STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION DIVISION FOR THE PURPOSE OF CONSIDERING:	)	
APPLICATION OF COLEMAN OIL AND GAS, INC., FOR AMENDMENT OF ADMINISTRATIVE ORDER SWD-806-B, SAN JUAN COUNTY, NEW MEXICO	)	CASE NO. 13,812

ORIGINAL

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

2006 NOV 20 PM 12 52

BEFORE: DAVID R. CATANACH, Hearing Examiner

November 9th, 2006

Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, DAVID R. CATANACH, Hearing Examiner, on Thursday, November 9th, 2006, at the New Mexico Energy, Minerals and Natural Resources Department, 1220 South Saint Francis Drive, Room 102, Santa Fe, New Mexico, Steven T. Brenner, Certified Court Reporter No. 7 for the State of New Mexico.

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I N D E X

November 9th, 2006
Examiner Hearing
CASE NO. 13,812

(Continued...)

DIVISION WITNESSES:

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E X H I B I T S

Applicant's	Identified	Admitted
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Division	Identified	Admitted
Exhibit 1	81	89
Exhibit 2	94	116

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A P P E A R A N C E S

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* * *

WHEREUPON, the following proceedings were had at 9:31 a.m.:

EXAMINER CATANACH: Okay, I think we're prepared to go forward. At this time I'll call Case 13,812, the Application of Coleman Oil and Gas, Inc., for amendment of Administrative Order SWD-806-B, San Juan County, New Mexico.

Call for appearances.

MR. CARR: May it please the Examiner, my name is William F. Carr with the Santa Fe office of Holland and Hart, L.L.P. I represent Coleman Oil and Gas, Inc., in this matter, and I have three witnesses.

EXAMINER CATANACH: Additional appearances?

MS. MacQUESTEN: Mr. Examiner, my name is Gail MacQuesten and I represent the Oil Conservation Division in this matter. I have three witnesses. Two are present in person, one, Mr. Steve Hayden, is in our Aztec District Office, and I ask that he be allowed to participate by telephone.

EXAMINER CATANACH: Is there any objection to that, Mr. Carr?

MR. CARR: No objection.

EXAMINER CATANACH: Okay, will the six witnesses please stand to be sworn in, including Mr. Hayden, please?

(Thereupon, the witnesses were sworn.)

EXAMINER CATANACH: Would the parties like to give any opening statements, or do you want to just get right to it?

MR. CARR: I'd like to give a brief opening statement.

EXAMINER CATANACH: All-righty, why don't you go ahead?

MR. CARR: Mr. Catanach, as you're probably aware, we're here today with a case that involves an injection permit that was obtained by Coleman Oil and Gas, Inc., in 2001, and they were authorized to use their Juniper Saltwater Disposal Well Number 1 for disposal purposes to inject into the Mesaverde formation.

They completed the well and they were injecting when, in late 2005, they received a letter from the Commission -- or the Division, advising them that there were problems with the permit and that changes would have to be made to the well. Needless to say, when we got the letter we were surprised, and today I think you'll be able to see from the evidence we present that since that time we've been doing everything we can to comply with directives from the Division and have in good faith been trying to determine how to deal with the problems that you identified in that letter.

We're appearing before you, we believe we're in

line and 2400 feet from the West line (Unit K) of Section 30, Township 24 North, Range 1 East, to an unorthodox subsurface oil well location 990 feet from the North and West lines (Lot 1/Unit D) of Section 30. All of Section 30 is to be dedicated to this

CASE NO. 13810: **Application of Corkran Energy, LP for compulsory pooling, Eddy County, New Mexico.** Applicant seeks an order pooling all mineral interests from the surface to the base of the Morrow formation underlying the E/2 of Section 16, Township 23 South, Range 24 East, NMPM, to form a standard 320-acre gas spacing and proration unit for all pools or formations developed on 320-acre spacing within that vertical extent, including the Undesignated South Bandana Point-Strawn Gas Pool, Undesignated Robina Draw-Atoka Gas Pool, and Undesignated Bandana Point-Strawn-Morrow Pool. The unit is to be dedicated to the proposed Renata "16" State Well No. 1, to be drilled at an orthodox location in the NE/4 NE/4 of Section 16. Also to be considered will be the cost of drilling and completing the well and the allocation of the cost thereof, as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a 200% charge for the risk involved in drilling and completing the well. The unit is located approximately 11-1/2 miles northwest of Whites City, New Mexico.

CASE NO. 13811: **Application of Corkran Energy, LP for compulsory pooling, Eddy County, New Mexico.** Applicant seeks an order pooling all mineral interests from the surface to the base of the Morrow formation underlying the E/2 of Section 25, Township 18 South, Range 26 East, NMPM, to form a standard 320-acre gas spacing and proration unit for any and all formations or pools developed on 320-acre spacing within that vertical extent, including the Undesignated Red Lake-Pennsylvanian Gas Pool and Undesignated Four Mile Draw-Morrow Gas Pool. The unit is to be dedicated to the Orleans "25" Well No. 1, to be drilled at an orthodox location in the NW/4 NE/4 of Section 25. Also to be considered will be the cost of drilling and completing the well and the allocation of the cost thereof, as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a 200% charge for the risk involved in drilling and completing the well. The unit is located approximately 5 miles southeast of Atoka, New Mexico.

CASE NO. 13812: **Application of Coleman Oil & Gas, Inc. for amendment of Administrative Order SWD-806-B, San Juan County, New Mexico.** Applicant seeks an order amending the provisions of Administrative Order SWD-806-B which authorized the completion of the Juniper SWD Well No. 1 **(API No. 30-045-29732)** located 880 feet from the North line and 730 feet from the West line (Unit D) of Section 16, Township 24 North, Range 10 West, NMPM, San Juan County, New Mexico for the injection of produced water for disposal purposes into the Mesaverde formation to eliminate the requirement for re-entering and re-plugging the Monument Well No. 1 **(API No. 30-045-21912)** located 1650 feet from the North line and 990 feet from the East line of Section 17, and the Monument Well No. 2 **(API No. 30-045-21463)** located 800 feet from the North and West lines of Section 16, both in Township 24 North, Range 10 West, NMPM, San Juan County, New Mexico. These wells are located approximately 23 miles southeast of Bloomfield, New Mexico.

CASE NO. 13813: **Application of OXY USA WTP Limited Partnership for compulsory pooling, Eddy County, New Mexico.** Applicant seeks an order pooling all mineral interests from the surface to the base of the Morrow formation in the following described spacing and proration units located in the S/2 of Section 9, Township 17 South, Range 29 East, N.M.P.M., Eddy County, New Mexico: the S/2 for all formations and/or pools developed on 320-acre spacing which includes but is not necessarily limited to the Undesignated South Empire-Morrow Gas Pool and the Undesignated North Grayburg-Atoka Gas Pool; and the SW/4 for all formations and/or pools developed on 160-acre spacing. OXY proposes to dedicate the above-referenced spacing or proration units to its Oxy Flameskimmer State Well No. 1 to be drilled at a standard gas well location 1650 feet from the South line and 1980 feet from the West line (Unit K) of said Section 9. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of OXY USA WTP Limited Partnership as operator of the well and a charge for risk involved in drilling said well. Said area is located approximately 5 miles west of Loco Hills, New Mexico.

CASE NO. 13814: **Application of Chi Operating, Inc. for compulsory pooling, Eddy County, New Mexico.** Applicant seeks an order pooling all mineral interests from the surface to the base of the Morrow formation in the following described spacing and proration units located in the E/2 of Section 4, Township 22 South, Range 26 East, N.M.P.M., Eddy County, New Mexico: the E/2 for all formations and/or pools developed on 320-acre spacing which includes but is not necessarily limited to the Happy Valley-Morrow Gas Pool and the Happy Valley-Atoka Gas Pool; the [illegible]/4 for all formations and/or pools developed on 160-acre spacing within this vertical extent; and the NE/4 NE/4 for all formations and/or pools developed on 40-acre spacing which includes but is not necessarily limited to the Undesignated

violation of no rule, we're not in violation of a permit, we simply want to discuss with you how to address the problems that have been raised and be sure that we're all on the same track as we go forward to complete the efforts on the well.

