

NEW MEXICO OIL CONSERVATION DIVISION

STATE OF NEW MEXICO

CASE NO. 10559

IN THE MATTER OF:

The Application of Southwest
Royalties, Inc., for saltwater
disposal, Eddy County, New Mexico.

BEFORE:

DAVID R. CATANACH

Hearing Examiner

State Land Office Building

September 18, 1992

REPORTED BY:

DEBBIE VESTAL
Certified Shorthand Reporter
for the State of New Mexico

ORIGINAL

A P P E A R A N C E S

FOR THE NEW MEXICO OIL CONSERVATION DIVISION:

ROBERT G. STOVALL, ESQ.

General Counsel

State Land Office Building

Santa Fe, New Mexico 87504

FOR THE APPLICANT:

RODEY, DICKASON, SLOAN, AKIN & ROBB, P.A.

Post Office Box 1357

Santa Fe, New Mexico 87504-1357

BY: **PAUL A. COOTER, ESQ.**

1 EXAMINER CATANACH: Call the hearing
2 back to order. At this time we'll call Case
3 10559.

4 MR. STOVALL: 10559 is the application
5 of Southwest Royalties, Inc., for a saltwater
6 disposal, Eddy County, New Mexico.

7 Mr. Examiner, I believe Mr. Cooter is
8 prepared to move for a continuance of this case.

9 MR. COOTER: Paul Cooter with the Rodey
10 law firm in Santa Fe, and we would move that that
11 case be continued to the October 15 docket.

12 MR. STOVALL: You are representing the
13 applicant; is that correct?

14 MR. COOTER: Yes.

15 EXAMINER CATANACH: Case 10559 will be
16 continued to October 15.

17 [And the proceedings were concluded.]
18
19
20

21 I do hereby certify that the foregoing is
22 a complete record of the proceedings in
23 the Examiner hearing of Case No. 10559
24 heard by me on September 17 1992.
25 David R. Catanch, Examiner
Oil Conservation Division

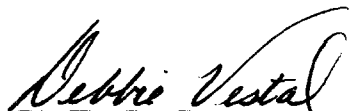
CERTIFICATE OF REPORTER

STATE OF NEW MEXICO)
) ss.
COUNTY OF SANTA FE)

I, Debbie Vestal, Certified Shorthand Reporter and Notary Public, HEREBY CERTIFY that the foregoing transcript of proceedings before the Oil Conservation Division was reported by me; that I caused my notes to be transcribed under my personal supervision; and that the foregoing is a true and accurate record of the proceedings.

I FURTHER CERTIFY that I am not a relative or employee of any of the parties or attorneys involved in this matter and that I have no personal interest in the final disposition of this matter.

WITNESS MY HAND AND SEAL SEPTEMBER 18,
1992.



DEBBIE VESTAL, RPR
NEW MEXICO CSR NO. 3

1 NEW MEXICO OIL CONSERVATION DIVISION

2 STATE LAND OFFICE BUILDING

3 STATE OF NEW MEXICO

4 CASE NO. 10559

5
6 IN THE MATTER OF:

7
8 The Application of Southwest Royalties,
9 Inc., for Salt Water Disposal,
Eddy County, New Mexico.

10
11
12
13
14 BEFORE:

15 DAVID R. CATANACH

16 Hearing Examiner

17 State Land Office Building

18 October 15, 1992

19
20
21
22 REPORTED BY:

23 CARLA DIANE RODRIGUEZ
24 Certified Shorthand Reporter
for the State of New Mexico

25
ORIGINAL

A P P E A R A N C E S

FOR THE APPLICANT:

THE RODEY LAW FIRM
Post Office Box 1357
Santa Fe, New Mexico 87504-1357
BY: PAUL A. COOTER, ESQ.

FOR CONOCO, INC.:

KELLAHIN & KELLAHIN
Post Office Box 2265
Santa Fe, New Mexico 87504-2265
BY: W. THOMAS KELLAHIN, ESQ.

FOR YATES PETROLEUM CORPORATION:

CAMPBELL, CARR, BERGE & SHERIDAN, P.C.
Post Office Box 2208
Santa Fe, New Mexico 87504-2208
BY: WILLIAM F. CARR, ESQ.

I N D E X

Page Number

Appearances 2

WITNESSES FOR THE APPLICANT:

1. GARY HENDRICKS
Examination by Mr. Cooter 6
Examination by Mr. Catanach 30
2. MITCHEL E. CHENEY
Examination by Mr. Cooter 33
3. JON TATE
Examination by Mr. Cooter 35

Certificate of Reporter 39

E X H I B I T S

Page Marked

Exhibit No. 1	8
Exhibit No. 2	10
Exhibit No. 3	14
Exhibit No. 4	14
Exhibit No. 5	14
Exhibit No. 6	14
Exhibit No. 7	14
Exhibit No. 8	20
Exhibit No. 9	21
Exhibit No. 10	23
Exhibit No. 11	23
Exhibit No. 12	24
Exhibit No. 13	25
Exhibit No. 14	36

1 EXAMINER CATANACH: At this time we'll
2 call Case 10559, application of Southwest
3 Royalties, Incorporated, for salt water disposal,
4 Eddy County, New Mexico.

