

CASE 3120: Application of DR.
SAM G. DUNN for review of Com-
mission's Directive of 8/27/64.

Dockets to be mailed to:

Dr. Sam G. Dunn ✓
1312 Main Street
Lubbock, Texas

H. E. Barnes ✓
Box 1057
Roswell, New Mexico

Ray Smith Drilling Company ✓
409 Wilkinson - Foster Bldg.
Midland, Texas

Barnes and Swanson ✓
Box 1057
Roswell, N.M.

Mr. J. J. Travis ✓
Box 873
Midland, Texas

Mr. John Anderson
USAS - Roswell, N.M.

Mr. Frank Gily

DOCKET MAILLED

Date 10-1-64

State Engineer's Office
PO Box 1717
Roswell, New Mexico

CASE No.
3120

Application,
TRANSCRIPTS,
SMALL Exhibits
ETC.

OIL CONSERVATION COMMISSION

P. O. BOX 2088

SANTA FE, NEW MEXICO

March 22, 1965

VIA AIR MAIL

Dr. Sam G. Dunn
1312 Main Street
Lubbock, Texas

Dear Dr. Dunn:

This letter will confirm the Commission's verbal authorization given Friday, March 19, 1965, to place the following wells on production:

Elliott Federal Well No. 1, located in Unit O of Section 33, Township 6 South, Range 26 East,

Elliott Federal Well No. 2, located in Unit O of Section 33, Township 6 South, Range 26 East,

Pendergrass Well No. 2, located in Unit E of Section 4, Township 7 South, Range 26 East,

Beadle Well No. 3, located in Unit P of Section 5, Township 7 South, Range 26 East, and

Lavers State Well No. 1-P, located in Unit P of Section 32, Township 7 South, Range 26 East,

all in Chaves County, New Mexico.

C
O
P
Y

OIL CONSERVATION COMMISSION

P. O. BOX 2088

SANTA FE, NEW MEXICO

-2-

March 22, 1965

Dr. Sam G. Dunn
1312 Main Street
Lubbock, Texas

C
O
P
Y

As satisfactory arrangements have been made with the Commission, the State Engineer, and the U.S.G.S. to assure compliance with Order No. R-2788, the shut-in notice of March 11, 1965, is hereby rescinded. The production and transportation of oil from the above wells is hereby authorized.

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

AJP/er

cc: McWood Corporation
P. O. Box 330
Abilene, Texas
(Via Air Mail)

Mr. M. L. Armstrong
Supervisor, District 2
Oil Conservation Commission
Drawer DD
Artesia, New Mexico

State Engineer
Box 1717
Roswell, New Mexico

Mr. Frank Irby
State Engineer Office
Capitol Building
Santa Fe, New Mexico

Mr. John Anderson
Regional Supervisor
United States Geological
Survey
Drawer 1857
Roswell, New Mexico

GOVERNOR
JACK M. CAMPBELL
CHAIRMAN

State of New Mexico
Oil Conservation Commission



LAND COMMISSIONER
GUYTON B. HAYS
MEMBER

P. O. BOX 2088
SANTA FE

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

LEGAL DIVISION
PHONE 827-2741

March 19, 1965

MEMORANDUM


TO: THE FILE

FROM: J. M. DURRETT, Jr., GENERAL COUNSEL

SUBJECT: DR. DUNN, RELEASE OF SHUT IN

Mose telephoned and stated that he, Bill Gressett, Mr. Collins from the State Engineer's Office, and Mr. Shook from the U.S.G.S. had inspected Dr. Dunn's installation on this date and verbally authorized all of the wells to be placed back on production. Mose advised that Dr. Dunn had installed pipe from the tank bottoms to the lined salt water disposal pits in order to assure that the tanks were drained into the pits and not on the ground. Mr. McFadden was not present during the inspection and could not be located at his house, but verbal authority to place the wells back on production was given to four men working on the tank batteries.

I informed Mose that Mr. Porter would write a letter Monday informing Dr. Dunn and the transporter that authority had been given to place the wells back on production.


J. M. DURRETT, Jr.
GENERAL COUNSEL

cc: Mr. Frank Irby
and
Mr. Harlan Flint
State Engineer Office
Santa Fe

GOVERNOR
JACK M. CAMPBELL
CHAIRMAN

State of New Mexico
Oil Conservation Commission



LAND COMMISSIONER
GUYTON B. HAYS
MEMBER

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

P. O. BOX 2088
SANTA FE

March 11, 1965

CERTIFIED - RETURN
RECEIPT REQUESTED

VIA AIR MAIL - SPECIAL DELIVERY

Dr. Sam G. Dunn
1312 Mair Street
Lubbock, Texas

Dear Mr. Dunn:

This letter will notify you that the following wells have been shut in by the Commission for violation of Commission Order No. R-2788:

Elliott Federal Well No. 1, located in Unit O of Section 33, Township 6 South, Range 26 East,

Elliott Federal Well No. 2, located in Unit O of Section 33, Township 6 South, Range 26 East,

Pendergrass Well No. 2, located in Unit E of Section 4, Township 7 South, Range 26 East,

Beadle Well No. 3, located in Unit P of Section 5, Township 7 South, Range 26 East, and

Levers State Well No. 1-F, located in Unit F of Section 32, Township 7 South, Range 26 East

all in Chaves County, New Mexico.

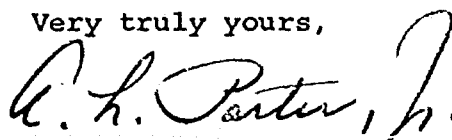
March 11, 1965

Dr. Sam G. Dunn
1312 Main Street
Lubbock, Texas

These wells were shut in on Wednesday, March 10, 1965, under my direction by Mr. M. L. Armstrong of our Artesia Office following a field inspection by Mr. Armstrong, a representative of the State Engineer's Office, and a representative of the U.S.G.S. in Roswell.

No production or transportation of oil from the above wells will be permitted until satisfactory arrangements have been made with the Commission, the State Engineer, and the U.S.G.S. to assure compliance with Order No. R-2788 and you have been notified in writing by the Commission that the wells may be placed on production.

Very truly yours,



A. L. PORTER, Jr.
Secretary-Director

ALP/esr

Copy to:

McWood Corporation
P. O. Box 330
Abilene, Texas
(Certified - Return
Receipt Requested and
Via Air Mail, Special
Delivery)

Mr. M. L. Armstrong
Supervisor, District 2
Oil Conservation Commission
Drawer DD
Artesia, New Mexico

State Engineer
Box 1717
Roswell, New Mexico

Mr. Frank Irby
State Engineer Office
Capitol Building
Santa Fe, New Mexico

Mr. John Anderson
Regional Supervisor
United States Geological Survey
Drawer 1857
Roswell, New Mexico

*file
Salt Water case*

S. E. REYNOLDS
STATE ENGINEER



STATE OF NEW MEXICO
STATE ENGINEER OFFICE
SANTA FE

March 12, 1965

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

Mr. Jim Durrett, Attorney
Oil Conservation Commission
Santa Fe, New Mexico

Dear Mr. Durrett:

Enclosed herewith is a copy of R. B. Collins' memorandum dated March 11, 1965 pertaining to Dr. Sam G. Dunn's operations. Attached to this memorandum are five photographs with explanation for each. I have requested Mr. Collins to supply a complete set of the photographs so that I may transmit them to you for a clearer understanding of his memorandum.

Yours truly,

S. E. Reynolds
State Engineer

FEI/ma
encl.

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

MEMORANDUM

State Engineer Office
Roswell, New Mexico
March 11, 1965

TO: Frank E. Irby

FROM: R. B. Collins, Jr.

SUBJECT: Brine disposal in unlined pits in the Linda San Andres Oil Pool, Townships 6 and 7 North, Range 26 East, N.M.P.N., Graves County, New Mexico.

On March 9, 1965, I made an inspection of all of the oil wells and brine disposal pits in the subject area.

On the Dr. Sam G. Dunn Levers State lease, in the NW $\frac{1}{4}$ of Section 32, Township 7 South, Range 26 East, a large plastic-lined pit has been constructed for the disposal of produced brine. Several barrels of brine and slush had been released from the oil tank and did not go into the lined pit but traveled about 60' in an earthen ditch where it collected in a 6' X 20' loose earthen unlined pit which is on the west side of the lined brine pit. This brine was about 3' deep in the unlined pit.

On the Dr. Sam G. Dunn Beadle lease in the SW $\frac{1}{4}$ of Section 5, Township 7 South, Range 26 East, the Beadle No. 3 well was found to be pumping fluid into the top of a tank truck and expelling brine from a pipe in the bottom of the tank. This brine was running into the unlined drilling mud pit which is about 8' wide, 65' long and had about 3' of brine in it.

On the Dr. Sam G. Dunn Pendergrass lease in the NW $\frac{1}{4}$ of Section 4, Township 7 South, Range 26 East, the Pendergrass No. 2 well was being swabbed. The produced fluid was being caught in a steel oil tank and the brine was drawn from the bottom of this tank into two unlined earthen pits about 8' X 40' and about 4' deep; both pits were full.

On the Dr. Sam G. Dunn Elliott Federal lease, in the SW $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 33, Township 6 South, Range 26 East there was much evidence of wet sand, salt crystals, and basic oil sediment indicating that the oil tanks had been drained on the open sandy soil.

In the late afternoon of March 9, 1965, Bill Gressett of the Artesia office of the Oil Conservation Commission was advised of the above noted conditions.

On March 10, 1965, I accompanied Mose Armstrong and Bill Gressett to the Linda San Andres area where Mr. Armstrong posted shut down notices on the above wells and the attached photographs were made.

R. B. Collins, Jr.

RECEIVED

FILED

JUN 1 1965



STATE OF NEW MEXICO

STATE ENGINEER OFFICE
SANTA FE

S. E. REYNOLDS
STATE ENGINEER

March 16, 1965

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

Mr. Jim Durrett, Attorney
Oil Conservation Commission
Santa Fe, New Mexico

Dear Mr. Durrett:

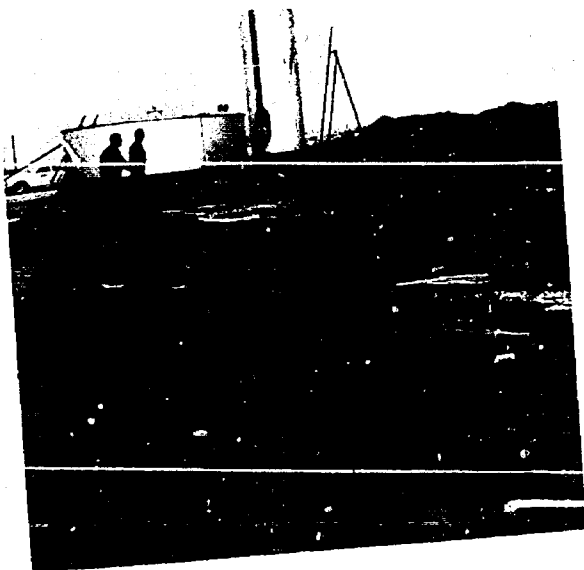
Enclosed herewith are the photographs to be attached to
Mr. R. B. Collins' report of March 11, 1965 pertaining to
Dr. Sam G. Dunn's operations.

Yours truly,

S. E. Reynolds
State Engineer

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

FEI/ma
encl.



Dr. Sam G. Dunn Lever State Lease

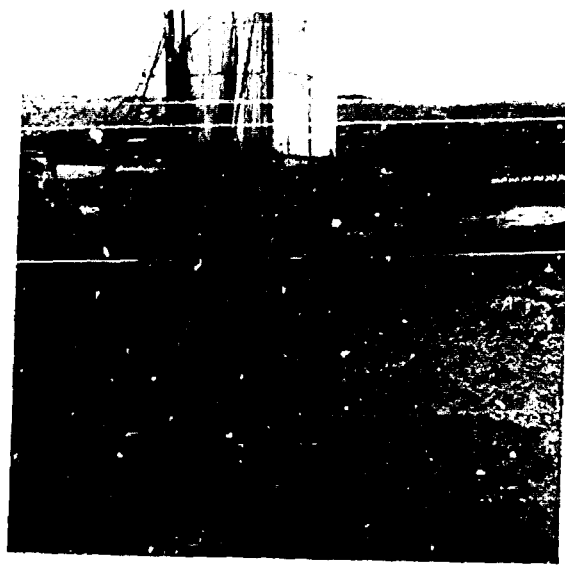
Photograph was made on March 10, 1965, and shows part of the disposed brine on the outside of the lined pit. On March 9, 1965, this small unlined pit was full; however, most of the brine had seeped into the soil when this picture was taken.



Dr. Sam G. Dunn Beadle Lease

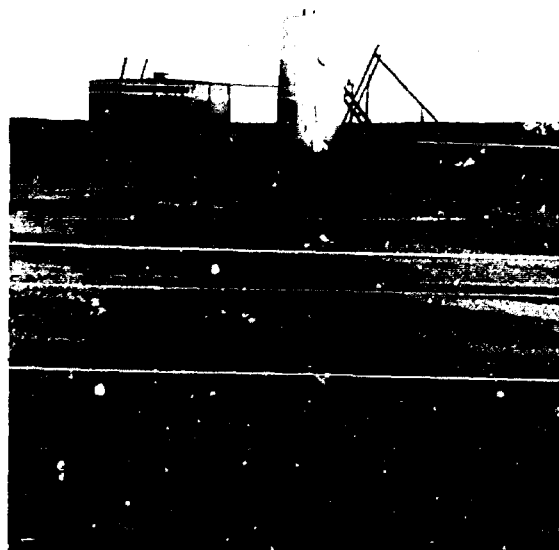
Both photographs were made on March 10, 1965. The top picture is a close up of the area where produced brine has evaporated leaving salt on the surface. The bottom picture shows tank truck and unlined pit where brine was discharged; this pit was about 3' deep in brine on March 9, 1965.





Dr. Sam G. Dunn Pendergrass Lease

Photograph was made March 10, 1965, and shows part of the two pits full of the produced brine.



Dr. Sam C. Dunn Elliott Federal Lease

Photograph was made March 10, 1965, and shows part of the area of wet sand, salt crystals, and basic oil sediment from the bottom of the oil tank seen in background.

SAM G. DUNN, M.D., F.A.C.S.

O. L. STALCUP, JR., M. D.

FROM THE SURGICAL SECTION
OF

SAM G. DUNN, M.D., F.A.C.S.

WEST TEXAS CLINIC
LUBBOCK, TEXAS

March 14, 1965

*Rec'd
March 17, 1965*

Mr. A.L. Porter, Jr.
New Mexico Oil Conservation Commission
Box 2088
Santa Fe, New Mexico

Dear Mr. Porter:

My apologies for bothering you again relative to the shutoff of our leases in Chaves County. Were it not so vital for me to get back on production, particularly on the Pendergrass, Beadle and Elliot, I would not bother you. Mr. Armstrong said it was out of his hands and all decisions would have to come from your office.

I made an exhaustive investigation and found that the gun barrel was not hooked up on the Levers as I had instructed them to do four weeks ago. They had been attempting to drain the water off the 500 barrel tank with a rubber hose to the pit and either it did not drain well or they had dug a trench in to the then existing rotary pit where there was some salt water crystals. On the Beadle No. 3 we were still testing the well and had already finished and was laying the pipe to hook it to the tank battery which has a plastic lined pits to drain ~~the~~ ^{it}. There was some salt crystals there where they had swabbed in to the rotary pits getting back acid water when of course mixed with the alkaline San Andres formation, which is lime, creates a salt. The line only needs to be hooked to the well as the pipe has been ~~laid~~ ^{laid}. Incidentally there is an irrigation reservoir on this same lease that has run over and there is enough salt in the water to form crystals from it. You will no doubt remember from the engineers report how many parts per million of salt that the water had on the Sturgeon Ranch. The Pendergrass was just swabbing acid water back from the acidizing and of course the salt crystals forms in the rotary pits. As I explained to you in my previous letter we have a plastic lined pit from the Pendergrass tank battery and we would only to hook up the well to get it in to the battery.

FROM THE SURGICAL SECTION
OF
SAM G. DUNN, M.D., F.A.C.S.
WEST TEXAS CLINIC
LUBBOCK, TEXAS
-page 2-

As for the Elliot here is the situation as it was explained to me. They had one night that the people said it got down below here and that heavy gravity oil out there did not separate enough from the salt water in the gun barrel and the hairpin got stopped up and blew out. When it did, some thawing out and came open it blew salt water and oil around the periphery of the tank battery. Mr. Brown who is drilling with the cable tool off-setting the tank battery reported this to Mr. McFadin and this was turned off and the wells were shut in but of course we did not have a tractor out there to cover up the salt crystals that had formed around the tank battery. All of these are way off from the river with no possible chance of contamination. I would appreciate it deeply if you could see fit to give us clearance on the Elliot, Pendergrass and Beadle No. 3 as soon as you can have them inspected by Mr. Armstrong and of course Mr. Collins who comes out every day. As for the Levers I told them to start in the morning hooking up the gun barrel so we would not have that trouble any more.

I have instructed them that any tank bottoms are to be soaked off with a pump in to a transport and carried to the pits that are lined with plastic so there will be no possible chance of contamination. All leases will be ready for inspection right away with the exception of the Levers and that should be within three days if we are allowed to hook up the Beadle to the tank battery as well as the Pendergrass.

Thanking you in advance for anything you may be able to do for us in this matter I am,

Sincerely,

[Signature]
Sam G. Dunn, M.D.

SGD/jf

cc: Mr. M.L. Armstrong
Artesia, New Mexico
cc: Mr. Frank Irby
Santa Fe, New Mexico
cc: State Engineer
Roswell, New Mexico
cc: Mr. John Anderson
USGS
Roswell, New Mexico

*P.S. I would appreciate a
ruling from you relative to whether or
not 2 can suck back acid water
after treatment into the Rotary Pit
before completing the well. Thanks
J.D.*

FROM THE SURGICAL SECTION
OF
SAM G. DUNN, M.D., F.A.C.S.
WEST TEXAS CLINIC
LUBBOCK, TEXAS
March 11, 1965

Mr. A.L. Porter, Jr.
Oil Conservation Commission
Box 2088
Santa Fe, New Mexico

Dear Mr. Porter:

It was a great shock to me when McFadin my superintendent called me and said they had posted notices on three of my leases that no production be had from these leases. I thought my nose was clean with the Commission after spending approximately \$10,000 getting my pits lined and everything seemed to be going smoothly with Mr. Collins making his daily inspection to our leases. I was unaware that there was anything wrong.

The Beadle No. 3 and the Pendergrass were brand new wells and had not been put on production as yet. It was my understanding that we could use the rotary pits that were present, and were lined with mud making them practically impervious to filtration of chlorides, to bring in a well. Of course salt crystals will form after a well has been acidized. We acidized both of these wells and were in the process of swabbing them back. We had just put the Beadle No. 3 on the pump and the chemical reaction of hydrochloric acid on an alkaline base, such as the San Andres is in that area, will of course form salt. These were rotary pits and not pits from the tank batteries. We had the Beadle Pit from the tank battery lined with plastic and it was all okayed by Mr. Collins. We did not want to swab the acid water back in the Beadle tank because of its corrosion qualities and thought we would be allowed to swab the acid water back in the rotary pits since nothing was said in the rule book about this or in the directive following the Hearing that we had in Santa Fe. It was ignorance on my part relative to those two wells.

McFadin also told me that on the Elliot there was some salt water and oil where McWood had taken oil from the tank. I have not had the opportunity to check this over but you can rest assured I will go out there Sunday and have checked everything to see exactly what happened. We have the pits on the Elliot lined with plastic and there would be no percentage in him not producing in the pit that was okayed by Mr. Collins so it is quite possible that he is telling the truth on the Elliot.

FROM THE SURGICAL SECTION
OF
SAM G. DUNN, M.D., F.A.C.S.
WEST TEXAS CLINIC
LUBBOCK, TEXAS
-page 2-

65 MAR 15 1965

On the Levers we have had nothing but unshirted gahenna trying to get the well on production. We have the pits lined with plastic which have also been okayed by Mr. Collins. McFadin told me that he has been draining the water off with a hose from the tank battery to the pit and that the hose evidently had been misplaced by cattle, which are numerous in that pasture. It was my understanding that the gun barrel had already been hooked up on that lease but Mr. Armstrong tell me it has not been. We certainly have the human equation to deal with. McFadin has been working for me approximately twelve years and has always been a good hand. We had been pushed to keep up our drilling commitments in that area to keep the leases and we have had to experiment in completions which has taken an undue amount of time.

As you know these wells will produce from 2 to 5 barrels per day per well primarily. We can swab them with a casing swab and get from 15 to 20 barrels per day in eight (8) hour swabbing so we show by this there is no bottom hole pressure and no gas. The payoff will be for me to water flood or steam flood. I have spent a tremendous amount of money in that area developing the leases and I would like to get some of my money back before instituting steam or water flood. As you no doubt know the soil out there is so strongly alkali that the dust is so thick it even clogs up our motors. I wrote Mr. Irby of the State Engineers Office and told him about our problem and he gave me permission to use some salt water to spray on the roads which helps more than anything else as the salt water forms a compact hard surface with the alkali or gyp. We have not done this anywhere close to the river because we do not have the thick gyp or alkali dust in the river bottom at all.

I am going out to the leases Sunday morning and you can rest assured I will do everything in my power to get things straightened up. I will check with Mr. Armstrong and have him okay everything so that we can get back on production before the salt water takes our wells. I am not asking any special favors of the Commission but would appreciate your forbearance with me as much as possible until I can get this business ironed out.

Sincerely,

Sam G. Dunn
Sam G. Dunn, M.D.

SGD/jf


cc: Mr. M.L. Armstrong-Artesia, N.M.
cc: State Engineers-Roswell, New Mexico
cc: Mr. Frank Irby-Santa Fe, New Mexico
cc: Mr. John Anderson-Roswell, New Mexico

No. 859774

RECEIPT FOR CERTIFIED MAIL—20¢

SENT TO McWood Corporation		POSTMARK OR DATE 3-11-65
STREET AND NO. Box 330		
CITY AND STATE Abilene, Texas		
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 50¢ fee		
FEES ADDITIONAL TO 20¢ FEE		
SEE OTHER SIDE		

POD Form 3820
Apr 1960

POST OFFICE DEPARTMENT OFFICIAL BUSINESS		PENALTY FOR PRIVATE USE TO AVOID PAYMENT OF POSTAGE, \$100
Dr. Sam G. Dunn 1312 Main Street Lubbock, Texas		 RETURN TO
INSTRUCTIONS: Fill in items below and complete instructions on other side, if applicable. Moisten gummed ends, attach and hold firmly to back of article. Print on front of article RETURN RECEIPT REQUESTED.		
REGISTERED NO.	NAME OF SENDER Oil Conservation Commission	
CERTIFIED NO. 859773	STREET AND NO. OR P. O. BOX Box 2088	
INSURED NO.	CITY, STATE, AND ZIP CODE Santa Fe, New Mexico	
Letter 3-11-65		


POB Form 3811 Sep 1963

No. 859773

RECEIPT FOR CERTIFIED MAIL—20¢

SENT TO Dr. Sam G. Dunn		POSTMARK OR DATE 3-11-65
STREET AND NO. 1312 Main Street		
CITY AND STATE Lubbock, Texas		
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 50¢ fee		
FEES ADDITIONAL TO 20¢ FEE		
SEE OTHER SIDE		

POD Form 3820
Apr 1960

POST OFFICE DEPARTMENT OFFICIAL BUSINESS		PENALTY FOR PRIVATE USE TO AVOID PAYMENT OF POSTAGE, \$100
McWood Corporation Box 330 Abilene, Texas		 RETURN TO
INSTRUCTIONS: Fill in items below and complete #1 on other side, when applicable. Moisten gummed ends and attach to back of article. Print on front of article RETURN RECEIPT REQUESTED.		
REGISTERED NO.	NAME OF SENDER Oil Conservation Commission	
CERTIFIED NO. 859774	STREET AND NO. OR P. O. BOX Box 2088	
INSURED NO.	CITY, ZONE AND STATE Santa Fe, New Mexico	
Letter 3-11-65		

POB Form 3811 Jan 1959

1. Stick postage stamps to your article to pay:
20¢ certified mail fee
First-class or airmail postage
Either return receipt fee—10¢ or 35¢ (optional)
Restricted delivery fee—50¢ (optional)
Special-delivery fee (optional)
2. If you want this receipt postmarked, stick the gummed stub on the left portion of the address side of the article, leaving the receipt attached, and present the article to a postal employee.
3. If you do not want this receipt postmarked, stick the gummed stub on the left portion of the address side of the article, detach and retain the receipt, and mail the article.
4. If you want a return receipt, write the certified-mail number and your name and address on a return receipt card, Form 3811, and attach it to the back of the article by means of the gummed ends. Endorse front of article RETURN RECEIPT REQUESTED.
5. If you want the article delivered only to the addressee, endorse it on the front DELIVER TO ADDRESSEE ONLY. Place the same endorsement in line 2 of the return receipt card.
6. Save this receipt and present it if you make inquiry.

PS-25027-3 11-60

INSTRUCTIONS TO DELIVERING EMPLOYEE	
<input checked="" type="checkbox"/> Deliver ONLY to addressee	<input type="checkbox"/> Show address where delivered (Additional charges required for these services)
RECEIPT	
Received the numbered article described on other side.	
SIGNATURE OR NAME OF ADDRESSEE (must always be filled in)	
<i>De Juan Luna</i>	
SIGNATURE OF ADDRESSEE'S AGENT, IF ANY	
<i>Wideman</i>	
DATE DELIVERED	SHOW WHERE DELIVERED (only if requested)
3-12-65	

CS-16-71800-5-1 11-60

1. Stick postage stamps to your article to pay:
20¢ certified mail fee
First-class or airmail postage
Either return receipt fee—10¢ or 35¢ (optional)
Restricted delivery fee—50¢ (optional)
Special-delivery fee (optional)
2. If you want this receipt postmarked, stick the gummed stub on the left portion of the address side of the article, leaving the receipt attached, and present the article to a postal employee.
3. If you do not want this receipt postmarked, stick the gummed stub on the left portion of the address side of the article, detach and retain the receipt, and mail the article.
4. If you want a return receipt, write the certified-mail number and your name and address on a return receipt card, Form 3811, and attach it to the back of the article by means of the gummed ends. Endorse front of article RETURN RECEIPT REQUESTED.
5. If you want the article delivered only to the addressee, endorse it on the front DELIVER TO ADDRESSEE ONLY. Place the same endorsement in line 2 of the return receipt card.
6. Save this receipt and present it if you make inquiry.

PS-25027-3 11-60

#1-INSTRUCTIONS TO DELIVERING EMPLOYEE	
<input checked="" type="checkbox"/> Deliver ONLY to addressee	<input type="checkbox"/> Show address where delivered (Additional charges required for these services)
RETURN RECEIPT	
Received the numbered article described on other side.	
SIGNATURE OR NAME OF ADDRESSEE (must always be filled in)	
<i>MC (Ad 12-65) Corp.</i>	
SIGNATURE OF ADDRESSEE'S AGENT, IF ANY	
<i>CE</i>	
DATE DELIVERED	ADDRESS WHERE DELIVERED (only if requested to show to whom)
3-12-65	

CS-16-71800-5-1 11-60

GOVERNOR
JACK M. CAMPBELL
CHAIRMAN

State of New Mexico
Oil Conservation Commission



LAND COMMISSIONER
GUYTON B. HAYS
MEMBER

P. O. BOX 2088
SANTA FE

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

March 11, 1965

CERTIFIED - RETURN
RECEIPT REQUESTED

VIA AIR MAIL - SPECIAL DELIVERY

Dr. Sam G. Dunn
1312 Main Street
Lubbock, Texas

Dear Mr. Dunn:

This letter will notify you that the following wells have been shut in by the Commission for violation of Commission Order No. R-2788:

Elliott Federal Well No. 1, located in Unit O of Section 33, Township 6 South, Range 26 East,

Elliott Federal Well No. 2, located in Unit O of Section 33, Township 6 South, Range 26 East,

Pendergrass Well No. 2, located in Unit E of Section 4, Township 7 South, Range 26 East,

Beadle Well No. 3, located in Unit P of Section 5, Township 7 South, Range 26 East, and

Levers State Well No. 1-F, located in Unit F of Section 32, Township 7 South, Range 26 East

all in Chaves County, New Mexico.

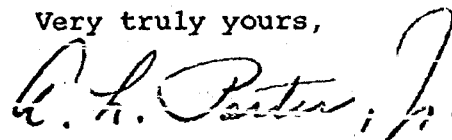
March 11, 1965

Dr. Sam G. Dunn
1312 Main Street
Lubbock, Texas

These wells were shut in on Wednesday, March 10, 1965, under my direction by Mr. M. L. Armstrong of our Artesia Office following a field inspection by Mr. Armstrong, a representative of the State Engineer's Office, and a representative of the U.S.G.S. in Roswell.

No production or transportation of oil from the above wells will be permitted until satisfactory arrangements have been made with the Commission, the State Engineer, and the U.S.G.S. to assure compliance with Order No. R-2788 and you have been notified in writing by the Commission that the wells may be placed on production.

Very truly yours,


A. L. PORTER, Jr.
Secretary-Director

ALP/esr

Copy to:

McWood Corporation
P. O. Box 330
Abilene, Texas
(Certified - Return
Receipt Requested and
Via Air Mail, Special
Delivery)

Mr. M. L. Armstrong
Supervisor, District 2
Oil Conservation Commission
Drawer DD
Artesia, New Mexico

State Engineer
Box 1717
Roswell, New Mexico

Mr. Frank Irby
State Engineer Office
Capitol Building
Santa Fe, New Mexico

Mr. John Anderson
Regional Supervisor
United States Geological Survey
Drawer 1857
Roswell, New Mexico

POST OFFICE DEPARTMENT
OFFICIAL BUSINESS

PENALTY FOR PRIVATE USE TO AVOID
PAYMENT OF POSTAGE, \$300

Ray Smith Drilling Company
409 Wilkinson - Foster Bldg.
Midland, Texas



INSTRUCTIONS: Fill in items below and complete #1 on other side, when applicable. Moistened gummed ends and attach to back of article. Print on front of article RETURN RECEIPT REQUESTED.

REGISTERED NO.	NAME OF SENDER
CERTIFIED NO.	STREET AND NO. OR P. O. BOX
277236	P. O. BOX 2088
INSURED NO.	CITY, ZONE AND STATE
	SANTA FE, NEW MEXICO

Directive 8-27-64

RECEIPT FOR CERTIFIED MAIL—20¢

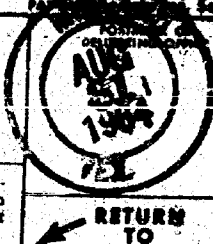
SENT TO	POSTMARK OR DATE
Ray Smith Drilling Company	8-28-64
STREET AND NO.	
409 Wilkinson - Foster Bldg.	
CITY AND STATE	
Midland, Texas	
If you want a return receipt, check which <input type="checkbox"/> 10¢ shows to whom and when delivered <input type="checkbox"/> 35¢ shows to whom, when, and address where delivered <input type="checkbox"/> If you want restricted delivery, check here 50¢ fee	
FEES ADDITIONAL TO 20¢ FEE	
POD Form 3800 Jul 1957 Directive 8-27-64	

No 277236

POST OFFICE DEPARTMENT
OFFICIAL BUSINESS

PENALTY FOR PRIVATE USE TO AVOID
PAYMENT OF POSTAGE, \$300

J. J. Travis
Box 873
Midland, Texas



INSTRUCTIONS: Fill in items below and complete #1 on other side, when applicable. Moistened gummed ends and attach to back of article. Print on front of article RETURN RECEIPT REQUESTED.

REGISTERED NO.	NAME OF SENDER
CERTIFIED NO.	STREET AND NO. OR P. O. BOX
277238	P. O. BOX 2088
INSURED NO.	CITY, ZONE AND STATE
	SANTA FE, NEW MEXICO

Directive - 8-27-64

RECEIPT FOR CERTIFIED MAIL—20¢

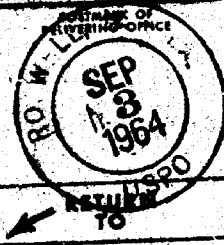
SENT TO	POSTMARK OR DATE
J. J. Travis	8-28-64
STREET AND NO.	
Box 873	
CITY AND STATE	
Midland, Texas	
If you want a return receipt, check which <input type="checkbox"/> 10¢ shows to whom and when delivered <input type="checkbox"/> 35¢ shows to whom, when, and address where delivered <input type="checkbox"/> If you want restricted delivery, check here 50¢ fee	
FEES ADDITIONAL TO 20¢ FEE	
POD Form 3800 Jul 1957 Directive - 8-27-64	

No 277238

POST OFFICE DEPARTMENT
OFFICIAL BUSINESS

PENALTY FOR PRIVATE USE TO AVOID
PAYMENT OF POSTAGE, \$300

Mr. H. E. Barnes
Box 1057
Roswell, New Mexico



INSTRUCTIONS: Fill in items below and complete #1 on other side, when applicable. Moistened gummed ends and attach to back of article. Print on front of article RETURN RECEIPT REQUESTED.

REGISTERED NO.	NAME OF SENDER
CERTIFIED NO.	STREET AND NO. OR P. O. BOX
277235	P. O. BOX 2088
INSURED NO.	CITY, ZONE AND STATE
	SANTA FE, NEW MEXICO

Directive - 8-27-64

RECEIPT FOR CERTIFIED MAIL—20¢

SENT TO	POSTMARK OR DATE
Mr. H. E. Barnes	8-28-64
STREET AND NO.	
Box 1057	
CITY AND STATE	
Roswell, 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 50¢ fee	
FEES ADDITIONAL TO 20¢ FEE	
POD Form 3800 Jul 1957 Directive 8-27-64	

No 277235

POST OFFICE DEPARTMENT
OFFICIAL BUSINESS

PENALTY FOR PRIVATE USE TO AVOID
PAYMENT OF POSTAGE, \$300

Dr. Sam G. Dunn
1312 Main Street
Lubbock, Texas



INSTRUCTIONS: Fill in items below and complete #1 on other side, when applicable. Moistened gummed ends and attach to back of article. Print on front of article RETURN RECEIPT REQUESTED.

REGISTERED NO.	NAME OF SENDER
CERTIFIED NO.	STREET AND NO. OR P. O. BOX
277234	P. O. BOX 2088
INSURED NO.	CITY, ZONE AND STATE
	SANTA FE, NEW MEXICO

Directive - 8-27-64

RECEIPT FOR CERTIFIED MAIL—20¢

SENT TO	POSTMARK OR DATE
Dr. Sam G. Dunn	8-28-64
STREET AND NO.	
1312 Main Street	
CITY AND STATE	
Lubbock, Texas	
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 50¢ fee	
FEES ADDITIONAL TO 20¢ FEE	
POD Form 3800 Jul 1957 Directive 8-27-64	

No 277234

#1-INSTRUCTIONS TO DELIVERING EMPLOYEE

☐ Deliver ONLY to addressee ☐ Show address where delivered
(Additional charges required for these services)

RETURN RECEIPT

Received the numbered article described on other side.

SIGNATURE OR NAME OF ADDRESSEE (must always be filled in)
Ray Smith July 6

SIGNATURE OF ADDRESSEE'S AGENT, IF ANY
Rose Eberle

DATE DELIVERED **AUG 31 1964** ADDRESS WHERE DELIVERED (only if requested in item #1)

CBS-16-71547-4 GPO

- Stick postage stamps to your article to pay:
20¢ certified mail fee
First-class or airmail postage
Either return receipt fee—10¢ or 35¢ (optional)
Restricted delivery fee—50¢ (optional)
Special-delivery fee (optional)
 - If you want this receipt postmarked, stick the gummed stub on the address side of the article, leaving the receipt attached, and present the article to a postal employee.
 - If you do not want this receipt postmarked, stick the gummed stub on the address side of the article, detach and retain the receipt, and mail the article.
 - If you want a return receipt, write the certified-mail number and your name and address on a return receipt card, POD Form 3811, and attach it to the back of the article. Endorse front of article RETURN RECEIPT REQUESTED.
 - If you want the article delivered only to the addressee, endorse it on the front DELIVER TO ADDRESSEE ONLY. Place the same endorsement in line 2 of the return receipt card.
 - Save this receipt and present it if you make inquiry.
- ☆ U. S. GOVERNMENT PRINTING OFFICE : 1957 16-71547-4

#1-INSTRUCTIONS TO DELIVERING EMPLOYEE

☐ Deliver ONLY to addressee ☐ Show address where delivered
(Additional charges required for these services)

RETURN RECEIPT

Received the numbered article described on other side.

SIGNATURE OR NAME OF ADDRESSEE (must always be filled in)
J. J. Hughes

SIGNATURE OF ADDRESSEE'S AGENT, IF ANY

DATE DELIVERED **AUG 31 1964** ADDRESS WHERE DELIVERED (only if requested in item #1)

CBS-16-71547-4 GPO

- Stick postage stamps to your article to pay:
20¢ certified mail fee
First-class or airmail postage
Either return receipt fee—10¢ or 35¢ (optional)
Restricted delivery fee—50¢ (optional)
Special-delivery fee (optional)
 - If you want this receipt postmarked, stick the gummed stub on the address side of the article, leaving the receipt attached, and present the article to a postal employee.
 - If you do not want this receipt postmarked, stick the gummed stub on the address side of the article, detach and retain the receipt, and mail the article.
 - If you want a return receipt, write the certified-mail number and your name and address on a return receipt card, POD Form 3811, and attach it to the back of the article. Endorse front of article RETURN RECEIPT REQUESTED.
 - If you want the article delivered only to the addressee, endorse it on the front DELIVER TO ADDRESSEE ONLY. Place the same endorsement in line 2 of the return receipt card.
 - Save this receipt and present it if you make inquiry.
- ☆ U. S. GOVERNMENT PRINTING OFFICE : 1957 16-71547-4

#1-INSTRUCTIONS TO DELIVERING EMPLOYEE

☐ Deliver ONLY to addressee ☐ Show address where delivered
(Additional charges required for these services)

RETURN RECEIPT

Received the numbered article described on other side.

SIGNATURE OR NAME OF ADDRESSEE (must always be filled in)
J. E. Barnes

SIGNATURE OF ADDRESSEE'S AGENT, IF ANY

DATE DELIVERED **9/3/64** ADDRESS WHERE DELIVERED (only if requested in item #1)

CBS-16-71547-4 GPO

- Stick postage stamps to your article to pay:
20¢ certified mail fee
First-class or airmail postage
Either return receipt fee—10¢ or 35¢ (optional)
Restricted delivery fee—50¢ (optional)
Special-delivery fee (optional)
 - If you want this receipt postmarked, stick the gummed stub on the address side of the article, leaving the receipt attached, and present the article to a postal employee.
 - If you do not want this receipt postmarked, stick the gummed stub on the address side of the article, detach and retain the receipt, and mail the article.
 - If you want a return receipt, write the certified-mail number and your name and address on a return receipt card, POD Form 3811, and attach it to the back of the article. Endorse front of article RETURN RECEIPT REQUESTED.
 - If you want the article delivered only to the addressee, endorse it on the front DELIVER TO ADDRESSEE ONLY. Place the same endorsement in line 2 of the return receipt card.
 - Save this receipt and present it if you make inquiry.
- ☆ U. S. GOVERNMENT PRINTING OFFICE : 1957 16-71547-4

#1-INSTRUCTIONS TO DELIVERING EMPLOYEE

☐ Deliver ONLY to addressee ☐ Show address where delivered
(Additional charges required for these services)

RETURN RECEIPT

Received the numbered article described on other side.

SIGNATURE OR NAME OF ADDRESSEE (must always be filled in)
[Signature]

SIGNATURE OF ADDRESSEE'S AGENT, IF ANY

DATE DELIVERED **8-1** ADDRESS WHERE DELIVERED (only if requested in item #1)

CBS-16-71547-4 GPO

- Stick postage stamps to your article to pay:
20¢ certified mail fee
First-class or airmail postage
Either return receipt fee—10¢ or 35¢ (optional)
Restricted delivery fee—50¢ (optional)
Special-delivery fee (optional)
 - If you want this receipt postmarked, stick the gummed stub on the address side of the article, leaving the receipt attached, and present the article to a postal employee.
 - If you do not want this receipt postmarked, stick the gummed stub on the address side of the article, detach and retain the receipt, and mail the article.
 - If you want a return receipt, write the certified-mail number and your name and address on a return receipt card, POD Form 3811, and attach it to the back of the article. Endorse front of article RETURN RECEIPT REQUESTED.
 - If you want the article delivered only to the addressee, endorse it on the front DELIVER TO ADDRESSEE ONLY. Place the same endorsement in line 2 of the return receipt card.
 - Save this receipt and present it if you make inquiry.
- ☆ U. S. GOVERNMENT PRINTING OFFICE : 1957 16-71547-4

POST OFFICE DEPARTMENT
OFFICIAL BUSINESS

PENALTY FOR PRIVATE USE TO AVOID
PAYMENT OF POSTAGE, \$300

Barnes and Swanson
Box 1057
Roswell, New Mexico

INSTRUCTIONS: Fill in items below and complete #1 on other side, when applicable. Moisture gummed ends and attach to back of article. Print on front of article RETURN RECEIPT REQUESTED.

REGISTERED NO. NAME OF SENDER
OIL CONSERVATION COMMISSION

CERTIFIED NO. STREET AND NO. OR P. O. BOX JMD
277237 P. O. Box 2088

INSURED NO. CITY, ZONE AND STATE
Santa Fe, New Mexico

Directive 8-27-64

SEP 8 1964
ROSWELL, N.M.

POD Form 3811 Jul 1957

CS-16-71840-4

RECEIPT FOR CERTIFIED MAIL—20¢

SENT TO
Barnes and Swanson
Box 1057
Roswell, New Mexico

STREET AND NO.
Box 1057

CITY AND STATE
Roswell, New Mexico

POSTMARK OR DATE
8-28-64

If you want a return receipt, check which
☐ 10¢ shows to whom and when delivered
☐ 35¢ shows to whom, when, and address where delivered

If you want restricted delivery, check here
☐ 50¢ fee

FEE ADDITIONAL TO 20¢ FEE
Directive 8-27-64

POD Form 3800
Jul 1957

No 277237

#1-INSTRUCTIONS TO DELIVERING EMPLOYEE	
<input type="checkbox"/> Deliver ONLY to addressee	<input type="checkbox"/> Show address where delivered
(Additional charges required for these services)	
RETURN RECEIPT	
Received the numbered article described on other side.	
SIGNATURE OR NAME OF ADDRESSEE (must always be filled in)	
<i>H. E. Barnes</i>	
SIGNATURE OF ADDRESSEE'S AGENT, IF ANY	
DATE DELIVERED	ADDRESS WHERE DELIVERED (only if requested in item #1)
9/3/64	
CES-16-71548-4 GPO	

1. Stick postage stamps to your article to pay:
20¢ certified mail fee
First-class or airmail postage
Either return receipt fee—10¢ or 35¢ (optional)
Restricted delivery fee—50¢ (optional)
Special-delivery fee (optional)
2. If you want this receipt postmarked, stick the gummed stub on the address side of the article, leaving the receipt attached, and present the article to a postal employee.
3. If you do not want this receipt postmarked, stick the gummed stub on the address side of the article, detach and retain the receipt, and mail the article.
4. If you want a return receipt, write the certified-mail number and your name and address on a return receipt card, POD Form 3811, and attach it to the back of the article. Endorse front of article RETURN RECEIPT REQUESTED.
5. If you want the article delivered only to the addressee, endorse it on the front DELIVER TO ADDRESSEE ONLY. Place the same endorsement in line 2 of the return receipt card.
6. Save this receipt and present it if you make inquiry.

GOVERNOR
JACK M. CAMPBELL
CHAIRMAN

State of New Mexico
Oil Conservation Commission



LAND COMMISSIONER
E. B. JOHNNY WALKER
MEMBER

P. O. BOX 2088
SANTA FE

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

August 27, 1964

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

DIRECTIVE

TO: Dr. Sam G. Dunn
1312 Main Street
Lubbock, Texas

Ray Smith Drilling Company
409 Wilkinson - Foster Bldg.
Midland, Texas

H. E. Barnes
Box 1057
Roswell, New Mexico

Barnes and Swanson
Box 1057
Roswell, New Mexico

J. J. Travis
Box 873
Midland, Texas

FROM: A. L. Porter, Jr., Secretary-Director

SUBJECT: Disposal of Produced Salt Water

The Commission has received reports from the Office of the State Engineer and the Commission's Artesia District Office concerning disposal of produced salt water in the Linda-San Andres Oil Pool and adjacent area in Townships 6 and 7 South, Range 26 East, NMPM, Chaves County, New Mexico. These reports indicate that a substantial volume of produced salt water is being disposed of in unlined pits. In order to prevent contamination of fresh water supplies designated by the State Engineer, you are hereby directed to cease disposing of produced salt water in unlined pits by November 1, 1964.

August 27, 1964

DIRECTIVE

In order to avoid the shutting in of your wells, immediate consideration should be given to underground disposal. An application for approval of salt water disposal well or wells should be filed with the Commission in accordance with the provisions of Rule 701.

This office and the Commission's Artesia District Office will be happy to answer any questions you may have concerning this matter.

A. L. Porter Jr.

A. L. PORTER, Jr.
Secretary-Director

cc: State Engineer Office
State Capitol
Attn: Mr. Frank E. Irby
Santa Fe, New Mexico

Oil Conservation Commission
Drawer DD
Artesia, New Mexico

Memo

From

I. R. TRUJILLO

ADMINISTRATIVE ASSISTANT

To

7/10/12 -

Inspected on Dam.

Drained tank

at Laido Canal

Pit. 1 mile tank

Shut in NW NW

37-7-76 Lewis St.

Close to River.

Buttle No 3 SE SE

5-7-76 - Tank

Truck. Draining
water into tank

Memo

From

I. R. TRUJILLO
ADMINISTRATIVE ASSISTANT

To

Pit. as much as
3 feet of water
Shut in.

