927	11601	1944	NR
1928	8122	1945	NR
1929	9430	1946	NR
1930	7071	1947	NR
1931	5093	48	
1932	8991	49	19568
1933	7251	50	22415
1934	6017	51	31126
1935	5351	52	17880
1936	4157	53	10800
1937	4738	54	10225
1938	4067	55	6182
1939	4259	56	6782
1940	NR	57	5305
1941	NR	58	4103
1942	NR	59	4375
1943	NR	60	3867

*NR NO RECORD

EXHIBIT II

WATER FLOOD ASSOCIATES, INCORPORATED
FORT WORTH, TEXAS

KENNEDY OIL COMPANY
WELL DATA

NORTH MALJAMAR FIELD
LEA COUNTY, NEW MEXICO

WELL	LOCATION	ELEV	COMP DATE	I.P. B/D	SURF CASG.	OIL STRING	T.D.	REMARKS
1A	M-5-17-32	4050 GL	12 MAR 27	100	12½ @ 770	6 5/8 @ 3645	4230 3800 PB	7 DISC. WELL
2A	P-6-17-32	4045 GL	30 MAY 40	45	8 5/8 @ 812 50 SAX	7" @ 3495 100 SAX	3980	3535
3A	A-7-17-32	4042 GL	15 JAN 41	29	8 5/8 @ 804 50 SAX	7" @ 3566 100 SAX	3970	PP&A 1942
3B	L-5-17-32	4055 GL	4 DEC. 48	400	8 5/8 @ 890 50 SAX	5½ @ 3642 100 SAX	4007	3406
4B	I-6-17-32	4062 GL	4 MAR 49	-0-	8 5/8 @ 922 50 SAX		4015	PP&A
5B	E-5-17-32	4072 GL	19 SEP 50	150	8 5/8 @ 905 50 SAX	5½ @ 3890 100 SAX	4025	3740
6B	D-5-17-32	4101 GL	15 DEC 50	18	8 5/8 @ 948 50 SAX	7" @ 3677 100 SAX	4072	3517
7A	M-5-17-32	4055 GL	20 MAR 53	-0-	8 5/8 @ 869 50 SAX	5½ @ 3638 50 SAX	4019	PP&A

EXHIBIT III

KENNEDY OIL COMPANY
WELL PRODUCTION DATA

NORTH MALJAMAR FIELD
LEA COUNTY, NEW MEXICO

WELL	I.P. B/D	PRESENT RATE B/M	CUM. RECOVERY, BBLS	STIMULATIONS
1A	100	100	160,000	SHOT: 260 qts: 3735-85
2A	45	85	35,026	SHOT: 120 qts: 3964-75 & 3715-35
3A	29	P & A	3,740 ✓	SHOT: 300 qts: 3690-3715 & 3785-3825
3B	400	70	75,852	SHOT: 280 qts
4B	-0-	P & A	-0-	NONE: DRY HOLE
5B	150	40	25,313	SHOT: 160 qts
6B	18	45	11,665	HYDRO FRAC: 4036-45
7A	-0-	P & A	-0- ✓	DRY HOLE
TOTAL		<u>340</u>	<u>311,596</u>	

EXHIBIT IV

WATER FLOOD ASSOCIATES, INC.

