



WFA - 109
New State June 27

SHELL OIL COMPANY

P. O. Box 1858
Roswell, New Mexico

22
June 4, 1962

Subject: Townsend Wolfcamp Field
Lea County, New Mexico
Pilot Waterflood Project
N.M.O.C.C. Order No. R-2053
Application for Change of
Injection Well

New Mexico Oil Conservation Commission
P. O. Box 871
Santa Fe, New Mexico

Gentlemen:

Shell Oil Company, as operator of the subject Pilot Waterflood Project, and in compliance with Rule 701 of N.M.O.C.C. Rules and Regulations, requests administrative approval to transfer water injection operations from Texas Pacific Coal and Oil State J Well No. 2, NE/4 SW/4 of Section 10-16S-35E, to Pure Oil Company Lea State "A" Well No. 4, SE/4 NW/4 of Section 10-16S-35E. In support of this application we enclose:

1. A plat of the Pilot Area and vicinity showing structure, status of wells, ownership of leases, water source well, shut-in injection well, and proposed injection well.
2. A schematic drawing describing the casing program, perforated interval, and work program for the proposed injection well.
3. An electrical log of the proposed injection well.
4. Receipts for registered letters to the State Engineer and offset operators to the injection well. These letters contained a copy of this application for change of injection well plus a covering letter (copy enclosed). All offset operators excepting Messrs. Brunson and Laughlin are signators to an operating agreement providing for the proposed change of injection well.

In support of the subject application, we also furnish the following information:

1. NMOCC Order No. R-2053, dated September 7, 1961, authorized a single-injector Pilot Waterflood Project Area in the Townsend Wolfcamp Field consisting of Section 10-16S-35E. This order further authorized injection of water into the Wolfcamp formation in the interval 10,552 feet to 10,592 feet in Texas Pacific Coal and Oil Company State "J" Well No. 2.

2. Water injection was duly begun as authorized on November 21, 1961, at an average rate of 278 BWPD after a 2500 gallon acid treatment. Subsequent retreatment with 6000 gallons of acid failed to increase receptivity to water injection.

3. The obtainable injection rate in the present injection well is not considered representative for an average Townsend Wolfcamp well. Further, the low injection rate will result in a prohibitively long pilot injection program.

4. In view of the poor receptivity of the injection well, water injection operations were terminated January 9, 1962, after a cumulative of 11,744 barrels had been injected.

5. All parties to the Townsend Pilot Waterflood Project have agreed to transfer injection operations to Pure Lea State "A" Well No. 4.

6. The proposed injection well, Pure Lea State "A" Well No. 4 is located at an inside location in an existing, State approved Pilot Waterflood Area.

7. The proposed injection well is presently non-productive.

8. Primary production performance is indicative of an average Townsend well with good interwell communication.

9. Net pay interval is satisfactorily uniform around the proposed injection well.

10. The only change to the original water injection program is a change of injection well.

11. An injection rate of approximately 1000 BWPD into the Wolfcamp formation interval 10,567 feet to 10,609 feet is anticipated for the proposed injection well. As before, saline water from the Santa Rosa formation obtained from Humble State AL Well No. 1 will be used with a possible supplement of water produced from the Townsend Wolfcamp Field.

Very truly yours,



R. L. Rankin
Division Production Manager



SHELL OIL COMPANY

P. O. Box 1858
Roswell, New Mexico

June 4, 1962

Subject: Pilot Waterflood
Townsend Wolfcamp Field
Lea County, New Mexico
Change of Injection Well

New Mexico State Engineer
P. O. Box 1079
Santa Fe, New Mexico

Brunson and Laughlin
P. O. Box 1207
Hobbs, New Mexico

Pan American Petroleum Corporation
P. O. Box 1410
Fort Worth, Texas
Attention Mr. Bruce A. Landis, Jr.