5 Are there appearances in this case?

6 MR. COOTER: Paul Cooter with the Rodey
7 law firm, Santa Fe, appearing on behalf of the
8 Applicant.

9 EXAMINER CATANACH: Additional
10 appearances?

11 MR. KELLAHIN: If the Examiner please,
12 I'm Tom Kellahin of the Santa Fe law firm of
13 Kellahin & Kellahin, appearing on behalf of
14 Conoco, Inc.

15 MR. CARR: May it please the Examiner,
16 my name is William F. Carr with the Santa Fe law
17 firm, Campbell, Carr, Berge & Sheridan, and I
18 would like to enter my appearance on behalf of
19 Yates Petroleum Corporation. I do not have a
20 witness.

21 EXAMINER CATANACH: Any additional
22 appearances? Do you have any witnesses, Mr.
23 Kellahin?

24 MR. KELLAHIN: I have a brief statement
25 before we get started. I have no witnesses.

1 EXAMINER CATANACH: May I get the
2 witnesses to please stand and be sworn in at this
3 time?

4 [The witnesses were duly sworn.]

5 EXAMINER CATANACH: Mr. Kellahin?

6 MR. KELLAHIN: Mr. Examiner, on behalf
7 of Conoco, Inc., we had originally filed a notice
8 of opposition to Southwest Royalties, Inc.'s salt
9 water disposal case that's docketed before you.
10 I wish to advise you at this time that we are
11 withdrawing that opposition.

12 EXAMINER CATANACH: Okay. Mr. Cooter,
13 you may proceed.

14 MR. COOTER: I would like to make a
15 statement. And I don't know if they want to sit
16 through it, fine. If not, at the suggestion of
17 Yates, and we'll bring this out through
18 testimony, they've asked that an injection survey
19 be done if the application is granted on the salt
20 water disposal, at least once a year, and that
21 they be furnished that survey or a copy of that
22 survey, and that's agreeable to Southwest
23 Royalties, and they will so do.

24 MR. CARR: And, Mr. Catanach, that
25 addresses the concern of Yates Petroleum

1 Corporation. We do not intend to participate in
2 the hearing other than just to be certain that we
3 had reached that agreement.

4 But that does address Yates Petroleum
5 Corporation's concern of this matter.

6 EXAMINER CATANACH: Okay.

7 **GARY HENDRICKS**

8 Having been first duly sworn upon his oath, was
9 examined and testified as follows:

10 EXAMINATION

11 BY MR. COOTER:

12 Q. State your name for the record please,
13 sir.

14 A. My name is Gary Hendricks.

15 Q. For whom do you work, Mr. Hendricks?

16 A. I work for Southwest Royalties,
17 Incorporated, in Midland, Texas.

18 Q. How long have you worked for that
19 company?

20 A. I have been with them approximately one
21 year.

22 Q. Would you please relate briefly your
23 education and your professional experience?

24 A. I have a bachelor of science in
25 chemical engineering from New Mexico State

1 University in 1978. I then moved to Midland,
2 worked three years for Exxon in production and
3 reservoir engineering.

4 In 1981 I went to work for Union Texas
5 Petroleum and worked for them for 10 years, from
6 1981 until 1991, at which time they were absorbed
7 by Meridian.

8 Since that time I have worked for
9 Southwest Royalties as a petroleum engineer.

10 Q. Are you familiar with the application
11 that Southwest Royalties has filed in this case
12 for the salt water disposal well?

13 A. Yes, sir, I am.

14 Q. Did you participate in the preparation
15 of the evidence for this case?

16 A. Yes, sir, I did.

17 Q. Have you previously testified before
18 this Division?

19 A. No, I have not.

20 MR. COOTER: Are the witness'
21 credentials satisfactory? We tender him as an
22 expert witness.

23 EXAMINER CATANACH: He is so qualified.

24 Q. Briefly relate for Mr. Catanach what
25 the Applicant seeks by its application here.

1 A. The purpose of this hearing is to hear
2 evidence and justification which will allow
3 Southwest Royalties, Incorporated, to reenter and
4 convert the Julie No. 1, plugged and abandoned
5 well, which is located in the southeast of the
6 northeast of Section 17, Township 19 South, Range
7 25 East, to a salt water disposal well in the Abo
8 formation, at an approximate depth of 4000 to
9 5000 feet.

10 Q. I would direct your attention to
11 Exhibit 1. What is that, Mr. Hendricks?

12 A. Exhibit 1 is a plat showing the area of
13 review which was filed with our application to
14 inject water into a nonproductive formation on
15 Form C-108. We propose to convert the Julie No.
16 1 well which is located in the northeast quarter
17 of Section 17, Township 19 South, Range 25 East,
18 which is currently a plugged and abandoned well
19 on our acreage.

20 The well was plugged in 1976 after
21 becoming uneconomic in the Upper Penn formation.
22 The C-108 was filed on July 28, 1992, with all
23 offset operators being notified as required. The
24 yellow shaded area shows the area of review which
25 shows all the wells within one-half mile of the

1 proposed disposal well. The blue shading shows
2 all wells within a two-mile radius of the well.

3 Within the one-half-mile radius of the
4 Julie No. 1 well, there are three current
5 wellbores and one proposed well which Southwest
6 Royalties proposed to drill in November. The
7 Barbara Federal No. 3 well is a plugged and
8 abandoned well which was produced from the Upper
9 Penn formation and plugged in 1986. It's located
10 1980 feet from the north line and 1980 feet from
11 the west line, which is the southeast of the
12 northwest quarter of Section 17.

