BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
September 18, 1968

REGULAR HEARING

IN THE MATTER OF:

Application of T. J. Sivley for an exception to Order No. R-3221, as amended, Lea County, New Mexico

Case No. 3860

BEFORE: A. L. PORTER, JR.
Examiner

TRANSCRIPT OF HEARING

MR. PORTER: The hearing will come to order, please. We'll proceed with Case 3860.

MR. HATCH: Case 3860. Application of T. J. Sivley for an exception to Order No. R-3221, as amended, Lea County, New Mexico.

MR. PORTER: The Commission will recognize Mr. Losee, the Counsel for the Applicant.

MR. LOSEE: A. J. Losee, Artesia, New Mexico, representing Mr. T. J. Sivley, and I have one witness: Mr. Gray.

MR. PORTER: Mr. Gray, would you stand and be sworn.

(Witness sworn).

MR. PORTER: Mr. Heidel, were you going to enter an appearance, too, in this case?

MR. HEIDEL: Yes, similar appearance as in the previous case. The extent of any testimony we will give will be identical to the other case. It could be copied, I assume, the same objection. I mean, it could be copied out of the previous record.

MR. PORTER: I imagine that's a safe assumption. Are there any other appearances in this case? Proceed, Mr. Losee.

RALPH GRAY

called as a witness, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. LOSEE:

Q Would you please state your name, please?

A Ralph Gray.

Q Where do you live, Mr. Gray?

A Artesia, New Mexico.

Q What is your occupation?

A Consulting Engineer.

Q How long have you been so engaged?

A Approximately ten years.

Q And prior to that time, you served as an engineer for how many years?

A Twenty years.

Q Have you previously testified before the Commission?

A Yes, sir.

MR. LOSEE: Mr. Porter, are Mr. Gray's qualifications acceptable?

MR. PORTER: The Commission considers Mr. Gray qualified.

Q Mr. Gray, would you explain to the Commission the purpose of this application?

A The purpose of this application is to authorize the Applicant to continue disposing of its produced water from the Federal Silver Lease into unlined surface pits.

(Whereupon, Applicant's Exhibits Numbers 1 through 8, inclusive, were marked for identification.)

Q Please refer to what has been marked as Exhibit 1 being a map of the area and explain what it portrays on this exhibit.

A Exhibit 1 is a map of the Lynch Pool and the surrounding area. This shows the well and the leases in the area, ownership, and the T. J. Sivley Federal Silver Lease indicated by the yellow coloring in the South Half of Section 28 of Township 20 South, Range 34 East.

Q Please refer to what has been marked as Exhibit 2 being the well data for the three wells on the Sivley Federal Silver lease and explain what is portrayed by this exhibit.

A Exhibit 2 shows a tabulation of well data on the three producing wells on the Sivley Federal Silver Lease. These wells were completed during 1959.

The approximate total depth is 3700 feet and five and a half casing was cemented in each case above the pay. The wells are completed with open hole formations exposed. The initial potential was 51 barrels of oil per day on Number 1, 180 barrels of oil per day on Number 3, and 71 barrels of oil per day on Well Number 4.

Q Please refer to what has been marked as Exhibit 3 being a log of the Federal Silver Number 3 Well and explain what is shown on the log.

A Exhibit Number 3 is presented to show a typical well log for this lease. This is a portion of the gamma-ray neutron log for the Number 3 Well and this shows the location of the five and a half inch casing and shows the formations exposed in the lower portion of the hole.

The pay was encountered in the bottom six feet of the hole.

Q Would you explain to the Commission the general nature of the reservoir from which these three wells are producing?

A These wells produce from the Yates-Seven Rivers dolomite. This formation has an active water drive and, at the present time, a substantial amount of water is being produced on the lease and these wells have characteristic high fluid levels and as we normally expect in a water drive type of a field.

Q Please refer to what has been marked as Exhibit 4 being a tabulation of the oil and water production on this Federal Silver Lease and explain what is portrayed and shown on this exhibit.

A Exhibit Number 4 shows a tabulation of oil and water production; figures from 1959 through 1967 show figures for the lease production. Then, monthly oil and water production is shown for the period January, 1968 through June, 1968.

You will note that the cumulative oil production for the three wells as of July the 1st, 1968, is 367,812 barrels.

The estimated cumulative water production for the same three wells is 109,955 barrels.

Q Mr. Gray, from this exhibit and from your knowledge of this or these wells, do you know what the average volume of produced water per day is from this lease?

A At the present time, it's approximately 70 barrels per day.

Q Please refer to what has been marked as Exhibit 5 being a Halbert water analysis and explain the important data as shown on this exhibit.

A Exhibit 5 is a laboratory water analysis or a sample of the water produced from the Federal Silver Lease. This analysis was made on August the 1st, 1968. This analysis shows a chloride content of 3400 parts per million, magnesium, 200, calcium, 710, sulphates, 1430, bicarbonates, 830, and the total solids are 6,570 parts per million.