Pack No. 2
pulling over it
sampling last
water (by tube
apart)

Large soft mud. Billed Engine 3-10-61
3 feet from well

11/11/61 32 1-26

Drained water from tank - Tank is 100'
from well. Has been 2 or 3 feet in bottom
around tank. 25 to 30 GPD

Beach No 3 - P

SE SE 5-7-26

Not pumping today. Testing into
tank truck & draining water drilling
pit. Pit is 20' feet long & about
8'. Water has been 3' deep in pit.

Swabbing into tank & draining tank
into pit.

Either Berlogress No 2 or Clark No 2
7-26



*Salt water
disposal case file*

DEC 3 1964

December 2, 1964

07501

Dr. Sam G. Dunn
West Texas Clinic
Lubbock, Texas

Dear Dr. Dunn:

Concerning your request to use salt water to control dust on your leases on Mr. Marley's ranch, please be advised that this office offers no objection to applying the salt water to the roads by sprinkler tank wagon provided the amount of water is not excessive to the extent that it would run off the road into natural drainage channels. If you desire, your superintendent on the lease may contact Mr. Collins at Roswell and work out the details with him.

Yours truly,

S. E. Reynolds
State Engineer

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

By:
Frank E. Irby
Chief
Water Rights Div.

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

Page 312

November 17, 1964

C
O
P
Y

Law Offices
Hinkle, Bondurant, and Christy
Hinkle Building
P. O. Box 10
Roswell, New Mexico

Attention: Mr. Clarence E. Hinkle

Re: Application of Ray Smith for a Special
Test and a Special Testing Allowable

Gentlemen:

Reference is made to your application of November 6, 1964, seeking authority for Ray Smith Drilling Company to institute a steam injection test on the England Federal Well No. 1 located in the SE/4 SW/4 of Section 29, Township 6 South, Range 26 East, NMPN, Linda-San Andres Pool, Chaves County, New Mexico, and to produce said well in excess of the daily and monthly tolerance as an exception to Rule 502 of the Commission Rules and Regulations.

As the proposed test is for the purpose of obtaining scientific data, it is considered an essential test within the purview of the Commission's rules and is hereby authorized. During the test, Ray Smith Drilling Company is hereby authorized to produce the subject well in excess of the daily and monthly tolerance for November, 1964, and in excess of the daily tolerance for December, 1964. Production in excess of existing lease storage facilities during the test is hereby authorized pursuant to Rule 504. The provisions of Order No. R-2788 must be complied with and all over-production resulting from the test must be reported to the Commission and made up during subsequent months in accordance with Rule 502 III.

OIL CONSERVATION COMMISSION

P. O. BOX 871

SANTA FE, NEW MEXICO

-2-

November 17, 1964

Law Offices

Hinkle, Bondurant, and Christy

C
O
P
Y
An exception to the monthly tolerance for December, 1964, will be considered upon the filing of a subsequent application indicating the necessity for the same.

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

ALP/JMD/esr

cc: Oil Conservation Commission
Drawer DD
Artesia, New Mexico

*Salt water demand
Case file [signature]*

RECEIVED
NOV 13 PM 1:10



STATE OF NEW MEXICO
STATE ENGINEER OFFICE
SANTA FE

S. E. REYNOLDS
STATE ENGINEER

November 12, 1964

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

Mr. A. L. Porter, Jr.
Secretary-Director
Oil Conservation Commission
Santa Fe, N. M.

Dear Mr. Porter:

Enclosed herewith for your information is a copy of Mr. Hennighausen's penned memorandum to me transmitting a memorandum to him from R. B. Collins dated November 10, 1964 which pertains to an inspection of oil wells in the Linda-San Andres oil pool.

Yours truly,

S. E. Reynolds
State Engineer

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

FEI/ma
encl.
cc-F. H. Hennighausen

MEMORANDUM

State Engineer Office
Roswell, New Mexico
November 10, 1954

TO Fred H. Hennig (auten)

FROM R. B. Collins, Jr.

SUBJECT Field inspection of all completed oil wells in the Linda San
Anares Oil Pool, Township 6 and 7 South, Range 26 East, N.M.P.M.,
Chaves County, New Mexico.

A field inspection of all of the completed oil wells in the Linda San Andres Oil Pool was made on November 6, 1954 by Mose Armstrong and Bill Gressett, of the Oil Conservation Commission and R. B. Collins, Jr., of the State Engineer Office.

Mr. Armstrong posted shut-down notices on the R. E. Barnes Federal number 1 and number 2 wells in Section 33, Township 6 South, Range 26 East because of brine being discharged into unlined pits. Shut-down notices were also posted on the Ray Smith, Harris well in Section 33, and the Ray Smith, George well in Section 32, both in Township 6 South, Range 26 East because of poor pit condition.

None of the oil wells operated by Dr. Sam G. Dunn or Ray Smith were found to be discharging water into the unlined pits at the time of this inspection.


R. B. Collins, Jr.

RBC*ld

MAIN OFFICE

NOV 13 1964

STATE ENGINEER OFFICE
MEMO

DATE _____

TO: Frank E. Kirby

() For Your Information () Note & Return

() For Your Files () Circulate

() For Your Handling () _____

REMARKS: Attached hereto is
a memo concerning the
Linda San Andres Pool. RB
states Barnes is on the
only one not notified by
the OCC prior to inspection

Fred

*Salt water
disposal case file
11/11/64*



STATE OF NEW MEXICO
STATE ENGINEER OFFICE
SANTA FE

S. E. REYNOLDS
STATE ENGINEER

November 9, 1964

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

87501

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

Dear Mr. Porter:

Enclosed herewith is a copy of Fred Hennighausen's memorandum to me pertaining to brine disposal pits in the Linda-San Andres Pool, north of Roswell and R. B. Collins' memorandum to Fred on the same subject, both of which are dated November 5, 1964.

On November 5, 1964, I received a letter from Dr. Sam G. Dunn of Lubbock, Texas, a copy of which I handed to Mr. Nutter on November 6th. You will note that there is a definite conflict of statements in Dr. Dunn's letter and Mr. Collins' memorandum. Possibly, Dr. Dunn is ignorant of what his field men are doing and has no intention of making an untruthful statement.

Please note the last paragraph of Mr. Hennighausen's memorandum which states that Mr. Armstrong is aware of our findings and is contacting you. In order that the Commission's order may be enforced, it is my desire to cooperate closely and effectively with you in this matter. If anything is needed or desired from this office, please advise me.

Yours very truly,

S. E. Reynolds
State Engineer

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

FEI/ma
encl.
ccF. H. Hennighausen

MEMORANDUM

March 14, 1944

TO: Frank E. Leby, Chief, Water Rights Division
FROM: Fred H. Hennighausen, District Supervisor
SUBJECT: Brine disposal pits in the Linda San Andres Pool north of Portland

Attached is a memo from R. B. Collins Jr., concerning his inspection of brine pits on the east and west sides of the Cross River in the Linda San Andres Pool. Mr. McCoy and Mr. McFadden, representing Dr. Burn, knew about these findings and were disturbed as they stated they had told the operator to shut down.

On October 28, Mr. Herman Cravey of Artesia, representing Mr. Ray Smith, visited this office and discussed requirements for disposing of the produced water. Mr. Cravey stated that he was attempting to determine the size of pits required, materials available, etc., and would contact this office regarding plans for disposal of the salt water. He was advised what would be required and that no water could be produced after the 1st.

More Armstrong of the Artesia C.C.C. office is aware of our findings and is contacting Mr. Parker.

[Handwritten signature]
Fred H. Hennighausen

FHT:td
encl.

My

November 5, 1964

Fred H. Remington

R. B. Collins, Jr.

Inspection of brine disposal on east and west sides of the Pecos River, in the Linda San Andres Oil Pool, Townships 6 and 7 South, Range 26 East, N.M.P.M., Chaves County, New Mexico.

On the afternoon of November 3, 1964, I inspected the brine pits in the Linda San Andres pool on the east side of the Pecos River, Township 6 and 7 South, Range 26 East. All of the wells were visited and on two leases, brine was being disposed of in unlined pits. These were the Dr. Sam G. Dunn Beadle Lease which was producing approximately ten barrels of water per day into an unlined pit and the Dr. Sam G. Dunn Bendergrass Lease which was producing about 15 barrels of water per day into an unlined pit.

On November 4, 1964, an inspection was made of all of the wells on the west side of the Pecos River. The Ray Smith Harris Lease was producing approximately 10 barrels of water into an unlined pit.

R. B. Collins, Jr.

RFC:LD

C
O
P
Y

MEMORANDUM

State Engineer's Office
Roswell, New Mexico

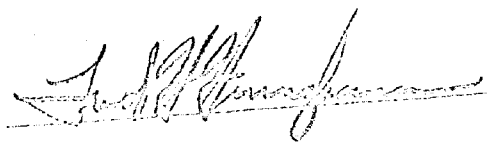
November 5, 1934

TO Frank E. Iddy, Chief, Water Rights Division
FROM Fred H. Hennighausen, District Supervisor
SUBJECT Brine disposal pits in the Linda San Andres Pool north of Roswell

Attached is a memo from R. B. Collins Jr., concerning his inspection of brine pits on the east and west sides of the Pecos River in the Linda San Andres Pool. Mr. McCoy and Mr. McFaddin, representing Dr. Dunn, know about these findings and were disturbed as they stated they had told the operator to shut down.

On October 28, Mr. Herman Cravey of Artesia, representing Mr. Ray Smith, visited this office and discussed requirements for disposing of the produced water. Mr. Cravey stated that he was attempting to determine the size of pits required, materials available, etc., and would contact this office regarding plans for disposal of the salt water. He was advised what would be required and that no water could be produced after the 1st.

Mose Armstrong of the Artesia O.C.C. office is aware of our findings and is contacting Mr. Porter.



FHH:td
encl.

WJ

November 5, 1964

Fred H. Hennighausen

R. B. Collins, Jr.

Inspection of brine disposal on east and west sides of the Pecos River, in the Linda San Andres Oil Pool, Townships 6 and 7 South, Range 26 East, N.M.P.M., Chaves County, New Mexico.

On the afternoon of November 3, 1964, I inspected the brine pits in the Linda San Andres pool on the east side of the Pecos River, Township 6 and 7 South, Range 26 East. All of the wells were visited and on two leases, brine was being disposed of in unlined pits. These were the Dr. Sam G. Dunn Beadle Lease which was producing approximately ten barrels of water per day into an unlined pit and the Dr. Sam G. Dunn Fendergrass Lease which was producing about 15 barrels of water per day into an unlined pit.

On November 4, 1964, an inspection was made of all of the wells on the west side of the Pecos River. The Ray Smith Harris Lease was producing approximately 60 barrels of water into an unlined pit.

R. B. Collins, Jr.

BRC:ld

C
O
P
Y

FROM THE SURGICAL SECTION
OF
SAM G DUNN, M.D., F.A.C.S. 207-5 11-11-64
WEST TEXAS CLINIC
LUBBOCK, TEXAS
November 4, 1964

Mr. Frank Irby
New Mexico State Engineers Dept.
Santa Fe, New Mexico

Dear Mr. Irby:

Just a note to tell you that we have had our pits surveyed and checked by Mr. Collins of the Engineering Department in Roswell and we plan to put a lining of asphalt to his satisfaction if we do not go the plastic route. We were delayed in getting our plastic due to the City of Roswell having a surplus of plastic having to have bids in and since they had decided to sell it to the highest bidder and not the bid we had offered them, which was tentatively accepted previously. This has delayed us somewhat. We drained all of our tanks before November 1st and have been pumping into the stock tanks themselves both with oil and salt water to keep from having to shut down any longer than possible. We will keep in touch with Mr. Collins relative to the pits. If you have any other instructions please let me know because we certainly do not want to do anything wrong.

Incidentally, since we are cementing our long string all the way from the bottom to the top of the ground I am wondering if you or the Conservation Commission would have any objections to me running second hand pipe which has been tested for the lower 300 feet of the string. We perforate the pipe and there would not be any possible chance of contamination of the water bearing strata or the Pecos River. The reason I am making this request is that I have some good second hand pipe that I pulled on wells that I have abandoned and as we cement all the way to the top under the direction of the Engineers of the Conservation Commission I do not see how we could possibly contaminate anything. I would appreciate your views on the matter since we do not want to do anything that is not okay. I have about 6000 feet of this pipe on hand and since the added expense of having to line all the pits, and the production is so meager and will be until we institute water flooding, it would help me a great deal in the development of the field.

FROM THE SURGICAL SECTION
OF
SAM G. DUNN, M.D., F.A.C.S.
WEST TEXAS CLINIC
LUBBOCK, TEXAS
-page 2-

Thanking you in advance for the courtesy of an early reply to this request I am,

Sincerely,

Sam G. Dunn, M.D.

SGD/jf

CC: Mr. Collins
State Engineer Department
Roswell, New Mexico
CC: Mr. M. L. Armstrong
New Mexico Oil Conservation Commission
Drawer DD
Artesia, New Mexico

POST OFFICE DEPARTMENT
OFFICIAL BUSINESS

PENALTY FOR PRIVATE USE TO AVOID
PAYMENT OF POSTAGE, \$500

Ray Smith Drilling Company
409 Wilkinson
Foster Building
Midland, Texas

INSTRUCTIONS: Fill in items below and complete #1 on other side, when applicable. Moisten gummed ends and attach to back of article. Print on front of article RETURN RECEIPT REQUESTED.

REGISTERED NO. _____ NAME OF SENDER
OIL CONSERVATION COMMISSION

CERTIFIED NO. _____ STREET AND NO. OR P. O. BOX
P. O. BOX 2088

INSURED NO. _____ CITY, ZONE AND STATE
SANTA FE, NEW MEXICO

Order No. R-2788

POSTMARK OF DELIVERING OFFICE
MIDLAND TEX
OCT 24 1964
RETURN TO

POD Form 3811 Jan. 1953

CSS-16-71848-4

POST OFFICE DEPARTMENT
OFFICIAL BUSINESS

PENALTY FOR PRIVATE USE TO AVOID
PAYMENT OF POSTAGE, \$500

Dr. Sam G. Dunn
1312 Main Street
Lubbock, Texas

INSTRUCTIONS: Fill in items below and complete #1 on other side, when applicable. Moisten gummed ends and attach to back of article. Print on front of article RETURN RECEIPT REQUESTED.

REGISTERED NO. _____ NAME OF SENDER
OIL CONSERVATION COMMISSION

CERTIFIED NO. _____ STREET AND NO. OR P. O. BOX
P. O. BOX 2088

INSURED NO. _____ CITY, ZONE AND STATE
SANTA FE, NEW MEXICO

Letter 10-22-64 - Order R-2788

POSTMARK OF DELIVERING OFFICE

RETURN TO

CSS-16-71848-4

#1-INSTRUCTIONS TO DELIVERING EMPLOYEE	
<input type="checkbox"/> Deliver ONLY to addressee	<input type="checkbox"/> Show address where delivered
(Additional charges required for these services)	
RETURN RECEIPT	
Received the numbered article described on other side.	
SIGNATURE OR NAME OF ADDRESSEE (must always be filled in)	
<i>Paul H. Meyer</i>	
SIGNATURE OF ADDRESSEE'S AGENT, IF ANY	
DATE DELIVERED	ADDRESS WHERE DELIVERED (only if requested in item #1)
OCT 24 1964	
CSG-16-71548-4 GPO	

#1-INSTRUCTIONS TO DELIVERING EMPLOYEE	
<input type="checkbox"/> Deliver ONLY to addressee	<input type="checkbox"/> Show address where delivered
(Additional charges required for these services)	
RETURN RECEIPT	
Received the numbered article described on other side.	
SIGNATURE OR NAME OF ADDRESSEE (must always be filled in)	
<i>John</i>	
SIGNATURE OF ADDRESSEE'S AGENT, IF ANY	
DATE DELIVERED	ADDRESS WHERE DELIVERED (only if requested in item #1)
10-23-64	
CSG-16-71548-4 GPO	

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. 3120
Order No. R-2788

APPLICATION OF DR. SAM G. DUNN
FOR A REVIEW OF THE COMMISSION'S
DIRECTIVE OF AUGUST 27, 1964,
CONCERNING SALT WATER DISPOSAL,
CHAVES COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on October 13, 1964, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 21st day of October, 1964, 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, Dr. Sam G. Dunn, seeks review of the Commission's Directive dated August 27, 1964, which prohibited the disposal of produced salt water in unlined pits after November 1, 1964, in the Linda-San Andres Oil Pool and adjacent area in Townships 6 and 7 South, Range 26 East, NMPM, Chaves County, New Mexico.

(3) That the applicant and other operators are disposing of produced salt water in unlined pits in the subject area; that all of said disposal pits are within two miles of the Pecos River except those in Section 26, Township 7 South, Range 26 East, NMPM, Chaves County, New Mexico.

(4) That the disposal of salt water in unlined pits within two miles of the Pecos River in the subject area constitutes a

-2-

CASE No. 3120
Order No. R-2788

hazard to the Pecos River and other fresh water supplies designated by the State Engineer and should be prohibited.

(5) That although disposal of salt water in unlined pits more than two miles from the Pecos River in the subject area constitutes some hazard to fresh water supplies designated by the State Engineer, the hazard is not great at this time and should be prohibited in each section when the average salt water production per well in the section exceeds three barrels per day or the total salt water production for the section exceeds fifteen barrels per day; provided, however, that effective May 1, 1965, the disposal of produced salt water in unlined pits in said area should be prohibited in each section when total salt water production for the section exceeds five barrels per day.

IT IS THEREFORE ORDERED:

(1) That, effective November 1, 1964, the disposal of produced salt water in unlined pits within two miles of the Pecos River in Townships 6 and 7 South, Range 26 East, NMPM, Chaves County, New Mexico, is hereby prohibited.

(2) That the disposal of produced salt water in unlined pits more than two miles from the Pecos River in Townships 6 and 7 South, Range 26 East, NMPM, Chaves County, New Mexico, is hereby prohibited in each section when the average salt water production per well in the section exceeds three barrels per day or total salt water production for the section exceeds fifteen barrels per day; provided, however, that effective May 1, 1965, the disposal of produced salt water in unlined pits in said area is hereby prohibited in each section when total salt water production for the section exceeds five barrels per day.

(3) That each operator desiring to line salt water disposal pits in Townships 6 and 7 South, Range 26 East, NMPM, Chaves County, New Mexico, shall notify the State Engineer's Office, P. O. Box 1717, Roswell, New Mexico, in writing of the date and time such operations are to commence in order that the same may be witnessed.

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

-3-

CASE No. 3120
Order No. R-2788

DONE at Santa Fe, New Mexico, on the day and year herein-
above designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

Jack M Campbell
JACK M. CAMPBELL, Chairman.

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

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

S E A L

esr/

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. 3120
Order No. R-2789

APPLICATION OF DR. SAM G. DUNN
FOR A REVIEW OF THE COMMISSION'S
DIRECTIVE OF AUGUST 27, 1964,
CONCERNING SALT WATER DISPOSAL,
CHAVES COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on October 13, 1964, at Santa Fe, New Mexico, before Examiner Daniel S. Mutter.

NOW, on this 21st day of October, 1964, 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, Dr. Sam G. Dunn, seeks review of the Commission's Directive dated August 27, 1964, which prohibited the disposal of produced salt water in unlined pits after November 1, 1964, in the Linda-San Andres Oil Pool and adjacent area in Townships 6 and 7 South, Range 26 East, NMPM, Chaves County, New Mexico.

(3) That the applicant and other operators are disposing of produced salt water in unlined pits in the subject area; that all of said disposal pits are within two miles of the Pecos River except those in Section 26, Township 7 South, Range 26 East, NMPM, Chaves County, New Mexico.

(4) That the disposal of salt water in unlined pits within two miles of the Pecos River in the subject area constitutes a

-2-

CASE No. 3120
Order No. R-2788

hazard to the Pecos River and other fresh water supplies designated by the State Engineer and should be prohibited.

(5) That although disposal of salt water in unlined pits more than two miles from the Pecos River in the subject area constitutes some hazard to fresh water supplies designated by the State Engineer, the hazard is not great at this time and should be prohibited in each section when the average salt water production per well in the section exceeds three barrels per day or the total salt water production for the section exceeds fifteen barrels per day; provided, however, that effective May 1, 1965, the disposal of produced salt water in unlined pits in said area should be prohibited in each section when total salt water production for the section exceeds five barrels per day.

IT IS THEREFORE ORDERED:

(1) That, effective November 1, 1964, the disposal of produced salt water in unlined pits within two miles of the Pecos River in Townships 6 and 7 South, Range 26 East, NMPM, Chaves County, New Mexico, is hereby prohibited.

(2) That the disposal of produced salt water in unlined pits more than two miles from the Pecos River in Townships 6 and 7 South, Range 26 East, NMPM, Chaves County, New Mexico, is hereby prohibited in each section when the average salt water production per well in the section exceeds three barrels per day or total salt water production for the section exceeds fifteen barrels per day; provided, however, that effective May 1, 1965, the disposal of produced salt water in unlined pits in said area is hereby prohibited in each section when total salt water production for the section exceeds five barrels per day.

(3) That each operator desiring to line salt water disposal pits in Townships 6 and 7 South, Range 26 East, NMPM, Chaves County, New Mexico, shall notify the State Engineer's Office, P. O. Box 1717, Roswell, New Mexico, in writing of the date and time such operations are to commence in order that the same may be witnessed.

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

-3-

CASE No. 3120

Order No. R-2788

DONE at Santa Fe, New Mexico, on the day and year herein-
above designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

JACK M. CAMPBELL, Chairman

E. S. WALKER, Member

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

S E A L

ent/

No. 859715

RECEIPT FOR CERTIFIED MAIL—20¢

SENT TO Barnes and Swanson		POSTMARK OR DATE 10-22-64
STREET AND NO. P. O. Box 1057		
CITY AND STATE Roswell, 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 50¢ fee		
FEES ADDITIONAL TO 20¢ FEE		
POD Form 3800 Apr 1960 SEE OTHER SIDE Order No. R-2788		

No. 859713

RECEIPT FOR CERTIFIED MAIL—20¢

SENT TO Mr. H. E. Barnes		POSTMARK OR DATE 10-22-64
STREET AND NO. P. O. Box 1057		
CITY AND STATE Roswell, 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 50¢ fee		
FEES ADDITIONAL TO 20¢ FEE		
POD Form 3800 Apr 1960 SEE OTHER SIDE Order No. R-2788		

No. 859714

RECEIPT FOR CERTIFIED MAIL—20¢

SENT TO Mr. J. J. Travis		POSTMARK OR DATE 10-22-64
STREET AND NO. Box 873		
CITY AND STATE Midland, Texas		
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 50¢ fee		
FEES ADDITIONAL TO 20¢ FEE		
POD Form 3800 Apr 1960 SEE OTHER SIDE Order No. R-2788		

No. 859712

RECEIPT FOR CERTIFIED MAIL—20¢

SENT TO Ray Smith Drilling Company		POSTMARK OR DATE 10-22-64
STREET AND NO. 409 Wilkinson - Foster Bldg		
CITY AND STATE Midland, Texas		
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 50¢ fee		
FEES ADDITIONAL TO 20¢ FEE		
POD Form 3800 Apr 1960 SEE OTHER SIDE Order No. R-2788		

No. 859647

RECEIPT FOR CERTIFIED MAIL—20¢

SENT TO Dr. Sam G. Dunn		POSTMARK OR DATE 10-22-64
STREET AND NO. 1312 Main Street		
CITY AND STATE Lubbock, Texas		
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 50¢ fee		
FEES ADDITIONAL TO 20¢ FEE		
POD Form 3800 Apr 1960 SEE OTHER SIDE Letter 10-22-64 - Order R-2788		

1. Stick postage stamps to your article to pay:
25¢ certified mail fee
First-class or airmail postage
Either return receipt fee—10¢ or 35¢ (optional)
Restricted delivery fee—50¢ (optional)
Special-delivery fee (optional)
2. If you want this receipt postmarked, stick the gummed stub on the left portion of the address side of the article, leaving the receipt attached, and present the article to a postal employee.
3. If you do not want this receipt postmarked, stick the gummed stub on the left portion of the address side of the article, detach and retain the receipt, and mail the article.
4. If you want a return receipt, write the certified-mail number and your name and address on a return receipt card, Form 3811, and attach it to the back of the article by means of the gummed ends. Endorse front of article RETURN RECEIPT REQUESTED.
5. If you want the article delivered only to the addressee, endorse it on the front DELIVER TO ADDRESSEE ONLY. Place the same endorsement in line 2 of the return receipt card.
6. Save this receipt and present it if you make inquiry.

1. Stick postage stamps to your article to pay:
25¢ certified mail fee
First-class or airmail postage
Either return receipt fee—10¢ or 35¢ (optional)
Restricted delivery fee—50¢ (optional)
Special-delivery fee (optional)
2. If you want this receipt postmarked, stick the gummed stub on the left portion of the address side of the article, leaving the receipt attached, and present the article to a postal employee.
3. If you do not want this receipt postmarked, stick the gummed stub on the left portion of the address side of the article, detach and retain the receipt, and mail the article.
4. If you want a return receipt, write the certified-mail number and your name and address on a return receipt card, Form 3811, and attach it to the back of the article by means of the gummed ends. Endorse front of article RETURN RECEIPT REQUESTED.
5. If you want the article delivered only to the addressee, endorse it on the front DELIVER TO ADDRESSEE ONLY. Place the same endorsement in line 2 of the return receipt card.
6. Save this receipt and present it if you make inquiry.

1. Stick postage stamps to your article to pay:
25¢ certified mail fee
First-class or airmail postage
Either return receipt fee—10¢ or 35¢ (optional)
Restricted delivery fee—50¢ (optional)
Special-delivery fee (optional)
2. If you want this receipt postmarked, stick the gummed stub on the left portion of the address side of the article, leaving the receipt attached, and present the article to a postal employee.
3. If you do not want this receipt postmarked, stick the gummed stub on the left portion of the address side of the article, detach and retain the receipt, and mail the article.
4. If you want a return receipt, write the certified-mail number and your name and address on a return receipt card, Form 3811, and attach it to the back of the article by means of the gummed ends. Endorse front of article RETURN RECEIPT REQUESTED.
5. If you want the article delivered only to the addressee, endorse it on the front DELIVER TO ADDRESSEE ONLY. Place the same endorsement in line 2 of the return receipt card.
6. Save this receipt and present it if you make inquiry.

1. Stick postage stamps to your article to pay:
25¢ certified mail fee
First-class or airmail postage
Either return receipt fee—10¢ or 35¢ (optional)
Restricted delivery fee—50¢ (optional)
Special-delivery fee (optional)
2. If you want this receipt postmarked, stick the gummed stub on the left portion of the address side of the article, leaving the receipt attached, and present the article to a postal employee.
3. If you do not want this receipt postmarked, stick the gummed stub on the left portion of the address side of the article, detach and retain the receipt, and mail the article.
4. If you want a return receipt, write the certified-mail number and your name and address on a return receipt card, Form 3811, and attach it to the back of the article by means of the gummed ends. Endorse front of article RETURN RECEIPT REQUESTED.
5. If you want the article delivered only to the addressee, endorse it on the front DELIVER TO ADDRESSEE ONLY. Place the same endorsement in line 2 of the return receipt card.
6. Save this receipt and present it if you make inquiry.

1. Stick postage stamps to your article to pay:
25¢ certified mail fee
First-class or airmail postage
Either return receipt fee—10¢ or 35¢ (optional)
Restricted delivery fee—50¢ (optional)
Special-delivery fee (optional)
2. If you want this receipt postmarked, stick the gummed stub on the left portion of the address side of the article, leaving the receipt attached, and present the article to a postal employee.
3. If you do not want this receipt postmarked, stick the gummed stub on the left portion of the address side of the article, detach and retain the receipt, and mail the article.
4. If you want a return receipt, write the certified-mail number and your name and address on a return receipt card, Form 3811, and attach it to the back of the article by means of the gummed ends. Endorse front of article RETURN RECEIPT REQUESTED.
5. If you want the article delivered only to the addressee, endorse it on the front DELIVER TO ADDRESSEE ONLY. Place the same endorsement in line 2 of the return receipt card.
6. Save this receipt and present it if you make inquiry.

GOVERNOR
JACK M. CAMPBELL
CHAIRMAN

State of New Mexico
Oil Conservation Commission



LAND COMMISSIONER
E. S. JOHNNY WALKER
MEMBER

P. O. BOX 2088
SANTA FE

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

October 22, 1964

CERTIFIED - RETURN
RECEIPT REQUESTED
SPECIAL DELIVERY

Dr. Sam G. Dunn
1312 Main Street
Lubbock, Texas

Re: CASE NO. 3120
ORDER NO. R-2788
APPLICANT Dr. Sam G. Dunn

Dear Sir:

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

Very truly yours,

A. L. Porter, Jr.
A. L. PORTER, Jr.
Secretary-Director

ir/

Carbon copy of order also sent to:

Hobbs OCC X

Artesia OCC X

Aztec OCC

OTHER State Engineer Office - Santa Fe and Roswell.
Ray Smith Drilling Company

H. E. Barnes

Barnes and Swanson and Mr. J. J. Travis
United States Geological Survey - Roswell

Case File

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

October 15, 1964

Dr. Sam G. Dunn
West Texas Clinic
Lubbock, Texas

Dear Dr. Dunn:

With reference to your letter of October 14, 1964, I regret to advise that the Commission will be unable to grant an extension of time beyond November 1, 1964 for the disposal of salt water as set out in the Commission's directive of August 27, 1964.

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

ALP/ir

C
O
P
Y

FROM THE SURGICAL SECTION
OF
SAM G. DUNN, M.D., F.A.C.S.
WEST TEXAS CLINIC
LUBBOCK, TEXAS
October 14, 1964

MAILED

OCT 15 PM 1

Mr. A.L. Porter, Secretary
New Mexico Oil Conservation Commission
Box 2088
Santa Fe, New Mexico

Dear Mr. Porter:

I just had a call from your Attorney relative to the decision of the Commission that I would not be allowed to use open pits after the 1st of November on the wells closest to the river. I ask him if they would not at least give us six weeks to get things started and he said no that it had to be the 1st of November. I will have approximately fourteen or fifteen pits that will have to be lined and as you know it takes quite a while to line a pit, particularly to the specifications of the State Water Engineers. I had made arrangements with Mr. Collins, who testified in the Hearing yesterday, relative to him supervising the construction and application of the plastic so it would meet with the approval of everyone concerned. This he told me he would be glad to do. We had already made arrangements for the plastic. However it will be a physical impossibility to get these done before the 1st since my crew is up in the Farmington Area at present hooking up some compressors and it will be two weeks before they will be back. Do you think that under these extenuating conditions that the Board would give me until the 1st of December. Of course I would not have them all done but at least I can get my most profitable wells taken care of by that time. As I told you in the Hearing yesterday I am going to have to work over all my wells which of course will take a lot of money and time. Of course the pits are more important and we will take care of them before we do anything else.

I also want to take this opportunity to thank you and Mr. Nutter for your courteous treatment of my representative Mr. McCoy and testimony. I realize now how futile our effort was but at least we did the best that we could. Thanking you in advance for anything you might be able to do for us in getting some extra time I am,

Sincerely,


Sam G. Dunn, M.D.

SGD/jf

GOVERNOR
JACK M. CAMPBELL
CHAIRMAN

State of New Mexico
Oil Conservation Commission



LAND COMMISSIONER
E. S. JOHNNY WALKER
MEMBER

P. O. BOX 871
SANTA FE

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

October 15, 1964

MEMO

TO: CASE FILE
FROM: J. M. DURRETT, Jr., GENERAL COUNSEL
SUBJECT: CASE 3120

Telephoned Dr. Dunn, H. E. Barnes, Paul H. Meyer,
Vice-President of Ray Smith Drilling Company, and J. J.
Travis' secretary today and advised them that the Commis-
sion had met this morning and decided that the November 1,
1964, deadline would be enforced as to all pits except those
in Section 26, Township 7 South, Range 26 East, NMPM, Chaves
County, New Mexico.

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

Case 3120

September 24, 1964

C
O
P
Y

Mr. John Anderson
U. S. Geological Survey
Post Office Box 1857
Roswell, New Mexico

DOCKET FILED
Date 10-1-64

Dear John:

This is to advise you as to the latest development concerning salt water disposal in the Linda-San Andres pool.

At the request of Dr. Dunn we are docketing two cases for October 13th. One of the cases is for an injection project and the other is for consideration of a redelineation of the area covered in our original directive.

I have asked Mr. Irby of the State Engineer Office to have his staff become thoroughly familiar with the area since it might be desirable to extend the deadline for wells located some distance from the river, while a permanent solution is being worked out.

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

ALP/ir



STATE OF NEW MEXICO
STATE ENGINEER OFFICE
SANTA FE

S. E. REYNOLDS
STATE ENGINEER

September 24, 1964

ADDRESS CORRESPONDENCE TO:
STATE CAPITOL
SANTA FE, N. M.
87501

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

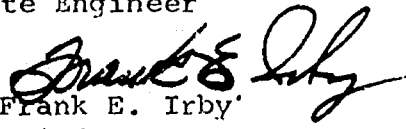
Dear Mr. Porter:

Enclosed herewith is a copy of a report by our Roswell District Office on the wells about which Dr. S. C. Dunn appears to be disturbed. The report covers an area different from that referred to in the previous report I sent you.

It is possible that you have already had information on this from Bill Gressett, but I thought you might be interested in this.

Yours truly,

S. E. Reynolds
State Engineer

By: 
Frank E. Irby
Chief
Water Rights Division

FEI/ma
encl.

MEMORANDUM

State Engineer's Office
Roswell, New Mexico
September 20, 1964


TO Frank E. Juby, Chief, Water Right Division

FROM Fred H. Hennighausen, Supervisor, District II

SUBJECT Disposal of Produced Water in Oil Pools North of Roswell
in Township 7 South, Range 26 East.

Attached hereto is a memorandum from R. B. Collins, Jr.
concerning the disposal of produced water in oil fields
north of Roswell adjacent to the Pecos River. The
contents of this memorandum bear on the forthcoming
hearing before the Oil Commission scheduled for
October 13, 1964.

FHH:k
Attach/


Fred Hennighausen

MEMORANDUM

State Engineer Office
Roswell, New Mexico
September 14, 1964

TO: James L. Wright

FROM: A. D. Collins, Jr.

SUBJECT: Disposal of produced water in an Undesignated Oil Pool and the Pecos San Andres Oil Pool located in Sections 26, 27, 28, 29, 32, and 33, all in Township 7 South, Range 26 East.

In response to your request on the morning of September 10, 1964, Bill Gressett of the Oil Conservation Commission and I made a field investigation of the subject area. We examined the oil wells and observed the water being produced. No samples of the water were collected nor did we measure the amount of water being produced. Mr. Gressett brought some of the records of the Oil Conservation Commission with him, and these were reviewed for any information that might be enlightening.

The Undesignated Oil Pool and the Pecos San Andres Oil Pool are located in the two southern tiers of Sections in Township 7 South, Range 26 East. All of these wells are on the east of the Pecos River in Chaves County, New Mexico. Part of the area under investigation is in the Northern Extension of the Roswell Artesian Basin and part of it is out of the Basin to the east. Sections 29 and 32 of Township 7 South, Range 26 East are in the Basin and Sections 26, 27, 28, and 32 of Township 7 South, Range 26 East are east of the Basin boundary. In the Undesignated Oil Pool and the Pecos San Andres Oil Pool none of the wells or water disposal pits are in the bottom land or in the flood plain of the Pecos River, but all are on the high lands to the east of the River.

The well nearest the Pecos River is the Dr. Sam G. Duan #1 Levers State in the SE $\frac{1}{4}$ of Section 32, Township 7 South, Range 26 East, located about one half mile east of the River. This well was pumping when we visited it and the water being produced was going into the tanks with the oil as no water pit had been constructed. Bill Gressett said that no potential record had been filed and that anything being pumped out of the well at the time of the visit was probably load oil and water that had been used to treat the well.

In the NW $\frac{1}{4}$ and in the SW $\frac{1}{4}$ of Section 33, Township 7 South, Range 26 East, there are two wells which are reportedly owned by Charles A. Lee. These wells were not pumping; and according to the Oil Conservation Commission records, the oil allowable was cut off on May 1, 1964. There were no lease signs on either well.

There is one complete well in the NW 1/4 of Section 32, Township 7 South, Range 26 East, which belongs to R. H. Barnes of Roswell, New Mexico. This well was not completed according to the Oil Conservation Commission records the oil allowed to run out off in May 1, 1934. This well did not have a sand pump on it.

The above four wells are in what has been named the Pecos San Andres Oil Pool. This pool is reported to be producing from the same zone of the San Andres formation that is producing in the Linda San Andres Oil Pool, approximately three miles north. If this is true, it is possible that these pools may in the future and be one large oil pool.

In Section 26, Township 7 South, Range 26 East, Dr. Sam Dunn of Lubbock, Texas has what is called the Dale Federal Lease. At the time of this visit there were five producing oil wells on this lease and one well that had been drilled but was not completed. These five producing wells were all pumping into one tank battery. This tank battery is about 30 yards north of the #1 Dale Federal Well, and the water disposal pit was constructed in sandy loam about 20 yards east of the tanks. This lease was producing a small amount of water and there was approximately 15 to 20 gallons of water in the pit. At the time of the visit, the bottom of the pit was not covered nor did it appear to have ever been covered with water. It was estimated that approximately 17 barrels of water per day were being produced. The water disposal pit just north of the #2 Dale Federal Well is about three miles east of the channel of the Pecos River.

Dr. Sam Dunn of Lubbock, Texas also owns the Sun Federal Lease in Section 29, Township 7 South, Range 26 East. On this lease the #1 well is completed and was pumping oil and water into the tank battery as there was no pit for the produced water. The #2 Sun Federal Well was not completed and the rig was still on the well. Apparently they had just set casing and were waiting on the cement. The #1 Sun Federal well is about one half mile east of the Pecos River.

Mr. Charles A. Lee owns the #1-B Dale Federal Lease in Section 27, Township 7 South, Range 26 East, and it was not completed for production.

A natural spring was found about one fourth mile north of the Dr. Sam G. Dunn #1 Sun Federal well. There was a pump by the spring and on a hill about 50 yards south was a large metal water tank. The pump was not connected, but it did appear that at some time the spring water had been pumped into this tank. This spring is about one fourth mile east of the Pecos River and flows into the River.

Several oil wells are now in existence in the two southern tiers of Sections in Township 7 South, Range 26 East, on the east side of the Pecos River. The five wells owned by Dr. Sam Dunn on the Dale Federal lease were the only wells producing water into an earth pit. This pit was on

James L. Wright

The high land operation by the well in section 25, Township 7 North, Range 25 East, is a good example of the oil wells and the water disposal pits in the section 25 of the plain of the Pecos River. The area is in a high level of development and very few of the wells are in the section 25. The water disposal pits are a necessary part of the operation of a well produced.

Bill Gussner and I visited the well in section 25, Township 7 North, Range 25 East, referred to in L. A. B. Hodge's letter to Dr. Dan G. Hodge concerning a well in section 25. After discussing this and checking the available records, we realized that Dr. Hodge in his letter to Mr. Hodge dated September 1, 1944, possibly made a typographical error and the well in question should be listed in Section 25 of Township 7 North, Range 25 East.

It is recognized that the water disposal method being used by Dr. Dan G. Hodge in Section 25, Township 7 North, Range 25 East presents a possible source of contamination of the fresh water in this area, however, the small amount of water being disposed of in earthen pits does not appear to be critical at the present time.

I suggest that this area be watched closely and as other wells are completed and production increases, a more thorough investigation be made of the method of disposal of the produced water.

R. B. Collins, Jr.
R. B. Collins, Jr.

RBC:ld

GOVERNOR
JACK M. CAMPBELL
CHAIRMAN

State of New Mexico
Oil Conservation Commission



LAND COMMISSIONER
E. B. JOHNNY WALKER
MEMBER

P. D. DRAWER DD
ARTESIA, NEW MEXICO

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

September 11, 1964

Oil Conservation Commission
Box 871
Santa Fe, New Mexico

Attention: Mr. D. S. Nutter

Dear Dan:

In reply to your note regarding Dr. Dunn's well in Section 25-7S-26E we do not have anything indicating that he has drilled a well in Section 25. But he has drilled 6 wells in Section 26-7S-26E. Well #1--I was completed on July 12, 1964 for 12 BO + 20 BWPD and #2--J was completed on July 19, 1964 for 20 BO + 12 BWPD. On September 10, 1964 a field inspection was made and we found wells #1 thru 5 pumping and #6 has the casing in it but no pumping equipment on it. I suppose that wells #3, 4, & 5 were pumping load oil. The tank battery is located in Unit J approximately 200' north of well #2, this being approximately 3 miles east of the river. There was a small stream of water going into the pit, it is going in the ground as fast as it goes in as there was very little water in the pit. According to the Form C-115 for July Well #1--I produced 176 barrels of oil and 200 barrels of water in 20 days, well # 2--J produced 177 barrels of oil and 200 barrels of water in 13 days. From well # 3 to the east of the section the soil is a sandy loam and sloping to the east and south, and from #3 to the west the soil is generally sandy loam with some small rocky hills sloping to the south, dropping off sharply to the west from Well #6. He also has completed a well in Unit P of Section 29-7-26 being the #1 Sun Federal, completed on July 12, 1964 for 10 BO + 2 BWPD. It was pumping into a tank about 150' south of the well, they do not have a pit at the battery at this time. According to Form C-115 for July it produced 140 barrels of oil and 350 barrels of water in 14 days. I don't know what they did with the water. This is up on the hill from the

- 2 -

Oil Conservation Commission

Mr. D. S. Nutter

river somewhere between $\frac{1}{4}$ and $\frac{1}{2}$ mile, and the ground is pretty rough and sloping to west right sharply.

In Unit F of 32-7-26 he has another well that is pumping but no completion report filed on it yet.

All of the wells that have been drilled in this immediate area are up on the hill from the river.

It seems to me that it would be necessary to watch this area for awhile to see if the development continues on to the west and down into the river bottom or flood plain. It might extend across to the west side of the river.

Very truly yours,

OIL CONSERVATION COMMISSION

Bill Gressett

Bill Gressett

BG/bh

FROM THE SURGICAL SECTION
OF
SAM G. DUNN, M.D., F.A.C.S.
WEST TEXAS CLINIC
LUBBOCK, TEXAS
September 10, 1964

COPIES
TO
FILE

SEP 15 2 11 PM '64

Mr. A. L. Porter, Jr.
Secretary-Director
Oil Conservation Commission
Box 2038
Santa Fe, New Mexico

Dear Mr. Porter:

I appreciated very much your letter relative to the contamination of the Pecos River Watershed. I agree with the Commission relative to possible contamination of the river with wells directly contiguous to the river but I feel that the wide scope that you have included in the area to be excessive as far as active contamination is concerned. In case of a flood I can see where open pits would contaminate the river but due to the character of the soil being clay and alkali in the area in which we are drilling and not having any caliche base, which makes it practically impervious to underground drainage, I feel that a "second look" as to the scope of the area is indicated. For this reason I respectfully ask for a Hearing relative to this at your earliest convenience. In this Hearing I would like to ask for permission to inject into the oil producing zone the excess waters produced from the producing wells and this will have a tendency to not only get rid of the salt water but to act as a pilot flood procedure.

I have been in close cooperation with Shell and also Pan American. As you know Pan American Bought some State Leases south of me in the area and of course you understand Shell's plans for unitization of the area. The head geologist of the Division Office of Pan American here in Lubbock, which controls the New Mexico area, made an exhaustive study of the Core Analysis on my wells that were made by the Core Lab of Dallas. I am enclosing their report which shows the formation will stand a water flood and that a water flood will be necessary to make them economically producible. Time is of the essence since the deadline is November 1st and wells will have to be drilled for disposal or existing wells taken out of production in order to meet this deadline. It is possible that some of the other area producers involved would be interested in this Hearing.

FROM THE SURGICAL SECTION
OF
SAM G. DUNN, M.D., F.A.C.S.
WEST TEXAS CLINIC
LUBBOCK, TEXAS

-page 2-

MAIN OFFICE 000

TH SEP 15 PM 1

I trust the latter part of ~~this~~^{the} week will be agreeable with you for the Hearing and I would like to enter the report of the Pan American expert on Water Flooding as proof of the availability of the producing zone to absorb the water. I propose to use a closed system with an oil blanket in this way the water produced will not be contaminated by the atmosphere or other agents.

Thanking you in advance for an early reply I am,

Sincerely,

[Signature]
S. G. Dunn, M.D.

SGD/jf
encl.

*P.S. I will be in Chicago at a Surgical
meeting from 10-4 to 10-12-64 - only other
time would be ok & the sooner the better.*

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

Case
3120

September 4, 1964

C

Sam G. Dunn, M.D.
West Texas Clinic
Lubbock, Texas

O

Dear Doctor Dunn:

P

Thank you for your letter of September 1, 1964, regarding my recent directive relative to the disposal of produced salt water in Townships 6 and 7 South, Range 26 East, Chaves County, New Mexico. I can well understand your concern over this matter, particularly since you have had previous experience with water pollution in various parts of the Permian Basin, in which cases hearings on the matter were conducted in Austin.

Y

Please be assured that this directive was not entered without thorough study of the situation by the staff of the State Engineer, who is charged by statute with the designation, allocation, and protection of fresh waters in this state, and by the staff of the Oil Conservation Commission, which is charged with the responsibility of directing disposal of produced brines in such a manner as to afford reasonable protection against contamination of fresh water; these studies revealed that such conditions and threats of contamination exist as to warrant expeditious action. Nor was the directive entered without considering the burden of an additional expense to the operation of these relatively small oil wells. I share your concern over the economics involved, but feel sure that you will share my belief that America's dwindling fresh water resources must be protected. I believe that the nation-wide effort by the oil and gas industry over the past several years to maintain safe, healthy, non-polluted water supplies is indeed commendable, particularly in view of the economic pressures

OIL CONSERVATION COMMISSION

P. O. BOX 871

SANTA FE, NEW MEXICO

*Case
3120*

September 4, 1964

C
O
P
Y

Sam G. Dunn, M.D.
West Texas Clinic
Lubbock, Texas

Dear Doctor Dunn:

Thank you for your letter of September 1, 1964, regarding my recent directive relative to the disposal of produced salt water in Townships 6 and 7 South, Range 26 East, Chaves County, New Mexico. I can well understand your concern over this matter, particularly since you have had previous experience with water pollution in various parts of the Permian Basin, in which cases hearings on the matter were conducted in Austin.

