CASE NO.

7603

APPLICATION,

TRANSCRIPTS,

SMALL EXHIBITS,

ETC.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO
9-7 June 1982

EXAMINER HEARING

IN THE MATTER OF:

Application of Riqueza, Inc., for an oil treating plant permit, Eddy County, New Mexico. CASE 7602

and

and

Application of Riqueza, Inc., for an exception to Order No. R-3221, Eddy County, New Mexico. CASE 7603

BEFORE: Richard L. Stamets

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division: W. Perry Pearce, Esq.
Legal Counsel to the Division
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For the Applicant: Ernest L. Padilla, Esq.
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I N D E X

E X H I B I T S

MR. STAMETS: We'll call next Case 7602.

MR. PEARCE: That is the application of Riqueza, Inc., for an oil treatment plant permit, Eddy County, New Mexico.

MR. PADILLA: Mr. Examiner, Ernest L. Padilla, on behalf of the applicant in this case. I have two witnesses who need to be sworn.

(Witnesses sworn.)

MR. PADILLA: Mr. Examiner, for the purposes of testimony, I would request that Case 7603 be consolidated with 7602. I think that would facilitate the matters, since the cases are related.

MR. STAMETS: Let's call Case 7603, and if I hear no objection, we will consolidate these cases for purposes of testimony.

MR. PEARCE: Case 7603 is the application of Riqueza, Inc., for an exception to Order No. R-3221, Eddy County, New Mexico.

MR. STAMETS: You may proceed, Mr. Padilla.

MR. PADILLA: Mr. Examiner, I call Stan Sygmunt to the stand at this time.

STAN ZYGMUNT

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

DIRECT EXAMINATION

BY MR. PADILLA:

Q. Mr. Zygmunt, would you please for the record state your name and also spell it for the benefit of the reporter?

A. My name is Stan Zygmunt. My last name is Z-Y-G-M-U-N-T.

Q. Mr. Zygmunt, where do you reside?

A. 1944 Camino Manzana, Los Alamos, New Mexico.

Q. And where do you -- what is your connection to the applicant in this case?

A. I was hired by the applicant to review his design of his facility.

Q. Have you testified previously before the Oil Conservation Division?

A. No, sir, I have not.

Q. Would you state your educational background and your work experience with oil and gas related activities?

A. Yes. I have a BS degree in chemical engin-

eering from the University of New Mexico; graduated in '71.

I worked three years for Cities Service Oil Company, Lake Charles Refinery, doing design and unit operations, and I worked for Little America Refining Company, Casper, Wyoming, for six years doing environmental work, process design, and unit operation.

Q. Mr. Zygmunt, are you familiar with the application today and more specifically with the design of the oil treating plant under application for Case 7602?

A. Yes, I am.

MR. PADILLA: Mr. Examiner, are the witness' qualifications acceptable?

MR. STAMETS: Yes.

Q. Mr. Zygmunt, referring to what has been marked as Exhibit Number One for this case, would you tell us what that is and what it contains?

A. It is a layout drawing of the system proposed to recover waste water and oil. Basically, the facility consists of a receiving tank battery consisting of four 500 barrel tanks. Truckloads of water and oil are received into this area; are checked to determine whether or not they contain an oil/water emulsion. If they contain oil/water emulsion, they are segregated into two determined tanks; if they contain an oil/water mixture which is easier -- easily settleable

they are put in another tank.

From the receiving tanks the -- which make the primary oil/water separation, that is, oil particles greater than 40 microns will easily settle out in these tanks, that oil then flows by gravity to the oil receiving tank.

The water which is separated in these tanks then flows by gravity to an oil/water separator. The oil/water separator is a Pinkleton rod separator, which is composed of three modules. The first module is a flocculation module. The second module is air flotation, and the third module is tilted plate separator.

For cases where you have an easily separateable oil/water mixture only the tilted plate separator will be employed. This is adequate to give a water which has a concentration of 10 parts per million of oil left in the water.

For cases where you have a stabilized emulsion, whether it be mechanical or chemical, the facility has equipment which will allow the addition of chemical surfactants or polymers which will help break the emulsion and the emulsion is then flocculated in a flocculation module and then by the use of air flotation the separation is enhanced as it proceeds through the tilted plate separator.

In this case the use of all three modules

will allow the breaking of the stable emulsion and still give a water which has a concentration of approximately 10 parts per million of oil.

The oil which is separated from the oil/water separator goes to a receiving tank. The water separated will flow to the -- to the salt lake.

Q Mr. Zygmunt, would you -- there's a -- towards the bottom of the diagram there's another sketch. What is that?

A This is just an elevation sketch which shows that the process if gravity operated; that is, that the water from the tanks flows to the oil/water separator by gravity, and the oil from the oil/water separator will flow to the receiving tank also by gravity.

The elevation of the Oil/water separator is such that oil will not overflow the oil/water separator. It will flow to the tank.

Q Mr. Zygmunt, there are some dashed lines around on the main portion of the diagram. What do those depict?

A Those are berm or fire walls and they are designed to maintain the contents of the tanks should tank failures occur. In the case of the receiving tanks, the battery of four tanks, that is, the volume of the berm wall is

sufficient to maintain failure of two tanks simultaneously. The receiving tank is -- the berm wall around it is adequate to receive the contents of that tank should it fail.

Over on the upper lefthand corner of the diagram, what is that depiction there? Is that the location of --

A. Yes, that is the location of the facility.

Q. In Section 26?

A. Yes.

MR. PADILLA: Mr. Examiner, I have no further questions of this witness.

CROSS EXAMINATION

BY MR. STAMETS:

Q. Mr. Zygmunt, just trying to get this thing organized, looking at Exhibit One, I presume the trucks will enter up there where the arrow says To State Road 31, is that correct?

A. That is correct.

Q. They'll drive in and unload into one or the other of these four tanks on the location?

A. That is correct.

Q. Now, who determines which tank they unload into?

A. There is an operator at the facility so it is a manned facility and will be -- and will be operated by personnel.

Q. Do you plan --

A. He will take a sample of the water and inspect it.

Q. When each tank comes in?

A. Yes.

Q. And if it is a heavy emulsion it goes into one tank.

A. That's correct.

Q. And if there is free oil in it it goes into another tank.

A. Well, if it's a fairly defineable water/oil mixture, then it will go into a segregated tank. Those tanks -- that mixture does not need as much settling time as does an emulsion, so that, you know, operating procedure would allow you to turn those tanks over at a faster pace than you could a tank with emulsion.

Q. Now it would appear as though the ability is there to take in the oil which settles out and run that directly to the oil storage tank?

A. Yes, that is correct. Oil that settles out in the receiving tank goes directly to the -- to the oil

storage tank.

Q And then any oil, or any liquids which have to be treated will then go to -- down this 4-inch brine pipeline, is that right?

A That is correct.

Q Through the treating system.

A That is correct.

Q Any oil recovered there will go to the oil storage tank.

A That is correct.

Q All right.

And then I believe you indicated that around the receiving tanks, that berm provides capacity to hold the volume of two tanks.

A Yes.

Q All right. The oil tank has a berm around it sufficient to hold the entire volume.

A That is correct.

Q And the same thing would be true relative to the treating system.

A That is correct, also. If I may point out on the drawing, that the berm wall around the oil storage tank shows a 16-inch minimum height, but that tank is actually set down subsurface and that 16 inches is in addition to the

setdown of the tank. The actual volume of the berm wall is 4-1/2 feet.

Q. So it's 4-1/2 feet inside.

A. From the floor to the top of the berm wall.

Q. And sixteen inches on the outside.

A. Right.

Q. Now when you calculated the volume, did you calculate it on the 4-1/2 foot side or the sixteen inch side?

A. It would be on the 4-1/2 foot side.

Q. All right. What size are these tanks? I see they're sixteen foot diameter.

A. They're fifteen foot tall. The receiving tanks are nominally 500 barrel tanks and the oil storage tank is nominally a 210.

MR. PADILLA: Mr. Examiner, I have another exhibit to introduce through this witness.

MR. STAMETS: Okay, fine, go ahead and do it.

REDIRECT EXAMINATION

BY MR. PADILLA:

Q. Mr. Zygmunt, I refer you to what has been marked as Exhibit Number Two. Would you please identify what that is and what it contains?

A. This is a statement of the materials of construction used in the facility. It states that the receiving tanks will be constructed of welded steel and they will be lined with a coal tar epoxy to prevent corrosion.

The unloading lines will be fiberglass and the brine line will be polyethylene; both of these materials are also corrosion resistant.

The fiberglass line is also pressure rated to cycle to 300 pounds and it has the advantage over other lines that when over-pressured, which might occur during -- a missed valve during unloading, it will leak prior to rupturing, so it presents a bit of a safety -- some safety protection.

Q. Mr. Zygmunt, do you have anything else to add to your testimony?

A. No, sir, I do not.

RECROSS EXAMINATION

BY MR. STAMETS:

Q. The only other question I have, most of these facilities wind up with an irreducable sediment.

A. Yes.

Q. What arrangements are being made to dispose of that?

A. When tanks are cleaned, the resulting sedi-

ment will be hauled to State-approved disposal site.

MR. STAMETS: Any other questions of this witness? He may be excused.

MR. PADILLA: Call Tim Kelly.