Q Mr. Gray, are you familiar with the testimony that was given in Case Number 3806 which served as the basis for the exception to Order R-3221 with respect to the maximum limit of cattle consumption of total solids?

A Yes, sir.

Q What is that maximum limit?

A It was stated that the maximum limit is 15,000 parts per million total solids.

Q So that, actually, the solids in the produced water from this lease are something less than half the maximum solids that cattle can consume?

A Yes. They're less than half and, therefore, are well within the range that cattle can consume and utilize.

MR. PORTER: Shouldn't have to salt the meat. You shouldn't have to salt the meat if they drank that 15,000 parts per million. You don't have to answer that.

Q Mr. Gray, are you familiar with some of the analyses of the Pecos River below Carlsbad with respect to chloride content and total solids?

A Yes, I am.

Q What have some of those analyses revealed with respect to chlorides and total solids?

A Various tests have been run by various state and government agencies, and it has been determined that as high as 16,000 parts per million chloride have been found in samples from the Pecos River in the vicinity of Red Bluff and the average over a period of several months in which tests were run was 3400 parts per million chloride at Red Bluff which was the same, essentially, as this water. At Peers Canyon, slightly north of Red Bluff, the average parts per million chloride was 3470. So this water is equally as good as water going into Red Bluff there in the Pecos River.

Q Do you know what that water is used for in Red Bluff?

A I understand it's used for irrigation.

Q Please refer to what has been marked as Exhibit 6 being the subsurface structure map of the Federal Silver Lease and the surrounding area and explain to the Commission the importance of this exhibit.

A Exhibit 6 is a structural contour map which is contoured on top of the Yates Formation. This is contoured on an interval of ten feet. It's evident that there are at least three distinct structural features in this area: the Old Lynch Pool, as we often refer to it, which is in the south part of Section 27 and Section 34 appears to be an individual structural feature, and there's a second separate feature up in the south part of Section 22 and the north part of Section 27. Then there's a separate distinct feature on the Sivley Silver Federal Lease. I think it's important that there are two dry holes drilled on the eastern portion of the Sivley Lease.

These dry holes separate this area from the Old Lynch area.

Q Does that indicate to you that the Old Lynch area and the Federal Silver are separate reservoirs?

A That's the way it appears, yes, sir.

Q When was the first well on the Old Lynch completed, approximately?

A The discovery well in the Lynch Pool was completed in 1929.

Q And was most of the development in that Old Lynch area completed many years ago?

A Yes. It was essentially developed at the time that the Sivley Wells were drilled.

Q Actually, Mr. Gray, isn't it true that most of the Old Lynch wells were completed many years before the first well on the Federal Silver?

A Yes, sir.

Q Now, are you familiar with the proposed program of Sinclair Oil and Gas Company which operates some wells up in this north structure area and with the proposed program of Texaco that operates some wells in the Old Lynch Pool to dispose of their produced water?

A I'm familiar to this extent: We have received a notice previously that Sinclair Oil and Gas Company was applying for permission to inject water into a well in Unit L of Section 22 in this same township. And also, it's my understanding that probably Texaco will ask for authority to inject their water into a well or wells.

Q Do you know any reason or reasons why the Commission should consider this application of Mr. Sivley, different than the proposed programs that were of Sinclair and Texaco?

A Yes, I think there are several reasons. Mr. Sivley has always had somewhat different regulations to live under. The Sivley lease is within the State potash area and it has been necessary for these wells to be drilled on the State potash rules which require that the surface casing be set into the top of the Rustler enhydrite, which, in this area, is way down about sixteen or 1700 feet, and this pipe has to be cemented back to the surface. So other wells in the Lynch area are outside of the potash area, so Mr. Sivley as in some respect has had different rules to live under.

I think there are other things involved. We know that there's a difference in philosophy of major oil companies and small independent companies. It's been pretty well demonstrated, I think, that generally speaking, the major oil companies are reluctant to ask for exceptions to these rules even though there may be cases where they're justified.

I'm aware of an operator, a small independent operator, in the Dos Hermanos Pool who, a few months back, had a hearing and requested authorization to continue to inject produced water into open pits in the Dos Hermanos Pool and the Commission heard the evidence and they saw fit to grant an exception in this case and to authorize the disposal of water into these open pits, so I really think that if the operator in this case had been a major oil company operator, that they never would

have made application for an exception, that probably they would have, probably in this case, plugged their wells because they didn't actually support any other expense, but there is this difference in the policies of companies and I think that may well exist in this case.

Also, we'll present evidence later to show that if there is any movement of surface waters in this area, the movement will be in the direction that's towards a depression in the potash area where, presently, large volumes of highly concentrated salt water are being injected, so we don't feel that there is any possible contamination of any domestic water supply involved.