Please be assured that this directive was not entered without thorough study of the situation by the staff of the State Engineer, who is charged by statute with the designation, allocation, and protection of fresh waters in this state, and by the staff of the Oil Conservation Commission, which is charged with the responsibility of directing disposal of produced brines in such a manner as to afford reasonable protection against contamination of fresh water; these studies revealed that such conditions and threats of contamination exist as to warrant expeditious action. Nor was the directive entered without considering the burden of an additional expense to the operation of these relatively small oil wells. I share your concern over the economics involved, but feel sure that you will share my belief that America's dwindling fresh water resources must be protected. I believe that the nation-wide effort by the oil and gas industry over the past several years to maintain safe, healthy, non-polluted water supplies is indeed commendable, particularly in view of the economic pressures

OIL CONSERVATION COMMISSION

P. O. BOX 871

SANTA FE, NEW MEXICO

PAGE -2-

Sam G. Dunn, M.D.
West Texas Clinic
Lubbock, Texas
September 4, 1964

C

under which the domestic industry is currently operating. It was with all of these things in mind that the directive was entered without first having a hearing. Of course, any operator can request a hearing on this matter if he so desires; in the meantime the November 1 deadline will remain in effect unless rescinded or extended by the Commission after hearing.

O

I agree with you that the best solution may be to utilize this water in the formation from which it comes in an effort to stimulate the natural production of oil. It is my understanding that there is considerable oil in place in this area but very little natural reservoir energy to produce it. It is my suggestion that studies be inaugurated at the earliest possible date to determine the feasibility of this inasmuch as a hearing is required before water can be injected into any producing formation.

P

As to the well in Section 25, Township 7 South, Range 26 East, we are contacting our field men and the State Engineer Office. We will let you know as soon as a decision has been made whether to except this well.

Y

If you have any further questions regarding this matter please feel free to call upon me. If you care to come to Santa Fe, my staff and I will be happy to go over the whole matter with you and with the other operators in the pool. We want to help you in any way that we can.

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

ALP/ir

FROM THE SURGICAL SECTION
OF
SAM G. DUNN, M.D., F.A.C.S.
WEST TEXAS CLINIC
LUBBOCK, TEXAS

-page 2-

1964 SEP 3 AM 8:15

Case 3/20

As you no doubt know the terrain in that location is more like a desert than anything else and there is not any vegetation to speak of with the exception of small plants. There is a base of alkali just beneath the earth crust, especially in Township 7 South, Range 26 East, and needless to say you could not grow anything there.

In the testimony presented at the Water Pollution Hearings in Austin a water engineer stated, in relation to the town of Andrews which as the terrain around there with a caliche base, that it would take one thousand years for any water to migrate from the twelve miles out into town even though it has a base of caliche. This was admitted on the part of the engineers of the Pollution Board. I note with a great deal of interest that the rain fall in that area is comparatively little in amount. I realize that you engineers are not concerned with economics and I am not going to stress that angle other than to say that these wells produce approximately three to five barrels of oil per day and some of them very little water. The area will be subject to water flood in the future and I feel that the State will derive a great deal of received revenue eventually from these wells when water flooding occurs as secondary recovery will be much more valuable than the primary. If the Commission could only give us a comparatively short time to recover some of our money we have spent in that area, incidentally I have drilled over 20 wells including dry holes there, before they clamped down on us with such an order as we received today I do not believe the water shed of the Pecos River would be damaged to any appreciable extent. In your Directive received today you did not say what zone we would have to put the water into and am wondering if the Commission would object to us putting the water in a producing zone that we are at present getting our oil out of. In this way we could dispose of the salt water and also act more or less as a secondary recovery. There would be no possible way to contaminate the Pecos River in this manner and by using a closed system we would not harm the producing horizon.

I will be glad to pay your expenses and meet you on the field and go over the entire situation with you at your convenience. Needless to say it means a great deal to me financially. Thanking you in advance for the courtesy of an early reply I am,

Sincerely,

Sam G. Dunn, M.D.

SGD/jr

FROM THE SURGICAL SECTION
OF
SAM G. DUNN, M.D., F.A.C.S.
WEST TEXAS CLINIC
LUBBOCK, TEXAS

SEP 3 1964
10:15 AM

September 1, 1964

Mr. A.L. Porter, Secretary
Oil Conservation Committee
Box 2038
Santa Fe, New Mexico

Re: Directive Relative to
Disposal of Produced Salt Water

Dear Mr. Porter:

It was quite a shock today to get your Registered Letter telling me that on November 1st there would be no more open pits in all of Township 6 & 7 South, Range 26 East, Chaves County, New Mexico. I would like very much to get more information relative to this. I have had quite a bit of experience with water pollution, since I have wells in all of the areas of the Permian Basin where they have had Hearings in Austin, and after hearing evidence we have had to do away with open pits in certain areas and some have been proven there would be no contamination of underground water. I am wondering why no Hearing was held or ordered in this case.

Since I have had some experience with water pollution as stated above I took the trouble before we started disposing of any of our salt water, and before any of the wells were completed in the area in question with the exception of the wells across the river, to have analysis done on the water in the water wells in the area in question. We took samples from the wells and had it tested and frankly this water is of such chemical composition that it has stopped up all my radiators on my equipment. It has been necessary to take water from Roswell to keep from ruining our machinery. This kind of water was done before we started disposing of any salt water. As you know there is no caliche under this area like there is in eastern New Mexico where it merely "strains" the water in passing through. We have a clay base out in Chaves County where we have been drilling and we have trouble even finding enough water for domestic purposes. We have drilled several wells with cable tools and in this way we can test each formation. This is especially true over in Section 25, Township 7 South, Range 26 East which is over four miles from the river by actual map measurement. It seems mighty hard on us to have to dispose of water that far from the river where there could not possibly be any contamination since the drainage does not go from this section.

RAY SMITH DRILLING CO.
DRILLING CONTRACTORS

409 WILKINSON FOSTER BLDG.
MIDLAND, TEXAS 79704



August 31, 1964

TELEPHONE
Mutual 2-9706

Oil Conversation Commission
State of New Mexico
P. O. Box 2088
Santa Fe, New Mexico

Attention: Mr. A. L. Porter, Jr.
Secretary-Director

Gentlemen:

We acknowledge receipt, this date, of your Directive relative to disposal of produced salt water in the Linda-San Andres area of Chaves County, New Mexico.

Action on our part will begin immediately to make arrangements in cooperation with the other parties to properly dispose of such salt water.

Yours very truly,

RAY SMITH DRILLING COMPANY

A handwritten signature in cursive script, appearing to read "Paul H. Meyer".

Paul H. Meyer,
Vice-President & General Manager

cc: State Engineer
Oil Conservation Commission

HGB/PHM/pjt

DRAFT

JMD/esr

Oct. 19, 1964

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

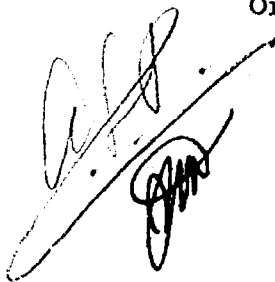
CF Subj. _____

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

CASE No. 3120

Order No. R- 2788

APPLICATION OF DR. SAM G. DUNN
FOR A REVIEW OF THE COMMISSION'S
DIRECTIVE OF AUGUST 27, 1964,
CONCERNING SALT WATER DISPOSAL,
CHAVES COUNTY, NEW MEXICO.



ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on
October 13, 1964, at Santa Fe, New Mexico, before Examiner
Daniel S. Nutter.

NOW, on this _____ day of October, 1964, 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, Dr. Sam G. Dunn, seeks review of the
Commission's Directive dated August 27, 1964, which prohibited the
disposal of produced salt water in unlined pits after November 1,
1964, in the Linda-San Andres Oil Pool and adjacent area in Town-
ships 6 and 7 South, Range 26 East, NMPM, Chaves County, New Mexico.

(3) That the applicant and other operators are disposing of
produced salt water in unlined pits in the subject area; that all
of said disposal pits are within two miles of the Pecos River
except those in Section 26, Township 7 South, Range 26 East, NMPM,
Chaves County, New Mexico.

(4) That the disposal of salt water in unlined pits within two miles of the Pecos River in the subject area constitutes a hazard to the Pecos River and other fresh water supplies designated by the State Engineer and should be prohibited.

(5) That although disposal of salt water in unlined pits more than two miles from the Pecos River in the subject area constitutes some hazard to fresh water supplies designated by the State Engineer, the hazard is not great at this time and should be prohibited in each section when the average salt water production per well in the section exceeds three barrels per day or ~~a~~ ^{the} total salt water production for the section exceeds fifteen barrels per day; provided, however, that effective May 1, 1965, the disposal of produced salt water in unlined pits in said area should be prohibited in each section when total salt water production for the section exceeds five barrels per day.

IT IS THEREFORE ORDERED:

(1) That, effective November 1, 1964, the disposal of produced salt water in unlined pits within two miles of the Pecos River in Townships 6 and 7 South, Range 26 East, NMPM, Chaves County, New Mexico, is hereby prohibited.

(2) That the disposal of produced salt water in unlined pits more than two miles from the Pecos River in Townships 6 and 7 South, Range 26 East, NMPM, Chaves County, New Mexico, is hereby prohibited in each section when the average salt water production per well in the section exceeds three barrels per day or total salt water production for the section exceeds fifteen barrels per day; provided, however, that effective May 1, 1965, the disposal of produced salt water in unlined pits in said area is hereby prohibited in each section when total salt water production for the section exceeds five barrels per day.

(3) That each operator desiring to line salt water disposal pits in Townships 6 and 7 South, Range 26 East, NMPM, Chaves County, New Mexico, shall notify the State Engineer's Office, P. O. Box 1717, Roswell, New Mexico, in writing of the date and time such operations are to commence in order that the same may be witnessed.

(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.

Salt water disposal pits

NEW MEXICO
OIL CONSERVATION COMMISSION

FIELD TRIP REPORT

Date November 10, 1964

Name of Employee M. L. Armstrong

Time of Departure 9:00 a.m. Time of Return 4:30 p.m.

Miles Travelled 166

In the space below please indicate purpose of trip and duties performed, listing wells or leases visited.

Dick and I inspected salt water pits in Chaves County. Didn't find any wells putting water in pits. Seems they are all making new pits with the intention of lining them.

MAIN OFFICE

'64 Nov 13 AM 6

M. L. Armstrong
Employee's Signature
District # 2

*Copy to
Salt Water Division
file
Case 3120*

NEW MEXICO
OIL CONSERVATION COMMISSION

FIELD TRIP REPORT

MAIN OFFICE CCC

64 DEC 2 AM 8 04

Date 11/19/64

Name of Employee W. A. Gressett

Time of Departure 7:30 a.m. Time of Return 3:30 p.m.

Miles Travelled 196

In the space below please indicate purpose of trip and duties performed, listing wells or leases visited.

Linda San Andres Pool & Pecos San Andres Pool Chaves County

Dr. Dunn's Osage & Sturgeon wells were the only wells pumping

None of

today, ~~all~~ of the other wells in the pool were ~~not~~ running at

the time I was there. There was no water being turned out into

the pits. According to Mr. R. B. Collins W/the State Engineer's Office in Roswell. Dr. Dunn is supposed to start lining his pits on Saturday the 21st.

All of the wells in the Pecos San Andres were down and no water has been turned out.

Also, went out to Shell Oil Company Waterflood project in the South Bitter Lakes San Andres Pool in 27-10-25. They had a small amount of water going into one pit, and had dug another pit close by that is to be lined as soon as the material comes in, and it is supposed to be in on Monday November 23.

W. A. Gressett

Employee's Signature

District # 2

*Copy to
Salt Water
Department
File*

NEW MEXICO
OIL CONSERVATION COMMISSION

RECEIVED
DEC 2 4 00 PM '64

FIELD TRIP REPORT

Date 11/13/64

Name of Employee W. A. Gressett

Time of Departure 8:00 a.m. Time of Return 3:30 p.m.

Miles Travelled 166

In the space below please indicate purpose of trip and duties performed, listing wells or leases visited.

Field Check: Linda San Andres Pool Area

There was several of the wells pumping but no water was being turned out into the pits. They are holding it all in the tanks.

Dr. Dunn had a man working on the Sturgeon pit getting it ready for the lining. Took the shut in signs off the Barnes wells. He is to hold all the water in the tanks until the new pit is finished.

W. A. Gressett
Employee's Signature
District # 2

NEW MEXICO
OIL CONSERVATION COMMISSION

FIELD TRIP REPORT

Date 11/6/64

Name of Employee W. A. Gressett

Time of Departure 7:00 a.m. Time of Return 4:30 p.m.

Miles Travelled 231

In the space below please indicate purpose of trip and duties performed, listing wells or leases visited.

Mose, R. B. Collins & I made a field check of the Pecos San Andres, Leslie San Andres & Linda San Andres Pool in 6 & 7S-26E, Chaves County. Pecos San Andres Pool: There was only 1 well pumping and no water was being turned out.

Leslie San Andres Pool: Dr. Dunn had 3 wells pumping and water was going in the pit at an estimated rate of 8 bbls of water per day.

Linda San Andres Pool: Dr. Dunn had several of his wells pumping but he was not putting any water in the pits. He has enlarged the pits on the following leases but has not started lining them yet. Beadle, Pendergrass, Sturgeon, Elliott Federal and Crandell Phillips.

H. E. Barnes was pumping his Fed. #1,2-N, 33-6-26, and running water out in the pit. Mose put shut in signs on these wells. Barnes has a new pit dug but not lined.

Barnes & Swanson Well in Sec. 8-7-26, had the rods out of the hole. They also have enlarged the pit.

Ray Smith #1-Harris, 33-6-26, was not running, there was still a lot of water in the pit. Shut in sign on this.

Ray Smith #1-George, 32-6-26, not running, shut in sign here too.

W. A. Gressett
Employee's Signature
District # 2

Copy to
Dist. 2
Cane file

MAIN OFFICE OF

1965 JAN 5 AM 9

NEW MEXICO
OIL CONSERVATION COMMISSION

FIELD TRIP REPORT

Date 12/10/64

Name of Employee W. A. Gressett

Time of Departure 7:30 a.m. Time of Return 4:00 p.m.

Miles Travelled 209

In the space below please indicate purpose of trip and duties performed,
listing wells or leases visited.

Field Check (Dry Holes)

Roy H. Smith #1 Humble State 4-10-27

Shell Oil Co., #4 State CB 5-9-27

Linda San Andres Pool

Dr. Dunn has lined 4 pits, the water from seven leases are going
into these pits. He still has 2 more to be lined.

H. E. Barnes and Barnes & Swanson have both been lined.

Dr. Dunn has also lined the Sun Federal Pit located in sec. 29-7-26.

Shell Oil Co., has lined a pit on their DeKalb Fed. Lease in sec.
27-10-25 in the South Bitter Lake San Andres Pool.

W. A. Gressett
Employee's Signature
District # 2

NEW MEXICO
OIL CONSERVATION COMMISSION

FIELD TRIP REPORT

Date 1/13/65

Name of Employee W. A. Gressett

Time of Departure 7:30 a.m. Time of Return 4:30 p.m.

Miles Travelled 196

In the space below please indicate purpose of trip and duties performed, listing wells or leases visited.

Field Check: Linda San Andres Pool, 6 & 7S-26E

The following leases have the disposal pits lined.

Barnes & Swanson	Tonkin	8-7-26	1 Well
H.E. Barnes	Federal	33-6-26	2 Wells
Dr. Sam G. Dunn	Beadle	4-7-26	2 Wells
"	Clark	"	1 Well
"	Crandell		
"	Phillips	34-6-26	1 Well
"	Elliott &		
"	England B	33-6-26	3 Wells
"	Sturgeon,		
	Osage &		
	England	33-6-26	7 Wells

This takes care of all of the produced water on the east side of the river.

Ray Smiths wells on the west side are shut down.

Pecos San Andres Pool, 7S-26E

Dr. Dunn has lined a pit on the Sun Fed. in 29-7-26 & the Levers State in 32-7-26.

Continued

W. A. Gressett
Employee's Signature
District # _____

-2-

Continued:

Charles A. Lee has lined one in 33-7-26

H. E. Barnes had dug a pit but has not lined it yet. 32-7-26.

Leslie Springs San Andres 7S-26E.

Dr. Dunn is the only operator in this pool, and he is producing a small amount of water into an unlined pit.

1955 JAN 25 11:10

*copy
to Mr. Brown
Salt water
disposal case file*

NEW MEXICO
OIL CONSERVATION COMMISSION

FIELD TRIP REPORT

Date February 11, 1965

Name of Employee W. A. Gressett
Time of Departure 7:30 a.m. Time of Return 4:30 p.m.
Miles Travelled 176

In the space below please indicate purpose of trip and duties performed, listing wells or leases visited.

Field check - Linda San Andres vicinity 6 & 7S-26E. Found the lining in the Surgeon pit (located in Unit F, Sec. 33-6-26) was torn in about the center of the pit. It is my understanding that when this pit was lined, the man that did the work told them that if the lining was covered with water at all times, they would not need to cover it with dirt, and they only covered part of it. The bottom of the pit is not level and there is a place in the center where there was no water, and I suppose that the wind started to whipping it and it finally tore it loose and when I found it, there was about a 20' square torn and rolled back.

On the way out I met Mr. McFadden at around 11:30 a.m. and told him what I had found, and he said that he didn't know about it, as he hadn't looked at the pit for several days. I suggested that he shut the wells down till the lining had been repaired and to notify the State Engineers office when the repairs were to be made so that they could witness this if they wanted to. When I got into Roswell and told Mr. R. B. Collins with the State Engineers

Continued

W. A. Gressett
Employee's Signature
District # _____

65 FEB 17 AM

- 2 -

continued:

office what I had found, he wanted to go and take a look at it so I went with him. We arrived at about 2:45 p.m. and the wells were still running, and water was still coming into the pit. However I understand that they were shut down shortly after we left there.

Mr. Collins called me Monday morning the 15th and said that the pit was repaired and that he witnessed the work, and the operator was going to completely cover the lining with dirt to prevent this from happening again.

*Copy to
Mr. Dunn
Pecos water case
file*

NEW MEXICO
OIL CONSERVATION COMMISSION

1
1
2
3
4
5
6
7
8
9
10
11
12

FIELD TRIP REPORT

Date March 10, 1965

Name of Employee W. A. Gressett

Time of Departure 7:30 a.m. Time of Return 6:15 p.m.

Miles Travelled 237

In the space below please indicate purpose of trip and duties performed, listing wells or leases visited.

Mose, R. B. Collins and Bill field Check, Pecos and Linda San Andres Pools, Chaves County. Dr. Sam G. Dunn, Levers State No. 1-F, 32-7-26. There has been some water drained out of the tank on the ground around the lined pit. Put sign up on this well.

Beadle No. 3-P, 5-7-26. This well has not been potentialled but they have been pumping it into a tank truck about 15' from the well and the water was dumped out into the mud pit. Put sign up on this well.

Pendergrass No. 2-E, 4-7-26. They had a pulling unit on this well and were swabbing into a test tank, and draining the water out into the mud pits.

Both of the pits were full of water. Came in to Roswell and called Santa Fe. Then picked up Ronnie Shook with the U.S.C.S. and went back.

Put a sign on the Pendergrass No. 2-@3:15 p.m.

Elliott Federal tank battery in SW SE, 33-6-26. Some oil had been drained out of the tanks on the ground. Put signs on wells No. 1 & No. 2 SW SE 33-6-26 at 3:30 p.m.

W. A. Gressett
Employee's Signature
District # II

Copy to
Mr. Dunn for
water disposal for
JMS

NEW MEXICO
OIL CONSERVATION COMMISSION

FIELD TRIP REPORT

Date March 17, 1965

Name of Employee M. L. Armstrong

Time of Departure 7:30 a.m. Time of Return 7:00 p.m.

Miles Travelled 150

In the space below please indicate purpose of trip and duties performed, listing wells or leases visited.

First, went to Shells wildcat in 34-11-25 to witness cementing surface pipe. They were not ready. From there went to Dr. Dunn's wells in Linda San Andres Pool to see if he had done anything to the wells that we have shut in. There had been very little done to get the wells back on production. Told Mr. McFadin, the Superintendent, what he would have to do before we would let him put the wells back on production.

Then, back to witness cementing 7" casing in Shells well. The job was not complete. Will need to go back sometime today, March 18, 1965.

M. L. Armstrong
Employee's Signature
District # 2

Copy to
Dr. Dunn
water file
[Signature]

255 MAR 24 AM 1

NEW MEXICO
OIL CONSERVATION COMMISSION

FIELD TRIP REPORT

Date March 19, 1965

Name of Employee M. L. Armstrong

Time of Departure 10:00 a.m. Time of Return 5:00 p.m.

Miles Travelled 117

In the space below please indicate purpose of trip and duties performed, listing wells or leases visited.

Ronnie Shook, U.S.G.S., R. B. Collins, State Engineers, Bill and myself went to the Dr. Dunn's wells in the Pecos and Linda San Andres Pools and took the shut in signs off the following wells:

Beadle, No. 3-P, 5-7S-26E
Levers, No. 1-F, 32-7S-26E
Pendergrass, No. 2-E, 4-7S-26E
Elliott, No. 1 and No. 2-O, 33-6S-26E

M. L. Armstrong

Employee's Signature
District # IV

NEW MEXICO
OIL CONSERVATION COMMISSION

FIELD TRIP REPORT

Date November 1, 1965

Name of Employee W. A. Gressett

Time of Departure 8:00 a.m. Time of Return 4:30 p.m.

Miles Travelled 193

In the space below please indicate purpose of trip and duties performed, listing wells or leases visited.

Field Check Pecos, Linda & Leslie Springs San Andres Pools 6 & 7S-26E. Mr. Shoger W/U.S.G.S., Mr. Collins W/State Eng. and I went to all of the pits in the above pools. We found 2 of the pits in need of immediate attention and the rest of them have places where the plastic is not covered with dirt, and we feel that in order to prevent the wind and weather from ripping the lining that it should be covered with dirt.

The pits that need immediate attention are on the

Dale Federal lease in 26-7-26
Elliott Federal lease in 33-6-26

The Dale Federal pit was not fenced and the cows have been in it, and the Elliott Federal pit has a place where the lining was not covered with dirt and the wind has ripped it down below the water level.

Mr. Shoger said that he would notify the operator to correct this and also to do some preventive maintenance on the rest of the Federal leases involved.

W. A. Gressett
Employee's Signature
District # II

Copy in the
New Mexico
file
P.D.

NEW MEXICO
OIL CONSERVATION COMMISSION

FIELD TRIP REPORT

Date 10-18-65

Name of Employee W. A. Gussett

Time of Departure 8:00 a.m. Time of Return 4:00 p.m.

Miles Travelled 178

In the space below please indicate purpose of trip and duties performed, listing wells or leases visited.

Field Check: Linda, Leslie Springs and Pecos San Andres Pools
in 6 & 7S-26E, Chaves County

Everything seemed to be in pretty good shape, however where the plastic lining is not covered with dirt above the water level I noticed several holes in the plastic.

W. A. Gussett

Employee's Signature
District # 2

Copy to
Dunn Case file
[Signature]

NEW MEXICO
OIL CONSERVATION COMMISSION

FIELD TRIP REPORT

Date May 4, 1965

Name of Employee M. L. Armstrong

Time of Departure 7:00 a.m. Time of Return 5:30 p.m.

Miles Travelled 128

In the space below please indicate purpose of trip and duties performed, listing wells or leases visited.

Bill, R. B. Collins and I went to the steam injection well of Ray Smith, Chaves County. When we got there they were running tubing, as the well would not flow back. They got it to pumping at 11:45 a.m., the temperature was 160°, when started to pumping began to raise at once at 12:30 was 170°.

We left at 12:30 they didn't think it would start to flowing until it had pumped 12 to 24 hours and got the water unloaded. Am supposed to get a report this evening.

From the Smith well, Bill, R. B. Collins and myself went to Dr. Dunns, Dale Federal lease found all the wells shut in. Didn't seem to have pumped for some time. When Collins tested the water from these wells he found 4 wells pumping and they were making at the rate of 21 barrels per day but they are on a clock, and the clock is set to pump 2 hours and shut in 2 hours. That would be 10 1/2 barrels a day from the 4 wells.

I don't exactly care for the Dr. But think we should make a more thorough test before shutting them in.

M. L. Armstrong
Employee's Signature
District # 1

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. 3120
Order No. R-2788

APPLICATION OF DR. SAM G. DUNN
FOR A REVIEW OF THE COMMISSION'S
DIRECTIVE OF AUGUST 27, 1964,
CONCERNING SALT WATER DISPOSAL,
CHAVES COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on October 13, 1964, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 21st day of October, 1964, 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, Dr. Sam G. Dunn, seeks review of the Commission's Directive dated August 27, 1964, which prohibited the disposal of produced salt water in unlined pits after November 1, 1964, in the Linda-San Andres Oil Pool and adjacent area in Townships 6 and 7 South, Range 26 East, NMPM, Chaves County, New Mexico.

(3) That the applicant and other operators are disposing of produced salt water in unlined pits in the subject area; that all of said disposal pits are within two miles of the Pecos River except those in Section 26, Township 7 South, Range 26 East, NMPM, Chaves County, New Mexico.

(4) That the disposal of salt water in unlined pits within two miles of the Pecos River in the subject area constitutes a

-2-

CASE No. 3120
Order No. R-2788

hazard to the Pecos River and other fresh water supplies designated by the State Engineer and should be prohibited.

(5) That although disposal of salt water in unlined pits more than two miles from the Pecos River in the subject area constitutes some hazard to fresh water supplies designated by the State Engineer, the hazard is not great at this time and should be prohibited in each section when the average salt water production per well in the section exceeds three barrels per day or the total salt water production for the section exceeds fifteen barrels per day; provided, however, that effective May 1, 1965, the disposal of produced salt water in unlined pits in said area should be prohibited in each section when total salt water production for the section exceeds five barrels per day.

IT IS THEREFORE ORDERED:

(1) That, effective November 1, 1964, the disposal of produced salt water in unlined pits within two miles of the Pecos River in Townships 6 and 7 South, Range 26 East, NMPM, Chaves County, New Mexico, is hereby prohibited.

(2) That the disposal of produced salt water in unlined pits more than two miles from the Pecos River in Townships 6 and 7 South, Range 26 East, NMPM, Chaves County, New Mexico, is hereby prohibited in each section when the average salt water production per well in the section exceeds three barrels per day or total salt water production for the section exceeds fifteen barrels per day; provided, however, that effective May 1, 1965, the disposal of produced salt water in unlined pits in said area is hereby prohibited in each section when total salt water production for the section exceeds five barrels per day.

(3) That each operator desiring to line salt water disposal pits in Townships 6 and 7 South, Range 26 East, NMPM, Chaves County, New Mexico, shall notify the State Engineer's Office, P. O. Box 1717, Roswell, New Mexico, in writing of the date and time such operations are to commence in order that the same may be witnessed.

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

-3-

CASE No. 3120
Order No. R-2788

DONE at Santa Fe, New Mexico, on the day and year herein-
above designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

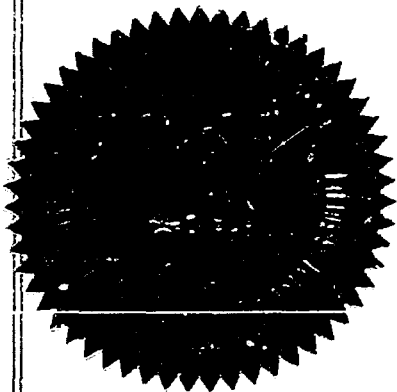
Jack M Campbell

JACK M. CAMPBELL, Chairman

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

A. L. Porter, Jr.

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



esr/

Land S. Lach
On Director
Applicant, J. S. N. Lach
for a Review of the
Commission's Directive of
August 27, 1964, concerning
saltwater disposal, Chaves
New Mexico.

Applicant, in the above titled
case, seeks a review of
the Commission's Directive
of August 27, 1964, prohibiting
the disposal of produced
salt water in unlined
pits after November 1, 1964, in
the Linda San Andres Pool
and adjacent areas in
Townships 6 and 7 South, Range
26 East, Chaves County New
Mexico. Applicant specifies

call requests an extension
of the November 1 deadline
and a determination that
salt water disposal in unlined
pits in Sections 26, 27, and
34, Township 7 South, Range
26 East, among other areas
does not constitute a
hazard to fresh waters
and should be excepted
from the Commission's
directive.

MEMORANDUM

State Engineer's Office
Roswell, New Mexico
October 14, 1954

TO: Frank E. Irby

FROM: R. B. Collins, Jr.

SUBJECT: Exhibit No. 1 and other matter presented in the Sao G. Damm
hearing on disposal of brine in the Linda San Andres pool.

Enclosed is one copy of Exhibit No. 1, "Prospectus of Education and Experience." Also enclosed are two copies of the information concerning the quality of water in the Pecos River along the reach in question. Mr. Rutter, who asked for one copy; would you please pass a copy to him. I thought you might want the other for your file.

'64 OCT 22 AM 10

I have talked with Fred and Jim about witnessing the lining of the disposal pits and have advised Mr. McCoy, Dr. Duan's engineer, that personnel from this office will witness this operation.

Very truly yours,

R. B. Collins, Jr.

R. B. Collins, Jr.

RBC:ld
encl.

H

Form 8-1388 (9-1960)
U. S. DEPT. OF INTERIOR
GEOLOGICAL SURVEY

(22)

ANALYTICAL STATEMENT - SW
PRC Seepage

COUNTY Chaves
LAB NO. 53238

75782

Locality Pecos River near
Acme, N. Mex.

Water Temp (°F) 75 Sample No. (ii) 2
pH 10.1
Collector WKT

Open Pit Sample _____
Open Daily Discharge _____
Ground Water Point _____
Depth _____
Date per Day _____

Date of collection _____
Ignition Loss _____ Color _____
Dissolved Solids:
Residue at 100°C _____
Calculated (Ppm) _____
Total per Area Point _____
Hardness as CaCO₃ _____
Non-carbonate Hardness _____
TDS _____
Specific Conductance _____
(Microhm/cm at 25°C) 3,940

*GH = 3.10 res.
32.03 temp.

	CPM	PPM
SiO ₂		
Fe		
Ca		
Mg		
Na		
K		
Na + K		
HCO ₃		103
CO ₃		0
SO ₄		436
Cl		
F		
NO ₃		

Analyst AFS
Date Completed Jan. 16, 1964
Checked by HEK
Date Transmitted JAN 22 1964
NMGW & SW

FORM 9-1368 (9-1960)
U. S. DEPT. OF INTERIOR
GEOLOGICAL SURVEY

ANALYTICAL STATEMENT. S*

LAB NO. 53237

PRC Seepage

Oct. 10, 1963

1530

(21)
Source Pecos River above
Location Arroyo Atascoso
River mile 97.5

Water Temp (°F) 76 Stage Ft. (ft) _____
Discharge (cfs) 11.5
Collector WCD

Box Pt. Boys _____
Stream Daily Discharge _____
Total Area Feet _____
Speed Feet _____
Stake per Day _____

Date of collection _____ Color _____
Ignition Loss _____
Dissolved Solids _____
Residue at 100°C _____
Calculated (Sum) _____
Solids per Area Foot _____
Hardness as CaCO₃ _____
Non-Carbonate Hardness _____
TDS _____
Specific Conductance
(intermediate at 25°C) 3,860

SiO₂

Fe

Ca

Mg

Na

K

Na + K

HCO₃

CO₃

SO₄

Cl

F

NO₃

ppm

ppm

108

0

424

Analyst AFS
Date completed JAN. 15, 1964
Checked by HEK
Date transmitted JAN 22 1964
AMGW & SW

(20)

ANALYTICAL STATEMENT. SW
PRC Seepage

COUNTY Chaves
L.S. NO. 53236

19783

Source <u>Pecos River at</u>		Date of collection <u>Oct. 10, 1963</u>	1350	
Location <u>El Paso pipeline crossing</u>		Ignition Loss _____	Color _____	
River mile <u>102.9</u>		Massive Solids _____	SiO ₂ _____	
Water Temp (°F) <u>76</u>	Gage Wt (ft) _____	Residue at 100°C _____	Fe _____	
Discharge (cfs) <u>13.6</u>		Calculated (Sum) _____	Ca _____	
Collector <u>WKN</u>		Time per Area Foot _____	Mg _____	
		Hardness as CaCO ₃ _____	Na _____	
		Non-carbonate Hardness _____	K _____	
		T. Ba. _____	Na + K _____	
		Specific Conductance _____		
		(microhm/cm at 25°C) <u>3,450</u>	HCO ₃ _____	100
			CO ₃ _____	0
			SO ₄ _____	
			Cl _____	328
			F _____	
			NO ₃ _____	
Checked by <u>AFS</u>				
Date completed <u>JAN. 16, 1964</u>				
Checked by <u>HEK</u>				
Date transmitted <u>JAN 22 1964</u>				
<u>WMB (W) 7-311</u>				

Provisional records subject to revision.

FORM 9-1368 (9-1960)
U. S. DEPT. OF INTERIOR
GEOLOGICAL SURVEY

ANALYTICAL STATEMENT. SW

COUNTY Chaves

LAB NO. 53235

(19)

PRC Seepage

Source <u>Six Mile Draw at</u>	Date of collection <u>Oct. 10, 1963</u>	1245
Location <u>road crossing</u>	Ignition Loss _____ Color _____	ppm
	Unsoluble Residue _____	ppm
	Acid-insoluble at 100°C _____	
Water Temp (°F) <u>79</u>	Calculated (Bom) _____	
Discharge (cfs) <u>0.01</u>	Yield per Acre Foot _____	
Collector <u>WKP</u>	Hardness as CaCO ₃ _____	
	Non-carbonate Hardness _____	
Gr. Ft. Day _____	% Sol. <u>8.2</u>	
Mean Daily Discharge _____	Specific Conductance _____	
Total Acre Foot _____	(microhm/cm at 25°C) <u>5,470</u>	
Total Time _____		
Time per Day _____		
	Na + K _____	
	HCO ₃ _____	190
	CO ₃ _____	0
	SO ₄ _____	
	Cl _____	524
	F _____	
	NO ₃ _____	

Analyst AFS
Date completed Jan. 16, 1964
Checked by HEK
Date transmitted JAN 22 1964
NMGW & SW

Provisional records, subject to revision.

ANALYTICAL STATEMENT-SW

COUNTY Chaves

LAB NO. 53234

(18)

PRC Seepage

Date of collection Oct. 10, 1963

1215

Source Pecos River at
Location Transwestern pipe-
line crossing
River mile 106.6
Water Temp (°F) 72 Stage Ht. (ft) _____
Discharge (cfs) 16.9
Collector WKO

Box Ft. Days _____

Name Bally Discharge _____

Total Area Feet _____

Total Tons _____

Tons per Day _____

Ignition Loss _____ Color _____
Dissolved Solids _____
Residue at 180°C _____
Calculated (Sum) _____
Tons per Acre Foot _____
Hardness as CaCO₃ _____
Non-carbonate Hardness _____
T. Alk. _____ pH 7.6
Specific Conductance _____
(microhm-cm at 25°C) 3,440

	SPM	PPM
SiO ₂		
Fe		
Ca		
Mg		
NaCl		
K		
Na + K		
HCO ₃		101
CO ₃		0
SO ₄		
Cl		334
F		
NO ₃		

Analyst AFS

Date completed Jan. 16, 1964

Checked by HEX

Date transmitted JAN 22 1964

NMEW & SW

Provisional records, subject to revision.

ANALYTICAL STATEMENT - SA

CHAVEZ

LAB NO. 55233

(17)

PRC Se page

Locality Recon River above
Location Five Mile Draw
River mile 11.0

Water Temp (°F) 66 Day of (M) 20.4

Alkalinity (eq/L) WKN

Collector WKN

Sec. Fe. 20%

Water Soluble 20%

Total 20%

Spent 20%

Total 20%

Date of collection Jan. 16, 1964
① Ignition Loss 3.450
Standard Solution
Sodium at 100°C
Calculated (Sum)
Total per area fact
Hardness as CaCO₃
Pre-oxidation balance
S. No. 1.2
Specific Conductance
(measured at 25°C) 3.450

	ppm	ppm
SiO ₂		
Fe		
Co		
Mg		
Na		
K		
Na + K		
HCO ₃		
CO ₃		
SO ₄		
Cl		
F		
NO ₃		

APC
Jan. 16, 1964
HEK
JAN 22 1964
DME 15 34

Provisional records subject to revision

Form 9-1284 (9-1960)
U. S. DEPT. OF INTERIOR
GEOLOGICAL SURVEY

(16)

ANALYTICAL STATEMENT - SW
PRC Seepage

COUNTY Chaves
LAB NO. 53232

701/20

Source Acacia River below
Location Mosque Draw
River mile 113.6

Date of collection Oct. 10, 1963 0930

Water Temp (°F) 59 Depth in (ft) _____
Dissolved Solids (ppm) 20.7
Dissolved _____ WKD
pH _____
Chloride (ppm) _____
Total Diss. Solids _____
Total _____
Total _____

Ignition Loss	Color	_____	_____
Dissolved Solids	SiO ₂	_____	_____
Residue at 100°C.	Fe	_____	_____
Colored (Dm)	_____	_____	_____
Wt per Area Foot	Ca	_____	_____
Hardness as CaCO ₃	Mg	_____	_____
Non-carbonate Hardness	Na	_____	_____
1 M _____ pH <u>6.8</u>	K	_____	_____
Specific Conductance	_____	_____	_____
(microhm-cm at 25°C) <u>3,470</u>	Na + K	_____	_____
	HCO ₃	_____	<u>110</u>
	CO ₃	_____	<u>0</u>
	SO ₄	_____	_____
	Cl	_____	<u>324</u>
	F	_____	_____
	NO ₃	_____	_____

Analyst AFS
Date analyzed Jan. 16, 1964
Reviewed by HEK
Date reported JAN 22 1964
WAGW & SID

Provisional records, subject to re-

FORM 3-1-58 (REV. 1-1-58)
U.S. DEPT. OF INTERIOR
GEOLOGICAL SURVEY

ANALYTICAL STATEMENT - SW

ACCOUNT CHAVES

LAB NO. 53231

(15) PPO Seepage

Oct. 10, 1963

0810

Source Pecos River below
Location Crockett Draw
River mile 116.7

Water Temp (°F) 54 Cgs (°C) 12.2
Discharge (cfs) 22.3
Collector WKO

Sec. Ft. Days

Sec. Daily Discharge

Total Area Feet

Total Tons

Tons per Day

Date of collection
Ignition Loss
Discoloration
Residue at 100°C
Calculation (Sum)
Tons per Acre Foot
Hardness in CaCO₃
Non-carbonate Hardness
T. Sol. in Lb. at 7.7
Specific Conductance
Conductance at 25°C 3,350

	ppm	ppm
SiO ₂		
Fe		
Ce		
Mg		
Mn		
X		
N + K		
HCO ₃		104
CO ₃		0
SO ₄		316
Cl		
F		
NO ₃		

Analyst AFS

Date completed Jan. 16, 1964

Checked by HEK

DATE 12-1-64 JAN 22 1964

Additional records, 12/1/64 to 1/1/64

Form 8-1308 (9-1960)
U. S. DEPT. OF INTERIOR
GEOLOGICAL SURVEY

(22)

ANALYTICAL STATEMENT - SW
PRC Seepage

COUNTY Chaves
LAB NO. 53238

1978

Source Pecos River near
Acme, N.Mex.

Depth (ft) 75 Depth (in) 10.1
Collector WKO

Date of collection Oct. 10, 1963
Time of day 1640
Name fully described
Total Area Feet
Total Time
Time per day

Base of collection
Ignition loss
Dissolved Solids
Residue at 100°C
Calculation (TSS)
Time per Area Foot
Hardness as CaCO₃
Non-carbonate Hardness
pH 7.6
Specific Conductance
(Microhm/cm at 25°C) 3,940

*GH=3.10 reg.
32.03 temp.

	SPM	PPM
SiO ₂		
Fe		
Ca		
Mg		
Na		
K		
Na + K		
HCO ₃		103
CO ₃		0
SO ₄		436
Cl		
F		
NO ₃		

Checked APS
Date completed Jan. 16, 1964
Checked by RRK
Date transmitted JAN 22 1964
NAGWE SW

UNDESIGNATED SAN ANDRES OIL POOL

Operator: Dr. Sam G. Dunn

Brine Pit Location: NE $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 26, Township 7 South, Range 26 East.

Wells on Lease: Five producing; one not completed.

Location of Wells: All wells located in Section 26, Township 7 South, Range 26 East.

Number of wells discharging into Brine Pit: Five

Production from Slaughter zone of San Andres formation.
Producing depth: Approximately 1500'.

Reported water production-July 1964: 400 (2 wells) barrels

Measurement of discharge and collection of water sample was at the end of the flow line.

Amount of brine being produced: Measured 1 qt. in 45 sec. by stop watch on October 8, 1964. Calculated to be 11 bbl. per day assuming continuous pumpage of wells.

Analyses of Produced water: Date of Collection: September 30, 1964.
PPM Chlorides: 134,000
Specific Conductance at 25° C ($K \times 10^6$):
192,010 micromhos.
Calculated total dissolved solids * ppm.
Analyses by R. L. Borton Technical Division SEO.

Pit condition: Visual inspection indicated pits were unlined and no apparent effort had been made by the operators to prevent contamination of fresh water.

* Conversion factor unknown.

Photograph No. 1 and 2 taken October 8, 1964.

Dated Eng of no 7



Photograph No. 1



Photograph No. 2

These photographs are of the Brine pit, located in the NE $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 26, Township 7 South, Range 26 East, which serves five producing oil wells on the Dr. Sam G. Dunn, Dale-Federal lease.

The above photographs were taken on October 8, 1964, at which time the measured flow of brine into the pit was 1 quart in 45 seconds. This is calculated to be 11 barrels per day, assuming there is a continuous flow. The pit is about 40x50 feet, bulldozed in loam.

DR. SAM G. DUNN

Sturgeon	#2	2310/N 2329/W	33 -6-26	TD 1074	Perfs	1004-40	Comp.	7-19-64	10 BO + 35 BWP
Osage	#1	990/N 2333/E	33 -6-26	TD 1081	"	1016-32	"	5 -4-64	12 BO + 50 BWP
Osage	#2	2310/N 2329/E	33 -6-26	TD 1069	"	1022-59	"	5 -6-64	15 BO + 35 BWP
England Fed.	#1	2310/S 2328/W	33 -6-26	TD 1078	"	1018-58	"	5 -2-64	20 BO + 25 BWP
"	#2	1650/S 1667/W	33 -6-26	TD 1074	"	999-1032	"	5 -2-64	22 BO + 27 BWP
Crandell Phill	#1	1650/S 331/W	34 -6-26	TD 1212	"	1148-68	"	5 -1-64	12 BO + 25 BWP
Beadle	#1	2326/S 330/E	5 -7-26	TD 1076	"	1008-35	"	5 -8-64	11 BO + 40 BWP
"	#2	990/S 990/W	4 -7-26	TD 1072	"	1017-53	"	5-10-64	16 BO + 38 BWP
England Fed.	#1-B	330/N 2310/E	4 -7-26	TD 1124	"	1064-88	"	5 -1-64	12 BO + 25 BWP
Pendergrass	#1	330/N 990/W	4 -7-26	TD 1064	"	998-1030	"	5 -1-64	13 BO + 41 BWP

H. E. BARNES

Federal	#1	990/S 2310/W	33 -6-26	TD 1068	Perfs	1023-53	Comp.	4-18-64	60 BO + 60 BWP
---------	----	--------------	----------	---------	-------	---------	-------	---------	----------------

RAY SMITH

George	#1	1980/E 660/E	32 -6-26	TD 1072	Perfs	956	Comp.	12-1-63	7 BO + 5 BWP
Harris	#1	2310/N 330/W	33 -6-26	TD 1046	"	981-93	"	10-8-63	20 BO + 20 BWP
England Fed.	#1	660/S 1980/W	29 -6-26	TD 1117	"	986-94	"	12-20-63	13 BO + 1 BWP
"	#2	1980/N 660/E	30 -6-26	TD 1055	"	986-1023	"	6-17-64	5 BO + 3 BWP

8-20-64 (58)

DR. SAM G. DUNN

DRILLING WELLS

Elliott Fed.	#1	330/S 1650/E	33 -6-26	4½"-1148-50, log & perf reported on 6-5-64.
"	#2	990/S 2310/E	33 -6-26	4½"-1119-50, log & perf reported on 6-5-64.
Sturgeon	#1	1650/N 1650/W	33 -6-26	TD 1059, 4½"-1053-50 reported on 6-10-64.
Keyes	#1	990/N 330/W	33 -6-26	TD 1013, 4½"-955-50 reported on 7-13-64.
Crandel Phill	#2	2310/S 990/W	34 -6-26	TD 107, 8-5/8"-107-50, waiting on larger rig 6-8-64.
Pendergrass	#2	1666/N 990/W	4 -7-26	Notice of Intention to Drill approved on 12-6-63.
"	#3	330/N 330/E	5 -7-26	"
Clark	#1	1666/N 1657/W	4 -7-26	4½"-1074-50, log, perfs & treat reported on 6-9-64.

H. E. BARNES

Federal	#1-R	990/S 990/W	33 -6-26	To log, perf & treat reported on 10-17-63.
Federal	#2	330/S 2310/W	33 -6-26	Notice of Intention to Drill approved on 5-19-64.

BARNES & SWANSON

Tonkin	#1	330/N 1650/E	8 -7-26	Notice of Intention to Drill approved on 5-15-64.
--------	----	--------------	---------	---

J. J. TRAVIS

Elliott Fed.	#1	2310/N 330/W	20 -6-26	Notice of Intention to Drill approved on 7-28-64.
--------------	----	--------------	----------	---

RAY SMITH

Ring	#1	330/N 1659/W	32 -6-26	5½"-1066-75 reported on 6-25-64.
------	----	--------------	----------	----------------------------------

BURLESON & HUFF

George	#2	2310/S 850/E	32 -6-26	Notice of Intention to Drill approved on 9-3-63.
--------	----	--------------	----------	--

8-26-64 (84)

Dr. Sam L. Dunn.