T. E. KELLY

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

DIRECT EXAMINATION

BY MR. PADILLA:

Q. Mr. Kelly, would you please state your name and where you reside?

A. My name is T. E. Kelly. I reside at 148 Whitetail Road, Albuquerque.

Q. Mr. Kelly, what's your connection with the applicant in this case?

A. I am President of Geohydrology Associates, a consulting, water resources consulting firm in Albuquerque, and our firm is retained by the applicant to make a hydrological investigation in the vicinity of the disposal site.

Q. Mr. Kelly, have you ever testified before the Oil Conservation Division?

A. No, I haven't.

Q. Would you please state your educational background and your work experience and related activities as regards to -- with respect to this application?

A. Yes, sir. I have a Master's degree in geology from the University of Kansas, completed in 1962. Following graduation I worked for Standard Oil of California for two years and then was employed by the Water Resources Division of the Geological Survey in the capacity of a hydrologist from 1964 until 1975.

Since 1968 I have been in New Mexico working on hydrologic problems. In 1975 I resigned from the Geological Survey and established the firm of Geohydrology Associates, and since that time we have worked for a variety of clients throughout the country, but in particular in New Mexico.

Of particular concern to this study is a two year study that we conducted in behalf of the Bureau of Land Management on the hydrology of the Nash Draw and Clayton Basin area of Eddy County, with particular emphasis on the effects of potash mining and refining on the hydrologic system.

Q. Mr. Kelly, is the area of application within the Nash Draw area of Eddy County?

A. Yes, it is.

Q And you're familiar with the purpose of the hearing today?

A Yes, I am.

MR. PADILLA: Mr. Examiner, are the witness' qualifications acceptable?

MR. STAMETS: They are.

Q Mr. Kelly, would you refer to what has been marked as Exhibit Number Three, and would you identify what that is and what it contains?

A This is a report entitled Hydrologic Assessment, Lindsay Lake Area, Eddy County, New Mexico, which was prepared by our firm in behalf of the applicant, and it contains our evaluation of the geohydrology of the proposed discharge site.

Q Mr. Kelly, did -- would you describe in general the nature of your study?

A Our study involved, first, a literature and file search of available data. We then made an assessment of the work which we did for the Bureau of Land Management with specific emphasis on the Lindsay Lake Area, and then we made a field evaluation of the area, in particular Lindsay Lake and the area within a radius of perhaps a mile, as well as any other adjoining areas which had a bearing on the hydrologic system as we envisioned it, or as we had determined by

our earlier studies.

We collected samples and also collected information from the files on water quality data in the area and put that in the form of a report.

Q. Mr. Kelly, on page five of the report there is a map. Would you identify where the Lindsay Lake area is and its significance to this application?

A. Yes, sir, Lindsay Lake is located, well, it's identified as the proposed site, and Lindsay Lake, that would be in Section 26, the northeast quarter of Section 26, Township 22 South, Range 29 East.

This -- this shows the area within which we concentrated our study because it's the area most likely to be impacted by the proposed discharge facility.

Q. Mr. Kelly, does this -- where is the Nash Draw in relation to this map?

A. The Nash Draw is a large topographic area which covers several hundred square miles, but this shows essentially the south end of Nash Draw. The salt lake shown in the lower lefthand corner of this illustration is the low point within Nash Draw, and Nash Draw is in general towards the north and east of this illustration.

Q. Mr. Kelly, would you give us a general description of the geology underlying the Lindsay Lake area?

A. Yes, sir, the area is underlain by the Salado salt formation, which is the source of the potash which is extensively mined in the area. This material is composed primarily of halite, is soluble, and as a result there has been solution on top of the Salado which resulted in collapse of the surface feature and the creation of Nash Draw and Clayton Basin, so that Nash Draw is in effect a collapsed structure in which the Rustler formation and the younger deposits on top of that have dropped down onto the erosional surface of the Salado. This has created a rubble zone through which ground water moves freely and since it is, the ground water is coming from the north, it is picking up the halite within the Salado formation and consequently, the water moving through this zone is a saturated brine in excess of 300,000 parts per million dissolved solids.

Q. Can you tell us anything about the Rustler formation i the area?

A. Well, the Rustler formation is composed of five different members that are shown in the table on page three.

In addition to the five members identified there, there is also what is called an upper leach zone, but essentially the Tamarisk member, the Culebre, which is a dolomite, the unnamed member, and the leach zone, these have all

collapsed, forming essentially a rubble zone through which the water moves. The overlying formations also contain highly mineralized water, which is derived by solution of the gypsum and the anhydrite within those formations, also.

Q. What are the topographical settings in the area? Can you tell us something about that?

A. Well, since the Nash Draw was created by collapse, there is a general movement of -- or a topographic slope from north to south with the lowest point being Salt Lake, and so any surface water which moves through the area moves towards the south through whatever channels are available; however, in general, most of the movement is underground. Most of the -- most of the ground water movement moves through this rubble zone beneath Nash Draw.

There are isolated closed depressions and so forth that have been created by differential collapse of these formations onto the Salado.

Q. Through what formation is the migration?

A. It's through the, basically through the Rustler formation and the lower members of the Rustler formation.

Q. Is there any percolation through the Rustler to other formations below the Rustler?

A. No, the Rustler is directly on top of the

Salado formation and there is no movement of water through the Salado.

Q What can you tell us about the ground water in the area?

A The, although there is some potable water in the Rustler on the boundaries and outside -- well, right, on the boundaries and outside of Nash Draw, within Nash Draw itself there is no potable water. There are a few isolated stock wells that stock do -- that are used for stock watering; however, none of this water is considered to be potable. The few residents which are in this area either haul water for drinking purposes and also depend on cisterns for -- for their water supply.

Q When you say potable, where do you make your cutoff as far as potable is concerned?

A The general cutoff is 1000 parts per million dissolved solids, which is the recommended upper limit for drinking water.

Q On page six of your study, I read in there that the shallow -- in the second paragraph, about the middle of the second paragraph, it says the shallow ground water is potable to slightly saline in most areas. What are you talking about when you say that?

A This refers to the wells which tap the

Rustler formation outside Nash Draw. The last sentence of that paragraph states there is no known potable water within Nash Draw itself.

Q. What can you tell us about the surface water conditions of the area?

A. The water moves generally through the ground but where it does come to the surface in lakes there is in many instances greater ground water discharge into the lakes than can be evaporated from these particular bodies; consequently, there is surface run off which occurs from the lakes and in particular there's Laguna Uno and a series of lakes which empty into Salt Lake. This surface flow occurs particularly in the spring and decreases during the summer when evaporation in the lakes increases.

Q. You mentioned Laguna Uno. Where is that located on your map?

A. That's approximately one mile east of Lindsay Lake in Section 24 and 25. This is a large closed depression into which IMC discharges its refinery waste.

Q. Who's IMC?

A. That's International Minerals and Chemical Corporation, a potash miner and refiner company. They discharge approximately 5200 acre feet a year into a lake and there is no outflow from the lake. Consequently, that water

either is evaporated or leaves the lake by subsurface underflow towards points to the south and ultimately ends up in Salt Lake.

Q Mr. Kelly, what conclusions have you reached as a result of your study as far as the application is concerned?

A Well, the -- I might refer you to Table II on page nine which lists oil field brines as well as three samples from Salt Lake, the IMC discharge, and Lindasy Lake, and there are also some additional analysis on the following page.

The three analyses from Salt Lake, IMC, and Lindsay Lake all show that the natural water quality in those lakes is considerably more mineralized than any of the oil field brines which -- for which analyses are available.

On the basis of this and on hydrologic investigation, we concluded that the proposed discharge facility would not adversely affect any ground water or surface water in the area both from a water quality standpoint and from a overall discharge which is proposed at 88 gallons per minute. There is sufficient surface area within the lakes to evaporate this quantity of water when considered over the annual cycle.

Q Mr. Kelly, do you have anything else to of-

fer as far as testimony is concerned?

A. No, I don't.

MR. PADILLA: Mr. Examiner, we pass the witness at this time.

CROSS EXAMINATION

BY MR. STAMETS:

Q. Mr. Kelly, you've used the term potable water and described that pretty well. However, the Oil Conservation Division is also supposed to protect any waters having a total dissolved solids concentration up to 10,000 milligrams per liter.

Does the Rustler in this area contain concentrations less than 10,000?

A. It does along the flanks of Nash Draw. I would refer you to Figure 1, page five. It's not shown on this map, but near the middle of Section -- Section 34, in which the highway symbol 31 is located, and in the middle of that section there is a stock well located which does --

Q. I believe, excuse me, I believe that's Section 33, isn't it?

A. 6, 5, 4, 3, yes, sir.

Q. Okay.

A. There is a stock well located in that sec-

tion which has been used for many years and my recollection, the water quality in that well is approximately 3500 to 4000 parts per million dissolved solids; however, highway 31 is constructed along the west boundary of Nash Draw and in our earlier study for the Bureau of Land Management it was our conclusion that the natural ground water flow is from northwest to southeast so that this is water which is being intercepted as it comes into Nash Draw; however, within the vicinity of the Tamarisk Lake, Laguna Tres, Laguna Uno, there are no stock wells which produce water of less than 10,000 parts per million dissolved solids.

Q Let me see if I understand this correctly. What we have is a stock water well there out of the Rustler with good enough water for cows to drink.

A Right.

Q But the water is locally derived --

A Yes, sir.

Q -- from rainfall and is moving from the high ground into the low ground.

A Yes, sir.