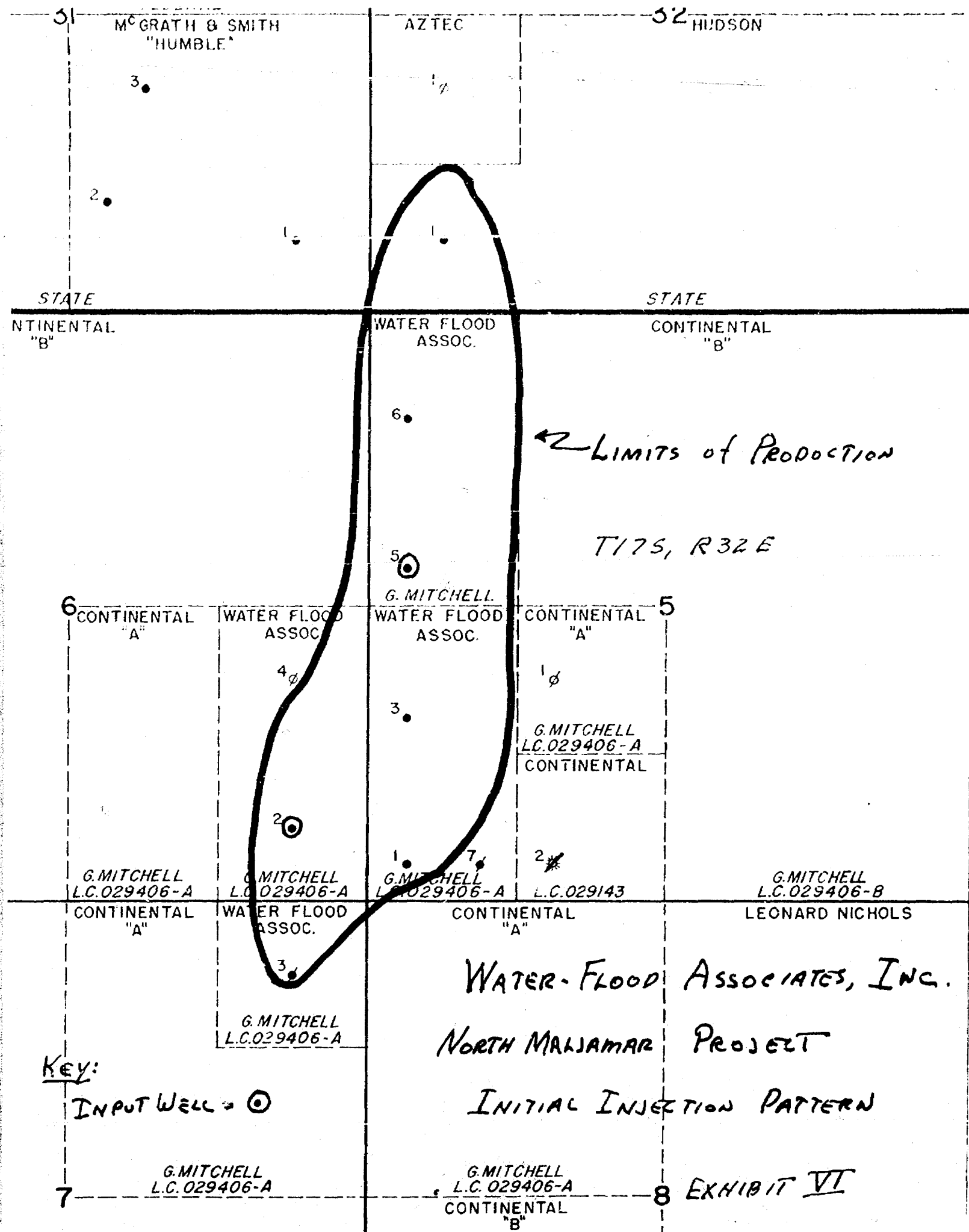
KENNEDY-NORTH MALJAMAR PROJECT

LEA COUNTY, NEW MEXICO

WELL	CALCULATED TOP OF CEMENT	
	SURFACE CASING	PRODUCTION CASING
1	UNKNOWN	UNKNOWN
2	212	3335
3A	202	P&A
3B	288	3406
4	320	DRY HOLE
5	303	3740
6	346	3517 -
7	267	DRY HOLE

ABOVE DEPTH ARE CALCULATED TOPS OF CEMENT BELOW SURFACE OF GROUND USING 4% GEL CEMENT TABLES.

EXHIBIT V



CAPROCK WATER COMPANY

P. O. BOX 607

ARTESIA, NEW MEXICO

October 13, 1961

Water Flood Associates, Inc.
Box 376
Artesia, New Mexico

Gentlemen:

With reference to your request for Caprock Water Company to furnish water for your water flood project in the North Maljamar Field, Lea County, New Mexico, we are in a position to furnish this water and agree to supply you based on the following terms:

1. The price charged you per barrel will be $2 \frac{3}{4}$ cents per 42-gallon barrel. We will furnish metering equipment and will bill you monthly.
2. The water will be furnished at a rate up to the capacity of our pipeline facilities.