		0.1	may	water	days	June.	water	days
✓	Pondgrass State #1-D 4-7-26	199		600	30	110	340	30
✓	England Island #1-K 33-6-26	338		765	28	98	280	30
✓	#2-K 33-6-26	337		765	28	98	280	30
✓	England Island #1-B 4-7-26	132		300	30	23	75	30
✓	Osage State #1-B 33-6-26	77		350	26	56	250	22
✓	#2-B 33-6-26	25		60	2	56	250	22
✓	Beale State #1-1 5-7-26	11		40	1	27	110	29
✓	#2-A 4-7-26	88		175	?	27	110	30
		1207		3055		196	1635	
✓	Crandall Phillips #1-L 34-6-26	24		50	2	40		

Ray Smith

✓	England Island #1-N 29-6-26	264	NR	31	0	NR	30
✓	Charge #1-H 32-6-26	152	NR	31	137	NR	30
✓	Harris #1-F 32-6-26	155	NR	31	104	NR	30

H. C. Brown

✓	Island #1-N 33-6-26	289	UK	21	292	UK	14
---	---------------------	-----	----	----	-----	----	----

This was taken from the C-115

Memo

From
W. A. GRESSETT
DEPUTY OIL & GAS
INSPECTOR

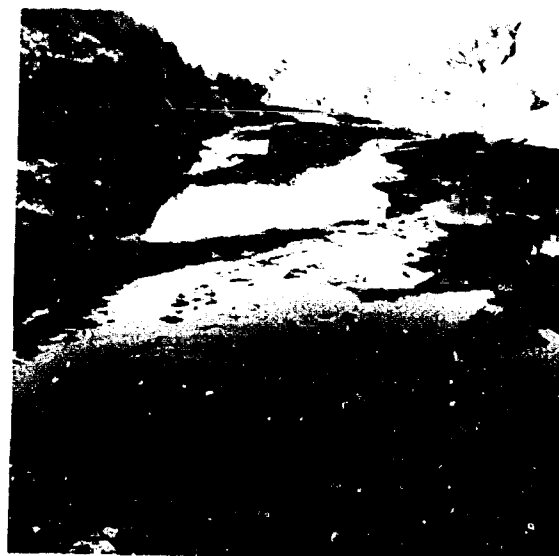
To: Dan Nutter

The wells located in sec. 29 + 32
of T8-26C are presenting no problem
at this time. But who knows what
the future may bring?

The information on the wells was
taken from the well files on 8-20-64
you can get some additional
information from the scout report
on the drilling wells.



Photograph No. 3



Photograph No. 4



Photograph No. 5

These photographs were made on October 8, 1954 and show a stretch of Eight-mile Draw located in the NE $\frac{1}{4}$ NE $\frac{1}{4}$ of Section 4, Township 8 South, Range 26 East. There are many small, live springs issuing from the bottom and from the northeast side of the draw.

St. Eugene
9x 100 6
Cs 3 120



Photograph No. 5

The above photograph shows a live spring in the SE $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 28, Township 7 South, Range 26 East.

2 1/2 in Stamp
Linda San Andres
Jill
The File

Frank E. Irby

Oct. 29, 1964

Impervious lining of disposal pits of H. E. Barnes in
Linda-San Andres Pool.

James I. Wright called me this morning at 11 A.M., and stated that Mr. Barnes desired permission to line his disposal pits with asphalt pavement. It is Mr. Wright's understanding that it is the intention of Mr. Barnes to construct the lining in a manner similar to that used in some of the Lea County disposal pits, which he briefly described to me. Use of the hot asphalt and aggregate is the method of construction. Mr. Wright further stated that as of this date no fault has been found in the construction of the pits in Lea County. I advised Mr. Wright that this office did not object to the use of asphalt pavement for lining these pits provided the specifications for construction were sufficient to pass either his inspection or that of R. B. Collins.

Mr. Barnes is anxious to get approval on construction methods and materials to be used in lining the pits as early as possible, since his deadline on completion of the disposal pits is November 1st. Mr. Wright is to call Mr. Barnes and advise him of my decision.

FEI/ma

cc-F. H. Hennighausen

Oil Conservation Comm. (Artesia)

Oil Conservation Com.. (Santa Fe)

Frank E. Irby

Chief

Water Rights Division

August 25, 1934

Frank E. Irby, Chief, Water Rights Division

Fred H. Hennighausen, Supervisor, District II

Produced brine in Townships 6 and 7 South, Range 26 East, NEMM,
adjacent to the Pecos River

Enclosed is Memorandum Report on disposal of produced brine in the Linda
San Andres Oil Pool in Townships 6 and 7 South, Range 26 East, Chaves County,
New Mexico, as compiled by R. E. Collins, Jr.

In this report Mr. Collins notes that there are 11 disposal pits which are
collecting produced brine water from 17 producing oil wells and one pit which
was formerly used to collect water from 2 producing wells (not producing water
at the time of the investigation) and one oil producing well which did not
have a constructed disposal pit. Mr. Collins also notes that all of the wells
and brine disposal pits, with the exception of one, are either in the river
bottom or on the river flood plain. This observation was made in the field
and means that all the wells and pits, with the one exception, were located
in the alluvial fill material adjacent to the river and off of the bluffs,
hills and higher terrain adjacent to the flood plain. Some of the wells are
located in the river bottom or flat lands adjacent to the river itself and
almost at the same elevation, but it appears that all, with the one exception,
could be subject to flood. It further appears from the plat accompanying the
Memorandum Report that most of the disposal pits are located within one-half
mile of the river channel.

Of the 19 active oil wells producing from the Linda San Andres Oil Pool, 16
were found to be producing water totaling approximately 606 barrels of brine
per day with a chloride content of 137,000 to 150,000 ppm of chlorides. This
figure is based on the assumption that the wells would continuously produce
the quantity found being produced at the time of the investigation although
this quantity may be subject to some variation as the produced water purportedly
is not constant. The 606 barrels of brine per day is equivalent to 25,452
gallons per day or 863,560 gallons per month. In order to obtain an approxi-
mation of the minerals which could be added to the flow, and as a comparative
analysis of the produced water including the total dissolved solids was not
available, Mr. Collins obtained the specific gravity of representative samples
and compared this with the specific gravity of samples obtained in other
investigations (Atoka field) for a comparative parts per million of total
dissolved solids. This figure, multiplied by a constant, would give the tons
of total dissolved solids per acre feet of water and would give, in the Linda
San Andres Oil Pool, an estimated 760 tons of total dissolved solids per month
contributed by the produced water.

BEFORE EXAMINER NUTTER

U. S. CONSERVATION COMMISSION

State

EXHIBIT NO. 2

Camp CASE NO.

3120

Mr. Frank E. Irby

- 2 -

August 25, 1964

It is also interesting to note that the produced water, as measured, was found to be about 250 percent greater than that reported.

New wells are now being drilled and it appears that some action should be taken at once to prevent contamination of the Pecos River water to the detriment of downstream users.

Fred H. Hennighausen
District Supervisor

MHI:td
encl.

C
O
P
Y

August 23, 1964

James L. Wilson

R. B. Collins, Jr.

Disposal of produced brine in the Linda San Andres Oil Pool.

Transmitted herewith are six copies of the information report
entitled, Disposal of Produced Brine in the Linda San Andres Oil Pool
Townships 1 and 2 North, Range 26 East in Chaves County, New
Mexico.

R. B. Collins, Jr.

cc-114
Encl.

C
O
P
Y

State of New Mexico
Office of the State Engineer
Water Rights Division

DISPOSAL OF PRODUCED BRINE IN THE
LINDA SAN ANDRES OIL POOL
TOWNSHIPS 6 AND 7 SOUTH, RANGE 26 EAST
IN CHAVES COUNTY, NEW MEXICO.

By
R. B. Collins, Jr.
Engineer, Water Rights Division

August 25, 1964

MEMORANDUM REPORT

Disposal of Produced Brine in the Linda San Andres Oil Pool Townships 6 and 7 South, Range 26 East in Chaves County, New Mexico.

In response to a request by James I. Wright on August 11, 1964, a field investigation was made of the brine disposal pits in the Linda San Andres oil pool located in Sections 20, 29, 30, 32, 33, and 34, all in Township 6 South, Range 26 East and Sections 4, 5, and 8 in Township 7 South, Range 26 East. Field work was done on August 11 by R. B. Collins, Jr. of the State Engineer office, and Bill Gressett, of the Oil Conservation Commission; on August 12 by E. H. Banta, Pecos River Watermaster; on August 14 by R. B. Collins, Jr.; and on August 17 by R. B. Collins, Jr. and Robert Darrow of the Oil and Gas Division of the United States Geological Survey office, Roswell, New Mexico.

In the course of this investigation, the records of the Oil Conservation Commission and the Oil and Gas Division of the United States Geological Survey were reviewed. Visual observation of the oil wells and photographs of all of the brine disposal pits were taken. Measurements of the produced brine were made and samples were collected from the end of the flow line where the flow line discharges into the pits. During the trips into the oil field the investigators met and talked with H. E. Barnes, owner and operator of some of the leases, Jim Glenn, a roustabout, and Mr. Esslinger and his son who have a ranch on the west side of the Pecos River and are employed as pumpers by some of the operators.

The Linda San Andres oil field is located in the south half of Township 6 South, and the north half of Township 7 South, both in Range 26 East. The south line of Township 6 South is the south line of the Fort Sumner declared water basin and the north line of the northern extension of the Roswell Basin. At the time of the investigation, there were 23 wells in the field; 4 producing wells on the west side of the Pecos River, 15 producing wells on the east side of the River, and 4 wells in the process of being constructed. All of the wells and brine disposal pits, with the exception of one, the Dr. Sam G. Dunn, Crandall Phillips #1, are either in the river bottom or on the river flood plain.

The oil production from this field is from the Slaughter zone of the San Andres formation at a depth of approximately 1000' from the surface. All of the wells were on pump; none were producing by natural flow. The field investigation found no evidence of gas being produced, and the operator's potential test reports to the Oil Conservation Commission office indicate no gas production.

The June, 1964 operator production reports to the Oil Conservation Commission office indicate a water-oil ratio in excess of three barrels of water to each barrel of oil produced. Assuming continuous pumping of wells, the field investigation found the water being produced to be about 250% greater than was reported; however, only one measurement at each brine pit was made and production of water could vary from time to time. This water was being disposed of in open, unlined pits. The soil of these pits varied from a rather tight sandy clay to loose sand and gravel. The character of the pit material can be seen in the attached photographs. Salt encrustation from the evaporated water can also be identified in the photographs.

Pertinent information on the individual brine pits and wells are attached to this report on forms prepared for that purpose along with identified and captioned photographs. Attached is a map prepared in this office showing the location of the oil wells, the location of the brine disposal pits, and their relation with respect to the wells and to the Pecos River. Attached is a tabulation of producing wells listing the reported June, 1964 water production, the August measured water production data, and the analyses of the water samples.

The following is a list of the active operators currently developing the Linda San Andres oil pool according to the records of the Oil Conservation Commission office and the Oil and Gas Division, United States Geological Survey.

Dr. Sam G. Dunn
1312 Main Street
Lubbock, Texas

Barnes and Swanson
Box 1057
Roswell, New Mexico

Ray Smith Drilling Co.
409 Wilkinson-Foster Building
Midland, Texas

J. J. Travis
Box 873
Midland, Texas

H. E. Barnes
Box 1057
Roswell, New Mexico

This investigation revealed five operators with 19 active oil wells in the Linda San Andres Oil Pool producing approximately 606 barrels of brine per day with a chloride content of 137,000 to 157,500 ppm. This brine is being disposed of in earthen unlined pits and no apparent effort is being made to prevent contamination of fresh water.

It is hereby recommended that the operators be advised of the probable contamination of fresh water and that a positive program be initiated immediately to remedy this situation.

Analysis of Produced Waters from Oil Wells in the
Linda San Andres Pool, Chaves County, New Mexico.
(Collected at Discharge Pipe, August 11, 14 and 17, 1964)*

Location No.	Source	June, 1964 Production in BBLs	BWPD**	Chlorides	Specific Conductance at 25°C (Kx10 ⁶) Micromhos
7.26.5.422	Dunn, #1 Beadle)				
7.26.4.332	Dunn, #2 Beadle)				
7.26.4.112	Dunn, #1 Pendergrass	220	0	-	-
6.26.33.322	Dunn, #1 England Federal)	340	25	147,000	200,280
6.26.33.323	Dunn, #2 England Federal)				
7.26.4.211	Dunn, #1-B England	500	34	No water sample	
6.26.33.213	Dunn, #1 Osage)	75	29	149,000	205,900
6.26.33.233	Dunn, #2 Osage)				
6.26.33.146	Dunn, #2 Sturgeon	500	15	No water sample	
6.26.33.434	Dunn, #1 Elliott Federal)	NR	101	150,000	200,000
6.26.33.431	Dunn, #2 Elliott Federal)				
6.26.33.342	Barnes, #1 Federal)	NR	254	137,000	198,480
6.26.33.344	Barnes, #2 Federal)				
7.26.8.211	Barnes & Swanson, #1 Tonkin	NR	36	No water sample	
6.26.29.340	Smith, #1 England Federal)	NR	25	144,300	210,360
6.26.30.240	Smith, #2 England Federal)				
6.26.32.240	Smith, #1 George	NR	8	148,000	203,800
6.26.23.133	Smith, #1 Harris	NR	23	157,500	203,800
6.26.34.313	Dunn, #1 Crandell-Phillips	NR	56	140,500	206,800
		NR	0	-	-

*Analysis by R. L. Borton, Technical Division, State Engineer Office
** Assuming continuous 24 hour pumping.

NR Not reported

LINDA SAN ANDRES OIL POOL

Operator Dr. Sam G. Dunn

Brine Pit Location SW¹SW¹ Sec. 4, T. 7S, R. 26E.

Well #1 Beadle

Well Location Number 7.26.5.422

Well #2 Beadle

Well Location Number 7.26.4.332

Number of wells discharging into Brine Pit 2

Production from Slaughter zone of San Andres formation.

Producing depth; Well #1 1000'-1035' Well #2 1017-1053

Potential test: Well #1 11BO + 40BWPD Well #2 16BO+38BWPD

Reported date of first oil production May 8, 1964

Reported water production June, 1964 220 Total barrels.

Measurement of discharge and collection of water sample was at the end of the flow line.

Amount of brine being produced; measured 1 qt. in _____ sec.
by stop watch on _____. Calculated to be _____ bbl.
per day assuming continuous pumpage of wells.

Analyses of Produced water:

Date of Collection No Water Production

PPM Chlorides _____

Specific Conductance at 25° C (Kx10⁶)
_____ micromhos.

Calculated total dissolved solids * ppm.

Analyses by R. L. Borton Technical Division SEO.

Pit condition: Visual inspection indicated pits were unlined and no apparent effort had been made by the operators to prevent contamination of fresh water.

*Conversion factor unknown

Photograph No. 1 Page 5

LINDA SAN ANDRES OIL POOL

Operator Dr. Sam G. Dunn.

Brine Pit Location SW¹/SW¹ Sec. 33, T.6S., R. 26 E..

Well #1 Pendergrass.

Well Location Number 7,26,4,112.

Well _____.

Well Location Number _____.

Number of wells discharging into Brine Pit 1.

Production from Slaughter zone of San Andres formation.

Producing depth; Well #1 988-1030 Well #2 _____.

Potential test: Well #1 1380+41BWD Well #2 _____.

Reported date of first oil production May 1, 1964.

Reported water production June, 1964 340 barrels.

Measurement of discharge and collection of water sample was at the end of the flow line.

Amount of brine being produced; measured 1 qt. in 20 sec.
by stop watch on August 11, 1964. Calculated to be 25 bbl.
per day assuming continuous pumpage of wells.

Analyses of Produced water:

Date of Collection August 11, 1964.

PPM Chlorides 147,000.

Specific Conductance at 25° C (Kx10⁶)
200,280 micromhos.

Calculated total dissolved solids UK ppm.

Analyses by R. L. Borton Technical Division SEO.

Pit condition: Visual inspection indicated pits were unlined and no apparent effort had been made by the operators to prevent contamination of fresh water.

*Conversion factor unknown

Photograph No. 2 Page 5 a.



1. Pit located SW $\frac{1}{4}$ SW $\frac{1}{4}$, Sec. 4, T7S., R26E, serving the Dunn, Beadle 1 and 2 wells.



2. Pit located SW $\frac{1}{4}$ SW $\frac{1}{4}$, Sec. 33, T6S., R26E., serving the Dunn, Pendergrass #1 well.

LINDA SAN ANDRES OIL POOL

Operator Dr. Sam G. Dunn.
Brine Pit Location N81S84 Sec. 33, T. 6 S., R. 26 E..
Well #1 England Federal.
Well Location Number 6.26.33.322.
Well #2 England Federal.
Well Location Number 6.26.33.323.
Number of wells discharging into Brine Pit 2.
Production from Slaughter zone of San Andres formation.
Producing depth; Well #1 1018'-1058' Well #2 999'-1032'.
Potential test: Well #1 2080+258WPD Well #2 2280+278WPD.
Reported date of first oil production May 2, 1964.
Reported water production June, 1964 500 total lease barrels.
Measurement of discharge and collection of water sample was at the end of the flow line.
Amount of brine being produced; measured 1 qt. in 15 sec.
by stop watch on August 11, 1964. Calculated to be 34 bbl.
per day assuming continuous pumpage of wells.

Analyses of Produced water:

Date of Collection none collected.
PPM Chlorides _____.
Specific Conductance at 25° C (Kx10⁶)
_____ micromhos.
Calculated total dissolved solids * ppm.

Analyses by R. L. Borton Technical Division SEO.

Pit condition: Visual inspection indicated pits were unlined and no apparent effort had been made by the operators to prevent contamination of fresh water.

*Conversion factor unknown

Photograph No. 3 Page 7 a.

LINDA SAN ANDRES OIL POOL

Operator Dr. Sam G. Dunn.

Brine Pit Location NW1/4 Sec. 4, T. 7 S., R. 26 E..

Well #1-B England.

Well Location Number 7.26.4.211.

Well _____.

Well Location Number _____.

Number of wells discharging into Brine Pit 1.

Production from Slaughter zone of San Andres formation.
Producing depth; Well #1 1064-1104 Well #2 _____.

Potential test: Well #1 12BO+25BWPD Well #2 _____.

Reported date of first oil production May 1, 1964.

Reported water production June, 1964 75 Total lease barrels.

Measurement of discharge and collection of water sample was at the end of the flow line.

Amount of brine being produced; measured 1 qt. in 18 sec.
by stop watch on August 11, 1964. Calculated to be 29 bbl.
per day assuming continuous pumpage of wells.

Analyses of Produced water:

Date of Collection August 11, 1964.

PPM Chlorides 149,000.

Specific Conductance at 25° C (Kx10⁶)
205,960 micromhos.

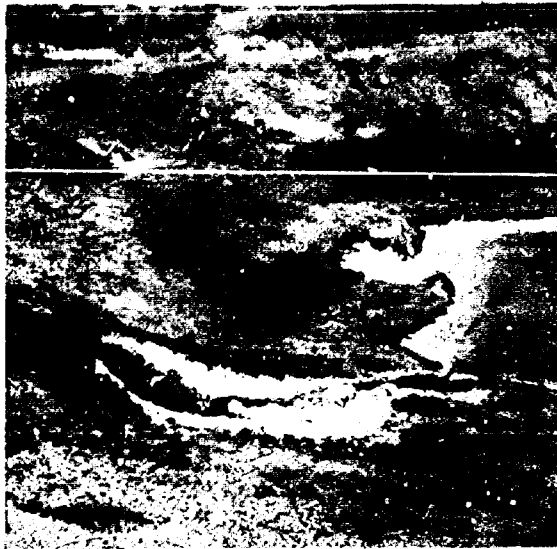
Calculated total dissolved solids * ppm.

Analyses by R. L. Borton Technical Division SEO.

Pit condition: Visual inspection indicated pits were unlined and no apparent effort had been made by the operators to prevent contamination of fresh water.

*Conversion factor unknown

Photograph No. 4 Page 7 a.



3. Pit located NE $\frac{1}{4}$ SE $\frac{1}{4}$, Sec. 33, T6S.,
R26E., serving the Dunn, England
Federal 1 and 2 wells.



4. Pit located NW $\frac{1}{4}$ NE $\frac{1}{4}$, Sec. 4, T7S.,
R26E., serving the Dunn, England
Federal #1-B well.

LINDA SAN ANDRES OIL POOL

Operator Dr. Sam G. Dunn.

Brine Pit Location SW $\frac{1}{4}$ NE $\frac{1}{4}$ Sec. 33, T. 6 S., R. 26 E..

Well #1 Osage.

Well Location Number 6.26.33.213.

Well #2 Osage.

Well Location Number 6.26.33.213.

Number of wells discharging into Brine Pit 2.

Production from Slaughter zone of San Andres formation.

Producing depth; Well #1 1016'-1032' Well #2 1022'-1059'.

Potential test: Well #1 12EO+50BWPD Well #2 15BO+35BWPD.

Reported date of first oil production May 4, 1964, #1 well.

Reported water production June, 1964 500 total lease barrels.

Measurement of discharge and collection of water sample was at the end of the flow line.

Amount of brine being produced; measured 1 qt. in 35 sec. by stop watch on August 11, 1964. Calculated to be 15 bbl. per day assuming continuous pumpage of wells.

Analyses of Produced water:

Date of Collection none collected.

PPM Chlorides _____.

Specific Conductance at 25° C (Kx10⁶)
_____ micromhos.

Calculated total dissolved solids * ppm.

Analyses by R. L. Borton Technical Division SEO.

Pit condition: Visual inspection indicated pits were unlined and no apparent effort had been made by the operators to prevent contamination of fresh water.

*Conversion factor unknown

Photograph No. 5 and 6 Page 8a.



5. West one-half of pit located SW $\frac{1}{4}$ NE $\frac{1}{4}$, Sec. 33, T6S., R26E., serving the Dunn, Osage 1 and 2 wells.



6. East one-half of pit located SW $\frac{1}{4}$ NE $\frac{1}{4}$, Sec. 33, T6S., R26E., serving the Dunn, Osage 1 and 2 wells.

LINDA SAN ANDRES OIL POOL

Operator Dr. Sam G. Dunn

Brine Pit Location SENECA Sec. 33, T. 6S., R. 26 E.

Well _____

Well Location Number _____

Well #2 Sturgeon

Well Location Number 6,26,33,144

Number of wells discharging into Brine Pit 1

Production from Slaughter zone of San Andres formation.

Producing depth; Well #1 _____ Well #2 1004'-1040'

Potential test: Well #1 _____ Well #2 1080+35BWPD

Reported date of first oil production July 19, 1964

Reported water production June, 1964 not reported barrels.

Measurement of discharge and collection of water sample was at the end of the flow line.

Amount of brine being produced; measured 1 qt. in 5.1 sec. by stop watch on August 11, 1964. Calculated to be 101 bbl. per day assuming continuous pumpage of wells.

Analyses of Produced water:

Date of Collection August 11, 1964

PPM Chlorides 150,000

Specific Conductance at 25° C (Kx10⁶)
200,000 micromhos.

Calculated total dissolved solids * ppm.

Analyses by R. L. Borton Technical Division SEO.

Pit condition: Visual inspection indicated pits were unlined and no apparent effort had been made by the operators to prevent contamination of fresh water.

*Conversion factor unknown

Photograph No. 7 Page 10a

LINDA SAN ANDRES OIL POOL

Operator Dr. Sam G. Dunn.

Brine Pit Location S.W. 1/4 Sec. 33, T. 6 S., R. 26 E..

Well #1 Elliott Federal.

Well Location Number 6.26.33.434.

Well #2 Elliott Federal.

Well Location Number 6.26.33.431.

Number of wells discharging into Brine Pit 2.

Production from Slaughter zone of San Andree formation.

Producing depth; Well #1 see note below Well #2 _____.

Potential test: Well #1 _____ Well #2 _____.

Reported date of first oil production _____.

Reported water production June, 1964 _____ barrels.

Measurement of discharge and collection of water sample was at the end of the flow line.

Amount of brine being produced; measured 1 qt. in 2 sec. by stop watch on August 14, 1964. Calculated to be 254 bbl. per day assuming continuous pumpage of wells.

Analyses of Produced water:

Date of Collection August 14, 1964.

PPM Chlorides 137,000.

Specific Conductance at 25° C (Kx10⁶)
198,480 micromhos.

Calculated total dissolved solids * ppm.

Analyses by R. L. Borton Technical Division SEO.

Pit condition: Visual inspection indicated pits were unlined and no apparent effort had been made by the operators to prevent contamination of fresh water.

Well records not completed.

*Conversion factor unknown

Photograph No. 8 Page 10a.



7. Pit located $SE\frac{1}{4}NW\frac{1}{4}$, Sec. 33, T6S.,
R26E., serving the Dunn, Sturgeon
#2 well.



8. Pit located $SW\frac{1}{4}SE\frac{1}{4}$, Sec. 33, T6S.,
R26E., serving the Dunn Elliott Fede-
ral 1 and 2 wells.

LINDA SAN ANDRES OIL POOL

Operator Dr. Sam G. Dunn

Brine Pit Location SE 1/4 NW 1/4 Sec. 4, T. 7 S., R. 26 E.

Well #1 Clark

Well Location Number 7.26.4.141

Well _____

Well Location Number _____

Number of wells discharging into Brine Pit _____

Production from Slaughter zone of San Andres formation.

Producing depth; Well #1 see below Well #2 _____

Potential test: Well #1 _____ Well #2 _____

Reported date of first oil production _____

Reported water production June, 1964 _____ barrels.

Measurement of discharge and collection of water sample was at the end of the flow line.

Amount of brine being produced; measured 1 qt. in _____ sec.
by stop watch on _____. Calculated to be _____ bbl.
per day assuming continuous pumpage of wells.

Analyses of Produced water:

Date of Collection _____

PPM Chlorides _____

Specific Conductance at 25° C (Kx10⁶)
_____ micromhos.

Calculated total dissolved solids * ppm.

Analyses by R. L. Borton Technical Division SEO.

Pit condition: Visual inspection indicated pits were unlined and no apparent effort had been made by the operators to prevent contamination of fresh water.

Well not completed

*Conversion factor unknown

Photograph No. none Page _____

LINDA SAN ANDRES OIL POOL

Operator Dr. Sam G. Dunn.

Brine Pit Location not built at time of inspection.

Well #1 Crandall - Phillips.

Well Location Number 6,26,34,313.

Well _____.

Well Location Number _____.

Number of wells discharging into Brine Pit no pit.

Production from Slaughter zone of San Andres formation.

Producing depth; Well #1 1148'-1168' Well #2 _____.

Potential test: Well #1 not filed Well #2 _____.

Reported date of first oil production May 1, 1964.

Reported water production June, 1964 not filed barrels.

Measurement of discharge and collection of water sample was at the end of the flow line.

Amount of brine being produced; measured 1 qt. in _____ sec.
by stop watch on _____. Calculated to be _____ bbl.
per day assuming continuous pumpage of wells.

Analyses of Produced water:

Date of Collection none collected.

PPM Chlorides _____.

Specific Conductance at 25° C (Kx10⁶)
_____ micromhos.

Calculated total dissolved solids * ppm.

Analyses by R. L. Borton Technical Division SEO.

Pit condition: Visual inspection indicated pits were unlined and no apparent effort had been made by the operators to prevent contamination of fresh water.

Well shut in.

*Conversion factor unknown

Photograph No. none Page _____.

LINDA SAN ANDRES OIL POOL

Operator R. E. Barnes.

Brine Pit Location SE 3/4 Sec. 33, T. 6 S., R. 26 E..

Well #1 Federal.

Well Location Number 6.2633.342.

Well #2 Federal.

Well Location Number 6.26.33.344.

Number of wells discharging into Brine Pit 2.

Production from Slaughter zone of San Andres formation.
Producing depth; Well #1 1023'-1053' Well #2 1022'-1066'.

Potential test: Well #1 60BO+60BWPD Well #2 no record.

Reported date of first oil production July 30, 1963.

Reported water production June, 1964 not reported barrels.

Measurement of discharge and collection of water sample was at the end of the flow line.

Amount of brine being produced; measured 1 qt. in 14 sec.
by stop watch on August 11, 1964. Calculated to be 36 bbl.
per day assuming continuous pumpage of wells.

Analyses of Produced water:

Date of Collection none collected.

PPM Chlorides _____.

Specific Conductance at 25° C (Kx10⁶)
_____ micromhos.

Calculated total dissolved solids * ppm.

Analyses by R. L. Borton Technical Division SEO.

Pit condition: Visual inspection indicated pits were unlined and no apparent effort had been made by the operators to prevent contamination of fresh water.

*Conversion factor unknown

Photograph No. 9 and 10 Page 13a.



9. Open flow from the tank battery discharge line of the Barnes Federal lease to the brine pit in picture #10



10. Pit located SE $\frac{1}{4}$ SW $\frac{1}{4}$, Sec. 33, T6S., R26E., serving the Barnes Federal 1 and 2 wells.

LINDA SAN ANDRES OIL POOL

Operator H. R. Barnes.

Brine Pit Location not constructed.

Well #1-R Federal.

Well Location Number 6.26.33.332.

Well _____.

Well Location Number _____.

Number of wells discharging into Brine Pit _____.

Production from Slaughter zone of San Andres formation.

Producing depth; Well #1 997-1027 Well #2 not completed.

Potential test: Well #1 _____ Well #2 _____.

Reported date of first oil production _____.

Reported water production June, 1964 _____ barrels.

Measurement of discharge and collection of water sample was at the end of the flow line.

Amount of brine being produced; measured 1 qt. in _____ sec. by stop watch on _____. Calculated to be _____ bbl. per day assuming continuous pumpage of wells.

Analyses of Produced water:

Date of Collection _____.

PPM Chlorides _____.

Specific Conductance at 25° C (Kx10⁶)
_____ micromhos.

Calculated total dissolved solids * ppm.

Analyses by R. L. Borton Technical Division SEO.

Pit condition: Visual inspection indicated pits were unlined and no apparent effort had been made by the operators to prevent contamination of fresh water.

*Conversion factor unknown

Photograph No. none Page _____.

LINDA SAN ANDRES OIL POOL

Operator Barnes and Swanson.

Brine Pit Location SEWANE Sec: E, T. 7 S., R. 26 E..

Well #1 - Rankin.

Well Location Number 7.26.8.211.

Well _____.

Well Location Number _____.

Number of wells discharging into Brine Pit 1.

Production from Slaughter zone of San Andres formation.

Producing depth; Well #1 973-1006 Well #2 _____.

Potential test: Well #1 not reported Well #2 _____.

Reported date of first oil production not reported.

Reported water production June, 1964 not reported barrels.

Measurement of discharge and collection of water sample was at the end of the flow line.

Amount of brine being produced; measured 1 qt. in 20 sec. by stop watch on August 14, 1964. Calculated to be 25 bbl. per day assuming continuous pumpage of wells.

Analyses of Produced water:

Date of Collection August 14, 1964.

PPM Chlorides 144,300.

Specific Conductance at 25° C (Kx10⁶)
210,360 micromhos.

Calculated total dissolved solids * ppm.

Analyses by R. L. Borton Technical Division SEO.

Pit condition: Visual inspection indicated pits were unlined and no apparent effort had been made by the operators to prevent contamination of fresh water.

*Conversion factor unknown

Photograph No. 11 Page 16a.

LINDA SAN ANDRES OIL POOL

Operator Ray Smith.

Brine Pit Location SE1/4 Sec. 29, T. 6 S., R. 25 E..

Well #1 England Federal.

Well Location Number 6.26.22.340.

Well #2 England Federal.

Well Location Number 6.26.30.240.

Number of wells discharging into Brine Pit 2.

Production from Slaughter zone of San Andres formation.
Producing depth; Well #1 986'-994' Well #2 956'-1023'.

Potential test: Well #1 1380+1BWPD Well #2 580+3BWPD.

Reported date of first oil production December 19, 1963.

Reported water production June, 1964 not reported barrels.

Measurement of discharge and collection of water sample was at the end of the flow line.

Amount of brine being produced; measured 1 qt. in 60 sec.
by stop watch on August 17, 1964. Calculated to be 8 bbl.
per day assuming continuous pumpage of wells.

Analyses of Produced water:

Date of Collection August 17, 1964.

PPM Chlorides 143,000.

Specific Conductance at 25° C (Kx10⁶)
203,800 micromhos.

Calculated total dissolved solids * ppm.

Analyses by R. L. Borton Technical Division SEO.

Pit condition: Visual inspection indicated pits were unlined and no apparent effort had been made by the operators to prevent contamination of fresh water.

*Conversion factor unknown

Photograph No. 12 Page 16a.



11. Pit located NW $\frac{1}{4}$ NE $\frac{1}{4}$, Sec. 8, T7S.,
R26E., serving the Barnes and Swan-
son #1 Tonkin well.



12. Pit located SE $\frac{1}{4}$ SW $\frac{1}{4}$, Sec. 29, T6S.,
R26E., serving the Ray Smith #1
England Federal well.

LINDA SAN ANDRES OIL POOL

Operator Ray Smith
Brine Pit Location SE1/4 Sec. 32, T. 6 N., R. 16 E.
Well #1 George
Well Location Number 6.26.32.240
Well _____
Well Location Number _____
Number of wells discharging into Brine Pit 1
Production from Slaughter zone of San Andres formation.
Producing depth; Well #1 956' Well #2 _____
Potential test: Well #1 7. BO-53H.PD Well #2 _____
Reported date of first oil production December 1, 1963
Reported water production June, 1964 not reported barrels.
Measurement of discharge and collection of water sample was at the end of the flow line.
Amount of brine being produced; measured 1 qt. in 22 sec. by stop watch on August 17, 1964. Calculated to be 23 bbl. per day assuming continuous pumpage of wells.

Analyses of Produced water:

Date of Collection August 17, 1964.

PPM Chlorides 157,500.

Specific Conductance at 25° C (Kx10⁶)
203,800 micromhos.

Calculated total dissolved solids * ppm.

Analyses by R. L. Borton Technical Division SEO.

Pit condition: Visual inspection indicated pits were unlined and no apparent effort had been made by the operators to prevent contamination of fresh water.

*Conversion factor unknown

Photograph No. 13 Page 17a.



13. Pit located SE $\frac{1}{4}$ NE $\frac{1}{4}$, Sec. 32, T6S.,
R26E., serving the Ray Smith #1
George well.

LINDA SAN ANDRES OIL POOL

Operator Ray Smith

Brine Pit Location SE 1/4 NE 1/4, Sec. 32, T. 6 S., R. 26 E.

Well #1 Harris

Well Location Number 6.26.33.133

Well _____

Well Location Number _____

Number of wells discharging into Brine Pit 1

Production from Slaughter zone of San Andres formation.

Producing depth; Well #1 981'-998' Well #2 _____

Potential test: Well #1 20BO+20BWPD Well #2 _____

Reported date of first oil production October 9, 1963

Reported water production June, 1964 not reported barrels.

Measurement of discharge and collection of water sample was at the end of the flow line.

Amount of brine being produced; measured 1 qt. in 9 sec. by stop watch on August 17, 1964. Calculated to be 56 bbl. per day assuming continuous pumpage of wells.

Analyses of Produced water:

Date of Collection August 17, 1964

PPM Chlorides 140,500

Specific Conductance at 25° C (Kx10⁶)
206,800 micromhos.

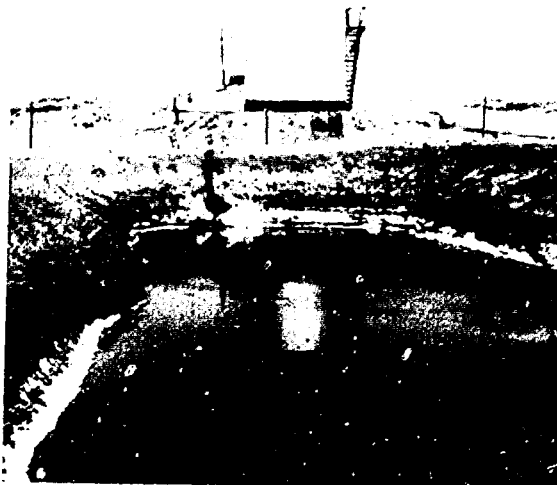
Calculated total dissolved solids * ppm.

Analyses by R. L. Borton Technical Division SEO.

Pit condition: Visual inspection indicated pits were unlined and no apparent effort had been made by the operators to prevent contamination of fresh water.

*Conversion factor unknown

Photograph No. 14, 15, 16 and 17 Page 18a, 18b



14. Pit located SE $\frac{1}{4}$ NE $\frac{1}{4}$, Sec. 32, T6S.,
R26E., serving the Ray Smith #1
Harris well.



15. Pit located SE $\frac{1}{4}$ NE $\frac{1}{4}$, Sec. 32, T6S.,
R26E., serving the Ray Smith #1 Harris
well. Photograph taken from Pecos
River bottom land showing soil wet
from seepage of water from pit.



16. Pit located SE $\frac{1}{4}$ NE $\frac{1}{4}$, Sec. 32, T6S., R26E., serving the Ray Smith #1 Harris well. Photograph taken along south side of pit showing pool of brine formed by seepage from pit.



17. Pit located SE $\frac{1}{4}$ NE $\frac{1}{4}$, Sec. 32, T6S., R26E., serving the Ray Smith #1 Harris well. Photograph taken along southeast side of pit showing steady stream of brine formed by seepage from pit. This stream of brine is estimated to be approximately 1 quart per minute.

LINDA SAN ANDRES OIL POOL

Operator Ray Smith.

Brine Pit Location NE1/4 Sec. 32, T. 6 S., R. 22 E..

Well #1 Rin:.

Well Location Number 6,26,32,121.

Well _____.

Well Location Number _____.

Number of wells discharging into Brine Pit 1.

Production from Slaughter zone of San Andres formation.

Producing depth; Well #1 276-290 Well #2 _____.

Potential test: Well #1 unknown Well #2 _____.

Reported date of first oil production not reported.

Reported water production June, 1964 not reported barrels.

Measurement of discharge and collection of water sample was at the end of the flow line.

Amount of brine being produced; measured 1 qt. in _____ sec.
by stop watch on _____. Calculated to be _____ bbl.
per day assuming continuous pumpage of wells.

Analyses of Produced water:

Date of Collection none collected.

PPM Chlorides _____.

Specific Conductance at 25° C (Kx10⁶)
_____ micromhos.

Calculated total dissolved solids * _____ ppm.

Analyses by R. L. Borton Technical Division SEO.

Pit condition: Visual inspection indicated pits were unlined and no apparent effort had been made by the operators to prevent contamination of fresh water.

*Conversion factor unknown

Photograph No. none Page _____.

LINDA SAN ANDRES OIL POOL

Operator J. J. Travis

Brine Pit Location not constructed

Well #1 Elliott Federal

Well Location Number 6.26.20.133

Well _____

Well Location Number _____

Number of wells discharging into Brine Pit _____

Production from Slaughter zone of San Andres formation.
Producing depth; Well #1 _____ Well #2 _____

Potential test: Well #1 _____ Well #2 _____

Reported date of first oil production _____

Reported water production June, 1964 _____ barrels.

Measurement of discharge and collection of water sample was at the end of the flow line.

Amount of brine being produced; measured 1 qt. in _____ sec.
by stop watch on _____. Calculated to be _____ bbl.
per day assuming continuous pumpage of wells.

Analyses of Produced water:

Date of Collection _____

PPM Chlorides _____

Specific Conductance at 25° C (Kx10⁶)
_____ micromhos.

Calculated total dissolved solids * ppm.

Analyses by R. L. Borton Technical Division SEO.

Pit condition: Visual inspection indicated pits were unlined and no apparent effort had been made by the operators to prevent contamination of fresh water.

Well drilling on August 17, 1964.

*Conversion factor unknown

Photograph No. none Page _____

MEMORANDUM

1964 AUG 26 AM 9:50

State Engineer Office
Roswell, New Mexico

STATE ENGINEER OFFICE
SALINA, N.M.

August 25, 1964

TO Frank E. Irby, Chief, Water Rights Division

FROM Fred H. Hennighausen, Supervisor, District II

SUBJECT Produced brine in Townships 6 and 7 South, Range 26 East, NMPM,
adjacent to the Pecos River

Enclosed is Memorandum Report on disposal of produced brine in the Linda San Andres Oil Pool in Townships 6 and 7 South, Range 26 East, Chaves County, New Mexico, as compiled by R. B. Collins, Jr.

In this report Mr. Collins notes that there are 11 disposal pits which are collecting produced brine water from 17 producing oil wells and one pit which was formerly used to collect water from 2 producing wells (not producing water at the time of the investigation) and one oil producing well which did not have a constructed disposal pit. Mr. Collins also notes that all of the wells and brine disposal pits, with the exception of one, are either in the river bottom or on the river flood plain. This observation was made in the field and means that all the wells and pits, with the one exception, were located in the alluvial fill material adjacent to the river and off of the bluffs, hills and higher terrain adjacent to the flood plain. Some of the wells are located in the river bottom or flat lands adjacent to the river itself and almost at the same elevation, but it appears that all, with the one exception, could be subject to flood. It further appears from the plat accompanying the Memorandum Report that most of the disposal pits are located within one-half mile of the river channel.

Of the 19 active oil wells producing from the Linda San Andres Oil Pool, 16 were found to be producing water totaling approximately 606 barrels of brine per day with a chloride content of 137,000 to 150,000 ppm of chlorides. This figure is based on the assumption that the wells would continuously produce the quantity found being produced at the time of the investigation although this quantity may be subject to some variation as the produced water purportedly is not constant. The 606 barrels of brine per day is equivalent to 25,452 gallons per day or 863,560 gallons ^(25,452 x 33.8) per month. In order to obtain an approximation of the minerals which could be added to the flow, and as a comparative analysis of the produced water including the total dissolved solids was not available, Mr. Collins obtained the specific gravity of representative samples and compared this with the specific gravity of samples obtained in other investigations (Atoka field) for a comparative parts per million of total dissolved solids. This figure, multiplied by a constant, would give the tons of total dissolved solids per acre feet of water and would give, in the Linda San Andres Oil Pool, an estimated 760 tons of total dissolved solids per month contributed by the produced water.

EP 2 RD 98 NOV 1964

300 HOURS

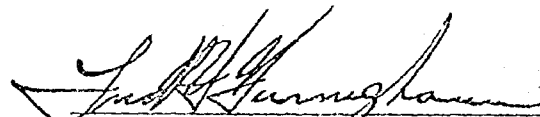
Mr. Frank E. Irby

- 2 -

August 25, 1964

It is also interesting to note that the produced water, as measured, was found to be about 250 percent greater than that reported.

New wells are now being drilled and it appears that some action should be taken at once to prevent contamination of the Pecos River water to the detriment of downstream users.


Fred H. Hennighausen
District Supervisor

FHH*td
encl.



STATE OF NEW MEXICO

STATE ENGINEER OFFICE

SANTA FE

S. E. REYNOLDS
STATE ENGINEER

August 31, 1964

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

*Corrections
made after 9/3*

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

Dear Mr. Porter:

Enclosed herewith is a copy of a memorandum from Fred Hennighausen concerning errors and corrections in the report of the Linda San Andres pool in Chaves County, New Mexico, which reduces the amount of produced brine by a comparatively small amount which I think will not have any effect on the directive which you have issued.

Yours truly,

S. E. Reynolds
State Engineer

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

FEI/ma
encl.
cc-F. H. Hennighausen

MEMORANDUM

1964 SEP 1 PM 1 07

State Engineer Office
Roswell, New Mexico

August 28, 1964

TO Frank E. Irby, Chief, Water Rights Division

FROM Fred H. Hennighausen, Supervisor, District II

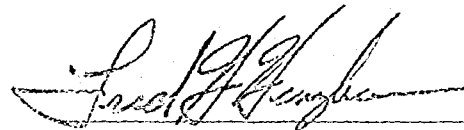
SUBJECT Corrections in memorandum report entitled "Disposal of Produced Brine in the Linda San Andres Oil Pool in Townships 6 and 7 South, Range 26 East, in Chaves County, New Mexico" by R. B. Collins, Jr.

We have noted four minor changes in the subject report. These changes do not alter the ultimate results of the report in any way. Our copies have been corrected and we would appreciate it if you would correct yours as follows:

Page 1, first paragraph, line 5: should be Township 7

Page 3, third column (Production in bbls.), across from location 7.26.4.332: should be 220 instead of NR. Also, in same column, across from location 6.26.33.344: should be NR instead of 292.

Page 13, line 12, under "Reported water production June 1964: should read "not reported" instead of "292 total lease".



td

1964 AUG 31 PM 6:41
STATE ENGINEER OFFICE
ROSSELL, N.M.



STATE OF NEW MEXICO

STATE ENGINEER OFFICE

SANTA FE

S. E. REYNOLDS
STATE ENGINEER

August 26, 1964

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

Mr. A. L. Porter, Jr.
Secretary-Director
Oil Conservation Commission
Santa Fe, N. M.

Dear Mr. Porter:

Attached hereto is a report of our District Personnel
on the salt water problem in the Linda San Andres Pool
which I promised to you.

If I can be of any further assistance in this matter,
please call on me.

Yours truly,

S. E. Reynolds
State Engineer

FEI/ma

By *Frank E. Irby*
Frank E. Irby
Chief
Water Rights Div.

August 25, 1964

James I. Wright

R. B. Collins, Jr.

Disposal of produced brine in the Linda San Andres Oil Pool.

Transmitted herewith are six copies of the memorandum report titled, Disposal of Produced Brine in the Linda San Andres Oil Pool Townships 6 and 7 South, Range 26 East in Chaves County, New Mexico.

R. B. Collins, Jr.

RBC:ld
Encl.

C
O
P
Y

1004 AUG 25 PM 2 43

State of New Mexico
Office of the State Engineer
Water Rights Division

DISPOSAL OF PRODUCED BRINE IN THE
LINDA SAN ANDRES OIL POOL
TOWNSHIPS 6 AND 7 SOUTH, RANGE 26 EAST
IN CHAVES COUNTY, NEW MEXICO.