Another factor is that this water has such a low salt content that we recognize that it's even usable for stock watering in its present condition and, certainly, if it's mixed with any other surface waters, it might have less solids than this does. The combination of the two waters is even going to be better, so all of these circumstances, I think, to me, tell me that regardless of what action some of these other companies might take in this case, the operator is justified in his application.

Q Now, also, Mr. Gray, is it not true that both Sinclair and Texaco production is what you believe to be in different reservoirs?

A Yes, sir.

Q And that is, to Texaco, the drainage of many of the underground of the produced water is in an opposite direction than that of the Silver?

A Yes, sir.

Q Please refer to the large map on the board marked as Exhibit 7 and explain what is the importance of this exhibit and the matters which it portrays.

A May I explain that the map on the board is just an enlargement of the smaller map that we show as Exhibit 7 in the other exhibits. Exhibit 7 has been prepared to show several important features in this area.

This map shows the outline of a series of townships of starting in the north row of Township 19 South and going southerly to Township 20 South and Township 21 South. And then the map extends from Range 31 East on the left to a half or part of Range 36 East on the right portion of the map.

The Sivley Federal Silver Lease is shown in Township 20 South, Range 34 East, and in this case, the outline of Section 28 is actually shown on the map, the Sivley Lease occupying the southern half of that section.

Now, we have shown the outline of our borders of the State potash area in red, and with a specific symbol in the legend here, and this red area extends over and includes the Sivley Federal Silver Lease. There's a separate portion of the

State potash area located south of that approximately five or six miles.

Now, the Federal potash area is indicated by the green line and this area isn't quite as irregular but it's a little more inclusive than the State potash area and, yet, also includes the area.

Order Number R-3221B established an area encompassing the potash mines and mills which areas are exempt from this no-pit order. And a portion of this area is indicated by the purple line. That, the eastern portion of this area, terminates approximately one and a half townships west of the Silver Lease.

Now, also, you will note some yellow and green dots. We've shown these in Townships 20 South, Range 33 East, and 20 South, Range 34 East. The yellow dots indicate the location of shallow water wells and, by shallow, we mean less than 300 feet deep. The green dots represent the location of deep water wells and these vary from seven to 800 feet in that neighborhood. This information was obtained from the records of the State Engineer's Office in Roswell.

The closest water well to the Sivley Lease is located approximately one and three-quarter miles to the northeast and this is a shallow stock well on the Berry Ranch which encompasses a large portion of this area including the Sivley Lease. There's also a deep well in the eastern part of Township 20 South,

Range 33 East which is also on the Berry Ranch. That will give you some indication of the extent of the ranch here.

Now, the contour lines that you see are copied or traced from Plate 1 of a Geological map of southern Lea County, New Mexico, which is included in Ground Water Report Number 6 entitled "Geology and Ground Water Conditions in Southern Lea County, New Mexico," by Alexander Nicholson, Jr., and Alfred Clebsch, Jr. of the U. S. G. S., published in 1961 by the State Bureau of Mines and Mineral Resources and the New Mexico Institute of Mining and Technology.

Q Why do you consider those contours on the Red Bed important, Mr. Gray?

A Well, we might refer to passage of Ground Water Report Number 6 on page number 53. The authors are describing the currents of ground waters and the movement of ground waters and related matters, and I will just read the first two sentences there on page 53. The author states: The underlying Red Beds are relatively impermeable. They form a lower confining layer which prevents further downward movement.

And the authors explain that the Red Bed structure then is a controlling factor, generally, on any movement of surface waters.

Q Mr. Gray, let me make sure the Commission understands. The report you just read from was the report actually prepared

by Mr. Nicholson and Mr. Clebsch?

A Yes, sir.

Q Excuse me, go ahead.

A No, I'd like to call attention to some major features and locations of the National Potash Company. The National Potash Company is located in the extreme western central portion of Township 20 South, Range 32 East. And, therein, the area which is a salt lake depression which is shown as Williams Sink on many of the maps. Also, there's a salt lake which is called Laguna Plata and it's located in the northern half of this same township. This lake is also used by National Potash Company to dispose of their salt water.

It's my understanding that approximately 22 to 23,000 barrels of highly concentrated salt water per day are being disposed of in the large area which we show as Williams Sink. Then there are times when they intermittently divert flow into what we show as Laguna Plata and I think Mr. Stamets' testimony in a previous hearing indicated that there was approximately 3,000 barrels of salt water per day which was being put into that lake.

Q Mr. Gray, before you go any further. Are you familiar with Mr. Stamets' testimony in Case 3806?

A Yes, sir.

Q Let me refer you to page 16 of the transcript of the

testimony and ask that you read the portion there pertaining to National Potash's use of the Laguna Plata Lake for disposal of their brine.

A Well, I'll start reading at the start of the last paragraph on page 16 of the transcript of this hearing. I'm quoting now: "One thing I failed to mention earlier, National Potash Company has a rather limited sized pit and I understand when it rains, they have to pump some of their water over here into this natural lake, Laguna Plata. However, the volume would represent no more than about 3,000 barrels a day if you average it out over a year, and that is about one percent of what potash mines dispose of so it's not a significant figure now.