13 The Barbara Federal No. 7 is a plugged
14 and abandoned well which was produced from the
15 Upper Penn formation also; also plugged in 1986.
16 It's located 1980 feet from the south line and
17 1980 feet from the east line, which would be the
18 northwest quarter of the southeast quarter of
19 Section 17.

20 The Conoco Julie Com No. 2 is a well
21 which is currently being completed in the Upper
22 Penn formation. It's located in unit letter B,
23 its location being 1980 feet from the east line
24 and 660 feet from the north line of Section 17.
25 It has not yet been potentialized in the Upper Penn

1 formation, but has cement covering the entire
2 interval from TD to surface behind the seven-inch
3 production string. Southwest Royalties did drill
4 and case that well.

5 Southwest Royalties has proposed the
6 Dagger Draw 1 A well which will be drilled in
7 unit letter G of this section. This well is
8 currently being permitted and will be spudded in
9 November of 1992 at an orthodox location.

10 Consistent with drilling practices used
11 by other operators in this field, we plan to
12 two-stage cement the seven-inch production casing
13 with a DV tool set at approximately 5500 feet,
14 and we will circulate cement to surface in the
15 second stage, bringing it fully to surface behind
16 the seven-inch production casing.

17 Q. Turn next to Exhibit No. 2, Mr.
18 Hendricks. That consists of some five pages,
19 does it not?

20 A. Yes, sir. Exhibit No. 2 is our
21 proposed reentry procedure of the Julie No. 1
22 well which we'll convert to disposal in the Abo
23 formation, between 4000 and 5000 feet. Rather
24 than go through it on a step-by-step basis, I
25 would ask that you turn to the third page of the

1 document which shows the current status of the
2 well as it was left when it was plugged in 1986.

3 What we plan to do to convert this to
4 Abo disposal is drill out the cement plug from
5 zero to 50 feet, the cement plug from 206 feet to
6 431 feet inside the 5-1/2 casing, drill out the
7 cement and the cement retainer at 2150 feet down
8 to below the four squeeze holes at 2200 feet. We
9 will test the casing to 1000 pounds to assure the
10 squeeze holes at 2200 feet will adequately hold
11 the required pressure test.

12 I would like to point out, when this
13 well was plugged through the squeeze holes at
14 2200 feet, cement was circulated behind the 5-1/2
15 casing in the 7-7/8" hole to surface with 525
16 sacks.

17 We will then clean the well out to a
18 plugged back total depth of approximately 5300
19 feet. At that time we will then run cement bond
20 logs and compensate a neutron log from the
21 plugged back interval to the surface.

22 Our reasons for doing this are
23 two-fold. The original log run on this well in
24 1978 is a side wall neutron porosity log, and we
25 don't feel like the porosity values in our

1 proposed Abo disposal interval of 4000 to 5000
2 feet, we don't feel the quality of the log is
3 good enough to adequately allow us to define an
4 exact injection interval at this time.

5 Also, we need a cement bond log to
6 determine where exactly cement is located behind
7 the 5-1/2" production casing. I would like to
8 point out that when this well was plugged, a
9 cement retainer was set at 5465 feet, and squeeze
10 holes at 5510 feet, and cemented with 1000 sacks
11 of Class H cement. That cement volume is
12 sufficient to bring cement almost all the way to
13 the surface. However, no returns were seen at
14 the surface during this cementing operation
15 according to the plugging and abandonment
16 records.

17 We do not know exactly where the top of
18 cement is, whether it covers the top of our
19 proposed injection interval at 4000 feet. The
20 cement bond log will allow us to determine if
21 cement squeezing is required at 4000 feet at or
22 near the top of our Abo disposal zone.

23 Q. The information that you've shown on
24 the first schematic, the current status, is taken
25 from the OCD form which is page 5--

1 A. Yes, sir, it is.

2 Q. --of this exhibit, is it not?

3 A. Yes. That's the plugging report filed
4 by Conoco in 1986 when this well was plugged,
5 which is how this wellbore sketch was arrived.

6 Q. The second schematic, which is page 4,
7 is your proposed completion endeavor as you've
8 testified?

9 A. Yes, sir. A couple of points I would
10 like to bring out here. What we've shown on this
11 at 3990 feet are some proposed squeeze
12 perforations. That assumes that we do not have
13 adequate cement covering the top of our Abo
14 disposal formation. We would propose to
15 perforate at 3990 feet and squeeze with 200 sacks
16 to be sure that we had adequate protection across
17 the top of our Abo disposal interval.

18 We will be using a Baker Model-R or
19 equivalent packer set at approximately 3950 feet
20 and our injection tubing will be 2-7/8 internally
21 plastic coated.

22 I would like to take this time to
23 mention that the lowermost oil productive zone
24 below our zone of injection in the Abo formation
25 is the Upper Penn. The uppermost zone that is

1 oil productive within the area is the Yeso
2 formation, which occurs at a depth of
3 approximately 1500 feet. It has been noted that
4 this zone produced--the closest one I could find
5 was in Section 8, over a mile away from here.
6 But this zone could possibly be productive.

