NEW MEXICO OIL CONSERVATION COMMISSION

ILLEGIBLE

EXAMINER HEARING

SANTA FE, NEW MEXICO

Hearing Date DECEMBER 18, 1985 Time: 8:00 A.M.

NAME	REPRESENTING	LOCATION
Paul Kautz	NMOCD	Hobbs
Joseph S. Sprinkle	myself	Denver
W. T. Kellahin	Kellahin & Kellahin	Santa Fe
Bob Huber	Byram	Santa Fe
George Neal	Eastland Oil Co	Midland, TX
John Paul Weber	[illegible]	[illegible]
Richard Donnelly	Eastland Oil Co	Midland, Texas
R. L. Kendrick	El Paso Natural Gas	El Paso, Tx
W. G. McCoy	J. Sprinkle	Santa Fe NM
Nancy Wood	N.M. Historic Preservation Division	Santa Fe, NM
Veryl F. Moore	Self	Farmington NM
W. F. Abbott	AGUA	Hobbs
JAMES D. THORNTON	AGUA	HOBBS
Daniel B Stephens	AGUA (D B Stephens Assoc.	Socorro NM
[illegible]	Agua, Inc.	Hobbs, N.M.
W. E. [illegible]	SLASH X RANCH	Andrews, Tx.

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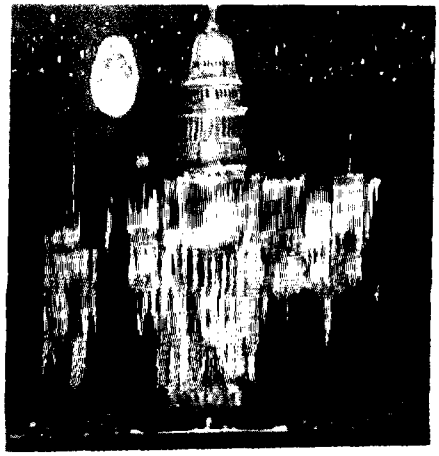
NAME	REPRESENTING	LOCATION
William Carr	Campbell, Black	Santa Fe
Ernest L. Padilla	Padilla & Snyder	Santa Fe
Dave Boyer	NMOCD	Santa Fe
R. Stamets	OCD	Santa Fe
CAROLYN TAPLIN	OCD	AZTEC
MIKE PIPPIN	UNION TEXAS PETR.	FARMINGTON
Chad Dickerson	Dickerson, Fair & Vandiver	Carlsbad
[illegible]	TXO	Midland
Mark Tisdale	TXO	Midland
Joe Terrell		
HARRY C SQUIRES	SNYDER RANCHES P.C.I.	Sonora
MARK S. MARTIN	Tipperary	Hobbs
Eric Crawford	GCNM	Mid land, TX
JOE D RAMEY		Albuquerque
STEVE FOSTER	Pollution Control/General Petro	Hobbs
Greg Davis	Pennzoil Company	Hobbs.
Greg Kerr	" " "	Midland, Tx.



America the Beautiful USA 15

Permian Basin Petroleum Assn.
P. O. Box 132
Midland, Texas 79702

Washington:
United States Capitol

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

18 December 1985

EXAMINER HEARING

IN THE MATTER OF:

The application of Petro-Thermo Corporation for an exception to Division Order No. R-3221 and for authorization to dispose of associated waste hydrocarbons and other solids obtianed in conjunction with the drilling and production of oil and gas into a disposal site on the surface, Lea County, New Mexico.

CASE 8781

BEFORE: Michael E. Stogner, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Division: Jeff Taylor
Attorney at Law
Legal Counsel to the Division
Energy and Minerals Dept.
Santa Fe, New Mexico 87501

For Petro-Thermo: Ernest L. Padilla
Attorney at Law
PADILLA & SNYDER
P. O. Box 2523
Santa Fe, New Mexico 87501
and
John Paul Weber
Attorney at Law
MADDOX, RENFROW & SAUNDERS
P. O. Box 5370
Hobbs, New Mexico 88241

A P P E A R A N C E S

For Snyder Ranches & Pollution Control, Inc.:

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

I N D E X

I N D E X

E X H I B I T S

MR. STOGNER: This hearing will come to order. We'll now call Case Number 8781.

MR. TAYLOR: The application of Petro-Thermo Corporation for an exception to Division Order No. R-3221 and for authorization to dispose of associated waste hydrocarbons and other solids obtained in conjunction with the drilling and production of oil and gas into a disposal site on the surface, Lea County, New Mexico.

MR. STOGNER: We'll now call for appearances.

MR. WEBER: Sir, my name is John Paul Weber. I'm with the law firm of Maddox, Renfrow, and Saunders in Hobbs, New Mexico.

I appear here today with Mr. Ernest L. Padilla, law firm of Padilla and Snyder, of Santa Fe, on behalf of the applicant, Petro-Thermo Corporation and its Aqua Division.

MR. STOGNER: Thank you, Mr. Weber. Any other appearances?

MR. KELLAHIN: Yes, Mr. Examiner. I'm Tom Kellahin of Santa Fe, New Mexico. I'm appearing on behalf of Snyder Ranches. Snyder Ranches has grazing leases in the area of the application.

In addition, I'm appearing on

behalf of Pollution Control, Inc., which is the current Oil Conservation Division permitted disposer of produced salt water into Laguna Plata, and so our -- Pollution Control's interest immediately offsets Mr. Abbott's acreage in Section 16. We are adjoining neighbors but we are appearing to see about the operations here.

MR. ABBOTT: Is he putting on testimony or introducing himself?

MR. KELLAHIN: Those are the parties I represent here today, Mr. Stogner.

MR. STOGNER: Thank you, Mr. Kellahin.

Are there any other appearances?

Are there any parties who wish to make any statements at this time?

Would you please stand up, identify yourself?

MS. WOOD: My name is Nancy Wood. I work with the State of New Mexico Historic Preservation Division. I'm an archaeologist.

MR. ABBOTT: Who do you repre sent?

MS. WOOD: The Historic Preservation Division.

MR. ABBOTT: And what part is that of --

MR. STOGNER: Please continue.

MS. WOOD: Okay. It's part of New Mexico Historic Preservation Division, Cultural Affairs.

Our concern is with the protection of archaeological sites in the vicinity. There's a number of known important archaeological sites around the vicinity of Laguna Plata.

Approximately fourteen of them were determined eligible for the Natural Register of Historic Places in approximately 1975.

I checked the State archaeological records. We don't know of any known sites that are on this specific area that's proposed for development but given the proximity to the lake margin there is a reasonably good probability that there may be sites (not clearly audible) particularly (not clearly audible).

The only way to tell if there are some is if an archaeological survey is done.

The other thing that I just wanted to point out is that under -- under the State Cultural Properties Act it is a violation of the Act to injure or destroy archaeological sites on State lands.

The other information that I

wanted to point out is that it's my understanding that the Bureau of Land Management has some interest in preserving the (not understood) Laguna Plata Area as an archaeological reserve.

There would be something more to take up with the Bureau of Land Management, but that's my understanding, and one of our -- one of our responsibilities under the law is to inform other State agencies and local governments of possible effects that their actions may have on (not audible clearly) resources.

Our usual recommendation for something like this is an archaeological survey should be done to try to protect these resources.

MR. STOGNER: Thank you, Ms. Wood. Is that everything you have?

MS. WOOD: Yeah, it is. Thank you.

MR. STOGNER: Are there any other statements?

MR. TAYLOR: Ms. Wood, is your agency recommending that a cultural survey be made? Is that a recommendation or are you just saying that's something you sometimes do?

MS. WOOD: Okay, it is a fairly standard recommendation that we do make. There is no re-

quirement under State law that surveys be done but it is a recommendation that I would make in order to protect archaeological --

MR. TAYLOR: Are you making it, then? Is that what you're saying?

MS. WOOD: Yes, I am making that recommendation.

MR. TAYLOR: And you're with the Division of Cultural Affairs of the Historical Preservation -- what's the rest of the name of it?

MS. WOOD: Just Historic Preservation Division.

MR. TAYLOR: Historic Preservation Department?

MS. WOOD: Division.

MR. TAYLOR: Division of the Division of Cultural Affairs?

MS. WOOD: Office.

MR. TAYLOR: The Office of Cultural Affairs.

MS. WOOD: Yeah.

MR. TAYLOR: I have to get all these divisions and offices straight.

Okay, thank you. We'll make that a part of the record.

MR. STOGNER: Okay, are there any other statements at this time before we get started?

There being none, will all witnesses at this time please stand and be sworn?

(Witnesses sworn.)

MR. STOGNER: Mr. Weber, you may proceed.

MR. WEBER: Sir, I would like to make a brief opening statement.

MR. STOGNER: Okay.

MR. WEBER: Petro-Thermo Corporation comes here today to seek an exception to Division Order R-3221, the general "no pit" order which was entered on the 1st of May, 1967, by the Oil Conservation.

There has been a real need in southeastern New Mexico for additional approved sites for disposal of oilfield related liquids and solids. This need has been communicated to Petro-Thermo Corporation and they have very actively searched the area to find a suitable site, a site that would not contaminate any existing fresh water supplies.

We feel, and we'd like to review the regulatory history relating to this particular area

and request that you take administrative notice of the various orders that have been entered with regard to this area in order to understand why we feel that this is the best possible site in southeastern New Mexico for this sort of a disposal facility.

By order dated July 25, 1968, that was Order No. R-3221-B in Case Number 3806, the Oil Conservation Commission exempted certain areas of Lea County, New Mexico, from the prohibition against disposal of production water in unlined surface pits.

Among the areas exempted was Range -- correction, Section 16, Township 20 South, Range 32 East.

The Commission at that time thought that the purpose of Order No. R-3221 would not be (not understood) by its enforcement in this area.

I would ask you to note that the proposed disposal site is located within the bounds of Section 16.

By letter dated April 16, 1969, the Oil Conservation Commission again considered this particular area. They considered it in Case Number 4047, resulting in Order R-3725.

By this order the Oil Conservation Commission specifically permitted the disposal of pro-

duction water in an actual salt lake known as Laguna Plata in Lea County, New Mexico. The Commission found that the utilization of Laguna Plata for the disposal of production water would not constitute a hazard to existing fresh water supplies in the area.

That, Mr. Examiner, is the legislative history . We feel that there is a definite need, a need which we will show through the testimony of our witnesses.

We will show that we have developed detailed engineering plans to eliminate any possibility of contamination of existing fresh water supplies.

We have very carefully examined the geology the topography of the area, and have reached the conclusion that once again the disposal would not constitute a hazard to existing fresh water supplies.

Sir, at this point I would like to call as our first witness Mr. Abbott, the President of Petro-Thermo Corporation.

MR. STOGNER: Before we do that, Mr. Weber, let me make sure I've got this clear.

You referred to Case Number 3806 and 4047, I believe?