The rate mentioned above is the rate approved by the Public Service Commission.

Very Truly Yours

CAPROCK WATER COMPANY

H. N. Morgan
H. N. Morgan, President

HNM/dt

EXHIBIT V-A

File: Kennedy Water Contract.

YUCCA WATER COMPANY

FORT WORTH NATIONAL BANK BUILDING

FORT WORTH 2, TEXAS

October 10, 1961

Mr. H. C. Porter
Water-Flood Associates, Inc.
301 Booker Building
Artesia, New Mexico

Dear Hal:

In answer to your request of September 27th concerning water for your Kennedy North Maljamar project, Yucca Water Company will be happy to supply water for this project on the basis of the attached rate schedule.

Yucca will require a take or pay contract which would commit Water-Flood Associates to purchase a minimum of 2,000 barrels per day for a period of two years. A sample contract is attached.

If you intend to purchase water from Yucca, we would appreciate receiving complete details as to the volumes and point of take on Yucca's line so that we can make plans for installing a meter station to service your project.

Very truly yours,

YUCCA WATER COMPANY

Frank
Frank Darden

FD:hd
Encl.
cc: Mr. Marion Foster

EXHIBIT VI-A

WATER FLOOD ASSOCIATES, INC.

301 BOOKER BLDG.
ARTESIA, NEW MEXICO

P. O. BOX 376

PHONE SH 6-6032

NOVEMBER 22, 1961

STATE ENGINEER
SANTA FE, NEW MEXICO

ATTENTION: MR. FRANK IRBY, CHIEF
WATER RIGHTS DIVISION

DEAR MR. IRBY:

AS I DISCUSSED WITH YOU INFORMALLY ON MY RECENT VISIT TO SANTA FE, WE PROPOSE TO INSTITUTE A WATER-FLOOD PROGRAM ON OUR LEASES IN THE NORTH MALJAMAR - ROBINSON AREA, SECTIONS 5, 6, AND 7, T17S, R32E, LEA COUNTY, NEW MEXICO. THESE LEASES ARE NOT IN A DECLARED WATER BASIN.

WE PLAN TO OBTAIN WATER FOR THE PROJECT FROM EITHER CAPROCK WATER COMPANY OR YUCCA WATER COMPANY, BOTH OF WHOM HAVE AGREED TO FURNISH THE WATER.

AS SHOWN ON THE ATTACHED PLAT, WE PROPOSE TO INJECT INTO OUR MITCHELL WELLS NOS. 2 AND 5. THESE WELLS HAVE SURFACE CASING CEMENTED INTO THE SALT SECTION, SET AND CEMENTED THROUGH THE OCHOA SECTION. PRODUCTION CASING IS SET AND CEMENTED AT ABOUT 3800 FEET. ANY WATER ZONES WHICH MAY BE PRESENT IN ANY INJECTION WELL ARE PROTECTED BY TWO STRINGS OF CASING AND TWO CEMENT JOBS. WELL DATA ARE SHOWN ON THE ATTACHED EXHIBIT.

THE CASE COMES UP FOR HEARING BEFORE THE OIL CONSERVATION COMMISSION ON NOVEMBER 29, 1961. WE RESPECTFULLY REQUEST YOUR APPROVAL OF OUR PLANS.

VERY TRULY YOURS

WATER-FLOOD ASSOCIATES, INC.


H. C. PORTER, ENGINEER

EXHIBIT VII

WATER FLOOD ASSOCIATES, INC.

301 BOOKER BLDG.
ARTESIA, NEW MEXICO

PHONE SH 6-6032

P. O. BOX 376

NOVEMBER 22, 1961

MR. JIM KNAUF
U. S. GEOLOGICAL SURVEY
ARTESIA, NEW MEXICO

RE: KENNEDY PROJECT
T 17S, R 32E, LEA COUNTY,
NEW MEXICO

DEAR MR. KNAUF:

AS I DISCUSSED WITH YOU, WE PROPOSE A WATER-FLOOD PROGRAM ON OUR LEASES IN THE NORTH MALJAMAR AND ROBINSON Pools, LEA COUNTY, NEW MEXICO. THESE LEASES ARE SHOWN ON THE ATTACHED PLAT. THE FEDERAL LEASE NUMBERS HAVE BEEN CHANGED AND THE NUMBERS SHOWN ON THE PLAT ARE NOT CORRECT.