"I was hesitant to take this area in for that small volume and I'm not certain what the drainage is from this lake."

Q Speaking of the drainage, Mr. Gray, does your map also point out a crest and some Red Beds and also some elevation on the surface?

A Yes, sir. The structural feature of this contour map shows a large depression area which is in the vicinity of all of these salt lakes which we mentioned, and then as we either go in a direction north or in a direction east or in the southeasterly direction from this depression, why, we get higher on the Red Bed structure until we reach an area which occurs in the extreme south part of Township 20 South, Range 34 East. You will

note that there are some enclosed contours in this area indicating a high structural feature. So we have drawn a dashed line through the high portions of these areas which we refer to the crest of the Red Bed structure.

Q Do you also have on this map some elevations on the surface?

A Yes, we do have. We have referred to a topographic map which has been published by the United States Geological Survey and starting at a point at the southeast corner of Section 28 of Township 20 South, Range 34 East, the highest elevation at that point is 3733.

Then, diagonally across the section at the northwestern corner of that same section, the elevation is 36--I have to refer to my other map. I can't read that figure.

Q 3661?

A 3678 is that figure. And then at a point approximately one mile west of that point, the elevation is 3665. Then progressing another mile in a westerly direction, the other surface elevation is 3661. Another mile in a westerly direction and the surface elevation is 3642. Another mile, and the surface elevation is 3608. Then we go in a northwesterly direction towards these depression areas and approximately one mile northwest, the elevation is 3569 and the final elevation point which we show just before reaching the Laguna Gatuna Lake

is 3536. So on the surface, the elevation dips down towards this depression area in the salt lakes and, essentially, it conforms with the structural conditions on the Red Bed Formation.

Q Now, at this point, Mr. Gray, based on the statement by Mr. Nicholson and Mr. Clebsch of the impervious character of the Red Beds and the elevation of the surface, do you have an opinion as to what happens, if anything, to the produced water from the Federal Silver Lease after it's put on the ground?

A Well, I think if there is any movement at all, you'd have to say it would be in a northwesterly direction. It would have to, not only follow the surface contours, but would have to follow the contours of the Red Bed Structure.

Q And would that go towards the Laguna Plata then?

A Yes, that direction is towards the salt lakes which we mentioned, the area in which the salt waters from the potash companies is being deposited.

Q Now, Mr. Gray, are you familiar with the testimony in 3806 with respect to the total brine water disposed of each day by all of the potash companies together with the average total solids in that water?

A Yes, sir.

Q What is that total volume and total solids?

A I think it was stated in this hearing that the total volume in the potash area was something like 301,000 barrels per day.

Q What about the total solids?

A The total solids, it was pointed out that these solids vary with different potash companies, but kind of trying to take an average figure on the basis of information that we have, we would state that the total solids or at least average 200,000 parts per million.

Q Now, refer at this point to the testimony of Mr. Stamets that you just read about the 3,000 barrels per day being disposed of into Laguna Plata and using this approximate 200,000 parts per million of solids together with your previous estimate of Mr. Sivley's 70 barrels per day and approximately 6500 total solids, do you have a comparison between total brine water that the potash companies put on the ground each day in the potash area and the water put by National Potash in the Laguna Plata Lake and the water put by Mr. Sivley, produced water which you've testified to, if there will be any drainage, it will be in that area.

A Well, we have estimated that there is at least 10,000 times as much salt being deposited into the large sink area there than is being produced on the Sivley Lease.

Q Do you also have the estimate of the total solids in

the entire exempt area in relation to the Sivley Lease?

A Well, we estimate that this comparison would be, the total potash area, is depositing something like 132,000 times more salt than would be deposited by the Sivley Lease.

Q Now, Mr. Gray, referring back to your map again, would you point out the Laguna Plata Lake and its relationship to the easterly boundary of the exempt area, the area exempt by the no-pit order?

A The Laguna Plata, the western portion of the Laguna Plata, is approximately on the eastern boundary line of the exempt area.

Q Now, that's the lake to which Mr. Stamets testified 3,000 barrels per day going in?

A Yes.

Q From the U. S. G. S. map which showed the location of those two salt lakes, do you determine that there is a connection between Laguna Plata and Laguna Gatuna Lake?

A Yes. On these maps, this indicates a connection between those.

Q Mr. Gray, could you tell us what sections in Township 20 South, Range 32 East encompass the Laguna Plata Lake?

A There are parts of Sections 2, 3, practically all of Section 10 and part of Section 11.

Q At this point, Mr. Gray, I would hand you what has

been marked as Exhibit Number 8 being a certificate by the Lovington Abstract Company with respect to the ownership of the four sections you have just testified to. Would you, without reading the whole certificate, explain what the abstractor concluded as to the ownership of those four sections?