MR. WEBER: That is correct.

MR. STOGNER: I will take administrative notice of both of those cases.

Please continue.

WILLIAM G. ABBOTT,

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

DIRECT EXAMINATION

BY MR. WEBER:

Q Sir, would you please state your full name?

A Yeah. My name is William G. Abbott and I live in Hobbs, New Mexico. I'm --

Q Sir, what is your -- sir, what is your profession?

A I'm a petroleum engineer.

Q From what institution did you receive your undergraduate degree, sir?

A I received by degree from the University of Texas in January of 1948.

Q Sir, what was your specialty or area of concentration?

A Actually my degree is in mechanical engineering but I specialized in petroleum engineering.

Q Sir, are you a member of any professional societies or organizations?

A Yes. I belong to the Society of Professional Engineers, Society of Petroleum Engineers, and API, American Petroleum Institute.

Q Sir, do you possess any licenses as an engineer?

A Yes. I'm licensed as a professional engineer in the State of New Mexico; also the State of Texas.

Q Sir, how long have you been a resident of Hobbs, New Mexico?

A I've lived in Hobbs, New Mexico since 1951.

Q Sir, could you please explain your work history?

A Yes. I was transferred to Hobbs, New Mexico, in 1951 with Amerada Petroleum Corporation, and I stayed with Amerada Petroleum Corporation until the middle of 1957 when I went to work as Manager of Rice Engineering in Hobbs, New Mexico.

Q Sir, what sorts of things does Rice Engineering do?

A Well, Rice Engineering specializes in salt water disposal and in 1967 I formed my own corporation, Agua, Incorporated, to specialize in the salt water dispo-

sal.

Q All right, sir. Sir, have you ever had an opportunity to testify before the Oil Conservation Commission?

A Yes, sir.

Q In what capacity did you so testify?

A With Amerada I was District Engineer and testified and then with Rice Engineering as Division Manager, and then with Agua as President.

Q Sir, were your qualifications accepted by the Oil Conservation Commission?

A Yes, they were.

MR. WEBER: Sir, I tender this witness as an engineer.

MR. STOGNER: Are there any objections?

MR. KELLAHIN: No, sir.

MR. STOGNER: Thank you. There being none, Mr. Abbott is so qualified.

Q Mr. Abbott, would you please describe in general terms the history of Petro-Thermo Corporation?

A Yes. We formed Petro-Thermo Corporation in 1970. We had a problem in -- during that time of disposing of oilfield waste, namely oil and BS, tank bottoms, and we formed Petro-Thermo to clean tanks and then

later on we got authority to -- from the Corporation Commission to be permitted to haul oilfield waste.

Q Sir, is Petro-Thermo Corporation a common motor carrier operating under a Certificate of Public Convenience and Necessity issued by the State Corporation Commission?

A Yes, sir, they are.

Q And do you also have authorization to move produced water from the Oil Conservation Commission?

A Yes.

Q Sir, in what counties and if you could please use the maps which are posted on the wall as exhibits.

A I think Exhibit One shows our counties of authority cross hatched. You'll notice the full east side of New Mexico, starting up here in Union County. We have a trucking yard at Clayton, New Mexico, up in Union County, and then we have all these counties cross hatched and we have another terminal and main office at Hobbs, New Mexico.

Q Sir, do you also have a division of Petro-Thermo Corporation called Agua, do you not?

A Yes, sir.

Q And what does Agua do and where does it do it?

A Oh, well, we operate disposal systems.

We've been hired by the oil companies to dispose of their water in the various systems and Agua operates those systems, the largest being down at Eunice, the Blinebry-Drinkard salt water disposal system, with approximately 550 wells.

Q Sir, that particular system is covered by a temporary permit, is it not, sir?

A Well, we have a temporary permit in that area issued by the Oil Conservation Division to dispose of solids. I can't remember when it runs out. It was a temporary, about a sixty day permit, so we need to proceed and to get a permanent place for the disposal of solids or waste.

Q Sir, would you please describe the reclaiming operations that are undertaken by Agua, Incorporated?

A Yes. We -- we operate a reclaiming plant. It's called our Goodwin Reclaiming Plant where we treat the tank bottoms to try to get a merchantable oil to sell as pipeline oil.

We also sell from -- from that spot drilling fluid additives. That's low, low grade hydrocarbons that are used in the drilling industry when they drill a well to add to the drilling mud.

Q Sir, do the reclaiming operations that

you undertake, or that Agua, Incorporated, undertakes result in the conservation of valuable energy resources?

A Yes. We produce a merchantable product and sell it, it's taxed, and we think it does prevent waste in the oilfield.

Q Sir, you've indicated that Petro-Thermo Corporation in its trucking operation serves Lea, Eddy, and Chaves Counties.

Will you please tell us the approximate number of oil wells in those counties?

A Yes, as you can see from this Exhibit Two, all these wells, most of them are in Lea County, coming from Hobbs and covering the whole of Lea County, Lea County is approximately 80 miles long and 40 miles wide and in the county there's over 15,000 oil and gas wells.

In Eddy County, they're growing. There's approximately 7200, over 7200 wells.

And in Chaves County there's about 2200 wells.

And if you'll notice, this proposed waste disposal site is right in the middle of all the wells. It can be reached by main highways and is a very good place to haul to.

Q Sir, could you, using Exhibit Number Two and the following exhibit, Exhibit Number Three, describe

what is meant by the Hobbs Pool?

A Yes. The Hobbs Pool is a pool right surrounding and in the City of Hobbs. About one third of the wells are in the city limits of Hobbs. There are over -- there are about 480 wells right now in the Hobbs Grayburg-San Andres Pools.

Those -- that pool is unitized, the north end being operated by Shell Oil Company and the south end unitized and operated by Amoco.

And I -- I can see that in the future, within -- if the price of oil stays up. that this waterflood will expand into CO2 flood and also they'll probably double the number of wells drilled in the Hobbs Pool.

Q So these are what are called tertiary means of recovery?

A Yes, that's right. Of course, when they drill these wells in this area especially, all the cuttings and all the mud has to be hauled out; they can't be left in the pits, be covered over; they have to be hauled away and that's why a solids waste area is needed.

Q So where are they hauled away to?

A Well, right now there's only two authorized places that I know of. One is an area down north and east of Eunice called Parabo. Parabo is limited somewhat because of the geology and the hydrology. It will probably

be shut down this -- this winter because the water level gets too high. When that happens they just have to shut it down.

The other site is out at the Laguna Gatuna.

Q Who operates that site, sir?

A Laguna Gatuna operates -- is operated by what do you call it -- I guess the Pollution Control, yeah, Incorporated.

Q Are there any limitations placed on the amount of waste which can be disposed of in Laguna Gatuna?

A Well, I think their order reads 30,000 barrels day, or something like that. I don't know if they could ever approach that capacity. I just don't have the knowledge.

Q Sir, have you received --

A I can point it out here. This is Laguna Gatuna, this area.

MR. STOGNER: What exhibit are you referring to?

MR. WEBER: Sir, that was Exhibit Four.

A Four.

MR. STOGNER: And on Exhibit Four what did you point to?

A Laguna Gatuna.

MR. STOGNER: It's on the far east side --

A Yeah, that's where Pollution --

MR. STOGNER: -- of the map.

A -- Control operates (not understood) site, or disposal site, and on the same Exhibit Four it shows Laguna Plata.

MR. STOGNER: Thank you, Mr. Abbott.

Q Sir, have you received from any other operators of oil and gas wells, or producers, any indication of need for additional disposal facilities in the southeastern portion of New Mexico?

A Yes, we've received copies of letter submitted to the Oil Conservation Division. I don't know the total number of them, since we haven't received copies of all of them.

Q Sir, I show you three letters which have been marked Five -- Exhibits Five, Six, and Seven, and ask you if you can recognize those?

A Yes. This first one is a letter from Amerada Hess Corporation; the second is a letter from Amoco Production Company; and the third one is Natural Resources Engineering, Inc..

Q Mr. Abbott, would you take Exhibit Number Five and read that letter into the record?

A This is the --

MR. KELLAHIN: I'm going to object, Mr. Examiner, to a letter being read into the record as part of the evidence in this case.

I think the typical way the Commission handles communications from nonparticipants in a hearing is to place them in your case file and read them as a practical matter, but we object to those things being introduced into evidence without a proper foundation, and none has thus far been made.

MR. WEBER: Mr. Examiner, I feel that a proper foundation has in fact been laid. These are letters from oil and gas operators in Hobbs, Lea County, New Mexico area. They have all, true, been sent directly to the Oil Conservation Division; however, carbon copies of those letters have been sent to Mr. Abbott in his capacity as President of Petro-Thermo Corporation.

MR. KELLAHIN: The letters speak for themselves, Mr. Examiner, there's no need to read them into the record to highlight Mr. Abbott's testimony. It's inappropriate.

MR. WEBER: Perhaps I can use them in a different way.

Q In very general terms, what factors have been indicated to you as the important factors with regard to the need for an additional disposal site?

A Well, the need, of course, is generated by the volume that will have to be disposed of and also, in the last two years, as the Conservation Division realizes, there have been some very serious salt water flows. In fact, we've been engaged to haul concentrated brine and Redbeds, and so on, from wells that are flowing out of control, and that -- that has to be disposed of right away because it's so -- so corrosive and so full of chlorides.

In fact on one -- one occasion, this well was flowing at such a high rate that there were over forth transports hauling 24 hours a day to keep up with the flow, and to my knowledge, I think the well is still flowing, but I think it's under control now, they're disposal downhole.

There is another area just recently, just south, I think it was mostly east of Lovington, same way, a drilling well, and salt water started flowing out of that well and that had to be hauled off.

Now this, this is very difficult because it isn't clean salt water. I mean it isn't water that you (not understood) a disposal well. It's water laden with Redbed solids and so on, and you couldn't use it to be disposed in a disposal system; it would plug up the wells.

So sites are needed such as this Laguna Plata site that we propose.

Q Sir, faced with the foreseen need in the oil and gas community, what steps did you take in determining the location of your proposed disposal site?

A Well, first of all, we -- we needed a centrally located area, one that we could see from our view it wouldn't pollute any water, and it would cause the least disturbance to -- to people, and that's why we selected this Laguna Plata.

Q Is this a very populated area?

A No, it's very, very sparsely populated.

Q What consideration did you give to the existing road map? Will the road map support the movement of transport trucks?

A Yes. I think the roads coming into this area, you have a 176 State highway coming up from the Eunice area, which is very, very important because there are a lot of wells in the Eunice area.

Then up from the north there's a road that ties into the area of Maljamar, which is being waterflooded at the present time and if one of those wells got away they'd have to take it some place and this would be centrally located.

It's also located close to the Eddy Coun-

ty wells.

Q And, sir, is there not an existing caliche road which leads almost up to the point of the disposal site?