Q Okay. Now in -- I obviously have not read all of this, but I've seen another report which was done for a similar application that is pending, and in that report referring to Laguna Uno you indicated that the edges of the

lake were not sealed.

A. That's correct.

Q. And that water can be escaping along the edges of the lake.

A. Yes, sir.

Q. Would the same thing be true of Lindsay Lake?

A. Yes, sir. Lindsay Lake has several springs shown on the illustration at the north end; however, there is a outflow from Lindsay Lake, which we estimate to be approximately 100 gallons a minute, and yet there's no surface inflow other than these springs. Therefor, the ground water, that 100 gallon a minute discharge from Lindsay Lake, is actually ground water discharge into the lake, which is coming from areas to the north and presumably from Laguna Uno, which is approximately 29 feet higher topographically than Lindsay Lake and is a constant source of -- or has a constant source from IMC, so that the water is flowing underground from Laguna Uno into Lindsay Lake and then out of Lindsay Lake, so obviously, Lindsay Lake has to have a leaky bottom in order to obtain that water.

Q. Where does it -- where does it go as it outflows?

A. From Lindsay Lake?

Q. Yes.

A. Into the area identified as Lindsay Flats and ultimately into Tamarisk Lake.

Q. Well now, does that mean that the additional water that would be put into this lake would just add to the outflow?

A. During the summer months the surface area of Lindsay Lake is adequate to evaporate approximately 1000 gallons a minute and the applicant proposes to discharge 88 gallons a minute; consequently, during the warmer periods of the year, in fact throughout most of the year, the evaporation from the surface of the lake would be adequate to eliminate the discharge proposed by the applicant.

During the winter months there could conceivably be outflow which would originally been contributed by the applicant, because the discharge -- the evaporation rate during the winter is approximately 66 gallons a minute.

Q. Nevertheless, do you have this outflow year round?

A. I can't answer that. There's 100, approximately 100 gallons a minute at the present time. This is the period of the year when the level of the lake should be at its highest because we're going into the summer season.

We haver't studied the discharge from Lind-

say Lake over a period of twelve months, which is what it would require. My assumption would be that the -- there would be no surface discharge during the bulk of the year, although at the present time there is.

Q Also from reading the report, the other report, I got the impression that this whole area is gradually filling up with salt water.

A That's correct.

Q How many years is it going to take before we have a salt water swamp in this area?

A I think we already have one. Our studies for the BLM identify two wells, one at Laguna Uno and the other one just to the east of this map, which produced potable water, or stock water, in the late thirties. The refining companies became active in the mid-forties, late forties, and those wells are now totally submerged beneath Laguna Uno and another lake, Laguna Quatro, it's based on our studies, we concluded that there is enough evaporation now occurring in all of these lakes and in the north end of Salt Lake to totally evaporate any of the discharge, all of the brine, I should say, which is getting into the area, so that we believe the area is now in equilibrium with evaporation and what transpiration occurs.

So it probably won't get any worse because

water levels have reached a point where evaporation is occurring to offset any of the natural -- any of the artificial discharge by the refining companies.

Q Okay, let me see if I understand this correctly.

What we have is a situation where upstream of Salt Lake more salt water is being added to the system than can be evaporated locally.

A Yes, sir.

Q But as it fills up the area available to it, including Salt Lake, more and more surface area is exposed to the atmosphere, you have greater rates of evaporation and so you do not foresee a situation where Salt Lake will become a permanent pool.

A No, sir. The surface area of the lakes is adequate to more than evaporate the amount of water that's being put into the system.

Q Now does this inflow of water to the Rustler in this area, does this have any effect on the discharge of salt water to the Pecos River?

A No, sir. The studies that have been done by the Geological Survey and our study with BLM, confirm that the salt water in the Pecos River is probably coming from upward migration from the Salado or the so-called leach zone

in the Salado. The best evidence for this is that between Salt Lake and the Pecos River the ground water level is higher than either, which indicates that there is a natural recharge in this zone, and also studies of the Pecos River show that the salinity is greatest along the very bottom of the river and decreases as you go up, indicating the water is coming up through the bottom of the Pecos, the bed of the Pecos River itself and not through surface inflow.

MR. STAMETS: Any other questions of this witness? I have a few more questions for Mr. Zygmunt at this point.

STAN ZYGMUNT

being recalled and having been previously sworn, testified as follows, to-wit:

RECROSS EXAMINATION

BY MR. STAMETS:

Q. I note that the capacity, or the throughput, is estimated at a maximum capacity of 3000 barrels a day. How will that be regulated so that no more than 3000 barrels a day will go through the system?

A. If the capacity -- the oil/water separator will be designed for approximately 100 gallons per minute.

This is greater than 3000 barrels a day on a 24-hour day operating basis, and the flow through the oil/water separator will be controlled by proper line sizing between receiving tanks and the oil/water separator. In other words, that line will be specified to restrict the flow given the head differential between the tanks, to limit the flow capacity in the line; it will be such that the system can only handle, you know, what flows through the line.

Now this is done, instead of putting in any kind of control device, because a control device would set up tiers in the flow that would re-emulsify any oil/water that came through the pipeline. So what you do is you put in a straight shot pipe and you size the pipe, the length of the pipe, and take into account the head differential and control your flow by sizing that pipe.

Q What's the fifteen cent description of the process? You know, you have a heat treating process, a chemical treating process ---

A. Okay, basically the -- if you assume you had a stable emulsion, the first thing you would do is add a chemical and the chemicals you would add to the system would be dependent upon what form the emulsion, and this going to have to be developed after some history of operation.

Q I'm just simply trying to come up with a

set of terms that look nice in an order.

A. Okay.

Q. So we've got chemicals partly, right?

A. Right.

Q. But you also have the corregated plates.

A. Okay, what the process is, it's chemical addition followed by flocculation. This is a process where the chemicals are allowed to work if you will, and add, you know, agglomerate the oil particles together so that they are more easily separable.

From the flocculator the air is added to the system, small air bubbles. This adds in settling the oil particles to the surface. From this point the flow is through tilted plate separators which tend to coalesce the oil into larger particles which settle to the surface and are removed.

Q. So it's basically a chemical/time process.

A. Right, that's correct.

Q. Now I'm not sure who to address this question to. Normally, when the Division has approved this type of operation we have required a -- that all the fluid initially go in to some sort of a settling pond before it gets into the lake bed proper. Is that planned for this installation or if it is required would that be any kind of a problem?

A. No, that would not present a problem. We would simply put an earthen pond following the -- oil/water separator and we would put an underflow or overflow device in so such that only water escapes should there be an inadvertent accident which put oil in the pond.

Q. What's an appropriate size for that? One day's volume?

A. One day's volume would be more than adequate. I would suggest typically a settler of that type would be designed on the basis of one or two hours, which would be a very small pond.

Q. Well, we'll do some calculation and see what's sensible. If you have any specific recommendations that you'd like to submit after the hearing, we would give those consideration.

A. Yes, sir.

MR. STAMETS: Are there any other questions of either of these witnesses? They may be excused.

MR. PADILLA: Mr. Examiner, I offer into evidence Exhibits One, Two, Three.

MR. STAMETS: These exhibits will be admitted.

MR. PADILLA: And I have nothing else.

MR. STAMETS: If there is nothing further, the case will be taken under advisement.

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. _____, heard by me on _____ 19____.

_____, Examiner
Oil Conservation Division

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July 16, 1982

Re: CASE NO. 7603
ORDER NO. R-7027

Mr. Ernest L. Padilla
Attorney at Law
Post Office Box 2523
Santa Fe, New Mexico 87502

Applicant:

Riqueza, Inc.

Dear Sir:

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

Yours very truly,

JOE D. RAMEY
Director

JDR/fd

Copy of order also sent to:

Hobbs OCD x
Artesia OCD x
Aztec OCD

Other

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
DIVISION FOR THE PURPOSE OF
CONSIDERING:

CASE NO. 7603
Order No. R-7027

APPLICATION OF RIQUEZA, INC. FOR AN
EXCEPTION TO ORDER NO. R-3221,
AS AMENDED, EDDY COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on June 9, 1982, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 16th day of July, 1982, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Riqueza, Inc., is the owner and operator of a sediment oil treatment plant, located in the NE/4 of Section 26, Township 22 South, Range 29 East, NMPM, Eddy County, New Mexico.

(3) That Order (3) of Division Order No. R-3221, as amended, prohibits in that area encompassed by Lea, Eddy, Chaves, and Roosevelt Counties, New Mexico, the disposal, subject to minor exceptions, of water produced in conjunction with the production of oil or gas, or both, on the surface of the ground, or in any pit, pond, lake, depression, draw, streambed, or arroyo, or in any watercourse, or in any other place or in any manner which would constitute a hazard to any fresh water supplies and said disposal has not previously been prohibited.

(4) That the aforesaid Order No. R-3221 was issued in order to afford reasonable protection against contamination of fresh water supplies designated by the State Engineer through

disposal of water produced in conjunction with the production of oil or gas, or both, in unlined surface pits.

(5) That the State Engineer has designated, pursuant to Section 65-3-11 (15), N.M.S.A., 1953 Compilation, all underground water in the State of New Mexico containing 10,000 parts per million or less of dissolved solids as fresh water supplies to be afforded reasonable protection against contamination; except that said designation does not include any water for which there is no present or reasonably foreseeable beneficial use that would be impaired by contamination.

