CASE NO.

7612

APPLICATION,

TRANSCRIPTS,

SMALL EXHIBITS,

ETC.

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

EXAMINER HEARING

IN THE MATTER OF:

Application of B & E, Inc., for salt water disposal, Eddy County, New Mexico. CASE 7612

BEFORE: Daniel S. Nutter

TRANSCRIPT OF HEARING

A P P E A R A N C E S

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MR. NUTTER: Call next Case Number 7612.

MR. PEARCE: That is the application of B & E, INc., for salt water disposal, Eddy County, New Mexico.

MR. TABOR: Mr. Examiner, I'm Cass Tabor, from McCormich and Forbes, and today we would call as witnesses, Gene Green, Mr. T. E. Kelly, and also Bill Ball.

(Witnesses sworn.)

MR. NUTTER: Are there other appearances in Case Number 7612?

Proceed, please.

MR. TABOR: We would ask Gene Green to testify first.

GENE GREEN

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

DIRECT EXAMINATION

BY MR. TABOR:

Q Would you please state your name, place of residence?

A I'm Gene Green. I live in Carlsbad.

Q. What is your present occupation?

A. I'm Vice President for B & E, Incorporated.

Q. Okay, B & E, Incorporated, have filed this application and have you been involved in the preparation and submission of the application to the Commission?

A. Yes, I have.

Q. This application concerns two sites, is that not correct?

A. That is correct.

Q. And in connection with the application B & E has contacted some experts, if you could tell us who these experts are?

A. Yes, sir, I have contacted a hydrologist, Mr. T. E. Kelly, and also the BLM, Mr. Jack Ragsdale with the Bureau of Land Management.

Q. Okay, and concerning the plant design, have you also contacted an expert in that regard?

A. Yes, we have. We've contacted C. E. Metco, their engineer, Mr. Bill Ball.

Q. In presenting this application could you tell the Examiner what the need is that you feel in this particular area? Why you need this?

A. We feel like there is enough wells producing disposal water in our area that there is a dire need for a

place to go with it in the southern part of the state. As there is now, there's just one commercial and one private, and the commercial doesn't -- they can't accept enough water to compensate everything that's being produced in that area right now.

Q. And are you aware of any dumping of salt water in the area?

A. I know there is some illegal dumping going on.

Q. You have in the application two sites proposed, and that's Section 12 in 23 South, Range 29 East, and also Section 6 of Township 23 South, Range 30 East. Are those two particular locations leased land, Federal land, or are they --

A. One is Federal and one is private land and we do have a lease on the private land.

Q. Okay, on -- do you know on which particular description that that is, that you have the lease?

A. I believe that the lease is on Section 12, Township 23 South, Range 29 East.

Q. Are you -- you do have a lease with the individual who owns the land, is that correct?

A. Yes, we do.

MR. TABOR: Mr. Examiner, if we could, as

far as exhibits are concerned, we've provided an application packet. Would you mind if we referred to page numbers and maybe numbered the page numbers in order to alleviate having to introduce specific exhibits, taking them out of the packet themselves?

MR. NUTTER: Yeah, we can refer to these in the booklet that was furnished with the application. You may make the booklet an exhibit, if you wish.

MR. TABOR: Okay. We'll have to do that through several witnesses and there are an assortment of data here.

MR. NUTTER: Okay, well, they can identify the portion that they prepared.

MR. TABOR: Okay, thank you, Mr. Examiner.

Q. In the event that this application is approved by the Commission, you will be dealing with the Federal people in order to obtain a lease, is that correct?

A. That is correct.

Q. In connection with your proposed site, have you contacted the State Highway Department?

A. Yes, we have. We have a signed letter from Mr. Downey stating to the fact that what we are doing in this area does not affect his drainage operation off of the highway.

Q. Okay, and this particular facility would be located near the highway, is that correct?

A. That is correct.

Q. I'd like to refer you to what is marked as page twenty-one in the application, and tell us what that particular document is.

A. That is a letter that we took to Mr. Cliff Downey and had his approval on, stating to the fact that the water that we would be putting into this salt water lake disposal system wouldin no way bother his drainage operation off of the highway.

MR. NUTTER: Mr. Tabor.

MR. TABOR: Yes, sir.

MR. NUTTER: You said page twenty-one of the application. From here on out let's refer to it as the exhibit, shall we?

MR. TABOR: Okay.

MR. NUTTER: And call that Exhibit Number One.

MR. TABOR: Sure, that will be fine.

MR. NUTTER: That will be page twenty-one of Exhibit Number One, then, is what you were just referring to.

MR. TABOR: Very well.

Q. Not going into a whole lot of detail, did you not assist in obtaining water samples from the proposed discharge site and area surrounding, in order to assist Mr. Kelly to comply with any provisions that the Water Quality Board would have as to the effects it would have in the water discharged?

A. Yes, sir, I did. I took four samples from various places in the lakes, in the lake system around the area, and had them analyzed.

Q. Okay, who did you forward these samples to in order to have the testing done?

A. Martin Water Lab in Monahans, Texas.

Q. I'd like to refer you to pages seventeen. eighteen, nineteen, and twenty of Exhibit One, and ask you if you can identify those particular documents?

A. Yes, I can. This is the analysis that we received from Martin Water Laboratory.

Q. Did you make use of these in any way in the preparation of the data that's in the exhibit?

A. Yes, we did. We -- we used them to determine that the water that we would be putting into the lake is as good or better than the water that is already in the lake as it is now.

Q. You did forward these to Mr. T. E. Kelly,

is that correct?

A. That is correct.

Q. We have an expert to testify as to the plan of operations, but could you go into detail and tell us, do you plan on having an individual at the plant site at all times in order to check the loading and unloading?

A. No, we do not. The design of the plant is so constructed that we felt like that a man could check on it once a day and it has safety devices built into it that would shut it down in the event of some bad water getting in.

Q. But you will have an individual checking sometime during each -- each day, is that correct?

A. That is correct.

Q. Is this part of the data contained in Exhibit One, to the best of your knowledge, the data which you submitted yourself, is it true and correct to the best of your knowledge and belief?

A. Yes, it is.

Q. I'd like to show you what is -- we're going to have to label this, it is in the packet in the back, Mr. Examiner, and ask you to identify -- shall we label this "A"?

MR. NUTTER: That will be Exhibit One-A.

Q. One-A. Can you identify what this parti-

cular document is and who prepared it?

A. Yes, sir, Mr. Jack Kennedy, an engineer from Carlsbad, prepared this plat for us. It shows the topography and where these two sites are located.

Q. Okay, it also shows, does it not, the proposed location of the storage tanks, et cetera, of the plant facility itself?

A. Yes, it does.

Q. At one time the original application did contain a site that is now different than yyou propose, is that correct?

A. That is right. The original site was on Bureau of Land Management and we have acquired a deeded lease so we have selected an alternate site, which is in Section 6.

Q. Okay, this has been noted on the application that the Commission has at this time, is that not correct?

A. That is correct.

Q. Okay.

MR. NUTTER: In other words, when the application was originally considered it was for disposal into two -- into one site, being in the southeast end of Laguna Tres in Section 12 and/or the northeast side of Laguna Quatro in Section 6.

Now do I understand correctly that one of

these is being dropped now?

MR. TABOR: I believe at one time there was -- on the southwest side of Laguna Quatro is where it originally -- I believe one of the maps in this particular exhibit --

A. Page ten.

MR. TABOR: Page 10 of the exhibit shows that to be the site reflected.

It is now on the northeast side of Laguna Quatro that this -- we have proposed the facility and as far as the rest of the application, it may be informative with that change, but this particular map on page ten is not.

MR. NUTTER: Okay, in other words, the original map here on page ten of Exhibit One shows two sites on Laguna Quatro.

MR. TABOR: That's correct.

MR. NUTTER: Private land on the northeast side and the BLM land on the southeast side.

MR. TABOR: It showed originally on Laguna Tres at the easterly edge of Laguna Tres was one site; the other site was on the southeast.

We now propose that the southeast side of Laguna Quatro be moved to the northeast.

If I may approach --

MR. NUTTER: This one stands.

MR. TABOR: Yes.

MR. NUTTER: Now this is the BLM site down here.

MR. TABOR: That's correct.

MR. NUTTER: On Laguna Tres, isn't it?

MR. TABOR: Originally both those sites were in the BLM.

MR. NUTTER: Oh, I see.

MR. TABOR: And now we have obtained a lease from an individual and have now been able to move that site that was on Laguna Quatro, the southeast side, to the northeast, because it is leased land, patented land.

MR. NUTTER: Okay, so the -- there's no change from what we've advertised here.

MR. TABOR: No, sir.

A. No, sir.

MR. TABOR: Other than this change on this particular map on page ten.

MR. NUTTER: Okay.

Q. Do you feel that in light of the experience and also the data which you compiled in connection with your experts, that this application, if granted, would be in the best interest of conservation and not adversely affect

any correlative rights?

A. Yes, I do.

MR. TABOR: I have nothing further of this witness at this time.

CROSS EXAMINATION

BY MR. NUTTER:

Q. Well now, Mr. Green, you had obtained the right to use the site on the private land, is that correct?

A. That is correct.

Q. What about the site on the BLM land down on Laguna Tres, is that still being negotiated?

A. Yes, sir, it is. We are in the process of acquiring it. They -- they were holding back, waiting to see what the Commission decides to do. They're kind of waiting on your decision as to whether to go ahead with --

Q. They won't issue the land unless they know you can use it.

A. That is correct.

Q. And so your application is for one site and/or the other site.

A. Yes, sir.

Q. But you're seeking really the "AND".

A. Yes, sir.

Q. Now, would you elaborate a little bit on why you obtained this letter from the State Highway Department? You mentioned their drainage --

A. Yes, sir, I did.

Q. -- program.

A. They are in the process of widening that highway and they were having to --

Q. Referring back to Exhibit Ten, now, tell me what the highway is there.

A. Okay, the highway is State Road 128.

Q. That's that line that's diagonally across over Laguna Quatro, is that correct?

A. That is correct. They -- they are in the process of widening that highway due to the WIPP site out there and the traffic that is imposed on it, and they have gone in and cut in surface drainage from one lake to the other and all of them to drain into the Great Salt Lake, and we -- I had seen them out there working and BLM informed me that we needed to probably talk to Mr. Kreb down there, he is the engineer for the Highway Department that was in -- in charge of that operation out there, and I contacted him by phone and took a letter to him, and he -- he was in agreement that no more water than what we would be putting in it, being south of the highway, it would not bother his operations.

Q. The drainage normally is from the north to south in this area, is it not?

A. That is correct.

Q. And so your proposal is south of the highway, so you're not creating any drainage problem through the highway or under the highway or over the highway.

A. Yes, sir, that's correct.

Q. And therefor he has given you a letter -- or he's signed a letter that you all sent to him.

A. He asked us to prepare the letter and he was in the field at the time and I took it to him and he read it and was satisfied with it and signed it for us.

Q. And you have agreed there in the letter that if you do interfere with their program of drainage in the area you'd discontinue operations until it is corrected.

A. That is correct, yes, sir.

Q. I see.

MR. NUTTER: Are there any further questions of Mr. Green?

MR. TABOR: We'd like to bring one point out and I think it is -- you haven't made it clear.

REDIRECT EXAMINATION

BY MR. TABOR:

Q. B & E is asking that approval be granted on both sides, is that not correct?

A. That is correct.

MR. NUTTER: Right. Okay, Mr. Green, I just happened to think.

RECROSS EXAMINATION

BY MR. NUTTER:

Q. You said you caught those four samples.

A. Yes, sir.

Q. Now give me the sites where you caught the samples and let me indicate them on one or these maps, if they haven't already been indicated on a map.

A. Okay, the sample from Lake --

Q. Wait a minute now, let me find the samples. They start on page 17, okay.

A. Yes, sir.

Q. Sample No. 1 is called Lake No. 1.

A. Yes, sir, that is from the Quatro Lake. I took that sample from where our site would be located on the -- on the lake.

Q. Now at one time you were proposing two sites on the Quatro Lake, which one?

A. Okay, that is -- the sample is from the

one that we are asking for now, on the north side of the lake.

Q. Now, if I go to Exhibit One-A, where is the lake on Exhibit One-A, Mr. Green?

A. Okay, this is -- it's at the top right-hand corner. You can see State Highway 128 in the top right-hand corner.

Q. Okay.

A. And the lake is south, crosses the highway right there, and it's just south of our secondary location there.

Q. Is this -- is this line that comes curving around through here that's marked 2980, is that the water level of the lake, the line with the little marks on it, the little hachures? Is that the lake?