WE PROPOSE TO CONVERT OUR MITCHELL 2, SE/4 SE/4 SECTION 6 AND MITCHELL 5, SW/4 NW/4 SECTION 5 TO WATER INJECTION.

PLEASE CONSIDER THIS AS OUR APPLICATION FOR U.S.G.S. APPROVAL FOR THIS PROJECT.

VERY TRULY YOURS,

WATER FLOOD ASSOCIATES, INC.

H. C. Porter
H. C. PORTER, ENGINEER

HCP/WW

EXHIBIT VIII

M^cGRATH & SMITH.
"HUMBLE"

AZTEC

HUDSON

3
2

2
5

1
7

1
24

STATE

STATE

T 16 S

CONTINENTAL
"B"

WATER FLOOD
ASSOC.

CONTINENTAL
"B"

T 17 S R 32 E
LEA COUNTY, N. M.

18
6
12

50
25

G. MITCHELL

6 CONTINENTAL
"A"

WATER FLOOD
ASSOC.

WATER FLOOD
ASSOC.

CONTINENTAL
"A"

5

0
4
0

3 400
76

10

G. MITCHELL
L.C. 029406-A
CONTINENTAL

2 45
35

100
160 70
G. MITCHELL
L.C. 029406-A

20

L.C. 029143

G. MITCHELL
L.C. 029406-A

G. MITCHELL
L.C. 029406-A

G. MITCHELL
L.C. 029406-B

CONTINENTAL
"A"

WATER FLOOD
ASSOC.

CONTINENTAL
"A"

LEONARD NICHOLS

3 29
4

G. MITCHELL
L.C. 029406-A

WATER-FLOOD ASSOCIATES, INC.
INITIAL POTENTIAL & CUMULATIVE RECOVERY
NORTH MALJAMAR FIELD

Key: I.P. (0/0)

Cum. Rec. Thru. BBLs

G. MITCHELL
L.C. 029406-A

G. MITCHELL
L.C. 029406-A

CONTINENTAL
"B"

SCALE: 1" = 1000'

EXHIBIT No. IX & X

01 MCGRATH & SMITH
HUMBLE

AZTEC

02 HUDSON

3.
5, 6 & 8

2.
5, 6 & 8

1.
5, 6 & 8

1.
5, 6 & 8

ZONES 5 & 6 ARE GRAYBURG
ZONE 8 IS LOUINGTON

STATE

STATE

CONTINENTAL
"B"

WATER FLOOD
ASSOC.

CONTINENTAL
"B"

6.
5, 6 & 8

T17S, R32E

5. 5, 6 To BE PERFORATED
8

G. MITCHELL

6 CONTINENTAL
"A"

WATER FLOOD
ASSOC.

WATER FLOOD
ASSOC.

CONTINENTAL
"A"

5

4.

1.

3.
5, 6 & 8

G. MITCHELL
L.C. 029406-A
CONTINENTAL

2.

5, 6 & 8

G. MITCHELL
L.C. 029406-A

G. MITCHELL
L.C. 029406-A

G. MITCHELL
L.C. 029406-A

L.C. 029143

G. MITCHELL
L.C. 029406-B

CONTINENTAL
"A"

WATER FLOOD
ASSOC.

CONTINENTAL
"A"

LEONARD NICHOLS

3.

5 & 6
8 P.B.

WATER-FLOOD ASSOCIATES, INC
NORTH MALJAMAR PROJECT
ZONES of COMPLETION

G. MITCHELL
L.C. 029406-A

G. MITCHELL
L.C. 029406-A

G. MITCHELL
L.C. 029406-A
CONTINENTAL
"B"

EXHIBIT XI

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico

November 29, 1961

EXAMINER HEARING

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325.1182

ALBUQUERQUE, N. M.
PHONE 243.6691

IN THE MATTER OF:

Application of Water Flood Associates, Inc.,
for a waterflood project in the Maljamar and
Robinson Pools, Lea County, New Mexico. Ap-
plicant, in the above-styled cause, seeks
permission to institute a waterflood project
in the Maljamar and Robinson Pools in portions
of Sections 5, 6 and 7, all in Township 17
South, Range 32 East, Lea County, New Mexico.