By
R. B. Collins, Jr.
Engineer, Water Rights Division

August 25, 1964

MEMORANDUM REPORT

Disposal of Produced Brine in the Linda San Andres Oil Pool Townships 6 and 7 South, Range 26 East in Chaves County, New Mexico.

In response to a request by James I. Wright on August 11, 1964, a field investigation was made of the brine disposal pits in the Linda San Andres oil pool located in Sections 20, 29, 30, 32, 33, and 34, all in Township 6 South, Range 26 East and Sections 4, 5, and 8 in Township 7 South, Range 26 East. Field work was done on August 11 by R. B. Collins, Jr. of the State Engineer office, and Bill Gressett, of the Oil Conservation Commission; on August 12 by E. H. Banta, Pecos River Watermaster; on August 14 by R. B. Collins, Jr.; and on August 17 by R. B. Collins, Jr. and Robert Darrow of the Oil and Gas Division of the United States Geological Survey office, Roswell, New Mexico.

In the course of this investigation, the records of the Oil Conservation Commission and the Oil and Gas Division of the United States Geological Survey were reviewed. Visual observation of the oil wells and photographs of all of the brine disposal pits were taken. Measurements of the produced brine were made and samples were collected from the end of the flow line where the flow line discharges into the pits. During the trips into the oil field the investigators met and talked with H. E. Barnes, owner and operator of some of the leases, Jim Glenn, a roustabout, and Mr. Esslinger and his son who have a ranch on the west side of the Pecos River and are employed as pumpers by some of the operators.

The Linda San Andres oil field is located in the south half of Township 6 South, and the north half of Township 7 South, both in Range 26 East. The south line of Township 6 South is the south line of the Fort Sumner declared water basin and the north line of the northern extension of the Roswell Basin. At the time of the investigation, there were 23 wells in the field; 4 producing wells on the west side of the Pecos River, 15 producing wells on the east side of the River, and 4 wells in the process of being constructed. All of the wells and brine disposal pits, with the exception of one, the Dr. Sam G. Dunn, Crandall Phillips #1, are either in the river bottom or on the river flood plain.

The oil production from this field is from the Slaughter zone of the San Andres formation at a depth of approximately 1000' from the surface. All of the wells were on pump; none were producing by natural flow. The field investigation found no evidence of gas being produced, and the operator's potential test reports to the Oil Conservation Commission office indicate no gas production.

The June, 1964 operator production reports to the Oil Conservation Commission office indicate a water-oil ratio in excess of three barrels of water to each barrel of oil produced. Assuming continuous pumping of wells, the field investigation found the water being produced to be about 250% greater than was reported; however, only one measurement at each brine pit was made and production of water could vary from time to time. This water was being disposed of in open, unlined pits. The soil of these pits varied from a rather tight sandy clay to loose sand and gravel. The character of the pit material can be seen in the attached photographs. Salt encrustation from the evaporated water can also be identified in the photographs.

Pertinent information on the individual brine pits and wells are attached to this report on forms prepared for that purpose along with identified and captioned photographs. Attached is a map prepared in this office showing the location of the oil wells, the location of the brine disposal pits, and their relation with respect to the wells and to the Pecos River. Attached is a tabulation of producing wells listing the reported June, 1964 water production, the August measured water production data, and the analyses of the water samples.

The following is a list of the active operators currently developing the Linda San Andres oil pool according to the records of the Oil Conservation Commission office and the Oil and Gas Division, United States Geological Survey.

Dr. Sam G. Dunn
1312 Main Street
Lubbock, Texas

Barnes and Swanson
Box 1057
Roswell, New Mexico

Ray Smith Drilling Co.
409 Wilkinson-Foster Building
Midland, Texas

J. J. Travis
Box 873
Midland, Texas

H. E. Barnes
Box 1057
Roswell, New Mexico

This investigation revealed five operators with 19 active oil wells in the Linda San Andres Oil Pool producing approximately 606 barrels of brine per day with a chloride content of 137,000 to 157,500 ppm. This brine is being disposed of in earthen unlined pits and no apparent effort is being made to prevent contamination of fresh water.

It is hereby recommended that the operators be advised of the probable contamination of fresh water and that a positive program be initiated immediately to remedy this situation.

Analysis of Produced Waters from Oil Wells in the
Linda San Andres Pool, Chaves County, New Mexico.
(Collected at Discharge Pipe, August 11, 14 and 17, 1964)*

Location No.	Source	June, 1964 Production in BBLS	BWPD**	Chlorides	Specific Conductance at 25°C (Kx10 ⁶) Micromhos
7.26.5.422	Dunn, #1 Beadle)	220			
7.26.4.332	Dunn, #2 Beadle)	NR	0	-	-
7.26.4.112	Dunn, #1 Pendergrass	340	25	147,000	200,280
6.26.33.322	Dunn, #1 England Federal)				
6.26.33.323	Dunn, #2 England Federal)	500	34	No water sample	
7.26.4.211	Dunn, #1-B England	75	29	149,000	205,900
6.26.33.213	Dunn, #1 Osage)				
6.26.33.233	Dunn, #2 Osage)	500	15	No water sample	
6.26.33.144	Dunn, #2 Sturgeon	NR	101	150,000	200,000
6.26.33.434	Dunn, #1 Elliott Federal)				
6.26.33.431	Dunn, #2 Elliott Federal)	NR	254	137,000	198,480
6.26.33.342	Barnes, #1 Federal)	NR			
6.26.33.344	Barnes, #2 Federal)	292	36	No water sample	
7.26.8.211	Barnes & Swanson, #1 Tonkin	NR	25	144,300	210,360
6.26.29.340	Smith, #1 England Federal)				
6.26.30.240	Smith, #2 England Federal)	NR	8	148,000	203,800
6.26.32.240	Smith, #1 George	NR	23	157,500	203,800
6.26.33.133	Smith, #1 Harris	NR	56	140,500	206,800
6.26.34.313	Dunn, #1 Grandell-Phillips	NR	0	-	-

*Analysis by R. L. Borton, Technical Division, State Engineer Office

** Assuming continuous 24 hour pumping.

NR Not reported

LINDA SAN ANDRES OIL POOL

Operator Dr. Sam G. Dunn.

Brine Pit Location SW1SW1 Sec. 4, T. 7S. R. 26E..

Well #1 Beadle.

Well Location Number 7.26.5.422.

Well #2 Beadle.

Well Location Number 7.26.4.332.

Number of wells discharging into Brine Pit 2.

Production from Slaughter zone of San Andres formation.

Producing depth; Well #1 1000'-1035 Well #2 1017-1053.

Potential test: Well #1 11BO + 40BWPD Well #2 16BO+38BWPD.

Reported date of first oil production May 8, 1964.

Reported water production June, 1964 220 Total barrels.

Measurement of discharge and collection of water sample was at the end of the flow line.

Amount of brine being produced; measured 1 qt. in _____ sec.
by stop watch on _____. Calculated to be _____ bbl.
per day assuming continuous pumpage of wells.

Analyses of Produced water:

Date of Collection No Water Production

PPM Chlorides _____.

Specific Conductance at 25° C (Kx10⁶)
_____ micromhos.

Calculated total dissolved solids * ppm.

Analyses by R. L. Borton Technical Division SEO.

Pit condition: Visual inspection indicated pits were unlined and no apparent effort had been made by the operators to prevent contamination of fresh water.

*Conversion factor unknown

Photograph No. 1 Page 5.

LINDA SAN ANDRES OIL POOL

Operator Dr. Sam G. Dunn

Brine Pit Location SW¹/SW¹ Sec. 33, T.6S., R. 26 E.

Well #1 Pendergrass

Well Location Number 7,26,4,112

Well _____

Well Location Number _____

Number of wells discharging into Brine Pit 1

Production from Slaughter zone of San Andres formation.

Producing depth; Well #1 983-1030 Well #2 _____

Potential test: Well #1 1380+41BWD Well #2 _____

Reported date of first oil production May 1, 1964

Reported water production June, 1964 340 barrels.

Measurement of discharge and collection of water sample was at the end of the flow line.

Amount of brine being produced; measured 1 qt. in 20 sec. by stop watch on August 11, 1964. Calculated to be 25 bbl. per day assuming continuous pumpage of wells.

Analyses of Produced water:

Date of Collection August 11, 1964

PPM Chlorides 147,000

Specific Conductance at 25° C (Kx10⁶)
200.280 micromhos.

Calculated total dissolved solids UK ppm.

Analyses by R. L. Borton Technical Division SEO.

Pit condition: Visual inspection indicated pits were unlined and no apparent effort had been made by the operators to prevent contamination of fresh water.

*Conversion factor unknown

Photograph No. 2 Page 5



1. Pit located SW $\frac{1}{4}$ SW $\frac{1}{4}$, Sec. 4, T7S.,
R26E, serving the Dunn, Beadle 1
and 2 wells.



2. Pit located SW $\frac{1}{4}$ SW $\frac{1}{4}$, Sec. 33, T6S.,
R26E., serving the Dunn, Pendergrass
#1 well.

LINDA SAN ANDRES OIL POOL

Operator Dr. Sam G. Dunn.

Brine Pit Location NELSE Sec. 33, T. 6 S., R. 26 E..

Well #1 England Federal.

Well Location Number 6.26.33.322.

Well #2 England Federal.

Well Location Number 6.26.33.323.

Number of wells discharging into Brine Pit 2.

Production from Slaughter zone of San Andres formation.

Producing depth; Well #1 1018'-1058' Well #2 999'-1032'.

Potential test: Well #1 20BQ+25BWPD Well #2 22BQ+27BWPD.

Reported date of first oil production May 2, 1964.

Reported water production June, 1964 500 total lease barrels.

Measurement of discharge and collection of water sample was at the end of the flow line.

Amount of brine being produced; measured 1 qt. in 15 sec. by stop watch on August 11, 1964. Calculated to be 34 bbl. per day assuming continuous pumpage of wells.

Analyses of Produced water:

Date of Collection none collected.

PPM Chlorides _____.

Specific Conductance at 25° C (Kx10⁶)
_____ micromhos.

Calculated total dissolved solids * ppm.

Analyses by R. L. Borton Technical Division SEO.

Pit condition: Visual inspection indicated pits were unlined and no apparent effort had been made by the operators to prevent contamination of fresh water.

*Conversion factor unknown

Photograph No. 3 Page 7.

LINDA SAN ANDRES OIL POOL

Operator Dr. Sam G. Dunn.
Brine Pit Location NW 1/4 NE 1/4 Sec. 4, T. 7 S., R. 26 E..
Well #1-B England.
Well Location Number 7.26.4.211.
Well _____.
Well Location Number _____.
Number of wells discharging into Brine Pit 1.
Production from Slaughter zone of San Andres formation.
Producing depth; Well #1 1064-1104 Well #2 _____.
Potential test: Well #1 1280+25BWPD Well #2 _____.
Reported date of first oil production May 1, 1964.
Reported water production June, 1964 75 Total lease barrels.

Measurement of discharge and collection of water sample was at the end of the flow line.

Amount of brine being produced; measured 1 qt. in 18 sec.
by stop watch on August 11, 1964. Calculated to be 29 bbl.
per day assuming continuous pumpage of wells.

Analyses of Produced water:

Date of Collection August 11, 1964.

PPM Chlorides 149,000.

Specific Conductance at 25° C (Kx10⁶)
205,960 micromhos.

Calculated total dissolved solids * ppm.

Analyses by R. L. Borton Technical Division SEO.

Pit condition: Visual inspection indicated pits were unlined and no apparent effort had been made by the operators to prevent contamination of fresh water.

*Conversion factor unknown

Photograph No. 4 Page 7 a.



3. Pit located NE $\frac{1}{4}$ SE $\frac{1}{4}$, Sec. 33, T6S.,
R26E., serving the Dunn, England
Federal 1 and 2 wells.



4. Pit located NW $\frac{1}{4}$ NE $\frac{1}{4}$, Sec. 4, T7S.,
R26E., serving the Dunn, England
Federal #1-B well.

LINDA SAN ANDRES OIL POOL

Operator Dr. Sam G. Dunn.

Brine Pit Location SW 1/4 Sec. 33, T. 6 S., R. 26 E..

Well #1 Osage.

Well Location Number 6.26.33.213.

Well #2 Osage.

Well Location Number 6.26.33.233.

Number of wells discharging into Brine Pit 2.

Production from Slaughter zone of San Andres formation.
Producing depth; Well #1 1016'-1032' Well #2 1022'-1059'.

Potential test: Well #1 12BO+50BWPD Well #2 15BO+35BWPD.

Reported date of first oil production May 4, 1964, #1 well.

Reported water production June, 1964 500 total lease barrels.

Measurement of discharge and collection of water sample was at the end of the flow line.

Amount of brine being produced; measured 1 qt. in 35 sec.
by stop watch on August 11, 1964. Calculated to be 15 bbl.
per day assuming continuous pumpage of wells.

Analyses of Produced water:

Date of Collection none collected.

PPM Chlorides _____.

Specific Conductance at 25° C (Kx10⁶)
_____ micromhos.

Calculated total dissolved solids * ppm.

Analyses by R. L. Borton Technical Division SEO.

Pit condition: Visual inspection indicated pits were unlined and no apparent effort had been made by the operators to prevent contamination of fresh water.

*Conversion factor unknown

Photograph No. 5 and 6 Page 8a.



5. West one-half of pit located SW $\frac{1}{4}$ NE $\frac{1}{4}$,
Sec. 33, T6S., R26E., serving the
Dunn, Osage 1 and 2 wells.



6. East one-half of pit located SW $\frac{1}{4}$ NE $\frac{1}{4}$,
Sec. 33, T6S., R26E., serving the
Dunn, Osage 1 and 2 wells.

LINDA SAN ANDRES OIL POOL

Operator Dr. Sam G. Dunn.

Brine Pit Location SE 1/4 Sec. 33, T. 6S., R. 26 E..

Well _____.

Well Location Number _____.

Well #2 Sturgeon.

Well Location Number 6.26.33.144.

Number of wells discharging into Brine Pit 1.

Production from Slaughter zone of San Andres formation.

Producing depth; Well #1 _____ Well #2 1004'-1040'.

Potential test: Well #1 _____ Well #2 1080+35BNPD.

Reported date of first oil production July 19, 1964.

Reported water production June, 1964 not reported barrels.

Measurement of discharge and collection of water sample was at the end of the flow line.

Amount of brine being produced; measured 1 qt. in 5.1 sec.
by stop watch on August 11, 1964. Calculated to be 101 bbl.
per day assuming continuous pumpage of wells.

Analyses of Produced water:

Date of Collection August 11, 1964.

PPM Chlorides 150,000.

Specific Conductance at 25° C ($K \times 10^6$)
200.000 micromhos.

Calculated total dissolved solids * ppm.

Analyses by R. L. Borton Technical Division SEO.

Pit condition: Visual inspection indicated pits were unlined and no apparent effort had been made by the operators to prevent contamination of fresh water.

*Conversion factor unknown

Photograph No. 7 Page 10a.

LINDA SAN ANDRES OIL POOL

Operator Dr. Sam C. Dunn

Brine Pit Location SW1/4 Sec. 33, T. 6 S., R. 26 E.

Well #1 Elliott Federal

Well Location Number 6.26.33.434

Well #2 Elliott Federal

Well Location Number 6.26.33.431

Number of wells discharging into Brine Pit 2

Production from Slaughter zone of San Andres formation.

Producing depth; Well #1 see note below Well #2 _____

Potential test: Well #1 _____ Well #2 _____

Reported date of first oil production _____

Reported water production June, 1964 _____ barrels.

Measurement of discharge and collection of water sample was at the end of the flow line.

Amount of brine being produced; measured 1 qt. in 2 sec. by stop watch on August 14, 1964. Calculated to be 254 bbl. per day assuming continuous pumpage of wells.

Analyses of Produced water:

Date of Collection August 14, 1964

PPM Chlorides 137,000

Specific Conductance at 25° C (Kx10⁶)
198,480 micromhos.

Calculated total dissolved solids * ppm.

Analyses by R. L. Borton Technical Division SEO.

Pit condition: Visual inspection indicated pits were unlined and no apparent effort had been made by the operators to prevent contamination of fresh water.

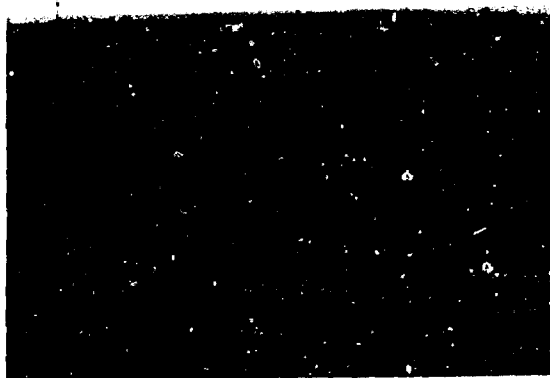
Well records not completed.

*Conversion factor unknown

Photograph No. 8 Page 10a



7. Pit located $SE\frac{1}{4}NW\frac{1}{4}$, Sec. 33, T6S.,
R26E., serving the Dunn, Sturgeon
#2 well.



8. Pit located $SW\frac{1}{4}SE\frac{1}{4}$, Sec. 33, T6S.,
R26E., serving the Dunn Elliott Fede-
ral 1 and 2 wells.

LINDA SAN ANDRES OIL POOL

Operator Dr. Sam G. Dunn
Brine Pit Location SE 1/4 Sec. 4, T. 7 S., R. 26 E.
Well #1 Clark
Well Location Number 7.26.4.141
Well _____
Well Location Number _____
Number of wells discharging into Brine Pit _____
Production from Slaughter zone of San Andres formation.
Producing depth; Well #1 see below Well #2 _____
Potential test: Well #1 _____ Well #2 _____
Reported date of first oil production _____ barrels.
Reported water production June, 1964 _____
Measurement of discharge and collection of water sample was at the
end of the flow line.
Amount of brine being produced; measured 1 qt. in _____ sec.
by stop watch on _____ Calculated to be _____ bbl.
per day assuming continuous pumpage of wells.
Analyses of Produced water:

Date of Collection _____
PPM Chlorides _____
Specific Conductance at 25° C (Kx10⁶)
_____ micromhos.
Calculated total dissolved solids * _____ ppm.

Analyses by R. L. Borton Technical Division SEO.

Pit condition: Visual inspection indicated pits were unlined and
no apparent effort had been made by the operators to prevent contam-
ination of fresh water.
Well not completed

*Conversion factor unknown

Photograph No. none Page _____

LINDA SAN ANDRES OIL POOL

Operator Dr. Sam G. Dunn.

Brine Pit Location not built at time of inspection.

Well #1 Crandall - Phillips.

Well Location Number 6,26,34,313.

Well _____.

Well Location Number _____.

Number of wells discharging into Brine Pit no pit.

Production from Slaughter zone of San Andres formation.

Producing depth; Well #1 1148'-1168' Well #2 _____.

Potential test: Well #1 not filed Well #2 _____.

Reported date of first oil production May 1, 1964.

Reported water production June, 1964 not filed barrels.

Measurement of discharge and collection of water sample was at the end of the flow line.

Amount of brine being produced; measured 1 qt. in _____ sec.
by stop watch on _____, Calculated to be _____ bbl.
per day assuming continuous pumpage of wells.

Analyses of Produced water:

Date of Collection none collected.

PPM Chlorides _____.

Specific Conductance at 25° C (Kx10⁶)
_____ micromhos.

Calculated total dissolved solids * ppm.

Analyses by R. L. Borton Technical Division SEO.

Pit condition: Visual inspection indicated pits were unlined and no apparent effort had been made by the operators to prevent contamination of fresh water.

Well shut in.

*Conversion factor unknown

Photograph No. none Page _____.

LINDA SAN ANDRES OIL POOL

Operator R. E. Barnes.

Brine Pit Location SE1/4 Sec. 33, T. 6 S., R. 26 E..

Well #1 Federal.

Well Location Number 6.2633.342.

Well #2 Federal.

Well Location Number 6.26.33.344.

Number of wells discharging into Brine Pit 2.

Production from Slaughter zone of San Andres formation.
Producing depth; Well #1 1023'-1053' Well #2 1022'-1066'.

Potential test: Well #1 6080+608WPD Well #2 no record.

Reported date of first oil production July 30, 1963.

Reported water production June, 1964 not reported ~~292 total lease~~ barrels.

Measurement of discharge and collection of water sample was at the end of the flow line.

Amount of brine being produced; measured 1 qt. in 14 sec.
by stop watch on August 11, 1964. Calculated to be 36 bbl.
per day assuming continuous pumpage of wells.

Analyses of Produced water:

Date of Collection none collected.

PPM Chlorides _____.

Specific Conductance at 25° C (Kx10⁶)
_____ micromhos.

Calculated total dissolved solids * ppm.

Analyses by R. L. Borton Technical Division SEO.

Pit condition: Visual inspection indicated pits were unlined and no apparent effort had been made by the operators to prevent contamination of fresh water.

*Conversion factor unknown

Photograph No. 9 and 10 Page 13a.



9. Open flow from the tank battery discharge line of the Barnes Federal lease to the brine pit in picture #10



10. Pit located SE $\frac{1}{4}$ SW $\frac{1}{4}$, Sec. 33, T6S., R26E., serving the Barnes Federal 1 and 2 wells.

LINDA SAN ANDRES OIL POOL

Operator H. R. Barnes.

Brine Pit Location not constructed.

Well #1-R Federal.

Well Location Number 6.26.33.332.

Well _____.

Well Location Number _____.

Number of wells discharging into Brine Pit _____.

Production from Slaughter zone of San Andres formation.

Producing depth; Well #1 997-1027 Well #2 not completed.

Potential test: Well #1 _____ Well #2 _____.

Reported date of first oil production _____.

Reported water production June, 1964 _____ barrels.

Measurement of discharge and collection of water sample was at the end of the flow line.

Amount of brine being produced; measured 1 qt. in _____ sec.
by stop watch on _____. Calculated to be _____ bbl.
per day assuming continuous pumpage of wells.

Analyses of Produced water:

Date of Collection _____.

PPM Chlorides _____.

Specific Conductance at 25° C (Kx10⁶)
_____ micromhos.

Calculated total dissolved solids * ppm.

Analyses by R. L. Borton Technical Division SEO.

Pit condition: Visual inspection indicated pits were unlined and no apparent effort had been made by the operators to prevent contamination of fresh water.

*Conversion factor unknown

Photograph No. none Page _____.

LINDA SAN ANDRES OIL POOL

Operator Barnes and Swanson.

Brine Pit Location RENNY Sec. 8, T. 7 S., R. 26 E..

Well #1-Tonkin.

Well Location Number 7.26.8.211.

Well _____.

Well Location Number _____.

Number of wells discharging into Brine Pit 1.

Production from Slaughter zone of San Andres formation.

Producing depth; Well #1 973-1006 Well #2 _____.

Potential test: Well #1 not reported Well #2 _____.

Reported date of first oil production not reported.

Reported water production June, 1964 not reported barrels.

Measurement of discharge and collection of water sample was at the end of the flow line.

Amount of brine being produced; measured 1 qt. in 20 sec. by stop watch on August 14, 1964. Calculated to be 25 bbl. per day assuming continuous pumpage of wells.

Analyses of Produced water:

Date of Collection August 14, 1964.

PPM Chlorides 144,300.

Specific Conductance at 25° C (Kx10⁶)
210,360 micromhos.

Calculated total dissolved solids * ppm.

Analyses by R. L. Borton Technical Division SEO.

Pit condition: Visual inspection indicated pits were unlined and no apparent effort had been made by the operators to prevent contamination of fresh water.

*Conversion factor unknown

Photograph No. 11 Page 16a.

LINDA SAN ANDRES OIL POOL

Operator Ray Smith.

Brine Pit Location SE1/4 Sec. 29, T. 6 S., R. 26 E..

Well #1 England Federal.

Well Location Number 6.25.22.340.

Well #2 England Federal.

Well Location Number 6.25.30.240.

Number of wells discharging into Brine Pit 2.

Production from Slaughter zone of San Andres formation.

Producing depth; Well #1 985'-994' Well #2 956'-1023'.

Potential test: Well #1 1300+1BWPD Well #2 580+3BWPD.

Reported date of first oil production December 19, 1963.

Reported water production June, 1964 not reported barrels.

Measurement of discharge and collection of water sample was at the end of the flow line.

Amount of brine being produced; measured 1 qt. in 60 sec. by stop watch on August 17, 1964. Calculated to be 8 bbl. per day assuming continuous pumpage of wells.

Analyses of Produced water:

Date of Collection August 17, 1964.

PPM Chlorides 143,000.

Specific Conductance at 25° C (Kx10⁶)
203,800 micromhos.

Calculated total dissolved solids * ppm.

Analyses by R. L. Borton Technical Division SEO.

Pit condition: Visual inspection indicated pits were unlined and no apparent effort had been made by the operators to prevent contamination of fresh water.

*Conversion factor unknown

Photograph No. 12 Page 16a.



11. Pit located NW $\frac{1}{4}$ NE $\frac{1}{4}$, Sec. 8, T7S.,
R26E., serving the Barnes and Swan-
son #1 Tonkin well.



12. Pit located SE $\frac{1}{4}$ SW $\frac{1}{4}$, Sec. 29, T6S.,
R26E., serving the Ray Smith #1
England Federal well.

LINDA SAN ANDRES OIL POOL

Operator Ray Smith.

Brine Pit Location SE 1/4 Sec. 32, T. 6 N., R. 26 E..

Well #1 George.

Well Location Number 6.26.32.240.

Well _____.

Well Location Number _____.

Number of wells discharging into Brine Pit 1.

Production from Slaughter zone of San Andres formation.

Producing depth; Well #1 956' Well #2 _____.

Potential test: Well #1 7 BO+3BHPD Well #2 _____.

Reported date of first oil production December 1, 1963.

Reported water production June, 1964 not reported barrels.

Measurement of discharge and collection of water sample was at the end of the flow line.

Amount of brine being produced; measured 1 qt. in 22 sec. by stop watch on August 17, 1964. Calculated to be 23 bbl. per day assuming continuous pumpage of wells.

Analyses of Produced water:

Date of Collection August 17, 1964.

PPM Chlorides 157,500.

Specific Conductance at 25° C (Kx10⁶)
203,800 micromhos.

Calculated total dissolved solids * ppm.

Analyses by R. L. Borton Technical Division SEO.

Pit condition: Visual inspection indicated pits were unlined and no apparent effort had been made by the operators to prevent contamination of fresh water.

*Conversion factor unknown

Photograph No. 13 Page 17a.



13. Pit located $SE\frac{1}{4}NE\frac{1}{4}$, Sec. 32, T6S.,
R26E., serving the Ray Smith #1
George well.

LINDA SAN ANDRES OIL POOL

Pit in Sec 32

Operator Ray Smith

Brine Pit Location SW1/4, Sec. 33, T. 6 S, R. 26 E.

Well #1 Harris

Well Location Number 6.26.33.133

Well _____

Well Location Number _____

Number of wells discharging into Brine Pit 1

Production from Slaughter zone of San Andres formation.
Producing depth; Well #1 981'-998' Well #2 _____

Potential test: Well #1 20BO+20BWPD Well #2 _____

Reported date of first oil production October 9, 1963

Reported water production June, 1964 not reported barrels.

Measurement of discharge and collection of water sample was at the end of the flow line.

Amount of brine being produced; measured 1 qt. in 9 sec.
by stop watch on August 17, 1964. Calculated to be 56 bbl.
per day assuming continuous pumpage of wells.

Analyses of Produced water:

Date of Collection August 17, 1964

PPM Chlorides 140,500

Specific Conductance at 25° C (Kx10⁶)
206,800 micromhos.

Calculated total dissolved solids * ppm.

Analyses by R. L. Borton Technical Division SEO.

Pit condition: Visual inspection indicated pits were unlined and no apparent effort had been made by the operators to prevent contamination of fresh water.

*Conversion factor unknown

Photograph No. 14, 15, 16 and 17 Page 18a, 18b



14. Pit located SW $\frac{1}{4}$ NW $\frac{1}{4}$, Sec. 33, T6S.,
R26E., serving the Ray Smith #1
Harris well.



15. Pit located SW $\frac{1}{4}$ NW $\frac{1}{4}$, Sec. 33, T6S.,
R26E., serving the Ray Smith #1 Harris
well. Photograph taken from Pecos
River bottom land showing soil wet
from seepage of water from pit.



16. Pit located SW $\frac{1}{4}$ NW $\frac{1}{4}$, Sec. 33, T6S., R26E., serving the Ray Smith #1 Harris well. Photograph taken along south side of pit showing pool of brine formed by seepage from pit.



17. Pit located SW $\frac{1}{4}$ NW $\frac{1}{4}$, Sec. 33, T6S., R26E., serving the Ray Smith #1 Harris well. Photograph taken along southeast side of pit showing steady stream of brine formed by seepage from pit. This stream of brine is estimated to be approximately 1 quart per minute.

LINDA SAN ANDRES OIL POOL

Operator Ray Sadri.

Brine Pit Location NE 1/4 Sec. 32, T. 6 S., R. 25 E..

Well #1 Ring.

Well Location Number 6.25.32.121.

Well _____.

Well Location Number _____.

Number of wells discharging into Brine Pit 1.

Production from Slaughter zone of San Andres formation.
Producing depth; Well #1 976-990 Well #2 _____.

Potential test: Well #1 unknown Well #2 _____.

Reported date of first oil production not reported.

Reported water production June, 1964 not reported barrels.

Measurement of discharge and collection of water sample was at the end of the flow line.

Amount of brine being produced; measured 1 qt. in _____ sec.
by stop watch on _____. Calculated to be _____ bbl.
per day assuming continuous pumpage of wells.

Analyses of Produced water:

Date of Collection none collected.

PPM Chlorides _____.

Specific Conductance at 25° C (Kx10⁶)
_____ micromhos.

Calculated total dissolved solids * ppm.

Analyses by R. L. Borton Technical Division SEO.

Pit condition: Visual inspection indicated pits were unlined and no apparent effort had been made by the operators to prevent contamination of fresh water.

*Conversion factor unknown

Photograph No. none Page _____.

LINDA SAN ANDRES OIL POOL

Operator J. J. Travis.

Brine Pit Location not constructed.

Well #1 Elliott Federal.

Well Location Number 6.26.20.133.

Well _____.

Well Location Number _____.

Number of wells discharging into Brine Pit _____.

Production from Slaughter zone of San Andres formation.
Producing depth; Well #1 _____ Well #2 _____.

Potential test: Well #1 _____ Well #2 _____.

Reported date of first oil production _____.

Reported water production June, 1964 _____ barrels.

Measurement of discharge and collection of water sample was at the end of the flow line.

Amount of brine being produced; measured 1 qt. in _____ sec.
by stop watch on _____. Calculated to be _____ bbl.
per day assuming continuous pumpage of wells.

Analyses of Produced water:

Date of Collection _____.

PPM Chlorides _____.

Specific Conductance at 25° C (Kx10⁶)
_____ micromhos.

Calculated total dissolved solids * ppm.

Analyses by R. L. Borton Technical Division SEO.

Pit condition: Visual inspection indicated pits were unlined and no apparent effort had been made by the operators to prevent contamination of fresh water.
Well drilling on August 17, 1964.

*Conversion factor unknown

Photograph No. none Page _____.

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS
September 22, 1964

4204 Boston Avenue
Lubbock, Texas

Dr. Sam G. Dunn
1312 Main Street
Lubbock, Texas

Subject: Analysis of water sample
identified as "Sturgeon
Ranch Well."

Dear Sir:

The above mentioned sample was submitted to the Lubbock laboratory for
measurement of chloride content.

Results of this analysis are as follows:

945 Parts per million

Thank you for this opportunity to be of service.

Very truly yours,

R. G. Gallop

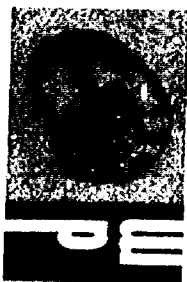
R. G. Gallop
Laboratory Manager
Lubbock, Texas laboratory

RGG

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO



PAGE 1

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico

October 12, 1964

EXAMINER HEARING

IN THE MATTER OF: Application of Dr. Sam G.
Dunn for a Review of the Commission's
Directive of August 27, 1964 concerning
salt water disposal, Chaves County, New
Mexico.

Case No. 3120 &
3121

BEFORE: MR. NUTTER

TRANSCRIPT OF HEARING

MR. NUTTER: The hearing will come to order please. For the information of anyone who may be concerned, cases 3120 and 3121 on this Docket No. 27-64 will be heard in this room at this time. All the remainder of the cases listed on Docket 27-64 are being heard in the large hearing room on the ground floor of this building by Mr. Utz.

We will now call Case No. 3120.

MR. DURRETT: Application of Dr. Sam G. Dunn for a Review of the Commission's Directive of August 27, 1964 concerning salt water disposal, Chaves County, New Mexico.

MR. NUTTER: Dr. Dunn are these two cases closely enough related that you would care to consolidate them for purposes of the hearing or would you rather have the two cases heard separately?

DR. DUNN: I think the two cases should be heard separately because the reaction to the first one will govern upon the second one.

MR. NUTTER: We'll just call case 3120 at this time. At this time I would like to ask for appearances in this case.

DR. DUNN: Shall we be sworn?

MR. DURRETT: The first appearance is the applicant Dr. Dunn.

DR. DUNN: Myself.

MR. NUTTER: Any other appearances?



MR. HILL: Yes. Roy G. Hill appearing for the State Engineer in this matter.

MR. BARNES: H. E. Barnes with Dr. Dunn.

MR. MCCOY: W. G. McCoy for Dr. Dunn.

MR. DURRETT: Are you gentlemen attorneys or are you representing yourselves in connection with Dr. Dunn?

MR. MCCOY: I am working for Dr. Dunn as a registered engineer.

MR. BARNES: I have some production in the same field he does.

MR. NUTTER: Then you are representing yourself?

MR. BARNES: Yes.

MR. PORTER: Are there any other producers?

MR. SWANSON: E. M. Swanson, representing myself.

MR. NUTTER: Are there any who plan to present testimony? All those planning to present testimony stand and be sworn.

(Witnesses sworn.)

MR. NUTTER: Would you proceed?

DR. DUNN: Mr. Nutter, members of the Commission, and gentlemen. I will first identify myself; I am Dr. Sam G. Dunn. I reside at Lubbock, Texas. I'm a surgeon by vocation and a wildcatter by avocation. You probably wonder why a surgeon is interested in wildcatting. My father was the first circuit

riding Methodist preacher to hit Texas in 1880.

I told him I would never gamble, I'd just drill wildcats. It's a little safer than Las Vegas. I got into New Mexico, and pardon my personal experience, I was so excited about this hearing that I forgot my bag and I may look like one of the Beatles or a beatnik, but I forgot everything except this. Thank God I didn't forget this.

First I want to say that I'm against pollution in any form. I feel, however, that the recent order was possibly a little premature. I appreciate very much the privilege of presenting our side of the case to the Commission. I have questioned the U.S.G.S. and other sources as to the migration horizontally of underground water. Excuse me a moment and I will get their report.

It seems that no one can tell exactly, that is no one with whom I have had any correspondence, and I really went through the whole field. I have a letter here from the Acting Chief of the U.S.G.S. at Roswell relative to this.

I didn't know we were going to be first or I could have had this correlated a little better. I apparently left it in the office, in which he states that the U.S.G.S. have no information as to the migration of underground water in the horizontal condition or even perpendicularly, so we were at a loss to know the speed.

dearnley-meier

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6491 • ALBUQUERQUE, NEW MEXICO



I've drilled and operated 386 wells, most of them in Texas, so although I'm not an engineer by training, I have gotten a lot of practical experience, particularly from the economic end of it and I can read a log about as well as I can a cardiogram so I have had to attend four water pollution hearings at Austin.

I checked with the engineers of the High Plains Water District who are the most involved, of course, in Texas, because we have underground irrigation there and under the Ogallala formation, why, the U.S.G.S. had carefully mapped all the sections that the Ogallala produced from.

Of course, they're particularly concerned with the contamination because we have a caliche sub-surface four feet down and sometimes two feet. Caliche is different from clay, it sort of strains the fluid. It doesn't act as an impervious matter such as clay and this lime, not lime but this gyp we have out there. They came up, the U.S.G.S. and the High Plains Water District came up with a comparable area which is part of Yocum County which has a clay sub-surface.

They said that it migrated horizontally three feet a year. Well, according to the ruling that was sent out by this Commission, it would take 6,000 years for it to migrate into the Pecos River from some places where we're drilling. It couldn't be exactly a menace that would cause an emergency

dearnley-meier

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO



ruling that would only give a man six weeks to dispose of his pit water, so I felt like that might be one factor, if we could bring out and tell you gentlemen as best we could our side of it, that maybe I wouldn't say that they had astigmatism, but maybe you could see every angle of it.

We have drilled five wells there with cable tools in the area of the Dale lease in Section 26 and 27. Now, Mr. Nutter, I sent all those maps and everything in for you; one of them I had a big map blown up that I could show you just exactly, if you have the big map there, I could show you where the Dale lease is.

MR. DURRETT: Let me interrupt you for a moment. If you want to testify from this, why don't we get it marked as an exhibit?

DR. DUNN: I would be glad to have it marked as an exhibit.

(Whereupon, Applicant's Exhibit A was marked for identification.)

DR. DUNN: This is my Dale lease in Section 26. That's my discovery. All of these wells with the exception of No. 4 were drilled with cable tools. We only cored, of course, the No. 4 because we drilled that with a rotary. All these other wells were drilled with cable tools and I cautioned my driller to watch for fresh water as I wanted to put my camp -- I had the biggest area in here and this is where I drilled.

dearnley-meier

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMAS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO



I wanted to put my camp where I could get some water. He didn't, in any of these wells, he didn't find enough water for a camp, fresh water of any type, except when we got over here and this one right here in 27 at 400 feet, we hit the Queens and then we got the ocean of sulphur water, just as sulphur as it could be. We had so much of the sulphur water in the Queens on this well in Section 27 that it was necessary to go to rotary because they couldn't control it.

I ran a brand new string of 7 inch casing and cemented it and still it didn't hold back this sulphur water, so we had to go to the rotary and then we completed it with the rotary and we had three cement jobs on that. So, not anywhere in this area did we find enough fresh water for a camp.

Now, Mr. Morely who owns all the surface in this area under which I'm drilling, has a windmill and the only amount of water he gets which is quite gyp is just for approximately 30 head of cattle on all these sections.

He has one well under the whole area, so you see, there wouldn't be much chance of contaminating water when there's not any water there as far as fresh water is concerned. The Pecos is a long way off. Of course, we are concerned particularly with the Pecos.

MR. NUTTER: Do you know where the ranchers' water well is?

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SUNDAY BLDG. • P. O. BOX 1092 • PHONE 243-6891 • ALBUQUERQUE, NEW MEXICO



DR. DUNN: It's right here. Southwest of Southwest of 26. Now, I had to drill when I didn't get any water here. I bought this lease from Mr. Barnes right here, the Sam Dunn Federal No. 1. I thought I would put my camp close to the river and surely I'll get water there, but I had to drill two wells before even I got enough water for my trailer house that I put at the camp. I filled all my radiators up not having tested it for -- We have two cats, four trucks, pulling unit, and I had to change the radiators on them all because it stopped up the radiators, this water that we got out of the well.

We finally got enough drilling here for just a campsite. That, mind you, is within half a mile of the river.

MR. DURRETT: Is that Section 4?

DR. DUNN: No, Section 33. In Section 33 is where I drilled for camp water. We got it, but just barely enough after getting the second well. The first one was as dry as a powder-house. That shows you, and there's only one well of any consequence on the whole area, that's the Sturgeon's well at his ranch-house. That would be situated right about here. I don't know exactly, but it's within this area right here, the Sturgeon's ranch-house, and there is a well there.

MR. NUTTER: It would be the west side of Section

4?

DR. DUNN: West side of Section 4 and 7. That water is not

dearnley-meier

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO



potable. Sturgeon has to carry water from town for drinking purposes, so it's pretty hard to contaminate a well of that nature. However, he does irrigate some of those small areas with it and he has a tank there which Mr. McCoy will tell you about, a dirt tank, an earthen tank. There are other sources of contamination along the bed of the Pecos river.

Now, Mr. Barnes, I think, will testify, he did to me, that when he started out in that area in '58, that the water in the river above the bridge on Highway 70 has less saline content than down at the bridge which means, that was even before the first well was drilled, so there couldn't have been any contamination of it then. That means that naturally is, sometimes it's running over a bed where the salt content is extremely high and it's absorbing it and that's what I hoped that the U.S.G.S. could give us, some information, or the Water Commission of New Mexico, as to the different beds of this salt because up here there's a different saline content from what it is down at the bridge.

MR. NUTTER: Does that Highway 70 traverse either of these two townships?

DR. DUNN: No, it goes below it.

MR. NUTTER: It's south of this map?

DR. DUNN: It's way below it. Now, I was just wondering, of course I notice the Commission wouldn't just

single us out I wouldn't say for punishment, at least for investigation it sounds better at least, but if they had been as careful around the potash plants as they are where we are, because after all, that's around where they're irrigating, around Artesia, I questioned some, I used to go fishing in Red Bluff a long time ago and I know nobody could drink that water and I know that some fishermen have told me that up the river that they have seen the fish floating belly upward due to contamination below. Of course the Oil and Gas Conservation Commission had nothing to do with that probably, but the Water Commission of New Mexico, I don't know under what category that would come, but I was hoping that they would look with as much favor on us as they do possibly on other sources of revenue for the state.

Now, I want to tell you something about how this up-dip goes. Now, as you go west, as you all know, this is academic, but the San Andres Formation out-crops up toward the San Ramentos and from east to west there's approximately from 20 to 50 feet up-dip on the San Andres Formation going from east to west.

MR. NUTTER: What is that per mile?

DR. DUNN: No, per location, 990 feet. I took my core analysis, brought some of them with me if you would like to have them. For example, my furthest north well, the Osage

right here, now that, we top the pay at a thousand and two feet. All right, across the river over here on the Keys we hit it at 800. Now, that's tremendous up-lift. That's just across. In fact that's practically on the bank of the river

As you remember, we had to get permission to move; the location was in the bed of the river. We had to get special permission to move over to drill the Keys which is a Federal lease. We hit it at 800 there. In fact we hit it so high that we went through it. One of Mr. Barnes' roughnecks kind of smelled a little oil and we weren't expected to hit it until we got to about 900 to hit it, so when we did start coring we were out of the pay so we got nothing whatever in the way of oil in the core on the Keys.

That shows the up-dip coming up this way. Now, for example, we hit here on this one right here.

MR. NUTTER: Identify the well, please.

DR. DUNN: The Osage No. 1 is the one that we have been talking about.

MR. DURRETT: What section is that in?

DR. DUNN: Section 33. All that I'm talking about now are in Section 33. Now, on the first one that I drilled I bought the lease from Mr. Barnes. We hit the top of the pay at 1010. In No. 2 we hit it at 990, the same lease, 990 feet southwest. It actually wasn't 900 straight west but southwest,

so that showed a tremendous incline there. When we hit it down on the Beadle No. 1 which is, the Beadle No. 1 is right here. That's in Section 5 in the south half of Section 5, the northeast quarter of the south half. We hit it at a thousand and twenty-six, so you see, it's up-lift goes a little northwest.

Now, the Beadle No. 1, Beadle No. 2, right here, we hit that at 1010. I brought that information, which I can prove by the core lab analysis and footage to show how tremendously fast the up-dip comes.

Well, according to Newton's laws of gravity, water won't run uphill, so we think ordinarily it would go to the east rather than to the river, particularly when it's clay there instead of caliche.

Now, the oil industry in Texas and New Mexico has come in for a lot of adverse criticism regarding pollution. Some of this is just there's no question about it and I have followed the dictates, in fact I have used injection wells in the Mean's Pool; I have used them up in Borger in the river up there and I've never had any trouble. I've been to four hearings with them down there and they have been quite fair about things and I think that, I feel like that New Mexico would be the same.

I think if you'll give the operators a square deal,

dearnley-meier

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO



you'll find they are willing to cooperate as they do when any pollution is concerned.

In Texas, before sales tax, which we inherited I guess from the other states, the oil industry paid 67% of all the taxes in the whole state. Of course, not as much probably now because we have a sales tax on a lot of items and I'm sure that they pay quite a bit of New Mexico taxes and anything of that import on the body economy I think should be given some consideration.

Now, you know you've got, you are conserving water; what about conserving oil? You know you can't fight a war with foreign oil. There's no safety in foreign oil, so as we only have to read in the papers and listen to the radio to find out what Russia is doing, and they are not behind in submarines and some of you remember, you could see where they sunk one right off the coast at Galveston, a tank coming up from the Venezuela.

Now, it's necessary to conserve our oil. Now, out where we are, it's hard to find that oil; it's not only hard to find it, but when you once find it, you've got to get it out of that ground. We are in the area where it isn't economical probably for a major to operate with a water flood. I think the Shell engineers will probably tell you that. But, here is what we have in the way of potential. I have a

memorandum prepared for me by Pan American relative to secondary recovery, but just to show you, I'm going to read what they came up with. That for secondary recovery they had a total recovery per 40 acre tract, is estimated at 50,500 barrels of oil. Now, that's right in here. That is taking an average, a mean average of all the core analyses that I gave them; Shell has the same information.

They don't have the information from the Pan American geologist. They were kind enough to prepare this for me, the head geologist at the Lubbock office, which as you know controls the Pan American activities in New Mexico.

When you figure that 40 acre tract, each 40 acres has 50,500 barrels of oil under it, you see, if we're from economic reasons, we have to abandon this area cause we're right at the break-through right now, if we have to use injection water and things like that, it may mean junking some of the wells because it's going to take a lot of money to drill down to where you get enough water for effective water flood. You'll have to go at least to the Glorieta.

I think the engineers will bear me out in that respect. Isn't it worthwhile, gentlemen, to consider some of the economic factors here as well as others?

Now, I would like, if I may, I got this thing for Christmas, this is the first time I have used it. If you will

dearnley-meier

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO



pardon my amateurish efforts, I'd like to show you some of the things that I have been talking about. There, gentlemen, is the terrain. There's one of the wells that's under question. See, it rained that day which is unusual in that area. They tell me they had to soak the hogs up with old slop out there most of the time. See the kind of land, the scrub, the scenery.

MR. NUTTER: What well is that?