A Yes. There was a dry hole drilled by TXO and they built a caliche road within just a short distance, probably 400-500 feet from this proposed site of ours.

Q Sir, to your knowledge has Laguna Plata been previously approved for the disposal of waste?

A That's what I understond, yes, sir.

Q Do you know if it's now being so used?

A No, sir.

Q Sir, for what capacity did you direct the design for the disposal facility?

A We designed it for 30,000 barrels a day of water. I don't know if we'll ever reach that, but it's over-designed as far as the pits that we -- and the tanks.

Q Sir, what is your actually immediate needs?

A I think probably around 2200 barrels a day of produced water.

Q Sir, how quickly could you put into place a disposal facility once the necessary approvals have been granted?

A I think we could do it in thirty to sixty

days.

Q Sir, what sophisticated design features have you directed to be incorporated in your plans to avoid the possibility of contamination of existing fresh water supplies?

A Well, I think our engineer probably could go into more detail, and the hydrologist, but on the Exhibit Five is our layout of the pits. The pits on the left on this Exhibit Five are the water pits, and also on Exhibit Nine we have a model that shows those pits.

MR. STOGNER: Excuse me, I show Exhibit Five as being a letter.

Is that Exhibit Eight you're referring to, I believe?

MR. WEBER: That is correct, Mr. Examiner.

A Yeah, Exhibit Eight, excuse me.

MR. STOGNER: Thank you.

A Exhibit Nine is a model made from the topographic map of the area and as you can visualize, the tankage will be up here on this pad. The entrance to this area will be right up here.

MR. STOGNER: Now, are you referring to the extreme southwest portion of --

A Yes.

MR. STOGNER: -- Exhibit Number Eight, is that right?

A That's right. This -- this Exhibit Nine is a 600 by 600 foot plat and it's located in the northeast, it's in the east half of the northeast quarter of Section 16, 20, 30.

Q 2.

A 32, yeah, and if you'll notice on this model, we will locate the gunbarrels and oil storage tanks up on the pad. The water will go on into these pits and that will be described in detail from -- with our engineer.

The solids are roughly on the righthand side, the pits on the righthand side. That has been designed so that the solid pits can be cleaned out by dozers or backhoes.

MR. STOGNER: Before we leave Exhibits Eight and Nine, these contours that you show on both of these, are those one-foot intervals?

MR. THORNTON: Yes. Yes.

MR. STOGNER: Who is telling me that? Who are you?

A Mr. Jim Thornton.

A Our engineer.

MR. STOGNER: So this is somewhat exaggerated.

A Yes.

MR. STOGNER: I don't remember it being that steep out there.

Thank you, Mr. Abbott. You may continue.

A That's all right.

Q Mr. Abbott, do you presently have under consideration by the State Land Office an application for a business lease regarding this property?

A Yes. I understand we have applied for a business lease.

Q Sir, in your opinion will approval of the proposed disposal site satisfy existing need in the oil and gas industry?

A Yes, I think that site is needed, especially since Parabo is -- I don't think it will survive the winter and they'll -- they'll -- everybody needs another spot.

Q Given the fact that you have an oil reclaiming operation, will the use of this particular facility serve the needs of conservation of valuable natural resources?

A Yes. We've found that when produced water is hauled to a tank and separated properly, there will -- we will recover some waste oil.

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

MR. STOGNER: Thank you, Mr. Weber.

Mr. Kellahin, your witness.

MR. KELLAHIN: Thank you, Mr. Stogner.

CROSS EXAMINATION

BY MR. KELLAHIN:

Q Mr. Abbott, you've described for us your coprorate structure in terms of Agua, Inc. and Petro-Thermo, and you described those in terms of "we". Are there other principals besides you in either of those companies?

A Yes, it's incorporated. There are other stockholders.

Q Are you the principal managing executive for both of those companies?

A Yes.

Q Who are the other major principals, Mr. Abbott, that would participate with you in making decisions about the construction and location of this type of facility?

A Well, we have a management team working for Agua and Petro-Thermo: Myself, Jim Thornton, our engin-

eer, and my two sons, Bob and Jim.

Q Is the proposed use of this facility one that is confined to allowing you and your trucking operation to have a facility to dispose of these solids and oilfield waste or do you propose to make this a public facility for the industry?

A No, we will make it a public facility for the industry. This is the oil industry.

Q I understand.

A Right.

Q Other truckers and haulers and --

A Yes.

Q -- other disposers on some financial basis --

A Yes, sir.

Q -- with your facility? Exactly what substances would be disposed of in the various pits as indicated on Exhibit Number Eight?

A Well, I -- the details I'll leave to my engineer, but roughly, the pits, as pointed out on the left of our exhibit, will be water pits, produced water pits.

The pits on the righthand side of the exhibit would be the solids pits; that is, cement, drilling muds, and that sort of thing.

Q Do you propose to utilize the facility

for all of the produced water, tank bottoms, oil and BS that you now accumulate, do you propose to take all those substances and run it through this unit up to whatever the maximum requested is?

A Actually, we'll probably haul it off and haul any -- any merchantable oil to our treating plant.

Besides these pits we'll have tanks. We'll have two 1500 barrel gunbarrels or -- and then an oil storage tank for the BS and oil on location.

Q Are you familiar with the -- on Exhibit Number Four, Mr. Abbott, you've shown us the approximate location of your facility to the south and west of Laguna Plata.

A Yes, sir.

Q And you've identified for us the area to the east at Laguna Gatuna where Pollution Control operates a facility, a disposal facility.

A Yes, sir.

Q All right, are you familiar with the Pollution Control facility at Laguna Gatuna?

A No, I've never been out there. My engineers and other management have.

Q Are you aware, or have you been informed of how your operation compares or differs with the facility that's in place at Laguna Gatuna operated by Pollution Con-

trol?

A No, I'm not familiar at all with it.

Q Do you currently have trucking disposal commitments from Amerada Hess, Amoco, and this Natural Resources, Inc.?

A We disposed -- we've worked for all three of the companies, yes, sir, but we don't have any planned, steady work. We're just available for their hauling.

Q Currently, without this proposed facility, Mr. Abbott, what are you doing as a hauler with these solids and oilfield waste?

A Well, our -- right now our disposal water we have a disposal well in -- at our treating plant and we dispose of the produced water there.

We also haul in tank bottoms and any -- any BS, basic sediments, and use our -- our treating plant at -- that we -- at our Goodwin Treating Plant, but as far as the muds, Redbeds, and so on, we just have a temporary permit for a pit down at Eunice, which we're disposing in.

Q Do you propose to divert proposed water from any of your existing disposal facilities and move them to the Laguna Plata proposed site?

A No, sir, just emergencies, and I don't see any in the future.

Q Have you or your company utilized in the

past the Pollution Control disposal facilities at Laguna Gatuna?

A Yes, sir, we've -- we've used them.

Q Do you know whether or not that existing facility continues to have the capacity to meet the need that you propose to fill with your facility?

A No, sir, I don't know.

Q You don't know that?

A No.

Q With regards to your facility, and I've lost the section, I think it was Section 16?

A Yes, sir.

Q All right, within Section 16, and we're looking at the northeast quarter and then again on Exhibit A it's approximately the east half of the northeast quarter, that 80-acre tract there --

A Yes, sir.

Q All right, when we look at that site, whose ownership is the surface subject to?

A That's the State of New Mexico.

Q Okay. You've talked about going through permitting procedures to acquire necessary permits to utilize this facility, Mr. Abbott. Apart from the Oil Conservation Division approval, what other permits or authorities are you aware are required of you before you commence opera-

tions?

A I don't know. There's probably others but I am not aware of them.

Q You've mentioned to us that you have filed for a business lease from the State of New Mexico to utilize the surface?

A Yes, sir.

Q I assume you're aware that that's a requirement for the site?

A Yes, sir.

Q Are there any permits that you are required from the Corporation Commission, to your knowledge?

A No, sir.

Q Your trucking permits from them are not affected by --

A No, sir.

Q -- this operation?

A Not that I know of.

Q All right. And I believe I understood you to tell us that at this point the business permit from the State of New Mexico has not been issued to you?

A We've applied.

Q In what name, sir, have you applied? Do you recall?

A No.

Q Do you currently have any knowledge as to what the surface of this tract is being used for now by the State of New Mexico?

A It's just a grazing lease, as far as I know.

Q Do you know, sir, who the current grazing lessee is for that tract?

A Yes. We -- I think we -- one of our management team contacted the present grazing lessee.

Q Do you know the name of the current grazing lessee?

A No, I don't remember his name.

Q With regards to the construction of the facility, as shown on Exhibit Eight, Mr. Abbott, where is that, those pits in relation to the high water mark for Laguna Plata?

A I think our engineer will show in his testimony.

Q Do you know of your own knowledge approximately where that might be?

A Yeah, it's probably the north one-sixth of the north tract, which we call Tract A; 40-acre Tract A.

Q Is the plan for construction of the facility one in which you propose to confine the produced waters and the discharges substances within the area of the pits

shown in Exhibit Eight and Nine?

A Yes, sir, at the present time.

Q Are you seeking authority to dispose of salt water into Laguna Plata?

A No, sir.

Q You told us, Mr. Abbott, that the facility would be available for general use.

A Yes, sir.

Q Have you come up with some charges for the use of that facility at this point?

A No, we -- we haven't made any firm charges.

Q What is charged to you by the facility that you said was virtually full?

A At Parabo?

Q Parabo.

A Yeah.

Q That's it.

A I think the solids charge there is $1.00 a barrel.

Q Do the econmics of the cost to you as a hauler or to other haulers, to your knowledge, do those costs bear in the decision you've made about the siting of this facility?

A Yes. We're familiar with other areas in

Texas, and so on. The oil industry needs a place to -- to put these solids and I think this -- this -- the location of our proposed site is -- is -- will help the whole oil industry.

Q How long have you been in this type of business, Mr. Abbott?

A I've been in the disposal end of it since probably 1948 when I was working with Amerada. I worked on my first salt water disposal system down in the Gulf Coast with Amerada and then subsequently worked on some with Amerada in Lea County.

Q And in conducting your salt water disposal operations have you utilized for the waste disposal, the salt waste disposal, have you utilized any other sites other than Pollution Control or the Parabo sites?

A Yes, this temporary site down at Eunice. That's the only two sites that I know of.

Q And is the temporary site at Eunice the one that you're currently utilizing to hold the solids that are generated from your business?

A No, not from our business; generated by our hauling business from other operators.

Q So your business now for disposing of the solids, you're utilizing Pollution Control and the Parabo sites at present?

A No, we were.

Q Oh.

A But we're not now.

Q You've indicated to us that the Parabo site, and you think it has perhaps reachd its limit in terms of having water volumes that are too high --

A Yes.

Q Does that facility still have the capacity to take the solid wastes?

A I don't known about the solid wastes.