A. Yes, sir, that is.

Q. This is the lake, okay.

A. Yes, sir.

Q. And then the Lake No. 1 sample was taken on what point?

A. Okay, it was taken just off of the highway right there where it goes under the highway there.

Q. Well, it doesn't seem to be -- it doesn't seem to go under the highway on this map.

A. It's -- yes, let's refer to page ten in

the exhibit.

We can see there is Laguna Quatro.

Q. Okay.

A. We took that sample right where the -- where the lake crosses the highway on the east side there.

Q. On the east side.

A. Yes, sir.

Q. Okay.

A. Okay, in Lake No. 2, the sample on page seventeen, was taken from the north edge there of the Great Salt Lake.

Q. North end of the Great Salt Lake.

A. Yes, sir.

Q. Whereabouts, where that inlet is, or what?

A. Yes, sir, right where the inlet is into the lake.

Q. Okay.

A. Okay, and then the Spring No. 1 on page seventeen, that was taken at the very upper edge of the Laguna Quatro, the very north of that lake. There is an underground flow into the lake there at that point.

Q. Okay.

A. And also Spring No. 2 on page seventeen was taken at the north edge of the Great Salt Lake. There is

an underground flow into that lake, also.

Q. That would be just a short distance west of the inlet there.

A. Yes, sir, it is.

Q. At the north tip there?

A. That very north tip of that lake.

Q. That's Spring No. 2 sample.

A. Yes, sir.

Q. And these are underground flows into the lakes, are they?

A. These two are that we referred to as springs are underground sources. It comes up out of the ground.

MR. TABOR: But it's in the lake

A. It is in the lake.

Q. And how do you sample the spring flow?

A. Took a bottle out there and put it down in the water where it's bubbling up and shook it two or three times.

Q. You can see the water coming into the lake up there?

A. Yes, sir, you can see it coming into the lake there.

Q. I see, and you just shot the bottle down

in there and catch some of that water that's coming in.

A. Yes, sir.

QUESTIONS BY MR. JOHNSON:

Q. What procedures were used for sampling? What kind of containers? Did you do any acidizing, stabilization?

A. I sent it to Martin Water Labs and asked them to -- I think that you had given us a copy of what you had wanted us to run on the water and I just sent them that copy and had them run the analysis on that water.

We -- I used a plastic container to sample the water in a gallon jug, each one.

Q. Could you be more specific? What kind of gallon jug? Given by them or --

A. No, sir.

Q. -- a milk jug, or what?

A. It was a distilled water bottle, is what it was, one gallon distilled water, plastic water jug.

MR. NUTTER: Do you have any further questions?

MR. JOHNSON: No, sir.

MR. NUTTER: Are there any other questions of Mr. Green? He may be excused.

MR. TABOR: Call at this time Mr. Kelly.

T. E. (TIM) KELLY

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

DIRECT EXAMINATION

BY MR. TABOR:

Q. Mr. Kelly, would you state your full name for the record, please, and your present place of employment?

A. My name is Tim Kelly and I am President of Geohydrology Associates in Albuquerque, New Mexico.

Q. And have you testified before the Commission before?

A. Yes, I have.

Q. You were accepted as an expert hydrologist, is that not correct?

A. That's correct.

MR. NUTTER: Mr. Kelly, if I might ask you, what case did you testify on?

A. It was in behalf of the Michael Grace application.

MR. NUTTER: The one that was just recently heard, is that right?

A. Yes, sir, it was the 9th of June, I believe.

MR. NUTTER: Okay.

And that involved more or less this same area, didn't it?

A. Yes, sir.

MR. NUTTER: Okay.

MR. TABOR: We would tender him as an expert.

MR. NUTTER: Mr. Kelly, I presume, was previously qualified?

MR. TABOR: Yes, he has.

MR. NUTTER: Okay.

Q. Could you go ahead and tell us how you were initially contacted by B & E, Incorporated, and in connection with what?

A. B & E contacted our firm and asked us if we would make an evaluation of the proposed area. This contact, I believe, originated as a result of the work that we have done in the same area on a project that was funded in 1978 by the Bureau of Land Management, when we made a rather extensive study of the Nash Draw Area and the potash refining region.

We were able to make the study for B & E in March or April of this year, and that study entailed a lit-

erature and file search updating our information from previous work for the BLM and then we made a field investigation to verify the present conditions that exist in the area.

And then we prepared our report, which is included as part of Exhibit A.

Q. And that particular report in Exhibit One is pages -- tell me if that is not what is pages six through fourteen, including page fifteen, which is the bibliography?

Can you identify those particular pages of Exhibit One?

A. Yes, that's our report.

Q. Also pages four and five, three, four, five, are also initial pages of that report, are they not?

A. Right.

Q. Could you tell us what the purpose of your hydrological investigation was in connection with B & E?

A. Well, B & E explained to us what their intent was and they were -- they wanted us to determine what the impacts of that proposed system would be on the hydrologic environment and the -- the existing system as it exists.

Q. Could you go ahead and give a description of the project area, mainly the geology of the project area?

A. Well, the area is within a topographic depression referred to commonly as Nash Draw, which is a collapsed

feature associated with the removal of, the natural removal of salt from the Salado formation, which is fairly close to the surface at that point.

With the removal of the salt, the formation, which is primarily the Rustler formation, collapsed, creating a so-called rubble zone, and it is within this rubble zone that the potash refineries have been discharging their waste for a number of years.

Also, there is every indication that the natural flow of water in the area is also highly concentrated, in fact saturated brine.

So it was within this area that B & E proposed to locate their facility.

Q. Referring to your report, is there anything -- is there anything that you would feel that is imperative that be noted regarding the geology? Would you --

A. Well, perhaps this is best illustrated on page eight of Exhibit A, which shows the -- the undisturbed formation on either side of the -- of Nash Draw, with the rubble zone in the bottom and the brine aquifer, as well as the saline aquifer, on top, and then into this is the -- the surface flow of the brine potash waste, and the general flow in this area, both of surface water and ground water, is -- is to the south, from the north to south, with the ultimate dis-

charge point being Salt Lake.

MR. NUTTER: Well now, Mr. Kelly, if I may interrupt you here, you show the Salado formation extending under Nash DRaw, so the entire salt has not been washed away.

A. No, sir, the salt has -- I think at that point is approximately 2000 feet thick. It's only the upper portion of the salt that's been dissolved out.

MR. NUTTER: How thick would the salt be on the east and west sides here of Nash Draw?

A. I believe the estimates are that approximately 50 feet of salt has been dissolved out from beneath Nash Draw. In addition to that, there was also evaporite deposits and soluble deposits within the Rustler formation itself.

MR. NUTTER: And those were carried away.

A. So those were also removed, so that the composite collapse is in excess of 50 feet, but approximately 50 feet of Salado has been dissolved.

MR. NUTTER: Okay.

A. The area originally was tapped by several stock wells. These are shown on page ten of the Exhibit A. The two I'd like to refer to is the JBarF Well, located on the southeast corner of Laguna Uno, and also Nash Well, which is located in Laguna Quatro. And when these wells were con-

structed in the 1930ies, they were producing, reportedly potable water and water that was used for stock watering.

However, by 1958 Nash WEll was completely inundated and the JBarF Well was no longer in use; the water level was at approximately land surface, indicating that the water level in this area had risen approximately 150 feet.

The only source of water that can be attributed to creat this rise in the ground water is the discharge from the potash refineries and I'll point out International Minerals and Chemical Corporation, shown on that particular illustration, which discharges approximately 3200-acre -- excuse me, 3200-gallons a minute into Laguna Uno, and this has been going on since the mid-1940s. The discharge from IMC is a saturated brine of approximately 325,000 parts per million dissolved solid, and it contains approximately 30 percent solid material in the form of suspended clays.

The water goes into Laguna Uno, which has no natural discharge point; consequently, the water is either evaporated from Laguna Uno or enters the ground water system and moves to the southwest toward Salt Lake.

The -- there is no, as I mentioned, no surface connection between Laguna Uno and Laguna Dos; likewise, there is no connection between Laguna Dos and Lagun Quatro.

MR. NUTTER: I've lost Dos. Where is Dos?

A. It's --

MR. NUTTER: Oh, yeah, I found it.

A. It's just --

MR. NUTTER: It's the little one there.

A. Right.

Yet the connection between Laguna Quatro and Laguna Tres, which is recently constructed culvert put in by the Highway Department, has a natural flow of approximately 500 gallons a minute. This was in May of 1982, and since there is no surface inflow to Laguna Quatro, other than a few isolated springs, the only conclusion we can reach is that the natural -- it is a natural ground water discharge point for brine and it is coming to the surface in Laguna Quatro and then moving through the series of lakes to Laguna Tres, and ultimately into Salt Lake.

MR. NUTTER: Okay, it's going underground, then, from Laguna Uno to Laguna Dos, and going underground from Dos to Quatro, and then from Quatro over to Tres there's about 500 gallons per minute through this culvert.

A. Yes, sir.

MR. NUTTER: So there's 2700 gallons of it, then, that's still -- stays underground somewhere.

A. That's right, and we can't account for it.

MR. NUTTER: Okay.

A. The proposed sites by B & E would discharge water either into Laguna Quatro or Laguna Tres, and the amount of water tht would be discharged would be -- would range anywhere from 218 gallons a minute to as much as 480 gallons a minute, which is what the plant design is.

Our studies several years ago for the Bureau of Land Management indicate that the evaporation rates from these lakes, that is from Laguna Quatro, Laguna Tres, and several small unnamed lakes, is adequate to evaporate approximately 400 gallons a minute during the coldest part of the year, and during the -- during the summer months it could be as much as 8000 gallons a minute from these lakes.

MR. NUTTER: Now what lakes are you talking about?

A. The Lakes, Laguna Quatro, Laguna Tres, and the three unnamed smaller lakes between there and Salt Lake.

MR. NUTTER: Okay.

A. So that the total surface area of these that are shown on the map as well as several marshes and sloughs which are not shown on the map, would be capable of evaporating as much as 8000 gallons a minute during the summer.

Considering the fact that the operator proposes to discharge approximately 218 gallons a minute and that the discharge by the operator would be very similar to the water that's already in the natural system, it is our conclusion that this operation will not adversely impact the hydrologic system as it exists today.

MR. NUTTER: Now, in making your study, Mr, Kelly, did the applicants furnish you with some figures as to what they would be expecting to put into these lakes?

A. Yes, they did.

MR. NUTTER: And what amount of water was that?

A. It was 218 gallons a minute. I would like to refer you to page thirteen of Exhibit A, I believe it is, the discharge proposal, and it was their proposal to process approximately fifty loads -- yes, fifty loads of oil field brine of approximately 150 barrels each, which would constitute a continuous discharge of approximately 218 gallons a minute.

MR. NUTTER: Okay, so your minimum evaporation rate in the winter months you figured from the two named lakes and the three unnamed lakes, would be 400 gallons per minute.

A. Yes, sir.

MR. NUTTER: So you'd stay within that --

A. Yes, sir.

MR. NUTTER: -- that figure. Of course, the salt is not going to evaporate.

A. No, sir, the salt is not. However, you mentioned, there's a large quantity of water that can't even be accounted for that's moving through the area, and we feel that the system has now reached equilibrium. The study that we made for the BLM indicates that during the year these lakes really don't show a great deal of fluctuation in the water level from winter to summer, which indicates then that the water is being lost during the summer and it's being made up for in the winter, but there's also a great deal of water that's moving through the system that we can't account for, and probably only is going into Salt Lake itself.

MR. NUTTER: Well now, even prior to the time of the installation of the potash facilities out there, the underground movement of water was occurring and the collapse of the Salado and the -- and the rubble zone -- creation of the rubble zone and all that occurred before there was ever any potash operations.

A. Yes, sir. The area --

MR. NUTTER: So there's a natural flow notwithstanding oil field discharge and potash mine discharge.

A. That's correct. The potash mines have simply selected a good area to discharge their waste, because the area was already through natural acitivity highly saline.

As I mentioned, there were several stock wells and these were up on the flanks, which would actually intercept fresh water coming into Nash Draw, which would then mix with the existing brine and lose its identity. Some of these wells have been lost perhaps due to the potash discharge, but the system itself is a natural brine area.