DR. DUNN: That is No. 6 on the Dale Federal. That's in Section 26. Now, there is an amount of oil that's going into the pits from all the wells on the Dale Federal ever since we have been producing. There's the waste. That's the common pit, you see, all this is in one lease so we can use one common tank battery for the whole lease. There's what is on the Dale, the Dale Federal.

MR. PORTER: Approximately how far from the river is that, Dr. Dunn?

DR. DUNN: Here's the river, about two and a half miles from the river.

MR. PORTER: Two and a half miles?

DR. DUNN: From the river. That's one of my failures. I got a lot of them. That's a dry hole, but then too, you can see, that you wouldn't actually call the Garden of Eden as far as fertility is concerned. You heard me speak of gyp.

dearnley-meier

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO



You only have to get out there when it's dry. That's after a rain. See that white looking stuff; you go through that and your carburetor will choke up. That's right on top of the ground. That's what we have to contend with in roads. That is practically water tight as most of you know. You know they had a gyp plant. You remember they had a wallboard plant at Acme close to our leases and they abandoned it because it wasn't economical, but they did give me permission to get some of the stuff to put on my roads. I haven't been able to put it on yet. I have been trying to fulfill my drilling obligation. That is some damage, it goes up to your hub.

I had to pay extra damages because every time you got stuck they went farther west. I have a road there that's as wide as a four lane highway if you could see the rest of them, this is the Sun Federal No. 2. That's how far it is to the hardest gyp or clay and I have got a D-7 cat that's next to the biggest one and it's practically brand new and that's as far as he could get down even with putting the diggers on the blade. Water is not going through that.

MR. NUTTER: For the purpose of the record, I think we should identify this picture.

DR. DUNN: That is the Sun Federal No. 2.

MR. NUTTER: This is a picture of the drilling rig with a pit having been dug by a bulldozer approximately how far?

DR. DUNN: Two feet down.

MR. PORTER: Approximately how far from the river is this one?

DR. DUNN: Right here, about half a mile from the river. Mr. McCoy has been out on the lease. I think you gentlemen have too. Some of the engineers even have been out. If we had known you were coming, we wouldn't have baked a cake, but we would have had a welcome sign for you.

I tell you gentlemen, the only thing tight about my wells is the formation. You see that white stuff, that, gentlemen, is gyp. That's the same depth down to where we could get to the hard-pan as the others.

That also is this well right here. That's the Dale Federal A-1. That's another picture. See, it was raining. I took that in the rain. I was afraid I wouldn't get the right exposure there not being a photographer of any consequence, so I took two pictures. That's the same picture as you saw before. That's where we cleared. That's the country. If they could ever make that tillable, I don't believe it ever could be done. Nothing but cattle country. They can only run in average times about five or six cows to the section up there. There's not much hope of ever, of course, irrigation is out of the question and not enough rain fall there to even think about it even if it were tillable land.

dearnley-meier

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO



I certainly appreciate again this privilege of presenting our side of the case to the Commission and Mr. McCoy, my engineer, will take over from here.

MR. MCCOY: I made a rough field reconnaissance. This is not to be certified because I cannot verify the exact results but just to get an idea how much water we are talking about per day ---

MR. DURRETT: Let me interrupt you a minute. Will you state your name for the record?

MR. MCCOY: William G. McCoy, consulting engineer, registered State of New Mexico License No. 3410. Dr. Dunn called me Saturday night in reference to getting a quick evaluation of how much fluid was being disposed into the pits on his various leases.

I don't have the exact location of the pits so I'll have to rely on you, Doctor. If there are any questions as to where the location of the pits are, Dr. Dunn will point them out.

His first lease is Dale Federal which is in Section 26, 7, 26. Four wells and the estimated test of fluid water was 5.7 barrels per day.

DR. DUNN: Pardon me, Mr. McCoy. There's five wells.

MR. MCCOY: Oh, five wells. Yes, five wells. But they are putting out a total of 5.7 barrels of water per day, so that would be roughly a little over a barrel a day apiece.

dearnley-meier

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMAS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO



dearnley-meier

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMAS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

The Osage lease is comprised of two wells.

DR. DUNN: That's in the Section 33, T-6. The pit is in the northwest quarter of the northeast quarter of Section 33.

MR. McCOY: Two wells there, the total estimated fluid is 5.5 barrels per day, or 2.25 barrels a well.

Sturgeon lease has two wells now producing a total of 17 barrels of water per day.

MR. DURRETT: Where is that located?

DR. DUNN: That is in the southeast quarter of the northwest quarter of Section 33.

MR. McCOY: That's closest to the river.

MR. DURRETT: Would you give the approximate distance from the river?

DR. DUNN: Yes, I would say about 900 feet from the river. Maybe a thousand. It wouldn't --

MR. McCOY: This is also right next to Sturgeon's ranch-house.

DR. DUNN: No, the Sturgeon ranch-house is here, the Pendergrass is right here.

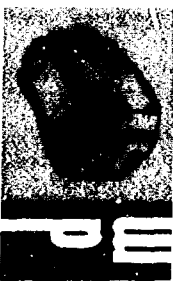
MR. McCOY: The total was 17 barrels total for the two wells on the last lease.

DR. DUNN: When we estimated, see, we potentialized these wells before we get the acid water off. Now, I think I should tell you about how we fractured your wells. We fractured

dearnley-meier

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPIR. TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMAS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO



them by using 7-1/2% acid water with a slicking agent and anywhere from a pound to half a pound of sand per gallon and we gave them approximately between 15 and 20 thousand gallons of water, acid water, so when we potentialed the wells, the amount of water we put in is different from now since they took this this last weekend because we had pumped off some of that acid water.

MR. McCOY: The England Federal lease.

DR. DUNN: That's in the north half of the southwest quarter of Section 33.

MR. McCOY: The total fluid, 33.3 barrels per day from two wells.

DR. DUNN: That's three wells now. We bought one from Mr. Barnes the other day. It's actually three wells.

MR. NUTTER: This is water that you are giving us?

MR. McCOY: Right.

DR. DUNN: Yes, this is water. I wish it were oil.

MR. McCOY: There is some oil contamination, but it wasn't shaken out to give us an estimate of total fluid.

DR. DUNN: This well, we fractured the well we bought from Mr. Barnes, we fractured before this was taken.

MR. McCOY: The H. E. Barnes lease.

DR. DUNN: That's the one right here.

MR. McCOY: It has one well, total fluids, 27.4

dearnley-meier

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS
1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

PAGE 21

barrels per day.

MR. BARNES: Did you check that last Saturday? There are two wells on that if you checked that last Saturday.

MR. McCOY: According to the pumper, he was measuring one well that was going in there, but you say there's two going into the battery?

DR. DUNN: That's the original well that was drilled on the area.

MR. BARNES: Yes, it was the first one drilled.

DR. DUNN: Yes, then he drilled one following that. There's two going into the battery.

MR. PORTER: What's the location?

DR. DUNN: The south half of the southwest quarter of Section 33.

MR. McCOY: Now the England-B lease.

DR. DUNN: That is in the northwest quarter of the northeast quarter of Section 4, T-7.

MR. McCOY: 13.7 barrels per day from one well. The Crandall Phillips lease.

DR. DUNN: The Crandall Phillips is in the southwest quarter of Section 24, T-6.

MR. McCOY: That lease is shut down as of Sunday.

DR. DUNN: This was a dry hole here, the No. 2 was a dry hole. We got just a stringer of San Andres, but not even

enough to make it commercial so we dry-holed it. This is the only well that's producing there. They parted about ten days ago so we couldn't get a test on that. It is not making hardly anything, water or oil either.

MR. McCOY: The Pendergrass lease is located --

DR. DUNN: Right here. That's in the northeast quarter of the northeast of Section 5. Northeast of the northeast of Section 5 in T-7.

MR. McCOY: Total, 17.1 barrels per day. Clark lease, one well.

DR. DUNN: Clark, right here.

MR. McCOY: Southeast of the northwest of Section 4.

DR. DUNN: Southeast of the northwest of Section 4.

MR. McCOY: 1.7 barrels per day. The Beadle lease.

DR. DUNN: Beadle No. 1 and Beadle No. 2.

MR. McCOY: There are two wells producing into that total of 9.8 barrels.

DR. DUNN: This tank battery is in where the Beadle No. 2 is. That's in the southwest of the southwest of Section 4, T-7.

MR. McCOY: And the Sun lease.

DR. DUNN: Right down here. There's one well.

MR. McCOY: One well producing.

DR. DUNN: We have hooked this one up. We've

dearnley-meier reporting services

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO



fractured it.

MR. McCOY: There's no way to measure the water on that.

DR. DUNN: There's no water in that well. That's the only one we don't have any water hardly at all.

MR. McCOY: We classified it no test because we couldn't verify how much fluid.

DR. DUNN: There's no water in it.

MR. McCOY: The last lease, the Levers at that time Sunday was shut down.

DR. DUNN: Let me show you this Levers. Right here.

Gentlemen, one of the many problems we have out there is emulsion blocks which Mr. McCoy can tell you more about than I. We got practically iron sulfite.

What I did, I happened to go on a note of a fellow who has a fracture outfit and I have been using him and I have been doing four at a time. That's where I made two mistakes, one going on his note and the other was waiting too long from where we fractured until we put them on production.

What happened, there's emulsion breaks in there, forms a block and I have got to put some chemical in there that will eat that out and I'm going to have to satisfy Mr. Bill Berry today, I've got an appointment with him to determine everything we can to get it on production because that's a

state lease. On the strength of our showing in that well Pan American paid thirteen thousand dollars for three hundred twenty acres on the south half of this. That's why they were interested in what my core analysis showed and why they were so cooperative in making an analysis.

This was not making any oil or water. We swabbed it, cased it and everything else and we have to break that emulsion. So, we do not know what that will do.

MR. MCCOY: Now, looking at your fluid production in these pits, I could see salt and crustation around the pits which would infer that we are getting safe rates of evaporation.

Also, to get a better idea of what we could do out there, I talked to the City of Roswell, the Engineers' office, Bob Owens, with reference to their saline plant and what they plan to do when they were in the planning stages of building disposal pits for the saline plant. He said it was their opinion, the city's opinion by themselves, that there was no seepage problem. They felt they could dig their pits, dike them, and they would have no seepage which could possibly contaminate the Pecos river because the soil at the point where they were digging was primarily clay.

It was the State Engineer that requested they line their pits which they finally did with, I think it's polystyrene and covered with about a foot of overburden, but if it had been



left to them to make the decision, they would not have lined their pits. They would have used just open evaporation pits. I believe they're affluent disposal into those pits is something in the order of two million gallons a day.

Now, trying to look at these leases of Dr. Dunn's, the pits appear to me to be in a clay type soil which would, to me, prohibit any excessive migration of water or leakage of water from these pits, but I'm not in a position to make a definite statement because I think before you could do that you would need some soil test. But really, I think the small amount of daily production of water in here is not sufficient to migrate to the Pecos River and contaminate it to any extent.

Here again we get down to the point, what is the horizontal migration, and the only figure that I could come up with was a report on the saline water plant again in compacted soils of about ten to a hundred feet per year migration.

Well, say if we evaporated no water and our closest evaporation pit is about nine hundred feet from the river, using the minimum figure, it would take ninety years to migrate over to the Pecos River. These are just hypothetical assumptions because we really don't know what type of soil we're dealing with. We have no tests to show any contamination from these pits.

My opinion to Dr. Dunn was I think that we are safely

evaporating all the well fluids from his leases in the present pits and for my purposes, unless further tests prove, I mean conclusive tests like soil tests or actually drilling a hole a certain distance away from the pit to show that we are getting contamination in the soils, I can see no reason for disposing of water in a water injection well.

But like I say, I think there are a lot of unknowns in here that I have no answer to that maybe the State Engineer can show us cause for. I do think it would have to be something conclusive of a definite analysis or test of the soils. So, that would be my recommendation to Dr. Dunn and that would finish my testimony.

DR. DUNN: Mr. Nutter, in final summation of our side, I would like the Commission to consider the following things: The rate of migration horizontal. That, of course is prime. The economic features of course is secondary to the Commission, but primary to us. We spent a lot of money out there and it is my purpose naturally to do secondary recovery work which we're going to do in cooperation with Shell, and you know, the ambitious program that Shell has put forth.

I had a bunch of drilling commitments and I could not enter into that unit because if we did, I would lose my leases. I think my information that I have would be of infinite value to Shell or any other operator in that area which did not cost them

a thing and it cost me a lot of money. Now, I don't expect to get my primary, I don't expect to get my investment back from primary recovery. I would like to get some of it back. If I have to go to the tremendous expense of injection wells, taking wells out of production and putting water with a cleaning system, it's going to be doubtful whether I can operate economically enough to proceed. I would like for you to consider that economic angle only if it is absolutely proven that we are contaminating or taking a chance of contaminating in the foreseeable future the Pecos River watershed. Thank you, gentlemen.

Pardon me, I would like to ask the Commission -- I forgot, I would like to ask the Commission to give us a year and if at the end of that time conclusive proof shows that we are even contaminating, that we will agree to line all our pits to the satisfaction of the Commission just as the City of Roswell did their pits which is infinitely more danger than ours to the Pecos River watershed. We will line our pits. I commit myself hereby that at the end of a year if the Commission proves to us, and we will cooperate in every way, that we are contaminating, or even about to contaminate the river, I will line my pits to their satisfaction.

MR. NUTTER: I believe before we go any further in this case I would like to review the background of it.

The Oil Conservation Commission was aware of the

development going on in this area for some little time. During the month of August, representatives of the O.C.C. and of the State Engineer's Office went into the field and observed the operations in the field. Reports were prepared by the State Engineer's Office and by the field men representing the Commission in which there were detailed observations made of the production from the wells and the disposition of the water produced from the wells which in all cases discernable, I believe, was into unlined pits.

While the amount of water was not determined to be large by the Commission at the time the reports were made, it was determined that an active program was going on in which further development was taking place.

We knew that the amount of water being produced would not decrease as time went on, but would in all probability increase. For this reason, the Commission studied the reports made by it's field men as well as the reports made by the office of the State Engineer and issued the Directive of August 27th.

For the sake of the record, I would like to read that Directive into the record at this time. This Directive was sent certified mail, return receipt requested, to the following operators who were the only ones that we were aware of that had wells in the pool at this time. It was sent to Dr. Sam G. Dunn,

to H. E. Barnes, to Ray Smith Drilling Company, to Barnes and Swanson, and to J. J. Travis.

The Directive, as I stated before, was dated August 27th, from A. L. Porter, Jr., Secretary Director of the Commission to the above mentioned operators in the pool.

The subject was, Disposal of Produced Salt Water. I'll read from the Directive. "The Commission has received reports from the Office of the State Engineer and the Commission's Artesia District Office concerning disposal of produced salt water in the Linda-San Andres Oil Pool and adjacent area in Townships 6 and 7 South, Range 26 East, NMPM, Chavez County, New Mexico. These reports indicate that a substantial volume of produced salt water is being disposed of in unlined pits. In order to prevent contamination of fresh water supplies designated by the State Engineer, you are hereby directed to cease disposing of produced salt water in unlined pits by November 1, 1964.

In order to avoid the shutting in of your wells, immediate consideration should be given to underground disposal. An application for approval of salt water disposal well or wells should be filed with the Commission in accordance with the provisions of Rule 701.

This office and the Commission's Artesia District Office will be happy to answer any questions you may have concerning

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

this matter." Signed, A. L. Porter, Jr., Secretary Director.

Carbon copies of the memorandum being sent to State Engineer's Office, attention Mr. Frank E. Irby and to the Oil Conservation Commission, Drawer DD, Artesia, New Mexico.

I would like to point out that we have return receipts from Barnes and Swanson signed by Mr. Barnes, Mr. H. E. Barnes signed by H. E. Barnes, Dr. Sam G. Dunn signed by Sam G. Dunn, Ray G. Travis signed Ray G. Travis by Rose Eberly, the Smith Drilling Company, signed by Rose Eberly.

As I understand it, Dr. Dunn, in this case, 3120, while the case was advertised for a review of the Commission's directive of August 27th, concerning salt water disposal, Chavez County, New Mexico, was the style of the case, the body of the case reads as follows: "Application of Dr. Sam G. Dunn for a Review of the Commission's Directive of August 27, 1964, concerning salt water disposal, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks a review of the Commission's Directive of August 27, 1964 prohibiting the disposal of produced salt water in unlined pits after November 1, 1964, in the Linda-San Andres Pool and adjacent areas in Townships 6 and 7 South, Range 26 East, Chaves County, New Mexico. Applicant specifically requests an extension of the November 1st deadline and a determination that salt water disposal in unlined pits in Sections 26, 27, and 34, Township 7 South, Range 26 East,

among other areas, does not constitute a hazard to fresh waters and should be excepted from the Commission's directive."

That's the way the case is advertised.

As I understand it, at the conclusion of your direct case, you are requesting that a one-year extension be issued to the Directive in it's entirety and that no disposal in unlined pits be required?

DR. DUNN: That's it. I'm requesting that test for a year.

MR. NUTTER: Then, at the end of the one-year period you have committed yourself that you would be willing to line the pits if it were established that it does constitute a hazard to the Pecos River Watershed, as I believe you called it?

DR. DUNN: Yes, I committed myself hereby, with the cooperation and inspection of the State Engineer's when we lined the pits.

MR. NUTTER: So, you are not requesting that the area of the Directive be reduced and that a portion of it be subject to the Directive, only that the entire Directive be dismissed for one year?

DR. DUNN: The entire Directive. I'm basing it on this. I knew that when we did our potential on the wells we were getting back a lot of acid water. I felt like that wasn't a true picture of exactly what amount of water we are producing now, and I figure that since we are producing less water now than we were then, that it is not at present, when I found out,

when I had my man, I said, "I don't want anything boiler-house, I want to know exactly how many gallons or barrels of salt water we are producing". Since it was so small, I wanted to change, and asked, and asked the change that we asked for, an extension on the whole area for one year.

MR. NUTTER: According to some of the reports we got when these wells were completed, some of them were mentioned as producing 10 barrels of oil and 35 barrels of water, 12 barrels of oil and 50 barrels of water, and figures like that. Is it your opinion that this amount of water that was reported on the initial potential did include some of the acid water that you had used for fracturing the wells?

DR. DUNN: It is, because as I said, we waited to get at least 4 wells at one time, we fractured six at a time and we never went back to them, maybe for as much as a month to six weeks, we let some of them set because we couldn't get around to putting them on production so early. That's the only way that I could get that fracture company to come over there and do it that far from Hobbs. That's why we were producing acid water when we potentialized the well.

MR. NUTTER: These figures that you gave Mr. McCoy, I believe I have got these figures right. Dale Federal, 5.7 per day, four wells; Osage, 5.5, two wells; Sturgeon, two wells, 17 barrels; England, 34 barrels, three wells; Barnes, one well, 27.4 barrels; England B, 13.7, one well; Crandall Phillip, shut down, Pendergrass, one well, 17 barrels, Clark, 1.7 barrels;

Beadle, two wells, 9.8; Sun, one well, no test. Elliott, two wells, 34 barrels.

MR. McCOY: Right.

MR. NUTTER: This is a test that was taken on these wells at what time?

MR. McCOY: Well, at the producing time when the well was producing, actually dumping into the pits.

MR. NUTTER: What date were these tests?

MR. McCOY: These tests were based on testing for one gallon and timing the period that it took one gallon of water to come out. For instance, the Dale Federal we measured, it took seven minutes to collect one gallon of water. Since we have no water meters or any other accurate means, we can assume that this would be a maximum period of production.

MR. NUTTER: In other words, you took a tester out there and on these individual batteries then you tested into a jar?

MR. McCOY: A gallon jug.

MR. NUTTER: Long enough to obtain one gallon of water?

MR. McCOY: Right.

MR. NUTTER: In addition to this there was oil on top of the water --

MR. McCOY: Emulsion.

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO



MR. NUTTER: --- or an emulsion in there. As soon as you had one gallon of fluid you timed that and translated it to a 24-hour period?

MR. McCOY: Right.

MR. NUTTER: This is the total fluid produced and does include some oil?

MR. McCOY: Yes. Not shaken out, because what I think we were interested in, are we producing an excessive volume. I think the main thing, we just called it all water and evaluated the results based on oil and water. What it might be, 90% water and, or 95% water, but I think for our purposes we could consider it 100% water.

MR. NUTTER: So this is total fluid but does include some oil?

MR. McCOY: Yes.

MR. PORTER: Did you ever get the date of the test, Mr. Nutter?

DR. DUNN: Saturday and Sunday.

MR. NUTTER: These tests were taken last weekend?

MR. McCOY: Yes. I classified them as tests of Sunday morning.

MR. NUTTER: So they are current tests?

DR. DUNN: I believe you had an engineering --

MR. McCOY: One of the state men was there.

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

DR. DUNN: The State man was there while Mr. McCoy was making the tests.

MR. NUTTER: These tests were made by a pumper employed by you?

MR. MCCOY: Yes.

DR. DUNN: Well, he's an engineer, Mr. Jim Glen, an engineer, temporarily wasn't employed, I was glad, in the interval, until he could get a better job, to put him on as a pumper. He's qualified. He ran the core analysis for Darrell Smith for several years and has made analyses on all Mr. Barnes' wells that he drilled up until the time that I went in the area. Also Dr. Lee's well.

MR. NUTTER: You mentioned a memorandum that you had received from Pan American Petroleum Corporation in which they estimated that the total recovery for 40 acre tract was 50,500 barrels?

DR. DUNN: Yes.

MR. NUTTER: That includes secondary recovery, is that correct?

DR. DUNN: Yes, I have it here. I have a copy if you would like it for your files, Mr. Nutter.

MR. NUTTER: Yes, sir, since it has been mentioned in the hearing.

DR. DUNN: I think it will be very infinite.

MR. DURRETT: Why don't you mark it as your exhibit.

(Whereupon, Applicant's Exhibit B marked for identification.)

DR. DUNN: It is interesting there, Mr. Nutter, it tells that system flood won't be profitable due to low permeability. It tells how much, based on Sun's plan of injection 160 barrels per day, what they would expect. It's rather interesting. I thought it would be of value to you in view of the fact that this man is a very capable petroleum engineer and geologist.

MR. NUTTER: This memorandum is addressed to no one. It's signed by no one.

DR. DUNN: Mr. Hunter did it for Pan American. Mr. Hunter of the Pan American office. I didn't tell him that we were going to put in as evidence. He'll be glad to sign it. I am sure that he will be glad to confirm that by writing to Dick Thiel at the Lubbock Pan American office.

MR. NUTTER: Anyone have any questions of Dr. Dunn?

MR. HILL: No, I have no questions. I would like to ask Mr. McCoy, I don't believe he gave any qualifications before he gave any testimony. I would like to have that, particularly in the field of hydrology.

MR. MCCOY: Graduated from Texas A & M College, 1949. B.S., geological engineer. Employed with Gulf for 8 years, production department, and geological, geophysical departments. Since 1957, I have been independent working in the capacity of a

geologist and engineer for three years, for the Denver Company past four years as an individual consultant.

MR. HILL: This is petroleum engineering consultant?

MR. MCCOY: Yes. I deny any association with hydrology. I have no experience in actual ground water flow.

DR. DUNN: They seem to be scarce, these hydrologists. I find they're only about four in Texas that are qualified, and I believe there's one in Santa Fe who was in Arizona, Mr. Erickson, but he was unable to come. He was tied up in Arizona.

MR. NUTTER: I believe a good part of them work for the water boards and state engineers' offices.

DR. DUNN: I think that's true, and I think they would be inclined to be on the other side of the fence. But I think, like Mr. Erickson told me over the phone, he says, "I think that's most unlikely." He says, "I can't be there, I'm tied up in Arizona". Of course, that's hearsay testimony. It might not be admissible as a fact of law.

MR. DURRETT: That's right.

MR. NUTTER: Did you have any questions, Mr. Hill, of Mr. McCoy?

MR. HILL: No.

MR. NUTTER: And no questions of Dr. Dunn?

MR. HILL: No.

MR. NUTTER: I heard some mention here of the fact that you felt this was a clay bed; I'll direct this question to you, Dr. Dunn. In your slide pictures there, we saw a certain amount of top soil of some nature or another particularly in the pit that had been dug for one of the wells. I believe it was the Sun well.

DR. DUNN: Yes.

MR. NUTTER: Then we saw below it two feet of top soil, we saw the caliche.

DR. DUNN: That's the Dale Federal. The one furthest away from the river.

MR. NUTTER: Then we saw the caliche bed; how thick is this area of caliche?

DR. DUNN: It's not caliche. It's gyp.

MR. NUTTER: Or the gyp?

DR. DUNN: I considered this hard substance of gyp, naturally I couldn't analyze it. It appeared to be gyp it was so hard. There's another kind that you can break through with your truck tires, but that is a problem for roads. That underground gyp, it's so tight and so hard that not even the diggers or a D-7 cat could break it. It's two feet down from the top of the ground.

MR. NUTTER: The drilling rig will penetrate it. How far does the drilling rig have to go before it gets through

this substance?

DR. DUNN: I don't have the information on that. Maybe Mr. Barnes could testify to that. He's drilled in some of these areas where they have that gyp problem.

MR. BARNES: No, over on the Sun lease, I don't know how deep.

DR. DUNN: He didn't drill the Sun lease. Another company drilled it.

MR. NUTTER: So, you don't know how thick this impervious substance is?

DR. DUNN: No.

MR. NUTTER: When you get through it what do you encounter when you are drilling, the red beds?

DR. DUNN: The red beds. The triassic we hit around about 125 feet, the red beds, the triassic, I believe that's technically known as.

MR. NUTTER: That's a clay for some distance down there?

DR. DUNN: Yes.

MR. NUTTER: Do you encounter any salt out in this area?

MR. BARNES: No. There's some salt in the lime. There seems to be a few out-crops of it along the river there. Evidently there is, it seems that as you go further east of

Roswell by the river bridge there's a higher salt content than it has up here before we start drilling. Something I would like to ask the Commission. I'm H. E. Barnes. We had this field for a little over a year now and right east of Roswell, right on the Pecos River, they have had that field for four years. They have never been called in and been questioned on water disposal.

I know for a fact those wells make water, I've pumped them out there. That's been going on four years. They don't seem to have a contamination problem there. I don't see why we have one up here.

MR. NUTTER: We'll get to that pool later probably.

MR. BARNES: I think from the record in that field, give us a year's time to check it out and see wouldn't be asking too much.

MR. NUTTER: Dr. Dunn, you mentioned that the ranchers' windmill was --

DR. DUNN: Right here. It's Robert Morely.

MR. NUTTER: Southwest, southwest of 26 --

DR. DUNN: T-7.

MR. NUTTER: How deep is that well producing water from?

DR. DUNN: I didn't ask him, frankly. He would have been glad to have given me any information in a sworn statement,

but I didn't ask him the depth of it. In fact, the conversation was paying off of surface damages on the area and he's been most cooperative, in fact about the most cooperative of any of the owners out there.

MR. NUTTER: You said up in Section 33 that you did finally get camp water?

DR. DUNN. Right here.

MR. NUTTER: That's the water that you put in the radiator and it stopped up the radiators?

DR. DUNN: It stopped up the radiators and Mr. Barnes would probably confirm that.

MR. BARNES: Yes.

MR. NUTTER: You are using it for camp water?

DR. DUNN: You can drink it. It has sort of the same it has a very strong laxative effect, if I may be specific. But it can be drunk.

MR. NUTTER: It's too gypie for radiators, it has a hardness in it that is undoubtedly brought out by the reaction of the heat on the water, which is a common occurrence in hot water tanks.

DR. DUNN: Yes, it deposits that calcium and gyp there and stops up your radiators.

MR. NUTTER: It's suitable for irrigation or stock purposes?

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMAS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO



DR. DUNN: Yes, they drink it. And Mr. Sturgeon has a better irrigation well. He has an above the ground tank where it's diked up and it's approximately eight feet tall, the dike is. it holds water, it doesn't seep. That's right at his ranch-house right here. The State Engineers that were out there can confirm that, he pumps from his domestic source, he pumps into this and then he irrigates a little plot that he wants five hundred dollars damages per location on that plot, a hundred by one hundred fifty feet.

MR. NUTTER: Are there any other questions of either of the witnesses? They may be excused.

(Witnesses excused.)

MR. NUTTER: Do you wish to offer Exhibits A and B in this case?

DR. DUNN: I do.

MR. NUTTER: Exhibits A and B will be admitted in evidence.

MR. NUTTER: Anyone have anything further to offer in this case?

MR. HILL: The State Engineer would like to offer something further in this case.

R. B. COLLINS

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

DIRECT EXAMINATION

BY MR. HILL:

Q Will you state your name, please, and occupation?

A R. B. Collins. I am employed presently by the State Engineer as a water resources engineer. Education was University of Oklahoma, 1949, Bachelor of Science Degree in Geological Engineering. We have, briefly professionally I was undergraduate teacher in geology at the University of Oklahoma, 1947, 1948, 1949. September 1949 to '52 I taught in the Roswell City Schools System mathematics, and organized and taught a course in general geology in the high school system.

I was employed by John A. Barnett, independent oil operator, as geologist and engineer conducting investigations for exploration of oil. For three months, October, '55 to January, '56, I worked at the United States Geological Survey, petroleum engineer, regulatory duties. Went back with Mr. Barnett February of '56, January of '62, same general duties.

'57, '58 while still employed with Mr. Barnett was employed as a special instructor in geology in the Roswell Community College, which is a branch of Eastern New Mexico.

2-10

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

February, 1962 to the present time, work with the State Engineer in hydrology as a water resources engineer. Registered Professional Engineer in New Mexico, 2277, Registered Professional Engineer in Texas, 16493.

MR. NUTTER: Before you go on with your witness, Dr. Dunn, the slides are a part of the records in this case, so if you would number those slides in the order in which they were shown, that would be 1, 2, 3, 4, 5, 6, and we will identify them as Exhibit C collectively.

Q (By Mr. Hill) Are you familiar with the application of Dr. Dunn in this matter?

A I am.

Q Are you familiar with the area?

A I am quite familiar with the area.

Q I hand you what has been marked as Exhibit No. 1 and ask you to identify that for me.

A It's a prospectus of my education and experience which I briefly summarized just now.

(Whereupon, State Eng's Exhibits Nos. 1 & 2 were marked for identification.)

Q I hand you what has been marked as Exhibit 2 and ask you to identify that for me, please.

A This is a copy of the results of field work that I did in this area in the Linda San Andres Oil Pool area.

3-p

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

Particularly in this field work that I note the location of the producing oil wells, brine pits, disposing of produced water.

I took photographs of the brine pits. I have them labeled with the wells they're serving. I caught samples of that water to be analyzed for chlorides and for specific conduction. Specific conduction, I might observe here, is one method of determining total dissolved solids in the water. It is a capability of the water to pass an electric current. I might add that Mr. R. L. Barton of the Technical Division of the State Engineer's Office in Roswell did the water analyses on these.

MR. NUTTER: Mr. Collins, are you referring to the report, a copy of which was furnished by the State Engineer's Office in Santa Fe to the Oil Conservation Commission?

A Basically it's the same report, Mr. Nutter. There were two or three small corrections that you may have been advised of.

MR. NUTTER: This is a report by R. B. Collins, Junior, dated August 25, 1964, "Disposal of produced brine in the Linda San Andres Oil Pool, Townships 6 and 7 South, Range 26 East in Chaves County, New Mexico?"

A Yes, sir, that's the report.

MR. NUTTER: I believe we did receive some

corrections dated August 28 from Fred Henninghausen, in which he noted a correction on page 1, page 3 and page 13.

A That is true.

MR. NUTTER: Outside of that --

A There's one further correction that I would like to make here, if I may. On pages 18, 18a and 18b, the Ray Smith Well No. 1 Harris is located in Section 33, the pit serving that well is in Section 32. I did not have that in that manner I believe on the original one. Other than that, there has been no further changes.

MR. NUTTER: Has a copy of this report been furnished to Dr. Dunn?

MR. HILL: No, sir.

DR. DUNN: I asked for it but none was obtained. We called Mr. Armstrong, my representative Pat Thompson of Artesia called Mr. Armstrong. I not only didn't get a report from them, I asked them, but I didn't get any from the United States Geological Survey. I have a letter to that effect. There was a telephone conversation with Mr. Pat Thompson, who lives right across the street from the office of the Conservation Commission at Artesia. I don't find any information. We asked them, no information was given. They said none was available.

MR. NUTTER: Do you have a copy that Dr. Dunn could

use, Mr. Hill?

MR. HILL: Yes. I might say I don't know Mr. Thompson.

DR. DUNN: She makes out all my reports.

MR. McCOY: I attempted to secure a copy of that yesterday in preparation of this, but they were closed.

MR. DURRETT: The office was closed yesterday?

MR. McCOY: We had no data to work with.

MR. NUTTER: There's a copy for you now.

Q (By Mr. Hill) That is a corrected copy?

A That is a corrected copy, yes.

MR. HILL: Were you through?

MR. NUTTER: Yes.

Q (By Mr. Hill) First of all, I believe you might explain your measuring system that you used.

A In measuring the quantity of water discharged into the brine pit I used a graduated quarter measure and a stop watch. I might add that I believe in every case of measurement I had another person or a witness there in case it was ever needed. They are not here at this time, but we could produce them if necessary.

The first three pages of this report pretty well summarizes what we have done or what was done then. Page 3 gives a tabulation just of those leases and wells that I

visited at the time that I was preparing this report. This was to cover only the Linda San Andres field and not some of the information in the South Part of Township 7 South.

If you'll look on page 3, we have the well location, the source of the water that would be from the wells, reported production and, of water, barrels of water per day that I actually measured, chloride content of that water and a specific conductance of that water. Though I do not have it in writing here to offer, it might be of interest to know that the specific conductance, if it's multiplied by .75, will give you a very close estimate of the total dissolved solids in the water in this case. That's from United States Geological Survey Water Supply paper 1454 I believe, by Mr. Rainwater and some other author.

DR. DUNN: May I ask a question there? Why would they tell me that they had no available information?

A Without attempting at all to be facetious, I think you asked the wrong people. I had it.

DR. DUNN: Well, I asked from every source I could get and they furnished all the information to the High Plains District about the Ogallala formation. I presume they were out here just as much in the Roswell District as much as they were in the Panhandle of Texas. They figured all the water from the Muleshoe down to Lubbock. I presumed they

would be the ones.

I wrote them just the minute that I got this certified letter from Mr. Porter, because I wanted to know, because if we were contaminating the river, why I would be the first one to line the pits, because as a physician and surgeon I would want to protect the health of the people.

Q (By Mr. Hill) Let me ask you this, does the Ogallala formation appear in this particular area with which we are concerned here?

A No, sir, it appears somewhat further to the east of the area that's under discussion at this time.

Q To continue with the report.

A Well, that's about all that I have at this time. I don't know if this copy of the report has it and I don't know if yours does or not, Mr. Nutter. It's a copy of the letter of transmittal from Mr. Hennighausen to Mr. Irby. Does it have that?

MR. NUTTER: We have that letter. I don't think that Dr. Dunn has it.

A Yes, a copy of it is in that report there.

MR. NUTTER: This Hennighausen --

MR. McCOY: August 25.

A It might be interesting to note down on the last paragraph, line 17 and also the second line we are talking

about 606 barrels of brine per day in this Linda San Andres area. When we break that down as it is back here to the number of barrels per well per day, it isn't very many, but when you total it up, 606 barrels of brine and concentration we have got here is a whole lot of salt.

(Whereupon, State Engineer's Exhibit No. 3 was marked for identification.)

Q I hand you what has been marked as Exhibit No. 3 and ask you to identify it for me, please.

A This Exhibit No. 3 is a map prepared under my direction showing the oil wells as I found them at the time this report was made. The brine pits, their relationship to the Pecos River, the escarpment on each side of the Pecos River, and it further shows the location of the water wells that we have reference to in that area.

Q Will you describe the legend for us, please?

A The legend used on the map here, the solid dot is a producing oil well. The open circle is a drilling well, or as far as my field work was concerned it is a well that is not producing, and a temporarily abandoned well will have a circle with a slash through it.

The brine disposal pits are shown as an oval, the water wells are shown as a square. It doesn't show up in the legend, over the water wells will be a three-letter number that

will indicate the location and the section, another square that has an "S" in it is a water well in which the State Engineer's Office, the Technical Division down at Roswell, have regularly for the past several years taken water samples and evaluated the quantity of the, excuse me, the quality of the water. The little dashed lines here show just generally which wells go into which brine pit.

MR. NUTTER: Mr. Collins, I notice on your exhibit there a line that comes down through Section 20 and also east of the river through Section 21.

A Hashered line?

MR. NUTTER: The hashered line, I guess it is from this distance, what does that indicate?

A That indicates the escarpment on the east and west side of the Pecos River.

MR. NUTTER: How high is that escarpment?

A I have not measured it. I am estimating it could run 40, 50 feet.

MR. PORTER: Is that what they call the Caprock on the east side?

A No, I don't believe it's the Caprock. The Caprock shows up eight or ten miles further on this way. This is exactly the outer edge of what we consider the flood plain.

MR. NUTTER: What's the elevation above the river

to the base of this escarpment?

A Here is going to run 15 or 20 feet. Again, I did not check it specifically.

MR. NUTTER: And it would vary from place to place?

A It would vary from place to place.

MR. BARNES: Are you familiar with the updip of that formation that comes from east to west?

A Faintly. I say faintly. What formation are you referring to?

MR. BARNES: The Slaughter zone or the San Andres formation.

MR. NUTTER: I think if we let the man go ahead with his direct testimony he may get into some of these things on direct. We can save the questions for cross later.

Q (By Mr. Hill) Will you point out on Exhibit 3 the fresh water wells in the immediate vicinity of the producing oil wells?

A I point out this one, an irrigation well, that's located in the Southwest Quarter of Section 33, another one in the extreme Southwest Quarter of Section 33, another one here in the Northeast Quarter of Section 5 in Township 7 South. We have one in Section 4 in about the northern edge of the Southwest Quarter of Section 4. Incidentally, on this one we do have some quality of water information.

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO



11-p

dearnley-meier reporting services, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

We have, incidentally, the depth of the water from the surface on all of these. Here is another one in the Northwest Quarter of Section 9 in 7 South, one over here, a stock well that is going to be the Northwest Quarter of Section 7, Township 7 South, 26 East.

Q What kind of well is that in the Northwest Quarter of Section 9?

A That one I do not know what kind it is there.

DR. DUNN: I can tell you. It's a windmill.

A It's a windmill.

DR. DUNN: With a stock tank.

A With a stock tank.

DR. DUNN: The road goes right on by.

(Whereupon, State Engineer's Exhibit No. 4 was marked for identification.)

Q I hand you what has been marked as Exhibit 4 and ask you to identify that, please.

A Exhibit 4 is a tabulation of all of these observed water wells in the area in question, Townships 6 and 7 South, Range 26 East. This tabulation shows the well number, by well number I mean how to locate the well, the distance below the land surface of the water level, and the date that that was measured, the water-producing formation, if it is known, the parts per million chlorides that were tested from

12-P

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

the water sample in these wells, and the dates that they were collected for testing.

Q Will you indicate the wells shown on Exhibit 3 from which you can tell from Exhibit 4 what the chloride content quality of the water?

A Section 33, Township 6 South, Range 26 East, well marked 314, the depth of the water on the 1st of August, 1964 was 10'7". It was producing from the Alluvium formation. We did not have a quality test on that well. The well down here in this corner in Section 33, Township 6 South, Range 26 East marked 333 -- may I correct, a few minutes ago I said on the 1st of August, it was the 8th of January, I was reading the numbers wrong.

On the 16th of January in 1962 is the only information we have, the depth of the water there was 12' from the surface. Going to these others, if I don't miss any, starting over here in Section 4, Township 7 South, Range 26 East, the well marked 312 on January 16th, 1962, the depth of the water was 26-1/2', producing from the Artesian group, had a chloride content of 650 parts per million of chlorides.

We have a well down in the same section, township and range marked 333, excuse me, 332, on January the 9th of 1963 it was 15.9' to water from the surface, producing from the Artesian group. The chloride content was 820 parts per

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

million. Section 5 we have an irrigation well. Incidentally, these are now all in 7 South, 26 East. We have an irrigation well marked 221, on the 9th of January, 1963 the depth of water in that particular well was 6.2' from the surface, producing from the Alluvium formation. We have no test on it.

The same section, township and range, well marked 242, on January the 17th, 1964 was 23-1/2' to water in this well producing from the Artesian group, with a chloride content of 296 parts per million. Section 7 we have a stock well about the center of the section, the Northwest Quarter there, January the 8th, 1963 it was 84' to water, do not know the producing formation nor was the quality tested.

MR. NUTTER: Mr. Collins, do I see correctly that that well would be to the west of the escarpment?

A Yes, it is on the escarpment of the water.

MR. NUTTER: It's up on top because that's the reason it is deeper in this well than in the other wells?

A That's a pretty good assumption. That we have about 40 or 50 foot of escarpment here that we had to go through to get to water.

MR. NUTTER: It's 84 feet to water in that well?

A 84 feet, yes, sir. In section 9 we have this well marked 112, depth to the water on the 8th of January, 1964 was 17.92, producing water from the Alluvium formation.

14-p

dearnley-meier reporting services, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1002 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

We do not have a quality test on that well.

DR. DUNN: May I interject something here, Mr. Nutter?

MR. NUTTER: Yes, sir.

DR. DUNN: Up here this, I don't have on this map either one of the wells that I got for my camp because this was prepared in January and I drilled since January, and then right here where my trailer house was located was dry and up about 600 feet, no, between four or six hundred feet up west we got enough water for the camp. This irrigation well that's right down here. That you'll notice has a pump on it and electricity to it because they abandoned it because it didn't have any water. That's why I don't have any analysis on it.

MR. NUTTER: You are referring to the well in the Northeast Northeast of Section 5?

DR. DUNN: Right here. Mr. Sturgeon abandoned that because he couldn't get enough water for the irrigation after the R.E.A. put the electricity in there.

A I might interject this in answer to that: These are wells that have been tested over the past years. Actually in this irrigation well we didn't test it for the amount of water it produced, just for the quality, and where the standing water level was. Your wells up here had not been tested because we have one right here and there's no

15-p

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

point in, you work yourself down getting too many right in one place.

DR. DUNN: That's why I am bringing that up, because four to six hundred feet away from a dry hole we get a little water and it's spotted all over the area.

(Whereupon, State Engineer's Exhibit No. 5 was marked for identification.)

Q (By Mr. Hill) Will you identify what has been marked as Exhibit No. 5?

A This Exhibit No. 5 is a map prepared under my direction showing every detail that the Exhibit No. 3, this map, showed. It takes up on the south side of where 3 leaves off and continues south to the south edge of Township 7 South. It has one additional feature not shown on this map, and that is I have located some live springs that are presently flowing or have water in them.

Q Will you indicate on that map, please, the fresh water supplies?

A Well, Section 17, this is all this particular one will all be in 7 South. In Section 17 we have three wells. Section 19 there are four water wells, Section 20, four water wells. Section 26, I show no water well. Dr. Dunn had one at that Southwest Southwest corner. To me there's a little bit of question it's right on the corner and right in the

16-p

dearnley-meier reporting services, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

line, I put it in Section 35 but it's the same well that he will be talking about.

I point out one error, this well is shown as a completed well. That is not true. It is not producing, it has not been completed.

Section 28 we have a live spring here in about the center of the South Half. Section 29 we have a live spring in the Southeast Quarter. Section 30 we have a fresh water well, 31 we have another fresh water well, 35, as I mentioned awhile ago, would be the same well right in the corner that Dr. Dunn is speaking of in 26. We have a well in 36, Section 36. We have a well in the Southwest Quarter just over into the edge of 8 South, Section 4 we have the uppermost springs in the reaches of what is known as Eight Mile Draw shown. There are possibly others on up the draw, but this one was the closest that any time I had, could locate and take a sample of and a reasonable estimate of the flow.

MR. NUTTER: What is that, a well or spring?

A These are springs.

MR. NUTTER: A spring in that draw?

A Yes, live springs.

Q (By Mr. Hill) Using Exhibit 4, will you give us any facts we know about the fresh water wells shown on Exhibit 5?

17-p

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

A We can start up here at the beginning, Section 17, we had three wells there. Our list starts with one marked 212, on the 9th of July, 1964, depth of water in that well was 7.64', producing from the Alluvium; the quality or the parts per million chlorides in August of 1964, 2830 parts per million. I have in this one three years, shall I go into all of those where I read the three years and we have records recorded?

MR. NUTTER: I think the latest figure is more pertinent when you have more than one.

A All right. Again, in Section 17 the well marked 222, January 8, 1964 the depth of water was 15.39', finished in the Alluvium, and August, '64 the quality of the water tested at 296 parts per million chlorides.

Third well in that particular section, 422, the 9th of January, 1963 it was 18.26' to water. Questionable, but this might be producing in that well from the San Andres formation. Parts per million chlorides, 1250 in August of 1964.

Coming down to Section 19 we have the four wells there. I may read them without pointing since I am sure you can't see the exact ones anyway. Section 19, the well marked 243, 7th of January this year, 18.98' to water. Did I do that one or did I miss one? Well, we'll continue, I think I am repeating this one. The chloride content is 110 parts per

million. The well in Section 19 marked 412, January the 7th this year, 34.78' to water, producing from the Alluvium and possibly the Artesian group, we have no quality test on that.

Section 19, the well marked 432, 7th of January this year, 22.48' to water. We do not know the water-producing formation there. It was not tested. Section 20, there are four wells there. Section 20, the well marked 114, January 7th, 1964 it was 13.33' to water, producing from the Alluvium with a chloride content in August of 836 parts per million.

Section 20 again, well marked 142, January 8th, 1963, it was 11.49' to water, producing from the Alluvium formation, and in August of 1963 it had 780 parts per million chlorides. Section 20 again, well marked 243, on the 8th of January, 1964 it was 25.55' to water, producing from the Artesian group. We have no quality test in that one.

Section 20, the well marked 313a, on the 7th of January this year it was 14.24' to water, producing from the Alluvium formation, and it had a quality of 700 parts per million chlorides.