7 Q. You mentioned the depth of the Yeso at
8 1500. What's the depth of the Upper Penn?

9 A. The Upper Penn produced in this well
10 from 7776 to 7848.

11 MR. COOTER: A word of explanation, Mr.
12 Catanach. Exhibits 3 and 4, and I don't know if
13 they're included in your packet, are the same
14 schematics as part of Exhibit 2.

15 Q. Let's now look at Exhibits 5, 6 and 7.
16 Shall we start with 5?

17 A. Yes, sir.

18 Q. Explain what that is.

19 A. Exhibit 5 shows the current monthly
20 production for all Upper Penn wells offsetting
21 the Julie No. 1. Our desire to convert the Julie
22 No. 1 to disposal in the Abo formation is to
23 handle water from our Dagger Draw 1 A well which
24 we'll be drilling in November.

25 This exhibit shows the current monthly

1 production for all Upper Penn wells offsetting
2 our Julie No. 1. This exhibit serves to clarify
3 the fact that Upper Penn wells produce at rates
4 of 200 to 400 barrels a day but specifically, if
5 you want to take a well for example, look at the
6 Yates-operated Roy AET No. 2 which is located in
7 the southwest of the southwest of Section 8. Its
8 production for June of 1992 was approximately 200
9 barrels of oil per day and 400 barrels of water
10 per day.

11 However, the closest well to our
12 proposed Dagger Draw 1 A well is the Conoco No. 1
13 Jenny, which I believe is in unit letter E of
14 Section 17. You can see that in the month of
15 June of 1992 it produced 30 barrels a day and
16 over 4000 barrels of water a day. So these wells
17 can produce, depending upon completion
18 techniques, quite significant amounts of water.

19 However, Southwest Royalties believes
20 that based on current completion techniques being
21 used in the field and with us perforating only
22 the upper portion of the Upper Penn formation,
23 water production can be limited to somewhere in
24 the 400 to 1000 barrel a day range, and we expect
25 an initial oil rate in our wells of somewhere

1 around 300 to 330 barrels of oil per day.

2 Q. Are you going to 6?

3 A. Yes, sir. Exhibit 6 shows the location
4 of the Julie No. 1 again highlighted in blue, and
5 all the current producing wells around the Julie
6 are producing from the Penn formation. This
7 shows cumulative oil, gas and water production
8 from these wells.

9 These cumulative productions were
10 obtained from the New Mexico Oil and Gas
11 Engineering Committee Reports through June of
12 1992. The only thing I want to point out on
13 Exhibit 6 is that wells to the east of the Julie
14 are not shown because east of the Julie No. 1
15 well there are no Upper Penn producers within a
16 mile.

17 As you can see, the Julie No. 1 is
18 located on the far eastern side of this plat.
19 Wells further to the east in Section 16 do not
20 produce from the Upper Penn. There are some
21 Morrow wells that produce but they are over a
22 mile away.

23 I would like to go on to Exhibit 7, and
24 Exhibit 7 consists of four pages. The first page
25 is a tabulation of 36 wells off of Exhibits 5 and

1 6. It shows the casing and cementing data on all
2 the wells surrounding the Julie, including
3 plugged and abandoned wells. How this data was
4 obtained was from scaff cards and cement
5 calculations.

6 What I'm trying to show is and what I
7 would like to focus on is the production casing.
8 Basically all of these wells, with the exception
9 of the Roy No. 3 salt water disposal well and a
10 couple of other wells in here are Upper Penn
11 producers, with typically seven-inch casing or
12 5-1/2" casing, if they're some of the older
13 wells, being set at approximately 8000 feet.

14 I've attempted--I've shown the volume
15 of cement that was used when the seven and/or
16 5-1/2" production casing was cemented, and I've
17 calculated the estimated top of cement, assuming
18 25 percent excess. Offsetting the Julie No. 1,
19 31 of these 36 wells have cement covering the Abo
20 formation which we plan to inject in our Julie
21 No. 1 salt water disposal well.

22 The fact that 86 percent of the wells
23 have cement across our proposed injection
24 interval will minimize any external corrosion to
25 the producing casing, which could be caused by

1 injection into the Abo reservoir.

2 Behind Exhibit 7 are schematics of the
3 three wells within the half-mile area of review,
4 the Barbara Federal 3, the Barbara Federal 7 and
5 the Dagger Draw No. 1, which is now called the
6 Conoco Julie Com No. 2 well, when Conoco took
7 over operations for that well after we drilled
8 and cased it.

9 Mr. Cooter, I don't plan on going
10 through these individual plugging schematics
11 unless someone needs to.

12 Q. Go back to the first page of Exhibit 7,
13 if you would.

14 A. Yes, sir.

15 Q. The Hanks/Barbara Federal No. 3 and the
16 Federal 7 wells, are they cemented through the
17 Abo formation?

18 A. They were not originally. But when
19 they were plugged, the Barbara Federal No. 3,
20 they again shot at 5580 feet which is below the
21 Abo formation and attempted to pump into that at
22 2,000 pounds and were unable to pump into it.
23 They went in and shot at 2100 feet which is above
24 the Abo formation, and they were again unable to
25 pump into it at 2,000 pounds. We feel there's

1 adequate protection on the Barbara Federal No. 3
2 across our zone of injection.