The Pure Oil Company
First City National Bank Building
Houston 2, Texas
Attention Mr. J. W. Collier

The Superior Oil Company
P. O. Box 1521
Houston 1, Texas
Attention Mr. L. J. Willis

Texas Pacific Coal & Oil Company
P. O. Box 1688
Hobbs, New Mexico

Gentlemen:

In compliance with Rule 701, Rules and Regulations of the New Mexico Oil Conservation Commission, Shell Oil Company as operator of the Townsend Wolfcamp Pilot Waterflood project hereby presents notification that application is being made to the N.M.O.C.C. for administrative approval to transfer water injection operations of the subject Pilot Waterflood to Pure Lea State "A" Well No. 4, SE/4 NW/4 of Section 10-16S-35E. Enclosed is a copy of the application letter which presents details of the proposed transfer.

Rule 701 stipulates that the Secretary-Director may authorize conversion of additional wells to water injection "without notice or hearing, provided that no offset operator nor the State Engineer objects to the proposed conversion within fifteen (15) days".

Please direct questions with regard to this application to:

Shell Oil Company
P. O. Box 1858 (Phone MAIN 2-3242)
Roswell, New Mexico
Attention Mr. D. D. Stokes

Very truly yours,

R. L. Rankin
Division Production Manager

Enclosure

No. 698118

RECEIPT FOR CERTIFIED MAIL—20¢

SENT TO New Mexico State Engineer		POSTMARK OR DATE 6-6-62
STREET AND NO. P. O. Box 1079		
CITY AND STATE Santa Fe, New Mexico		
If you want a return receipt, check which <input checked="" type="checkbox"/> 10¢ shows to whom and when delivered <input type="checkbox"/> 35¢ shows to whom, when, and address where delivered <input type="checkbox"/> If you want restricted delivery, check here <input type="checkbox"/> 50¢ fee		

FEEs ADDITIONAL TO 20¢ FEE

POD Form 3800
Dec. 1960

CAUTION—NOT FOR INTERNATIONAL MAIL

(See other side)

No. 698119

RECEIPT FOR CERTIFIED MAIL—20¢

SENT TO Mr. E. W. Laughlin		POSTMARK OR DATE 6-6-62
STREET AND NO. P. O. Box 2234		
CITY AND STATE Hobbs, New Mexico		
If you want a return receipt, check which <input type="checkbox"/> 10¢ shows to whom and when delivered <input type="checkbox"/> 35¢ shows to whom, when, and address where delivered <input type="checkbox"/> If you want restricted delivery, check here <input type="checkbox"/> 50¢ fee		

FEEs ADDITIONAL TO 20¢ FEE

POD Form 3800
Dec. 1960

CAUTION—NOT FOR INTERNATIONAL MAIL

(See other side)

No. 698120

RECEIPT FOR CERTIFIED MAIL—20¢

SENT TO Pan American Pet. Corp.		POSTMARK OR DATE 6-6-62
STREET AND NO. P. O. Box 1410		
CITY AND STATE Fort Worth, Texas		
If you want a return receipt, check which <input checked="" type="checkbox"/> 10¢ shows to whom and when delivered <input type="checkbox"/> 35¢ shows to whom, when, and address where delivered <input type="checkbox"/> If you want restricted delivery, check here <input type="checkbox"/> 50¢ fee		

FEEs ADDITIONAL TO 20¢ FEE

POD Form 3800
Dec. 1960

CAUTION—NOT FOR INTERNATIONAL MAIL

(See other side)

No. 698121

RECEIPT FOR CERTIFIED MAIL—20¢

SENT TO The Pure Oil Company		POSTMARK OR DATE 6-6-62
STREET AND NO. 1st National Bank Bldg.		
CITY AND STATE Houston 2, Texas		
If you want a return receipt, check which <input checked="" type="checkbox"/> 10¢ shows to whom and when delivered <input type="checkbox"/> 35¢ shows to whom, when, and address where delivered <input type="checkbox"/> If you want restricted delivery, check here <input type="checkbox"/> 50¢ fee		

FEEs ADDITIONAL TO 20¢ FEE

POD Form 3800
Dec. 1960

CAUTION—NOT FOR INTERNATIONAL MAIL

(See other side)