CASE NO.
2441

BEFORE: Daniel S. Nutter, Examiner

TRANSCRIPT OF HEARING

EXAMINER NUTTER: We will call Case No. 2441.

MR. WHITFIELD: Application of Water Flood Associates,
Inc., for a waterflood project in the Maljamar and Robinson Pools,
Lea County, New Mexico.

MR. KELLAHIN: Jason Kellahin, Kellahin & Fox of Santa
Fe, representing the Applicant. We'll have one witness.

Incidentally, the advertising in this case appears in
the name of Water Flood Associated, Inc. It should be Water Flood
Associates, Inc.

(Witness sworn.)



H. C. PORTER,

called as a witness, having been first duly sworn on oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Will you state your name, please?

A Harold Porter.

Q By whom are you employed and in what position?

A I am an engineer employed by Water Flood Associates, Inc., Ft. Worth, Texas, home office.

Q Have you testified before the Oil Conservation Commission as a petroleum engineer and made your qualifications a matter of record?

A Yes, sir.

MR. KELLAHIN: Are the witness's qualifications acceptable?

EXAMINER NUTTER: Yes, sir.

Q (by Mr. Kellahin) Mr. Porter, are you familiar with the application of Water Flood Associates, Inc., in Case No. 2441?

A Yes, sir. I have made a study of the area itself.

Q Before we get into that, have you prepared a plat showing the area involved?

A Yes, sir, I have an area plat.

Q Is that the plat which has been marked as Applicant's

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Exhibit A?

A Yes, sir.

Q Would you go ahead, please, sir?

A With reference to the brochure marked Exhibit B, the application is for a waterflood permit in the North Maljamar and Robinson Pools of Lea County. The location of the lease involved is an appendix. It is the Mitchell 1 and 2 lease, the Mitchell 3 and 4, and the Mitchell 5 and 6 lease in Sections 5, 6, and 7, Township 17 South, Range 32 East. The Mitchell 5-6 lease is carried in the Robinson Pool. The other leases are carried in the North Maljamar Pool. However, they are the same geologic zones being produced.

Q The intervals are identical in your opinion?

A Yes, sir, they are.

EXAMINER NUTTER: The area which was designated as the North Maljamar Pool has been abolished by Commission Order R-1907. That was done recently, April of 1961.

Q (by Mr. Kellahan) The project area includes how many acres?

A There are 280 acres involved, of which five are producing oil wells, two are plugged and abandoned and one dry hole.

Q Now, what is the geology of the area you're dealing with, Mr. Porter?

A The zones are commonly referred to by the USGS as



zones 5, 6, 7, and 8. However zone 7 is not productive, is not significant in the area. Zones 5, 6 and 8 are the productive zones. Zones 5 and 6 are Grayburg formations. Zone 7 is San Andres lime and zone 8 is the Lovington sand found about 120 feet into the San Andres formation.

Q It is a part of the defined limits of the Maljamar and Robinson pools, is that correct?

A Yes.

Q The Lovington as well as Grayburg?

A Yes, that's correct.

Q What is this, a stratographic trap?

A Yes, it's an elongated stratographic trap. Permeability is controlled on all sides. The limits of production are shown in Exhibit 6, which is a map. As you can notice, I have drawn a line in there showing the limits of production. We have dry holes to the east, south, and to the west, except in the area of 5 and 6. They are not offset by any dry holes or production.

Q With reference to the well in the Southwest of the Southwest of Section -- what section is that on that area map north of 6?

A Section 31. With reference to that well, I have left it out of the limits of production for the reason it has been drilled recently and has made on the order of 7,000 barrels of oil total and is now producing at a very low rate, less than

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one barrel per day, so it is really not a commercial well.

EXAMINER HUTTEN: That would be the No. 1 well in the Southeast of the Southeast of Section 31?