Down in Section 30, the well marked 431, on the 7th of January this year was 11.95' to water, producing from the Artesian group, and in August of '64 had a chloride content of 1696 parts per million. Section 31 we do not know the depth of the water nor the producing formation, but we do have a

19

dearnley-meier reporting services, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

chloride content of 530 parts per million. Section 35, well marked 111, right here, the one that has been put up in Section 26, on the water level it was reported by Mr. Morely, who reports that he told me that six months ago he cleaned that well out. He knows that this well is a nearly exactly 50' from the surface second measure. There was five foot of water in the hole when he got through cleaning it out, so that would give us a reported water level of 45' from the surface on this well here.

Section 35, the well marked 111, I just talked about that one. Section 36, the well marked 311 here, on the 10th day, or the 8th day of October this year I was at that well. I measured the depth to water. The water level was standing at 63.3' from the surface. I do not know the chloride content of that water, the water-producing formation I do not know, but the chloride content was 170 parts per million. Incidentally, back on this well the chloride content I believe I missed. It was 128 parts per million.

MR. NUTTER: This's the well in the extreme Northwest corner of Section 35?

A That is correct. Now, to continue with what I do have here in 8 South, 26, Section 4, approximately this location, we called it 220, it's live springs flowing into Eight Mile Draw down this way. The water apparently is

coming from the Alluvium and the Artesian group and in October of '64 a sample taken there and tested showed only three hundred parts per million chlorides.

MR. NUTTER: Do you have an analysis on the spring in Section 28?

A. No, sir, I do not. That spring was down in the hole and it was late in the afternoon and I really didn't think I could get out. I have nothing that would lead me to believe that the water in these two springs would be any different from this because from what I could observe they were coming from the same formation.

Q (By Mr. Hill) I hand you Exhibit 6 and ask you to identify that, please, Mr. Collins.

(Whereupon, State Engineer's Exhibit No. 6 was marked for identification.)

A Exhibit 6, the first page is three photographs taken along this live spring area here in Eight Mile Draw. It shows the beginning of the spring area and on down the spring area for probably three, four hundred yards. Those would be of photographs 3, 4 and 5.

Photograph 6 is a picture looking down into the hole that this spring is located in in Section 28. Now, there is in the photograph marked, or No. 6 on this particular exhibit of this spring in Section 28, you have to look at the

21-p

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

photographs closely, you could see I was a good ways above it, but there are quite evidently tracks of livestock that have been in watering at that spring.

(Whereupon, State Engineer's Exhibit No. 7 was marked for identification.)

Q I hand you Exhibit No. 7. Would you identify that for us?

A This one is labeled an "Undesignated San Andres Oil Pool." It is a summary that I have and collected in Section 26, Township 7 South, Range 26 East on what is called Dr. Sam G. Dunn, Dale-Federal lease. I have a brine pit location shown both here and described on this as being in the Northeast Quarter of the Southwest Quarter, five producing wells on that lease, one not producing; production zone is reportedly the Slaughter zone of the San Andres. The reported water production, July, 1964 is 400 barrels, statement here that the measurement of all the discharges that I personally made and collection of all water samples were at the discharge line where the water flows into the brine pit. It was not caught to the tanks or any place else. Actually where it went into the pit and onto the ground.

DR. DUNN: That's in July?

A No, sir. I believe if you'll let me refer to some more notes here, that I have here. That was on October the

1st, 8 and 11 of this year.

DR. DUNN: Right after we fracked it?

A Yes, sir. The reported water production was the July report to the Oil Conservation Commission.

DR. DUNN: That's what I was going on.

A My visits were in October.

DR. DUNN: The photographs were made in October?

A That is correct. The amount of brine being produced into this pit actually measured one quart, 45 seconds, using a graduated measure and stop watch, calculated to be 11 barrels of oil per day, assuming, of course, continuous production.

MR. NUTTER: Is this another exhibit you are referring to?

MR. HILL: Yes, Exhibit 7.

A The analysis of the produced water, that particular water sample that was analyzed was caught on the 30th of September, 1964 and analyzed in parts per million chloride, 134,000 parts per million. Specific conductance was measured at 192,010 micromhos, which, if you care to take three-fourths of that, you will have a good approximation of the total dissolved solids.

It gives the pit condition, unlined, no apparent effort had been made by the operator to prevent contamination of

23-p

dearnley-meier reporting services, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

fresh water. Incidentally, the asterisk where it says "Conversion factor unknown" was not arrived at at the time this was typed. It has been determined fairly well since then.

Second page shows the two views of the brine pit. There the pit is approximately 40 by 50 feet and wet. At the time this picture was made these were made about two minutes after I measured 11 barrels of water per day flowing into the pits, and it just doesn't show much water there. These photographs were taken on the 8th of October.

Q Can you approximate how much water there was in the pit at the time that you took the photograph, Mr. Collins?

A No. I wouldn't attempt to in the way of volume. I would say it was very, very little water in the pit compared to what should be flowing in. What should be there if it isn't going underground or leaving some place. I would have to answer it this way: If it's producing 11 barrels per day there certainly is not 11 barrels of water in the pit.

Q Do you have an opinion, Mr. Collins, as to where this water is going?

A It's my opinion that the water is going underground. Some of it is evaporating, of course, but the majority of it is going underground almost as fast as it's being produced.

Q Do you have an opinion of the migration of the water that goes under the ground, Mr. Collins?

A I think possibly water here going underground is going to move south to Eight Mile Draw, which extends on this way, possibly discharging into Eight Mile Draw and then through the live spring flow down into the Pecos River. I think that there is a very definite possibility and probability that in a reasonably short time the water will possibly contaminate the stock water in this well and also in this well.

MR. NUTTER: Identify the wells rather than "this well and that well".

A Yes, sir. I think it will possibly contaminate the water, the stock water in the well in the Northwest, Northwest, Northwest Section 35, Township 7 South, Range 26 East, and also the stock water derived from this well in the Southwest Quarter of Section 36, Township 7 South, Range 26 East.

I think that because of the nature of the geology there is a probability of this water moving down this way some possibly, a possible contamination of these two springs. However, I think the contamination possibility here and this stock well just described and in the Eight Mile Draw is a very real and definite threat.

MR. PORTER: When you said there's a possibility of the water moving down this way, are you talking about the producing water in Section 26 moving more directly toward the water?

25-p

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

A No, sir. I think it will move to the river, but it will move by moving south and into Eight Mile Draw and into the river.

MR. PORTER: As I understood you, you said there was a possibility that it might move directly, if I was following your pointer on the map.

A That is true. I think there's a possibility that it will do that. That possibility or that opinion is based on walking the area out looking at the outcrops and observing what kind of formation we have and what could possibly occur there.

MR. PORTER: Proceed, Mr. Hill. Excuse the interruption. I just wanted to clear up that point while he was talking about it.

Q (By Mr. Hill) Mr. Collins, if you will describe for us generally the geology of this area both as shown on Exhibits 3 and 5, I believe, and particularly addressing yourself to what's been noted here as the escarpment and perhaps the difference between the escarpment and the area below it.

A All right, if I may, the area below the escarpment both in this and over here.

Q You are pointing to Exhibits 3 and 5?

A 3 and 5, the area between the escarpment is primarily

sand and sandy loam. There's a little clay in evidence there but it is as we classify Alluvium material for the first part. Alluvium material is an unconsolidated material, that is would not be clay or sandstone, it would be the loose stuff.

Q Let me interrupt for a moment at that point. The producing wells shown on Exhibit 3 are shown within what you have classified as the Alluvium-like materials, is that correct?

A Yes, that is correct.

Q All right.

A As we come up on the escarpment here, here and in this Exhibits 3 and 5 we have some sand up there, some unconsolidated material. We have some sandy loam. We have some gypsum outcrops; depending on where you are would be what you have in this area --

Q Will you indicate the area, please?

A I am sorry. In Section 26, the Dale-Federal brine pit is constructed in what I consider a sandy loam. As we go south to the Eight Mile Draw and follow that draw we have an outcrop in the draw of gypsum, however, that is a relatively shallow depth gypsum. The gypsum is highly soluble. It has many solution channels, cavities through it.

One interesting thing to note along the Caprock in Section 29, I walked along this for quite a long ways here

and as you walk along the Caprock normal tread and then suddenly thud, thud, thud, no question that you are walking over solution channel of some type. I can think of nothing more particularly to add there unless you have some specific question.

Q Let me ask you this: I believe Dr. Dunn testified, and I have forgotten exactly which well he was speaking of. I think it was perhaps the one you show in Section 35 on Exhibit No. 5. I believe he said that was sulphur water.

DR. DUNN: No.

MR. HILL: I am sorry, which one was it then, Dr. Dunn?

DR. DUNN: This well right here. At 400 feet we encountered the Queens. In fact, on this first well here I thought I had a producing horizon, I had ten feet of beautiful Queens all right, we jump over here, we have the Queens, we had the ocean of sulphur water at 400 feet. This is Marley's water well here.

MR. NUTTER: Now the first well you were referring to was the well --

DR. DUNN: The discovery well.

MR. NUTTER: The discovery well in the extreme eastern portion of Section 26?

DR. DUNN: Yes.

28-p

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMAS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

MR. NUTTER: That's where you had ten feet of Queen?

DR. DUNN: Yes.

MR. NUTTER: Then you jumped ten miles to the west?

DR. DUNN: We got Queen in this. As we go over here, when we hit the Queen there we got the sulphur water.

MR. NUTTER: That's the well in the Northwest of the Southwest of 27?

DR. DUNN: Yes. We got it at 520 feet. It's a long dip there.

MR. NUTTER: The Queen was productive of sulphur water or salt water?

DR. DUNN: Sulphur water. It had the odor like concentrated essence in North Fort Worth.

A Just one thing that might be of interest to the Commission. Generally speaking, in irrigation, in using irrigation water, sulphur water is many times hoped for by the driller. It seems to do something for the soil that is beneficial. An equally strong salt water would kill his crops. The same amount of sulphur in the water would probably condition the soil and make it a much more productive soil.

DR. DUNN: That I would like to see.

A That's right, I can show you sulphur wells south of Roswell if you care to. We just can't stand close to them.

Q (By Mr. Hill) Mr. Collins, looking at Exhibits 3



and 5, and the location of the producing oil wells and the fresh water supplies we have shown on there, both the fresh water wells and the Pecos River, do you have an opinion as to whether or not a continued practice of brine disposal will contaminate the fresh water supply in this area?

A I think the present method of disposing of this highly-concentrated brine will most definitely adversely affect the shallow water in this area and also the Pecos River, the water in the Pecos River.

MR. HILL: That's all the questions I have of Mr. Collins.

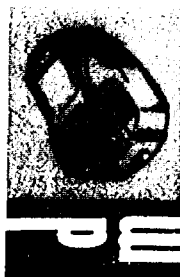
CROSS EXAMINATION

BY MR. NUTTER:

Q You went through quite a number of wells there and mentioned particularly the ones in between the two escarpments on the east and west side of the river were producing from the Alluvium or Artesian group. Do you have any knowledge of the thickness of the Alluvium between the escarpments bordering the river?

A That thickness will vary from zero to possibly up to 50 or 60 feet. The deepest well log I recall looking at was, I believe it was about 80 feet, and it was considered an Alluvium well.

Q It was a well that was drilled between the



escarpments?

A Yes, sir.

Q And at a depth of 80 feet it was still in the Alluvium, is that correct?

A That, to the best of my recollection, is correct.

Q Well, most of these wells in the, that are completed there in the Alluvium between the escarpment, you quoted a parts per million of chloride there ranging from 200 up to 2500, I believe 2400. Where is that salt coming from that's in that water? Maybe I had better precede that question by asking where the water is coming from that is coming into those wells, is that coming from the river?

A The water that is coming into those wells, I believe is coming from rainfall, from stored water and possibly the Artesian group leaking up into the Alluvium.

Q If the water is flowing through the Alluvium and the wells are completed through the Alluvium, isn't it reasonable to suppose that wells are being completed from water that is being charged in the river?

A That is correct.

Q Where is the nearest point where you take salinity on the Pecos River? Is there any salinity station along here?

A The only ones that I have had available are a few miles of here.

31-p

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

Q What does the salinity of the water in the river there run generally, normally?

A I do not prepare to offer these as exhibits. They are on record with the United States Geological Survey's Surface Water Branch. In 1963, October of 1963, at the Acme gauging station, which I think is about five miles below here, isn't that right, Mr. Irby?

MR. IRBY: Approximately.

A The chloride content of the Pecos River was 436 parts per million. The specific conductance was 3940. The El Paso Pipeline crossing, which is somewhat closer up here, the same year, same time, chlorides, 328 parts per million, specific conductance was 3,450; and the Transwestern Pipeline crossing, which is a little ways above that yet, above the river, I believe that it would be along in here. Transwestern's crossing is in Section 29, 7 South, 26 East, so it is on up here.

Q (By Mr. Nutter) That would be on Exhibit No. 6 then?

A Exhibit No. 5. The chloride content was 334 parts per million, specific conductance of 3440. We have another one here, it's called B-o-s-q-u-e, Bosque Draw, Northwest Quarter of Section 33, Township 6 South, Range 26 East. It would show up on Exhibit 3 here. At Bosque Draw, chloride

32-p

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

content, 324 parts per million. The specific conductance, 3407. This information comes from the Pecos River seepage investigations conducted by the United States Geological Survey.

Q Let's see if I have this correct now. On Exhibit No. 3 you've got a Bosque Draw measurement in Section 33--

A Yes, sir.

Q -- of 300 some parts per million?

A 324.

Q On Exhibit 6, Section 29 you have the Transwestern Pipeline station which read some 300 some parts?

A 334.

Q South of Exhibit 6 you have El Paso crossing where the salinity was 300 some parts?

A 320.

Q And then at the Acme gauging station, five or six miles south of Exhibit 6 you had a reading of 300 --

A No, 436.

Q 436?

A Yes.

Q Were all of those readings taken at approximately the same time?

A Yes. When I planned to make one of these readings I think everyone turns out in force and we do it all.

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

Q The Acme station has been in operation for a good length of time?

A Yes.

Q Do you have the readings on the salinity of the river over that?

A No, I didn't come prepared. I have a few of them, but I don't have many.

Q Your office could furnish the Commission with the readings over the years at that station?

A Yes, sir. We have this one in October, 1961, 534 parts per million. Much of the -- if I may add, much of the salinity that is read in the Pecos River is the result of a type of year we have, a dry year possibly the chloride content will be higher. By the same token, a dry year, a little bit of saline water or brine coming into the river channel from any of these producing wells will go a whole lot further, of course, than if we had a lot of water.

Q Depending on how much water was diluted?

A Yes, sir.

Q Of all these various wells that you read into the record as being water wells on these Exhibits 3 and 6, you gave the depth of the water and you gave the formation it was producing from if you could find out, and also the parts per million of chlorides. You didn't give any capabilities or

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

productivities of any of these wells?

A No, sir.

Q Do you know how much water they can produce?

A I do not have any information on the amount they can produce. My point in bringing those up is that regardless of how many gallons per minute they can produce, there is fresh water there that is being used.

Q Do you have any idea are some of them big wells or are they all small wells?

A I judge they are all small wells, I don't know. I have not had time to run any type of tests on them.

Q In this area covered by Exhibits 3 and 6, you had numerous wells. How many of those wells are used for anything other than stock tanks?

A I can count on here because they are most of them labeled. Here's one, shall I just count one, two, three or point out? This is domestic irrigation use.

Q That would probably be a ranch house or farm house?

A Yes.

Q To what extent irrigation as you go through these?

A Well, there is a large irrigated area here. I do not have the acreage on it, but it's a pretty nice looking field over here.

Q What is that a field of?

35-p

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMAS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

A I didn't go down and examine the crop. I looked over it and it was a nice, pretty green. I didn't examine the type of crop.

Q But it's --

A It's an irrigated crop.

Q It's an irrigated crop and approximately what size?

A I am going to estimate approximately 300 acres.

Q That's the well that's in Section 30 of 27 South, 26 East?

A That area is probably irrigated from the well here, here and here. There's three or four of these wells. This one, this one are irrigation wells and domestic wells.

MR. PORTER: You are referring to wells in what sections?

A Sections 19, 20 and 30 and 7 South, 26 East.

Q (By Mr. Nutter) They would be irrigating a field on the west side of the river?

A Yes.

Q Probably in Sections 27, 29 and possibly 30?

A That's correct. An irrigation well in Section 17 of 26 East, 7 South.

Q What's that well used to irrigate?

A Again, I can not tell you a crop, but there is a crop down there.

36-p

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

Q There's an irrigated field there in Section 17?

A Yes. Over here in 27 South, Sections 4, 5, 6, 7, 8 and 9 there is a little irrigated crop in Section 5, I will agree with Dr. Dunn, I was out over that the other day, it was cotton and it looked kind of sad, most of it. But it was being cultivated in that area.

Q That's in the Southeast Quarter of Section 5 east of the river?

A Yes, I believe it would be in the Southeast Quarter of Section 5. There is a little crop in Section 33, a little irrigation up here. Again, I've looked at it from a distance without going out and examining it. There isn't much there. Further north I do not have any information of any irrigation.

Q Then most of these other wells that you haven't mentioned as irrigation wells would be stock wells?

A Stock wells primarily, yes, sir.

Q How about the area over in Section 26 of Township 7 South, Range 26 East in the area of the, I believe that's the Dale-Federal?

DR. DUNN: Dale-Federal lease.

A That is all pasture land, stock raising.

Q And the well that you show on your exhibit as being in the Northwest, Northwest of Section 35 is a stock well?

A It's a stock well with windmill on it, yes, sir.

37-p

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6891 • ALBUQUERQUE, NEW MEXICO

Q What does that flow into?

A A metal tank, about a six or eight-foot metal tank.

Q What was the depth that that water stood? Did you have that?

A 45 foot from the surface.

Q Now, these pictures on your Exhibit No. 6 are of the Eight Mile Draw, which is in the south part of your Exhibit No. 5, is that correct?

A Eight Mile Draw is in the south part there. The springs are just barely off of the south edge of my exhibit. They are in Section 4 of the township south.

Q You stated here in this exhibit that the springs issue from the bottom and from the northeast side of the draw?

A They issue from the bottom of the draw. They issue at places from the sides and as you go further back upstream you'll find evidence of, in wet weather they have issued up here on the edge of the section. They are all that I found here were being fed from the northeast direction. I found no springs that were coming in from the southwest section.

Q You don't think there's any flow coming from the south?

A I did not observe any.

Q These rocks that are apparent in the pictures of Eight Mile Draw, are these the caliche rocks or gyp rocks?

38-p

dearnley-meier reporting service

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

A Yes, sir, they are gypsum. Photograph 3, the large rock on the left side there you can see how it has solution channels clearly there in the rock.

Q Is this the same kind of rock that you encounter along the escarpment on both sides of the river?

A I wouldn't state on this side. This is typically of some of the rock that you encounter here that has been weathered considerably along the outcrops of the escarpment.

Q Is it your opinion that this gyp rock prevails throughout this area beneath the surface? That is when you are up above the escarpment, say on Section 6 you are anywhere in Sections 26, 27, 28, 33, 34 and 35 of that exhibit, that this kind of rock would be present beneath the surface of the land?

A I would only commit myself to say I have seen it in some places. I do not know what would be under the surface to see that it prevails everywhere.

Q If it's present from the outcrop, you presume it goes back?

A For a distance.

Q What is the well in Section 35 producing from?

A We did not have the information on that, it was not available.

Q Do you believe that this gyp rock that is shown on

39-p

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

Exhibit 6 would be productive of water back up there in the hinterlands away from the river or would the water be below it or above it?

A I think possibly we have water above it, below it and in it.

Q And in it?

A Gypsum is a highly-soluble rock, over a period of thousands and thousands of years solution channels will develop in it and it can produce some water. It wouldn't be the best quality for drinking, but then I might add that this is pretty good stock water. There was stock drinking down there at various times in looking at it. You can see the tracks in around there.

Q When we got up on the escarpment and we're in the area, the subject area that we're talking about, what is the source of the water in here, would it be rainfall or do you presume that this water is migrating from farther north into the area?

A You mean in here?

Q Yes.

A I think there would be a little bit of it rainfall and some of it would be migrating into the area.

Q We are above the area of the river, and in this area it would not be river water?

40-p

dearnley-meier reporting services, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

A We are above the area. The fact that water is being discharged from the springs leaves no doubt in my mind that there is water in the area to be discharged.

Q There is a flow in Eight Mile Draw from the springs down to the river?

A It is an intermittent flow on the surface. I think the underground is probably continuous. There's a road out there that crosses this draw approximately in Section 32, or 33, Sunday last when I was out there there was a little flow below the road on the river side.

Q It appears from your Exhibit 6 that what the flow consists of is pools of water along in the bottom of the draw.

A In this particular case on these exhibits this is a continuous flow here for approximately 300 yards. Photograph 3 is at the beginning of it, the photograph 4 I was down possibly half way looking back up the draw. Photograph No. 5, as you probably could guess, the draw is bent and I'm down fairly close to the end of the surface flow in that area.

Q Are you looking upstream in 4 and 5 and downstream in 3?

A That is correct.

Q And 3 is the beginning of the flow?

A That's the beginning of the flow in that area. Mr. Marley told me there were flows further upstream, but

I didn't see them.

MR. NUTTER: Are there any other questions of Mr. Collins?

MR. PORTER: I have a question or two, Mr. Nutter.

BY MR. PORTER:

Q I was out for a moment, this might have been explored. What is the closest pit to the river, disposal pit, about how far would you say?

A If I may refer to my notes here. It will probably be Section 33, 6 South, 26 East, Dr. Dunn's or Sturgeon pit.

DR. DUNN: Between 900 and a thousand feet from the river bed. That's the closest one that we have to the river.

A My estimation was a hundred yards to the river bed and probably further to the channel. You are probably speaking of the river channel when you speak of a thousand yards.

DR. DUNN: I was speaking where there is a little bit of water. There's only a little bit of water there. Of course, there's trees and cedars there. I was speaking of the river bank.

A That's what I was calling the river channel. Going off into the bottom and a hundred yards.

Q (By Mr. Porter) How many disposal pits did you find in that Section 33 there that you were talking about?

A I believe there's five there.

42-p

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

Q Five disposal pits. I believe you testified that in regard to some of the pits, and I don't know whether they were in this section or not, that apparently the water was going into the ground about as fast as it was being produced?

A That is true.

DR. DUNN: On the Dale-Federal?

A The Dale-Federal is where we brought that out in particular.

DR. DUNN: Ten barrels a day, all five wells.

A Section 26, 7 South. If we refer to the pictures in Exhibit 2 we could go into it.

Q (By Mr. Porter) That's all right.

A I would be happy to. There are several pictures there that will show we have water going into the pit but no water in the pit.

Q Is that in Section 33?

A Some of them would be in 33 and 32, and in 4, and 5 of 7 South.

Q In other words, some are near the river. What about the one that's nearest the river?

A The pit nearest the river, I took this photograph, had a lot of water in it.

Q In other words, there's an indication there that the water was going in at least some faster than it was going

into the ground?

A In this particular case there was more water in the pit than I thought should have been there, the top photograph there. I feel like that that particular pit at that time might have encountered some of the shallow water in the river, it might not have.

Q In other words, this pit is not very far above the level of the river?

A No, sir.

Q About how far would you say?

A Referring to the river first, if I may, the river channel is where the water is exactly running. The bottom land would be the land easily flooded. The flood plain would be over that. This is what I consider the flood plain and probably ten or twelve feet above it the flood land.

Q Do you know whether the river in flood stage reaches the pit?

A I have only the information that I have learned in trying to study in this case, that the biggest flood on record was in 1941. At the gauging station the gauge showed a rise of something over 17 feet; 17 foot of water in that area would, I believe, definitely flood out.

DR. DUNN: That was before the Alamogordo Dam, was it not?

MR. IRBY: No.

A I believe that they would flood, take a flood like we had in '41.

Q (By Mr. Porter) Is there any danger of waters from higher grounds in the case of rain, I know rain is rare in this area, but it does happen sometime it falls in pretty large quantities in a short time. Would there be any danger in overflow in the river to the pits?

A I believe that is a real danger. If we had a heavy rain the overflow and the escarpment to the river, it would flood out the pits, take the accumulated salt and salt water out of those pits and on to the river.

MR. PORTER: That's all I had, Mr. Nutter.

MR. NUTTER: Any further questions, Dr. Dunn?

BY DR. DUNN:

Q In case of a flood like that, all of us would have to have a counterpart of Noah's ark. It would be so diluted with the fresh water that it wouldn't affect the salinity of the river. If it has a 17-foot rise with the Alamogordo dam being present, it wouldn't be likely. Occasionally it could happen?

A Let me answer that first.

Q Yes.

A It would dilute the water. It would have enough

45-10

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMAS BLDG. • P. O. BOX 1092 • PHONE 243-6491 • ALBUQUERQUE, NEW MEXICO

effect, it would wash out your pit so that you could start over.

Q That might be a good deal and might not. You'll notice the photographs 1 and 2 in Exhibit 7. It's the same pit that I showed in color. You don't see the oil there, do you? You do in color. You see the encrustations of salt. Well, the mixture of salt and oil will give you a layer of protective covering for the underground. I think any of you gentlemen will admit that.

Five wells are making ten barrels of oil. Five wells, ten barrels of oil. Correction, I mean two barrels of water. That is two barrels per day per well. Ten barrels of water, gentlemen, a day, it's a mile and a half down here, isn't going to be a great menace within the next year that we're asking for special dispensation to test.

If at the end of a year, if the taxpayers don't feel like making the test out from the pits, I will commit myself here to drill the wells under the supervision of the Conservation Commission and we'll test just to see how far that contamination goes.

Of all the testimony we've had, we've had no definite proof as to how many feet in a horizontal direction this water will migrate. Gentlemen, in a Court of law you are innocent until you are proven guilty. In a deal like this I

46-p

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6491 • ALBUQUERQUE, NEW MEXICO

hope we won't be guilty until we are proven innocent.

As far as the water well, the Sturgeon well is the only operating well, and I think Mr. Collins will agree with me on the east side of the river. I have had trouble with areas of this before. I wanted to test before we started our production and see just how much salinity is in the wells in the location, so that if they come up with me a damage suit I'll have them tested, the wells tested and have compared to what it was before.

I had the Core Laboratories of Dallas to make a test on the only irrigation wells on the east of the river. There's 495 parts per million on the Sturgeon, which is the only active irrigation well on the east side of the river. I think Mr. Collins will agree that they abandoned the well northeast of there because it wasn't economically feasible.

Here's the exhibit from Core Laboratories. It shows that the areas of salinity is greater as it goes to the south. He gave the testimony that you have to gauge the underground pressure, you know, to see how much, how far it would come up. It only came up six feet in this well here from way down, and very little of it in volume.

Now, the ten barrels per day for five wells on this pit over here isn't a great menace, and in the photograph in color we showed you, you could see the salt, you could see the oil.

46-p

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

hope we won't be guilty until we are proven innocent.

As far as the water well, the Sturgeon well is the only operating well, and I think Mr. Collins will agree with me on the east side of the river. I have had trouble with areas of this before. I wanted to test before we started our production and see just how much salinity is in the wells in the location, so that if they come up with me a damage suit I'll have them tested, the wells tested and have compared to what it was before.

I had the Core Laboratories of Dallas to make a test on the only irrigation wells on the east of the river. There's 495 parts per million on the Sturgeon, which is the only active irrigation well on the east side of the river. I think Mr. Collins will agree that they abandoned the well northeast of there because it wasn't economically feasible.

Here's the exhibit from Core Laboratories. It shows that the areas of salinity is greater as it goes to the south. He gave the testimony that you have to gauge the underground pressure, you know, to see how much, how far it would come up. It only came up six feet in this well here from way down, and very little of it in volume.

Now, the ten barrels per day for five wells on this pit over here isn't a great menace, and in the photograph in color we showed you, you could see the salt, you could see the oil.

47-p

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS.

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

On the photograph here not in color you can see some fine white areas of salt around there. As I mentioned a moment ago, a combination of salt and oil will protect that underlying surface.

One well down here, I don't remember which one, was 2200 parts per million. That's before any contamination or anything. So it seems to me, gentlemen, that the burden of proof would be on the other side more than it would be ours.

As I stated before, if at the end of a year we will make tests and if the Conservation Commission and the State Water Board will not pay for those, I will do them under the supervision of the Commission, and I know I have two strikes on me from now on out there as far as the Commission is probably concerned, but I do in all fairness, I wanted to present our side of it for which you all have been most kind, and thank you.

MR. NUTTER: I presume there's no further questioning of Mr. Collins, except one question I might want to ask you here.

BY MR. NUTTER:

Q Do you have any estimate as to the rapidity with which water might migrate horizontally in this area?

A I think I would have to qualify any answer by saying through Alluvial material, which is an unconsolidated

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1992 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

sand and clay, it would move relatively fast, and I think it would be in the matter of feet per month. If you get down into a consolidated clay and some of the other material it would be slower.

Q In other words, we are talking about feet per month in the area between the escarpments?

A Yes, sir. I also believe that there may be solution channels into this spring that would also include that. I might like to add one thing, if I may, or I would like to add Dr. Dunn mentioned the pressure of the wells when I gave the depth there. With the exception of a Artesian well, generally speaking the water encountered in the formation at the top of the water in the well will be the top of the water in the formation. There's no pressure in a shallow water or Alluvium well to affect it in any way. In an Artesian well, yes, there would be, but the majority of these are shallow wells.

DR. DUNN: We went to 60 feet on our first well. I think it was 45 or 50 on the next for water at our camp before we hit it.

A That Alluvium does vary in thickness. I am well aware of that.

MR. NUTTER: Are there further questions of Mr. Collins?

MR. MCCOY: Mr. Nutter, I would like to ask him a question.

MR. NUTTER: You will have to refer your questions to Dr. Dunn for Dr. Dunn to ask. It's a requirement in this State.

MR. MCCOY: Dr. Dunn, I think we need to know particularly about the limit of parts per million chloride for human consumption and agricultural consumption.

DR. DUNN: You mean human consumption absolutely he said or what's potable?

MR. MCCOY: What's healthy to drink.

DR. DUNN: I'm not a water engineer and my work, of course, is mainly surgery. I would say that 125 parts per million would be that you could still taste a wee bit of salt, but you could drink it fairly well. With more than that a water softener would be necessary to make it potable. Now, stock can drink this water at over a thousand parts per million, and you can irrigate with over a thousand parts per million. I believe down around the Roswell area are they not irrigating with water much more than a thousand parts per million in those wells? Probably the United States Geological Survey could give us some information on that.

MR. NUTTER: I imagine Mr. Collins could give you some answers to those questions if you care to ask him.

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

BY DR. DUNN:

Q I would like to ask you, Mr. Collins, if you know about what the irrigation wells in the irrigation district in Roswell--

A May I start where you started? The human consumption, I think, by the National Health Bureau, or something of that nature, recommends 250 million parts per chlorides. It's palatable and useable up to a thousand parts by individuals, it depends on where they are and what they're used to. You will find ranchers who are thrilled to drill if they get a fair amount of water with 900. I don't know the limit to set on the irrigation water. Some crops are more susceptible to chlorides than others.

There was one that I was talking to a rancher about the other day. I believe he calls it Coastal Bermuda that he uses for permanent pasture. He tells me that it can be twice as salty on that as it can be for cotton. I do not have the limits on that. You could probably get by if you had a good supply of water with up to 2,000 parts. Enough to flush the salt out and keep it moving.

Q I know we have 80 grains in Lubbock in some of our city water. My own private well is 80 parts.

A Is that 80 parts per million?

Q Per million.

51-p

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

A That's real good water.

DR. DUNN: You have to use a softener though.

MR. NUTTER: Are there any further questions of Mr. Collins?

MR. DURRETT: I have a question.

BY MR. DURRETT:

Q Are you of the opinion that the contamination is occurring at this moment in this area?

A I am, yes.

Q To what degree, could you tell us that?

A I don't quite understand what you mean. What degree?

Q You are going to have to give me a generalized answer, but do you feel there is serious contamination right at the moment?

A Yes.

Q That it's not so serious right now, it's going to get worse?

A I think that we already in the northern part in the Linda San Andres field, Section 33, I think that we already have started the movement of that salt water into the river. Whether that movement is actually flowing into the actual river now or not, but I do believe it has moved far enough that we will get results of this contamination even though we were to shut down any day.

Q You mean you think the water would continue moving even though the disposal was stopped today?

A I think the amount of water that has been put into the Alluvium there will in turn keep moving, we will have a rain on it, it's going to move it, when the river comes down it's going to push water back and suck it back into the river channel. I think we are going to get results of this brine disposal if we didn't put another drop in there.

Q Would you have any idea or could you give us an estimate in your opinion as to how long you would think, assuming the present practices are continued, that it would be before you had real serious contamination of the Pecos River water?

A Again, I have to base my statement on the amount of water available. If we had a sufficient supply to flush the water out in Alamogordo, it might be a year. With a limited supply available, incidentally, we will notice it much sooner than a year.

MR. DURRETT: I think that's all.

BY DR. DUNN:

Q Do you mean that right now we get a contamination of the river bed from our pits right now?

A I believe you are, yes, sir.

Q That's the fastest migration I've ever heard of.

53-p

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMAS BLDG. • P. O. BOX 1692 • PHONE 243-6491 • ALBUQUERQUE, NEW MEXICO

A I didn't say the water in the river. I said that the river area between here and the river, any water that comes in there is going to move towards the river.

MR. NUTTER: I believe your statement was, Mr. Collins, wasn't it, that whatever salt has already gone into the Alluvium below the pits is there and that eventually it will be in the river?

A Yes, sir, that's right.

MR. NUTTER: Are there further questions of Mr. Collins?

MR. PORTER: I have another question for Mr. Collins.

BY MR. PORTER:

Q Do you think there is danger of contamination of fresh water either in the wells around the area or in the river from all of the pits that are now being used for disposal pits? Do you think there's a danger from all the disposal pits in the area?

A I do, yes, sir.

Q Regardless of how close they may be to the river, how far out?

A Yes, sir. If we can look here in Section 26, I firmly believe that that water disposed here is going to move down to Eight Mile Draw and from there directly to the Pecos River.

54-p

dearnley-meier reporting service inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

DR. DUNN: Mr. Collins, if I were to furnish a well between the closest pit and the river under your supervision to be drilled foot by foot with a cable tool, would you be willing to take the results of a soil analysis as a criteria with the Oil Conservation Commission holding off until that test was made before coming out flatfooted and saying that we're getting contamination now? Would you be willing to do that with me furnishing the hole?

A If you will take that up with Mr. Reynolds, the State Engineer, that's what I will do.

DR. DUNN: That's what I would like the Commission to do, in all fairness. I don't want to contaminate the river. I want to be sure we are contaminating it in there before we come with any flat decision. You wouldn't have any guess work. It's not like playing poker. Your hand is right there, face up.

MR. DURRETT: How long will it take you to drill such a well?

DR. DUNN: Mr. Barnes, could you move on that soon? Could you move over at a place designated by the Oil Conservation Commission, put a hole down, with them taking samples every few feet?

MR. BARNES: I don't have a cable tool. We could auger it down.

55-p

dearnley-meier reporting services, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

DR. DUNN: I have a cable tool. We can get one available. I have one at home stacked up in the yard. Under the supervision of the Commission. I would like to know if I'm contaminated, gentlemen. I want to quiet --

MR. PORTER: I would like at this point to ask somebody, Mr. Collins or somebody else with the State Engineer's Office if such a procedure would prove that there either is or isn't any contamination occurring?

A I'm just ahurting to say something on that. May I, please?

MR. PORTER: Sure, I would like to have an answer.

A One well I don't think will tell us anything at all. If we put one well here there's some wells lined up between there and the river. I think to make that procedure work we would have to put a battery of wells between each pit and the river. I sincerely don't believe one well would tell us.

DR. DUNN: I would say two wells.

A I don't think two wells.

DR. DUNN: You are saying we are getting contamination. If you come out on a periphery between the well and the river, space the wells 100 feet apart, then you would know just whether it's going to the river or not.

BY MR. NUTTER:

Q Mr. Collins, if you are talking about an area

above the escarpment, you were presuming awhile ago that a good portion of the migration would be through solution channels which would have been even through the gyp?

A Yes, sir.

Q If you drilled a test well and it didn't penetrate a solution channel, you probably would not have any increase in the amount of salinity shown there?

A That's correct.

Q If you happened to hit a solution channel you would probably find the salt water, is that right?

A That's right.

Q Is there any way to determine the various solution channels through the gyp?

A To the best of my knowledge, there is no way to determine it.

DR. DUNN: May I suggest it?

MR. NUTTER: Yes.

DR. DUNN: Not being facetious, if he can walk overland and tell where the water is going, why couldn't he walk over and tell us where to drill? He said he could tell from walking over this where the water was. He could make a million dollars walking over West Texas, not to mention New Mexico, and if he could tell where the water is we will drill where his feet tells him there is water.

57-p

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

MR. NUTTER: If that question is directed to me I'll answer it. I believe he stated that when he walked over the area that he heard thumps instead of the normal foot treads as he walked across the soil. He indicated there were caverns that eroded into the gyp.

DR. DUNN: That would be where the water migrated?

MR. NUTTER: If the caverns were connected.

DR. DUNN: If he will fix the cavern, fix the cavern, I'll drill right where he says.

MR. NUTTER: Are there any further questions of Mr. Collins? He may be excused.

(Witness excused.)

MR. NUTTER: Does anyone have anything they wish to offer in this case at this time?

MR. HILL: I want to make a statement that I think the evidence offered here today by the State Engineer shows that there is a fresh water supply in all of the pertinent areas where Mr. Dunn has producing oil wells. I think the evidence also shows that there is a considerable amount of brine being disposed of and there is no explanation of where the brine is going, because it is still not there. It is not in the pits. I think it is clear that it is going into the ground.

Admittedly there's no explanation or no evidence of

58-p

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMAS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

how fast it is moving. Mr. Dunn, Dr. Dunn offered a figure, I believe, of 6,000 years to take it to move from Section 26 to the river, but he based this on some figures from Texas which were on the Ogallala formation, which does not appear in this part of New Mexico, so these figures are no good.

We have the evidence of Mr. Collins that the water from Section 26 will in all probability migrate south to the Eight Mile Draw and directly into the Pecos River. The important thing here is that there is fresh water in these areas and there is a good possibility, in fact a probability that they will be contaminated if the present practices are continued.

That may not be entirely true of Section 26. Probably Section 26 will probably not contaminate tomorrow because it is further removed.

Looking at Exhibit 3 and those wells and pits, the brine pits which are in the flood plain, as Mr. Collins described it, they are contaminating the river today in his opinion, and I think that's probably pretty clear. That's not the river channel. The brine is already missing. It's in the ground and it's in the river proper and will eventually show up in the flow of the river some place, if not intercepted in the meantime by the shallow water wells in the area.

Section 26 pit, the effects of that pit perhaps will not

59-p

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMAS BLVD. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

be felt and are not being felt now in any fresh water supply, even though we have a well within, it looks like a half a mile or so, which undoubtedly will feel the effects of this water for sometime.

I strongly urge upon the Commission that if any extension is given it would only be for those pits in Section 26 and that the pits shown on Exhibit 3 in Section 33, I believe most of them are, that they be required to comply with the order as is presently written. That's all I have.

DR. DUNN: Is that by using an injection well or lining the pits? At least the City of Roswell is given permission to line their pits for the tremendous amount of brine.

MR. NUTTER: I think, Dr. Dunn, if you will refer back to the original directive in this case, it merely prohibits the disposal of produced brines in unlined pits.

Now, there's any number of alternatives. The water can be injected into the ground into another formation, it can be hauled away in trucks, it can be evaporated from lined pits. It can be stored. There's numerous alternatives. The only thing that is prohibited is the disposal in unlined pits.

Is there anyone further who wishes to offer anything further in the case? I believe you probably summarized your case awhile ago. Do you have anything further to add at

60-p

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIRMUS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

this time?

DR. DUNN: Nothing except that I trust I'm still on speaking terms with all of you.

MR. NUTTER: Don't worry about that. In that event we will take the case under advisement and we will recess the hearing until 1:30, at which time we will take up 3021.

DR. DUNN: This companion case is all based on all this. That is about the injection well. What I would like, if you could project it into the future. I intend to inject this water into the wells in a closed system. I can present that to show you the number of wells, it will only take a few minutes.

I wanted to get a little bit of my hold card, you know, before I have to go to the expense of doing that, because I've already promised Shell if that's what my plans are in the future as a waterflood. But now, if I can line my pits or be allowed to have a year's trial, which I would prefer, of course, why then I wouldn't want to do that yet. But if it's in the future, I've got all the data, if it might save another hearing later on that make it in the future, I could present that in a very few minutes.

MR. NUTTER: Dr. Dunn, I'll depart from our usual procedure here quite drastically. I can tell you now that it's going to be my recommendation to the Commission, and,

61-p

dearnley-meier reporting service inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6491 • ALBUQUERQUE, NEW MEXICO

of course, the Commission will have to act on this after they receive the record of this case. They'll have the transcript in their hand, they'll have these exhibits at their disposal.

It's going to be my recommendation that the Commission not suspend its order particularly as related to the Linda Pool itself, which is between the escarpment. I haven't decided what I'll recommend regarding Section 26 over here. I don't know what the Commission will do with it. That's going to be my recommendation, particularly in the Linda area.

I think it may behoove the operators in there to dispose of the water in there in unlined pits. Whether you want to proceed with your case for the water injection or whether you plan to line the pits will depend upon you.

DR. DUNN: I think, Biblically speaking, I can see the handwriting on the walls now. I will make plans to line the pits to the satisfaction of the Commission, because you know and I know the Commission's going to take probably, if I were on the Commission I would take your -- I think you have been fair with this deal. I think they'll take your opinion about that.

But right now I prefer to line my pits to the satisfaction of the Commission rather than use the injection method, because I would have to take two wells out of production, they're not making much but I would like to keep the wolf at the door

dearnley-meier reporting service inc.

SPECIALIZING IN DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMAS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

from having pups for awhile until I get my money back out of this deal, part of it at least. This next hearing is along the lines I wrote you about that I propose to use a closed system, and I have the wells diagrammed and that you have all in your file, and when and if the waterflood comes up, in which I want to cooperate with Shell with, then I am going to have to drill some deep wells to supplement the waste water that I'm going to put out, using the closed system to keep out the contamination, as you know is prevalent in closed systems.

With the preference of a further hearing, I'll be glad to present that.

MR. NUTTER: As I mentioned, this is a rather irregular procedure on my part to tell you my recommendations. I wanted to tell you that so if you did plan to go ahead with the water disposal as an injection program, that you would be aware of what I would recommend and what the Commission may or may not adopt.

If you plan, in the event that the Commission should not suspend it's order, that if you plan to go ahead and line the pits as one means of disposal and don't care to go ahead with the injection program, well, we can dismiss the other case.

DR. DUNN: I would like to line the pits. Would you give me a month of grace?

dearnley-meier reporting services, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

MR. NUTTER: If there's nothing further in Case 3120, we'll take it under advisement. Let the record show Applicant's Exhibit 3, the slides taken by Dr. Dunn, will be admitted.

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, ADA DEARNLEY, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me; and that the same is a true and correct record of the said proceedings, to the best of my knowledge, skill and ability.

Witness my Hand and Seal this 18th day of October, 1964.

Ada Dearnley
NOTARY PUBLIC

My Commission Expires:

June 19, 1967.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 3120, heard by me on Oct 13, 19 64.

[Signature], Examiner
New Mexico Oil Conservation Commission

I N D E XWITNESSPAGE

R. B. COLLINS

Direct Examination by Mr. Hill	43
Cross Examination by Mr. Nutter	71
Cross Examination by Mr. Porter	83
Cross Examination by Dr. Dunn	86
Cross Examination by Mr. Nutter	89
Cross Examination by Dr. Dunn	92
Cross Examination by Mr. Durrett	93
Cross Examination by Dr. Dunn	94
Cross Examination by Mr. Porter	95
Cross Examination by Mr. Nutter	97

EXHIBITMARKEDADMITTED

Applicant's A	6
Applicant's B	36
State Engineer's 1 & 2	44
" "	3
" "	4
" "	5
" "	6
" "	7

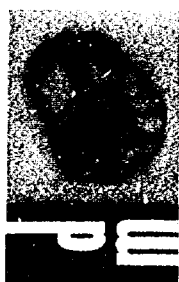
Applicant's 3

105

dearnley-meier reporting services, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO



NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING

SANTA FE, NEW MEXICO

REGISTER

HEARING DATE OCTOBER 13, 1964

TIME: 9 A.M.

NAME:	REPRESENTING:	LOCATION:
Frank E. Dwyer	State Engr	Santa Fe
R. B. Collins Jr.	State Engr	Lawrence
Ray H. W.	State Engr	Santa Fe
T. G. Went	State Engr	Santa Fe
W. A. Gussert	OCC	Artesia
V. T. Lyon	Continental Oil Co	Hobbs
Richard J. Morris	Seth, Montgomery, Fennell & Graham	Santa Fe
Lewis Jamerson	V. L. R. Rouse & Assoc	Albuquerque
Pete Carter	OCC	Santa Fe
N. L. Tombulini	Shell Oil Co.	Roswell N.M.

GOVERNOR
JACK M. CAMPBELL
CHAIRMAN

State of New Mexico
Oil Conservation Commission



LAND COMMISSIONER
E. S. JOHNNY WALKER
MEMBER

P. O. BOX 2088
SANTA FE

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

August 27, 1964

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

DIRECTIVE

TO: Dr. Sam G. Dunn
1312 Main Street
Lubbock, Texas

Ray Smith Drilling Company
409 Wilkinson - Foster Bldg.
Midland, Texas

H. E. Barnes
Box 1057
Roswell, New Mexico

Barnes and Swanson
Box 1057
Roswell, New Mexico

J. J. Travis
Box 873
Midland, Texas

FROM: A. L. Porter, Jr., Secretary-Director

SUBJECT: Disposal of Produced Salt Water

The Commission has received reports from the Office of the State Engineer and the Commission's Artesia District Office concerning disposal of produced salt water in the Linda-San Andres Oil Pool and adjacent area in Townships 6 and 7 South, Range 26 East, NMPM, Chaves County, New Mexico. These reports indicate that a substantial volume of produced salt water is being disposed of in unlined pits. In order to prevent contamination of fresh water supplies designated by the State Engineer, you are hereby directed to cease disposing of produced salt water in unlined pits by November 1, 1964.