No. 698122

RECEIPT FOR CERTIFIED MAIL—20¢

SENT TO The Superior Oil Company		POSTMARK OR DATE 6-6-62
STREET AND NO. P. O. Box 1521		
CITY AND STATE Houston 1. Texas		
If you want a return receipt, check which <input checked="" type="checkbox"/> 10¢ shows to whom and when delivered		If you want restricted delivery, check here <input type="checkbox"/> 50¢ fee
<input type="checkbox"/> 35¢ shows to whom, when, and address where delivered		
FEEs ADDITIONAL TO 20¢ FEE		

POD Form 3800
Dec. 1960**CAUTION—NOT FOR
INTERNATIONAL MAIL**

(See other side)

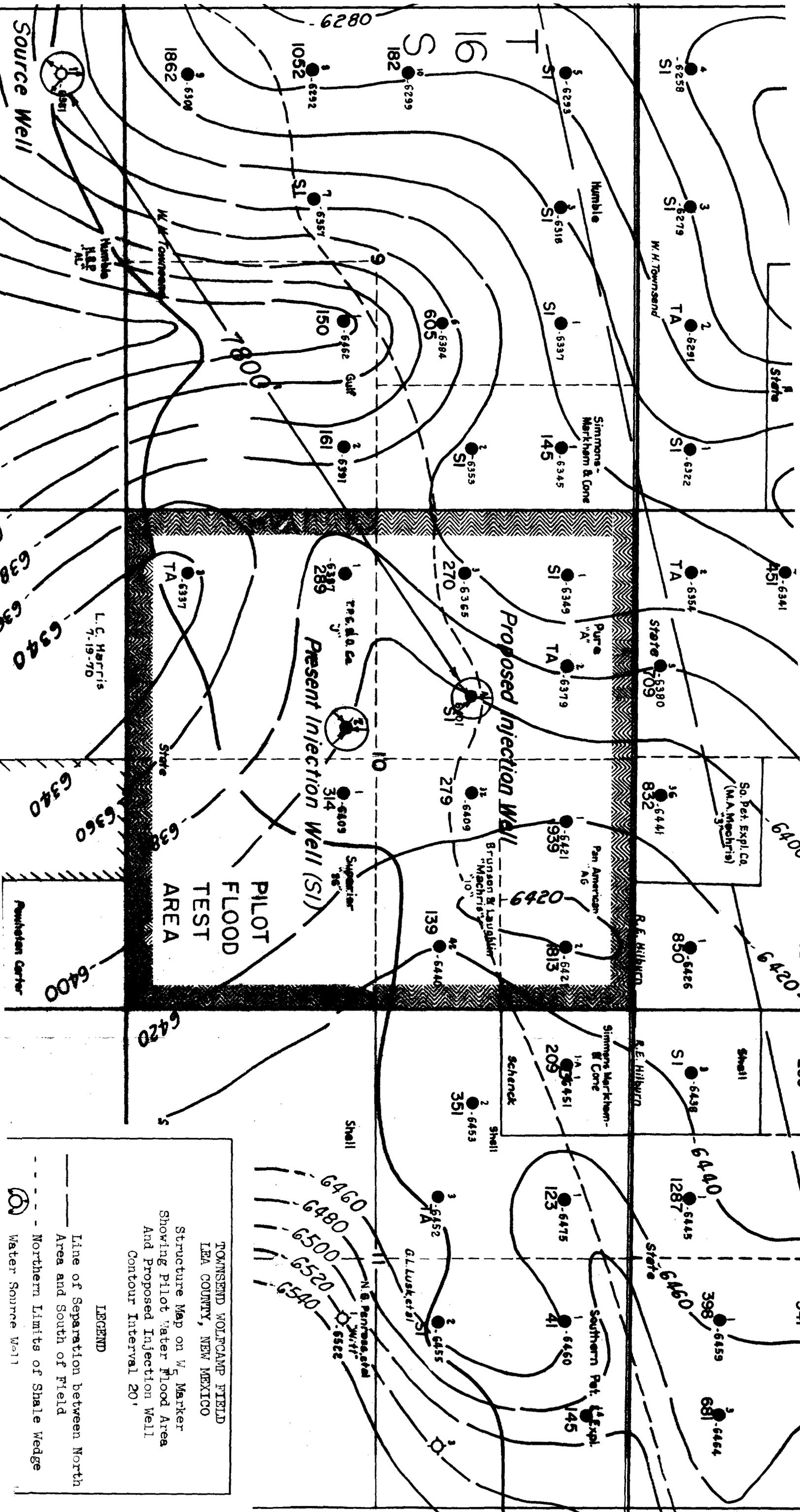
No. 698123

RECEIPT FOR CERTIFIED MAIL—20¢

SENT TO Texas Pacific Coal & Oil		POSTMARK OR DATE 6-6-62
STREET AND NO. P. O. Box 1688		
CITY AND STATE Hobbs, New Mexico		
If you want a return receipt, check which <input checked="" type="checkbox"/> 10¢ shows to whom and when delivered		If you want restricted delivery, check here <input type="checkbox"/> 50¢ fee