MR. NUTTER: Now, when you stated that it's in equilibrium now, you're considering equilibrium with the natural flow as well as the flow that's coming from that IMC --

A. Right.

MR. NUTTER: -- installation, and I think there are other installations --

A. There are others.

MR. NUTTER: -- farther on up Nash Draw, aren't there?

A. Right. IMC is simply the furthest one south and the one that was shown on the maps. Mississippi Chemical and Duval and a number of others are -- I think there are a total of eight dischargers in the area.

MR. NUTTER: So it's all in equilibrium

now.

A. Yes, sir.

MR. NUTTER: And adding 218 gallons a minute is not going to take it out of equilibrium.

A. No, sir.

MR. NUTTER: Okay, go ahead.

Q. Have you had a chance to -- you were submitted the testing results on those samples that Mr. Green took, were you not?

A. Yes, we were, and we -- you can compare that data and you'll notice that the oil field brine on page eighteen and the -- excuse me, on page nineteen, and by comparing down near the middle of the bottom the total dissolved solids, you can see that the natural water is higher in mineralization than the amount of mineralization contained in the water samples from wells that were selected as indicative of the type of water that would be discharged.

So the actual oil field brine is less highly mineralized than the natural water in the system.

MR. JOHNSON: Where did you select these wells, these --

A. These were selected by Mr. Green. They have a contract hauling system at the present time and these are wells which they're currently haulting oil field brine

from. These are wells which would be used, or which would be discharged into the system. Also I might mention that these are from the Morrow and the Bone Springs, which are the major oil bearing zones in that area, so that they should be representative of those formations, as well as a large number of wells in the area.

MR. NUTTER: Well now, Mr. Green, there's also a considerable amount of Delaware production in this area. What kind of water is the Delaware?

MR. GREEN: We don't -- it's not in the process right now of hauling anything from the Delaware formation, so I couldn't -- couldn't tell you. I did not run a Delaware sample.

MR. NUTTER: Bone Spring and Morrow is what you principally are concerned with.

MR. GREEN: Yes, sir, that's what we're primarily hauling right now.

MR. NUTTER: Excuse me, Mr. Kelly.

Q. Is there going to be any ground water effect as far as potable water; there's none in this area; there won't be any adverse effects by B & E's proposed plant site, either one of the plant sites, is that correct?

A. That's correct. There is no potable water in the area and either site would fall within the criteria

that we analyzed and that is the total amount of evaporation from the surface area of the lakes. They are very close proximity to one another and it wouldn't make any difference which site was selected.

Q. On page thirteen of this Exhibit One, you have stated that the winter capacity is 443 gallons per minute. This did not take into consideration that the site would be on the northeast side of Laguna Quatro, is that correct?

The surface area encompassed as far as the evaporation level was for Tres, Laguna Tres, and the three unnamed, is that not correct?

A. The -- I believe in making that calculation we were using the area downstream from the site in Section 12, which would have been at the northeast end of Laguna Tres, so it did not include much of Laguna Quatro.

Q. So there is some --

A. That's correct.

Q. -- additional evaporative amounts of the capacity --

A. Right.

Q. You do not feel, then, that this proposed site will adversely affect any correlative rights in this area or the hydrology of the area?

A. No. Our conclusion is that the type of

operation proposed by B & E would not adversely affect the hydrologic system.

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

CROSS EXAMINATION

BY MR. NUTTER:

Q. Mr. Kelly, in a number of instances where we've considered discharge of brines into natural salt lakes in southeast New Mexico there has been a situation where there was a natural flow from the Ogalalla or other fresh water sands into the lake bed, and that if the lake bed hydrostatic head exceeded a certain amount, the flow would be reversed and the salt water would flow into the fresh water sand.

A. Yes, sir.

Q. Does that situation exist here in any place around any of these lakes?

A. No, sir. The -- all of the flow into the lakes is highly mineralized brine, as indicated by the two spring samples which Mr. Green collected.

The nearest fresh water -- I don't even want to call it fresh water -- source, but in the approximate position of the "L" of Laguna Seis on page ten, where it's --

Q. Okay.

A. Where it states Laguna Seis, at the approximate position of the letter "L", there's a stock well located, which produces water that's approximately 3000 parts per million dissolved solids. For Nash Draw 3000 parts per million is almost considered potable. It is used as a stock well and the water from that, we have -- well, the ground water contours indicate that that flow is from the northwest -- excuse me -- yes, northwest to southeast into that particular stock well, but that's the only one where there is any water that could occur, any source of fresh water. Once it hits those lakes everything we see is highly mineralized, so that the evaporation consumes the amount of water coming in and certainly the amount of discharge proposed by B & E would not raise the level of those lakes because of their size to the point where the ground water gradient would be reversed to cause the type of reversal and flow that you're referring to.

Q. Okay.

MR. NUTTER: Are there any further questions of Mr. Kelly? He may be excused.

MR. TABOR: We call at this time Mr. Bill Ball.

WILL DEXTER BALL IV

being called as a witness and being duly sworn upon his oath,

testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. TABOR:

Q. Would you state your name, please, for the record and where you're from?

A. My given name is Will Dexter Ball IV, and I'm from -- and I was born in Long Beach, California.

Q. Where do you presently reside?

A. I reside in Tulsa, Oklahoma, presently.

Q. And also your present occupation?

A. I am Manager of Field Operations for C. E. Natco.

Q. Could you give the Examiner an idea of what your duties entail and any training and experience you've had in the particular area that you're intending to testify about today?

A. Yes, sir, I will. I am -- I was raised in the oil field. I'm third generation oil field. I started my career in the oil field with what is now Champlin Petroleum in southern California where I was in charge of designing and installing surface facilities to handle approximately half a million barrels of produce water a day discharging into the Pacific Ocean. I worked for that firm for six years, then was

employed by a small oil field chemical firm dealing with water equality improvement in the oil field, and subsequently was employed by C. E. Natco in the Los Angeles area and transferred to Hobbs, New Mexico, where I spent seven years as our branch manager and business agent- manager in the City of Hobbs.

In January of 1982, this year, I was promoted to Manager of Field Operations and transferred to Tulsa, Oklahoma.

Q. As far as experience in the engineering design of water quality assurance facilities, could you tell us a little bit about how long you've done that, and any particulars?

A. Well, since I began my career in this business, I think I've made the full gamut from -- I can give you a history of the beginnings of that, if you like, or in the late fifties in southern California the Los Angeles harbor had subsided some thirty feet and as a result of that the State of California dictated that any oil withdrawal would be proceeded, or at least thereby followed by water injection to minimize and thereby eliminate subsidence.

Up until 1959 all produced water to the tune of about 100,000 barrels a day had been discharged into the ocean with little or no care and breeding, if you will, of

water quality.

With the inception of water injection and water quality being tantamount to the effective and economic operation of that oil field, and some $4-1/2 million worth of facilities were designed by my group and installed to process the produced water and safely, economicly, and ecologically deposit that water back in the Pacific Ocean.

Some ten years later, with the improved quality standards that exist in -- existed in California in the late sixties, that system was upgraded to again refine the quality of that water to what we'll call the nth degree for the purpose of this discussion, and the systems were then -- existing systems were then revamped, expanded, and redesigned to effect a water quality far in advance of that which we'll consider here today.

Q. You were involved in the --

A. It was my responsibility to design that equipment and oversee its installation and function.

Q. Okay, you've been doing this work for --

A. For about twenty years.

Q. -- twenty years.

MR. TABOR: We would offer Mr. Ball as an expert.

MR. NUTTER: Mr. Ball is so qualified.

Q. Mr. Ball, you've been contacted by B & E, is that correct, in --

A. That is correct.

Q. -- order to design a plant, a water quality assurance facility, I believe you refer to it as. On pages 22 through 24 of Exhibit One, I'd like for you to identify, if you would that particular document.

A. That is the document which I prepared for this case, yes, sir.

Q. Okay, and I'd also like for you to identify what we'll mark as Exhibit One-B, which is in the packet at the back of the application, and ask if you can identify what that particular document is.

A. That is a flow sheet which I supervised our drafting department in fabricating, depicting the general scheme of flow through the proposed plant site in Carlsbad Disposal Station.

Q. Could you tell us, if you would, please, explain the system, that might be the easiest way to do it.

A. Certainly. The system is designed to, in essence, preclude the worst conditions and encompass them, embody them, and enfold them into a package that will preclude the discharge of what we'll -- what we'll describe as oily wastes into the previously described natural bodies of water.

The system functions to allow the discharge of hauled water into above ground steel storage facilities, in essence, two at a time at maximum A brief description of how the system functions will be as follows: The typical 150-barrel transport truck will enter the location, make a connection to the inlet piping, activate an identification, an electronic identification keyed system.

Q. What would be the purpose of that?

A. The purpose in the -- the purpose if two-fold, both practical and economical. The system is simply an on/off system activated by a key to identify one of the several potential dischargers into this facility by company, and to thereby initiate or enact electrically controlled valves and an alarm system, which allow the system to begin the flow at the point of discharge from the truck.

MR. NUTTER: Okay, now, Mr. Ball, that would be at the extreme left of the Exhibit One-B, is that correct?

A. That is absolutely correct.

MR. NUTTER: That would be upstream from the device labeled "electric actuated butterfly".

A. That's correct.

MR. NUTTER: That's where the truck hooks up.

A. That is correct.

MR. NUTTER: Okay.

A. There would be a panel box there with a series of insert keys/locks. The driver will make his physical hose connection to this facility, turn the key on, a valve will open both on the front end and on the back end of the system, depicted just to the left of the tank described in the Exhibit One-B as "aeration tank", thus allowing flow to exist from, in essence on this drawing, from left to right.

Discharge will take place into the skim tank where the entrance of contaminated waters will begin. The separation of oily waste will take place in the top of the vessel, solids, being heavier than water, will by Stokes Law, sinck to the bottom and through a series of what are called in the industry sandpans, or inverted -- inverted cone drainoffs, solids will be removed to a separate solids storage facility, and oil waste will be skimmed from the top of the initial tank into an oil storage facility.

The then partially clarified water will flow from the tank referred to as the skim tank in the drawing, Exhibit One-B, to the surge tank, the center tank in Exhibit One-B, for secondary polishing and removal of solids and oily waste, which will be accomplished in the same manner as was described for the skim tank.

The water then predominantly clarified of oily wastes and solids will then flow by gravity to the third tank in the system, described in One-B as "aeration tank", where a -- where an aeration system will in essence create what appears to be from the novice standpoint, a fountain effect, to oxiginate the waters predominantly due to chemical and biological oxygen demand, and make them relatively consistent with the quality of water that exists in the lake, and further, to oxidize any remaining, what I'll refer to as inert contaminants, such as iron sulphide, to either colloidal sulphur or some sulphur compound.

Between the surge tank and the aeration tank exists a water quality monitoring device. It's an electronic device using ultraviolet light to monitor the -- the continuous amount of oily wastes flowing between the two facilities, on a go/no go basis such that when the level of oily wastes reaches the maximum concentration permitted by this Committee, which I believe is construed to be 50 milligrams per liter, or parts per million, if you will, the two motorized electrically actuated valves will close and the plant will shut in. The plant does not then automatically return to service but has to be manually returned to service by the manual reset of this alarm and should the quality of the water continue to be so poor that -- that the monitoring

device indicates an excessive level of oil, then of course, the plant does not go onstream.

By the physical phenomenon of gravity separation, with the sytem in total quiescence, the oily wastes that would contaminate the monitoring device will settle to the top in the two previous tanks, eventually, and at that point, then of course, a reset of the system would allow the system to go back into service.

MR. NUTTER: Now is that water quality control probe looking for anything except oil?

A. Only oil. It's a standard of the industry type device used typically by marine terminals in their clarification of ballast water with the recent laws and by most oil companies discharging into lakes and rivers throughout this country and countries abroad.

MR. NUTTER: So if the system works properly, when it gets to the aeration tank, there is no oil left.

A. That is correct. The purpose for the aeration tank is really twofold. Naturally, we hope to -- to minimize any contamination of this lake by the system and it was construed in the conceptual stage of this design that if we simply inserted the water quality control device downstream of the surge tank, discharging directly into either of

the lakes mentioned, that at the point of alarming we would have already put some oil in the lakes. It was that point we chose to eliminate and that is the firstfold reason for the aeration tank. The aeration is also open top and, as I mentioned previously, they're to aerate the water to provide some oxygen to that water.