(6) That the applicant seeks as an exception to the provisions of the aforesaid Order (3) to permit the disposal of salt water collected at applicant's above-described facility into a salt lake (Lindsey Lake) located in the NE/4 of said Section 26.

(7) That applicant's facility is expected to handle approximately 3000 barrels of water per day.

(8) That there appears to be no shallow fresh water in the vicinity of the subject pit for which a present or reasonably foreseeable beneficial use is or will be made that would be impaired by contamination from the subject pit.

(9) That the area of the salt lake is sufficient to provide for evaporation in excess of the volume of salt water proposed for disposal (up to 3000 barrels of water per day).

(10) That the applicant should construct a header or settling pit upstream from Lindsey Lake to receive the initial discharge of waters from the treatment facility.

(11) That such header or settling pit shall be of sufficient size and design to prevent the movement of oil from the treatment facility to Lindsey Lake.

(12) That if the applicant fails to prevent the movement of such oils to the surface of Lindsey Lake, the Director of the Division should be empowered to administratively suspend or rescind the authority for use of such lake for salt water disposal.

(13) That this application should be approved.

IT IS THEREFORE ORDERED:

(1) That the applicant, Riqueza, Inc., is hereby granted an exception to Order (3) of Division Order No. R-3221, as

amended, to dispose of up to 3000 barrels of salt water per day produced in conjunction with the operation of its sediment oil treatment facility, located in the NE/4 of Section 26, Township 22 South, Range 29 East, NMPM, Eddy County, New Mexico, in a salt lake (Lindsey Lake) also located in the NE/4 of said Section 26.

(2) That prior to disposal of any waters into Lindsey Lake, the applicant shall construct a pit upstream from such lake to receive the initial discharge of water from the treatment facility and shall maintain such pit in a manner as to prevent the movement of oil onto the surface of said lake.

(3) That the Director of the Division may by administrative order suspend or rescind such authority whenever it reasonably appears to the Director that such suspension or rescission would serve to protect fresh water supplies from contamination or if the applicant should permit the movement of oil onto the surface of Lindsey Lake.

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

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

JOE D. RAMEY,
Director

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-2434

August 26, 1982

McCormick & Forbes
Box 1718
Carlsbad, New Mexico 88220

Attention: Mr. Roger E. Yarbro

Re: Case No. 7603

Gentlemen:

In reference to your letter of August 16, 1982, we understand that B & E, Inc. has now assumed all rights granted under Division Order No. R-7027 as well as those granted under Division Order No. R-7026.

Yours very truly,

JOE D. RAMEY
Director

JDR/fd

RIQUEZA INC. Case 7602 S. ZYGMUNT
6-10-82

PROBLEM: CALC. EFFLUENT POND DESIGN FOR OIL/WATER SEPARATOR OUTFLOW

GIVEN: MAXIMUM PRODUCTION RATE 3000 BBL/DAY

BASIS: 2 HR RETENTION TIME

$$\text{PIT VOLUME} = \frac{3000\ \text{BBL}}{\text{DAY}} \left| \frac{\text{DAY}}{24\ \text{HR}} \right| \frac{2\ \text{HR RET.}}{} \left| \frac{42\ \text{GAL}}{\text{BBL}} \right| \frac{\text{CuFT}}{7.48\ \text{GAL}}$$

$$= 1404\ \text{CuFT}$$

DESIGN DEPTH 4 FT

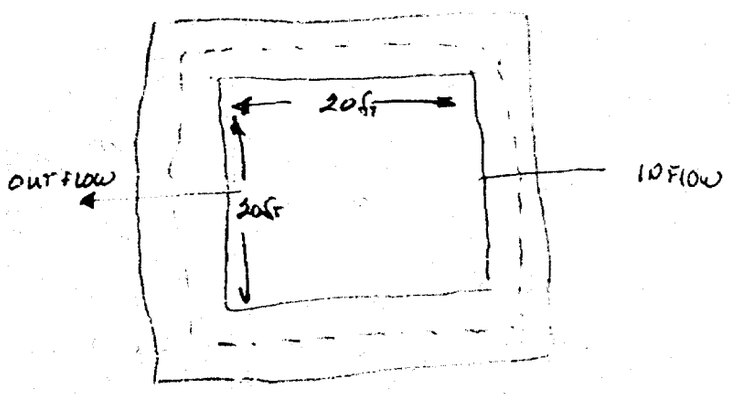
$$\text{CALC. AREA} = \frac{1404\ \text{CuFT}}{4\ \text{FT}} = 351\ \text{FT}^2$$

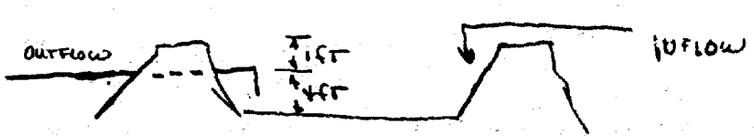
PIT DIMENSIONS = 18.7 FT

DESIGN DIMENSIONS = 20 FT X 20 FT X 4 FT

DESIGN VOLUME = 1600 CuFT

RETENTION TIME = 2.3 HR





STATEMENT AS TO EQUIPMENT

All water storage tanks will be constructed of welded steel and completely coated with coal tar epoxy. The oil storage tank will also be constructed of welded steel.

Every tank shall be equipped with vapor-proof positive seal thief hatches, corrosion resistant manual valves, and bronze check valves on the fiberglass (rated at 300 psi cyclic working pressure) inlet lines. Polyethylene SDR 17 pipe will be utilized for the remaining brine handling lines.

NARRATIVE DESCRIPTION OF TREATING PROCESS

Produced brine will be brought to the site by truck. In order to avoid commingling waters of different quality, the incoming water will be inspected by the site attendant, who will then direct the truck driver to discharge into the appropriate storage tank. Most of the free oil present (if any) will separate inside the water storage tanks. Any recovered by the gravity separator oil in water emulsiors received will be processed separately. Demulsifiers and flotation reagents will be added as necessary to this stream. Complete removal of emulsified oil shall be achieved by means of dissolved air flotation inside the gravity separator.

HYDROLOGIC ASSESSMENT, LINDSEY LAKE AREA

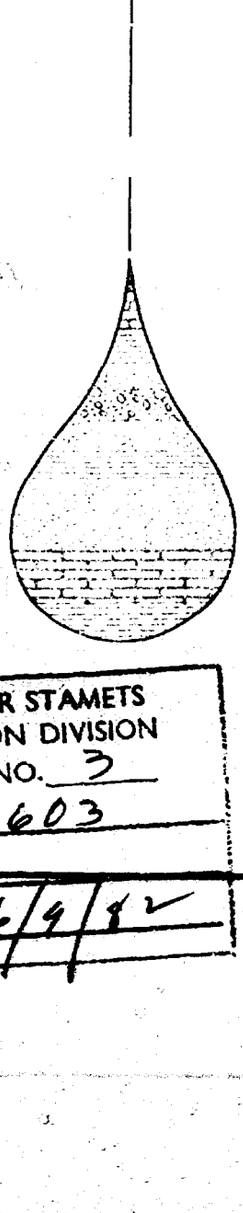
EDDY COUNTY, NEW MEXICO

by

Geohydrology Associates, Inc.

4015 Carlisle, N.E. • Suite A • (505) 884-0580
Albuquerque, New Mexico 87107

May 1982



HYDROLOGIC ASSESSMENT, LINDSEY LAKE AREA

EDDY COUNTY, NEW MEXICO

by

Geohydrology Associates, Inc.
Albuquerque, New Mexico

May 1982

CONTENTS

HYDROLOGIC ASSESSMENT, LINDSEY LAKE AREA

EDDY COUNTY, NEW MEXICO

by

Geohydrology Associates, Inc.

In May 1982, Mr. Michael Grace of Houston, Texas, authorized a study of the hydrologic conditions in the vicinity of Lindsey Lake, Eddy County, New Mexico. The area is located about 20 miles east of Carlsbad in Townships 22 and 23, South, Range 29 and 30 East. The study was made by Geohydrology Associates, Inc., of Albuquerque.

The purpose of the study was to determine the effects that might result for discharge of oil-field brine into Lindsey Lake.

Earlier studies in the region established that the regional ground-water flow was from northeast to southwest. However the regional flow pattern has been changed locally by various factors, including the potash refineries, and various natural and man-made factors.

Many of the earlier studies were devoted to the regional aspects of the ground-water system. Robinson and Lang (1938) showed that most of the lower Nash Draw drained into the large, natural Salt Lake, and concluded that brine from the lake is not discharging into the Pecos River. Other studies were made by Thomas (1963) and Mower and others (1964); however their work was completed before the major impacts of the potash refineries were exerted on the area.

Gilkey and Stotelmyer (1965) made one of the earliest detailed studies of the Nash Draw area. They concluded that brine-disposal ponds at the potash refineries contribute to the hydrologic system by leakage. A detailed study by Geohydrology Associates, Inc. (1978) identified significant quantities of brine entering the ground-water system, although much of this is confined to the Clayton Basin area north of the project area. All of these factors have a bearing on the suitability of Lindsey Lake as a brine-discharge site.

The study authorized by Michael Grace was based on a thorough literature and file search of existing data; it also drew heavily from the earlier reports by Geohydrology Associates, Inc., which was submitted to the Bureau of Land Management. A field reconnaissance was made which included a visual inspection of Lindsey Lake, Tamarisk Flat and Lake, and Laguna Seis. A water sample was collected from Lindsey Lake. An analysis of the data and the resultant conclusions are presented herein.

