STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO

26 April 1989

EXAMINER HEARING

IN THE MATTER OF:

Application of Parker & Parsley Petroleum Company for salt water disposal, Eddy County, New Mexico.	CASE 9658

BEFORE: David R. Catanach, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Division:	Robert G. Stovall Attorney at Law Legal Counsel to the Division State Land Office Building Santa Fe, New Mexico
For Parker & Parsley Petroleum Company:	W. Thomas Kellahin Attorney at Law KELLAHIN, KELLAHIN & AUBREY P. O. Box 2265 Santa Fe, New Mexico 87504

I N D E X

E X H I B I T S

MR. CATANACH: Call next Case Number 9658.

MR. STOVALL: Application of Parker & Parsley Petroleum Company for salt water disposal, Eddy County, New Mexico.

MR. KELLAHIN: Tom Kellahin of the Santa Fe law firm Kellahin, Kellahin & Aubrey, appearing on behalf of Parker & Parsley Petroleum Company and I have one witness.

(Witness sworn.)

RANDY R. JOHNSON,

being called as a witness and being duly sworn upon his oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Mr. Johnson, would you please state your name and occupation?

A Randy R. Johnson. I'm a petroleum engineer.

Q Mr. Johnson, have you on a prior occasion testified before the Division as a petroleum engineer?

A Yes, I have.

Q And did you prepare the Commission Form C-108 for the filing of the request for approval of the subject well for disposal purposes?

A Yes, I did.

Q Have you also reviewed and analyzed the geologic presentation that is included in the package of exhibits this morning?

A Yes, sir.

MR. KELLAHIN; We tender Mr. Johnson as an expert petroleum engineer.

MR. CATANACH: He is so qualified.

Q Mr. Johnson, let's take a moment and use Exhibit Number One to orient the Examiner as to what you're seeking to accomplish. If you'll take a moment and simply identify Exhibit Number One for us.

A Okay. Exhibit Number One is a structure map of the Bone Spring. The map shows or indicates Parker & Parsley acreage which is the yellow. The acreage we're concerned with is in Section 27 and Section 26, Range 28 East, Township 24 South.

Q How do we find the disposal well on the display?

A The disposal well is indicated by the red dot which is in Section -- or the northeast quarter of

Section 27.

Q Summarize for us generally what you're seeking to accomplish with the application, Mr. Johnson.

A Parker & Parsley is making application to seek authority to dispose of produced water into the Delaware Cherry Canyon formation. This is not an expansion of an existing project but a replacement of Order SWD 335 in which Parker & Parsley was given administrative approval to convert the Pardue Farms 27 No. 4 to salt water disposal.

Q All right, let's find on the display No. 1 the Pardue Farms 27 No. 4 Well, for which you got the Administrative Order 335.

A The 27 No. 4 is the furthest well in the southeast corner of Section 27.

Q All right, the one that's shaded half orange and half brown?

A Right.

Q Why was that well not utilized for disposal purposes?

A The Pardue Farms 27 No. 4 was not converted to salt water disposal but recently recompleted as a producer in the Brushy Canyon and it's now commingled in the Bone Spring and Brushy Canyon.

Q You still need to find a disposal well

in the vicinity to utilize yet for produced water?

A Yes, we do. If Parker & Parsley is granted a permit for disposal the economic life of the leases in the area of review, which is shaded yellow, will be increased substantially by an average of four years per well; therefore, Parker & Parsley will be able to recover additional reserves from the Bone Spring and Brushy Canyon avoiding waste of oil and gas.

Q Let's talk about the Cherry Canyon Delaware formation disposal interval, if you will.

First of all, before we leave the display, tell us generally what that gross interval thickness is.

A The gross interval thickness of the Cherry Canyon is approximately 1300 feet and within the area of the proposed well, which is the red dot in Section 27, there is not any Cherry Canyon production within two miles. If you'll notice at the top of the exhibit where the red arrow is pointing to a well located in Section 9, that is the closest Cherry Canyon production in the area, which is over 2 miles or 2-1/2 miles from the proposed well.

Q In your opinion is there any opportunity for commercial hydrocarbon production out of the Cherry Canyon disposal formation in this immediate vicinity?

A No, sir.

Q What is the formation that produces the produced water that you're seeking to dispose of in this well?

A The Bone Spring and the Brushy Canyon will be our produced water that we'll be disposing of.

Q Identify for us the wells that will contribute water production to be disposed of in the well.

A In the shaded areas, shaded yellow in Section 27 and 26 of Range 28 East and Township 23 South, the orange colored circles and the brown shaded circles will be the sources for produced water for disposal, that are located in these two sections.

Q So you currently -- you propose to dispose of Brushy Canyon produced water and Bone Spring produced water.

A Yes, sir.

Q Do you have an estimated range of volume on a daily basis that you will dispose of in the well?

A Right now we figure we'll probably have close to 1500 barrels per day.