<input type="checkbox"/> 35¢ shows to whom, when, and address where delivered		
FEEs ADDITIONAL TO 20¢ FEE		

POD Form 3800
Dec. 1960**CAUTION—NOT FOR
INTERNATIONAL MAIL**

(See other side)



TOMPENSE WOLF CAMP FIELD
 LEA COUNTY, NEW MEXICO

Structure Map on W5 Marker
 Showing Pilot Water Flood Area
 And Proposed Injection Well
 Contour Interval 20'

LEGEND

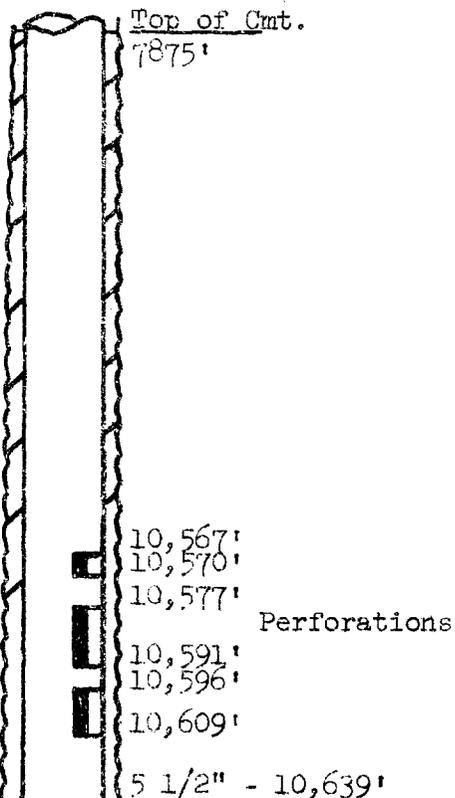
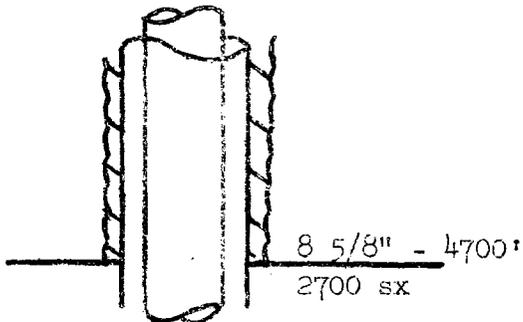
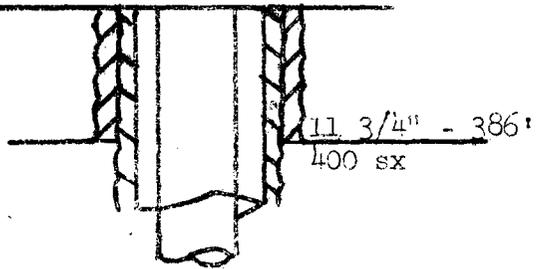
- Line of Separation between North Area and South of Field
- - - Northern Limits of Shale Wedge
- Water Source Well

TOWNSEND FIELD
 LEA COUNTY, NEW MEXICO
 PILOT WATERFLOOD
 REPLACEMENT INJECTION WELL

PURE LEA STATE A-4
 SE/4 NW/4 Section 10-16S-35E
 Elev. 4027'

Work Program

1. Pull tubing.
2. Rerun tubing with packer.
3. Spot inhibited water in casing-tubing annulus.
4. Set packer at approximately 10,500'.
5. Begin water injection.
6. If required, acid treat perforations.