We've been injecting pursuant to an approved injection permit, and that's been going on for some time. We had to change our plans for the use of the well once we were contacted by the Division, and we did meet with you and we agreed to modify the well so that injection will only occur in a lower interval under a packer. We also arranged for a study to be made to determine the radius of influence for the well. That was immediately undertaken after we were contacted by you, and we have that with us today and we will review that for you.

The problem that we have with the requirements really relates to the plugging of one well that is a little less than .4 of a mile from the injection well. And we requested a meeting with the Division to discuss that, but we were advised that since it involved a requirement for the plugging in the well that it would be best to come to hearing, so we filed this Application.

We think it's important to come before you now to give you really -- review the history and bring you up to date on the current status of our efforts in the area. We

want to also present the area-of-influence report, because I think it's important for you to know that we have taken a close look at the area, and you'll be able to see that there is now no threat to fresh water, may never be, from what is going on out there.

We understand the permit has been changed. We're going to comply with whatever you tell us to do.

But we also want you to know that we appreciate your responsibilities in regard to this well as it relates to your relationship with EPA, but we do believe that the facts are somewhat unique. The costs of this effort, trying to comply with this changed order, have been very substantial, and we're asking to be relieved of the plugging obligation on the Monument Number 1. We believe, in fact, it is an orphan well, and it ought to be plugged as an orphan well under the state plugging fund. And so that's what we're here for today.

EXAMINER CATANACH: Thank you, Mr. Carr.

Ms. MacQuesten, do you have anything?

MS. MacQUESTEN: Only briefly. The OCD is presently participating in this case only to alert the Examiner as to our concerns about this particular well and to support Order 806-B as it is written with the conditions that are present in that order.

EXAMINER CATANACH: Thank you.

Mr. Carr, you may proceed.

MR. CARR: At this time I would call Alan Emmendorfer.

ALAN P. EMMENDORFER,

the witness herein, after having been first duly sworn upon his oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. CARR:

Q. Would you state your name for the record, please?

A. Alan P. Emmendorfer.

Q. Mr. Emmendorfer, where do you reside?

A. Golden, Colorado.

Q. By whom are you employed?

A. Coleman Oil and Gas.

Q. And what is your position with Coleman Oil and Gas?

A. I'm the geologist out of the Denver office.

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

A. Yes, I have.

Q. At the time of that testimony, were your credentials as an expert in petroleum geology accepted and made a matter of record?

A. Yes, they were.

Q. Are you familiar with the Application filed in

this case on behalf of Coleman?

A. Yes.

Q. Are you familiar with the status of the lands in the portion of the Mesaverde formation that is the subject of this hearing?

A. Yes.

Q. Have you made a geological study of the area which is the subject of the Application?

A. Yes, I have.

Q. Are you prepared to share the results of that work with the Examiner?

A. Yes.

MR. CARR: We tender Mr. Emmendorfer as an expert in petroleum geology.

EXAMINER CATANACH: Any objection?

MS. MacQUESTEN: No objection.

EXAMINER CATANACH: Mr. Emmendorfer is so qualified.

Q. (By Mr. Carr) Would you explain to the Examiner what it is that Coleman seeks with this Application?

A. Mr. Examiner, Coleman seeks an order to amend Division Administrative Order Number SWD-806-B. In particular, 806-B authorized the completion of the Juniper SWD Number 1 well, located 880 feet from the north line and 730 feet from the west line of Section 16, Township 24

North, 10 West, San Juan County, New Mexico, for injection of produced water for disposal into the Mesaverde formation.

It also required us to re-enter and re-plug a dryhole in Section 24 North, 10 West. This well is the Monument Number 1 well, located at 1650 feet from the north line and 950 feet from the east line of Section 17, 24 North, 10 West. We are asking that the order eliminate the requirement to plug this well -- re-plug this well.

In addition, it also asks us to address the status of the Monument Number 2 well, which is located at 880 feet from the north and west lines of Section 16, also Township 24 North, 10 West.

Q. Now Mr. Emmendorfer, at this time is Coleman proceeding with efforts to comply with the provisions of Administrative Order SWD-806-B?

A. Yes, we are.

Q. And are you targeting having everything in compliance by the end of this year as required by that order?

A. Yes, we are.

Q. Could you go to what has been marked for identification as Coleman Exhibit Number 1, identify that and review it for Mr. Catanach?

A. Exhibit Number 1 is a land plat with all the

wells Coleman operates in what we call our Juniper area. It's in Township 24 North, Range 10 and 11 West. It's approximately 25 air miles southeast of Bloomfield, New Mexico.

Coleman has been lucky enough to acquire approximately 18 contiguous acres of leases -- 18 contiguous sections of leases in these two townships, consisting of a combination of Federal, BLM leases, Indian allotted leases, and State of New Mexico leases.

We currently have approximately 50 wells that are producing from the Fruitland Coal. We have approximately 15 more wells that are in various stages of either being drilled or completed, and when it's all said and done with the permitted wells that we are in the process of permitting and waiting on approval, I have approximately 75 wells in this project.

Also on this map -- it's all color-coded as to the -- black well symbols being the Fruitland Coal wells that are currently producing, the green wells that we have approved APDs, and then the red well symbols are wells that we have APDs pending.

Early on, we thought that to make this area economically productive out of the Fruitland Coal, that we would need to have a system where all the wells were tied in to one or two sales point meters, and also for water

collection since Fruitland Coal does make water with the gas, we knew that we wanted to have everything all pumped into -- in one system, and having the 18 contiguous sections helped us in doing that.

Q. Because of this land position, Coleman is really the only affected operator; is that correct?

A. That's correct.

Q. Are you ready to go to Exhibit Number 2?

A. Sure.

Q. Would you review that -- Identify it, please, and then review the information on that exhibit for Mr. Catanach.

A. This is a montage of the stratigraphy of the La Ventana sandstone member of the Cliff House formation, which is part of the Mesaverde group in the San Juan Basin. The map at the bottom of the montage is a general map of the New Mexico portion of the San Juan Basin. Each of these squares are governmental townships.

I've hachmarked Township 24 North, Range 10 West, which is a portion of the Juniper area. Again, it's 24 North, Range 10 and 11 West.

What this map shows is productive wells out of what would be considered the Chacra producing interval, which is an OCD-defined interval for separating production from the rest of the Mesaverde formation deeper into the

Basin. Geologically, the La Ventana is part of the Mesaverde group.

If we look at the stratigraphic cross-section above this base map, you can see where the Mesaverde group consists of the basal Point Lookout sandstone member and the Menefee sandstone, the Cliff House tongue sandstone, and then the La Ventana tongue, which is a pile of sand that was deposited during transgressive and regressive -- deposited through depositional processes during Mesaverde time.

Go back to the base map, you can see that this stacking of sands makes up a rather long, linear trend of coalescing sands that come and go but approach between 500 and 600 feet in some areas.

Additionally, the type log on the left-hand side of this montage shows a little bit more clearly the actual nomenclature of the Mesaverde group. Again, it's the Point Lookout sandstone at the base, the Menefee formation, the Cliff House sandstone, which is a lot thinner in the southwestern portion of the Basin than it is in the interior of the Basin, and then above a tongue of the Lewis Shale is the La Ventana tongue of the Cliff House sandstone. And that's all part of the Mesaverde group.

These figures were taken from Neal Whitehead's work in 1993 when he worked for the New Mexico Bureau of

Mines and Mineral Resources, and these are published in the *Atlas of Major Rocky Mountain Gas Reservoirs*.

Q. Let's go now to the type log on the subject well, the Juniper SWD Number 1, which is marked Exhibit 3.

A. Exhibit 3 is the Mesaverde section of the wireline logs of the Juniper SWD Number 1. The log on the left is the induction log, the log on the right is the neutron porosity and gamma-ray log for this well.