A Well, this states, it is further certified that the United States of America appears to be the owner of the surface and surface estate of the following described real estate in Lea County, New Mexico. And they show all of Section 3, all of Section 10, all of Section 11, Township 20 South, Range 32 East.

Q And those are the sections encompassing Laguna Plata Lake bed?

A Yes, sir.

Q Now, from the testimony that you have submitted and your research on this, do you have an opinion, Mr. Gray, as to whether or not the authorizing of an exception to Mr. Sivley permitting the continued disposal of produced water in an unlined pit from the south end of Section 28 will permit the recovery of oil from the Federal Silver Lease that would otherwise not be recovered?

A Yes. I think it's very definite that it will result in the recovery of oil that would not otherwise be recovered because if it is necessary for Mr. Sivley to construct disposal facilities and dispose of this water over a period of time, a

great deal of money will have been spent and, as a result of the increased operating cost of such an operation, the life of the lease would certainly be shortened and this would result in less oil being produced.

Q Mr. Gray, were Exhibits 1 through 7 prepared by you or under your supervision?

A Yes, sir.

Q And Exhibit 8 is the abstractor's certificate?

A Yes, sir.

MR. LOSEE: We move the introduction of Exhibits 1 through 8.

MR. PORTER: If there are no objections, the exhibits will be admitted.

(Whereupon, Applicant's Exhibits Numbers 1 through 8, inclusive, were admitted in evidence.)

Q Do you have anything further, Mr. Gray?

A Mr. Losee, we might make one more statement in regard to water wells which we have shown in some of these areas. We went to the records of the State Engineer's Office and obtained this information and the information that we were able to gain did not indicate that there were any domestic water wells at all in either of the two townships in which we have shown the location of water wells. All of the water wells are being used either for stock use or for drilling oil wells,

commercial use and that type of thing, and we know, actually, of no water supply in this area that's suitable for domestic use.

MR. LOSEE: I have no further questions of the witness.

MR. PORTER: Does anyone else have a question of this witness? Mr. Nutter.

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Gray, now you said you know of no other wells. Have you been on the site? Have you looked it over? Are there any houses anywhere in these two townships that might have a well?

A You mean in regard to water wells?

Q Yes, sir.

A Mr. Nutter, I assume that the State Engineer keeps accurate records on water wells. It's my understanding that they have an accurate record on the location and the status of all water wells that have been drilled and they keep books on these wells and, from time to time, they take readings on water levels and such as that, and I have the depths of those wells and the water levels and so forth and in cases where wells are being used for domestic purposes, well, they're classified on the State Engineer's books as domestic.

Q And in their records, you didn't see any wells that are listed as domestic wells?

A No, sir, I didn't.

Q In these townships?

A No, sir, I didn't, in these two areas.

Q Did you notice, while you were going through the records, what the quality of the water was in these various wells?

A They did not have any analyses on the waters and I tried to get some analyses from other sources and was unable to get any definite information.

Q Now, while we're talking about water quality, for the second time today, I've heard mentioned that the quality of the water at Red Bluff--Mr. Lamb got away from me and I forgot to mention this to him--The fact that the water is bad at Peers Canyon and Red Bluff isn't a good thing, is it?

A Well, I don't consider that the water is bad, I mean, in an extreme sense. This water is being used. It's being used for irrigation.

Q But a lot of money is being spent just to improve the quality of the water just up north of --

A Oh, that's true. It would be nice if it were better water.

Q But this is the bad water that's going by whether they

are doing an improvement on the quality of it?

A Well, it's usable water.

Q But in using it for irrigation, it's probably, in the long run, going to contaminate that soil. It would be ideal if the quality could be improved more than what it has been.

A It would be very helpful, yes, sir.

Q Now, if I read your structure map correctly, Mr. Gray, we have this crest at the Red Bed structure running across the south end of that township and then the Red Beds would be dipping to the north, is this correct, sir?

A That's correct. North of the crest, the dip is to the north or more accurately I guess in a northwesterly direction.

Q And also from making comparisons of the contours on top of the Red Beds and the surface elevations, there's probably about 40 of 50 feet of gravels and sands there.

A Yes, sir, above the Red Bed.

Q On top of the Red Beds. Now, if disposal were to take place on the Sivley Lease in underground pits and the water were to move through the sands and down ~~through~~ to the Red Beds, which you read from the report as being impermeable, then which direction would that water be moving?

A It should move in a northwesterly direction.

Q Right in the direction of the water wells which you depicted on the map?

A There are two water wells. One of them is a deep well and there is one shallow well which is located approximately two and a half or I'd say about two and a half miles to the northwest of the Sivley Lease.

Q Now, Mr. Gray, when you mentioned that these wells on this particular lease had been drilled in compliance with the potash rules and the wells further east on the Lynch area had not been, you didn't mean to imply that because they were drilled in accordance with the potash rules, there was any less damage from salt water disposal or less hazard from salt water disposal from these wells than there would be from the wells from the east, did you?