Top of Wolfcamp
 producing zone

10,567'
 10,570'
 10,577'

Perforations

10,591'
 10,596'

Bottom of
 producing zone

10,609'

5 1/2" - 10,639'

PLAIN COPY OF 000
JUN 15 1962 9 13

June 15, 1962

C
Mr. R. L. Rankin
Division Production Manager
Shell Oil Company
Roswell, New Mexico

Dear Mr. Rankin:

O
Reference is made to your application to the Oil Conservation Commission under date of June 4, 1962 which seeks approval for a change of injection well. In order that I may determine whether the State Engineer should file Waiver with the Oil Conservation Commission, it will be necessary for me to have a copy of your Item 1, Plat of the Pilot Area and 2, a copy of your schematic drawing describing the casing program. Also you are requested to advise me whether injection will be down tubing under packer or down casing. If injection is through tubing where will packer be set with reference to top of cement in annulus surrounding production string? What is the maximum injection pressure anticipated?

P
Y
If all pertinent detailed data concerning casing and cementing program are given in the schematic drawing, I believe the information requested will be sufficient for me to make my determination.

Very truly yours,

S. E. Reynolds
State Engineer

By:
Frank E. Irby
Chief
Water Rights Division

FRI/ma
cc-Mr. A. L. Porter, Jr.
F. H. Hennighausen

Reproduced By
West Texas Electrical Log Service
 1305 Commerce Street
 Dallas 1, Texas

REFERENCE N° W 4643 -D

SCHLUMBERGER WELL SURVEYING CORPORATION
 2075 10th, Texas



Electrical Log

FIELD or LOCATION, Lea. State A # 4 WELL COMPANY Pure Oil Co.	COMPANY PURE OIL CO. #	Location of Well 1650' f NL 1997' f WL Sec. 10-16S-35E
	WELL LEA. STATE A # 4	ES (ML)
	FIELD TOWNSEND	Elevation: D.F.: 4027 K.B.: G.L.:
	LOCATION SEC. 10-16S-35E	FILING No.
COUNTY LEA		
STATE NEH MEXICO		

RUN No.	6-10-54				
1st Reading	10634				
2nd Reading	4700				
Net Measured	5934				
g. Schlum.	4700				
g. Driller	4700				
Depth Reached	10637				
Bottom Driller	10641				
Depth Datum	KDB 15' Adv. 6L				
Fluid No.	Gel-Chemicals				
Density	9.0				
Viscosity	46				
Resist.	1.08 @ 74 F	@	F	@	F
Res. BHT	52 @ 155 F	@	F	@	F
pH	12 @ F	@	F	@	F
Wir. Loss	2 CC 30 min.	CC 30 min.	CC 30 min.	CC 30 min.	CC 30 min.
Box Temp. F	155				
Size	7 7/8"				
AM	10"				
A	32" LS				
AO	19"				
Dr. Rig Time	2 Hrs.				
Jack No.	1759-Hobbs				
Recorded By	Bayless				
Witness B.					

FOLD HERE

MARKS

THIS IS NOT A COMPLETE REPRODUCTION OF THE ORIGINAL LOG.

Spontaneous Potential millivolts	DEPTHS	RESISTIVITY -ohms. m ² /m
20	20	10" Normal 150



RECEIVED JUN 22 1962

1962 JUN 22 11 01 AM '62

STATE OF NEW MEXICO
STATE ENGINEER OFFICE
SANTA FE

S. E. REYNOLDS
STATE ENGINEER

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

June 21, 1962

Mr. A. L. Porter, Secretary Director
New Mexico Oil Conservation Commission
P. O. Box 871
Santa Fe, New Mexico

Dear Mr. Porter:

Reference is made to the application of Shell Oil Company under date of June 4, 1962, which seeks approval for a change of injection well. Reference is also made to my letter of June 15, 1962, addressed to Shell's Division Production Manager a copy of which was forwarded to you and to Shell's reply to my letter enclosing the information which I requested. A copy of Shell's letter is herewith enclosed. In view of their statement that they plan to inject through tubing with packer set at 10,500 feet which is well below at the top of the cement in the annulus surrounding the production string; that they plan to inject 100 barrels per day by gravity and plan a maximum injection pressure of 500 psi, it is concluded that no threat of contamination to any fresh waters which may exist in the area will occur, therefore this office offers no objection to the granting of their application.