DESCRIPTION OF THE AREA

Geology

A number of studies of the geology and ground-water resources of the area have been made. These include King (1942), Hendrickson and Jones (1952), and Vine (1963), Brokaw and others (1972) and Geohydrology Assoc., Inc. (1978, 1978a, 1979). The reader is referred to these studies for more detailed information than is warranted in this report.

There are only two formations in the Lindsey Lake area that are directly concerned by this study (table 1). These are the Salado Formation below and the overlying Rustler Formation. The Rustler generally is subdivided into a Lower Member, the Culebra Dolomite, the Tamaris Member, the Magenta Member, and the uppermost Forty-nine Member.

Salado Formation

The Salado Formation is an areally extensive unit which underlies much of Eddy County east of the Pecos and extends far beyond the study area. This formation consists of more than 75 percent salt deposits with minor amounts of clastic rocks, anhydrite, and dolomite. The Salado is the source deposit of the potash which is mined in the region.

As a soluble unit underlying Lindsey Lake and the entire potash area, the Salado exerts major control over the shallow and surficial structure of the area. Collapse structures, such as Nash Draw, are widespread and exert control over the deposition of eolian and alluvial material.

Structure contours on the top of the Salado Formation show that the Nash Draw depression, in which Lindsey Lake is located, reflects a similar trough in the top of the salt (Vine, 1963, pl. 1). There are closed depressions in the top of the salt in the area of Salt Lake and Laguna Uno. The depth to the top of the Salado Formation in the vicinity of Lindsey Lake and Laguna Uno is approximately 275 feet.

Rustler Formation

The Rustler and Salado Formations are separated by a leached zone approximately 60 feet thick. This insoluble residue is regarded as basal Rustler Formation by some authors (Cooper and Glanzman, 1971) and as uppermost Salado Formation by others (Vine, 1963, p. 7). Regardless of the name used, this zone consists of an insoluble rubble of brecciated clastics and limestone which collapsed following the solution of underlying evaporite deposits. This rubble represents material from the Lower Member, the Culebra dolomite, and insoluble deposits from the Tamarisk Member.

The Lower Member of the Rustler Formation consists of 60 to 120 feet of siltstone and fine-grained sandstone that locally contains gypsum, anhydrite, and halite (Brokaw and others, 1972, p. 50). It is overlain by the Culebra dolomite which is a distinctive and persistent marker bed about

Table 1. Summary of deposits in vicinity of proposed Lindsey Lake disposal site.

Formation	Member or Zone	Description	Water-bearing Characteristics
Dewey Lake Redbeds		Siltstone, locally sandy or clayey	Zone used for discharge by Mississippi Chemical; stock wells produce slightly saline water; 200-250 feet thick
	Forty-niner	Gypsum and siltstone	Small capacity stock and domestic wells; water potable outside Nash Draw; up to 65 feet
	Magenta	Dolomite; some anhydrite	May be tapped by wells at AMAX; generally not an aquifer; 20 feet
Rustler	Tamarisk	Predominately gypsum; some siltstone	Zone used for discharge by International Minerals; does not yield water to wells; 115 feet thick
	Culebra	Dolomite	Produces brine to wells used by Mississippi Chemical; probably tapped by AMAX; 30 feet thick
	Unnamed	Siltstone, fine-grained sandstone, some gypsum; included in rubble zone	Not known to be tapped by wells; water should be very highly mineralized; 120 feet thick
	Upper leached zone	Brecciated siltstone, gypsum, anhydrite	Forms the "brine aquifer" penetrated by exploration wells. Saturated brine present in large quantities; 50 to 200 feet thick.
Salado	Massive salt zone	Halite, anhydrite, potash minerals	Non-water-bearing. Up to 2,000 feet thick

30 feet thick. Where tapped by wells, the Culebra produces large quantities of highly mineralized water, as in the vicinity of Mississippi Chemical Corporation in section 11, T. 21 S., R. 29 E.

The Tamarisk Member (Vine, 1963, p. 14) was named for its exposures at Tamarisk Flat where Lindsey Lake is located. This deposit consists of about 115 feet of massive, coarsely crystalline gypsum in the outcrop but is chiefly anhydrite in the subsurface. Throughout most of the area of Nash Draw, the Tamariks deposits are blanked by a thin layer of silt and clay that has washed down from the rim of the Draw. This sheetwash is particularly evident in Tamarisk Flat; however on the east side of Lindsey Lake, there are massive exposures of deformed gypsum beds and large selenite crystals indicating recrystallization by the movement of ground water.

Brine from the potash refineries in and near Nash Draw is being deposited primarily into disposal ponds excavated in the Tamarisk Member.

The Magenta and Forty-niner Members of the Rustler Formation have been removed by erosion from Nash Draw and generally do not affect the discharge of waste in the project area.

Topography Setting

Nash Draw is the principal surface feature in the potash mining area of Eddy County. According to Vine (1963, p. B38) this feature is an undrained depression which resulted from regional differential solution of evaporite deposits in the upper Salado and lower Rustler Formations. The solution of these deposits resulted in large-scale collapse of the Lower Member, Culebra dolomite, and the Tamarisk Members. Evidence for solution within the Rustler can be found almost everywhere that the formation is exposed.

Contour lines drawn on top of the massive salt in the Salado Formation show a high degree of correspondence between the topography of Nash Draw and the top of the salt. The Salt Lake overlies a closed depression on top of the Salado. Likewise, there is a large closed depression northeast of Salt Lake which is ringed by a series of surface lakes including Laguna Uno and Lindsey Lake (fig. 1). Laguna Uno is the discharge point for International Minerals Corporation; Lindsey Lake is the disposal site proposed by Michael Grace.

Although the regional dip of the beds is toward the east, the rocks exposed along the margins of Nash Draw dip toward the depression. This also is true in Clayton Basin farther north. In addition, hydration of anhydrite to gypsum causes localized doming. Sinkholes and domes influence the direction of ground-water movement, which in turn controls the development of collapse structures.

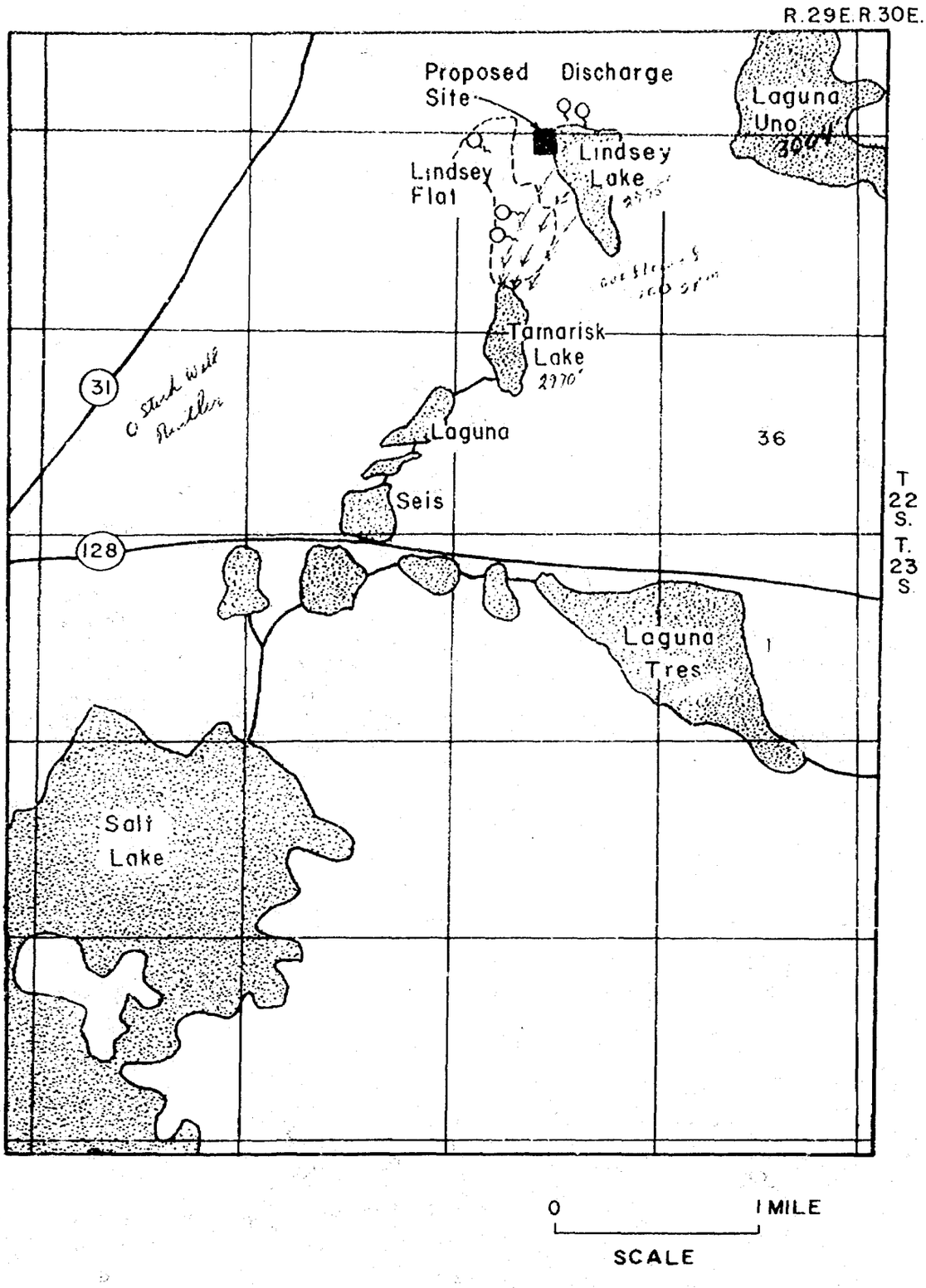


Figure 1. Distribution of lakes in the vicinity of IMC refinery and Salt Lake.

