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

5 June 1985

EXAMINER HEARING

IN THE MATTER OF:

Application of Sage Energy Company for salt water disposal, Roosevelt County, New Mexico. CASE 8603

BEFORE: Gilbert P. Quintana, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division: Maryann Lunderman
Attorney at Law
Energy and Minerals Dept.
Santa Fe, New Mexico 87501

For the Applicant:

MR. QUINTANA: We'll call next Case 9603.

MS. LUNDERMAN: Application of Sage Energy Company for salt water disposal, Roosevelt County, New Mexico.

MR. QUINTANA: This case was prior heard by Mike Stogner.

Are there further appearances or testimony in this case?

If not, this Case 9603 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 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. 8603 heard by me on June 5, 1985.

Gilbert P. Quintana, Examiner
Oil Conservation Division

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
State Land Office Building
Santa Fe, New Mexico

22 May 1985

EXAMINER HEARING

IN THE MATTER OF:

Application of Sage Energy Company for salt water disposal, Roosevelt County, New Mexico. CASE 8603

BEFORE: Michael E. Stogner, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division: Jeff Taylor
Attorney at Law
Legal Counsel for the Division
Oil Conservation Division
Santa Fe, New Mexico 87501

For the Applicant: W. Thomas Kellahin
Attorney at Law
KELLAHIN & KELLAHIN
P. O. Box 2265
Santa Fe, New Mexico 87501

I N D E X

E X H I B I T S

MR. STOGNER: Call next Case Number 8603.

MR. TAYLOR: The application of Sage Energy Company for salt water disposal, Roosevelt County, New Mexico.

MR. KELLAHIN: If the Examiner please, I'm Tom Kellahin of Santa Fe, New Mexico, appearing on behalf of the applicant, and I have one witness to be sworn.

MR. STOGNER: Is there any other appearance in this matter?

Will the witness please stand and be sworn?

(Witness sworn.)

JAY HARDY,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Mr. Hardy, for the record would you please state your name and occupation?

A My name is Jay Hardy and I'm a petroleum engineer for Sage Energy Company.

Q Mr. Hardy, have you prpeviously testified before the Oil Conservation Division and had your qualifications as a petroleum engineer accepted and made a matter of record?

A Yes, I have.

Q And pursuant to your employment by Sage Energy Company, have you made a study of the facts surrounding this application for the use of this well for salt water disposal?

A Yes, I have.

MR. KELLAHIN: We tender Mr. Hardy as an expert petroleum engineer.

MR. STOGNER: Mr. Hardy is so qualified.

Q Mr. Hardy, I've placed before the Examiner the C-108 and all the attachments to that application.

Would you briefly describe for the Examiner what Sage seeks to accomplish with this application and then we'll get into the substance of the application itself?

A Sage seeks to convert a current producing well to salt water disposal and use that well to dispose of the produced water from two other wells that it operates in this area, and this is strictly a salvage operation and if

we aren't granted permission to do this, we will plug all three wells.

Q When you talk about the wells involved, what formation do the producing wells produce from?

A They produce from the Bough C in the Penn section.

Q The third well that's to be used for disposal purposes also has produced from the Bough C?

A That's correct.

Q And all three of these wells are located on the same lease, are they?

A That's correct.

Q Would you estimate for the Examiner the approximate maximum daily rates in barrels of water that you need for the disposal well?

A We estimate 100 barrels a day.

Q The application has requested a maximum of 500 barrels a day. Would that maximum rate take into consideration your anticipated future increased water production from this lease?

A Yes, it would.

Q Now is the method of disposal one that will allow the water to be disposed of in the disposal well under vacuum, or will it require pressure?

A We plan to do this under vacuum.

Q All right, sir, let's turn now, if you will, please, to the plat that's attached to the application and let's use that plat to identify the wells of interest.

First of all, if you'll identify for the Examiner the proposed disposal well.

A The proposed disposal well is the Cabot State No. 4 in the southwest of the northeast quarter.

Q All right, sir, and what are the two producing wells from the Bough C that will produce water for this well?

A The two producing wells are the Cabot State No. 3, which is in the northeast of the northeast, and the Midwest State No. 1, which is in the northeast of the northwest.

Q Also on the plat are two other wells to the south of the disposal well. What's the status of those wells?

A Those wells were plugged in about 1974.

Q And they appear on other documentation in the application?