What I've outlined is the formation tops, which are my picks as to the geology within the wellbore. Again, the Point Lookout formation is at the bottom. Menefee formation would consist of coals, sandstones and shales. The thin Cliff House sandstone member, and then a big sandpile package at the top of the La Ventana tongue in the Cliff House formation.

Between these two wireline logs I've identified the perforated intervals that are currently completed within the SWD Number 1 and currently open for injection of our saltwater disposal for our Juniper project.

Q. At this point in time, could you provide the Examiner with whatever geological conclusions you have been able to reach from your review of this particular area?

A. Well, the main conclusion to me is that La Ventana is a big pile of sand in the Juniper area. Although it's approximately 500 feet thick, sands can come

and go, but they're approximately 20-percent porosity and can receive a tremendous amount of water in a disposal situation.

What I did not mention earlier is that when we originally put this area together as a Fruitland Coal project, we knew that water disposal was going to be an issue. There wasn't really anything right in the area. It's fairly isolated from the main portion of the field, the Basin. And I have looked at wells, in particular, in 25 North, 10 and 11 West, in the old East Bisti oilfield.

Back in the 1950s Skelly, who operated that field, drilled a lot of water source wells for the waterflood project East Bisti oilfield and used water from the La Ventana at volumes of 5000 to 7500 barrels a day per well out of this zone, knew that this sand could take a lot of water.

Q. Now that's basically the geological backdrop for this hearing; is that correct?

A. Correct.

Q. I'd like to now go with you and sort of run through the chronology of what has happened out at this location and with this well. And so if you could go to Coleman Exhibit Number 4, the chronology, and then if we could sort of work through that together, just to be sure that we understand what has happened and where we are at

this point.

A. Exhibit Number 4 is a compilation of notes and orders and e-mails that talk about -- particularly about the Juniper SWD Number 1. The first is a -- just a --

Q. And actually, the first page is sort of a summary of relevant dates as well; is that correct?

A. That's correct.

Q. Okay.

A. And if I can go through several of those, around December 1st of 2005 -- it's a mistake on the -- it's a typo here; it says 2006, but it's actually 2005, we actually started looking at and building a disposal plant with Odessa pumps for the Saltwater -- or Juniper Saltwater Disposal Well Number 1, that involved tending a skid and getting the equipment ready.

Q. Now Mr. Emmendorfer, this activity followed notification from the OCD that there were problems with the permit; is that right?

A. That's correct.

Q. And that notification was by letter dated October 28th, 2005?

A. Yes.

Q. Okay, let's go ahead.

A. Should I --

Q. Well, let's just go ahead and go through it. I

thought it was important to put that in context in regard to the OCD letter.

A. Okay. And then on January 4th we signed a contract with Jemez Mountain Electrical for three-phase power out in the area, knowing that -- and this was after a meeting that we had with the OCD, but we knew that we needed electrical power, three-phase power, to run the pumps to be able to inject under pressure from the Juniper SWD Number 1, because we were being asked, and we had tentatively agreed, to reduce the intervals of perforation, which I'll go through here shortly.

And then -- you can read all this, but we had to work on right-of-way clearance for the electrical work and all. We had met with the OCD, we had stated that it would take probably up to a year to be able to get everything ready to comply to what they were asking.

Q. What is the first document behind the summary?

A. This first document is a -- was an approved application for the disposal of water into the Juniper SWD Number 1. It's administrative order SWD-806. In that, we were allowed to inject saltwater into the Point Lookout portion of the Mesaverde formation.

Q. And then -- the documents may be a little out of order -- let's go next to SWD-806-A.

A. Administrative Order SWD-806-A authorized us with

an amend -- amend the original order to allow us to also inject into the entire Mesaverde interval within the Juniper SWD Number 1. That included both the La Ventana tongue of the Cliff House sandstone -- Cliff House, Menefee and the Point Lookout, which is something that we went back and asked for, and it was approved on May 15th, 2002.

Q. And then how soon after that did you actually go out and convert the well to -- or complete the well for injection?

A. I'm not sure of the exact date, but it was that summer of 2002 that we started injecting into the well.

Q. And the next document in the material is an October 28th, 2005, letter from the OCD?

A. That's correct. And shortly after -- in November, after this letter dated October 28th, 2005, from the OCD was sent to Mr. Carr, he informed us that there were some issues with our injecting into the Mesaverde formation in the Juniper SWD Number 1.

In particular, the OCD was concerned that there may be protectible waters within the intervals -- some of the intervals that we were injecting into, and they proposed several things that they wanted to address with that, including limiting our injection into the Point Lookout formation only and squeezing all the perforations in the La Ventana, the Cliff House and the Menefee

formation, and also to go back and re-enter and re-plug a well -- in particular, the Monument Number 1 referred to earlier -- to completely isolate the entire Mesaverde section with -- inside the wellbore.

We had some problems with this letter. In particular, one of them was the fact that we didn't think we could squeeze the perforations in the La Ventana interval, and if we could we'd probably go broke doing so. It's a tremendous amount of perforations, and with the porous nature of the sand we didn't think we could effectively do that.

So we had -- through Mr. Carr, requested a meeting with the OCD to discuss and try to resolve some of these issues.

Q. And is that request what is included as my November 14th, 2005, letter?

A. That's correct.

Q. And in that letter did you advise the Commission that you were going to isolate, or attempt to isolate, the La Ventana, and also hire a certified hydrologist to study the area?

A. Yes, that's true.

Q. And when did that meeting occur?

A. The meeting occurred on December 15th. Several members of the OCD were in attendance, and we had people

from our Farmington office and from our Denver office come down here to Santa Fe to meet with them, and we discussed our project with them at that time.

Q. At that time you were already building the disposal plant; is that not correct?

A. That's correct.

Q. Okay.

A. We started that on December 1st, 2005, started building a plant. We told them, you know, about our concerns about trying to squeeze the perforations off and told them that we would -- what we would prefer to do would be set a packer below the perfs in the La Ventana and monitor and inject below that packer into the Menefee perforations and the Point Lookout perforations, monitor the back side, inside the wellbore, to make sure there was no fluids leaking up into the La Ventana from the injection intervals below.

In addition, we informed the OCD that we really needed three-phase power, and that was going to take some time to address and get in there but that we were willing to do that.

Q. And when did you arrange or sign a contract for power?

A. January 14th, 2006.

Q. Now go to our letter dated January the 3rd. What

is this?

A. January 3rd, we sent a letter written by Mr. Carr to the OCD stating what we had agreed to in our December 15th meeting with them, and in particular outlined exactly how we were going to change the injection system within the Juniper SWD Number 1, once we had electrical power to do. That's in the second paragraph. And also we stated that we would work on looking at a radius-of-influence study for the area.

Q. All right, what's the next document in this packet of material?

A. The next document is Administrative Order SWD-806-B by the New Mexico Oil and Gas Conservation Division that is dated May 18th, 2006. In that document they amended our disposal, authorizing us to isolate the upper perforations in the La Ventana like we had suggested and allowing us to inject into the Menefee and Point Lookout sandstones.

And then they also included in that a requirement that within a half-mile radius of the Juniper SWD Number 1, that there were two wellbores that they were concerned about, one being the Monument Number 1 located in the northeast of Section 17. That had been drilled and plugged and abandoned back in 1975, and they wanted us to re-enter and re-plug the Mesaverde portion of the well.

And in addition, the Monument Number 2 well which is located in the northwest of 16, which is in the same quarter section as the Juniper SWD Number 1, they wanted us to try to find out information exactly where the DV tool had been set in the well, because they could not find the information in their well files and asked us to look to see where that had been.

Q. Okay. After you received this letter, what did Coleman do?

A. Well, we had some problems with re-entering and re-plugging the Monument Number 1 well, so we instructed Mr. Carr to try to arrange another meeting with the OCD to try to discuss this matter. Actually, we tried several times. We were set for a meeting about the middle to latter part of August of 2006. Due to my commitments on a well up in Wyoming and other people's work schedules, and with the people at the OCD not necessarily knowing who was going to actually be at the meeting, we canceled that meeting and tried to reschedule that. We tried to reschedule it several times.