Hydrology

Ground Water

Two comprehensive studies of the hydrology of the potash area have been made by Brokaw and others (1972) and Geohydrology Associates, Inc. (1979) These studies have shown that the normal hydrologic system has been modified by collapse of Nash Draw and Clayton Basin. This has been further complicated by discharge from the various potash refineries in the area.

Hendrickson and Jones (1952, pl. 3) mapped the water table in Eddy County. East of the Pecos River the ground-water movement is predominately from north to south. Topographic divides exist along the Eddy-Lea County line and Quahada Ridge which tend to divert the regional flow into Nash Draw. The shallow ground water is potable to slightly saline in most areas. Wells outside Nash Draw generally produce adequate quantities of water to meet the stock and domestic requirements of the ranchers. However along the boundaries of Nash Draw, the regional water table intersects the land surface where ground water discharges as a series of seeps and springs. There is no known potalbe water within Nash Draw itself.

Saline water is present in most of the deeper aquifers. It has been shown that the regional dip of strata in the subsurface is from west to east. The Culebra dolomite Member of the Rustler crops out along the Pecos River, and a few wells have tapped this strata in the subsurface. Highly mineralized water was produced from wells drilled by AMAX Corporation in T. 19 S., R. 30 E. and by Mississippit Chemical Corporation in T. 21 S., R. 29 E. The AMAX wells most likely were completed in the Culebra, although it is possible that they tap the shallower Magenta Member of the Rustler Formation. The Mississippi Chemical wells are known to tap the Culebra.

The so-called rubble zone between the Salado and Rustler Formations has been called "the brine aquifer" by workers at the WIPP site and in Nash Draw. Although not everywhere present outside Nash Draw, it is as much as 60 feet thick near Salt Lake. Virtually all of the water produced from the rubble zone is very highly mineralized.

In addition to the natural ground-water flow into Nash Draw, there is a considerable amount of refinery waste released annually. Approximately 9,248 acre-feet per year is discharged as brine by refineries located in Nash Draw (Geohydrology Assoc., Inc., 1970, p. 60). In most cases this discharge is a saturated brine containing as much as 30 percent solids in the form of suspended clay.

During 1977 it was calculated that International Minerals Corporation released slightly less than 5,233 acre-feet of brine into Laguna Uno (fig. 1). Although much of the water would have been evaporated from the lake surface, this would further concentrate the salts in the lake. The remaining brine enters the shallow ground-water system within Nash Draw where there is a general movement of ground water and surface water toward Salt Lake.

Surface Water

The surface of Lindsey Lake has a land-surface elevation of about 2,975 feet, or approximately 29 feet lower than that of Laguna Uno. Nevertheless there is no surface inflow from Laguna Uno to Lindsey Lake. Some springs and seeps were noted along the north and northwest side of Lindsey Lake in May 1982; however the total inflow probably did not total 30 gpm (gallons per minute). Yet at the outlet of Lindsey Lake to Tamarisk Lake, the flow was estimated to be approximately 100 gpm.

Tamarisk Lake has a surface elevation of 2,970 feet. In addition to the inflow from Lindsey Lake, there are a number of springs and seeps located along the west side of the lake. It is difficult to estimate the total rate of spring and seep inflow due to the small quantity at any given site; however this inflow probably does not exceed 100 gpm, most of which comes from Tamarisk Flats. Although Tamarisk Lake has a combined inflow of approximately 200 gpm from the Flats and from Lindsey Lake, the total outflow was estimated to be nearly 1,000 gpm which enters Laguna Sies (fig. 1). Since most of this water cannot be attributed to surface inflow, nearly 80 percent of the lake outflow must be derived from ground-water discharge into Tamarisk Lake.

There appears to be no direct connection between Laguna Seis and Salt Lake to the south.

Detailed studies have shown that large quantities of water are lost by evaporation from the surface of the many lakes in Nash Draw (Geohydrology Assoc., Inc., 1979, p. 29). Inasmuch as evaporation rate is a function of many physical and climatic factors, the rate of evaporation varies significantly between summer and winter months. For example it was determined that the summer evaporation rate was 6.69 gpm per acre of surface area and the winter evaporation rate was 0.369 gpm per acre of surface. These studies were made at Laguna Uno which is located approximately one mile east of Lindsey Lake. Presumably the values would apply at both sites.

In May 1982 the surface area of Lindsey Lake was determined to be approximately 180 acres. Tamarisk Lake had a surface area of approximately 145 acres, and Laguna Seis and its drainage system an additional 95 acres. This combined surface area of 420 acres is adequate to evaporate 2,810 gpm during peak summer days and 155 gpm during the winter when mnimum evaporation would occur.

CHEMICAL QUALITY OF GROUND WATER

Ground water in the vicinity of Lindsey Lake ranged from slightly saline to saturated brine, using the classification of Kelly (1970, p. 3). The slightly saline samples were collected from wells located along the boundary of Nash Draw where inflow from the shallow water table aquifer has not yet been mineralized. All of the surface-water sources are very highly mineralized and frequently represent saturated brine solutions. A sample from Laguna Uno contained 361,380 mg/l (milligrams per liter) dissolved solids. A sample from the outflow of Lindsey contains 345,836 mg/l. Salt Lake contains 334,892 mg/l dissolved solids.

DISCHARGE PROPOSAL

The oil field brine disposal system proposed by Michael Grace would have a maximum capacity of 3,000 barrels per day. The brine would be obtained from various oil-field operations. After being temporarily held in storage tanks, the brine would be released to Lindsey Lake. This quantity would represent a discharge of about 88 gpm into the lake.

The chemical quality of water that would be discharged has not been identified. It is assumed that the brine would be obtained from oil wells in the area, and most of these tap the Bone Springs and Morrow zones. Samples from these zones were published by the Roswell Geological Society (1956, 1960, and 1967). A comparison of selected anions and cations from various samples are shown in Table 2.

CONCLUSIONS

1. The discharge system proposed by Michael Grace will not adversely impact the existing ground-water or surface-water systems in the vicinity of Lindsey Lake.

2. The surface area of Lindsey Lake is sufficiently large to allow for 1,204 gpm summer evaporation and 66 gpm winter evporation. With a proposed discharge by Grace ~~of about 88 gpm,~~ the total annual evaporation from Lindsey Lake would be adequate to evaporate the total amount of brine discharged for the year.

Assuming that some overflow might occur during the winter months, this quantity of brine would be evaporated from either Tamarisk Lake or Laguna Seis which are connected with Lindsey Lake.

3. The chemical quality of water from oil-field reservoirs in the area is very similar to that in Lindsey Lake and Salt Lake. No adverse impact should occur as a result of the proposed discharge.

Table 2. Partial chemical analyses of oil-field brines and other brine sources in the project area.

Source or Field	Formation	Na + K	Ca	Mg	Cl	SO_4	Total Solids
		parts per million					
Bell Lake	Bone Springs Limestone	52,450	20,600	3,100	126,250	1,050	
Scharb	Bone Springs Limestone	67,600	12,800	1,940	131,000	1,880	
Lea	Bone Springs Limestone	57,408	10,400	1,701	115,607	450	
Atoka	Morrow	17,350	1,760	316	30,000	610	
Atoka, West	Morrow	20,648	1,840	405	35,989	130	
Burton Flat	Morrow	14,591	640	261	23,791	56	
Wilson Deep	Morrow	15,962	1,160	264	26,500	990	
Salt Lake		103,687	425	5,250	178,697	5,500	334,892
IMC Discharge		116,250	350	3,750	188,400	8,250	361,380
Lindsey Lake		103,000			185,969		345,836

CORE LABORATORY

Preliminary Lab Report

Field	Formation	Na	K	Ca	Mg	Cl	SO_4	TDS
Indian Flats Pearl State #1	Delaware	39,700	410	5,540	1,540	75,000	2,200	127,500
South Culebra Bluff	Atoka Delta Rally	67,200	1,000	1,930	190	114,000	750	189,000
Nash Draw Nash Unit #3	Atoka	10,200	41	480	38	15,100	230	28,550
Bone Springs	Maddox Erg.	77,300	930	30,400	3,650	184,000	190	298,000
Loving	Cherry Canyon	53,300	830	29,700	3,320	123,000	910	200,500
SE Lindsey Lake		-	-	540	6,990	-	15,800	-

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Docket No. 16-82

Dockets Nos.19 -82 and 20-82 are tentatively set for June 23 and July 7, 1982. Applications for hearing must be filed at least 22 days in advance of hearing date.