A No, sir. We were just trying to make the point that this operator has had to live under separate or different rules than the other portions of the Lynch Pools, so even though there may be some justification or there may be some disposal methods different than this used in the other portions of the pool, it wouldn't necessarily mean that all areas would have to be bound by the same rules. We were making a point that we have different rules to live under and that was the idea in presenting that information.

Q Not that the water was any less contaminated?

A Oh, no.

Q Now, I fail to see the significance of some of the

testimony regarding the Laguna Plata over here. Now, it's an overflow lake, but National uses it when Williams Sink gets too full, is that correct?

A That's correct.

Q So there must not be any ground drainage then directly from Williams Sink into Laguna Plata. They have to pump the water over there, correct?

A I don't know how they get the water over there. I can't answer that.

Q I believe the record that you read of Mr. Stamets' testimony said something about pumping the water over there. I'm not sure.

A Perhaps so. I'm not certain.

Q Does Williams Sink have any outlet to it?

A I can't answer that.

Q Does Laguna Plata have any outlet?

A According to the maps that we have, it shows that there is a connection between Laguna Plata and Laguna Gatuna.

Q But however, the surface elevations are dipping to the west, so the drainage would be from Laguna Gatuna to Laguna Plata, wouldn't it?

A Well, I can't answer that because I don't know what those elevations are.

Q In general, the direction is dipping to the west,

though, as evidenced by your little surface elevations.

A We ran a series of elevations from the southeastern corner of the Sivley Lease, mostly in a western direction over to the eastern edge of the Laguna Gatuna, and we didn't carry these on across, so I do have an elevation map here. If you'd like, I'll be glad to refer to it. I think it goes over, maybe, to the Eddy County line and I'll be glad to sit down and look at that and give you some indication of what happens across this township, if you'd like.

Q What I was wondering, in the long run, Mr. Gray, is whether this area here is connected on the surface with Nash Draw and Clayton Basin, which were the subjects of the hearing in Case Number 3806, or if Williams Sink is an isolated low here that doesn't have any surface connection to the just-mentioned area.

A My study hasn't extended that far and I just can't answer you. I don't know.

Q Do you know whether Laguna Gatuna is a salt lake or not?

A Yes. It's what we commonly refer to as a salt lake. It's a lake that a large part of the time is actually dry. There are periods when there is water in the lake. The authors of this Ground Water Report Number 6 make some mention of these salt lakes and, apparently, they have analyzed the material

in the bottom of the lakes and they make the statement that this material consists of salt and gypsum.

Q Now, this would be true, not only of Williams Sink and Laguna Plata, but also Laguna Gatuna then?

A Yes, sir.

Q Despite the fact that it apparently has a drainage-out comment into Laguna Plata.

MR. PORTER: In other words, during the time that these lakes are dry, you can see foam deposits in the bottom of the lake.

THE WITNESS: Yes, you can see a white deposit in the bottom of the lake. It looks like a salt. It's a white material. It glistens.

MR. NUTTER: That's all I have, Mr. Porter.

MR. PORTER: Does anyone else have a questions of Mr. Gray? Mr. Ramey.

CROSS EXAMINATION

BY MR. RAMEY:

Q Mr. Gray, do you know the location of the Berry Ranch house?

A Only approximately. I believe the Berry Ranch house is in the north part of Township 21 South and Range 33 East. Does that --

Q It is south of your area?

A Yes, sir.

Q Were you aware that in Case 3551 which was the hearing held in Hobbs that there was reference made to a contaminated water well at the Berry Ranch?

A Yes, we understand that there was contamination in a water well at the Berry Ranch, and my understanding was that it probably occurred in down through an unplugged well. Now, I don't know the details of this thing, but I am aware that there was a well that was contaminated and I do understand that perhaps one of the unplugged wells had quite a bit of bearing on why the contamination occurred.

Q What is the fluid level in your wells, in your wells in the Lynch Pool? Are they that close to the surface? In other words, do they get up to within a hundred feet, two hundred feet above the --

A Well, I can't quote you. I don't have any information on what the fluid levels are. It is a typical water drive field. I can tell you from what I know about these types of pools that are, relatively speaking, I'm sure that these wells do have what we consider the high fluid level, but I don't have any actual measurements. I doubt --

Q It may compare with the Jalmat or the Wilson Pool?

A Yes, sir.

Q Somewhere 800 to 1200 feet to the surface?

A Probably.

Q So then if you had an unplugged well, why, the fluid level would come up to 800 or 1200 feet in that order, not under one, 200 feet because that could contaminate the water.

A Well, the way that it could become contaminated would be the pit water could progress from the surface into this old hole and go down the hole. I mean, that's one possibility. Now, whether or not that has happened, I don't have sufficient details in this particular case to tell you that that's what definitely happened.

