Pittsburgh 8, Penn -
Midland, Texas

CITIES SERVICE OIL COMPANY

BOX 97

HOBBS, NEW MEXICO

1956

January 16, 1958

State Engineer
State of New Mexico
Box 1079
Santa Fe, New Mexico

Attn: Mr. Frank E. Irby, Chief, Water Rights Division

Dear Sir:

Your letter of January 13, 1958, concerning the measurement of water from permit wells numbered L-2661, L-2662, L-3451 and L-3452 has been received by this office.

Water from these wells is to be gathered at a central battery, located in the SW/4 of the NW/4, Section 24, T-14-S, R-31-E, Chaves County, New Mexico. From this point the water will be pumped to the filter plant site, which will be located in the NE/4 of the SE/4, Section 3, T-14-S, R-31-E, Chaves County, New Mexico (see attached plat). It is planned to install a meter in the discharge line of the pump which will be located at the central battery. This meter will be a Rockwell "Roto Cycle" or equivalent. Measurement of fluid in this type meter is accomplished as a continuous rotating cycle by true positive displacement. Injected water will be measured at each well head with a Rockwell "Five Pointer" disc type or equivalent meter. The meters herein described are both subject to your approval.

It is proposed to use water from the four permit wells numbered L-2661, L-2662, L-3451 and L-3452 in the following manner: (1) waterflood; (2) dissolve salt in well bore of producing wells; (3) domestic use for company employees; (4) general oil production, drilling and well workover operations.

You will be notified prior to installation of meters for your approval of both equipment and method of installation. Should there be further questions in this matter, please call on me.

Very truly yours,

E. F. Matter
District Engineer

EFM/gb

STATE OF NEW MEXICO

OFFICE OF STATE ENGINEER

IN THE MATTER OF THE PERMITS

OF CITIES SERVICE OIL COMPANY

FILES L-2661, L-2662, L-3451 and L-3452

ORDER REQUIRING THE INSTALLATION OF TOTALIZING METERS ON WELLS USED IN WATER FLOODING PROGRAM.

WHEREAS, the State Engineer approved Applications No. L-2661 and L-2662 on June 9, 1955 and January 17, 1955, respectively, for Kerby & Sons, Inc. of Lovington, County of Lea, State of New Mexico for an annual use of 3.0 acre feet from each well for supplying oil wells for drilling purposes and road contractors within Lea and Chaves Counties.

WHEREAS, the State Engineer approved Applications No. L-3451 and L-3452 on May 9, 1957 for J. J. Kerby and Sons, Inc. for a combined annual use of 465 acre feet per annum to be appropriated from the four wells, L-2661, L-2662, L-3451 and L-3452 for deliveries by this privately owned public utility water company to oil companies and others for domestic use, oil well drilling, oil production operations and various municipal and commercial uses as need arises.

WHEREAS, on the 28th day of October, 1957 Cities Service Oil Company of Roswell, County of Chaves filed changes of ownership stating that they had acquired all of said water rights set forth in file numbers L-2661, L-2662, L-3451 and L-3452.

NOW, THEREFORE, I, S. E. Reynolds, State Engineer of the State of New Mexico, by virtue of the authority vested in me by the laws of said State, do hereby order that prior to any withdrawals from described wells the Cities Service Oil Company shall:

1. Install totalizing water meters on the discharge line of each pump or one meter at the gathering point of discharge from all wells so that the withdrawal for the prescribed purposes from the four wells will be fully and accurately measured.

2. The totalizing meter shall be of a design approved by the State Engineer and installed at the most practical point or points for measuring the water.

3. The discharge line of each pump must be visible from the pump to the meter and the meter or meters must be accessible for reading.

4. Cities Service Oil Company shall notify the State Engineer before said meters are installed.

5. Cities Service Oil Company shall submit records of withdrawal for each calendar year, on or before the 30th day of January of the following year, to the Groundwater Supervisor, District II, Roswell, New Mexico.

WITNESS, my hand and the official seal of my office this 13th day of January, 1958.

S. E. Reynolds
State Engineer

/s/ By: Frank E. Irby

Frank E. Irby
Chief
Water Rights Division

SEAL:

OIL CONSERVATION COMMISSION
P. O. BOX 871
SANTA FE, NEW MEXICO

February 14, 1958

COPY

Mr. Alfred O. Holl
Cities Service Oil Co.
Bartlesville, Oklahoma

Dear Mr. Holl:

We enclose two copies of Order R-1128 issued February 12, 1958, by the Oil Conservation Commission in Case 1356, which was heard on January 7th at Santa Fe.