3 On the Barbara Federal No. 7 they shot
4 four holes at 4090 feet. They set a retainer at
5 4050 feet and pumped 30 sacks of cement through
6 the retainer, so there is a plug at the top of
7 our injection interval. Below that, the nearest
8 plug below that is 6625 to 6775 inside the
9 casing.

10 Q. What is your proposed average and
11 maximum daily rate in volume of fluids to be
12 injected?

13 A. We anticipate again somewhere in the
14 range of 400 to 1000 barrels of water from our
15 Dagger Draw 1 A well. We're proposing, under
16 Section 7 on our form, I believe it's the C-108
17 that we filed, the proposed average daily
18 injection rate will be 1200 barrels with a
19 maximum daily rate of injection of 2000 barrels.
20 I have data later in my presentation that shows
21 that other Abo disposal wells which Yates has
22 will take water initially at a much higher rate
23 than this.

24 Q. Is your proposed system open or closed?

25 A. It is closed. The system will be a

1 closed system. It will utilize at least 1500
2 barrels of storage.

3 Q. What are the proposed average and
4 maximum injection pressures?

5 A. We propose an average injection
6 pressure of 1,000 pounds and a maximum injection
7 pressure of 1,400 pounds. These pressures were
8 obtained from historical data from Yates-Abo
9 disposal wells approximately seven miles away.

10 The water injected into the Abo will be
11 from the Upper Penn or the Cisco Reef formation.
12 Permission to inject this has been granted in the
13 past to Yates in their Abo formation disposal
14 wells, located again about seven miles away, so
15 we don't see compatibility problems between the
16 two waters.

17 Q. Are you ready to go to Exhibit 8?

18 A. Yes, sir.

19 Q. Turn to Exhibit 8 and explain that.

20 A. Exhibit 8 is a copy of the porosity log
21 and the drill lateral log across the zone of
22 disposal on our Julie No. 1 well. The log I'm
23 showing you is the Conoco, Incorporated, Julie
24 Com No. 2, which is located approximately 1980
25 feet northwest of the Julie No. 1.

1 The reason we chose to present this
2 instead of the Julie No. 2 is because the Julie
3 No. 2 well only has again an SNP log, a sidewall
4 neutron porosity log, which is not the most
5 accurate porosity log available.

6 What we've tried to highlight on here
7 is our porosity streaks and separation in the
8 permeability, and separation on the dual lateral
9 log which would indicate permeability. We feel
10 like the interval between 4000 and 5000 foot in
11 this area, in the Abo formation, will accept
12 water and can handle the volumes of disposal
13 water we plan on disposing out there.

14 Q. What stimulation do you include in your
15 plans for the water disposal?

16 A. Again, after we reenter the Julie No. 1
17 well, we propose to log it in bit corporations.
18 Depending upon the exact interval we choose, we
19 will acidize the well somewhere between 5,000 and
20 10,000 gallons. This is consistent with data
21 obtained on the scaff cards on the two Yates-Abo
22 disposal wells, again located six to seven miles
23 away.

24 Q. When you talk about those Yates wells,
25 let's turn to Exhibit No. 9. Identify that,

1 please, Mr. Hendricks.

2 A. Exhibit 9 is a production map of wells
3 surrounding two Abo disposal wells which are
4 located in Sections 3 and 10 of Township 20
5 South, Range 24 East. You can see these are
6 shaded in blue on the west side or the left side
7 of this exhibit.

8 These wells are located approximately
9 seven miles south/southwest of our proposed Julie
10 No. 1 disposal well. Yates operates these two
11 Abo disposal wells and they dispose of Upper Penn
12 water from their offsetting production in the
13 Dagger Draw South and the Dagger Draw North
14 field.

15 The highlighted wells are the
16 Bate-Federal No. 1 which is located in the
17 Section 3, and the Donahue-Federal No. 1 located
18 in Section 10. Also shown is the cumulative
19 production from offsetting producing wells in the
20 Upper Penn formation, as can be seen from the
21 cumulative oil and water production.

22 These producing wells produce large
23 amounts of water, and disposal is required to
24 maximize recovery from their wells, and Yates has
25 used the Abo for disposal of this produced

1 water. The Abo formation is the same formation
2 we desire to dispose of water in our proposed
3 Julie No. 1 well.

4 Q. Turn to Exhibit No. 10, while we're
5 talking about those two wells, and identify that.

6 A. Exhibit No. 10 is the same porosity and
7 lateral log. It's the porosity and lateral log
8 on the Donahue-Federal No. 1 well. That's the
9 same type of suite of logs that we showed earlier
10 on the Conoco Julie Com No. 2 well. We have
11 highlighted or shaded in blue the zone of
12 injection, from 4296 down to just above 4600 feet
13 that they have used for disposal in the Donahue
14 well.

15 Q. All right, then. Let's go to exhibit--

16 A. Let me make one more point. We have
17 compared porosity and resistivity on this log to
18 the Conoco Julie Com No. 2 well, and we believe
19 the porosities and resistivity profiles are
20 similar such that we believe the Julie No. 1 well
21 will dispose of sufficient quantities of water
22 based on the cumulative injection into these
23 wells which we'll present in later exhibits.

24 Q. Let's go to that cumulative water that
25 has been injected. Turning to Exhibits 11 and

1 12?