Q. As far as solids are concerned, they are also placed in steel containers, I guess you'd say.

A. Yes, the concept of this system was to minimize any contamination of either surface or subsurface topography by the possible contamination of oily waste, so that the entire system is in steel aboveground storage vessels. There are no -- no pits construed for this system at the present time, and none contemplated for the future.

Q. Mr. Green referred to earlier the fact that they were going to have a man go out there once or twice a day in order to check the system. In your opinion, based on the fact that you have this quality control device or alarm, is that going to be sufficient to protect the area, protect from a discharge?

A. Yes, it is. The system is designed to have a nominal retention time, approximately 32 hours, such that a human being checking the plant once in any given 24 hour period would obviously be able to detect any failure of

the electronic water quality monitoring device.

That is to say, should we enter -- should we get an alarm condition but the alarm not find that condition through some fault, assumedly hit by lightening, act of God, that kind of thing, or failure of the instrument, that the retention time of the system is sufficient to allow it to store that contaminated water and not discharge any of it to the lake system prior to the next round of the employee that will be in charge of the responsibility of monitoring the system.

Q. You've had occasion in the past to view systems in the area, have you not?

A. Indeed I have.

Q. Storage systems, discharge systems?

A. That is right.

Q. Can you see any particular advantages in this system as opposed to others used in the area, or not necessarily immediate area, but in the southeastern part of New Mexico?

A. I see several advantages and without dwelling on the negatives of others, I'll dwell on the positives of this, because I think we as a group decided that our intent here is to protect the ecology of the surrounding -- of surrounding areas in total as much as it is possible, and certainly, within reason; thus, this system is again totally

contained in steel, welded storage tanks above the surface of the earth, rather than in lined or unlined pits, which may or may not contribute to contamination of -- of surface facilities.

There are no systems, to my knowledge, in the southeastern New Mexico that have any device to monitor the quality of water affluent to the discharge point, whatever it might be, and this system does employ that, and I might mention that that's quite, quite an expensive added component to this system to acquire, so that his concern is obviously to the quality of the water and not so much to his pocketbook.

Also, to my knowledge, there is no attempt in any -- of any existing system to aerate or thereby oxidize inert solids in any other system.

MR. JOHNSON: I have a question. IN case something does fail and you do get an oily residue on one of these lakes, what precautions or procedures would be responsible?

A. I think that the likelihood of that is slim, but obviously, should that happen, standard offshore practices of excelsior skimming and small rowboats, and that sort of thing would be accomplished by human beings. That is oily contaminants are rather easily removed from waters, particularly quiescent waters, such as exist onshore and in lakes, so that the difficulty of accomplishing that sort

of a cleanup is not magnanimous, although expensive.

I'll suggest that with the recent rulings of the EPA, that we will probably not dispose of that kind of a -- of an unusual discharge by means of chemical disbursements, or that sort of thing, which further contaminate the lake, but by the physical removal of oil waste from -- from the lake itself.

MR. JOHNSON: What -- on your solid waste storage tank there, how are you going to dispose of the solid waste in there?

A. The solid waste in that tank will be in a slurry condition, such like we would envision drilling mud, and since the client here is in the hauling business, that -- that drilling mud sludge will be accumulated in that tank, clear water decanted off as possible, until the concentration of the -- of the mud approximates 14 or 15 pound mud, at which time it will be hauled to a solid waste disposal system extraneous to this plant.

MR. JOHNSON: Do you know where?

A. Probably Laguna Gatuna.

MR. JOHNSON: No other questions.

MR. TABOR: I have nothing further of this witness.

CROSS EXAMINATION

BY MR. NUTTER:

Q. Mr. Ball, now you alluded there to the slurry that's going over to the solid storage tank. I presume there are some pumps here that aren't shown, also, aren't there?

A. No, this is a gravity system and there -- there are no pumps in this system. It's --

Q. And you've got enough gravity head there that these solids and the slurry containing the solids would flow from the skim tank and the surge tank over to the solids storage tank.

A. Yes, sir.

Q. Uh-huh.

A. We're dealing with skim tanks at 20 feet total height with a water column of approximately eighteen feet; the surge tank at sixteen feet with a water column of approximately twelve feet; and solid storage tank at a total elevation of eight feet. So we have sufficient head to, in essence, flush or gravity drain from any of the two predominant treating tanks to the two storage tanks, yes.

MR. JOHNSON: What size lines are we talking about?

A. I have not gotten to that stage of design as yet; probably 3-inch, and probably fiberglass or plastic to keep the see values high and pressure loss low.

Q. Okay, then you mentioned something about decanting the liquid off the slurry. Would that liquid be placed back in the surge tank or somewhere?

A. Yes, it would be. That would be done by one of the client's trucks --

Q. It would be hand operation, then.

A. -- on a batch basis, just as if he were hauling from any other waste site.

Q. So we're not missing a pipeline coming back here.

A. No, we're not missing a pipeline.

Q. Okay, Now, what is the capacity of the skim tank, Mr. Ball?

A. Each of the skim tanks is sized for a capacity of approximately 200 gallons a minute maximum; well oversized for the quantity of discharge expected or anticipated by the customer.

Q. Well, I'm talking about the size of tank to hold water.

A. Oh, physical size.

Q. Right.

A. It's a 400 barrel tank, 12 by 20, 12 foot diameter, 20 feet tall.

Q. So we've got two 400 barrel skim tanks.

A. That's correct.

Q. The surge tanks are what size?

A. They are, each of them are 750 barrel tanks.

Q. So they're a lot bigger than the skim tanks although they're not as tall, so they must be wider.

A. That's right, they're shorter and taller -- shorter and wider than the --

Q. The solid storage tank, what size would that be?

A. They will either be 100 barrel or 200 barrel tanks; probably 100 barrel tank.

Q. And the oil storage tank?

A. The same. The premise is, if I can use an analogy, if we fill the room with flies and give everyone a flyswatter, it's easy for us all to get a few, and so the skim tank being rather small is capable of handling large quantities of contaminants. Once removed, those -- the water then is of a rather difficult mode to process; that is, it contains only a few number of flies and it's difficult for us to run around and get them, so that the retention time of the

water, were it contaminated largely, can be quite small, but where contaminated only slightly must be increases.

While my logic probably seems backwards, in practice, that's probably the reason we've been in business fifty-seven years.

It's that kind of expertise that has to be applied to these sorts of systems, I think, to make them function.

Q. Okay, now the aeration tank, what size is that, Mr. --

A. That would be an 8-foot tall, 3333 barrel tank.

Q. 3333?

A. Yes, sir, that's what we would call one-third of a 10,000 barrel tank.

Q. Okay, now where aeration, you mentioned a fountain effect --

A. Yes.

Q. -- is that water actually sprayed?

A. Absolutely, there'd be an on-site centrifugal pump throwing water off the bottom of this tank, not depicted in Exhibit One-B, but described in my addendum to this exhibit. There would be an on-site out of the tank centrifugal pump drawing the clarified water off the bottom

of the aeration tank and putting it through what amounts to a nodule system similar to a gas stove burner, to create a fountain aeration effect to that water in the center of the tank.

Q. Okay. Now this skim tank you've got, or these skim tanks that you've got are not just ordinary tanks without any insides to them, are they?

A. No, sir, they're not.

Q. Will you describe what's inside those tanks?

A. Be happy to. The -- I could have taken notes from our original meeting, because I think your -- your descriptive terminology was better than mine, but the tank internals consist of a center flume, which is a small diameter piece of pipe compared to the -- compared to the diameter of the vessel, into which enters the influent on a tangent. The bottom of that center column pipe is closed precluding flow downward and preeminating flow upward in a centfrigal motion effect. The flow then rises through that pipe and exits in an enlargment of that pipe which could be verbally described as an inverted cone, so that the flow exiting the center column must be directed toward the outside of the tank where the maximum capacity of the tank exists on a radial basis. The flow then exits toward the top of the

tank so that any oily wastes have the minimum distance to travel to be accumulated in the -- in a shallow oil blanket and skimmed off to the oil holding facility.

Water then must change direction to flow vertically downward and underneath a secondary cone to exit the tank. Underneath that cone and to the sides of the cone on the bottom will be smaller cones, also inverted, out of the top of which will be water draw piping to the exterior of the tank, as indicated in One-B, flowing to the solid storage tank. Those lines will be interconnective and valved so that the operator of the plant will daily open each valve for a short period of time drawing off solids that have collected in the vicinity of that particular draw off. By design those draw offs allow horizontal flow in this vertical tank across the bottom of the tank to pick up any solid that exists and exit them to the solid storage tank.

Obviously, there's going to be an inordinate amount of water carried with the solids and the quantity of solids in that water will small by volume of weight, so the decanting of the water back into the system will be a requirement, probably semi-weekly, that sort of thing.

Water -- so the magic of that technology is to get the water flowing centrifugally and horizontally in a vertical tank and exiting in the tank as close to the oil

blanket as possible for the accumulation of oily waste, which is the predominant design emphasis on the plant.

The clarified water then exits the bottom of the tank through a conventional water leg device to the secondary surge tank, which is a simplification of the skim tank, using -- using a center column pipe again without the -- without either of the two cones top and bottom, but again using the small solid collection sandpan cones in the bottom of the tank for solids removal.

So again the entrance to the surge tank is a two-way center column in the very middle of the tank concentric with its circumference on a tangent to create centrifugal flow and vertical rise in that center column to in essence discharge the oil radially in the top of the tank, discharge the oily water radially in the top of the tank so that the oil can then be skimmed off and then the flow again inverts, flows downward, and out a water leg and finally to the aeration tank.

So that in all cases the two tanks, the skim tank and surge tank, are designed to maximize the retention time and take full advantage of -- of the retention volume of the tanks themselves.

The flow then goes through the water quality control probe and into another small center column in

the aeration tank so that the flow must be from center to -- to the wall edge, or shell edge, if you will, again to maximize the piston displacement or piston flow characteristics of the water in the tank.

Q. Now, if a truck is not hooked up and pumping water into the system, it's all standing still, is it not?

A. Absolutely quiet, that's correct.

Q. So the only movement is caused by the pump pressure or the trucks.

A. That is correct. It's a batch system and we -- from a real world standpoint, it's conceivable that we may have two trucks pumping into this system at the same time. That's by design conceivable, and each of those pump trucks is capable of discharging their 150 barrel load in approximately twenty minutes. So that if you extrapolate that, you can come to about a 14,000 barrel a day maximum, assuming that you don't ever have to move trucks or do any of that real world stuff, but the reality is that the trucks, of course, do have to move. They have to move in and move out. They have to come back and disconnect and they have to stick a key into this lock to turn it, and there are several chores that must be done to accomplish the discharge of water into this facility, so that the likelihood of us running more than about

two -- two loads per train of this system per hour, or four truckloads per hour, is not possible. It's just not possible to get more trucks full of water processed through this facility in that time frame, or about fifty loads a day, extrapolating four into -- into the day's frame.

It's likely, however, and anticipated on the basis of the client's typical daily work, that in fact something more on the order of 20 to 25 loads a day will actually be discharged through this facility.

Q. So you feel confident you'll get your 32 hours of --

A. Yes.

Q. -- retention, then.

A. That's correct.

Q. Okay.

A. I can say to you unequivocally that 32 hours is well more than is absolutely required but -- for proper separation and discharge.

Q. Okay, now this is admittedly a rather sophisticated system. When the truckdriver inserts his magnetic key into the electric actuated butterfly switch pack over here, does it give a -- it takes a turbine meter reading of the amount that came out of that truck; does it provide a printout with the truck and the volume that came in from that

trucking company?

A. It's been decided that rather than accomplish that we will -- we will just simply record on a central trip counter the fact that that company had that truck there at that time.

Q. I see.

A. The sophistication of the system is greatly enhanced if we do it with -- if we do actual measurement and printing out, if you will, and probably not economically justifiable. In the original proposal metering was proposed and the client has determined that that's not the route we would --

Q. So the turbine meters won't be there, instead you have a counter for trucks.

A. That's correct.

Q. Okay.

MR. NUTTER: Are there any further questions of Mr. Ball?

MR. TABOR: We'd like to ask one question.