Q Mr. Johnson, the Commission has a guideline on a surface pressure limitation that they utilize for disposal wells, which is .2 psi per foot of depth, and they normally base that on the top perforation in the disposal

formation.

With that in mind, let's have you, sir, turn to Exhibit Number Two and describe for us how you propose to complete this well for disposal in the Cherry Canyon interval?

A Okay. Exhibit Number Two is a stratigraphic cross section from the Pardue Farms 27 No. 1 in the bottom lefthand corner of this index map. The 27 No. 1 is located in Section 27, Township 23 South, Range 28 East, and the 26 No. 1 is in Section 26.

Our proposed well is located between these two wells and, as you can see from the cross section, the Cherry Canyon interval, there is about 1300 feet of gross -- I say gross sand and gross pay, but actually, using a 12 percent porosity cutoff, we only have around 500 feet of net sand which we feel we can dispose of water into.

Q Where -- where do you anticipate would be the likely highest or most shallow perforation in the Cherry Canyon that would be first utilized for disposal?

A The highlighted area there on the log under No. 1 on the cross section there, there at around 3800 feet is where our top perforation would be, but actually our perforated intervals will only be in those highlighted areas of the good sands.

Q Let's assume that your top perforation is at approximately 3500 feet and that the Commission utilizes their guideline of a pressure limitation of .2 psi per foot of depth, then that will give you a surface pressure limitation of 700 pounds.

Based upon your experience and knowledge as an engineer, do you anticipate that that is going to be a sufficient enough pressure in order to allow you to dispose of the produced water as you anticipate?

A At this time from experience in the area, I don't believe it would be enough pressure. It's because we have not enough experience in the immediate area with the Cherry Canyon, it's going to be hard to tell till we get in there and actually perforate and dispose water.

Q At this point, though, you anticipate that you're likely to need a larger pressure limitation than is customarily granted initially.

A Yes, sir.

Q In what anticipated range would you expect at this point without having actually done the work?

A Probably 1500 to 2000 pounds.

Q Would you request the Examiner provide in the disposal order that approves this application an administrative procedure to allow you to conduct a step rate test, submit that to the District Office and thereby

obtain a larger pressure limitation than is done if you utilize the .2 psi limitation?

A Yes, sir.

Q Let's go into some of the specifics now, Mr. Johnson, of the Form C-108.

Exhibit Number Three is simply the form itself, Mr. Johnson, if you'll turn behind that, turn to the landman's plat that's marked as Exhibit Number Four. What is that intended to show?

A Exhibit Four is the plat which indicates the location of the proposed well which is indicated by the red dot in Section 27. All leases and wells surrounding the well within two miles are located on this map.

The highlighted circle indicates the subject well's area of review.

Q Within that area of review, have you found any plugged and abandoned wells that penetrate through the Cherry Canyon formation or formerly produced from the Cherry Canyon formation that have been plugged and abandoned?

A No, there is none.

Q Using this as a reference point, describe for us to your knowledge, where is the closest point of fresh water in this immediate area?

A Okay. In Section 22, which is located

directly north of Section 27, and approximately a half mile north of the proposed well, there is some residences along that bottom part of the section, but as far as the information we can find, they're are all getting their water from the City of Loving, and there is not any active water wells in the area of review.

Q Based upon your investigation, what is the deepest depth of any water that might be considered fresh water or potable water?

A The Rustler formation, which the base of the Rustler is at 400 feet.

Q The top potential perforation in the Cherry Canyon s 3500 feet.

A 3800.

Q 3800 feet.

A Yes, sir.

Q Is that a sufficient enough separation between the disposal formation and the deepest fresh water formation to isolate the disposal fluids and keep them separate from any fresh water sources?

A Yes, that is.

Q Do you find any indication of faulting or other means by which produced water could migrate out of the Cherry Canyon and move up into the Rustler?

A No, sir.

Q Have you notified the surface owner at the location to where the disposal well is to be located to obtain his consent and concurrence to the disposal operation?

A Yes, we have. We have a verbal agreement with him.

Q And have you also notified any of the offset operators within a half mile radius of your disposal well of this application?

A They all have been notified and all are excited about it.

Q All right, we received no objection to your proposal.

A No.

Q Let's turn now, sir, to Exhibit Number Five, which is the schematic. Would you identify and describe that for us?

A Exhibit Number Five is a schematic of the wellbore of the proposed salt water disposal well, which includes each casing string and size, the setting depth, sacks of cement to be used, hole size, and anticipated cement top.

A description of the tubing is also included and packer with setting depth to be used.

Also included is the disposal interval,

proposed volume and anticipated surface pressures.

Q In proposing the design for this new disposal well, in your opinion as an engineer is it going to be adequate and efficient to accomplish the objective desired?

A Yes.

Q Will you have a pressure gauge on the surface to monitor that annual space between the tubing and the casing?

A Yes, there will be.

Q And what will you fill that space with?

A I will use a packer fluid that will be KCL water and a corrosive type chemical.