THE WITNESS: Yes, sir.

Q (by Mr. Kellahan) Is that the well belonging to Water Flood Associates?

A McGrath and Smith. However, all those wells, one, two, and three, have produced very little oil.

Exhibit 10 shows the cumulative production which is one, 7,000 barrels; two, 5,000; three, 2,000; and they're all well down in production. So, they're really not what you might call part of this productive area.

Q Would you refer to Exhibit No. 3 attached to Exhibit B and discuss the information, the completion data on those wells.

Q These wells were all drilled by cable tools. The surface casing was set into the salt section through the Eocene Series and the surface casing was cemented with 50 sacks in each instance. The long string was set above the pay section and they were all cemented with 100 sacks of cement. The general practice was to drill the pay zone and simulate production by shooting with nitroglycerine.

Exhibit 3 of Exhibit D shows the casing data, TDs and general well completion data.

Exhibit 4 shows the IPs, present producing rates, cumulative recovery and the stimulations that were given on the

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Wells.

Q Now, this area has been on primary production for some time?

A Yes, sir. The Mitchell No. 1 was drilled in March, 1927 and was the discovery well. It potentialled for a hundred barrels a day. This well produced on the order of 160,000 barrels. Additional development did not occur in this area until 1940, when No. 2 was drilled and then the other wells were drilled up through 1953. Completion dates are shown in Appendix 3. The five producing wells have produced 311,596 barrels of oil.

Q Production generally has declined, has it not?

A Yes, sir.

Q What is the average now?

A The average production now is less than two barrels a day per well.

Q Is that an economical well?

A These wells are nearing their depleted primary state. They're nearing their economic limits.

Q Are you producing any quantities of water?

A No, sir. One well makes a very, very little water but not enough to mention. I would say less than a tenth of a barrel per day.

Q What about the gas-oil ratio?

A The GORs were 50 to 1.



Q In your opinion, are the wells completed to the point that secondary recovery is indicated?

A Yes, sir, they are.

Q How do you propose to inject water in this area, Mr. Porter?

A We would like to inject into Well No. 2 at the location of Section 6 and Well 5 at the location of Section 5. The nature of the reservoir in the elongated shape of the reservoir makes it impossible to have a five-spot or other normal water-flood pattern. It's felt that by the use of these two injection wells and the possible conversion of the wells later, that an efficient sweep of the reservoir may be made by flooding against the pinch-out and permeability.

Q Is that the permeability that you refer to as the limit of production on your Exhibit 6?

A Yes, sir.

Q Will that pattern of flood have any adverse effect on offset operations?

A No, sir, it will not. The only offset operators that we have here are Continental Oil Company in Section 5, 6, and 7 and these wells have not been drilled if there is production there on the north. Now, down to the south of the productive area, that area is defined by dry holes.

Q There are no areas immediately offsetting this to the south, then, are there?



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PAGE 8

A There's no proven area.

Q There are no producing wells?

A No, sir.

Q Do you have any reservoir data available?

A These wells were drilled with cable tools. There are no electric logs, no radioactive logs run. There have been no cores taken. The cable tool sample analyses have shown these wells to be zones 5, 6, 7 and 8 in the Grayburg-San Andres formation.

I have no data as to net pay thickness, porosity, or permeability, absolutely none available.

Q Do you have any estimate of the net pay?

A I have used some rules of thumb that show that the average net pay thickness should be on the order of 18 feet.

Q On what do you base that, Mr. Porter?

A Well, sir, I base it on the primary recovery of 366,000 barrels, or thereabouts, using a 200-acre productive area. As a rule of thumb, that says that you can recover 100 barrels per acre foot for 40-acre spacing, which gives us roughly 18 feet. This is probably more than is there. That's the best way I can determine it.

Q Have you made any estimate of the recoveries to be expected on secondary recovery?

A Yes, sir. Again using a rule of thumb, 1.5 times the primary recovery, I have come up with a recoverable of oil of



480,000 barrels. This is based on the fact that it is now predicted that the Caprock Queen flood will produce 1.4 times as much secondary oil as it did primary oil.