A That's correct.

Q All right, sir, let's turn now to the half mile radius circle and within that area of review, Mr. Hardy, would you identify for us the wells and the status of those wells within that area?

A The No. 4 is the disposal well, which is the center of the circle, and on your plat there it probably shows it plugged, but that's not correct. That well is currently producing.

The No. 3 is in the northeast of the northweast and we operate that. That's about a 3-barrel well. It makes about 30 barrels of water.

The Midwest State No. 1, which is in the northeast of the northwest, we operate that. It's a producing well; pumps about 16 barrels of oil and 60 barrels of water.

And then in the northeast of the southeast is the Cabot State No. 2, which was P&A'd and in the northeast of the southwest is the Cabot State No. 1, which was also P&A'd.

Q Of the two producing wells, you produce approximately 100 barrels of water a day. What is being done with that water?

A That water is being trucked.

Q And at what expense to Sage, Mr. Hardy?

A It costs about $1.20 a barrel to truck it.

Q All right, sir, let's turn now to the wellbore schematic for the proposed injection well and have you describe for the Examiner how you propose to complete

this well for disposal.

A The schematic shows the way that we plan to do this. We plan to use the current 2-inch tubing which is in the well, internally plastic-coated, and set it on a Baker Model R packer at 9700, plus or minus, above the perforations, which are at 9777 to 9795, and that is the current disposal setup, the way we plan to do it.

Q Will you fill the space between the tubing and casing with an inert fluid?

A Yes, we will use the packer fluid.

Q And you'll have a pressure gauge or some other monitoring device at the surface?

A Yes, we will.

Q To detect for leaks?

A Yes.

Q All right. All right, sir, let's turn now to the additional information and have you describe for us the next schematic.

A The next schematic is the Cabot State No. 3, the way it is currently completed with the perforations at 9709 to 9734; 5-1/2 inch casing.

The surface 13-3/8ths was circulated to the surface with 425 sacks; the 8-5/8ths at 4050, and a calculated top of the cement at 3300 feet, and then the calculated top of the cement on the long string is 7500 feet.

And that well is currently pumping.

Q Okay. Have you had any mechanical difficulty with this well?

A Not to my knowledge.

Q In your opinion is it properly completed in such a way that the produced water reinjected into the Bough C will remain confined to the Bough C and that this wellbore would not be used as a conduit to allow that water to migrate up into fresh water sands?

A That's the way I see it.

Q All right, sir. Let's turn now to the schematic on the other producing well, the No. 1 Well.

A The Midwest State No. 1 was completed with 5-1/2 set at 10,030; was perforated from 9802 to 9828. It was cemented with 400 sacks. Calculated top of the cement is 7569.

The 8-5/8ths was set at 4065, cemented with 300 sacks. Calculated top of the cement inside an 11-inch hole is 3300 feet and the 13-3/8ths surface was set at 416 and there's a note in the record that cement circulated.

And it's perforated from 9802 to 9828, and that's the well that pumps 16 barrels of oil and 60 barrels of water.

Q All right, sir, let's turn to the schematics on the first of the plugged and abandoned wells, which

will be the Cabot State No. 1 Well? Is that what you have?

A That's correct.

Q All right, sir, describe for us whether you have an opinion as to this well being adequately plugged and abandoned.

A This well was plugged by Roger Hanks and we retrieved the record from the State and these are the plugs that are in place, starting at the bottom we have a 25-sack plug above the perforations and we have a 20-sack, 25-sack plug at 5800 feet, where the 5-1/2 was pulled.

Then we have a 25-sack plug inside and outside the 8-5/8ths at 4055.

We have a 25-sack plug at 1375 inside and outside the 8-5/8ths, wich was pulled.

Then we have a 25-sack plug at the base of the 13-3/8ths inside and outside.

Then we have a 10-sack plug set at the surface.

In my opinion that well has been plugged.

Q All right, sir, let's go to the last of the two plugged and abandoned wells within the area of review and have you describe the status of that wellbore.

A Right. The Cabot State No. 2 was drilled by Hanks and plugged by Hanks very similar to the last one, the Cabot State 1.

It has a 20-sack plug here across the perforations, which the other one didn't have.

It has a 35-sack plug at the 5-1/2 casing stub.

It has a 35-sack plug at the top of the Glorieta at 5503.

It has a 35-sack plug inside and outside the 8-5/8ths at the base of the casing.