Very truly yours,

S. E. Reynolds
State Engineer

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

FEI;hmv

cc: R. L. Rankin
Fred H. Hennighausen



SHELL OIL COMPANY

P. O. Box 1858
Roswell, New Mexico

June 18, 1962

1962 JUN 20 PM 1:42
STATE ENGINEER OFFICE
SANTA FE, N. M.

Subject: Pilot Waterflood
Townsend Wolfcamp Field
Lea County, New Mexico

State of New Mexico
State Engineer Office
State Capital
Santa Fe, New Mexico

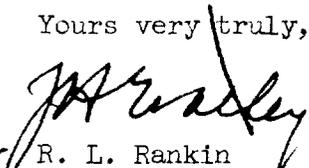
Attention Mr. S. E. Reynolds, State Engineer

Dear Mr. Reynolds:

In answer to your request of June 15, 1962, we attach (1) a plat of the subject Pilot Area and (2) a copy of the schematic drawing showing the casing program in the proposed injection well. We plan to inject through tubing with packer set at 10,500 feet; approximately 2600 feet below the top of cement in the annulus surrounding the production string. Our current plans call for injection of 1000 barrels of water per day by gravity; however, we are equipped to go to a maximum surface pressure of 500 psi if the injection rate under gravity proves inadequate.

We regret the omission of attachments on your copy of our application to the Oil Conservation Commission and hope the data furnished herein will be adequate.

Yours very truly,


for R. L. Rankin
Division Production Manager

Reproduced By
West Texas Electrical Log Service

1305 Commerce Street
Dallas 1, Texas

REFERENCE N° W 4643 -D ✓

SCHLUMBERGER WELL SURVEYING CORPORATION
HOUSTON, TEXAS



Electrical Log

COUNTY LEA FIELD or LOCATION Townsend WELL LEA State A # 4 COMPANY Pure Oil Co.	COMPANY PURE OIL CO. #	Location of Well 1650' f NL 1997' f WL Sec. 10-16S-35E
	WELL LEA STATE A # 4	
	FIELD TOWNSEND	ES (ML)
	LOCATION SEC. 10-16S-35E	Elevation: D.F.: 4027 K.B.: G.L.:
COUNTY LEA		
STATE NEW MEXICO	FILING No.	

RUN No.	1								
Date	6-10-54								
First Reading	10634								
Last Reading	4700								
Feet Measured	5934								
Csg. Schium.	4700								
Csg. Driller	4700								
Depth Reached	10637								
Bottom Driller	10641								
Depth Datum	KDB 15' Adv. 6L								
Mud Nat.	Gel-Chemicals								
" Density	9.0								
" Viscosity	46								
" Resist.	1.08 @ 74° F	@	F	@	F	@	F	@	F
" Res. BHT	52 @ 155° F	@	F	@	F	@	F	@	F
" pH	12 @ F	@	F	@	F	@	F	@	F
Wtr. Loss	8.2 CC 30 min.	CC 30 min.	CC 30 min.	CC 30 min.	CC 30 min.	CC 30 min.	CC 30 min.	CC 30 min.	CC 30 min.
Max. Temp. F	155								
Bit Size	7 7/8"								
Spccs. - AM	10"								
A	32" LS								
AO	19"								
Opr. Rig Time	2 Hrs.								
Truck No	1759-Hobbs								
Recorded By	Bayless								
Witness B.									

FOLD HERE

REMARKS

THIS IS NOT A COMPLETE REPRODUCTION OF
THE ORIGINAL LOG.

SPONTANEOUS-POTENTIAL millivolts	DEPTHS	RESISTIVITY -ohms. m ² /m
120	20	10" Normal 150