Q. We were eventually advised, were we not, that a request of this nature concerning the plugging of the well is something that should properly come to hearing?

A. That's correct.

Q. What is the last document in this packet of

material?

A. This last document is an e-mail from Will Jones to Bill Carr, stating that the -- that he was advised that we wanted to meet with the OCD, didn't know exactly what we wanted to discuss, but he had made some outlines as to what he thought we might want to do, outlined again some of the requirements that we were required to -- the SWD-806-B administrative order, we --

Q. And then we filed our Application for this hearing?

A. That's correct.

Q. Is Coleman Exhibit Number 5 an affidavit confirming that notice of the hearing has been provided as required?

A. Yes, it is.

Q. You're the only operator?

A. Yes, we are.

Q. Who was notified?

A. We notified the BLM, the New Mexico State Land Office, and --

Q. Did you publish notice in San Juan County?

A. Yes, we did.

Q. Will Coleman call engineering witnesses to review the engineering and hydrological part of this case?

A. Yes.

Q. Were Exhibits 1 through 5 either prepared by you or compiled at your direction?

A. Yes, they were.

MR. CARR: May it please the Examiner, at this time I'd move the admission of Coleman Exhibits 1 through 5.

EXAMINER CATANACH: Any objection?

MS. MacQUESTEN: No objection.

EXAMINER CATANACH: Exhibits 1 through 5 will be admitted.

MR. CARR: And that concludes my direct of Mr. Emmendorfer.

EXAMINER CATANACH: Ms. MacQuesten, any questions?

CROSS-EXAMINATION

BY MS. MacQUESTEN:

Q. Yes. Mr. Emmendorfer, what is the current status of the Juniper well? Is it --

A. The Juniper SWD Number 1?

Q. Yes.

A. We are currently injecting in all the existing perforations, which according to 806-B we were allowed to do until January 1st, 2007, when we have to have packer in place to inject underneath that packer. So we're currently operating as we were before.

Q. You don't understand Order 806-B as changing the area you have authorization to inject into?

A. Yes, we do, but it was -- we were told that we had to have -- When we had met with you all in December, we had stated that to inject below the packer we would have to do that under pressure and that to do that we would have to have electrical power, and that was going to take six months to a year to get that done because of the remoteness of the area. And my understanding of 806-B is that injection can occur as-is until January 1, and at that time we will have our electricity in place, our injection plan in place, the tubing in the hole with the packer, and we'll be injecting just under the Menefee and Point Lookout Sands.

Q. Have you done any remedial work on the Juniper well?

A. Nothing that I'm aware of. Again, we have to wait for electrical power to -- the three-phase power to actually inject under pressure.

Q. All right, I'm a little confused because I'm looking at the Application that Coleman filed in this case, and in paragraph 11 it says, based on the work it has done on the Juniper well and the data it has obtained on the area of influence, Coleman is seeking an amendment to the order.

Are you telling me you have not done any work on the Juniper well at this point?

A. The -- Well, my understanding, we have not done anything downhole in the well. We're putting our pumps in place, getting electricity in place. That's part of the remedial work on the Juniper Number 1 well, but we have not went downhole yet.

Q. Is that work that will help us evaluate whether it's necessary for you to re-enter and re-plug the Monument wells?

A. I'm not sure I understand your question.

Q. Well, I'm just reading the Application. Part of the basis of the Application is that work has been done on the Juniper well, and because of that you are seeking an order eliminating the requirement that you re-enter and re-plug the Monument wells, but it doesn't sound to me as though whatever work has been done will help us answer that question; is that right?

A. I would say that's correct, that that's a separate issue, that it's all part of being in compliance with 806-B.

Q. Will you be able to complete the work required on 806-B by the deadline set in that order?

A. We're planning to. Not to pass the buck, but I think our next witness, Mike Hanson, who's our engineer and

does all the field work, would be a better person to ask of the timing of that. But it's our goal to have that done by January 1.

Q. What is the injection volume in the Juniper well?

A. I believe it's around 3500 barrels a day.

Q. What pressure are you injecting at?

A. I'm not sure offhand. Again, Mike would be the person to ask, he's intimately involved with the field operations.

Q. Order 806-B required Coleman to provide the logs for the Monument Well Number 2. Have they been supplied?

A. I don't know if they've been supplied. They're on the OCD website. I got a copy of them here, but I don't know -- if they're on the website, the OCD website, if we need to supply -- we can print them out just like anyone else can, but I don't know if having -- any physical copy being supplied or not, I don't know.

Q. So are you saying that we always had those logs and there was no need for us to ask for them? Is that --

A. I would say yes, because they're -- they're on the OCD website. And my understanding is -- how they got on the OCD website, they were in the well files at the Aztec office, they were all scanned into the website, or scanned into the system and able to access on the well site -- not from the well site, from the computer, sorry.

Q. Order 806-B also required Coleman to provide information pertaining to the DV tool. Has that information been provided?

A. To try to acquire that information. We have -- Again, I think Mike has been talking with the Aztec office. I know we looked -- I went to the website, the OCD website, to look up the well files. I did not find information saying exactly where the tool was set.

I went to the Denver Earth Resources Library in downtown Denver, which is a regional -- actually a lot of the United States, but they have a very good record of all the Rocky Mountain states, geological well files. I looked at all the information they had. I could not find an exact depth.

Being a plugged well, Tenneco no longer in existence, plugged well files tend to get someplace into the ethersphere or wherever, once companies get acquired by other companies. I don't know if that actual depth is obtainable, but we did make an effort to acquire that information.

Q. The diagram of the Monument 2 well that was attached to Coleman's Application showed the DV tool was set below the Mesaverde. What information did Coleman have available to it, to place it at that location on the diagram?

A. Again, Mike would be better to direct that. I believe in their -- the OCD website had a plugging procedure where they said -- or a completion procedure where the DV tool was going to be set, and Mike has done calculations based off of the amount of cement that was pumped and reported on the completion forms, suggests that the cement was sufficient to have cement behind the entire Mesaverde section in the well.

But again, like I said, Mike would be the one that has looked at and done the calculations in regard to where the DV tool was probably set, based on what they had suggested that they were going to do.

Q. On your Exhibit Number 1, I noticed a number of proposed disposal wells in this area.

A. That's correct.

Q. Has work begun on those, or applications filed for those yet?

A. Yes, actually we have a second water disposal well, the SWD Number 4 well, which is located in the southwest of Section 17, 24 North, 10 West. That well is currently injecting water into the lower Mesaverde section at this time.

We're working on a Juniper West SWD disposal well. I'm not sure of the -- I've provided the geology, but Mike Hanson is the one that's doing the actual

application work, and so I don't know the exact status of where those applications are.

Q. Do you know if the saltwater disposal wells that Coleman will operate -- operates now or will operate in this area -- are you planning to inject only in the lower intervals of the Mesaverde, or are you going to be asking to go into the upper levels?

A. We're going to inject only in the lower levels.

Q. So there are no plans to inject into the Ventana, for example?

A. La Ventana, no there is not.

Q. Okay. What water rate, injection rate, is the Saltwater Disposal Number 4 taking?

A. I don't know what the current rate is. Again, not to pass the buck but Mike Hanson would be better to answer that question. He lives it on a day-to-day basis out of the Farmington office.

MS. MacQUESTEN: Okay, thank you.

EXAMINER CATANACH: Any redirect?

MR. CARR: No redirect.

EXAMINATION

BY EXAMINER CATANACH:

Q. Okay. Mr. Emmendorfer, the Number 1 well is currently being injected into?

A. Correct.

Q. In the whole Mesaverde interval?

A. That's correct.

Q. And it's your understanding that -- or it's your interpretation of 806-B that you have authority to do this?

A. Until January 1, 2007, or until we can get electricity, three-phase electricity, to the location and have our injection plant up and running, yes, that's our interpretation.

Q. So how are you injecting at this point without electricity?

A. Gravity.

Q. Just gravity. And you don't know what the well is taking at this point?

A. It's taking all 3500 barrels a day.

Q. So at the point you do get electricity, or January 1st, 2007, what happens in your opinion? I mean, what are you required to do?