Q You've indicated to us that the Pollution Control site at Laguna Gatuna, that you're not aware that that's full?

A No, sir, I'm not aware of that.

MR. KELLAHIN: May I have a minute?

MR. STOGNER: I'm ready whenever you're ready.

MR. KELLAHIN: Thank you, sir.

Q Are you familiar enough with the operations at the site, Mr. Abbott, that you could take me through in a general way how the site is to be utilized by a trucker that brings salt water to you and tank bottoms? Can you give me a general idea of how it runs through the system?

A Yes, sir, I believe so in a general way.

The -- this is shown on Exhibit Eight. The produced water pits are shown here on the left. The entrance to our -- our facility is right here. This would be the entrance and the trucks would come in here and unload at the gunbarrels. They'd unload into two 1500-barrel -- or 750-barrel gunbarrels, excuse me, and the water would flow out of the syphons from these gunbarrels, there would be two unloading places, would flow into this pit.

MR. STOGNER: The pit marked W-1?

A Yes.

MR. STOGNER: Okay.

A This pit is designed so that the connection between W-1 and W-2 would be a large conduit below the waterline and the water would flow into W-2.

We've designed it so that the water would have to zigzag through these pits, which will slow the velocity down in the pits and the solids would drop out and also any oil that was trapped with the water could be removed.

Of course, most of the oil will come off right at the gunbarrels.

Our engineer can go into more detail but that's just generally --

Q Just a follow-up question, Mr. Abbott,

once the water hits the W-1 and W-2, you build up, I assume, some solid sediments in those bottoms, you periodically clean them, and what do you do with the stuff after you clean them?

A We'll probably get some build-up. I don't know. We haven't -- we haven't -- I don't know how much build-up we're going to have, really.

Q Thank you, Mr. Abbott.

MR. STOGNER: Mr. Weber, any redirect?

MR. WEBER: Yes, sir, I have a few questions.

REDIRECT EXAMINATION

BY MR. WEBER:

Q Just to bring you to a point of reference, Mr. Kellahin in his questions asked whether or not Petro-Thermo Corporation and its trucking operations dealt with the three companies whose letters you have examined here today.

A Yes, sir.

Q Are these, to your knowledge, all the letters that have been sent?

A No, there may be more that they sent directly and failed to send us a copy. I have no knowledge.

Q Sir, if you could give us an estimate of the number of companies which have trucking operations carrying oil and gas field related waste?

A Well, in the immediate area of southeastern New Mexico there are probably forty different trucking companies. I have't added them up. They run all the way from Jal in the south up to Crossroads on the north and also to the west in the Carlsbad area and to the north at Maljamar, or west, northwest.

Q Is it usual that these transportation companies would be wedded to one particular producer of oil and gas for all their hauling of wastes?

A No, I don't believe so. From my knowledge of the trucking industry in Lea County, most of it's divided up and it's according to the best service in that they're the ones who get the business.

Q You talked about the very small number of approved waste disposal sites in southeastern New Mexico.

Assume for a moment that your temporary exception for the pit in Eunice expires. Assume for a moment that Parabo is no longer able to accept waste, and assume for one reason or another Laguna Gatuna is not available to you or to other of the 39, the 40 or so, truckers in the area.

What alternatives do they then have?

A The only alternative is to come to the Conservation Division and ask for approval of a site.

Q Are there any additional sites, say, in Texas or in other areas?

A I believe there are some sites in Texas but you'd have to have trucking authority to truck the waste to Texas, and we don't. We have some authority in Texas but not extensively.

Q What ramifications if all those things occur would that have on the oil and gas industry in southeast New Mexico?

A Well, it would be -- it would be disastrous. They'd have to shut-in some wells.

Q And what would happen to the 40 truckers?

A Well, they'd go broke.

MR. WEBER: I have no further questions.

MR. STOGNER: Thank you, Mr. Weber.

Mr. Kellahin, any more cross examination?

Are there any other questions of Mr. Abbott?

I'm going to waive cross examining Mr. Abbott at this time. I reserve the right to re-

call him at a future time.

MR. WEBER: Mr. Examiner, at this time I'd like to call Mr. James Thornton as our second witness.

JAMES D. THORNTON,

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

DIRECT EXAMINATION

BY MR. WEBER:

Q Sir, would you please state your full name?

A James Douglas Thornton.

Q And where do you reside?

A Hobbs, New Mexico.

Q Mr. Thornton, by whom are you employed?

A Agua Division of Petro-Thermo.

Q And in what capacity are you employed?

A I'm an engineer.

Q How long have you been employed as an engineer with Petro-Thermo?

A Seven months.

Q What are your general duties and responsibilities at Petro-Thermo?

A Oh, the operation and engineering and design of several salt water disposal systems that Agua operates.

Q Mr. Thornton, where did you receive your undergraduate degree?

A Texas A & M.

Q And what degree did you receive and when did you receive it?

A Petroleum engineering degree in December, 1984.

Q And petroleum engineering was your specialty or area of concentration?

A Yes, sir.

Q Are you a member of any professional societies or organizations?

A Yes, sir, I'm a Junior Member of the Society of Petroleum Engineers.

MR. WEBER: Sir, at this point we would ask that Mr. Thornton be qualified as an engineer.

MR. STOGNER: Are there any objections?

MR. KELLAHIN: No objection.

MR. STOGNER: Mr. Thornton is so qualified.

Q Mr. Thornton, as part of your general

duties and responsibilities, were you responsible for developing the engineering plans for the proposed disposal facility at Laguna Plata?

A Yes, I was.

Q Are those engineering plans, are they shown by an exhibit which is on the wall?

A Yes, they are. It's Exhibit Number Eight.

Q Was that exhibit prepared by you or under your supervision?

A Yes, it was prepared by myself.

Q Did you also prepare a model?

A Yes, I did, a topographic model of the area.

Q And is that the model which has been numbered as Exhibit Nine?

A Yes, sir, it is.

Q In developing your engineering plans what sources of information did you rely upon?

A Well, first my task was to find a spot or two for disposal so we had to search the area and we came up with an exempted section and I did use material, books that have been previously written on the subject, such as the Groundwater Contamination Report in a book by the Environmental Protection Agency on brine disposal treatment prac-

tices relating to the oil production industry.

Q Did you actually get out on the ground of the proposed site before preparing your plans?

A Yes, I did.

Q Did you have an opportunity to visit other salt water solids disposal sites?

A Yes, I did.

Q Please describe the site that you have selected.

A The site is located in Section 16. It's the southeast quarter of the northeast quarter. It's 600 foot by 600 foot starting on the southwest side. The very southwest corner has a pad where trucks can enter and exit freely. There are tank batteries for use to separate and five water disposal pits, four solids pits, and an overflow or emergency pit.

Q Now, the topography of the site that you selected is rather unusual. Please describe the topography.

A Well, it's downward sloping hill caused by a sink, a sink in the area.

Q And to what feature does it slope towards?

A Laguna Plata.

Q And what is Laguna Plata.

A It's a large salt water lake.

Q And why did you design the pits in such a manner that each successor pit was on a lower level?

A So that movement between pits was much easier, easily accomplished.

Q What was your primary consideration in designing this facility?

A The evaporation rate of the fluids in Laguna Plata.

Q You spoke of the evaporation rate in Laguna Plata. Could you please tell us what that rate is?

A Mr. Dan Stephens, our hydrologist, knows more about that. I did read his report, however, and it was 4.4 feet per year.

Q What types and quantity waste materials did you design this site for?

A Would you repeat that?

Q What types and quantity of waste materials --

A Okay, well, we --

Q -- did you design the proposed site for?

A The quantities, the types and quantities were production water. There is oil associated with production water, and also drilling fluids and cement.

The -- we set a limit of 30,000 barrels per day. It's only 20 percent or less of what the evapora-

tion of the lake will handle.

The quantities of each were 26,500 barrels would be water. 2500 barrels would be oil, and 1100 barrels would be the actual solids.

Q And how much of this 30,000 barrel capacity do you anticipate actually using?

A Only 2250 barrels per day is our expected initial rate.

Q What is the actual maximum capacity, assuming that you have steady stream of traffic up and down State Road 176?

A That would be 30,000, approximately 30,000 barrels per day, that's nothing else could possibly get into those pits, the number of unloadin lines.

Q Mr. Thornton, could you please step up to the map, and beginning with the unloading line, describe the flow of solids and liquid wastes?

A Okay. When trucks enter this pad they come up to either -- there are two sets of two unloading lines. One is for solids, meaning drilling fluid and cement, and the other is for production water.

The truck comes in here, hooks up to one of the two unloading lines which is connected to a 700-barrel gunbarrel. There are two of these.

Q What is the purpose and function of the

gunbarrel tank?

A It is to separate the oil from the water before entering the tank.

Q How does that accomplish that?

A By gravity. The gunbarrels have a water leg attached to each one.

Q And to where do the usuable hydrocarbons go?

A Into the center tank, marked P-2, which holds 1000 barrels.

Q What will be done with the oil that comes from that tank?

A The oil will be taken from one of our trucks to our reclamation plant, the Goodwin Treating Plant, and we will re-treat this oil and recover some pipeline oil from that.

Q Now how is the tank battery connected to the disposal pits?

A The two gunbarrels are connected to the disposal pits through a water leg.

Q What's the purpose of setting up the five disposal pits that you have on succeeding lower levels?

A The purpose is to, number one, each pit is lower than the other, meaning that fluid can be transferred and controlled much easier.

The pipe, the conduit right here, which will be 12, at least 12 inches in diameter, are staggered such that the maximum amount of retention time or settling time can be accomplished.

Q That's why the conduits are offset?

A Yes, sir.

Q Now have you calculated the -- or designed the size and calculated the capacity of each of the salt water disposal tanks?

A Yes. I'll go ahead and -- the pit W-1, or water disposal pit, the first one holds 7480 barrels; that is at a level 3-foct from the top of the pit. It will actually hold 10,686.

The second pit will hold 7480.

The third pit will hold 6411.

Number four will hold 5343 barrels.

Fifth pit, 4274 barrels.

And total capacity of these water pits will be 30,988 barrels with -- go ahead.

Q Now, you indicated that you -- Mr. Thornton, I understand that you have established a 3-foot leeway between the top of the pit and the maximum water level.

Why did you do so?

A To protect against any spills that might

occur from either extremely several 35-year rain in six hours or any other operational problem, such as maybe sediment that's cemented solid that are settling out into the pit from clogging the conduit.

Q Now, your salt water disposal pits are established or connected, rather, to an overflow pit. What is the purpose and function of that pit?

A Well, to further protect the -- any overflowing of the pit due to the same problems mentioned before.

Q Another over-design?

A Right.

Q What is the size of the overflow pit?

A It's 100 foot by 60 foot by 3 foot deep.

Q And what is its capacity in barrels?

A It is 3206 barrels.

Q How many solids pits have you included in your engineering plans?