August 27, 1964

-2-

DIRECTIVE

In order to avoid the shutting in of your wells, immediate consideration should be given to underground disposal. An application for approval of salt water disposal well or wells should be filed with the Commission in accordance with the provisions of Rule 701.

This office and the Commission's Artesia District Office will be happy to answer any questions you may have concerning this matter.

A. L. Porter Jr.

A. L. PORTER, Jr.
Secretary-Director

cc: State Engineer Office
State Capitol
Attn: Mr. Frank E. Irby
Santa Fe, New Mexico

Oil Conservation Commission
Drawer DD
Artesia, New Mexico

PROSPECTUS OF EDUCATION AND EXPERIENCE

Name: R. B. Collins, Jr.

Occupation:

Water Resources Engineer for the State of New Mexico, State Engineer Office since February 1962.

Early Education:

Graduated from Martha High School in June 1938--Martha, Oklahoma.

Professional Training:

Altus Junior College--Altus, Oklahoma--September 1938 to January 1940--General undergraduate work in Engineering.

Southwestern Technical College--Weatherford, Oklahoma--January 1940 to October 1940--General undergraduate work in Engineering.

University of Oklahoma--July 1945 to June 1949--Bachelor of Science Degree in Geological Engineering.

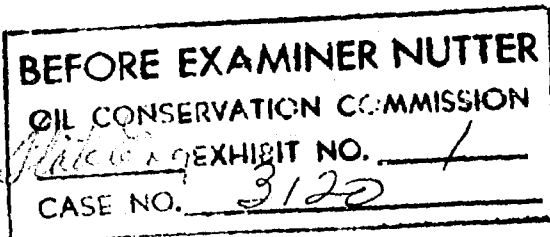
Professional Employment:

1947, 1948, and 1949--University of Oklahoma--Undergraduate teaching assistant, School of Geology and the School of Engineering.

September 1949 to May 1952--Roswell City School System--Classroom instructor in Plane and Solid Geometry--Organized and instructed a course in General Geology.

June 1952 to September 1955--John A. Barnett, Independent oil operator--Employed as a Geologist and Engineer--Conducted investigations for exploration drilling and development of oil and gas in southeast New Mexico and West Texas.

October 1955 to January 1956--United States Geological Survey, Oil and Gas Branch--General petroleum engineering duties in the regulatory branch of the U.S.G.S.



Professional Employment:

February 1956 to January 1962--John A. Barnett, Independent oil operator--
Duties as above plus reservoir engineering in secondary recovery of oil.

1957-1958--Roswell Community College, a branch of Eastern New Mexico
University--Special instructor in Geology.

February 1962 to present--State of New Mexico, State Engineer Office--
Water Resources Engineer--Investigations of: the use of surface water,
quantities of groundwater available in various area, relationship of
groundwater in areas adjoining declared basins, declines of ground-
water tables in southeast New Mexico, oil field brine disposal problems,
oil field waterflood injection problems, well construction, and other
hydrological and geological studies.

Professional Registration:

Registered Professional Engineer--New Mexico, Geological and Petroleum
No. 2277.

Registered Professional Engineer--Texas, Geological Engineer No. 16493.

Professional Societies and Recognition:

Active member of American Association Petroleum Geologists since 1954.

American Geological Institute.

American Institute of Mining and Metallurgical Engineers--Petroleum
Engineer section--1947.

Who's Who in the West

Specialized Professional Projects:

Soil, Foundation, and Design--Studies for: KSWB television office
studio, 1610' steel television tower, and United States Post Office
all located in or near Roswell, New Mexico.

Extensive evaluation of the San Andres oil producing formation in
West Texas and New Mexico.

Evaluation of waterflooding possibilities of the Spraberry Oil pro-
ducing formation in Midland and Upton Counties, Texas.

Extensive evaluation of waterflooding of the oil producing formations
in the Caprock Queen area, southeast New Mexico.

Specialized Professional Projects:

Broad field and subsurface work in the Powell Park area, Colorado.

Investigation of the possible supply of potable water along the east edge of Chaves County in the Caprock area.

Investigation of the possible supply of potable water in the Comanche Hill area about 8 miles east of Roswell, New Mexico.

Investigation of Drain Lines in the Roswell Artesian Basin.

Investigation and reclassification of lands irrigated from the Pecos River and its tributaries.

Investigation of the quantity and quality of underground water available in the Indian Basin Area, Eddy County, New Mexico.

Investigation of possible fresh water contamination by oil field water flooding in the Atoka-Grayberry oil field, Eddy County, New Mexico.

MEMORANDUM

The following report sets forth the feasibility of water flooding the Linda San Andres Field in Chaves County, New Mexico.

Core analysis from 8 wells gives the following reservoir properties:

Average pay thickness	28'
Average porosity	15.6%
Average permeability	2.7 md

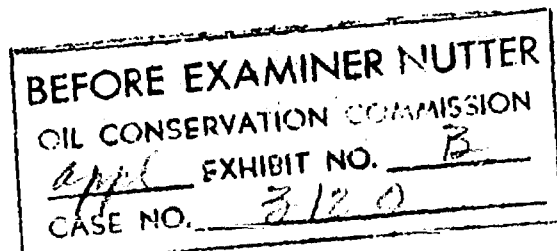
Because of initial water cuts of approximately 60%, the initial water saturation is estimated at 35%. Assuming 5% gas saturation at end of primary period, on oil saturation of 60% is estimated at the start of secondary recovery. Based on these properties, there is approximately 700,000 barrels of oil in place per 40-acre tract at the end of primary recovery. (3,000 to 10,000 BO).

A mobility ratio of 3.1 is calculated based on water cut, permeability etc. At this mobility, the sweep efficiency at break through of water is 55% and will require the injection of 5 pore volumes of water to obtain 100% sweep efficiency.

Assuming a 70% vertical sweep efficiency it is estimated that approximately 40,000 BO will be recovered prior to breakthrough of water per 40 acre tract.

Based on Shell's reported initial injectivity of 160 BHPD per injection well in the Bitterhebe ^{LAKE} Field, it is estimated that injection during steady state conditions would be 1/4 of initial injection rate. Therefore, an average injection and producing rate of 40 Barrels of fluid per day per well is estimated.

The initial producing rate on a 20 acre spacing, 5 spot pattern (40 acre drainage), would be 20 BO + 20 BHPD. Based on 20 BOPD producing rate the production period prior to water breakthrough is 5.5 years (40,000 BO). A 40% decline per year was assumed after water breakthrough and 10,500 BO additional will be recovered in 4.5 years. Total recovery per 40 acre tract estimated at 50,500 BO.



Shell used a cost of \$1000 per acre for drilling and equipping wells for flood and based on these figures a full scale 5 spot pattern flood would give a return on investment of 1.3 and a pay out in 3 years.

It is not believed that Steam flood will work in the Linda Field due to low permeability.

DOCKET: EXAMINER HEARING - TUESDAY - OCTOBER 13, 1964

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, Alternate Examiner:

CASE 3108: (Continued from the September 30, 1964 examiner hearing)

Application of Monsanto Company for a dual completion, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of the dual completion (conventional) of its Dagger Draw Well No. 1, located in Unit O of Section 6, Township 20 South, Range 25 East, Eddy County, New Mexico, to produce gas from the Strawn and Morrow formations through the casing-tubing annulus and through tubing, respectively.

CASE 3115: Application of Monsanto Company for a dual completion, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of the dual completion (conventional) of its Lowe-State Well No. 1 located in Unit F of Section 36, Township 21 South, Range 23 East, Eddy County, New Mexico, to produce gas from the Cisco Canyon and Lower Morrow formations through parallel strings of tubing.

CASE 3116: Application of Tex-Star Oil & Gas Corporation for force-pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order force-pooling all mineral interests in the Pearl-Queen Pool underlying the NW/4 NW/4 of Section 24, Township 19 South, Range 35 East, Lea County, New Mexico.

CASE 3117: Application of Tex-Star Oil & Gas Corporation for force-pooling, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an order force-pooling all mineral interests in the Basin-Dakota Pool underlying the E/2 of Section 26, Township 30 North, Range 14 West, San Juan County, New Mexico.

CASE 3118: Application of Gulf Oil Corporation for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the South Penrose Skelly Unit Area comprising 4,400 acres, more or less, of Federal, State and Fee lands in Township 22 South, Range 37 East, Penrose Skelly Pool, Lea County, New Mexico.

October 13, 1964 Examiner Hearing

CASE 3119: Application of Gulf Oil Corporation for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the Penrose Skelly Pool in its South Penrose Skelly Unit Area by the injection of water into the Grayburg formation through six wells in Sections 5 and 6, Township 22 South, Range 37 East, Lea County, New Mexico.

CASE 3120: Application of Dr. Sam G. Dunn for a Review of the Commission's Directive of August 27, 1964, concerning salt water disposal, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks a review of the Commission's Directive of August 27, 1964, prohibiting the disposal of produced salt water in unlined pits after November 1, 1964, in the Linda-San Andres Pool and adjacent areas in Townships 6 and 7 South, Range 26 East, Chaves County, New Mexico. Applicant specifically requests an extension of the November 1st deadline and a determination that salt water disposal in unlined pits in Sections 26, 27, and 34, Township 7 South, Range 26 East, among other areas, does not constitute a hazard to fresh waters and should be excepted from the Commission's directive.

CASE 3121: Application of Dr. Sam G. Dunn for a water injection project, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a water injection project by the injection of water into the San Andres formation through one well located in Section 33, Township 6 South, Range 26 East, Linda-San Andres Pool, and by the injection of water into one well in Section 32 or 33, and one well in Section 27, Township 7 South, Range 26 East, all in Chaves County, New Mexico.

CASE 3122: Application of Continental Oil Company for an unorthodox location and a non-standard unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to complete its Meyer B-4 Well No. 27 at an unorthodox location 5,610 feet from the South line and 660 feet from the East line of Section 4, Township 21 South, Range 36 East, Oil Center Blinebry Pool, Lea County, New Mexico. Said well would be dedicated to a 53-acre non-standard unit comprising that portion of Lots 1 and 8 of said Section 4 which is productive from the Oil Center Blinebry Pool.

CASE 3123: Application of Continental Oil Company for special pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the establishment of special pool rules including a provision for 80-acre spacing and a gas-oil ratio of 6000 to 1 for the Monument-Tubb Pool in Township 20 South, Range 37 East, Lea County, New Mexico.

October 13, 1964 Examiner Hearing

- CASE 3124: Application of Continental Oil Company to amend Order No. R-2566, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an amendment to Order No. R-2566, which authorized the Continental Baish-Yates Waterflood Project, to also provide authority for the injection into each well of approximately 500 barrels of LPG.
- CASE 3125: Application of Shell Oil Company for a dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the dual completion (conventional) of its Antelope Ridge Unit Well No. 4-1 in Unit B of Section 4, Township 24 South, Range 34 East, Lea County, New Mexico, to produce gas from the Antelope Ridge Pennsylvanian and Antelope Ridge Devonian Gas Pools through parallel strings of tubing.
- CASE 3126: Application of Murphy Oil Corporation for a pressure maintenance project, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a pressure maintenance project in the Many Rocks-Gallup Pool by the injection of water into the Gallup formation through five wells in Sections 17, 18 and 20, Township 32 North, Range 17 West, San Juan County, New Mexico. Applicant further seeks the promulgation of special rules for the operation of said project.
- CASE 2654: (Reopened)
In the matter of Case No. 2654 being reopened pursuant to the provisions of Order No. R-2349, which order established temporary 320-acre gas proration units for the Buffalo Valley-Pennsylvanian Gas Pool, Chaves County, New Mexico, for a period of two years. The Commission will consider indefinite extension of Order No. R-2349 in the absence of evidence to the contrary.
- CASE 3127: Application of Shell Oil Company for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of the China Canyon Unit Area comprising 7611 acres, more or less, of Federal, State and Fee lands in Township 23 South, Ranges 23 and 24 East, Eddy County, New Mexico.
- CASE 3128: Application of Shell Oil Company for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Grama Ridge Unit Area comprising 3052 acres, more or less, of Federal and State lands in Townships 21 and 22 South, Range 34 East, Lea County, New Mexico.

PAGE -4-
October 13, 1964 Examiner Hearing

CASE 3129: Application of Shell Oil Company for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the West Wilson Deep Unit Area comprising 3360 acres, more or less, of State and Fee lands in Township 21 South, Range 34 East, Lea County, New Mexico.

ir/

*Salt water disposal
directive core file*

MAIN OFFICE 000

'64 OCT 2 AM 8 12

NEW MEXICO
OIL CONSERVATION COMMISSION

FIELD TRIP REPORT

Date 9/10/64

Name of Employee W. A. Gressett

Time of Departure 7:00 a.m. Time of Return 4:30 p.m.

Miles Travelled 160

In the space below please indicate purpose of trip and duties performed, listing wells or leases visited.

Field Check: Dr. Sam G. Dunn Leases in section 26, 29 & 32 of 7S-26E, in Chaves County.

He has 6 wells drilled on the Dale Federal Lease in section 26-7-26. Wells #1, 2, 3, 4 & 5 were pumping, there was no equipment on #6. Wells #1 & 2 have been completed, and #3, 4 & 5 no completion has been filed on them yet. The tank battery is located in unit J approximately 200' North of well #2, there was a small stream of water going into the pit and is going in the ground as fast as it comes in. He has completed 1 well and staked 3 more in section 29-7-26. The #1 is located in unit P and the tank battery is approximately 150' to the south of the well, there was no pit or any sign of water out here. In section 32-7-26

W. A. Gressett
Employee's Signature
District # 2

continued:

he has 1 well drilled and was pumping, but the completion has not been filed.

H. E. Barnes has 1 completed well (that is now shut in) and another one that he started and then moved off of it., in section 32-7-26.

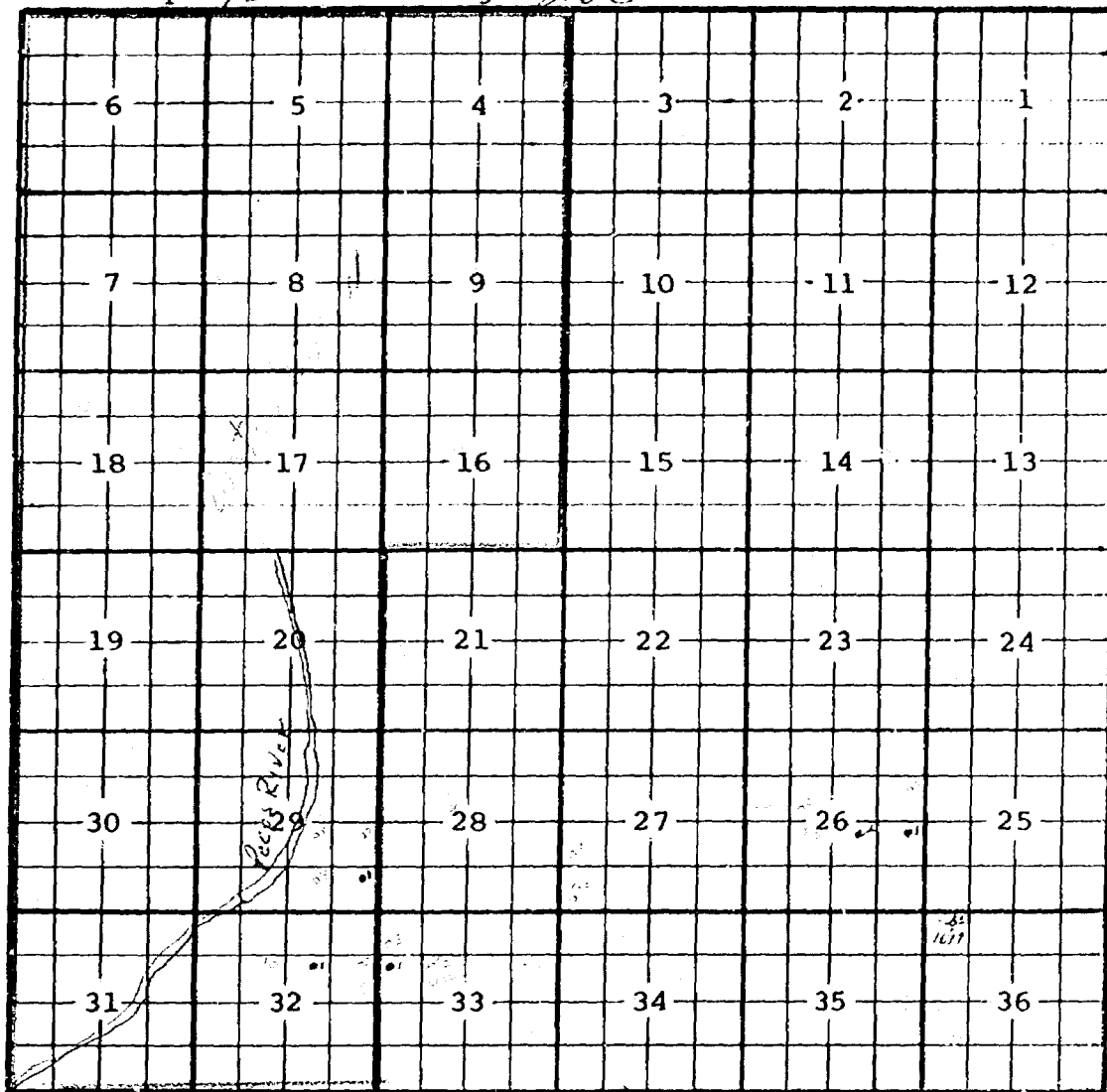
Charles A Lee also has a couple in section 33 and another one in section 34.

WASH OFFICE COPY

64 OCT 2 AM 8 11

County Chautauq Pool

Township 7s Range 26e NMPM



Memo

From
W. A. GRESSETT
DEPUTY OIL & GAS
INSPECTOR

To

The allowable was cancelled
on 5-1-64 for failure to file
form C-113 on the

H.E. Barnes #1 Levens State

Charles A. Lee #1 Dale Fed.

DR. SAM G. DUNN

Completed Wells

Dale Fed.	#1	2310/S	330/E	26 -7-26	TD 1545	Perf 1498-1530	Comp. 7/12/64	12 BO + 20 BWPD
"	#2	2310/S	1650/E	26 -7-26	TD 1503	" 1472-1484	" 7/19/64	20 BO + 15 BWPD
Sun Fed.	#1	990/S	330/E	29 -7-26	TD 1135	" 1111½-12	" 7/12/64	10 BO + 2 BWPD

H. E. BARNES
Levers State

#1	1650/N	1650/E	32 -7-26	TD 1167	Perf 1088-1140	Comp. 12/28/61	41 BO + 5BWPD
----	--------	--------	----------	---------	----------------	----------------	---------------

CHARLES A. LEE
Dale Fed.

#1	1650/N	330/W	33 -7-26	TD 1170	Perf 1128-60	Comp. 10/29/61	15 BOPD
----	--------	-------	----------	---------	--------------	----------------	---------

NEW MEXICO OIL CONSERVATION COMMISSION
 BOX 871 SANTA FE, NEW MEXICO
OPERATOR'S MONTHLY REPORT

STATEWIDE FORM C-115 REV. 10-1-64
 SUBMIT ORIGINAL TO OCC SANTA FE
 ONE COPY TO OCC DIST. OFFICE
 ONE COPY TO TRANSPORTER

(Company or
 Operator)

Dr. Sam G. Dunn

(Address)

Box 452, Artesia, New Mexico

FOR MONTH OF

July, 1964

Page **2** of **2**

WELL NO. UNIT SEC. TWP. RND.	WELL STATUS	TOTAL LIQUIDS PRODUCED			GAS PRODUCED MCF	DAYS PROD	DISPOSITION OF GAS					C O D E	DISPOSITION OF OIL				
		MONTHLY OIL ALLOWABLE	ACTUAL BARRELS PRODUCED	BARRELS OF WATER PRODUCED			VENTED	USED ON LEASE	SOLD	PURCH	OTHER		OIL ON HAND BEG OF MONTH	BARRELS TO TRANS PORTER	OTHER	C O D E	TRANS PORTER
LEASE NAME AND STATE LAND LEASE NUMBER OR FEDERAL LEASE NUMBER																	
UNDESIGNATED POOL - Chaves County																	
Dale Federal LC-067811-A																	
1 I 26-7-26	P	240	176	200		20											
2 J 26-7-26	P	260	177	200		13											
		500	353	400									-0-	-0-			McW 353
Sun Federal - M4-022584																	
1 P 29-7-26	P	200	140	350		14								-0-	-0-		McW 140

STATUS CODE

F.....FLOWING
 P.....PUMPING
 G.....GAS LIFT
 S.....SHUT IN
 T.....TEMP. ABANDONED
 I.....INJECTION

"OTHER" GAS DISPOSITION CODE

X.....USED OFF LEASE
 D.....USED FOR DRILLING
 G.....GAS LIFT
 L.....LOST (MCF ESTIMATED)
 E.....EXPLANATION ATTACHED
 R.....REPRESSURING OR PRESSURE MAINTENANCE

"OTHER" OIL DISPOSITION CODE

C.....CIRCULATING OIL
 L.....LOST
 S.....SEDIMENTATION (BS&W)
 E.....EXPLANATION ATTACHED

I HEREBY CERTIFY THAT THE INFORMATION GIVEN IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

Sam G. Dunn
 (SIGNATURE)

Agent

(POSITION)

8-24-64

(DATE)

Memo

From
W. A. GRESSETT
DEPUTY OIL & GAS
INSPECTOR

To

The Scout report has more
information on these wells than
we have in our files

Drilling Wells

DR. SAM G. DUNN

Dale Fed.	#3	2310/S	2310/W	26 -7-26
"	#4	1650/N	330/E	26 -7-26
"	#5	2310/N	1650/W	26 -7-26
"	#6	2310/N	330/W	26 -7-26
Dale Fed.B	#1-A	1650/S	330/W	27 -7-26
Sun Fed.	#2	2310/S	330/E	29 -7-26
"	#3	2310/S	1660/E	29 -7-26
"	#4	990/S	1660/E	29 -7-26
Livers State	#1	1650/N	2310/W	32 -7-26
<i>Sun Fed.</i>	<i>#5</i>	<i>2310/N</i>	<i>2310/W</i>	<i>28 -7-26</i>

H. E. BARNES

Livers State	#2	1650/N	330/E	32 -7-26
--------------	----	--------	-------	----------

CHARLES A. LEE

Dale Fed.	#1-B	330/S	330/W	27 -7-26
Dale	#3	990/N	330/W	33 -7-26
Dale	#4	1650/N	990/E	33 -7-26
Dale Fed.	#2	1650/N	1700/W	33 -7-26

HEAD OFFICE 300

NEW MEXICO
OIL CONSERVATION COMMISSION

1964 SEP 3 AM 8 23

FIELD TRIP REPORT

Date 8/11/64

Name of Employee W. A. Gressett

Time of Departure 7:00 a.m. Time of Return 4:15 p.m.

Miles Travelled 182

In the space below please indicate purpose of trip and duties performed, listing wells or leases visited.

Field Check: Linda San Andres Pool in 6 & 7S-26E.

This pool is in the water basin and is producing some salt water.

One operator reported 3105 bbls of water produced in May from 9 wells, and 1635 bbls of water in June from 8 wells. Two other operators did not report any water produced, but they are producing some.

Mr. R. B. Collins from the State Engineers Office in Roswell went up with me to see what was being done with the water and also get some samples. We found the water being put into unlined surface pits. The distance from the river to these pits ranges from about 400' to about 3/4 of a mile.

W. A. Gressett

Employee's Signature

District # _____

Also went by Shell Oil Co., Waterflood in the South Bitter Lakes-San Andres Pool, they are not producing much water and most of it is being put in the injection system.

PROSPECTUS OF EDUCATION AND EXPERIENCE

Name: R. B. Collins, Jr.

Occupation:

Water Resources Engineer for the State of New Mexico, State Engineer
Office since February 1962.

Early Education:

Graduated from Martha High School in June 1938--Martha, Oklahoma.

Professional Training:

Altus Junior College--Altus, Oklahoma--September 1938 to January 1940--
General undergraduate work in Engineering.

Southwestern Technical College--Weatherford, Oklahoma--January 1940 to
October 1940--General undergraduate work in Engineering.

University of Oklahoma--July 1945 to June 1949--Bachelor of Science
Degree in Geological Engineering.

Professional Employment:

1947, 1948, and 1949--University of Oklahoma--Undergraduate teaching
assistant, School of Geology and the School of Engineering.

September 1949 to May 1952--Roswell City School System--Classroom
instructor in Plane and Solid Geometry--Organized and instructed
a course in General Geology.

June 1952 to September 1955--John A. Barnett, Independent oil operator--
Employed as a Geologist and Engineer--Conducted investigations for
exploration drilling and development of oil and gas in southeast New
Mexico and West Texas.

October 1955 to January 1956--United States Geological Survey, Oil and
Gas Branch--General petroleum engineering duties in the regulatory
branch of the U.S.G.S.

State Engineer

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. <u>1</u>
CASE NO. <u>3120</u>

Professional Employment:

February 1956 to January 1962--John A. Barnett, Independent oil operator--
Duties as above plus reservoir engineering in secondary recovery of oil.

1957-1958--Roswell Community College, a branch of Eastern New Mexico
University--Special instructor in Geology.

February 1962 to present--State of New Mexico, State Engineer Office--
Water Resources Engineer--Investigations of: the use of surface water,
quantities of groundwater available in various area, relationship of
groundwater in areas adjoining declared basins, declines of ground-
water tables in southeast New Mexico, oil field brine disposal problems,
oil field waterflood injection problems, well construction, and other
hydrological and geological studies.

Professional Registration:

Registered Professional Engineer--New Mexico, Geological and Petroleum
No. 2277.

Registered Professional Engineer--Texas, Geological Engineer No. 16493.

Professional Societies and Recognition:

Active member of American Association Petroleum Geologists since 1954.

American Geological Institute.

American Institute of Mining and Metallurgic Engineers--Petroleum
Engineer section--1947.

Who's Who in the West

Specialized Professional Projects:

Soil, Foundation, and Design--Studies for: KSWB television office
studio, 1610' steel television tower, and United States Post Office
all located in or near Roswell, New Mexico.

Extensive evaluation of the San Andres oil producing formation in
West Texas and New Mexico.

Evaluation of waterflooding possibilities of the Spraberry Oil pro-
ducing formation in Midland and Upton Counties, Texas.

Extensive evaluation of waterflooding of the oil producing formations
in the Caprock Queen area, southeast New Mexico.

Specialized Professional Projects:

Broad field and subsurface work in the Powell Park area, Colorado.

Investigation of the possible supply of potable water along the east edge of Chaves County in the Caprock area.

Investigation of the possible supply of potable water in the Comanche Hill area about 8 miles east of Roswell, New Mexico.

Investigation of Drain Lines in the Roswell Artesian Basin.

Investigation and reclassification of lands irrigated from the Pecos River and its tributaries.

Investigation of the quantity and quality of underground water available in the Indian Basin Area, Eddy County, New Mexico.

Investigation of possible fresh water contamination by oil field water flooding in the Atoka-Grayberry oil field, Eddy County, New Mexico.

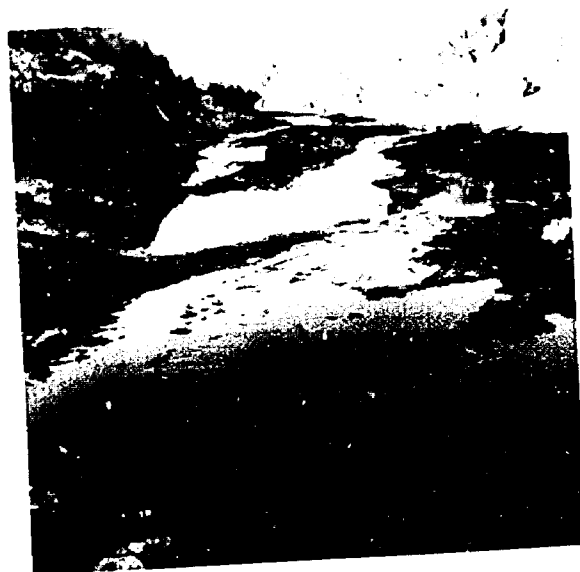
Tabulation of Observed Water Wells
in Townships 6 and 7, Range 26 East

Well Number	Water Level Below Land Surface		Water Producing Formation	ppm Chlorides	
6.26.33.314	1-8-64	10.7'	Alluvium	not tested	
.333	1-16-62	12.18'	Alluvium	not tested	
7.26.4.312	1-16-62	26.65	Artesia group	8-62	650
4.332	1-9-63	15.95'	Artesia group	8-64	820
				8-63	780
				8-62	620
5.131	1-7-64	23.55'	Alluvium	not tested	
5.221	1-9-63	6.27'	Alluvium	not tested	
6.242	1-17-62	23.63'	Artesia group	8-64	296
				8-63	450
				8-62	350
7.144	1-8-63	84.08'	Unknown	not tested	
9.112	1-8-64	17.92'	Alluvium	not tested	
17.212a	1-9-64	7.64'	Alluvium	8-64	2830
				8-63	2640
				8-62	2750
17.222	1-8-64	15.39	Alluvium	8-64	296
				8-63	396
17.422	1-9-63	18.26	Alluvium	8-64	1250
				8-63	1340
19.243	1-7-64	18.98	San Andres	8-64	110
				8-63	100
				8-62	200
19.412	1-7-64	34.78	Alluvium and Artesia group	not tested	
19.432	1-7-64	22.48	Unknown	not tested	
20.114	1-7-64	13.33	Alluvium	8-64	836
				8-63	1000
				8-62	980
20.142	1-8-63	11.49	Alluvium	8-63	780
20.243	1-8-64	25.55'	Artesia group	not tested	
20.313a	1-7-64	14.24'	Alluvium	8-64	700
30.431	1-7-64	11.95'	Artesia group	8-64	1696
				8-63	1680
				8-62	1656
31.121	unknown		unknown	8-64	530
35.111	10-8-64	45.0'	unknown	10-64	128
36.311	10-8-64	63.3	unknown	10-64	170
8.26.4.220	Live Spring		Alluvium and Artesia group	10-64	300

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 4
CASE NO. 3120



Photograph No. 3



Photograph No. 4



Photograph No. 5

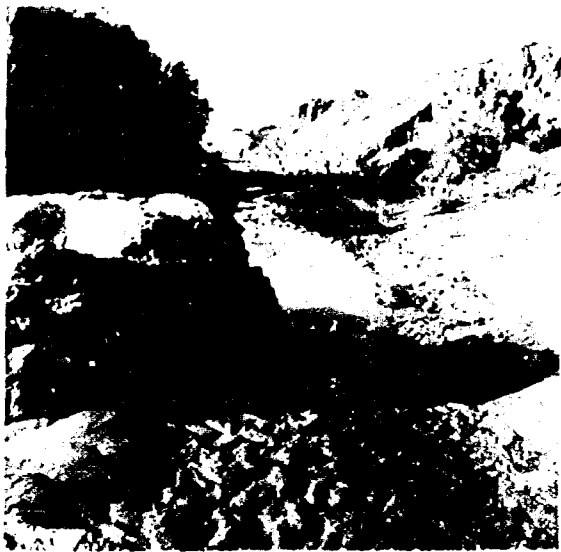
These photographs were made on October 8, 1954 and show a stretch of Eight-mile Draw located in the NE $\frac{1}{4}$ NE $\frac{1}{4}$ of Section 4, Township 8 South, Range 26 East. There are many small, live springs issuing from the bottom and from the northeast side of the draw.

BEFORE EXAMINER NUTTER	
OIL CONSERVATION COMMISSION	
EXHIBIT NO.	6
CASE NO.	3120



Photograph No. 6

The above photograph shows a live spring in the $SE\frac{1}{4}$ $SW\frac{1}{4}$ of Section 28, Township 7 South, Range 26 East.



Photograph No. 3



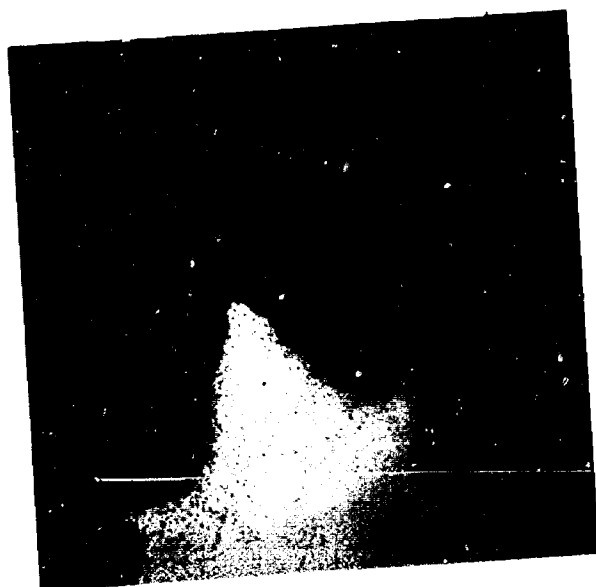
Photograph No. 4



Photograph No. 5

These photographs were made on October 8, 1954 and show a stretch of Eight-mile Draw located in the NE $\frac{1}{4}$ NE $\frac{1}{4}$ of Section 4, Township 8 South, Range 26 East. There are many small, live springs issuing from the bottom and from the northeast side of the draw.

BEFORE EXAMINER NUTTER	
OIL CONSERVATION COMMISSION	
EXHIBIT NO.	<u>6</u>
CASE NO.	<u>3120</u>



Photograph No. 6

The above photograph shows a live spring in the SE $\frac{1}{4}$ SW $\frac{1}{4}$ of
Section 28, Township 7 South, Range 26 East.

UNDESIGNATED SAN ANDRES OIL POOL

Operator: Dr. Sam G. Dunn

Brine Pit Location: NE $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 26, Township 7 South, Range 26 East.

Wells on Lease: Five producing; one not completed.

Location of Wells: All wells located in Section 26, Township 7 South, Range 26 East.

Number of wells discharging into Brine Pit: Five

Production from Slaughter zone of San Andres formation.

Producing depth: Approximately 1500'.

Reported water production-July 1964: 400 (2 wells) barrels

Measurement of discharge and collection of water sample was at the end of the flow line.

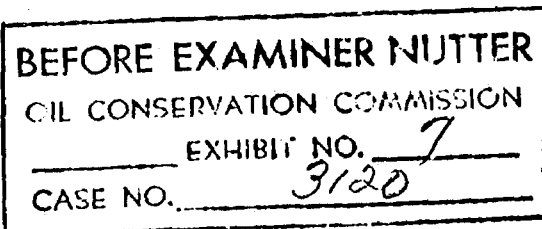
Amount of brine being produced: Measured 1 qt. in 45 sec. by stop watch on October 8, 1964. Calculated to be 11 bbl. per day assuming continuous pumpage of wells.

Analyses of Produced water: Date of Collection: September 30, 1964.
PPM Chlorides: 134,000
Specific Conductance at 25° C (K $\times 10^6$):
192,010 micromhos.
Calculated total dissolved solids * ppm.
Analyses by R. L. Borton Technical Division SEO.

Pit condition: Visual inspection indicated pits were unlined and no apparent effort had been made by the operators to prevent contamination of fresh water.

* Conversion factor unknown.

Photograph No. 1 and 2 taken October 8, 1964.





Photograph No. 1



Photograph No. 2

These photographs are of the Brine pit, located in the NE $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 26, Township 7 South, Range 26 East, which serves five producing oil wells on the Dr. Sam G. Dunn, Dale-Federal lease.

The above photographs were taken on October 8, 1964, at which time the measured flow of brine into the pit was 1 quart in 45 seconds. This is calculated to be 11 barrels per day, assuming there is a continuous flow. The pit is about 40x50 feet, bulldozed in loam.

UNDESIGNATED SAN ANDRES OIL POOL

Operator: Dr. Sam G. Dunn

Brine Pit Location: NE $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 26, Township 7 South, Range 26 East.

Wells on Lease: Five producing; one not completed.

Location of Wells: All wells located in Section 26, Township 7 South, Range 26 East.

Number of wells discharging into Brine Pit: Five

Production from Slaughter zone of San Andres formation.
Producing depth: Approximately 1500'.

Reported water production-July 1964: 400 (2 wells) barrels

Measurement of discharge and collection of water sample was at the end of the flow line.

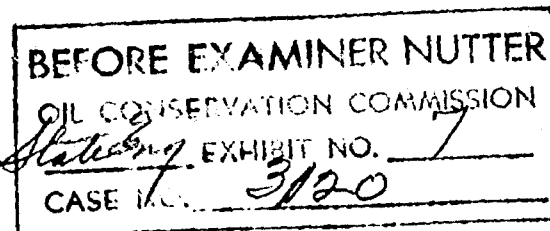
Amount of brine being produced: Measured 1 qt. in 45 sec. by stop watch on October 8, 1964. Calculated to be 11 bbl. per day assuming continuous pumpage of wells.

Analyses of Produced water: Date of Collection: September 30, 1964.
PPM Chlorides: 134,000
Specific Conductance at 25° C ($K \times 10^6$):
192,010 micromhos.
Calculated total dissolved solids * ppm.
Analyses by R. L. Borton Technical Division SEO.

Pit condition: Visual inspection indicated pits were unlined and no apparent effort had been made by the operators to prevent contamination of fresh water.

* Conversion factor unknown.

Photograph No. 1 and 2 taken October 8, 1964.





Photograph No. 1



Photograph No. 2

These photographs are of the Brine pit, located in the NE $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 26, Township 7 South, Range 26 East, which serves five producing oil wells on the Dr. Sam G. Dunn, Dale-Federal lease.

The above photographs were taken on October 8, 1964, at which time the measured flow of brine into the pit was 1 quart in 45 seconds. This is calculated to be 11 barrels per day, assuming there is a continuous flow. The pit is about 40x50 feet, bulldozed in loam.

Tabulation of Observed Water Wells
in Townships 6 and 7, Range 26 East

Well Number	Water Level Below Land Surface		Water Producing Formation	ppm Chlorides	
7.26.5					
6.26.33.314	1-8-64	10.7'	Alluvium	not tested	
.333	1-16-62	12.18'	Alluvium	not tested	
7.26.4.312	1-16-62	26.65	Artesia group	8-62	650
4.332	1-9-63	15.95'	Artesia group	8-64	820
				8-63	780
				8-62	620
5.131	1-7-64	23.55'	Alluvium	not tested	
5.221	1-9-63	6.27'	Alluvium	not tested	
6.242	1-17-62	23.63'	Artesia group	8-64	296
				8-63	450
				8-62	350
7.144	1-8-63	84.08'	Unknown	not tested	
9.112	1-8-64	17.92'	Alluvium	not tested	
17.212a	1-9-64	7.64'	Alluvium	8-64	2830
				8-63	2640
				8-62	2750
17.222	1-8-64	15.39	Alluvium	8-64	296
				8-63	396
17.422	1-9-63	18.26	Alluvium	8-64	1250
				8-63	1340
19.243	1-7-64	18.98	San Andres	8-64	110
				8-63	100
				8-62	200
19.412	1-7-64	34.78	Alluvium and Artesia group	not tested	
19.432	1-7-64	22.48	Unknown	not tested	
20.114	1-7-64	13.33	Alluvium	8-64	336
				8-63	1000
				8-62	980
20.142	1-8-63	11.49	Alluvium	8-63	780
20.243	1-8-64	25.55'	Artesia group	not tested	
20.313a	1-7-64	14.24'	Alluvium	8-64	700
30.431	1-7-64	11.95'	Artesia group	8-64	1696
				8-63	1680
				8-62	1656
31.121	unknown		unknown	8-64	530
35.111	10-8-64	45.0'	unknown	10-64	128
36.311	10-8-64	63.3	unknown	10-64	170
8.26.4.220	Live Spring		Alluvium and Artesia group	10-64	300

BEFORE EXAMINER NUTTER

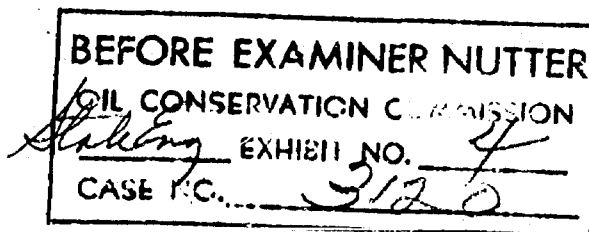
OIL CONSERVATION COMMISSION

EXHIBIT NO. 4

CASE NO. 3120

Tabulation of Observed Water Wells
in Townships 6 and 7, Range 26 East

Well Number	Water Level Below Land Surface		Water Producing Formation	ppm Chlorides	
6.26.33.314	1-8-64	10.7'	Alluvium	not tested	
.333	1-16-62	12.18'	Alluvium	not tested	
7.26.4.312	1-16-62	26.65	Artesia group	8-62	650
4.332	1-9-63	15.95'	Artesia group	8-64	820
				8-63	780
				8-62	620
5.131	1-7-64	23.55'	Alluvium	not tested	
5.221	1-9-63	6.27'	Alluvium	not tested	
6.242	1-17-62	23.63'	Artesia group	8-64	296
				8-63	450
				8-62	350
7.144	1-8-63	84.08'	Unknown	not tested	
9.112	1-8-64	17.92'	Alluvium	not tested	
17.212a	1-9-64	7.64'	Alluvium	8-64	2830
				8-63	2640
				8-62	2750
17.222	1-8-64	15.39	Alluvium	8-64	296
				8-63	396
17.422	1-9-63	18.26	Alluvium	8-64	1250
				8-63	1340
19.243	1-7-64	18.98	San Andres	8-64	110
				8-63	100
				8-62	200
19.412	1-7-64	34.78	Alluvium and Artesia group	not tested	
19.432	1-7-64	22.48	Unknown	not tested	
20.114	1-7-64	13.33	Alluvium	8-64	836
				8-63	1000
				8-62	980
20.142	1-8-63	11.49	Alluvium	8-63	780
20.243	1-8-64	25.55'	Artesia group	not tested	
20.313a	1-7-64	14.24'	Alluvium	8-64	700
30.431	1-7-64	11.95'	Artesia group	8-64	1696
				8-63	1680
				8-62	1656
31.121	unknown		unknown	8-64	530
35.111	10-8-64	45.0'	unknown	10-64	128
36.311	10-8-64	63.3	unknown	10-64	170
8.26.4.220	Live Spring		Alluvium and Artesia group	10-64	300



UNDESIGNATED SAN ANDRES OIL POOL

Operator: Dr. Sam G. Dunn

Brine Pit Location: NE $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 26, Township 7 South, Range 26 East.

Wells on Lease: Five producing; one not completed.

Location of Wells: All wells located in Section 26, Township 7 South, Range 26 East.

Number of wells discharging into Brine Pit: Five

Production from Slaughter zone of San Andres formation.
Producing depth: Approximately 1500'.

Reported water production-July 1964: 400 (2 wells) barrels

Measurement of discharge and collection of water sample was at the end of the flow line.

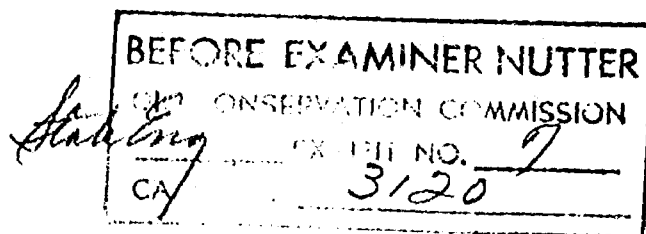
Amount of brine being produced: Measured 1 qt. in 45 sec. by stop watch on October 8, 1964. Calculated to be 11 bbl. per day assuming continuous pumpage of wells.

Analyses of Produced water: Date of Collection: September 30, 1964.
PPM Chlorides: 134,000
Specific Conductance at 25° C (Kx10⁶):
192,010 micromhos.
Calculated total dissolved solids * ppm.
Analyses by R. L. Borton Technical Division SEO.

Pit condition: Visual inspection indicated pits were unlined and no apparent effort had been made by the operators to prevent contamination of fresh water.

* Conversion factor unknown.

Photograph No. 1 and 2 taken October 8, 1964.





Photograph No. 1



Photograph No. 2

These photographs are of the Brine pit, located in the NE $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 26, Township 7 South, Range 26 East, which serves five producing oil wells on the Dr. Sam G. Dunn, Dale-Federal lease.

The above photographs were taken on October 8, 1964, at which time the measured flow of brine into the pit was 1 quart in 45 seconds. This is calculated to be 11 barrels per day, assuming there is a continuous flow. The pit is about 40x50 feet, bulldozed in loam.



Photograph No. 3



Photograph No. 4

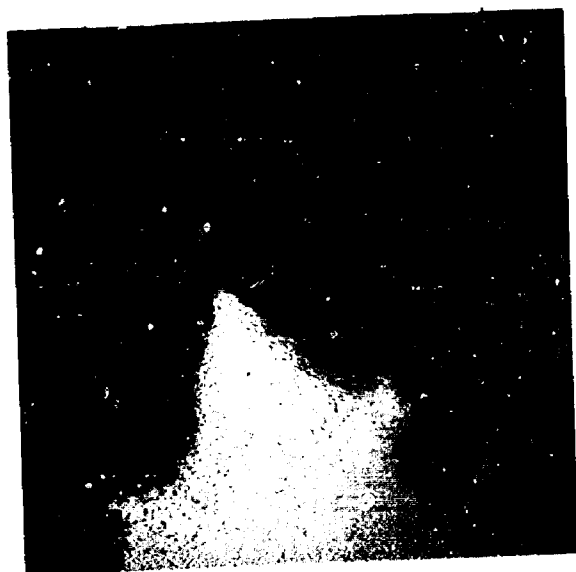


Photograph No. 5

These photographs were made on October 8, 1964 and show a stretch of Eight-mile Draw located in the NE $\frac{1}{4}$ NE $\frac{1}{4}$ of Section 4, Township 8 South, Range 20 East. There are many small, live springs issuing from the bottom and from the northeast side of the draw.

BEFORE EXAMINER NUTTER	
OK. COMMISSION	
State of	NO. 6
CASE NO.	3120

State of 67706



Photograph No. 6

The above photograph shows a live spring in the SE $\frac{1}{4}$ SW $\frac{1}{4}$ of
Section 28, Township 7 South, Range 26 East.