A. We are required to isolate the upper perfs in the La Ventana portion of the well by packer, being able to monitor the back side to make sure the packer is not leaking, and inject -- continue to inject our Fruitland Coal water into the Menefee and the Point Lookout formations.

Q. Okay, so Menefee is okay, as far as the Division is concerned?

A. That's correct.

Q. And you did get authorization from the Division to monitor the La Ventana and not have to squeeze it?

A. That's correct.

Q. That's not an issue in this case?

A. No.

Q. And does the January 1st, 2007, date also -- is that the date that you have to commence work on the Monument well?

A. That's correct, the Monument Number 1 well.

Q. Okay, so we allowed you to inject for a period of time before we had to go fix the Monument well?

A. Yes. But it was predominantly to get our wellbore in compliance, and a big factor was the electricity.

Q. Is the La Ventana section -- is that the one that you think has taken the majority of the water?

A. Yes, I do.

Q. If you inject into the Menefee and the Point Lookout, do you feel like the Menefee and the La Ventana section are effectively isolated from one another?

A. Yes, I do. There's approximately 200 feet of nonperforated interval between the uppermost Menefee perforation and the lowermost La Ventana. But in addition, the series of small coals that are at the top of the

Menefee and at the base of the Cliff House sandstone should have served effectively as a frac barrier, so the growth of the fracture did not communicate to two different zones.

Q. So this Juniper well was frac'd?

A. Yes.

Q. In the entire Mesaverde?

A. Correct.

Q. And it's your opinion that that's -- that served as a barrier to separate these two intervals?

A. Yes, I do.

Q. What logs were you required to provide on the Monument Well Number 2?

A. Just the wireline logs on the Monument Number 2. I'm not sure why -- except that the OCD is in receipt of the logs, I'm not sure why we had to provide a physical copy.

Q. Do you know why those logs were requested by the Division?

A. No, I do not.

Q. You testified -- I guess as far as the Monument Well Number 2, would it be better to talk to Mr. Hanson about that?

A. Yes.

EXAMINER CATANACH: I think that's all I have.

Do you have anything?

MR. BROOKS: No.

MR. CARR: At this time we call Michael Hanson.

MICHAEL T. HANSON,

the witness herein, after having been first duly sworn upon his oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. CARR:

Q. Would you state your name for the record, please?

A. Michael Thomas Hanson.

Q. Mr. Hanson, are you the Mr. Hanson Mr. Emmendorfer has identified as the person has identified with all the answers?

A. I believe so.

(Laughter)

Q. (By Mr. Carr) Where do you reside?

A. Farmington, New Mexico.

Q. By whom are you employed?

A. Coleman Oil and Gas.

Q. And what is your position with Coleman?

A. Operations engineer.

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

A. No, I have not.

Q. Could you review for Mr. Catanach your educational background?

A. I studied engineering at the Casper College.

Q. And how long have you been working as an engineer?

A. I've been working for Coleman as an operations engineer for almost 12 years now.

Q. And are you the engineer responsible for the area that's involved in this case?

A. That's correct.

Q. Are you the individual who has personal knowledge about the wells that are the subject of this hearing?

A. Yes, I am.

Q. Have you made an engineering study of the area that's involved in this Application and the wells that are at issue in this case?

A. (Nods)

Q. Are you prepared to share the results of your work with the Examiner?

A. Yes.

MR. CARR: We tender Mr. Hanson as an expert petroleum engineer.

EXAMINER CATANACH: Any objection?

MS. MacQUESTEN: No objection.

EXAMINER CATANACH: Mr. Hanson is so qualified.

Q. (By Mr. Carr) Mr. Hanson, what is the current status of the Juniper Saltwater Disposal Well Number 1?

A. The current status is, it's a Mesaverde disposal for the Fruitland Coal produced water.

Q. And the work conducted on this well during the last year would consist of work at the surface and also various studies that have been run on the well; is that correct?

A. That's correct.

Q. What did Administrative Order SWD- -- I guess it's -806-B -- require Coleman to do with the Juniper Saltwater Disposal Well Number 1?

A. Squeeze off the upper perforations or set a packer with a pressure-sensor monitoring device to monitor the annular pressure, and isolate with a packer to inject into the lower Mesaverde.

Q. What is the effect of this change in the configuration of the well?

A. I would expect that when that change takes place it would cut the injection in half, at least.

Q. And what has Coleman done to comply with these requirements, in addition to anything Mr. Emmendorfer discussed?

A. We knew that we would probably need power, so we immediately contacted the power company and signed a contract with them to deliver power to the disposal facilities --

Q. And why --

A. -- and we took other measures to enable us to comply.

Q. And why is power so important?

A. Well, we didn't expect that the well would continue to take the higher volume on a vacuum, so we knew that we would need some sort of artificial power to assist in the injection volumes.

Q. And if you're unable to get these volumes injected, would you have to shut in production?

A. Yeah, probably with the current approved disposal that we have, if we had to shut that well in, we'd have to shut in probably 50 percent to 75 percent of the production.

Q. Now you contracted with who, Jemez Mountain for the power?

A. Correct.

Q. What has that cost Coleman?

A. It's going to cost, by the time we get power to both disposal facilities, about $200,000.

Q. And what is the status of Jemez's efforts to get power to these wells at this time?

A. They are putting up poles and crossbeams as we speak.

Q. Do you anticipate having that power in place so

you can meet the January 1st deadline?

A. Yes, sir.

Q. What other costs have you incurred as a result of the change in the Oil Commission's order authorizing injection in the Juniper Number 1?

A. We've also ordered additional disposal plants. These disposal plants run about $120,000 apiece. We've got two that we're manufacturing in Farmington, and the third one is being manufactured in Casper, Wyoming. We expect delivery of those plants all before the 15th of December, and we have everything in place where all we have to do is slap it in, tie the power in, and put it under injection.

Q. And these changes are required because you're not going to be able to inject the volumes anticipated in the Juniper 1?

A. Yes, and I think that's proven from the SWD Number 4 volumes at the current time.

Q. And what are those?

A. It's right at 1000, at about 50 to 60 p.s.i. tubing pressure.

Q. And that is injecting into what interval?

A. That's into the lower Menefee and the Point Lookout.

Q. To comply with the change in the OCD's directive to date, can you just give us an estimate of the costs that

have been incurred by Coleman?

A. It's going to be close to -- by the time it's all said and done, close to a half a million dollars.

Q. And that's without plugging this well?

A. That's without P-and-A.

Q. Let's go to what's been marked as Coleman Exhibit Number 6. Would you identify that, please?

A. Coleman Exhibit Number 6 is a sundry notice of intent to workover the Juniper SWD Number 1, which was approved by the Aztec District Office with several stipulations.

Q. And the date of that sundry notice?

A. The date of the sundry notice was August 17th, 2006, approved August 18th, 2006.

Q. There are some notations on this that impose some additional conditions on the well; is that correct?

A. Yeah, they just want to make sure the packer was set within 100 feet of the uppermost perforated interval, and also notification of 24-hour notice to the OCD prior to any step rate tests.

Q. Are either of those conditions an issue for Coleman?

A. No.

Q. What is the Exhibit Number 7?

A. Exhibit Number 7 is the attachment that was

attached to the sundry notice when it was sent in, and it is a procedure to do the work that was requested for permission to do on August 17th, 2006, which would be to lower the injection packer, isolate the La Ventana, and inject into the lower Menefee and Point Lookout.

Q. The date on this is actually January the 18th.

A. Well, I actually -- we actually did this work prior to submitting the sundry notice right after we contacted the power company, and when we found out we was going to have to do an EA, we knew it was going to take a considerable amount of time to get that in.

Q. And was the workover procedure set out on Exhibit Number 7 subsequently modified to conform with the conditions imposed by the District Office?