A Four solids pits.

Q Can you please tell me the purpose and function of the solids pits?

A The solids pits are designed to handle any mud or cement that the trucks may haul in. The truck merely hooks up the line, either line, and disposes into a pit, into these pits on both sides because of build-up, un-

equal build-up if we just had one going, say.

Q What is the size of each of the proposed solids pits?

A It's 100 foot by 24 foot or 25 foot. They are designed that size so that it is easily accessible to backhoes or dozers and such to clean them out.

Q What is the capacity of each in barrels?

A Solid disposal pit number one is 3117 barrels, and again I've got a maximum. That's 3 foot from the top of the dike that will be built around each one of these pits. It's 4,452, actually.

Solid pit two is 3,117 barrels; solids pit three is 2,671; and solids pit four is 2,226. These give a total capacity of 11,131 barrels.

Q Would you please explain the conduit system that you have designed which links the solids pits?

A As I said before, the -- each unloading line is connected to one side of the pit so as to equalize the solids over the whole pit, because solids are viscous and tend to build up on one side, but we went ahead and got 6-inch conduit running through the pits on each side with valves on each one of the pits -- I mean one of the inlet lines to the pits.

The way it will operate is three of these valves will be closed; we'll use one pit at a time. When

that is built up, we'll close that pit off and use the other one, and we'll continue down here until you get down here to the fourth pit and we need the first pit by the time we get to this one. This one should have dried out and we will be able to clean it out and then re-use it again.

Q Are the solids pits also connected to the overflow pit?

A Yes, sir, they're connected. The overflow pit has a series of 6-inch lines connected to each pit so the level of all pits will never exceed the height of the dike.

Q Is this another intentional --

A Yes, this is another over-design again.

Q What other improvements to this 600 foot by 600 foot area have you included in your design?

A Two roads coming into the site. The area will be fenced with a 4-strand barbed wire fence around the whole 600-foot area and the oading pad.

Q What impact, if any, will all your over-design features have upon any discharge into Laguna Plata?

A It will keep any solids from entering into Laguna Plata. These pits will contain everything they're designed to contain. It will operate so that it is over-designed for safety.

Q Why have you over-designed it?

A To provide safety for groundwater contamination. We don't want to --

MR. WEBER: I have no further questions.

MR. STOGNER: Mr. Kellahin, your witness.

MR. KELLAHIN: Thank you.

CROSS EXAMINATION

BY MR. THORNTON:

Q Mr. Thornton, you said earlier in your direct examination that you had had an opportunity to visit other sites in coming up with a design for this facility?

A Yes, I did.

Q What sites have you visited in making your study to determine what type of design for this site?

A Pollution Control, Laguna Gatuna.

Q You have been at that facility?

A Yes, sir.

Q When did you examine that site, Mr. Thornton?

A There were a couple times. There was one just recently with Mr. Stephens.

Q How long have you worked on this particular design prospect for Agua, Inc.?

A Approximately three months.

Q Can you describe for us in what ways, if at all, your proposed facility here differs from the one at Pollution Control?

A Yes. The -- number one, we are using the topography of the area.

Number two, our pits, each of our pits are -- will not go, say, above the level of the dike. It will never be equal to the level of the dike.

Q This three-foot freeboard that you're talking about --

A Right. Right.

Q -- is the difference. When you said awhile ago that the evaporation rate given to you by the hydrologist was some number and the volumes used in this disposal facility were approximately 20 percent of the evaporation rate --

A Right.

Q -- in what context are you saying that? Have you calculated or has someone calculated the evaporation rate for the surface of the pits?

A No, of the lake itself.

Q Oh, I see, okay. When trucks come into the facility, do you propose that waste products run through your system will be in trucks that are equipped to either

pump or discharge fluids through the tanks?

A Right.

Q Do you receive or do you propose to receive materials that will come in dump trucks?

A No, we will not. This is -- this is strictly oilfield waste. We do not -- we do not want any other solids at our disposal site.

Q Drill cuttings, I understand, sometimes come in dump trucks, that kind of thing, are you designed to handle that kind of disposal?

A I wasn't aware of that and the design can be -- I mean it can be altered but I don't -- I don't see any need to because there is -- I had never heard of such a thing.

Q All right. When -- when we have the capacity of the four solid pits and I think you gave us a number of a little over 11,000 barrels, is that the --

A 1100 barrels. Oh, I'm sorry. Yes, sir, you're right.

Q The capacity of the four solids pits?

A Right.

Q 11,000 barrels? Have you estimated how long it will take you to fill up those pits before you have to clean them out?

A That's depending -- that's largely depen-

ding on how much is disposed in there and that is not a definite quantity.

Q Once a solid pit becomes full or has to be cleaned out, what is your plan for the disposal or the storage of those solids?

A They will just be placed on the pit -- on the pad.

Q You would take the solids after all liquids have evaporated out of these solids pits, those solids that are left remaining after evaporation?

A Yes, the clays from the drilling mud and the cement itself.

Q You'd clean the pits and then take that solid material and place it on the pad.

A Right.

Q All right. Are any of the pits lined?

A No, they are not.

Q You've described for us a few ways in which your facility was different than Pollution Control. Are you aware of any other material ways that your facility is different than the one at Pollution Control?

A Yes. We do not separate our oil in the pits. We separate it in the tank.

Q In that first ank there?

A Right, the first two.

Q All right. Are there any other differences between your design and the facility at Pollution Control?

A They discharge into the -- into Laguna --

Q Gatuna.

A -- Gatuna directly. We do not. Ours is an indirect method.

Q Your proposal then would be that the water in the pits, it's your intent to have that water remain confined to the pit.

A It will seep towards Laguna Plata.

Q But in terms of a direct discharge into Laguna Plata, you haven't designed that nor do you propose to do that?

A No, we do not. We don't see a need for it.

Q All right.

MR. KELLAHIN: I wonder if we might take a few minute break?

MR. STOGNER: Now would be a good time to take about a ten to fifteen minute break.

(Thereupon a recess was taken.)

MR. STOGNER: The hearing will

come to order.

Mr. Kellahin, I believe you were ready to cross examine?

Q Mr. Thornton, just a few more questions about the operations at the proposed site.

A Uh-huh.

Q Do you propose to fence in the facility in any way to keep livestock and --

A Yes, sir.

Q Off the property?

A Yes, sir. These are steel posts I've got up here and between them we'll have four strands of barbed wire.

The entrance is -- both entrances, or the entrance and the exit will be -- will have a cattleguard so no cattle or livestock and enter into that area.

Q How will you handle the day to day operations in terms of manning the facility? Will this be staffed 24-hours a day or you going to open and close it during particular hours? What is the proposed plan?

A Any time the site is open there will a person on the site looking over the disposal area.

Q You propose to have it manned, then, so that when the compound is open there will a person in charge to direct the proper utilization of the facility by

truckers?

A Yes, we will.

Q Have you done any kind of analysis of the chemicals or substances that will be removed from the solid waste pits and placed on the pad? Have you made any studies of those or analyses of those types of materials?

A No, sir, I have not, but it is -- they're probably the same composition as what is going into Pollution Control solids pits.

Q Do you propose to put these on the pad in such a way that they will remain confined either with some kind of liner underneath or that they'll be covered so that the salts and whatever else they are may not blow away or dissipate into the adjoining properties?

A No, we hadn't planned on putting anything there. We did not anticipate it blowing away.

A All right. Thank you.

MR. KELLAHIN: I have nothing further.

MR. STOGNER: Thank you. Mr. Weber, any redirect?

MR. WEBER: Yes, sir, just a few questions.

REDIRECT EXAMINATION

BY MR. WEBER:

Q You mentioned in discussing the difference between your proposed design and that presently employed by Pollution Control, certain differences.

Among those differences was the use of topography. What did you mean by using topography?

A The area is down -- has a downward slope towards Laguna Plata. Any -- any water disposal or solid disposal, whatever, it will run downhill to the -- into the pit.

Q Could you show us the flow using your model, which has been marked as Exhibit Nine?

A The flow will run downward, and the water pits, as I said, they were staggered, and it will be filtered through the -- the underlying sand layer that runs toward Laguna Plata.

Q What is the benefit of that filtering process?

A It cleans up all the -- any suspended particles that might be in the production water.

Q Are you indicating, then, that the eventual discharge into Laguna Plata will be cleaner than had you put a direct line?

A Yes, it will be much cleaner.

Q You talked about conduits. Do the conduits in your proposed design differ at all from the conduits presently in use by Pollution Control?

A Yes. They're larger.

Q What benefit, if any, does that provide?

A Any problems with lines plugging due to any build-up of suspended solids, as I mentioned to you before.

Q Is the possibility of plugging of conduit a real possibility?

A No, it's a remote possibility.

Q Have you developed any plans to deal with the remote possibility should it occur?

A Yes. The, number one, the design does incorporate the overflow pit and if we do have a build-up of solids in the bottoms of the pits, we can divert the water such that we can clean each pit separately.

Q Now with regard to cleaning of pits, there was some question with regard to the placement of solid materials on the pad that you will have constructed.

If any difficulty develops are your plans flexible enough to provide contingencies to handle that?

A I don't follow.

Q Is this a preliminary plan that you're presenting or is it a final --

A Yes, this is a --

Q -- plan?

A This is a preliminary plan. If we do need more pits we will dig more pits to insure that we can handle what we are getting.

Q And if you do need to employ other methods with regards to solids disposal, you can accomplish that as well?

A Yes.

MR. WEBER: I have no further questions.

MR. STOGNER: Mr. Kellahin?

MR. KELLAHIN: No, sir.

CROSS EXAMINATION

BY MR. STOGNER:

Q Mr. Thornton, just a few basic questions here.

Let's go back to Exhibit Number Eight and your solids -- I'm sorry, the line into your solids pits you said was 6-inch conduit, is that right?

A Yes, sir. I'm sorry, that was 8-inch.

Q When you come in there an empty cement through these 8-inch lines, what would -- what will Petro-Thermo use to wash those lines out with?

A Gravity.

Q How much slope does these 8-inch lines have?

A Well, up on the pad the -- if you'll give me just a minute here I can give you height.

Q Well, I guess what I'm getting at, you don't think that cement is going to set up in those lines?

A No, if it does, we can put another line.

Q Okay.

A There, and there will be somebody there at all times to make sure that nothing happens.

Q Okay. Let's go over to your water pits. The conduit, the 12-inch diameter pipe between the two that's staggered, where are those actually set within the pit?

A Three feet below the level, below the dike.

Q Okay. When W-1, or Pit No. 1, when it fills up with solids, you propose to take those solids out and then spread it around the pad, is that correct?

A Yes, sir, that was S-1.

Q I'm talking about W-1.

A W-1 is a water disposal pit. It has production water only going to it. The whole west -- the west pits there are water disposal pits. The east ones are so-

lids disposal pits, solids disposal pits with an overflow pit.