DOCKET: COMMISSION HEARING - WEDNESDAY - JUNE 2, 1982
OIL CONSERVATION COMMISSION - 9 A.M.
MORGAN HALL, STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO

CASE 7522: (DE NOVO - Continued from May 17, 1982, Commission Hearing)

Application of Santa Fe Exploration Co. for an unorthodox gas well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of an unorthodox location 660 feet from the North and West lines of Section 14, Township 20 South, Range 25 East, Permo-Penn, Strawn, Atoka and Morrow formations, the N/2 of said Section 14 to be dedicated to the well.

Upon application of Chama Petroleum Company, this case will be heard De Novo pursuant to the provisions of Rule 1220.

CASE 7521: (DE NOVO)

Application of William B. Barnhill for an unorthodox gas well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of an unorthodox location 660 feet from the South and West lines of Section 35, Township 19 South, Range 25 East, Permo-Penn, Strawn, Atoka and Morrow formations, the S/2 of said Section 35 to be dedicated to the well.

Upon application of Chama Petroleum Company and William B. Barnhill, this case will be heard De Novo pursuant to the provisions of Rule 1220.

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Docket No. 17-82

DOCKET: EXAMINER HEARING - WEDNESDAY - JUNE 9, 1982
9 A.M. MORGAN HALL, STATE LAND OFFICE
BUILDING, SANTA FE, NEW MEXICO

The following cases will be heard before Richard L. Stamets, Examiner, or Daniel S. Nutter, Alternate Examiner:

CASE 7599: Application of Barber Oil Inc. for an Exception to Rule 705-A Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an exception to the provisions of Rule 705-A of the Division Rules and Regulations to permit 37 temporarily abandoned injection wells in its Russell Pool waterflood project to remain inactive for a period of up to three years without the required cement or bridge plugs being installed therein to isolate the injection zone.

CASE 7600: Application of Gulf Oil Corporation for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Seven Rivers and Queen formations in the perforated interval from 3338 feet to 3448 feet in its Arnott-Ramsay (NCT-B) Well No. 4 located in Unit D of Section 32, Township 25 South, Range 37 East, Langlie Mattix Pool.

CASE 7548: (Continued from April 14, 1982, Examiner Hearing)

Application of Tahoe Oil & Cattle Co. for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the San Andres formation in the perforated interval from 4932 feet to 4992 feet in its Schwalbe Well No. 1, located in Unit P of Section 21, Township 9 South, Range 37 East, West Sawyer-San Andres Pool.

CASE 7601: Application of Claude Walker for an oil treating plant permit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority for the construction and operation of an oil treating plant for the purpose of treating and reclaiming sediment oil at its salt water disposal site in the NE/4 NE/4 of Section 11, Township 10 South, Range 35 East.

CASE 7602: Application of Riqueza, Inc. for an oil treating plant permit, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority for the construction and operation of an oil treating plant for the purpose of treating and reclaiming sediment oil in the NE/4 of Section 26, Township 22 South, Range 29 East.

CASE 7603: Application of Riqueza, Inc. for an exception to Order No. R-3221, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Order No. R-3221 to permit the commercial disposal of produced brine into an unlined surface pit located near its proposed oil treating plant in the NE/4 of Section 26, Township 22 South, Range 29 East.

CASE 7510: (Continued from May 26, 1982, Examiner Hearing)

Application of S & J Oil Company for special pool rules, McKinley County, New Mexico. Applicant, in the above-styled cause, seeks the promulgation of special pool rules for the Seven Lakes-Manafee Oil Pool to provide for wells to be located not nearer than 25 feet to the quarter-quarter section line nor nearer than 165 feet to lands owned by an offset operator.

CASE 7604: Application of Rio Pecos Corporation for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests from the surface to the base of the Pennsylvanian formation underlying the W/2 of Section 2, Township 19 South, Range 32 East, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 7605: Application of Yates Petroleum Corporation for compulsory pooling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests from the top of the Wolfcamp formation through the uppermost 100 feet of the Mississippian Chester Limestone underlying the W/2 of Section 35, Township 19 South, Range 24 East, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 7606: Application of MTS Limited Partnership Company for compulsory pooling, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests from the surface through the base of the Abo formation underlying the NW/4 of Section 5, Township 7 South, Range 26 East, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 7592: (Continued from May 26, 1982, Examiner Hearing)

Application of OXOCO for compulsory pooling, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests from the surface to the base of the Mesa Verde formation underlying the E/2 of Section 20, Township 32 North, Range 8 West, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 7586: (Continued and Readvertised)

Application of Standard Resources Corp. for designation of a tight formation, Chaves and Eddy Counties, New Mexico. Applicant, in the above-styled cause, seeks the designation of the Abo-Wolfcamp formation underlying all or portions of Township 15 South, Ranges 23 through 25 East, Township 19 South, Range 20 East, and Township 20 South, Range 20 East, all in Chaves County; in Eddy County: Township 16 South, Ranges 23 through 26 East, Township 17 South, Ranges 21, 23, 24, and 25 East, and Township 18 South, Ranges 21, 23, 24 and 25 East, Township 19 South, Ranges 21, 23 and 24 East, and Township 20 South, Ranges 21, 23 and 24 East, containing 460,800 acres, more or less, as a tight formation pursuant to Section 107 of the Natural Gas Policy Act and 18 CFR Section 271. 701-705.

CASE 7607: Application of El Paso Natural Gas Company for the abolishment of the Blanco-Pictured Cliffs Pool and the expansion of the South Blanco-Pictured Cliffs Pool in Rio Arriba, Sandoval and San Juan Counties, New Mexico. Applicant, in the above-styled cause, seeks the abolishment of the Blanco-Pictured Cliffs Pool and the expansion of the horizontal limits of the South Blanco-Pictured Cliffs Pool to include the abolished acreage.

Also to be considered will be the appropriate method for institution of gas prorationing for wells effected by the change in pool designation.

CASE 7608: Application of Tenneco Oil Company for designation of a tight formation, San Juan County, New Mexico. Pursuant to Section 107 of the Natural Gas Policy Act of 1978 and 18 CFR Section 271. 701-705, applicant, in the above-styled cause, seeks the designation as a tight formation of the Dakota Producing Interval underlying the following described lands:

All of:

Sections 1 thru 6, Township 29 North, Range 8 West;

Sections 1 and 2, Township 29 North, Range 9 West;

Sections 1 thru 10 and Section 24, Township 30 North, Range 10 West;

Sections 7 thru 9, 16 thru 21 and 25 thru 36, Township 32 North, Range 7 West;

All sections, Township 32 North, Range 8 West; and

All sections, Township 32 North, Range 9 West;

Also:

All of Township 30 North, Range 8 West except Sections 3 thru 5 and Section 35;

All of Township 30 North, Range 9 West except Sections 31 thru 34;

All of Township 31 North, Range 8 West except Section 32; and

All of Township 31 North, Range 9 West except Sections 27 and 28

containing 149,760 acres, more or less.

CASE 7609: In the matter of the hearing called by the Oil Conservation Division on its own motion for an order creating and extending certain pools in Chaves, Eddy, and Lea Counties, New Mexico.

(a) CREATE a new pool in Eddy County, New Mexico, classified as a gas pool for Middle Bell Canyon production and designated as the Brushy Draw-Middle Bell Canyon Gas Pool. The discovery well is the J. C. Williamson EP-USA Well No. 2 located in Unit O of Section 26, Township 26 South, Range 29 East, NMPM. Said Pool would comprise:

TOWNSHIP 26 SOUTH, RANGE 29 EAST, NMPM
Section 26: SE/4

(b) CREATE a new pool in Lea County, New Mexico, classified as an oil pool for Bone Spring production and designated as the Legg-Bone Spring Pool. The discovery well is the Amoco Production Company State LT Well No. 1 located in Unit K of Section 32, Township 21 South, Range 33 East, NMPM. Said Pool would comprise:

TOWNSHIP 21 SOUTH, RANGE 33 EAST, NMPM
Section 32: SW/4

(c) CREATE a new pool in Chaves County, New Mexico, classified as a gas pool for Atoka production and designated as the White Ranch-Atoka Gas Pool. The discovery well is the Depco, Inc. White Ranch Unit Well No. 1 located in Unit F of Section 8, Township 13 South, Range 30 East, NMPM. Said Pool would comprise:

TOWNSHIP 13 SOUTH, RANGE 30 EAST, NMPM
Section 8: W/2

(d) EXTEND the Austin-Mississippian Gas Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 14 SOUTH, RANGE 36 EAST, NMPM
Section 3: N/2 and SW/4

(e) EXTEND the Baum-Upper Pennsylvanian Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 14 SOUTH, RANGE 33 EAST, NMPM
Section 18: NE/4

(f) EXTEND the Burton Flat-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 20 SOUTH, RANGE 28 EAST, NMPM
Section 8: S/2

(g) EXTEND the East Burton Flat-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 20 SOUTH, RANGE 29 EAST, NMPM
Section 6: S/2

(h) EXTEND the Cedar Lake-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 17 SOUTH, RANGE 30 EAST, NMPM
Section 34: N/2
Section 35: N/2

(i) EXTEND the Crooked Creek-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 24 SOUTH, RANGE 24 EAST, NMPM
Section 3: S/2
Section 10: N/2

(j) EXTEND the EK Yates-Seven Rivers-Queen Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 18 SOUTH, RANGE 34 EAST, NMPM
Section 9: SW/4

(k) EXTEND the Elkins-San Andres Pool in Chaves County, New Mexico, to include therein:

TOWNSHIP 7 SOUTH, RANGE 28 EAST, NMPM
Section 22: S/2 NW/4

(l) EXTEND the Empire-Pennsylvanian Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 17 SOUTH, RANGE 28 EAST, NMPM
Section 20: N/2