REDIRECT EXAMINATION

BY MR. TABOR:

Q. Do you realize there are two sites proposed?

A. Yes.

Q. You are aware of that?

A. Yes.

Q. Do either one of those sites propose any problems as far as your plant design is concerned?

A. Absolutely not, and I think we should point out for the benefit of the panel that in the event that both sites are used, then half of the stream depicted here will be used at each site, so that we're not going to double the capacity that we're asking you for, but rather split it in half and go on two different locations.

I think that's a valid point, a good question.

MR. JOHNSON: What is the reason for splitting it and (inaudible)

A. The client prefers, may prefer, to have a location exclusively for his own vehicles, and a secondary location exclusively for other contractors, so that he can assure himself of his own quality in the one and provide minimum maintenance and minimus sophistication electronically.

The desire for monitoring and -- of human beings and other monitoring for contractors is quite needy, and necessary, but he feels that there's some likelihood that if he uses the two facilities, that the one will be exclusive

to his own operation, simplifying his administration of the entire facility some.

MR. GREEN: I might add something, that our second choice, which is the BLM land, we had selected it originally because of the topography of the land where centrifugal fource would help us. The tanks would be lower than what we would be unloading into; the other one wouldn't be.

I think that the deeded land where we already have the land leased, providing that we get the system, we can move on it and put it in, where BLM it might take as much as six months to procure their lease, and that was the reason for going ahead with this other, with the deeded lease.

A. I'd like to clear that up a little by saying as I looked at the plot plans, the BLM selection shows the initial tank at a higher elevation and we're stairstepping down to increase the head one from the next, which gives us some process advantage. The disadvantage is that the BLM land may not come available immediately and that is the provocation, apparently, for acquiring of deeded land lease, but that particular piece of property does show a level plot of land so that the stairstepping -- tank stairstepping design is absolutely necessary.

MR. NUTTER: Are there any further questions of Mr. Ball? He may be excused.

Do you have anything further, Mr. Tabor?

MR. TABOR: No, sir, we do not.

MR. NUTTER: Does anyone have anything they wish to offer in Case Number 7612?

I don't think you offered your exhibits.

MR. TABOR: We would offer our exhibits into evidence, Exhibit One, One-A, and One-B.

MR. NUTTER: The Exhibits One, One-A, and One-B will be admitted in evidence.

If there is nothing further, we'll take Case Number 7612 under advisement and a fifteen minute recess.

(Hearing concluded.)

CERTIFICATE

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. 7612 heard by me on 6/23 19 82.

_____, Examiner
Oil Conservation Division

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ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

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July 22, 1982

Mr. Gus Tabor
McCormick and Forbes
Attorneys at Law
P. O. Box 1718
Carlsbad, New Mexico 88220

Re: CASE NO. 7612
ORDER NO. R-7031

Applicant:

B & E, 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

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Artesia OCD x
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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. 7612
Order No. R-7031

APPLICATION OF B & E, INC. FOR SALT WATER DISPOSAL, EDDY COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on June 23, 1982, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 21st 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, B & E, Inc., has certain rights to dispose of salt water in a brine lake known as Laguna Cuatro and is in the process of acquiring rights to also dispose of salt water in a brine lake known as Laguna Tres, both in Eddy County, New Mexico.

(3) That the applicant proposes to install and operate a commercial facility for the disposal of salt water into the Southeast end of Laguna Tres in Section 12, Township 23 South, Range 29 East and/or into the Northeast side of Laguna Cuatro in Section 6, Township 23 South, Range 30 East, both in Eddy County, New Mexico.

(4) 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.

(5) 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.

(6) 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.

(7) That the applicant seeks an exception to the provisions of the aforesaid Order (3) of Division Order No. R-3221, as amended, to permit the commercial disposal of produced salt water into either or both of the aforesaid lakes at the sites described above.

(8) That the applicant proposes to install and operate an effective system for the removal of oily and solid waste material from the waters to be disposed of, said system being equipped to monitor the discharge stream and to automatically shut the facility down should water quality deteriorate below an accepted average level of 15 parts insoluble oils per million parts of water.

(9) That said facilities should be capable of handling up to 14,400 barrels of water per day at each of the proposed sites, but 7,500 barrels per day is a reasonable limit to place on each facility at this time.

(10) That the discharge of 7,500 barrels of salt water per day into either or both of the proposed salt lakes will not create a hazard to any fresh water in the area for which a present or reasonably foreseeable beneficial use is or will be made.

(11) That the surface area of each of the aforesaid salt lakes is sufficient to permit the evaporation of at least 7500 barrels of salt water per day, and the disposal of that amount of water into each of said lakes will not adversely affect the existing hydrologic systems in said lakes.

(12) That the commercial disposal of salt water into Laguna Tres and/or Laguna Cuatro in the amounts and manner described above will not impair correlative rights nor cause waste, and should be approved, provided however, that the Division Director should be authorized to suspend disposal operations by the applicant into either or both of said lakes if applicant fails to prevent oil or other deleterious wastes from escaping to the lakes in harmful quantities.

IT IS THEREFORE ORDERED:

(1) That the applicant, B & E, Inc., is hereby authorized to install and operate a commercial salt water treating and disposal facility at the southeast end of Laguna Tres in Section 12, Township 23 South, Range 29 East, NMPM, and/or at the northeast side of Laguna Cuatro in Section 6, Township 23 South, Range 30 East, NMPM, both in Eddy County, New Mexico, said systems being limited to the disposal of a maximum of 7,500 barrels of salt water per day at each site.

(2) That the operator shall install and maintain in good operating condition a salt water treating facility at each site utilized for salt water disposal, said treating facility being designed and operated in such a manner as to reduce insoluble oils from the disposal discharge stream to an average concentration of less than 15 parts per million.

(3) That each of the aforesaid salt water treating facilities shall be so equipped as to monitor the salt water disposal stream and automatically shut the facility down if disposal water quality should deteriorate to an unacceptable level.

(4) That the Division Director shall have authority to suspend operations at the facilities herein authorized upon failure of the applicant to prevent oil or other deleterious substances from entering Laguna Tres and/or Laguna Cuatro in harmful quantities.

(5) 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

Docket No. 19-82

Dockets Nos. 21-82 and 22-82 are tentatively set for July 7 and 21, 1982. Applications for hearing must be filed at least 22 days in advance of hearing date.

DOCKET: COMMISSION HEARING - TUESDAY - JUNE 22, 1982

OIL CONSERVATION COMMISSION - 9 A.M.
MORGAN HALL, STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO

The following cases were continued from the June 2, 1982, Commission hearing:

CASE 7522: (DE NOVO)

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. 20-82

DOCKET: EXAMINER HEARING - WEDNESDAY - JUNE 23, 1982

9 A.M., MORGAN HALL, 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:

CASE 7610: Application of Stevens Oil Company for salt water disposal, Chaves 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 2724 feet to 2745 feet in its O'Brien "J" Well No. 9 located in Unit A, Section 31, Township 8 South, Range 29 East, Twinlakes-San Andres Pool.

CASE 7611: Application of Texaco Inc. for special pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks special pool rules for the Skaggs-Drinkard Pool, including provision for a limiting gas-oil ratio of 10,000 cubic feet of gas per barrel of oil.

CASE 7612: Application of B & E, Inc. for salt water disposal, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to install and operate a commercial facility for the disposal of salt water into the Southeast end of Laguna Tres in Section 12, Township 23 South, Range 29 East and/or into the Northeast side of Laguna Cuatro in Section 6, Township 23 South, Range 30 East.

CASE 7613: Application of Tenneco Oil Company for an unorthodox gas well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of a Pennsylvanian test well to be located 660 feet from the South and West lines of Section 28, Township 16 South, Range 34 East, the W/2 of said Section 28 to be dedicated to the well.

CASE 7548: (Continued from June 9, 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.

CASES 7614 AND 7615: Application of Inexco Oil Company for compulsory pooling, Lea County, New Mexico. Applicant, in each of the following cases seeks an order pooling all mineral interests from the surface through the Strawn formation underlying the lands specified in each case, to form a standard 80-acre oil proration unit in the South Humble City-Strawn Pool 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 wells and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the wells and a charge for risk involved in drilling said wells:

CASE 7614: W/2 NE/4 Section 23, Township 17 South, Range 37 East

CASE 7615: E/2 NE/4 Section 23, Township 17 South, Range 37 East

CASES 7616 AND 7617: Application of Southland Royalty Company for compulsory pooling, Eddy County, New Mexico. Applicant, in each of the following cases seeks an order pooling all mineral interests in the Pennsylvanian formation underlying the lands specified in each case, to form a standard 320-acre gas spacing and proration unit 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 wells and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the wells and a charge for risk involved in drilling said wells:

CASE 7616: N/2 Section 21, Township 18 South, Range 29 East

CASE 7617: S/2 Section 21, Township 18 South, Range 29 East

CASE 7618: Application of Doyle Hartman for an unorthodox gas well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of a gas well to be drilled 1450 feet from the South line and 1980 feet from the East line of Section 20, Township 20 South, Range 37 East, Eumont Gas Pool, the SE/4 of said Section 20 to be dedicated to the well.

CASE 7605: (Continued from June 9, 1982. Examiner Hearing)

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 7458: (Continued from April 28, 1982, Examiner Hearing)

Application of Marks & Garner Production Company for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of salt water into the Bough C formation in the perforated interval from 9596 feet to 9616 feet in its Betenbough Well No. 2, located in Unit M of Section 12, Township 9 South, Range 35 East.

CASE 7598: (This case was heard on May 26, 1982. However, due to an error in originally advertising the case in the Torrance County newspaper, it has been readvertised in Torrance County only and will be reopened June 23, 1982, with respect to Torrance County only.)

Application of ANR Production Company and Yates Petroleum Corporation for designation of a tight formation in San Miguel, Torrance, Guadalupe, De Baca, Lincoln and Chaves Counties, New Mexico. Pursuant to Section 107 of the Natural Gas Policy Act of 1978 and 18 CFR Section 271.701-705, applicants, in the above-styled cause, seeks the designation as a tight formation of the Abo formation underlying the following described lands in the above-named counties.

All of:

Townships 1 thru 4 North, Ranges 14 thru 27 East;
Townships 5 thru 11 North, Ranges 14 thru 26 East;
Township 1 South, Ranges 14 thru 27 East;
Townships 2 thru 5 South, Ranges 14 thru 21 East;
Townships 6 thru 11 South, Ranges 15 thru 21 East;
Township 12 South, Ranges 17 thru 21 1/2 East; and
Townships 13 and 14 South, Ranges 17 thru 21 East;
containing 5,168,563 acres, more or less, but excluding the not yet defined Capitan Wilderness Area.

Ex 1

APPLICATION FOR BRINE DISPOSAL FACILITY

by

B & E, INC.
CARLSBAD, NEW MEXICO

Submitted By:
McCormick and Forbes
P. O. Box 1718
Carlsbad, New Mexico 88220

Case 1612

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Drawings of proposed plant sketch
plan of proposed brine disposal facility

INTRODUCTION

I. STATEMENT OF APPLICATION

B & E, Inc., a New Mexico corporation, requests permission of the New Mexico Oil Conservation Commission to establish a surface disposal system of saltwater waste. The saltwater waste is generated from oil field product waste. The proposed system would provide a badly needed approved dumping station in Eddy County sufficient to take care of Eddy County and West Lea County's needs and hopefully eliminate unauthorized dumping in the area.

II. PLANT

The proposed plant will use the batch treatment method and will have a quality control safety system designed to prevent the discharge of unsuitable water into the environment.

III. LOCATION

B & E, Inc., proposes two alternate locations for the plant. The primary location is located on BLM land in the NE/4 of Section 12, Township 23 South, Range 29 East. BLM has advised B & E, Inc., that its application for B & E, Inc., land use will be considered upon approval of the New Mexico Oil Conservation Commission. The alternate location is on private property in the NE/4 of Section 6, Township 23 South, Range 30 East. Both locations are covered by this application.

IV. HYDROLOGY

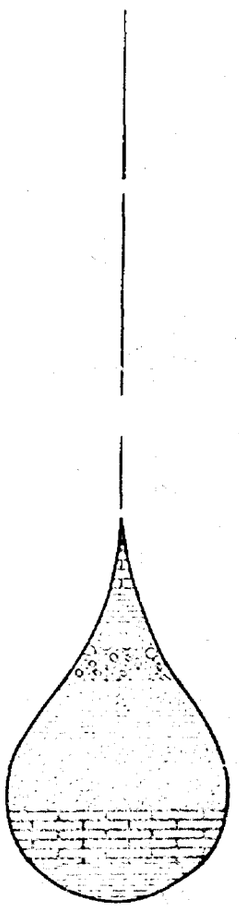
B & E, Inc., proposes to dispose of the saltwater in a natural salt lake. The oil field brine being released into the lake is very similar to the saltwater in the lake and will not adversely affect the ecology of the lake.