Q What kind of reservoir was this initially, volumetric?

A Yes, sir. There is no high GOR and no water. From all available evidence, the drive is of the solution gas type, volumetric reservoir.

Q Do you have any secondary gas cap present now?

A There is no evidence of any secondary gas cap.

Q What do you anticipate will be injected in the water injection program, what volume?

A We anticipate an initial injection of 500 barrels per day per well with this being reduced later as we get response. The maximum pressure would be 2,000 pounds per square inch. Withdrawal rates are controlled by proration, and it will be necessary to lower the injection volumes.

Q Do you anticipate that the reservoir will take that volume of water?

A Yes, I think it will, to start with. I base this on the Roberts waterflood, which is approximately three miles to the east. These wells took only on the order of 400 to 500 barrels per day initially. Also, in the Square Lake area, where both these pools I mentioned are flooding the same zones in open hole.

Q Do you have about the same pressures at the well head?

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PHONE 325-1182

ALBUQUERQUE, N. M.
PHONE 243-6691

A Yes, sir. We have 2100 pounds in the Roberts field right now.

Q What is the estimated life of this project?

A It's estimated to take on the order of ten years to recover this oil.

Q You have already covered the volume of oil you anticipate you will recover. Will it be possible for you to operate this project within the allowable provisions as presently set up by the Commission rules governing secondary recovery?

A Yes, sir. We are applying subject to Rule 701.

Q Is water available for the purpose of this project?

A Yes, sir. The Caprock Water Company and the Yucca Water Company have both agreed to sell water to us for this project from their commercial water lines which transport water from the shallow Lea County Basin down through the oil field to the Loco Hills area.

Q Their letters are attached to Exhibit B as Exhibits 5A, and 6A, is that correct?

A Yes, sir.

Q Have you made any contract with either one of these companies as yet?

A No, sir. We are negotiating with them to buy water they have offered to sell.

Q What casing program do you have on the injection wells?

A Well No. 2 has 8 5/8-inch service pipe set at 812 feet



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PHONE 243-6691

and cemented with 50 sacks of cement with seven-inch pipe set at 3495 feet cemented with 100 sacks of cement. No. 5 has 8 5/8-inch casing, surface casing set at 905 feet cemented with 50 sacks and a long string of 5 1/2-inch casing set at 3890 feet cemented with 100 sacks. I have calculated the tops of the cement for each individual well and shown it as Exhibit 5. Well No. 1 was drilled in 1927. I have no cement records of that well. I don't know how much was used. It is not now making any water so it's assumed that the well will be all right for production. It's been producing since 1927. Any fresh water which might be present in the area is protected in the injection wells by two strings of casings, two cement jobs. It is anticipated that the wells will be injected initially down the casings without tubing in the wells.

Q Will you inject these wells open hole or are these wells perforated?

A It will be open hole injection, as shown in the completion record.

Q Were Exhibits A and B prepared by you or under your supervision?

A Yes, sir, they were.

MR. KELLIHAN: I'd like to offer Exhibits A and B.

EXAMINER NUTTER: Water Flood Associates' Exhibits A and B will be admitted in evidence.

Q (by Mr. Kellahin) Do you have anything further to add,



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PHONE 243-3691

Mr. Porter?

A We will be injecting into zones 5, 6 and 8. These zones are the same zones which are being waterflooded successfully in the Robinson pool and also in the Square Lake pool. The completions are the same in these pools as in this one. The Robinson production has increased since the first injection to 12,000 barrels a month. The Square Lake zone has increased from 300 barrels a month to 10,000 barrels per month.

MR. KELLAHIN: That's all we have.

EXAMINER NUTTER: Are there any questions of Mr. Porter?

CROSS EXAMINATION

BY EXAMINER NUTTER:

Q You will inject 500 barrels per day per well, is that correct?

A Yes, sir.

Q And then later you will reduce the rate of injection. You didn't specify as to any particular volume.

A No, sir. It is anticipated that we will not be able to get that much water in due to fill-up, lower permeabilities, and also our withdrawals.

Q Injection will be by pressure only?

A Yes.

Q Up to a maximum of 2,000 pounds?