Q But if the pit water were removed, why, then to remove the hazard from maybe probably the unplugged wells?

A Pardon?

Q I say, if the pit water were removed, why, then it would remove the hazard from probably unplugged wells?

A Yes.

Q Maybe, I mean uncased water wells then.

A If there were any holes in there that existed that were unplugged, I'm not aware of any such holes.

Q Well, I'm not either. But the hazard there is, there is reported contaminated water wells and there is surface disposal near the contaminated water wells.

A Yes.

Q In other words, we could conclude that perhaps surface

disposal may contaminate water?

A Well, I think we have to be careful about our assumptions. We can't assume that just because there was contamination in this well, that this pit will contaminate any well.

Q That's true. But we could assume my assumption that it will and we could assume your assumption; probably an unplugged well is contaminating the fresh water supplies.

MR. NUTTER: I assume you could.

MR. RAMEY: That's all.

MR. PORTER: Any further questions of Mr. Gray?

MR. LOSEE: I've got a couple of questions.

REDIRECT EXAMINATION

BY MR. LOSEE:

Q First, Mr. Gray, with respect to this ranch house of Mr. Berry, that's Mr. D. C. Berry, is it not?

A Yes.

Q She had Mr. "E. C."

A It's my understanding that it's Mr. D. C. Berry.

Q Now, you correctly pointed it to being in the township below. The ranch house is actually in Section 2. With respect to the crest of these Red Beds and also the surface crest, I suppose, which way is the drainage from the Federal Silver Lease with respect to the Berry Ranch house, towards it or away from it?

A Well, it should be away from the ranch house.

Q So that, actually, the ranch house is located over the crest on the other side of the crest of the Red Beds?

A That's true.

Q Now, we made several assumptions, and would you think it reasonable to assume that if Mr. D. C. Berry wrote a letter to the Oil Commission explaining he had no objection to this application that it would be safe to assume that, in his opinion, he didn't think he was getting any contamination in his water well from Mr. Sivley's operations? Would that be a safe assumption?

A I think if he wrote such a letter, I think it would indicate, at least in his belief, he doesn't think that disposal of water into these pits is going to have any harmful effect on his operations.

MR. LOSEE: Thank you. I have no further questions.

MR. RAMEY: May I ask a question?

MR. PORTER: Mr. Ramey.

RECROSS EXAMINATION

BY MR. RAMEY:

Q Would you refer to your Exhibit 1 and Exhibit 7, Mr. Gray? Now, you did state that Sinclair and Texaco are making plans to dispose of their water?

A That's my understanding.

Q So you've heard that rumor.

A I've heard it.

Q I've heard that said, too. Now, Sinclair has the lease in the northwest of Section 27 which, according to your contour map here on 7, would be, well, let's say fairly equal to the Sivley Lease.

A Are you referring to --

Q The structural map.

A Are you referring to Exhibit 6 or Exhibit 7?

Q Exhibit 7 where you show the crest of the Red Bed structure. In other words, the Sinclair Lease is directly -- it's in the section directly east of you so it's a level structure with yours, right?

A Well, I believe --

Q It's on the north side of the crest of the Red Bed so the drainage from the Sinclair Lease should be approximately --

A Yes.

Q -- the drainage as the Sivley Lease?

A The Sinclair lease in the northwest quarter of Section 27 should also be on the north side of this crest, yes, sir.

Q How about a portion of the Texaco Lease in Section 34? I believe you show the crest to --

A Yes, it looks like the crest will run through a part of Section 34.

Q And yet these operators are seeing fit to dispose of their waters by some means other than open surface pits?

A They are seeing fit, due to the policy, yes.

MR. RAMEY: Thank you. That's all.

MR. PORTER: Does anyone else have a question? The witness may be excused.

Mr. Heidel, I believe you indicated that you'd probably follow the same course in this case as you did the previous one.

MR. HEIDEL: That's correct. To save time, why, I would suggest that we copy the testimony and objections from the previous record.

MR. PORTER: Do you have any objection to that procedure, Mr. Losee?

MR. LOSEE: No, sir, as long as my objections are noted and the Commission's limited consideration of that testimony.

MR. PORTER: In other words, as long as the Commission's ruling is the same in both cases?

MR. LOSEE: Yes, sir.

MR. PORTER: Then this will be done. Does anyone else have anything particular to offer in this case? Mr. Nutter.

MR. NUTTER: Yes, sir, Mr. Porter. Because of the general testimony in Case Number 3551 as it relates to the problems of salt water disposal in this area, I would like to

make a motion that the record in Case Number 3551 be incorporated by reference in the record in this case; also, such numerous references have been made to the so-called Nash Draw and Clayton Basin in Case Number 3806, I'd like to move that the record in that case be made a part of this record by reference. And also, since Ground Water Report Number 6 by Nicholson and Clebsch has been made reference to as an expert treatise on ground waters in this area, I'd like to move that that be admissible into the record in this case so that we could have the benefit of all of it rather than simply this sketch of the contours and the reference on page 53 which was alluded to.