Q So you don't anticipate W-1 filling up with silt.

A No. The line that is connected between those two pits is located a food below the top of the dike. The water level will never reach that high to interconnect into each pit, and if it does, the water would flow down to overflow pit, the overflow pit.

MR. STOGNER: I have no further questions of Mr. Thornton.

Are there any other questions of this witness?

MR. WEBER: I have none.

MR. STOGNER: If not, he may be excused at this time but we may bring him back to answer some more questions.

A Thank you.

MR. WEBER: Sir, we'd like to call as our next witness, Mr. Dan Stephens.

DANIEL BRUCE STEPHENS,

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

DIRECT EXAMINATION

BY MR. WEBER:

Q Mr. Stephens, will you please state your full name?

A My name is Daniel Bruce Stephens.

Q And where do you reside, Mr. Stephens?

A In Socorro, New Mexico.

Q And are you the principal of Daniel B. Stephens and Associates, Consultants in Groundwater Hydrology?

A That's correct.

Q How long have you had this consulting?

A I've been doing consulting in New Mexico for about six years.

Q Mr. Stephens, from what institution did you receive your undergraduate degree?

A I went to Penn State University.

Q And what degree did you receive and when did you receive it?

A Bachelor of Science and a degree in geological science in 1971.

Q Were you singled out for any honors?

A I graduated with honors and I was given

an award as the outstanding senior in the College of Earth and Mineral Science.

Q From what institution did you recieve your graduate degree?

A A Masters degree in hydrology at Stanford in 1974 and a PhD in hydrology at the University of Arizona in 1979.

Q At those institutions were you singled out for any particular honors?

A No.

Q Are you a member of any professional organizations?

A Yes. I'm a member of the American Geophysical Union, the American Association of Groundwater Scientists, Soil Science Society of America, Sigma Xi.

Q What is Sigma Xi?

A It's a scientific honorary society.

Q Have you been published in any scientific or technical journals?

A Yes. I've published in the Water Resources Research, the American Society of Civil Engineers, General Hydraulics, Groundwater Journal, and General Hydrology, a number of things.

Q Have you delivered any papers at any scientific or technical meetings?

A Yes, commonly to several per year.

Q So then you estimate you delivered something in excess of a dozen papers?

A At least.

Q Have you been employed as a consultant to any state agencies?

A I'm a consultant to the State of Colorado's Department of Health and the State of New Mexico Environmental Improvement Division.

Q If you were to say you had a single specialty, what would that specialty be?

A Primarily in problems of seepage through materials towards -- as it moves towards the water table.

Q What practical experience have you had with regard to investigating problems of seepage in the State of New Mexico?

A Well, we had, in addition to some consulting to the State Environmental -- State of New Mexico's Environmental Improvement Division on uranium mill tailings, we've done a field investigation and laboratory study of seepage from an impoundment on the Ogallala area in the Clovis vicinity.

Q Have you ever had the opportunity to prepare a complete hydrogeologic -- hydrologic study?

A Yes.

MR. WEBER: Mr. Examiner, I would at this point offer Mr. Stephens as an expert hydrologist.

MR. STOGNER: Any objections?

MR. KELLAHIN: Dr. Stephens is so qualified.

Q Dr. Stephens, have you had the opportunity to study the hydrology of those tracts of land proposed by Petro-Thermo Corporaiton of use as a waste disposal site?

A Yes.

Q Have you had an opportunity to review those engineering plans prepared by Mr. Jim Thornton for Petro-Thermo?

A Yes.

Q Have you had an opportunity to actually visit the site of the proposed waste disposal facility?

A Yes, I did.

Q Have you prepared a report with regard to your findings?

A Yes.

Q I show you now what has been marked as Exhibit Number Ten in Case Number 8781 and ask you if you can recognize that?

A Yes, that's the report prepared by myself.

Q Please describe in very general terms the hydrologic conditions in the vicinity of the proposed disposal site.

A The water-bearing units that are of interest are usually above the Permian section, which is at a depth of 800 or so feet, and within the interval, the first 800 feet, there are notable occurrences of water in the redbeds formation, which comprises maybe 750 or more feet of that -- that interval, particularly in sandstone layers within the Chinle, which is the upper member, and also in the Santa Rosa sandstone in the lower portion of the Triassic Redbeds.

There's also an alluvial cover that may be variable thickness, perhaps at the site 20, 10 to 20 feet, maybe, and in places around the site there seems to be groundwater which occurs in the alluvium but is very discontinuous because of the irregular nature of the redbeds and the low rates of natural infiltration.

At the site there doesn't seem to be any significant amount of water in the alluvial section. Primarily water that occurs at the site is expected to be in the Triassic redbeds.

Q Does the site lead towards Laguna Plata and if you could, please explain what Laguna Plata is.

A Laguna Plata is a body of water which is

located in the deepest portion of a collapse feature that created a number of other lakes in the area and it's regional sink for groundwater discharge at shallow depths and at greater depths in the Triassic section.

So at the site groundwater flows towards the -- towards Laguna Plata. On all sides of Laguna Plata there's convergent groundwater.

Q Now you indicated that Laguna Plata is a regional sink. We have in the very near vicinity Laguna Gatuna, Laguna Toston. What can you tell me about the relative elevations of these in relation to Laguna Plata?

A Laguna Plata is the lowest water surface of those several bodies you mentioned. It serves as a regional collection point for groundwater where most of the discharge from the system occurs.

Q Is both Laguna Plat and the proposed disposal site within the collapse feature?

A Yes, that's correct.

Q Where are the Triassic redbeds in relation to Laguna Plata and the proposed waste disposal plant?

A The redbeds occur, the interface between the redbeds and the alluvial material at the site is, oh, perhaps 20 to 30 feet below land surface.

In Laguna Plata the drilling that was done in the lake encountered the redbeds at, maybe, 30 feet

below the surface of the redbeds, so there's in a sense an offset in the redbeds, possibly due to some deformation by faulting or actual folding into the collapse structure.

Q Did you have an opportunity to walk up and down arroyos and determine the general depth of the redbeds underneath the alluvial sands and what, if anything unusual did you discover?

A In walking through some of the arroyos it appears that the section that's visible there from land surface is a thin veneer of dune sand. It might be a foot to several foot thick.

Then there's a light red to tan sandstone with some green sandstone layers in it that appears to me to be a sandy member of the Chinle and that might be maybe 20 feet thick, and then there's a very noticeable contrast of the shale, a dark brown redbed shale that is very prominent and one of the features that struck me when I was there was that there seemed to be a line of seeps, a diffuse zone of discharge of groundwater that occurred just above this reddish horizon, which was very -- in a clay stone you'd call it a shale, and appeared to me as though it marked the -- it was an impeding horizon naturally, under natural conditions that caused discharge to leave at this contact, and we traced it for maybe 100 yards laterally to the north from the site.

Q In practical terms what does this mean?

A That any infiltration that falls from the permeable sand and surfacial deposits percolates down, perhaps it goes to 20, 30 feet, depending on particular locations at the site, and then moves laterally down dip, or down this interface to the north towards Laguna Plata and discharges.

The practical significance that struck me is that if this is occuring under natural conditions, chances are that this is a very good barrier to downward percolation due to seepage from these pits.

Q Aren't Triassic redbeds generally considered to be virtually impermeable?

A In the vertical direction that's a very often assumed condition.

Q Do the Triassic redbeds act as a barrier to any seepage into sand stringers which may be found below them?

A That's my opinion, yes.

Q What is the direction of the major flow of surface and subsurface water from the disposal site?

A To the north.

Q To the north in the general direction of Laguna Plata.

A To the north towards Laguna Plata.

Q Tell me a little bit about Laguna Plata. What is it?

A It's a salt lake; a point of groundwater discharge; there are springs surrounding it, probably upward moving water. At the very shallow depths it comes into the adjacent areas and there's a high concentration of salt rocks occuring there at the present time.

Q What do you mean by a high concentration of salt? Could you give us a numer which would indicate how concentrated the salt is or --

A A chemical analysis recently done that was reported to me gives the total dissolved solids concentration of 335,000 milligrams, or parts per million chlorides. That would be about 192,000 parts per million.

Q Is that total dissolved solids number significant?

A It's much more concentrated than sea water by an order of magnitude.

Q About ten times as concentrated as sea water?

A Yes.

Q Is there any leakage of water from Laguna Plata into adjoining formations?

A Not that I have any evidence for. There is a vertical component of the hydraulic gradient that one

could infer because of the pressures in underlying formations are less than the potential level of the lake, but there hasn't been demonstrated any significant amount of leakage based on water chemistry data.

Q Based upon your study and inspection, have you been able to formulate an opinion as to any reasonably foreseeable beneficial use of Laguna Plata?

A From my own -- my own point of view, I don't see any change in the current pattern of use of Laguna Plata.

Q Have you had an opportunity to measure the surface area of Laguna Plata and to calculate the evaporation which would occur on it?

A The surface area of Laguna Plata is approxiamtely two square miles. Based on studies that were done for the Bureau of Land Management in the potash district, they found that the evaporation rate from brine lakes is approximately 4.4 feet per year; over that two square miles gives an annual evaporation rate of about 5630 acre feet per year.

Q You have Petro-Thermo's proposed engineering plat. Have you been able to take their discharge of some, the maximum discharge of some 30,000 barrels a day of liquid and reduce that to acre feet so as to compare it with the evaporation rate?

A It would be about 1500 acre feet per year at the maximum.

Q In terms based upon the assumption that all the materials, waste in the proposed disposal facility would have flowed directly into Laguna Plata, would they be evaporated?

A Essentially the material that would seep in has a potential to evaporate. The normal operating condition, though, is much, much less than the 30,000 barrels a day. I believe the number is 2250 barrels a day, which if we look at the waste that would come from the salt water ponds, if all of that seeped into the lake, that, and assuming none evaporated, all of that went into Laguna Plata, it would be about 93 acre feet per year, or maybe less than 2 percent of the total inflow to Laguna Plata would be -- that would be the increase that would flow to Laguna Plata as a result of seepage from this operation, assuming no evaporation took place in the pits.

Q What would be the practical effect of this discharge of brine water into Laguna Plata?

A I think there would be no measurable consequence. From the practical standpoint, I don't think there would be consequence. From a mass balance standpoint there has to be a small increase in the stage, maybe on the order of tenths of feet and of course as the stage rose and

the surface area expanded slightly, we would be looking at even more rate of evaporation on a larger water surface.

Q Based upon your study and inspection, have you been able to form an opinion regarding the effects on any discharge -- or on Laguna Plata from any discharge? That was basically negligible?

A That's correct.

Q Based upon your study and inspection have you been able to make any determinations as to the presence of fresh water at shallow depths in the vicinity of the proposed disposal?

A The nearest well we were able to located is up, up gradient about 2-1/2 miles near Halfway. Its quality is marginal for drinking. The little bar at Halfway is abandoned.