Very truly yours,

A. L. Porter, Jr.
Secretary - Director

bp
Encls.

OIL CONSERVATION COMMISSION
P. O. BOX 871
SANTA FE, NEW MEXICO

February 14, 1958

COPY

Mr. Jack Campbell
Campbell & Russell
P.O. Box 721
Roswell, New Mexico

Dear Mr. Campbell:

On behalf of your client, Graridge Corporation, we enclose two copies of Order R-1128 issued February 12, 1958, by the Oil Conservation Commission in Case 1356, which was heard on January 7th at Santa Fe.

Very truly yours,

A. L. Porter, Jr.
Secretary - Director

bp
Encls.

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

February 6, 1958

Case No. 1356

Hearing Date: January 7, 1958
Daniel S. Nutter
Santa Fe, New Mexico
9:00 a.m.

My recommendations for an order in the above numbered cases are as follows:

I hesitate to accept the definition of this proposed program as a water-flood, at least in the usual sense of the word. It is true that water is to be injected into certain wells with the aim of flushing oil from the reservoir and producing it from adjoining wells. However, the same basic principle exists in a pressure maintenance program, in that one of the aims is to flush oil from the reservoir and produce it from adjoining wells while another aim is to build up or maintain the reservoir pressure at a level similar to the original pressure of the reservoir or the saturation pressure of the oil.

Water flooding is generally construed to be a secondary recovery process whereby oil is recovered from a reservoir which would not otherwise be recovered, if the producing medium were confined to one of those accepted as primary recovery methods.

We therefore see that water flooding cannot be said to recover any additional oil until the volume of oil which would have been produced without the water flooding has been produced.

It follows that pressure maintenance programs in their early lives are that: pressure maintenance programs, also that in the later stages of depletion when secondary recovery oil volume only is being recovered, that they should be considered as water floods. The question then arises as to the determination of the point at which a pressure maintenance program ceases to be a maintenance program and becomes a secondary recovery program.

Another question to be decided is whether a project at its inception should be classified as a pressure maintenance project or as a secondary recovery project.

This latter determination is important in view of the previous determinations by the Commission with regard to allowables for these two types of projects.

The Commission has on previous occasions:

1. Authorized water flood projects with allowables and production restricted to the total allowable of all developed tracts with the privilege of producing said allowable from any well or wells.
2. Authorized water flood projects to produce any amount of oil from any well or wells without restriction, providing the operator requested authority to so produce the well.
3. Authorized pressure maintenance projects to produce the top allowable from each well with allowable credit given for injection wells, said injection well allowable eligible for production from any well or wells in the project.

It is apparent that more allowable advantages, to date at least, have been granted to the water flood type of project. The advocates of the capacity allowables referred to in 2 above admitted the possibility of water flood oil obtaining a non-proportional share of the total market for New Mexico oil if certain curtailments were not made. The recommended curtailments would be achieved by limiting the number of water flood projects or by limiting the expansion of existing projects.

Another obvious way of limiting the amount of capacity allowable, to not glut the market with such oil to the detriment of primary recovery fields and exploration, is to prevent any but bonafide water floods from being operated at capacity allowables. It is apparent that if pressure maintenance projects should ever be granted capacity allowables, that by the mere expediency of injecting some water into a few wells an entire pool in its early stage of depletion could be produced at capacity.

The applicant in this case has maintained that "pressure maintenance to be strictly pressure maintenance, ought to be applied above the saturation pressure of the fluid". It is agreed that the reservoir pressure in the subject area is considerably below the saturation pressure of some 900 + pounds, being in the neighborhood of some 260 pounds.

However the production of oil in this area has not declined to a stripper stage at which it may be said that water flooding is the only means of producing additional oil, the four proposed injection wells having a total productive capacity in excess of 2,000 barrels of oil, per month. In view of the serious considerations involved in permitting any but the most unquestionable projects to be classified as water floods and eligible for consideration of capacity allowables, I recommend that the application of Cities Service for a pilot water flood be denied, but that the applicant be permitted to inject water into this reservoir through the proposed wells in an effort to stimulate the primary recovery.

Further, that the applicant be required to limit the amound of water injected into the four injection wells to an amount that will permit limiting the production without waste to only that amount of oil obtained by assigning top allowable to those wells on the lease which, by bottom hole pressure data and productivity data, indicate that the injection project is having a marked effect upon them, plus the top allowable for injection wells. The allowable for the injection wells should be permitted to be produced from any such affected adjoining well or wells.