A. That's correct, it had set the packer at plus or minus 2900, and I believe that was a result of the November meeting that we had down here in Santa Fe from the original wellbore schematic that was handed out, and it was modified to plus or minus 2950 to bring it in within 100 feet of the top perforated interval.

Q. Would you identify Coleman Exhibit 8?

A. Coleman Exhibit 8 is a wellbore schematic of the proposed workover procedure to isolate the La Ventana and again inject into the lower Menefee and Point Lookout.

Q. Mr. Emmendorfer testified that there was concern

about being able to effectively squeeze off the La Ventana. Do you believe that can be done?

A. It would be difficult. It would be expensive. I don't know that it -- I would say it would be difficult to do.

Q. And so that is the reason that you're going to be injecting through tubing and a packer in this well; is that correct?

A. I believe that's correct. Well, that is correct, due to the fact we also -- in the November meeting we also proposed that, and it was agreed upon with the OCD.

Q. Mr. Hanson, a few minutes ago Ms. MacQuesten had some questions concerning the Monument Well Number 2.

A. Okay.

Q. What is your understanding concerning the status of the Monument Number 2 well?

A. The Monument Number 2 well, I've reviewed the well records, I've looked for the information that was requested, as far as the DV stage tool. I have not been able to find it in black and white where it was actually set by the company that ran it.

Q. And who was that? Was that Tenneco?

A. That was Tenneco, that's correct.

Q. Have you attempted to determine whether or not there is adequate cement across the Mesaverde in this well?

A. If you -- If you put the DV tool at the base of the Mesaverde, which is what would be probably standard procedure, due to the fact that the Mesaverde wouldn't hold a full column of cement, possibly, that -- and also there may be a possibility of damaging your -- the production zone, that would be where you would put it. So if you calculate the cement volumes, use 100-percent excess, you should have cement from TD to surface in this well.

Q. And how do you determine that? Do you use a --

A. It's just a standard calculation that's used in drilling and cementing operations.

Q. And is it your opinion that there is cement from total depth to surface on this well?

A. As far as my calculations, that would be correct.

Q. When you look at the cement, I mean do they show the volume that was used?

A. After reviewing the completion report, that's how I base the volumes that were calculated, was from the volumes that they reported on their completion report, and it's shown on the completion report that it was a two-stage job, and that's in the -- that was from the OCD well file.

Q. Can you tell from these volumes if adequate cement was actually used in the well?

A. I feel confident that there was adequate cement used in these wells with the two-stage job.

Q. Can you tell if there was excess cement?

A. There was twice the amount -- the way it looked to me it was 100-percent excess, which would be twice the amount of cement that was required.

Q. Now the amended order, SWD-806-B, directed Coleman to go out and re-plug the Monument Well Number 1; is that correct?

A. Yes, it was a requirement to re-enter and plug and abandon the well.

Q. And what have you done to date on that?

A. We commissioned a study to determine the radius of injection for the well.

Q. And is that study going to be presented by the next witness?

A. Correct, that is correct.

Q. What is -- will be the impact on Coleman if you're actually required to go out and plug and abandon the well?

A. Exhibit 9 is a cost estimate to plug -- to re-enter the Monument Number 1 well and plug and abandon it.

Q. And the total on that?

A. Is $156,750.

Q. And that would be in addition to the half million dollars --

A. That's correct.

Q. -- you've already incurred?

A. That's correct.

Q. Is -- This well is the Monument Well Number 1, who's the operator of that well?

A. As far as I know, the operator is still Lang Oil and Gas.

Q. Okay. You have not become operator of that well?

A. No, we have not assumed operator of that well.

Q. Were Coleman Exhibits 6 through 9 either prepared by you or compiled at your direction?

A. Yes, they were.

MR. CARR: May it please the Examiner, at this time I'd move the admission into evidence of Coleman Exhibits 6 through 9?

EXAMINER CATANACH: Any objection?

MS. MacQUESTEN: No objection.

EXAMINER CATANACH: Exhibits 6 through 9 will be admitted.

MR. CARR: Pass the witness.

EXAMINER CATANACH: Ms. MacQuesten?

CROSS-EXAMINATION

BY MS. MacQUESTEN:

Q. Mr. Hanson, you testified that if Coleman is required to squeeze off or set a packer to prevent injection into the upper zones. You expect that the

injection will be cut in half?

A. That's what I would expect. It would only be -- we would only be able to determine that by running a step rate test, but that's what I would expect.

Q. So is it fair to say that half of the water being injected now is going into the zones that the OCD feels may endanger protectible water?

A. I guess it would be safe to assume that, but I think that's still a big question mark.

Q. Well, it's going into the zones that we're asking you to --

A. Well, some of these zones that we're also forfeiting is also the Menefee, the upper Menefee above the coal section, so there will be some that goes into that zone also, that won't.

Q. You spoke about the work being done to bring electric power to the area. Would Coleman expect to use electric power for other purposes besides the disposal programs we're talking about today?

A. If we were able to leave the injection well under a vacuum, then no, we wouldn't anticipate needing electricity.

Q. So you don't need it for any of your production efforts or any other activities in the area?

A. We don't need it. It may be a benefit, but we

don't need it.

Q. Who prepared the wellbore diagram of the Monument Number 2 that was attached to Coleman's Application?

A. I believe Paul Thompson submitted the original application for the Juniper SWD Number 1, so I would assume that that was the case, unless it was sent with the amendment to that application. If it was sent with the amendment to that application, then it would have been myself, but I don't recall doing that. So I would assume that it was Paul Thompson.

Q. Do you have any knowledge of how Coleman determined where to put the DV tool on that diagram?

A. Experience within that area. You know, that -- if cement calculations fit, everything -- everything indicates that that's what was done and what should have been done, so that's...

Q. Is it possible that the DV tool was set at the top of the Mesaverde instead of at the base?

A. It could be possible, but according to the bottom cement calculations, I would assume that's incorrect.

Q. How much cement would it take to fill the Mesaverde entry? What amounts are we talking about?

A. You -- Well, without actually doing the calculation -- I can do it for you and submit it to you later, but I don't have the volume calculations that I

would need to do that with me, so... It would just be, you know, a straight wellbore minus 5-1/2 casing and that particular volume, so...

Q. I'm just --

A. Just from experience, I would say that it's correct, though, just from experience in the wells that we do on a day-to-day basis, and -- plus the calculations that I've done.

Q. Mr. Hanson, do you know if Coleman has had lost circulation problems in the Cliff House while drilling wells in this general area?

A. We've only drilled the one well, and I don't recall having lost circulation in that well. That was the Juniper SWD Number 4. I don't recall having it. I can look back through the information on the drilling records and get back to you, but I don't have that record with me.

MS. MacQUESTEN: No other questions, thank you.

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Hanson, the monitoring of the casing annulus, how is that going to be accomplished? Can you --

A. That's -- was another one of the reasons that we were needing -- requiring electricity, is, we will run a cable down to a bottomhole sensor. That cable will feed information up to us on a daily basis.

And we -- what -- I think the information that we had talked about was minimum reporting, at least follow up with a sonic fluid level on a quarterly basis, on a minimum, just to prove that out, on an ongoing operation.

Q. Now there shouldn't be any pressure on that annulus in the Cliff House, right?

A. Well, it will have pressure. What the Cliff House exerts down onto the packer, it will have that pressure from day one.

Q. And do you feel like that's adequate to make sure that nothing is going into the Cliff House?

A. I believe that it is. Into the -- Yes, up into the upper Menefee, yes.

Q. Have you talked to the Division -- Since you're going to have some open perfs in that annulus, have you talked to the Division about how to accomplish MIT testing on the well?

A. That was talked about at the November meeting, and that was one of the reasons for the monitoring of it and the recording of it on a very regular basis.

Q. That's not going to tell you whether or not you develop holes in the casing in other areas of the well?

A. Unless you had a pressure change that would signal some significance, that's correct.

Q. Your producing wells, do you have an estimate on

what they're producing at this time?

A. We're making approximately 3200 MCF a day. We're producing about 3500 barrels of water a day in the 24-and-10 area. In the 24-11 area we're producing zero MCF a day and 400 barrels of water a day.