2 A. Okay. Exhibit No. 11 is the
3 Bate-Federal No. 1 well. It's a tabulation of
4 monthly disposal water or the amount of water
5 disposed monthly into the well since it began
6 disposal in late 1989. The Bate-Federal No. 1
7 again is located in Section 3.

8 Its injection interval in the Abo is
9 4238 to 4522, and what I would like to point out
10 is, through June 1991 when Yates discontinued Abo
11 injection in this well, they injected 1.26
12 million barrels of water. If you'll look in
13 January of 1990 and February of 1990, they
14 injected at rates as much as 5000 barrels of
15 water per day at an average injection pressure of
16 up to 1,200 pounds.

17 This is the data we used to get our
18 average and maximum injection pressures that we
19 expect from our Julie No. 1 well. They disposed
20 of water at much higher rates than we believe
21 we'll need for our Julie No. 1.

22 Q. You explained Exhibit 11. What's No.
23 12?

24 A. Exhibit 12 is the Donahue-Federal No. 1
25 located in Section 10. It began Abo injection in

1 March of 1990. It had cumulative injection
2 through May of 1992 with 568,000 barrels and was
3 still injecting between 100 to 200 barrels of
4 water per day at an average pressure of up to 600
5 pounds.

6 Q. Where is the closest potable water to
7 your proposed injection well?

8 A. We researched the area, and that's
9 Exhibit 13, and the closest potable water is
10 located approximately one-and-a-half to two miles
11 away from our Julie No. 1 well. We obtained a
12 water sample of that just for record to show, and
13 had it analyzed just to show--to have an analysis
14 on file of the potable water. And there is
15 potable water. We could find our Julie No. 1
16 well.

17 Q. Exhibit 13 is the report that was done
18 on that water sample?

19 A. Yes, sir. It was obtained from a water
20 well at a farmhouse approximately two miles
21 southwest of the Julie.

22 Q. Now, Mr. Hendricks, have you undertaken
23 an economic study of the various possibilities
24 for water disposal from your proposed, I think,
25 1 A well?

1 A. Yes, sir. The reason we desire to
2 convert the Julie Com No. 1 to salt water
3 disposal is because we're in the process of
4 permitting our Dagger Draw Well No. 1 A which
5 will be located 1650 feet from the north and 1880
6 feet from the east line of Section 17. We
7 anticipate that well to begin production at
8 approximately 300 to 350 barrels of oil per day.
9 Based on an average of the offsetting water
10 production, initially we expect about 1000
11 barrels of water per day.

12 We ran three economic scenarios.
13 Economic Scenario No. 1 is water being trucked at
14 92 cents a barrel. That is the minimum regulated
15 rate of 62 cents, plus 30 cents a barrel disposal
16 fee.

17 Economic Scenario No. 2 is that water
18 is disposed into a third-party disposal at 50
19 cents a barrel. We're not sure this is even a
20 viable assumption, but what we assumed is that
21 somebody would come to us and take our water at
22 50 cents a barrel. We know of no one in the area
23 who has made this offer to us at this time.

24 The third economic scenario is that the
25 Julie No. 1 is converted to an Abo salt water

1 disposal well for an initial investment of
2 \$153,600. The other assumptions we made on our
3 economic analysis was that our base lease
4 operating cost, excluding water disposal, was
5 \$4,000 per well. This assumes the well produces
6 on submersible pump. Also, the cost of drilling
7 the Dagger Draw 1 A well was \$535,500.

8 Under Economic Scenario No. 1-- Well,
9 let me back up. I forgot one thing. The oil
10 pricing we used flat at \$20 per barrel with the
11 gas price being flat at \$1.50 per Mcf, and the
12 well produces 2000 standard cubic feet per
13 barrel. On oil production we assumed 10,000
14 barrels of oil per month, declined it at 75
15 percent for the first year and then leveled off
16 the decline rate 20 to 25 percent in future
17 years.

18 Under Economic Scenario No. 1 where
19 water is trucked, our well life would only be 1.7
20 years with a cumulative recovery of 76,000
21 barrels of oil and 153 million cubic feet of gas,
22 with the well yielding a net cash flow of \$91,000
23 over the life of the well. Our monthly operating
24 costs under this scenario would be \$32,000 per
25 month. The economics associated with trucking

1 water are not good at all.

2 Economic Scenario No. 2, which is where
3 water is disposed into a third-party disposal at
4 50 cents per barrel, would increase our well life
5 from 1.7 to 3.9 years, and increase our
6 cumulative recovery of oil to 122,000 barrels and
7 244 million cubic feet of gas, with the well
8 yielding a net cash flow of \$427,500. Monthly
9 operating costs would be reduced to \$19,200.
10 These are acceptable economics but still not very
11 good. We would have to put out \$700,000 of
12 expenditure to receive a net cash flow of--to
13 receive payout plus \$427,000. Those are still
14 not very good economics.

15 Economic Scenario No. 3 is where the
16 Julie No. 1 is converted to a disposal well. The
17 cost of disposing the water would be 20 cents a
18 barrel. That includes five cents royalty to the
19 landowner and 15 cents per barrel for operating
20 costs for the disposal system, and an initial
21 investment including an initial investment of
22 \$153,600 is required on top of the drilling costs
23 of the Dagger Draw 1 A well.

24 Under this scenario the well life would
25 be 9.4 years with a cumulative recovery of

1 185,000 barrels of oil and 370 million cubic feet
2 of gas with the well yielding a net cash flow of
3 \$918,200.