HYDROLOGIC ASSESSMENT, LAGUNA TRES 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, LAGUNA TRES AREA

EDDY COUNTY, NEW MEXICO

by

Geohydrology Associates, Inc.
Albuquerque, New Mexico

May 1982

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HYDROLOGIC ASSESSMENT, LAGUNA TRES AREA

EDDY COUNTY, NEW MEXICO

by

Geohydrology Associates, Inc.

In May 1982, B & E, Incorporated, of Carlsbad, New Mexico, requested that a hydrologic study be conducted in the vicinity of Laguna Tres in Eddy County, New Mexico. This area is located approximately 18 miles east of Carlsbad in Towship 23 South, Ranges 29 and 30 East. The study was made by representatives of Geohydrology Associates, Inc., of Albuquerque. T. E. Kelly was project leader.

The purpose of the hydrologic investigation was to determine the effects that might result from discharge of oil-field brines into existing brine lakes.

The regional pattern of ground-water flow had been described by earlier studies. However this northeast to southwest flow pattern has been changed locally by various factors, including the potash refineries, and various natural and man-made factors. Presently the State Highway Department is channelizing the local flow system near the proposed site.

Many of the earlier studies were devoted to the regional characteristics of the ground-water system. According to Robinson and Lang (1938), most of lower Nash Draw drains into the large, natural Laguna de la Sala Grande, commonly called Salt Lake. They also concluded that brine from the lake is not discharging into the Pecos River. Other investigations were made by Thomas (1963) and Mower and others (1964). However most of this 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 water-supply 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. (1979) identified significant quantities of brine entering the ground-water system, although much of this is confined to the Clayton Basin area which is north of Nash Draw and the project area. All of these factors have a bearing on the suitability of Laguna Tres as a brine-disposal site.

The study authorized by B & E, Inc., was based on a thorough literature and file search of existing data; it also drew heavily from the earlier reports by Geohydrology Assoc., Inc. which were prepared under contract with the Bureau of Land Management. A field reconnaissance was made which included a visual inspection of the area between Laguna Uno and Salt Lake, including Laguna Tres. An analysis of the data and the resulting conclusions are presented in this report.

DESCRIPTION OF THE PROJECT AREA

Geology

Owing to the mineral development of the region, a number of studies of the geology have been made. These include the work by King (1942), Hendrickson and Jones (1952), Vine (1963), Brokaw and others (1972) and Geohydrology Associates, 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 project area that are directly concerned by this study (fig. 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 Tamarisk Member, the Magenta Member, and the uppermost Forty-niner Member.

Salado Formation

This formation is an areally extensive unit which underlies much of Eddy County east of the Pecos River and it extends far beyond the study area. The Salado 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.

The Salado exerts major control over the shallow and surficial structures in the area because it is readily soluble and underlies the entire potash area, including Laguna Tres. Collapse structures, such as Nash Draw, are widespread and control the deposition of eolian and alluvial material in the area.

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

Rustler Formation

A leached zone approximately 60 feet thick separates the Rustler Formation from the Salado. 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 the underlying evaporite deposits. This rubble represents material from the Lower Member, the Culebra Dolomite, and insoluble deposits from the Tamarisk Member. Because of the brecciated and unconsolidated nature of this material, it is a major zone of ground-water movement.

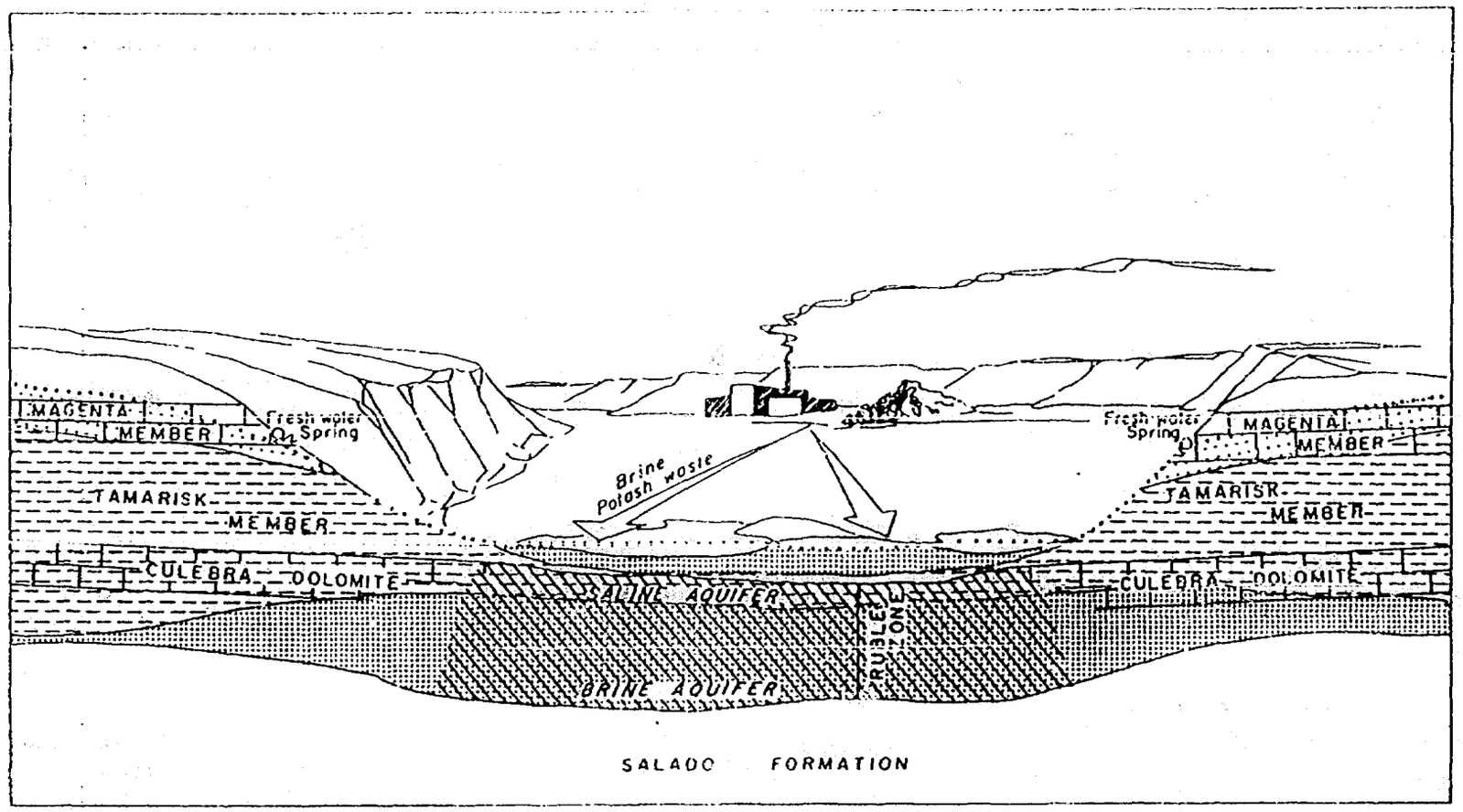

Figure 1. Diagrammatic east-west cross section through Nash Draw, showing stratigraphic units and ground-water relationships.

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 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 about two miles northwest of the proposed disposal site. This member 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 Tamarisk deopsits are blanked by a thin layer of silt and clay that has washed down from the rim of the Draw. However in the vicinity of Laguna Tres, 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, although some remnants of these members may be present in the rubble zone in the bottom of the Draw. Nevertheless, these two members generally do not affect the discharge of waste that is proposed by B & E, Inc., at Laguna Tres.

Topographic 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/or 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 at the surface.

Contour lines drawn on top of the massive salt in the Salado Formation show a high degree of similarity 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 Tres (fig. 2) which is the proposed disposal site.

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 omes influence the direction of ground-water movement, which in turn controls the development of collapse structures through which ground water readily migrates.

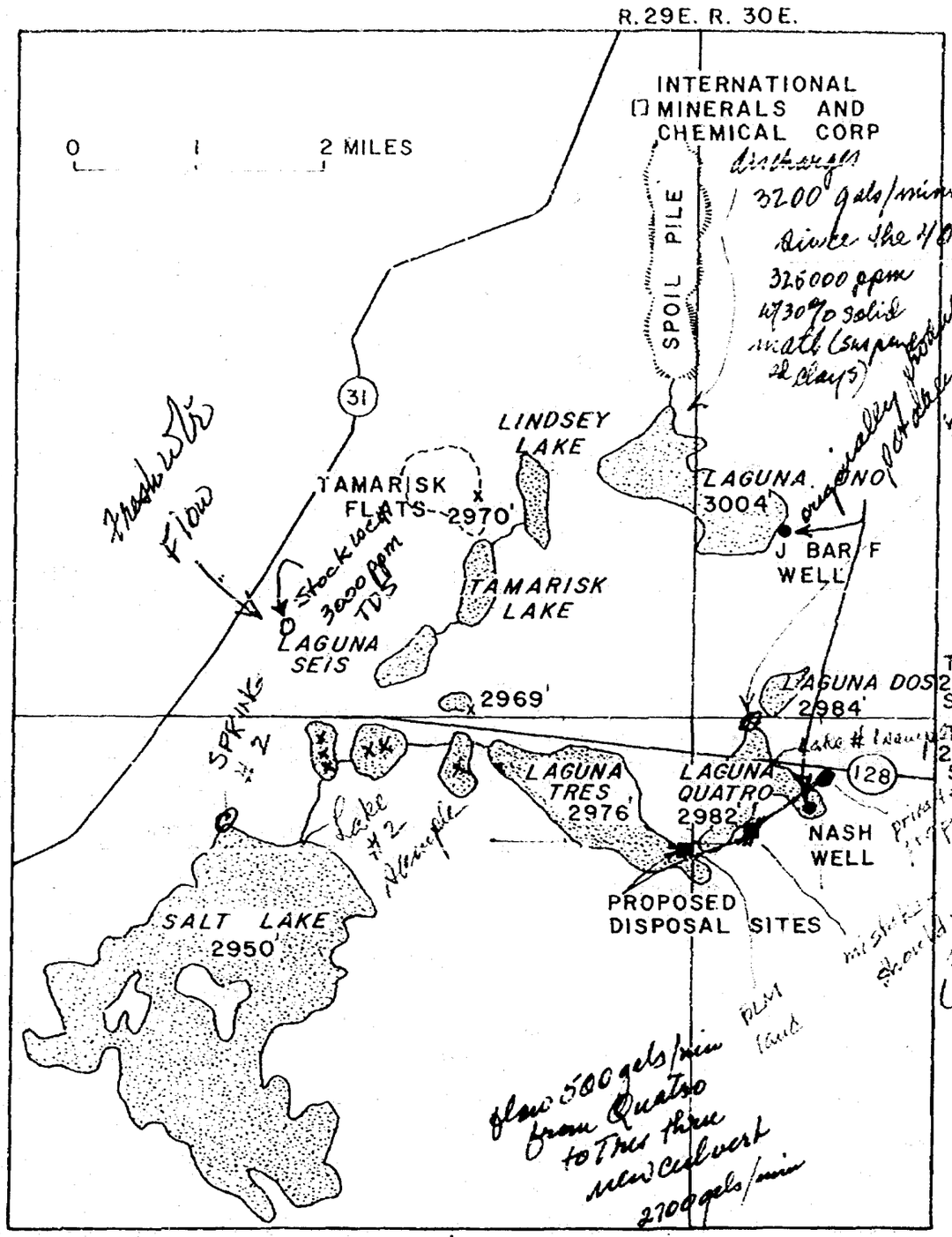

Figure 2. Distribution of lakes in the vicinity of IMC refinery and Salt Lake, with selected altitudes.

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 (fig. 1). There is no known potable 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 Mississippi 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 "brine aquifer" has been identified by workers at the WIPP site as that zone of solution and collapse between the Salado and the basal Rustler. Although not present everywhere, it may be as much as 60 feet thick near Salt Lake and Laguna Tres. By the very nature of this zone, all of the water present is highly mineralized and probably is a saturated brine.