There's a windmill to the east approximately three miles distant from the site, which is used for stock watering, or had been used for stock watering; apparently abandoned now, and it does have water in thew alluvium that seems to be good quality.

Q Now you mentioned that these locations were up gradient from the proposed disposal site and I suppose up gradient from Laguna Plata. What difference does that make?

A Any -- any seepage from Laguna Plata

would be likely to move down gradient and there's no way possible for that seepage to contaminate wells that far up gradient.

Q Based upon your study and your inspection have you formed an opinion as to whether the discharge water and solids could move to subsurface in such a manner as to commingle in the reasonably foreseeable future with an uncontaminated water supply?

A I don't foresee that as a probability.

MR. WEBER: I have no further questions.

MR. STOGNER: Mr. Kellahin, your witness.

MR. KELLAHIN: Thank you, Mr. Stogner.

CROSS EXAMINATION

BY MR. KELLAHIN:

Q Dr. Stephenson, I'd like you to help me understand the relationship in this site specific area between the potential for evaporation versus the infiltration rate of the liquids into the ground.

Let's assume some fact situations and then you tell me what will be the effect on this particular operation.

The first assumption I'd like you to make is let's assume that the infiltration rate of the fluids has been totally impaired. Let's assume that may have occurred with solids becoming deposited on the bottom of the ponds so that infiltration is minimal, if at all.

Should that occur what is the capacity of the proposed plan to by means of evaporation handle a certain volume of disposed liquids? My question is, without infiltration and using your evaporation rates from Laguna Plata, can you estimate for me what would be the capacity of the facility if they to rely solely on evaporation?

A Approximately, approximately three, three to four acre feet per year.

Q I need some help. How many barrels of oil are we talking about in relation to an acre foot?

A 7580, well, it's about 20 --

MR. ABBOTT: 7758.

A It's about 20 --

MR. ABBOTT: 7758.

MR. KELLAHIN: Somebody give me a number that everybody likes.

A I think there's about -- I don't know, about 22 or so thousand barrels per day in an acre foot per year.

Q All right. Have you taken into consider-

ation the effect the evaporation rate -- well, let me start over.

Can you tell me or have you studied the effect that the oil skim or the oil slick on the surface of the ponds will have in terms of its effect on the evaporation rate?

A It's my understanding that one of the features of the pond is to recover any floating hydrocarbons that has been bypassed in the gunbarrels and that will be skimmed off.

If there were a cover of -- a veneer of oil slick on top, it would depress the rate of evaporation but as far as this site's concerned in order for it to operate it's got to be viewed essentially as an infiltration gallery rather than an evaporation system. Evaporation in my calculation is a negligible amount. This primarily should be viewed as an infiltration system which uses the soil as a filter, allows the retention in the settling bases and recovery of any floating product.

Q Assuming the operator on a regular basis attempts to skim the oil but we still have a small viscosity of oil on the surface, and assuming lack of infiltration, what effect does that have on your evaporation calculation of Laguna Plata using the salt brine evaporation calculation?

A The 4.4 feet per year?

Q Yes, sir, what effect will that oil skim on the evaporation have? Is there a way to estimate for us the impact?

A I can't do it here. I think one could look in the literature for some available studies. I believe there are some but I just don't have that one with me.

Q All right, now let's talk about the system the way you anticipate it to work, not as evaporation ponds --

A Right.

Q -- but as a mechanism whereby we have high rates of infiltration and we have the fluids then migrating down gradient into the Laguna Plata.

Have you calculated or estimated the rates of infiltration of the produced water in the absence of having the infiltration impaired by substances collecting on the bottoms of the ponds. Let's disregard that kind of problem for the moment.

A Okay. Let me rephrase your question so I can --

Q Okay.

A -- understand it. Are you asking me what the infiltration rate would be if there were no impeding

layer?

Q Yes, sir, the impeding layer being something not physically there now. It would be oil or mud or some --

A We haven't done any field tests. That would be required in order to calculate the permeability of the subsoil.

It appears to me, based on preliminary calculations and inspection of the site that the soil has a potential permeability to allow that much water to infiltrate. I think the point about build-up of solids in the bottom of the pond is an important one and really will require, I think, as part of the plan a regular maintenance of the pit to allow infiltration to occur.

Q Let me interrupt you a moment, Doctor. You talked about a volume. What volume are we talking about? Is this still the 30,000 barrels a day?

A No. No, this would be the 2250 barrels a day --

Q All right.

A -- calculation. The other -- the other could be handled -- if the hydraulic conductivity of the formation underneath it is about 10 to the minus 3 centimeters a second, 1000 feet per year, I believe, it could handle it. I don't think it's quite that much but I -- we

haven't done any field tests to determine it.

On the other hand if it's 10 to the minus 4 centimeters a second, you know, with the 2250 barrel a day rate, I think that's about what it is, without a clogging layer.

Q If we're using the 2250 barrels a day as the anticipated use for the facility, you've indicated that maintenance of the ponds in terms of scrapping the pond bottoms in order to maximize the ability of the fluids to infiltrate might be a prudent thing to do.

A Yes.

Q Can you give us -- can you give us some estimation as a hydrologist of how frequent that maintenance operation ought to be? How are we going to judge when we ought to start cleaning the bottoms of the ponds?

A That's a question I haven't thought about but it is an ongoing problem when people are doing artificial recharge along rivers, say, in Orange County, California, where they do this thing to get water into aquifers for re-use. It's an ongoing operation. I think one may want to -- a period of a couple of weeks, perhaps, maybe on that order, have one pit out of commission for drying and disking or removing some of the sludge or sediments, suspended materials, bypassing it, bypassing that particular pit and putting another one in use.

That's a guess. I've not scoured the literature for the experience that's available concerning this.

MR. KELLAHIN: May I have a moment, Mr. Stogner?

I'm through with Mr. Stephenson, thank you.

MR. STOGNER: Thank you, Mr. Kellahin.

Mr. Weber, anything --

MR. WEBER: Yes, sir, I have a few --

MR. STOGNER: -- further?

MR. WEBER: -- further questions for Dr. Stephens.

REDIRECT EXAMINATION

BY MR. WEBER:

Q Dr. Stephens, you were asked just a few moments ago to assume that the infiltration rate of fluids on the bottom of a disposal pit was totally impaired, was zero. What would the practical effect of that be?

A Well, a couple of things would have to happen. Either the pits would fill up; in order to prevent any spillage over the sides you'd cut back operations. That

would be easy to do when the pits were not full and taking on any more water. They could be operationally shut down until they could be improved in terms of their infiltration characteristics.

Q So if this assumption actually occurred, a total -- the infiltration rate of the fluids would be totally impaired, that would be something entirely obvious to the operators, I guess you could say.

A I would think so. If it spilled over the sides the whole system would be eroded and there wouldn't be any -- wouldn't be any other recovery of hydrocarbon on the water surface, so its not to their advantage to have the water flowing over land into Laguna Plata.

Q And if the infiltration rate was such that there would be no flow, how difficult a job woud it be to improved the infiltration rate?

A Well, it's a common -- it's a common problem in artificial recharge studies but it's -- it's one that -- there's plenty of artificial recharge experience that can be relied upon to reclaim the permeability of the formation. It's an engineering problem that can be overcome with either disking and drying, actual removal of the some of the materials with, perhaps, a backhoe to get down to the basic formation.

MR. WEBER: I have no further

questions at this time.

MR. STOGNER: Mr. Kellahin?

MR. KELLAHIN: No, thank you.

CROSS EXAMINATION

BY MR. STOGNER:

Q Dr. Stephens, I'd like to refer ot Figure 3 of your Exhibit Number Ten, which is your report, and this Figure 3 is Water Level Evaluations and Depths to Water, and in the center of your plat you show Laguna Plata and over to the east you have several circles and sqwiggley lines, what you show as being springs.

What is that water makeup and where is the water coming from that feeds those springs?

A The makeup of the water?

Q Yes, sir.

A Do you mean its chemical composition?

Q Chemical composition, salinity.

A Table 3, Page 8, tabulates the chloride concentrations at those springs. They're in the -- most of them are on the order of 8000 parts per million chloride.

Q Okay, what feeds these springs? Where is this water coming from?

A It appears to me that there's a couple of possible sources. One, it might be a mixture of different

sources. We have dune material, limitless dune material in the north side of these lakes which is very good infiltration characteristics. I think there's some water which comes into Laguna Plata from the north and there's also some that comes from the east, possibly in drainage out of Laguna Gatuna, in that vicinity, and mixing and so there's possibly two, two sources, one would be areal infiltration through the surfacial deposits which are permeable, and also lateral flow from adjacent areas, which could be in the vicinity of Laguna Gatuna nearest to these (not audible because of coughing.)

Q This is contained in your report and needless to say, I haven't had a chance to look at it yet.

Let's talk about the redbeds for a little bit between Laguna Plata and back toward the proposed disposal site.

Over the disposal site itself how far down before you hit redbeds?

A My estimate is about 25 to 30 feet. That's for the clay, what you would call the redbed, that maroon clay layer that I described which was a barrier to seepage. That appears to be about 25 to 30 feet down.

Q And the thickness of the redbed in this general area?

A Approximately 800, 750, 800 feet. Total

redbeds, including Dewey Lake, Santa Rosa, Chinle.

Q Okay, you mentioned that there is some sandstone deposits within the redbed, is that right?

A Within the Triassic generaly, that's correct, and the Santa Rosa, of course, is a sandstone.

Q Where is the Santa Rosa in respect to the redbed in here?

A The depth is probably several hundred feet below the site.

Q Okay, within the redbed itself is there any deposits of sandstone that are water bearing?

A Yes.

Q There is. Are those deposits inter-channeled with other sandstone deposits or are they layered, separated?

A They're layered. It's my feeling that it's the latter; not too much interfingering with Santa Rosa.

Q Do you know what the depth would be from the top of the Redbed to your first sandstone layer that has water in it?

A I really haven't had a study of that stratigraphy. There's a lot of drilling reports, which you'll find contained in the report and it's very difficult to use these types of drillers logs to correlate one, what

might be called the water sand and one layer to another. I don't think there's that sufficient geologic control based on drillers logs to make a stratigraphic horizon, but you'll see that it does occur in the first couple hundred feet, 400 feet, there are occurrences of water in the -- in these units.

Regionally, however, the quality of water in the Triassic is poor.

Q What do you mean poor?

A High in chlorides; above drinking water standards.

Q So I can understand it, let's talk about Laguna Plata itself.

Is the -- is the redbeds present within the bottom of the lake or -- I guess they aren't.

Is there any percolation downward from Laguna Plat at, say, a maximum water level, at a flood stage, say?

A It would be very local, as it were, some going into the bank at the stage the Laguna Plata rose during a (not understood), there would be some lateral movement into the adjacent soil, but when the level fell it would move back in, the bank storage type in effect.