Q This is plastic lined tubing?

A It's fiberglass tubing.

Q And you have adequate cement continuity from the disposal interval back up tying yourself back into the surface.

A We have plans to circulate cement to the surface on both strings of casing. If needed on the long string, we'll run a caliper survey to estimate our volume.

Q Turn now, sir, to Exhibit Number Six, which continues on with your tabulation of information for the C-108. What have you shown?

A Exhibit Number Six is -- is a tabulation

of the data on all wells of public record within the area of review of the subject well.

Also additional information is included here submitted with the C-108, which was submitted to the Oil Conservation Division.

Q In making your investigation of those producing wells that are shown on the tabulation, do you find any of those that are suspect of being sources by which disposal fluid might migrate through those wellbores up to shallower fresh water sands?

A No, there is not.

Q Do you propose to stimulate the well?

A Yes. We're hoping we'll only have to acidize the well with approximately 5000 gallons of HCL.

Q Have you had water analyses conducted on the produced water from the two formations, the Brushy Canyon and the Bone Spring, to determine whether or not they are going to be compatible?

A Yes, we have. It is included in Exhibit Seven and they are compatible.

Q Let's look at Exhibits Seven and Eight, having you taking those exhibits together, and describe what each one is.

A Exhibit Seven is the analysis of the source water to be disposed of and Exhibit Eight is an

analysis of the produced water from the receiving formation, and I might say that this Exhibit Eight of the produced water from the receiving formation was the closest we could find at the same depth at which we plan on disposing into.

Conclusions are that there would be a negative sulfate and/or carbonate scaling tendency. The low sulfate concentration in the disposal fluid will water down the higher concentration in the receiving formation and although the total hardness in calcium concentrations are higher in the disposal fluids, a similar pH of the fluids should delete any carbonate scaling. And also the analysis indicated a low pH not conducive to any excessive corrosion.

The combination of the fluids does not appear to harbor any adverse consequences to the receiving formation.

Q Can we find the well from which the water analysis shown on Exhibit Eight was taken if we look at Exhibit Number One?

A No.

Q It's outside the area shown on that plat?

A Yes.

Q But it comes from water produced from

the Delaware formation?

A From the Delaware formation in Eddy County at the similar depth at which we're going to be disposing into.

Q Would you turn now, sir, and identify Exhibit Number Nine?

A Exhibit Number Nine is our Form C-101 which was submitted to the Oil Conservation Division.

Q And Exhibit Number Ten?

A It's our Form C-102, which also was submitted to the Oil Conservation Division.

Q It shows the surveyed location for the disposal well, gives the footages?

A Yes, it does.

Q And Exhibit Number Eleven?

A Exhibit Number Eleven is just a schematic of the blowout prevention equipment to be used while drilling the proposed well.

Q When we look at Exhibit Number Twelve, and if you'll turn to the return receipts attached behind the certificate, there are four return receipts shown. Would you identify those parties for us?

A HNG, Amoco, and (not clearly understood) but actually Amoco and HNG aren't even in the area of review, but we went ahead and sent notices to them and Billie

Queen is our surface owner.

MR. KELLAHIN: That concludes my examination of Mr. Johnson.

We move the introduction of Exhibits One through Twelve.

MR. CATANACH: Exhibits One through Twelve will be admitted as evidence.

CROSS EXAMINATION

BY MR. CATANACH:

Q Mr. Johnson, did you do an examination of all the area of review wells?

A Yes, I did.

Q Did you say that they were -- these were submitted with the prior application?

A Yes, they were.

Q Information on these wells?

A Yes, they were.

Q Do you know if those -- if that information included casing and cementing data?

A I don't believe it did. It's the same information as we have here and actually all the -- all the wells that are tabulated are operated by Parker & Parsley, except for one, which is operated by Milton Wessels.

Q I'm going to ask you to go ahead and

submit that casing and cementing data for all those area of review wells subsequent to the hearing.

A Okay.

Q The -- the produced water analysis from the Cherry Canyon, that was from a Mobil Well?

A Yes, sir. What I did, I had (not clearly understood) dig up the nearest analysis they could find and at that depth and that's what they came up with and I apologize for not having an exact location on it.

Q Do you know approximately where -- how far it's located from this well?

A No, sir, I don't.

MR. KELLAHIN: We'd be happy to find out and submit that to you, if you like.

MR. CATANACH: I have no further questions of the witness. He may be excused.

And there being nothing further in this case at this time, it will be taken under advisement.

(Hearing concluded.)

C E R T I F I C A T E

I, SALLY W. BOYD, C. S. R. DO HEREBY CERTIFY that the foregoing Transcript of Hearing before the Oil Conservation Division (Commission) was reported by me; that the said transcript is a full, true and correct record of the hearing, prepared by me to the best of my ability.

Sally W. Boyd CSR

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 9658, heard by me on April 26 1985.

David R. Catanach, Examiner
Oil Conservation Division