Q. And this is coming out of the Coal?

A. The Fruitland Coal.

Q. Fruitland Coal. That's pretty good water, isn't it?

A. The TDS, I think, averages anywheres from 10,000 to as high as 16,000 TDS, I believe, from the work that I've done. On an average, you're probably looking at 12,000 to 15,000 TDS, which is -- you know, it's not heavy saline, but it's not fresh either.

Q. And the 3200 MCF a day, that's all coal production?

A. Correct. That's all we have, are basal Fruitland Coal producers in that area, other than the disposal wells.

Q. You did not drill the Juniper SWD Number 1?

A. Yes.

Q. Oh, you did?

A. Coleman did.

Q. Okay, and that well was drilled with a DV tool?

A. That's correct.

Q. And what depth was that DV tool set at?

A. We put the DV tool at the base -- at the top of the Mesaverde.

Q. And that wellbore has cement --

A. -- top to bottom, yes, sir.

Q. Top to bottom.

Did you -- or could you provide your cement calculations that you did on the Monument Well Number 2?

A. Sure.

Q. Could you provide those to us?

And the Monument Well Number 2, that's -- it's P-and-A'd, right?

A. Monument Number 2 was P-and-A'd by Tenneco. I believe that's Tenneco.

Q. And again, the concern -- as you understand it, the Division's concern with regard to that well is, the Cliff House may be open in that well so as to permit migration of fluid into that zone? Is that your understanding?

A. My understanding is that their information was, they didn't know where the DV tool was. But I'm sure that's a concern of theirs.

Q. So at this point you can only make assumptions as to whether or not that wellbore has cement behind that casing?

A. Just by the calculations. I don't believe

there's any cased hole logs that indicate anything different. Or we haven't been able to locate it, anyway.

Q. Are we talking about if you had to -- potentially had to re-enter that well to determine a cement top? Are we talking -- Have you done a calculation on how much that might be?

A. I would say you could re-enter and -- probably for $50,000, $50,000 to $60,000 on that one, at the high end. That's just to determine.

Q. That's if no remedial work is required after that?

A. That's correct.

Q. The cost to re-plug the Monument Well Number 1, it just seems a little bit high. Is that --

A. Well, any time you re-enter an existing wellbore you never know what you're going to find, number one.

It is on tribal surface. That could be an expense on its own.

EXAMINER CATANACH: Anything further from this witness?

MR. CARR: Nothing further.

EXAMINER CATANACH: Okay, this witness may be excused.

MR. CARR: May it please the Examiner, at this time we'd call Mr. Oldaker.

PAUL R. OLDAKER,

the witness herein, after having been first duly sworn upon his oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. CARR:

Q. Would you state your name for the record, please?

A. Paul Roger Oldaker.

Q. Mr. Oldaker, where do you reside?

A. Steamboat Springs, Colorado.

Q. By whom are you employed?

A. I'm a self-employed hydrogeologist.

Q. And what is your relationship with Coleman Oil and Gas?

A. I'm a consultant to them.

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

A. Yes, I have.

Q. Has that been recently?

A. It was 1985.

Q. Maybe we could ask you to just briefly review your educational background?

A. I have a bachelor of science from Colorado State University, I did two years of graduate studies there.

Q. And since graduation, for whom have you worked?

A. I've worked for Peter Kiewit Sons, Coal Mining

Division; Beak Consultants; and since 1982 I've been working on my own as a consulting hydrologist and hydrogeologist.

Q. In your work as a hydrogeologist, have you been involved on projects or worked with injection wells?

A. About 70 injection wells in the San Juan Basin.

Q. In the San Juan Basin. Are you familiar with the Application filed in this case on behalf of Coleman?

A. Yes, I am.

Q. Have you made a -- I guess geohydro- --

A. Hydrogeology.

Q. -- a hydrogeological survey or a study of the area that's the subject of this Application?

A. Yes, I have.

Q. And are you prepared to share the results of your work with the Examiner?

A. Yes, I am.

MR. CARR: We tender Mr. Oldaker as an expert witness in hydrogeology.

EXAMINER CATANACH: Any objection?

MS. MacQUESTEN: No objection.

EXAMINER CATANACH: Mr. Oldaker, do you remember the circumstances of the testimony back in 1985?

THE WITNESS: Well, it was with Mr. Carr, and it was the -- it was some of the pit issues in the San Juan

Basin.

EXAMINER CATANACH: Okay, the vulnerable area, that type of thing?

THE WITNESS: I believe it was mainly Cedar Hill, other -- review and some requirements. I believe they were proposed regulations at that --

MR. CARR: There were a number of issues in the Cedar Hill area and some OCD study. Mr. Oldaker and I worked together during that time.

EXAMINER CATANACH: That's about the time I started as Examiner.

Okay, Mr. Oldaker is qualified.

Q. (By Mr. Carr) Mr. Oldaker, when were you employed by Coleman Oil and Gas?

A. I began working February of 2006.

Q. What were you asked to do?

A. I was asked to do a radius-of-influence study, literature review, and calculate radius, compile volumes.

Q. And is this for the Juniper Saltwater Disposal Well Number 1?

A. That's correct.

Q. And when did you start to actually work on the project?

A. February of '06.

Q. And your study was completed when, initially?

A. The initial report was 10 April 2006.

Q. At the time you actually did your work, were you aware of any concern with the Monument wells?

A. No, I was not.

Q. Let's ask you to identify what has been marked Coleman Exhibits 10 and 11.

A. Number 10 is the April 10th report, area-of-influence report. Number 11 is the November 3rd update of that.

Q. All right, I'd like to work through you -- or work with you through these studies, and if you want to work with me, it's fine, it'll make the questioning easier. But I would like to go through these studies with you, and you indicated you had reviewed literature. Would you explain that to the Examiner?

A. Yes, I briefly examined the hydrogeology literature of Beaumont in 1956, identified the La Ventana tongue.

Stone *et al.* in 1983 published maps of the Cliff House sandstone with hydrogeologic data, and he presented a map of specific conductance data. They then said that water produced from this unit in deeper parts of the Basin probably has a specific conductance exceeding 30,000 micromhos per centimeter.

Then Thorn in 1990, *et al.*, published maps of the

Cliff House sandstone. Total dissolved solids can be much higher, deeper in the Basin. Usually it's much lower near the outcrop.

Q. And this material is contained in your original report, Exhibit 10?

A. That's correct.

Q. Let's talk about the porosity information you were able to get from your work on the Juniper Saltwater Disposal well.

A. It was geophysically logged with a density tool, and from density you can directly read porosity in a sandstone lithology. I then read those, entered them into a spreadsheet for each of the perforated intervals, and then came up with a series of mean values for the upper, medium, lower units from 17 to about 20-1/2-percent porosity. Then each perforated interval, mean basically from 15 to 23 percent. And overall if you take the entire perforated interval, it would be approximately 19.9-percent porosity.

Q. And that's shown on page 6 of Exhibit Number 10?

A. Correct.

Q. We've had some questions concerning the water injection and the volumes. Let's go to the material on page 7 of Exhibit 10, the water injection volume information.

A. Okay, the -- basically it was the sum of the amount of water being injected into the Juniper SWD Number 1. The April report is complete through December of 2005. The updated report, which is on page 2, again --

Q. And that's Exhibit 11.

A. -- also Figure 4 -- that's Exhibit 11 --

Q. Okay.

A. -- is updated through September of 2006. The total volumes are about 3.5 million barrels of water, which is about 20 million cubic feet of water.

Q. And that's shown on Exhibit 11, the updated version?

A. Correct.

Q. When you updated the version -- the study, all you were doing was actually taking the data and bringing it through September where the first report was focusing on a period that ended in December of last year; is that right?

A. Correct.

Q. Have you calculated a radius of drainage for this injection volume?

A. I did, it was calculated first in the April report. Basically it's a cylinder if radially consistent flow throughout the perforations is assumed. If we put that into an equation, where basically porosity is the dependent variable, to determine radius, from 15-percent to

23-percent porosity the radius is somewhere between 193 and 244 feet. I then updated that with the higher volumes in September of 2006. That's from 231 to 292 feet.