4 The summary to our economic analysis,
5 permission to convert the Julie well to disposal
6 in the Abo will increase recovery from our Dagger
7 Draw 1 A well by over 100,000 barrels of oil and
8 allow maximum reserve recovery from the well and
9 prevent waste of any reserve recovery from this
10 well.

11 Q. Would the granting of the application,
12 in addition to the prevention of waste, be in the
13 best interests of conservation?

14 A. Yes, it would.

15 Q. And would it protect correlative rights
16 of both the Applicant, Southwest Royalties in
17 that south half of the northeast quarter, but the
18 offsetting owners and operators as well?

19 A. Yes, it would.

20 Q. At the opening of this case, you heard
21 the statement that Yates has requested that if
22 the application is granted, that Southwest run an
23 injection survey at least once each year on this
24 proposed water disposal well. Would Southwest
25 Royalties agree that that be done?

1 A. Yes, we would.

2 Q. Would it comply with that?

3 A. Yes, we will.

4 MR. COOTER: That's all the questions I
5 have of this witness.

6 EXAMINER CATANACH: Any questions, Mr.
7 Carr? Mr. Kellahin?

8 MR. CARR: No questions.

9 MR. KELLAHIN: No questions.

10 EXAMINATION

11 BY EXAMINER CATANACH:

12 Q. Mr. Hendricks, the proposed injection
13 well, you don't have any idea where the cement
14 top is in the well at the present time?

15 A. What I do know, based on the plugging
16 report, is that there is cement behind the 5-1/2
17 production casing. There is cement behind the
18 5-1/2 production casing from 2200 feet to
19 surface.

20 The other thing that you can calculate
21 is that when the well was drilled and cemented
22 with 280 sacks, the estimated top of cement is
23 about 6300 feet, and that's assuming 25-percent
24 excess, which is 1431 feet above the Upper Penn
25 perforation set at 7776.

1 As to what happened to the thousand
2 sacks of cement when the well was perforated at
3 5510 feet, I have no knowledge of where that
4 cement went. According to the plugging reports,
5 returns were not obtained at the surface. A
6 thousand sacks of cement in a 5-1/2" casing in a
7 7-7/8 hole should have brought cement almost
8 within a thousand feet of surface. However, with
9 no returns being obtained, I can't tell you, sir,
10 exactly where it went. That's why we plan on
11 running our cement bond log after we clean the
12 well out to a plugged back total depth of
13 approximately 5300 feet.

14 Q. What if your bond log shows you do not
15 have cement down to 5300 feet?

16 A. What we would then propose doing would
17 be finding the top of cement based on our bond
18 log, perforating above that, and attempting to
19 squeeze above and below our disposal interval
20 from 4000 to 5000 feet.

21 Q. You would attempt to squeeze below
22 5000?

23 A. Right. Below whatever we choose, after
24 we run our compensated neutron log, pick our
25 perforated interval, we would then squeeze below

1 and squeeze above to assure adequate protection
2 below the disposal interval and above the
3 disposal interval.

4 Q. What formations are located between the
5 Abo and the Upper Penn? Is there any chance that
6 any fluid could go into other formations in that
7 interval?

8 A. I'm going to have to defer that to our
9 geologist, Mr. Cheney.

10 Q. Okay. That's fine. The two wells in
11 the area of review that are plugged and
12 abandoned, do you have confidence that the
13 injected fluid from your Julie Com No. 1 will not
14 migrate in the annulus of those wells?

15 A. Based on the plugging records that were
16 obtained when these wells were plugged in 1986,
17 yes, sir, I have confidence that migration will
18 be minimal. I see no reason why there should be
19 migration.

20 On the Barbara Federal No. 3, they were
21 unable to pump into either at above or below at
22 2,000 pounds, and the Barbara Federal No. 7 they
23 cemented above the Abo formation at 4090 feet,
24 and we should have cement somewhere around the
25 base of our disposal interval at about 5000 feet,

1 based on cement calculations.

2 EXAMINER CATANACH: I have no further
3 questions of the witness.

4 MR. COOTER: My next witness is Mr.
5 Cheney.

6 **MITCHEL E. CHENEY**

7 Having been first duly sworn upon his oath, was
8 examined and testified as follows:

9 EXAMINATION

10 BY MR. COOTER:

11 Q. State your name for the record please,
12 sir.

13 A. Mitch Cheney.

14 Q. By whom are you employed, Mr. Cheney?

15 A. Southwest Royalties.

16 Q. That is for this case?

17 A. Yes, as a consultant.

18 Q. Briefly relate your education and
19 professional experience for Mr. Catanach?

20 A. I have a bachelor's of science in
21 geology from the University of Michigan;
22 graduated in 1980. I was employed as a petroleum
23 geologist for Exxon Company, U.S.A., from 1980
24 until June 1987, and have been an independent
25 petroleum geologist from 1987 till present,

1 consulting on occasion.