There's, in the subsurface contours on the deeper zones within the redbeds which show convergence

of flow, even at great depth, that's been described in the report by Nicholson and Clebsch, 1961 on the hydrogeology in the area, and their map shows that the (not understood) metric surface slopes towards Laguna Plata and if there were any downward leakage, it would presumably be still contained within this zone of convergent flow. But if there were a lot of downward discharge under current conditions, the salinity of those zones that were receiving this discharge would be very, very high, Laguna Plata being a saline lake.

Q Again, just so I can understand, the water that accumulates in Laguna Plata is all evaporated; none of it migrates out, except, like you were saying, at a high flood stage it could go back and theoretically those waters would then --

A Come back in or themselves evaporate from the soil directly.

Q You referred to a Nichols and Clebsch?

A Nicholson and Clebsch.

Q Nicholson and Clebsch, I'm sorry.

A C-L-E-B-S-C-H.

Q Are those in your references?

A Yes, sir.

Q You stated that Laguna Plata was the lowest of the lakes within this area. What is the elevation of the lake bed?

A I recall looking at a benchmark out in the lake during the field survey. I believe it was 3431 feet.

Q And how much lower is that than Laguna Gatuna to the east?

A Probably 60 feet.

Q And Laguna Tonto up in the farther east and north?

A I'd have to look at the map. I don't know offhand. Looks like on the order of 100 feet.

Q Are you referring to a regular USGS map --

A That's correct. The Laguna Gatuna 7-1/2 Minute Quadrangle.

Q Okay, thank you. Okay, how about Laguna Toston, which is down south?

Tuston or Toston?

A It appears to be about 60 feet, also.

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

Are there any questions of the witness?

All right, Mr. Weber.

MR. WEBER: If I could ask just one further question.

REDIRECT EXAMINATION

BY MR. WEBER:

Q Do the same Triassic redbeds underlie all the salt lakes which you've described, Laguna Gatuna, Laguna Plata, and Laguna Tonto, Laguna Toston?

A That's correct.

Q Thank you.

MR. WEBER: Nothing further.

MR. STOGNER: Are there any other questions of Dr. Stephens?

If not, he may be excused.

MR. WEBER: Mr. Examiner, I would like at this time to move the admission of Exhibits One through Ten.

MR. STOGNER: Are there any objections?

MR. KELLAHIN: I don't recall which letter was marked what exhibit number. Our only objection went to that exhibit. We have no objection to the others.

MR. STOGNER: I believe the Exhibits were Five, Six, and Seven, the letters from Amoco, Amerada, and another --

MR. KELLAHIN: Natural

Resources?

MR. STOGNER: Are those the letters that you refer to that --

MR. KELLAHIN: Yes, sir.

MR. STOGNER: Mr. Kellahin, I'm going to overrule your objection and allow those into evidence.

MR. WEBER: In this regard I would request that the copy of the letter from Bravo Energy, Incorporated, which was received by the Oil Conservation Division on 12-9, 1985 also be included in this file.

MR. STOGNER: Okay, the record will so show we did receive that, being we, the OCD, received that on December 9th, 1985, and it was made part of the case file at that time.

Mr. Weber, do you have anything further?

MR. WEBER: I have nothing further.

MR. STOGNER: Mr. Kellahin?

MR. KELLAHIN: Thank you, Mr. Examiner. I propose not to put on any direct evidence on behalf of my client at this point and we are prepared to make a brief closing statement. We would like an opportunity to submit a proposed order in this case but I have no

witnesses to call at this time.

MR. STOGNER: Thank you, Mr. Kellahin.

I believe if there is nothing else, then we are ready for closing statements.

MR. KELLAHIN: We seem to have a number of people here today. There perhaps is somebody here that wants to make a statement other than me and Mr. Weber.

Are there other parties here?

MR. STOGNER: Thank you for correcting me. Since there is a large contingency here, would anybody like to stand and make any kind of a statement? We'll start from this end of the room and work around.

Please stand and identify yourself.

MR. BILL TOM: Bill Tom from Andrews, Texas. We are the present lessee on the grazing lease concerned and we have not relinquished the grazing lease at the present time. We are against the proposal because of our ranching interest at this time.

MR. STOGNER: Okay, what was your name again, please?

MR. TOM: Bill Tom.

MR. STOGNER: Mr. Tom, the grazing lease that you're referring to is a grazing lease from the State?

MR. TOM: This is correct.

MR. TAYLOR: Is our understanding correct that your permission is needed to change the grazing lease to a business type lease?

MR. TOM: This is correct as I understand it.

MR. STOGNER: Per the rules and regulations of the State Land Office.

Any further statements?

There being none by any parties, we're ready for closing statements.

Mr. Kellahin, you may go first. Mr. Weber, you may go last.

MR. KELLAHIN: Mr. Stogner, I'll be quite brief.

We would, first of all, request that you grant us a week or ten days in which to submit to you a proposed order that we would believe appropriate for entry in this case.

The reason I suggest that is Dr. Stephens' report, his report that I have not read. I would like to review that and try to understand it before

we attempt to suggest to you how the Division might want to enter an order for this particular site.

My client, as the testimony, has shown, operates Laguna Gatuna and Pollution Control, Inc.. There have been some comparisons made between this proposed site and the Pollution Control site. I'd like to examine what we've heard today in terms of what we do on our facility and see if I can't suggest an order to you that protects our interest.

Mr. Abbott has indicated, and I believe Mr. Weber told you in his beginning comments, that there had been an order approving the use of Laguna Plata for salt water disposal. He referenced Order No. R-3725 and that is an order that was issued back in '69 to Mr. Larry Squires, who is the principal of Pollution Control.

Because of the close proximity of this project to our approval of the use of Laguna Plata for salt water disposal it's important for us to recommend to you an order that minimizes the impact that this operation may have on our potential use of Laguna Plata.

As you can see from this Order 3725, this order only allows the use by Larry Squires of Laguna Plata for salt water disposal and does not allow him to use it for oilfield waste and solids.

This order has been subse-

quently amended in small part by providing for the use of Laguna Plata -- Laguna Gatuna in this order as the site for the use of the solid waste.

We want to try to suggest to you a proposed order that accommodates Mr. Abbott as best we

project may have on our interest in the area.

In addition, Mr. Squires is the Manager of Snyder Ranches, which is the surface owner not of this particular site but of the adjoining property.

We would appreciate the courtesy that you could extend to us to give us seven or ten days to give you an order so you could deal in specific substances about the nuts and bolts of the order itself.

In closing, the only point I see that gives me some concern in the presentation Mr. Weber has made, is that there may be fundamental jurisdictional defect in the application at this point. The Commission rules, as you know, require under 1203 that the initiation of a hearing can be done by the Division, the attorney general, any operator or producer, or anyone having a property interest may institute proceedings for a hearing.

I think it's apparent -- it's implicit upon your exercising of authority in this case to make a decision about the jurisdiction. The testimony was

that Mr. Abbott has applied for a business lease from the State of New Mexico to utilize the surface. You have to resolve whether or not the filing of an application would vest Mr. Abbott's company with a sufficient property interest by which he could be an applicant today.

I would like an opportunity to search some of the other cases that we've put on here before the Commission before I give you what my opinion of the law is, but I want to raise that as an issue because my recollection is in the past the Commission has required that the applicant obtain a business lease from the State Land Commissioner before proceeding with his application.

Now, I say that with some qualification because I think it's incumbent upon myself and Mr. Weber to determine if in fact that does constitute a fatal flaw in the application. It might be possible to process the application here, contingent upon approval by the Land Commissioner, so I'm suggesting there may be other solutions but I raise that issue as one that is still before you in this case. It is that Mr. Abbott's companies don't own the surface. We know from Mr. Tom, Toms, that this ranch owns the grazing, and it may cause you the same concern it causes me that the party here lacks sufficient standing before the Commission to bring the application.

Having said all those things,

now, we would like to have an opportunity to submit to you a draft order.

MR. STOGNER: Thank you, Mr. Kellahin.

Mr. Weber?

MR. WEBER: Yes, sir. Petro-Thermo Corporation would also request the opportunity to present to you a proposed order within a ten day period and we would press for a speedy disposition of this particular matter in view of the fact that its temporary permit to dispose of solids near Eunice, New Mexico, will expire on or about the 19th of January of next year.

A quick decision might well minimize any adverse impact from the closure of one of the three available solids disposal sites in southeastern New Mexico.

I would like to now turn to that interesting jurisdictional question raised by Mr. Kellahin.

This is really not a new or a novel argument. Mr. Kellahin raised it on the 23rd of September, 1981, in the matter of Loco Hills Water Disposal Company. Loco Hills also wanted an exception to Order Number R-3221.

Loco Hills was also in the same

posture as Petro-Thermo Corporation. It had made but had not received final approval from the State Land Office with regard to its business lease. That was Case Number 7329. Mr. R. L. Stamets was the Examiner.

There, as here, the application had been made but had not reached its final approval. We would argue that here, as there, the jurisdictional objection should be dismissed. It's my understanding in that particular case Mr. Stamets that there was a sufficient property interest even though final approval had not been received.

Understanding full well the position of the present grazing lessee, it is our contention that it is not necessary to obtain a relinquishment of his grazing lease; that in accordance with the rules and regulations of the State Land Office it would be possible to grant that lease in the absence of a relinquishment.

Mr. Examiner, we have tried to show through our presentation today that a legitimate need exists in southeastern New Mexico for additional approved disposal sites. There are a limited number of disposal sites now and it's quite possible that an emergency could really have a significant impact not only on trucking operations but on oil and gas production within that section.

Mindful of the need to devoid

-- to avoid any possible of discharge into a reasonably foreseeable fresh water source, we have been very careful to select the site, a site which limits any possible -- possibility of contamination of adjacent fresh water sources. We have selected a site which the Oil Conservation Commission has exempted from the operation of its Order 3221, exempted in the sense that it permitted the disposal of production water in unlined surface pits.

We have selected an area by the Laguna Plata which -- into which the disposal of production water would not constitute a hazard to fresh water supplies in the area.

We feel that we have met the burden demonstrating the absence of the possibility of contamination, met the burden of showing that an exception to Order No. R-3221 should be granted to Petro-Thermo.

That's it.

MR. STOGNER: Thank you, Mr. Weber.

Is there anything further in Case Number 8781?

There being none -- before I take this case under advisement, I've been doing some figuring. If I allow seven days or a week it would be on Christmas, and if I allow ten days it would be on the 28th, which

is on a Saturday, so I wish that rough draft orders from both you all be in here by the 30th of December, which is the Monday after Christmas.

So if there is nothing further in this case, this case will be taken under advisement.

(Hearing concluded.)

C E R T I F I C A T E

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

Sally W. Boyd CSR

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 8781, heard by me on 18 December 1985.

, Examiner
Oil Conservation Division