MR. PORTER: Mr. Losee, do you have any objection to Mr. Nutter's motion?

MR. LOSEE: No. Again, I reiterate that we're well aware that 3221 places the burden on us to show that our area is entitled to a different treatment. We think the evidence in 3806 will show that we're in the same ballpark and draining into the same area, and with that statement, we have no objection.

MR. PORTER: Then these matters will be incorporated by reference in this record. Does anyone have anything further to offer in this case?

MR. HATCH: Mr. Losee, did you wish this letter to be read into the record?

MR. LOSEE: Yes, sir.

MR. PORTER: Mr. Hatch has a communication here. We will ask him to read it into the record.

MR. HATCH: It's a letter from D. C. Berry addressed to the Oil Conservation Commission dated September the 12th, 1968.

"This letter refers to the application of T. J. Sivley for an exception to the no-pit order Number R-3221 of the Oil Conservation Commission. In his application, I understand that Mr. Sivley seeks authority to continue to dispose of produced water in his unlined surface pit located in the Northeast Southeast of Section 28, Township 20 South, Range 34 East, Lea County, New Mexico. I understand that this case has been docketed as Number 3860 and set for hearing on September 18th, 1968 before the Oil Conservation Commission.

"I am the owner of the ranch in Lea County, New Mexico embracing Mr. Sivley's Silver Federal Lease. I am familiar with Mr. Sivley's practice in disposing of his produced water in the above-mentioned surface pit. I do not believe that the disposal of water produced by T. J. Sivley in conjunction with production of oil in his wells, eventuates the Seven Rivers Pool, Lea County, New Mexico, constitutes a hazard to the fresh water wells in the area and located on my ranch.

"Accordingly, you are advised that I have no objection to the proposed application of T. J. Sivley for permission to

continue to dispose of his produced water in the above-mentioned unlined pit. Respectfully submitted, D. C. Berry."

MR. SMITH: Mr. Examiner.

MR. PORTER: Do you wish to make a statement?

MR. LOSEE: I'd like to make a statement.

MR. PORTER: We want yours towards the last. Mr. Smith.

MR. SMITH: Well, that letter from D. C. Berry, I think information should be given to you that he is pumping oil wells out there at the job, so I don't know whether his information would be very good or not.

MR. PORTER: Mr. Losee.

MR. LOSEE: Let me explain that the D. C. Berry who owns the ranch upon which the Federal Silver Lease is the uncle of the man who is pumping the well. He's not the man who signed the letter.

On behalf of Mr. Sivley in connection with his application for an exception, I would point out maybe in deference to Mr. Nutter's feeling of the reasoning that, different from the other operators in the Old Lynch Pool, Sinclair and Texaco, Mr. Sivley has been required by the existing rules put into effect at the instance of the potash companies to expend considerably more funds in completing these wells in setting more pipe and cement in the top and the bottom to protect the pipe and he's still within their area. Based on their

testimony, they're putting 300,000 barrels, 200,000 parts per million of solids each day on the ground. He's putting 70 barrels of 6500 parts per million of solids, and for that reason, he feels like he is entitled to similar treatment afforded operators in the potash area.

With respect to the contours, we think the evidence shows conclusively that Mr. Sivley's lease is located on the northwest side of the crest of these Red Beds and that either the water drains it all either along the surface or along the impervious barrier Red Beds, it will drain towards this dry salt lake area. And as the testimony pointed out, one way or the other, National Potash is putting an average of 3,000 barrels per day into one of these so-called salt lakes outside of the exempt area. They're putting 23,000 barrels a day into the Williams Sink. Now, I don't know whether they're pumping it or whether it's draining into it, but it's the same area to which the water from Mr. Sivley's Lease will drain, if at all; in the same general direction.

We're putting 70 barrels of water up there, that if it eventually reaches the same source and they're putting 3,000 barrels, again, with 200,000 parts per million of solids in the potash brine and 6500 parts per million solids in the Sivley. So for each barrel of solids that we put on the surface there, for each part, they're putting 10,000 parts in that same area.

I could probably summarize Mr. Sivley's application in the words of Mr. Stamets when he recommended to the Commission that part of the potash area be held exempt from Order R-3221, and I quote: "In my opinion, the enforcement of Order 3 of R-3221 will not depreciably reduce the hazards to fresh water and would be an unnecessary expense to operator."

We think that the situation in this area, the draining is exactly the same and justifies the same treatment.

MR. PORTER: Anyone else have anything else to offer in the case? The Commission will take the case under advisement and the hearing is adjourned.

I N D E X

E X H I B I T S

Number	Marked for Identification	Received in Evidence
Applicant's Exhibits 1 through 8	4	22

STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILLO)

I, CHARLOTTE MACIAS, 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 4th day of November, 1968.

Notary Public

My Commission Expires:

February 10, 1971.