A Yes, sir. There haven't been any wells at all drilled on the east side of this productive area north of the abandoned



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location on the Continental Mitchell A lease.

Q That is shown as a abandoned location, is that correct?

A That is a dry hole.

Q Was that well actually dry?

A Yes, and also Well No. 4 over in Section 6 is a dry hole. Those are dry holes. Wells 3 and 7 are plugged and abandoned wells. They never have made any oil to speak of. They were plugged and abandoned very soon after they were drilled. However, casing was set and they did produce a slight amount of oil.

Q How do you actually know the existence of permeability and porosity around the northern part of the productive limits when only one well has actually been drilled, that being in the Southeast of Section 31?

A Well, there is a dry hole north of the Hudson No. 1 well, the Aztec well there. That is a dry hole. As I said, this is the McGrath-Smith Well No. 1 which has been very poor. It has not been economical. It has only produced 7,000 barrels of oil.

Q When was it completed?

A I don't have the date but it was within the last two or three years. I don't have it with me. The producing rate has fallen off to on the order of one barrel a day. We have applied to Continental for a farm-out of those 80-acre tracts in five and six and they have indicated to us that we will get a



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PHONE 243-5691

farm-out on these at which time we will attempt to further define the field.

Q Whereabouts is that now?

A The two 80s offsetting Wells 5 and 6, the 80 to the west and the 80 acres to the east.

Q Zones 5 and 6 are in the Grayburg formation?

A Yes.

Q Eight is the Lovington sand in the San Andres?

A Yes.

Q What name did you use for zone 7?

A Zone 7 is the permeable zone in the San Andres lime which does produce in some of this Malmajar- Square Lake area.

Q You have no specific name for that?

A No, sir.

Q Now, your 18 feet of net pay thickness was based on a primary recovery of 311,000 barrels with a rule of thumb of 200 barrels per acre foot?

A One hundred.

Q Two hundred productive acres?

A Yes. I just ran that out roughly. It could be -- I think that's too much. I don't have any data to prove it. It probably is not significant, anyhow.

Q Both of these water companies that you have contacted relative to furnishing the water for the flood will be able to furnish water in sufficient quantities to finish this flood out?



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A Yes, sir. They have indicated that they have water rights and enough line capacity for sufficient water for the flood.

Q Is it your anticipation that you will contract with one or the other or both?

A One or the other, yes, sir.

EXAMINER NUTTER: Are there any further questions of Mr. Porter?

THE WITNESS: I would like to state also here that I have discussed this informally with the USGS office at Artesia and they have given verbal approval. I have made formal application and they have told me informally that it will be approved.

Q (by Examiner Nutter) Is it your anticipation to attempt to produce the 3A which is plugged and abandoned and also the Number 7 which is plugged and abandoned?

A No, not at the present time. Based upon the results of the flood, these wells will later be applied for -- permission will be applied for to either produce them or inject into them.

Q Both of them do have a production string of casing in them?

A No, sir. The wells have been plugged and abandoned.

Q Was the casing pulled?

A Yes, sir, and plugged with cement.

Q If you decide to use them as producing wells or injection wells, you will case them?



A Yes, sir.

EXAMINER NUTTER: Are there any further questions of Mr. Porter?

He may be excused.

(Witness excused.)

EXAMINER NUTTER: Does anyone have anything further they wish to offer?

The case will be taken under advisement.

* * * *

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1112

ALBUQUERQUE, N. M.
PHONE 243-6691



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1132ALBUQUERQUE, N. M.
PHONE 243-6691STATE OF NEW MEXICO)
) ss.
COUNTY OF SAN JUAN)

I, THOMAS F. HORNE, NOTARY PUBLIC in and for the County of San Juan, State of New Mexico, do hereby certify that the foregoing and attached transcript of hearing was reported by me in stenotype and that the same was reduced to typewritten transcript under my personal supervision and contains a true and correct record of said proceedings, to the best of my knowledge, skill and ability.

Thomas F. Horne
NOTARY PUBLIC

My Commission Expires:

October 2, 1965

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 2441, heard by me on 11/29, 1961.

[Signature], Examiner
New Mexico Oil Conservation Commission