It has a 75-sack plug in and out of the 8-5/9ths casing stub, which was pulled, and it has a 75-sack plug at the base of the 13-3/8ths inside and outside.

It has a 10-sack plug at the surface with a marker.

And in my opinion that well was properly plugged.

Q All right, sir, let's turn to the water analysis information that you have submitted in the C-108, and let me direct your attention to the water analysis on the Cabot State No. 4 Well.

A This analysis was obtained in 1975, showing that the chlorides in milligrams per liter are approximately 56,000; the magnesium, 3900; calcium 14,350; sulfates, 600; bicarbonates, 204 -- 205; soluble iron is 400 with a note at the bottom that this contains some spent acid water.

Q Do you have additional produced water analyses?

A Yes, I do. Because of that note I had another analysis run and that's the next exhibit there, which shows that it is very similar to that produced water that was obtained in 1975. The chlorides are a little higher.

Q All right, sir, have you also made an investigation of the status of fresh water in the area?

A Yes, I have.

Q All right, do you have a fresh water analysis?

A Yes, I do.

Q Would you describe from what water well that sample was taken?

A This is from the -- what they call the Cabot Windmill, which is in the southwest quarter of the southeast quarter of Section 32.

It's the only well that we could find in the section and you can see that the calcium is 200 milligrams per liter. There's no magnesium. Chloride at 1000 milligrams per liter; no sulfates; bicarbonates are 280 and there's no soluble iron.

Q Have you made an investigation through the State Engineer's Office to determine whether or not

there are any other permitted water wells within the area of review?

A Yes, I have.

Q And are there?

A There are none.

Q In your opinion, Mr. Hardy, is the surface casing and the cementing program of the producing and abandoned wells in the area such that they have isolated off the fresh water aquifers?

A In my opinion, yes.

Q All right, sir, I think the next exhibits are your notices to offset operators and to the surface owner?

A That's correct.

Q And who is the surface owner at the disposal well?

A The surface owner is -- the State owns the surface but it's being leased to a Mr. W. H. Lovejoy from Milnesand, New Mexico.

Q And you have provided notice to Mr. Lovejoy?

A Yes, we have.

Q And you've also provided notice to all the offset operators?

A That's correct.

Q Has any of the operators or the surface owners objected to your application?

A No, they haven't.

Q Mr. Hardy, have you caused the geology in this area to be examined to determine whether or not there are any open faults or other hydrologic connections between the Bough C and the shallow fresh water sands?

A Yes, we have.

Q And are there any?

A No.

Q Was Exhibit One, which is te C-108 and its attachments, prepared by you?

A It was prepared by my clerk at my instruction.

Q All right, sir, have you reviewed these documents and ascertained whether they are true and accurate to the best of your knowledge?

A Yes, I have.

MR. KELLAHIN: That concludes our examination of Mr. Hardy.

We move the introduction of Exhibit Number One.

MR. STOGNER: Exhibit Number One with all its parts will be admitted into evidence.

CROSS EXAMINATION

BY MR. STOGNER:

Q Mr. Hardy, what is this Well No. 4 producing at this time, or is it producing?

A It's not producing at the present time.

Q When did it cease producing?

A About six months ago.

Q Did it water out or --

A Watered out; uneconomic.

Q Are the other surrounding wells, the No. 2 and the No. 1, are they on the verge of watering out, also?

A The No. 2 now is plugged. The No. 3 is producing 30 barrels of water.

The No. 1 is the best well there, which is the Midwest State.

Q So the reinjection of this water back into the same formation should not interfere with production of the No. 1 and No. 3?

A No.

MR. STOGNER: I have no further questions of this witness.

Are there any other questions of Mr. Hardy?

CROSS EXAMINATION

BY MR. TAYLOR:

Q Did you send this to the Land Office, also?

A Yes, we did.

Q Did you receive (not understood) from the Land Office?

A Yes, we did.

Q Thank you.

MR. STOGNER: Are there any other questions of Mr. Hardy?

If not, he may be excused.

Is there anything further in Case Number 8603 at this time, Mr. Kellahin?

MR. KELLAHIN: No, sir.

MR. STOGNER: Case Number 8603 will be continued to the Examiner Hearing scheduled for June 5th, 1985. At such 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 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. 8603 heard by me on 22 May 1985.

Examiner
Oil Conservation Division