2 Q. Were you asked to review the area
3 involved in this application?

4 A. Yes.

5 Q. And by whom were you asked to do that?

6 A. Rich Masterson at Southwest Royalties
7 Inc., VP of exploration.

8 Q. Have you previously testified before
9 this Commission?

10 A. Yes.

11 Q. When was that?

12 A. When I was with Exxon several years
13 ago.

14 Q. But you've traveled here and sat in
15 this chair before?

16 A. Yes.

17 MR. COOTER: Are the witness'
18 qualifications acceptable?

19 EXAMINER CATANACH: They are.

20 Q. In reference to the Julie No. 1 well
21 which Southwest seeks to convert to a water
22 disposal well, have you examined the available
23 geologic and engineering data of that area?

24 A. Yes, I have.

25 Q. Have you found any evidence of open

1 faults or any other hydrologic connection between
2 the disposal zone and any underground source of
3 drinking water, potable water?

4 A. No, I haven't. None whatsoever.

5 MR. COOTER: That's all I have of this
6 witness.

7 EXAMINER CATANACH: I have no
8 questions. The witness may be excused.

9 MR. COOTER: Thank you. Jon Tate.

10 **JON TATE**

11 Having been first duly sworn upon his oath, was
12 examined and testified as follows:

13 EXAMINATION

14 BY MR. COOTER:

15 Q. Would you state your name for the
16 record, please, sir.

17 A. My name is Jon Tate.

18 Q. By whom are you employed?

19 A. I work for Southeast Royalties in
20 Midland.

21 Q. How long have you been employed by
22 Southwest Royalties?

23 A. Almost four years now.

24 Q. And in what capacity?

25 A. Vice-president of land.

1 Q. Have you previously testified before
2 this Commission?

3 A. Yes, I have.

4 Q. And made your qualifications a matter
5 of record?

6 A. Yes, I have.

7 MR. COOTER: Are Mr. Tate's
8 qualifications acceptable, sir?

9 EXAMINER CATANACH: They are.

10 Q. Let me direct your attention to what
11 has been marked as Exhibit No. 14. Would you
12 identify that, please, sir.

13 A. Yes, sir. That is a copy of a Salt
14 Water Disposal Agreement into which Southwest
15 Royalties has entered with Mr. Howard J. Howell
16 and his wife, Betty Howell, who are the surface
17 owners of the quarter section in which our
18 proposed "SWD" well is located.

19 That agreement's dated August 25, 1992.
20 It has an initial primary term of five years,
21 renewable upon written notice at the termination
22 of that five-year period, and it calls for us to
23 dispose of water at the rate of five cents per
24 barrel.

25 Q. I believe, under paragraph 6 of that

1 agreement, your conversion efforts must be
2 completed on or before December 1 of this year?

3 A. Yes, sir, that's correct. That was an
4 agreement we entered into with Mr. Howell. He
5 didn't want to leave it open-ended, so we decided
6 to put a time limit of December 1st on our
7 agreement.

8 Q. Mr. and Mrs. Howell are the owners of
9 the surface of the northeast quarter of Section
10 17?

11 A. Yes, sir, that is correct.

12 MR. COOTER: That completes my
13 examination of this witness.

14 EXAMINER CATANACH: I have no
15 questions. The witness may be excused.

16 MR. COOTER: Mr. Catanach, I would like
17 to point out that in the file on this case I
18 believe you have copies of the notices sent to
19 Conoco, Yates and Barbara Fasken, and that
20 Barbara Fasken has waived any objection to it.

21 Yates Petroleum and Conoco are, of
22 course, here and they have already made their
23 statements.

24 EXAMINER CATANACH: Yates, Conoco and
25 Barbara Fasken are the only offset operators?

1 MR. COOTER: Yes, sir.

2 EXAMINER CATANACH: Barbara Fasken has
3 waived any objection?

4 MR. COOTER: Yes, sir.

5 EXAMINER CATANACH: Do you have a
6 document to that effect?

7 MR. COOTER: Yes. I thought one was
8 filed. Let me hand you my copy.

9 EXAMINER CATANACH: There may be one in
10 here.

11 MR. COOTER: That completes our case.

12 EXAMINER CATANACH: Is there anything
13 further?

14 There being nothing further, Case 10559
15 will be taken under advisement.

16 (And the proceedings concluded.)

17

18

19

20

21

22

23

24

25

I do hereby certify that the foregoing is
a complete record of the proceedings in
the Examiner hearing of Case No. 10559,
heard by me on October 15 1992.
David L. Catanch, Examiner
Oil Conservation Division

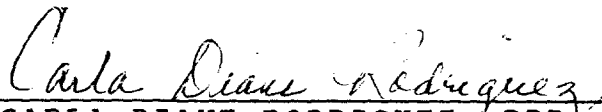
1 CERTIFICATE OF REPORTER

2
3 STATE OF NEW MEXICO)
4) ss.
5 COUNTY OF SANTA FE)

6 I, Carla Diane Rodriguez, Certified
7 Shorthand Reporter and Notary Public, HEREBY
8 CERTIFY that the foregoing transcript of
9 proceedings before the Oil Conservation Division
10 was reported by me; that I caused my notes to be
11 transcribed under my personal supervision; and
12 that the foregoing is a true and accurate record
13 of the proceedings.

14 I FURTHER CERTIFY that I am not a
15 relative or employee of any of the parties or
16 attorneys involved in this matter and that I have
17 no personal interest in the final disposition of
18 this matter.

19 WITNESS MY HAND AND SEAL November 4,
20 1992.

21
22
23 
24 CARLA DIANE RODRIGUEZ, RPR
25 CSR No. 4