(m) EXTEND the East Grama Ridge-Morrow Gas Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 21 SOUTH, RANGE 35 EAST, NMPM
Section 31: S/2

(n) EXTEND the Hoag Tank-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 19 SOUTH, RANGE 24 EAST, NMPM
Section 34: N/2

(o) EXTEND the House-Drinkard Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 19 SOUTH, RANGE 38 EAST, NMPM
Section 35: SE/4

TOWNSHIP 20 SOUTH, RANGE 38 EAST, NMPM
Section 2: NE/4

EXAMINER HEARING*WEDNESDAY-JUNE(

(p) EXTEND the South Kemnitz Atoka-Morrow Gas Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 16 SOUTH, RANGE 34 EAST, NMPM
Section 19: S/2

(q) EXTEND the EastLaRica-Morrow Gas Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 18 SOUTH, RANGE 34 EAST, NMPM
Section 35: S/2

(r) EXTEND the North Loving-Atoka Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 23 SOUTH, RANGE 28 EAST, NMPM
Section 5: All

(s) EXTEND the North Loving-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 23 SOUTH, RANGE 28 EAST, NMPM
Section 6: S/2

(t) EXTEND the Maljamar-Atoka Gas Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 16 SOUTH, RANGE 33 EAST, NMPM
Section 28: E/2

(u) EXTEND the South Salt Lake-Morrow Gas Pool in Lea County, New Mexico to include therein:

TOWNSHIP 21 SOUTH, RANGE 32 EAST, NMPM
Section 6: Lots 1, 2, 3, 4, 5, 6, 7, and 8

(v) EXTEND the Sand Hills Grayburg-San Andres Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 20 SOUTH, RANGE 39 EAST, NMPM
Section 31: SE/4

(w) EXTEND the Shugart-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 19 SOUTH, RANGE 31 EAST, NMPM
Section 4: N/2

(x) EXTEND the Tom-Tom San Andres Pool in Chaves County, New Mexico, to include therein:

TOWNSHIP 7 SOUTH, RANGE 31 EAST, NMPM
Section 35: NE/4

(y) EXTEND the Travis-Upper Pennsylvanian Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 18 SOUTH, RANGE 28 EAST, NMPM
Section 13: N/2 NW/4

(z) EXTEND the North Turkey Track-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 18 SOUTH, RANGE 28 EAST, NMPM
Section 27: E/2

(aa) EXTEND the White City-Pennsylvanian Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 25 SOUTH, RANGE 26 EAST, NMPM
Section 13: All

(bb) EXTEND the North Young-Bone Spring Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 18 SOUTH, RANGE 32 EAST, NMPM
Section 4: SE/4
Section 11: W/2

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Docket No. 18-82

DOCKET: EXAMINER HEARING - THURSDAY- JUNE 17, 1982

9 A.M. - OIL CONSERVATION DIVISION CONFERENCE ROOM, STATE LAND OFFICE BUILDING, SANTA FE, NEW MEXICO

The following cases will be heard before Daniel S. Nutter, Examiner, or Richard L. Stamets, Alternate Examiner:

ALLOWABLE: (1) Consideration of the allowable production of gas for July, 1982, from fifteen prorated pools in Lea, Eddy, and Chaves Counties, New Mexico.

(2) Consideration of the allowable production of gas for July, 1982, from four prorated pools in San Juan, Rio Arriba, and Sandoval Counties, New Mexico.

BEFORE THE OIL CONSERVATION DIVISION

DEPARTMENT OF ENERGY AND MINERALS

STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF RIQUEZA, INC. FOR A TREATING PLANT PERMIT AND AN EXCEPTION TO ORDER R-3221, AS AMENDED EDDY COUNTY NEW MEXICO

Case 7603

APPLICATION

COMES NOW Riqueza, Inc., by its undersigned attorney, and hereby makes application for a treating plant permit and an exception to Order R-3221, as amended and in support of this Application would show the Division:

1. That its principal place of business is located in Eddy County, New Mexico.

2. That this Application is made pursuant to the provisions of Rule 312 of the rules and regulations of the New Mexico Oil Conservation Division and Order R-3221, as amended.

3. That the proposed location of the treating plant and the salt water disposal site is in the NE¼ of Section 26, Township 22 South, Range 29 East, NMPM, Eddy County, New Mexico.

4. That disposal of salt water as an exception to Order R-3221, as amended, will not constitute a hazard to or impairment to fresh water supplies in the vicinity of the treating plant site or the salt water disposal site.

5. That the type and capacity of the plant are of sufficient volume and quality to store and treat the sediment oil and tank bottoms incoming into the plant.

MAY 18 1982

WHEREFORE, Riqueza, Inc. requests that this Application be set for hearing before a duly appointed Examiner of the Oil Conservation Division at the next available hearing date, that notice be given as required by law and the rules of the Division, and that this Application for a treating plant permit and an exception to Order R-3221, as amended, be approved.

Respectfully submitted,

Ernest L. Padilla
Post Office Box 2523
Santa Fe, N.M. 87501
505-988-7577

Attorney for Applicant

DIANE

STATE OF NEW MEXICO

ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
DIVISION FOR THE PURPOSE OF
CONSIDERING:

CASE NO. 7603

Order No. R- 7027

APPLICATION OF RIQUEZA, INC. FOR AN
EXCEPTION TO ORDER NO. R-3221,
AS AMENDED, EDDY COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on June 9, 1982, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this_____day of June, 1982, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Riqueza, Inc., is the owner and operator of ~~the~~ a sediment oil treatment plant, located in ~~Unit~~ NE/4 of Section 26, Township 22 South, Range 29 East, NMPM, ~~_____~~ pool, Eddy County, New Mexico.

(3) That Order (3) of Division Order No. R-3221, as amended, prohibits in that area encompassed by Lea, Eddy, Chaves, and Roosevelt Counties, New Mexico, the disposal, subject to minor exceptions, of water produced in conjunction with the production of oil or gas, or both, on the surface of the ground, or in any pit, pond, lake, depression, draw, streambed, or arroyo, or in any watercourse, or in any other place or in any manner which would constitute a hazard to any fresh water supplies and said disposal has not previously been prohibited.

(4) That the aforesaid Order No. R-3221 was issued in order to afford reasonable protection against contamination of fresh water supplies designated by the State Engineer through disposal of water produced in conjunction with the production of oil or gas, or both, in unlined surface pits.

(5) That the State Engineer has designated, pursuant to Section 65-3-11 (15), N.M.S.A., 1953 Compilation, all underground water in the State of New Mexico containing 10,000 parts per million or less of dissolved solids as fresh water supplies to be afforded reasonable protection against contamination; except that said designation does not include any

water for which there is no present or reasonably foreseeable benefitical use that would be impaired by contamination.

(6) That the applicant seeks as an exception to the provisions of the aforesaid Order (3) to permit the disposal of salt water ~~produced by~~ collected at applicant's above-described ~~well~~ facility into an ~~unlined surface pit~~ salt lake (Lindsey Lake) located in ~~Unit~~ the NE/4 of said Section 26.

(7) That applicant's facility is expected to handle ~~produces~~ approximately 3000 barrels of water per day.

(8) That there appears to be no shallow fresh water in the vicinity of the subject pit for which a present or reasonably foreseeable beneficial use is or will be made that would be impaired by contamination from the subject pit.

(9) That the area of the salt lake is sufficient to provide for evaporation in excess of the volume of saltwater proposed for disposal (up to 3000 barrels of water per day),

(10) That the applicant should construct a header or settling pit upstream from Lindsay Lake to receive the initial discharge of waters from the treatment facility.

(11) That such header or settling pit shall be of sufficient size and design to prevent the movement of oil from the treatment facility to Lindsay Lake.

(12) That if the applicant fails to prevent the movement of such oils to the surface of Lindsay Lake the Director of the Division should be empowered to administratively suspend or rescind the authority for use of such lake for saltwater disposal.

(13) That this application should be approved.

IT IS THEREFORE ORDERED:

(1) That the applicant, Riqueza, Inc., is hereby granted an exception to Order (3) of Division Order No. R-3221, as amended, to dispose of ~~water~~ up to 3000 barrels of salt water per day produced in conjunction with the operation of its sediment oil treatment facility ~~production of oil or gas, or both, from its~~ _____, located in ~~Unit~~ the NE/4 of Section 26, Township 22 South, Range 29 East, NMPM, ~~Pool~~, Eddy County, New Mexico, ~~in an~~ in a salt lake (Lindsey Lake) also ~~unlined surface pit~~ located ~~in Unit~~ the ~~SE~~ NE/4 of said Section 26, ~~until _____, 1982.~~

(2)

(3) That the Director of the Division may by administrative order suspend or ~~rescind~~ such authority whenever it reasonably appears to the Director that such suspension or ~~rescission~~ would serve to protect fresh water supplies from contamination. or ~~that~~ if ~~the~~ the applicant should permit the movement of oil onto the surface of Lindsey Lake.

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

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

(2) That prior to disposal of any waters into Lindsey Lake the applicant shall construct a pit upstream from such lake to receive the initial discharge of water from the treatment facility and shall maintain such pit in a manner as to prevent the movement of oil onto the surface of said lake.

Dismissed

Parker
Burleff, Middleton

DOCKET MAILED

Date 5/28/82 (DWF)