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., 1979, p. 60). In most cases this discharge is a saturated brine containing as much as 30 percent solids in the form of suspended clay.

The rubble zone, which represents the collapsed Rustler Formation in the bottom of Nash Draw, has produced potable water to wells in the past. Nash well (sec. 6, T. 23 S., R. 30 E.) was completed for stock use prior to 1935 (fig. 2). Subsequently the level of Laguna Quatro has risen to the point that this well was completely inundated by 1977. Likewise, the J Bar F well (sec. 20, T. 22 S., R. 30 E.) supplies water for stock at Laguna Uno.

According to Hendrickson and Jones (1952, p. 134-135), the water level in this well was 134.0 feet below land surface on March 17, 1948. The water level was at the land surface in 1979--a rise of 134 feet in 31 years. Since both of these wells are down gradient from IMC, it is probable that the rise in water level in the rubble zone can be attributed to discharge by IMC into Laguna Uno. The IMC refinery has been in operation since 1947.

Surface Water

All of the refinery discharge from International Minerals and Chemical Corporation is released into the headwaters of Laguna Uno which is in parts of sections 24 and 25, T. 22 S., R. 29 E., and adjoining sections. Discharge records of brine from the IMC refinery are not available. However, according to the New Mexico State Engineer Office in Roswell, the amount of water imported by IMC during 1977 was 5,233 acre-feet. This is equivalent to 3,244 gpm. Not all of this water enters Laguna Uno due to refining losses and evporation of water on the spoil pile. Nevertheless, the measured discharge into the lake is nearly equal to the quantity of imported water, thus indicating that the refining and evaporation loss are small.

The amount of water loss from Laguna Uno is difficult to determine. The size of the lake prevents the sediment-laden refinery discharge from spreading evenly across the lake. As as result, most of the sediment is deposited at the upper end of the lake, and the southeast end of Laguna Uno is characterized by relatively clear, sediment-free water. Thus there is no sealing effect at the fringes of the lake.

Studies at the lake determined that the summer evaporation rate at Laguna Uno was 6.69 gpm (gallons per minute) per acre and the winter evaporation rate was 0.369 gpm per acre (Geohydrology Assoc., 1979, p. 71). Inasmuch as the area of the lake is 710 acres, the summer loss would be about 4,750 gpm and the winter loss would be about 260 gpm. Therefore it is likely that virtually all of the refinery inflow during the summer is lost by evaporation from the lake. During the winter months the evaporation is only about 10 percent of the inflow rate. This surplus waste water then enters the lake chain which includes Laguna Dos, Laguna Tres, Laguna Quatro, and Salt Lake (fig. 2).

Lindsey Lake, Tamarisk Lake, and Laguna Seis also are topographically lower than Laguna Uno. Although there is no surface connection between Laguna Uno and this chain, it is likely that a subsurface connection exists.

In May 1982, a field reconnaissance was made of the area to assess the hydrologic connection between the IMC discharge point and Salt Lake. It was found that there is no surface connection between Laguna Uno and Laguna Dos; likewise there is no surface connection between Laguna Dos and Laguna Quatro. Laguna Quatro drains into Laguna Tres through a culvert and ditch system recently completed by the State Highway Department. At the culvert beneath Eddy County Road 793 which separates Laguna Quatro and Laguna Tres, the discharge is estimated to be about 500 gpm. With no surface inflow to the lake, this quantity of discharge can only originate from ground-water discharge.

Recent work by the Highway Department has provided a surface connection between Laguna Tres and several unnamed ponds south of Highway 128. The trenching has connected these lakes and ponds with Salt Lake. The total surface area of these surface-water bodies exceeds 1,200 acres. This would provide a summer evaporation capacity of 8,028 gpm and a winter capacity of 443 gpm.

WATER QUALITY

A number of water samples were collected by B & E, Inc., from springs and lakes in the vicinity of the proposed discharge point. The distribution of these samples and the total dissolved solids are shown in Figure 2. Virtually all of the water exceeds 200,000 mg/l (milligrams per liter) dissolved solids. This level of mineralization is very similar to that in oil-field samples that are likely to be discharged at the proposed site. (Appendix A.)

DISCHARGE PROPOSAL

B & E, Incorporated, estimates that the discharge facility will have the capacity to process approximately 50 loads of oil-field brine per day. Each load would be approximately 150 barrels. This represents a daily discharge of about 315,000 gallons, or a continuous discharge of 218 gpm.

The brine will be processed through a processing facility which will remove all hydrocarbons and solids. Only the oil-field brine will then be released to the hydrologic system. This facility will be located in the northeast quarter of section 12, T. 23 S., R. 29 E. This would be the upper end of Laguna Tres which presently has a natural inflow of about 500 gpm. The alternate site would be located near the center of section 6, T. 23 S., R. 30 E., along the south edge of Laguna Quatro.

Most of the oil production in the vicinity of the proposed facility produces from the Bone Springs and the Morrow Formations. Chemical quality within these formations does not vary significantly, and it is believed that the analyses given in the Appendix are representative of these two zones.

150
50
7500

CONCLUSIONS

1. The discharge system proposed by B & E, Inc., will not adversely impact the existing hydrologic system in the vicinity of Laguna Quatro and Laguna Tres.

2. The surface area of the lakes between Laguna Tres and Salt Lake are adequate to totally consume the total discharge proposed for the system.

3. The continued natural discharge of ground water into this lake system will provide sufficient brine to mask any quality change that might originate from the oil-field brine.

BIBLIOGRAPHY

Brokaw, A. L., Jones, C. L., Cooley, M. E., and Hays, W. H., 1972, Geology and hydrology of the Carlsbad potash area, Eddy and Lea Counties, New Mexico: U. S. Geol. Survey, Open-file rept., 4339-1.

Cooper, J. B., and Glanzman, V. M., 1971, Geohydrology of Project Gnome site, Eddy County, NM: U. S. Geol. Survey Prof. Paper 712-A, 24 p.

Geohydrology Assoc., Inc., 1978, Collection of hydrologic data, Eastside Roswell Range EIS Area, NM: Consultant report prepared for Bureau of Land Mangement, 97 p.

_____, 1978a, Ground-water study related to proposed expansion of potash mining near Carlsbad, NM: Consultant rept prepared for Bureau of Land Management, 127 p.

_____, 1979, Water-resources study of the Carlsbad potash area, NM: Consultant rept prepared for Bureau of Land Mangement, 91 p.

Gilkey, M. M., and Stotelmyer, R. P., 1965, Water requirements and uses in New Mexico industries: U. S. Bur. Mines Infor. Circ. 8276, 113 p.

Hendrickson, G. E., and Jones, R. S., 1952, Geology and ground-water resources of Eddy County, NM: N. Mex. Bur. Mines and Min. Res. Ground-Water Rept. 3, 169 p.

King, P. B., 1942, Permian of west Texas and southeastern New Mexico: Amer. Assoc. Pet. Geol. Bull., V. 26, no. 4, p. 535-763.

Mower, R. W., Hood, J. W., Cushman, R. L., Borton, R. L., and Galloway, S. E., 1964, An appraisal of potential ground-water salvage along the Pecos River between Acme and Artesian, NM: U.S. Geol. Survey Water-Supply Paper 1659.

Robinson, T. W., and Lang, W. B., 1938, Geology and ground-water condtions of the Pecos River valley in the vicinity of Laguna Grande de la Sal, NM: N. Mex. State Eng. 12th and 13th Bienn. Rept., 1934-1938, p. 77-100.

Thomas, H. E., 1963, Causes of depletion of the Pecos River in New Mexico: U.S. Geol. Survey Water-Supply Paper 1619-G.

Vine, J. D., 1963, Surface geology of the Nash Draw Quadrangle, Eddy County, New Mexico: U.S. Geol. Survey Bull., 1141-B, p. B1-B46.

APPENDIX

P. O. BOX 1468
MONAHANS, TEXAS 79756
PHONE 943-3234 OR 563-1040

Martin Water Laboratories, Inc

709 W. INDIANA
MIDLAND, TEXAS 79701
PHONE 683-4521

RESULT OF WATER ANALYSES

LABORATORY NO. 482226
SAMPLE RECEIVED 4-9-82
RESULTS REPORTED 4-22-82

TO: Mr. Cene Green
P.O.Box 756, Carlsbad,NM

COMPANY B & E Transport LEASE

FIELD OR POOL

SECTION BLOCK SURVEY COUNTY STATE

SOURCE OF SAMPLE AND DATE TAKEN

NO. 1 Lake #1. 4-8-82
NO. 2 Lake #2. 4-8-82
NO. 3 Spring #1. 4-8-82
NO. 4 Spring #2. 4-8-82

REMARKS:

CHEMICAL AND PHYSICAL PROPERTIES

	NO. 1	NO. 2	NO. 3	NO. 4
Specific Gravity at 60° F.	1.1996	1.2363	1.1784	1.2352
pH When Sampled				
pH When Received	7.48	7.47	6.99	7.50
Bicarbonate as HCO_3	234	312	210	307
Supersaturation as $CaCO_3$				
Undersaturation as $CaCO_3$				
Total Hardness as $CaCO_3$	27,500	45,750	25,000	44,500
Calcium as Ca	590	390	620	390
Magnesium as Mg	6,324	10,880	5,698	10,577
Sodium and/or Potassium	111,428	125,222	100,599	123,801
Sulfate as SO_4	22,313	23,375	20,400	22,100
Chloride as Cl	174,707	208,086	157,662	205,955
Iron as Fe	0.16	0.16	0.23	0.08
Barium as Ba	0	0	0	0
Turbidity, Electric				
Color as Pt				
Total Solids, Calculated	315,596	368,265	285,189	363,130
Temperature °F.				
Carbon Dioxide, Calculated				
Dissolved Oxygen, Winkler				
Hydrogen Sulfide	0.0	0.0	0.0	0.0
Resistivity, ohms/m at 77° F.	0.044	0.039	0.047	0.060
Suspended Oil				
Filtrable Solids as mg/l				
Volume Filtered, ml.				
Carbonate, as CO_3	0	0	0	0
Fluoride, as F	6.0	6.0	6.0	6.5
Nitrate, as NO_3	5.0	0.0	0.0	0.0

Results Reported As Milligrams Per Liter

Additional Determinations And Remarks				
Arsenic, as As	0.009	0.006	0.006	0.009
Cadmium, as Cd	0.00	0.00	0.00	0.00
Cyanide, as CN	0.00	0.00	0.00	0 0.00
Lead, as Pb	0.00	0.00	0.00	0.00
Total Mercury, as Hg	0.000	0.000	0.000	0.000
Selenium, as Se	0.00	0.00	0.00	0.00
Silver, as Ag	0.00	0.00	0.00	0.00

Form No. 3

The undersigned certifies the above to be true and correct to the best of his knowledge and belief.

By

Waylan C. Martin, M. A.

Locations from which foregoing samples were taken:

Lake #1: Quatro

Lake #2: Great Salt Lake

Spring #1: Upper end of Lake

Spring #2: Upper Great Salt Lake

P. O. BOX 1468
MONAHANS, TEXAS 79756
PHONE 943-3234 OR 563-1040

Martin Water Laboratories, Inc

709 W. INDIANA
MIDLAND, TEXAS 79701
PHONE 683-4521

RESULT OF WATER ANALYSES

LABORATORY NO. 58240
SAMPLE RECEIVED 5-6-82
RESULTS REPORTED 5-7-82

TO: Mr. Gene Green
P. O. Box 756, Carlsbad, NM 88220

COMPANY B & E Inc. LEASE As listed

FIELD OR POOL

SECTION BLOCK SURVEY COUNTY Eddy STATE NM

SOURCE OF SAMPLE AND DATE TAKEN:

NO. 1 Produced water - taken from Brantley. 5-3-82 Maco

NO. 2 Produced water - taken from Huber State. 5-3-82 Blue Spirit

NO. 3 Produced water - taken from SCB #4. 5-3-82 Maco

NO. 4 Produced water - taken from Southland State. 5-3-82 Blue Spirit

REMARKS:

CHEMICAL AND PHYSICAL PROPEPTIES	NO. 1	NO. 2	NO. 3	NO. 4
Specific Gravity at 60° F.	1.0904	1.1760	1.1369	1.1720
pH When Sampled				
pH When Received	6.46	5.86	6.83	5.01
Bicarbonate as HCO_3	1,488	561	1,708	744
Supersaturation as $CaCO_3$				
Undersaturation as $CaCO_3$				
Total Hardness as $CaCO_3$	13,600	67,000	2,300	43,000
Calcium as Ca	3,440	21,200	564	14,100
Magnesium as Mg	1,215	3,402	216	1,883
Sodium and/or Potassium	52,034	80,055	87,956	90,313
Sulfate as SO_4	312	234	1,775	391
Chloride as Cl	88,774	170,446	134,936	169,025
Iron as Fe	441	155	48.3	169
Barium as Ba	0	0	0	0
Turbidity, Electric				
Color as Pt				
Total Solids, Calculated	147,263	275,898	227,155	276,461
Temperature °F.				
Carbon Dioxide, Calculated				
Dissolved Oxygen, Winkler				
Hydrogen Sulfide	0.0	0.0	0.0	0.0
Resistivity, ohms/m at 77° F.	0.071	0.048	0.053	0.048
Suspended Oil				
Filtrable Solids as mg/l				
Volume Filtered, ml				
Carbonate, as CO_3	0	0	0	0
Fluoride, as F	0.3	0.0	0.0	0.0
Nitrate, as NO_3	0.0	0.0	0.0	0.0
Results Reported As Milligrams Per Liter				
Additional Determinations And Remarks				
Arsenic, as As	0.000	0.000	0.000	0.000
Cadmium, as Cd	0.20	0.20	0.80	0.20
Cyanide, as CN	0.00	0.00	0.00	0.00
Lead, as Pb	0.00	0.00	0.00	0.00
Total Mercury, as Hg	0.000	0.000	0.000	0.000
Selenium, as Se	0.00	0.00	0.00	0.00
Silver, as Ag	0.00	0.00	0.00	0.00

The undersigned certifies the above to be true and correct to the best of his knowledge and belief.

Form No. 3

By

Waylan C. Martin, M. A.

Martin Water Laboratories, Inc.

P. O. BOX 1468
MONAHANS, TEXAS 79756
PH 943-3234 OR 563-1040

WATER CONSULTANTS SINCE 1953
BACTERIAL AND CHEMICAL ANALYSES

709 W. INDIANA
MIDLAND, TEXAS 79701
PHONE 683-4521

To: Mr. Gene Green
P.O.Box 756
Carlsbad, NM

Laboratory No. 482226-A
Sample received 4-9-82
Results reported 5-11-82

Company: B & E Transport

Subject: To determine the radioactivity (radium 226 and 228) and uranium content of submitted water samples. Samples taken 4-8-82.

Source of sample	Radium 226 pico curie/liter	Radium 228 pico curie/liter	Uranium mg/l
1. Lake #1	less than 0.6	less than 1.0	0.099
2. Lake #2	9 (+or-1)	less than 1.0	0.051
3. Spring #1	less than 0.6	less than 1.0	0.081
4. Spring #2	9 (+or-1)	less than 1.0	0.051

Remarks: The undersigned certifies the above to be true and correct to the best of his knowledge and belief.

Waylan C. Martin, M. A.

McCORMICK AND FORBES
ATTORNEYS AT LAW
BUJAC BUILDING
P. O. BOX 1718
CARLSBAD, NEW MEXICO 88220

TELEPHONE 885-4171
AREA CODE 505

CON G. MCCORMICK
JAY W. FORBES
THOMAS L. MAREK
ROGER E. YARBRO
JOHN M. CALLAWAY
CAS TABOR

26 May 1982

New Mexico State Highway Department
P. O. Box 1457
Roswell, New Mexico 88201

Attn: Mr. Cliff Downey

Re: Proposed Location of Salt Water Disposal System
by B & E, Inc.

Dear Mr. Downey:

It is my understanding that Mr. Gene Green, of B & E, Inc., has discussed with you at some length the proposed locations for their proposed salt water disposal system. Both of these locations are located in Eddy County with the first or primary location being in the NE/4 of Section 12, Township 23 South, Range 29 East, and the secondary location being in the NE/4 of Section 6, Township 23 South, Range 30 East.

It is my understanding that you have reviewed these proposed locations with Mr. Green and on behalf of the State Highway Department, you are willing to state that the locations and the system proposed will not interfere with the use and operation of Highway 128 and the current draining operation, which you have underway along said highway as it leaves the intersection with State Highway 31. In the event the drainage of Highway 128 is interfered with, the salt water disposal system will terminate until arrangements can be made to correct the problem.

If you agree with the terms set forth herein, please return the signed copy of this letter to me for our records and for filing with the New Mexico State Oil Conservation Commission.

Sincerely,

Roger E. Yarbro

REY:lld

APPROVED BY:

Cliff Downey Maint. Supt.
Cliff Downey

WATER QUALITY ASSURANCE FACILITY

B and E INCORPORATED
Carlsbad, New Mexico

I INTRODUCTION

In order to make available to industry an approved waste water disposal station, the design herein described and depicted is presented. This facility provides a proven method of removing oily and solid wastes from water of varying quality by the batch treatment method. Water will be hauled to the site in 150-barrel or less loads and discharged into the facility at a rate not exceeding 10 barrels per minute (420 GPM). The goal of the facility is to remove insoluble oils to below maximum concentration of 50 PPM with an average concentration below 15 PPM. Should an oil concentration higher than desired (and approved by the State of New Mexico) occur, an alarm system will close valving to stop the flow of fluid into and out of the facility

II FLUID FLOW

The fluids, a predominantly water with small quantities of oil and solids, enter the facility through an electrically actuated emergency shutdown valve and a key activated turbine flow meter into the first process vessel, a Skim Tank. The Skim Tank is designed to be predominantly filled with water to assure maximum residence time and correspondingly high water quality. A thin layer of oil is maintained near the top of the tank. This oil layer is near the level of the oily influent minimizing the distance this contaminant must travel to be absorbed into the oil blanket. Oil is skimmed off into a holding tank ready for sale to a waste oil reclaimer. Water flows to the Surge Tank, typically 30 percent larger than the Skim Tank. While the internals of the Surge Tank are not as complex as the Skim Tank, the flow and levels are similar. Oily wastes

are captured near the top and drawn off to storage. Water is removed from the bottom and flows to the Aeration Tank for final quality control. A portion of the water in the Aeration Tank is pulled off near bottom and pumped into an aeration nozzle. The aeration of this water has the effect of clarifying it prior to discharging it into the adjacent salt lake.

Each Skim Tank and Surge Tank is designed to process the influent from one transport truck at a time. The initial system will consist of a twin set of these vessels feeding one Aeration Tank as indicated on C-E Natco Drawing No. 75747. Therefore, two transport trucks can unload at the same time into separate process facilities.

III SYSTEM CAPACITY

Each of the twin systems described above will accept a load of waste water from one transport truck at a time. Each transport truck has a capacity of approximately 150 barrels. Trucks are equipped to offload via on-board pumping systems. The truck pumping capacities vary, but do not exceed ten barrels per minute. Therefore, the maximum influent rate is 10 barrels per minute. Each truck must position itself properly, connect to the influent nozzle, activate the key actuated valve/meter assembly, unload, disconnect and proceed out of the unload area. While unloading can occur in as few as 15 minutes, the entire process typically takes a minimum of 25 minutes. And, by the time a second transport is ready to unload, a minimum of 30 minutes has elasped. This equates to surges of 10 barrels per minute (420 GPM) and averaged maximum plant throughput of five barrels per minute (210 GPM) per unloading process train. Since the initial system concept consists of two trains, maximum averaged discharge capacity will be on the order of 10 barrels per minute total or 14,400 barrels per day

The actual discharge volume is anticipated at less than 6,000 barrels per month. This volume will be carried 50 percent by the owner/operator's transports and 50 percent by others.

IV OIL PROCESSING

Waste oil will be collected and sold to a waste oil reclaimer. As the volume of this product justifies, a process addition designed to reclaim oil on-site may be added. This system will include a low pressure boiler and a larger process tank with steam coils for heat input.

VII SOLIDS

Minor amounts of solids will accumulate in the system. These solids will be decanted from the Skim and Surge Tanks via draw-off laterals. Solids will accumulate in the solids storage tank. Water separated from solids will be cycled back into the water process system.

VIII WATER QUALITY CONTROL

The implementation of appropriate design concepts for tank internals will assure a high degree of water quality under normal circumstances. However, to prevent the possibility of an upset, vandalism, or other cause resulting in an oil discharged, a water quality monitor continuously monitors the concentration of oil in water between the Surge Tank and the Aeration Tank. Should the concentration exceed preset limits, the automatic valving switches to the closed position to stop flow through the facility. The automatic valves are fail closed so that any loss of power causes a facility shut down. No manual override will be installed in this system.

ORDERS

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. 7612

Order No. R-7031

APPLICATION OF B & E, INC. FOR SALT WATER DISPOSAL, EDDY COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on June 23, 1982, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this _____ 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, B & E, Inc., has certain rights ~~is the owner and~~ to dispose of salt water in a brine lake known as ~~operator of the~~ , ~~located in Unit~~ Laguna Cuatro [illegible] ~~Range~~ [illegible] and is in the process of acquiring rights to also dispose of salt water in a brine lake known as Laguna Tres [illegible] in Eddy County, New Mexico.

(3) That the applicant proposes to install and operate a commercial facility for the disposal of salt water into the Southeast end of Laguna Tres in Section 12, Township 23 South, Range 29 East and/or into the Northeast side of Laguna Cuatro in Section 6, Township 23 South, Range 30 East, both in Eddy County, New Mexico.

(4) 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.

(5) ~~(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.

(6) ~~(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.

(7) That the applicant seeks an exception to the provisions of the aforesaid Order (3) of Division Order No. R-3274, as amended, to permit the commercial brine disposal of produced salt water into either or both of the aforesaid lakes at the sites described above.

(8) That the applicant proposes to install and operate an effective system for the removal of oily and solid waste material from the waters to be disposed of, said system being equipped to monitor the discharge stream and to automatically shut the facility down should water quality deteriorate below an accepted average level of 15 parts insoluble oils per million parts of water.

(9) That said facilities should be capable of handling up to 14,400 barrels of water per day at each of the proposed sites, but 7,500 barrels per day is a reasonable limit to place on each facility at this time.

(10) That the discharge of 7,500 barrels of salt water per day into either or both of the proposed salt lakes will not create a hazard to any fresh water in the area for which a present or reasonably foreseeable beneficial use is or will be made.

(11) That the surface area of each of the aforesaid salt lakes is sufficient to permit the evaporation of at least 7500 barrels of salt water per day, and the disposal of that amount of water into each of said lakes will not adversely affect the existing hydrologic systems in said lakes.

commercial
(12) That the disposal of salt water into Laguna Tres and/or Laguna Cuatro in the amounts and manner described above will not impair correlative rights nor cause waste, and should be approved, provided however, that the Division Director should be authorized to suspend disposal operations by the applicant into either or both of ~~the~~ said lakes if applicant fails to prevent oil ~~from~~ ~~it~~ or other deleterious wastes from escaping to the ~~surface of~~ ~~the~~ lakes in harmful quantities.

IT IS THEREFORE ORDERED:

(1) That the applicant, B & E, Inc., is hereby authorized to install and operate a commercial salt water treating and disposal facility at the southeast end of Laguna Tres in Section 12, Township 23 South, Range 29 East, NMPM, and/or at the northeast side of Laguna Cuatro in Section 6, Township 23 South, Range 30 East, NMPM, both in Eddy County, New Mexico, said systems being limited to the disposal of a maximum of 7,500 barrels of salt water per day at each site.

(2) That the operator shall install and maintain in good operating condition a ~~the~~ salt water treating facility at each site utilized for salt water disposal, said treating facility being designed and operated in such a manner as to ~~remove~~ reduce insoluble oils from the disposal discharge stream to an average concentration of less than 15 parts per million.

each of

(3) That the aforesaid ~~shall~~ salt water treating facilities shall be so equipped as to ~~auto-matically~~ monitor the salt water disposal stream and automatically shut the facility down if disposal water quality should deteriorate to an unacceptable level.

(4) That the Division Director shall have authority to suspend operations at the ~~facility~~ facilities herein authorized upon failure of the applicant to prevent oil or other ~~harmful~~ deleterious substances from entering Laguna Tres and/or Laguna Custero in harmful quantities.

(5) Jurisdiction

DONE at