Q. And this material is shown in Exhibits 10 on page 8 and 11 on page 3; is that right?

A. Correct.

Q. Can you also calculate an area impacted by this injection in terms of acres?

A. Basically it's the radius, then squared times π for the area. Those range from 2.7 to 4.3 acres in the original report. The September is 3.8 to 6.1 acres.

Q. And so at this point in time, based on your study through September, the maximum number of acres impacted by injection to date is 6.1 acres; is that right?

A. It's the maximum possible, yes.

Q. Now in your original study you had information concerning the chemistry of the water, and I think there were some questions, or at least a question from Mr. Catanach about that. Would you go to page 10 in Exhibit 10, the original report, and review that for him?

A. Yes, there are two formations we're really dealing with Here, the Cliff House and the Fruitland. I'll start with the Cliff House.

We have two samples from the Cliff House. The original Juniper SWD Number 1 sample taken after

perforation and swabbing on May 16th, that had a TDS of 27,300 milligrams per liter. And the other sample came from an RFT tool on November, 2005, from the SWD Number 4, and it had a TDS -- excuse me, total dissolved solids of 9740 milligrams per liter.

Those levels are classified as moderately to highly saline, they're too high for most uses, and they are within the range of those published in some of the literature. Then it is a -- classifies then as a sodium chloride water, which is what we'd expect from lithologies deposited in a marine environment.

The Fruitland is -- ranges from 12,800 to 18,189 milligrams per liter. That's classified as highly saline. Again, that makes it unusable for most uses, and it is also sodium chloride, again from a lithology deposit in a marine environment.

Q. In the updated study on page 5, you have porosity versus time calculations. Could you review those and explain what injection rates -- explain the injection rates you used and, based on that input data, how long it would take to reach the Monument well?

A. Yes, the distance from the SWD Number 1 to the Monument well I calculated from the surveyed locations from the north lines, east lines, as 1885 feet, which is .357 mile. The rate -- excuse me, the thickness has been

reduced to 124 feet due to the packer. The rate was estimated as 2000 barrels a day as a maximum rate that could be injected through the tubing under the packer.

If we substitute the volume using rate and time, and putting it into a straight-line equation, it basically says that for that water to reach a radius of .357 mile varies somewhere between 52 and 74 years, depending on which porosity you use.

Q. Do you have an opinion as to whether or not at this point in time water injected in the Juniper well could, in fact, be impacting the offsetting Monument wells?

A. It is not.

Q. Now you used the 2000 barrels per day. Where did you get that number?

A. That was provided by Coleman and Mr. Hanson.

Q. And that's just an estimated maximum value?

A. Correct.

Q. What kind of declines are being seen the Fruitland Coal?

A. We took the original fivespot -- That is presented on figure 8, on page 6 of the updated. It started out at about 40,000 barrels per month and has now declined to about 20,000, a little above 20,000. We would expect coalbed methane water production to continue to decline.

Q. Based on your work is it fair to say that if injection was maintained in this well, it would have to be conducted for 50 to 70 years before it would reach the Monument wells?

A. I think that's a fair assessment, yes.

Q. Were Exhibits 10 and 11 prepared by you?

A. They were.

MR. CARR: That concludes my examination of Mr. Oldaker.

CROSS-EXAMINATION

BY MS. MacQUESTEN:

Q. Mr. Oldaker, before we begin I have to warn you that I'm a liberal arts major, and I may use the wrong words in my questions. So if I do, and I ask you something that doesn't make sense or you don't understand what I'm trying to get at, please stop me and correct me.

A. You're asking me to be kind?

(Laughter)

Q. Not necessarily, you can be mean about it if you want, as long as we get an answer.

A. I see no reason to be mean.

Q. When you did your work in calculating the radius of influence, you testified that you assumed a consistent flow of the water?

A. Radial, that the flow is radial and consistent,

yes.

Q. Does that mean that you assumed that the geography in that area was homogeneous, that what the water was passing through was homogeneous?

A. At this point, the geology was assumed to be homogeneous in infinite extent, yes. It's simply an assumption.

Q. Would it affect your calculations if the geology was not homogeneous?

A. Yes, it would.

Q. I believe you testified that the porosity was the dependent variable in your calculations?

A. It's actually the independent variable.

Q. Independent variable?

A. It's on the X axis.

Q. Is porosity the main issue that you look at, or do you consider the pressure of the injected water?

A. Well, in this case since the injection -- there really is no injection pressure, it is taking it on vacuum or taking it by gravity. It is more that we're calculating how much volume has been displaced within the injection zone.

Q. If Coleman switched to injecting with pressure, would that affect the radius of influence?

A. Not by this calculation, because it's just a

displacement of volume.

Q. So again -- and forgive me for being a liberal arts major -- if they injected at pressure, the water wouldn't go any further than it would go when the well is accepting at vacuum?

A. You have two different situations. Under vacuum you have a thickness through the -- a total thickness of 501 feet. Under pressure it is a thickness of 124 feet. To get the volume displaced into the formation in the second case, they're going to have to add pressure to push it into the formation. Under the first case it's simply being displaced by gravity.

Q. Do we need to worry about injection into the Juniper 1 if Coleman chooses to inject at pressure? Will we have to be concerned that it may reach the Monument 1 and Monument -- well, Monument 1 faster than your calculations have concluded?

A. No, the pressure is -- in both cases you are displacing the volume in the formation, using pressure to push it into the Menefee and Point Lookout. It's the same displaced volume, whether it was put in there by gravity or by pressure. We're assuming that we come to equilibrium pressures there.

Q. In looking at the radius that you have calculated, is that the area impacted by the injected

water?

A. That is the area displaced by the injected water, yes.

Q. Did you look at what water would be displaced by the injected water --

A. Yes.

Q. -- and how far that would reach?

A. It's simply the formation. In other words, some -- out in the formation, it has pushed water in the formation out that -- some distance. But I mean, it's -- the formation in these calculations is considered to be infinite and homogeneous.

Q. I've been handed a question and it appears to be in a foreign language, but I'll read it to you.

A. All right.

Q. For the Juniper Number 4, where was the RFT tool --

A. May I --

Q. -- for the sample.

A. For the sample. May I refer to the Exhibit 10? I think I put it in, I hope I did. If not, I really do not know the -- Here we go. I just have it sampled by RFT tool. We can certainly get that depth for you.

Q. What was the salinity of the mud used to drill the well?

A. That I'd have to look up for you.

MS. MacQUESTEN: No other questions, thank you.

EXAMINER CATANACH: Mr. Oldaker, you've --

MR. CARR: Redirect first?

EXAMINER CATANACH: Yeah, go ahead.

REDIRECT EXAMINATION

BY MR. CARR:

Q. Mr. Oldaker -- I just want to be sure. Mr. Oldaker, there were questions concerning the injection into the lower Mesaverde under pressure?

A. Uh-huh.

Q. Without that pressure, is it fair to say you wouldn't be able to get 2000 barrels a day into the formation?

A. Correct.

MR. CARR: That's all.

EXAMINATION

BY EXAMINER CATANACH:

Q. Okay, have you looked at the geology in this area, and have you determined that these sands are in fact continuous?

A. Generally the La Ventana has been mapped reasonable well. The Point Lookout is continuous through the area. That doesn't mean there couldn't be some type of heterogeneity within those sands causing a boundary, but I

think the geology says they exist.

Q. What's the possibility of water channeling to the Monument Well Number 1 or Well Number 2?

A. I think pretty low, simply because the porosity values are fairly consistent through the area, 15 to 23 percent. If I had some large range, you know, possibly we might have a channel -- a particularly highly permeably channel, but we don't see it in the porosity values.

Q. You've stated that the water volume has been coming down, as far as the produced water from the Fruitland Coal; is that correct?

A. For the fivespot it is declining. The overall field was still going up, simply because they're adding -- they added wells.

Q. Correct. So the water production is dropping in the existing wells, but you're adding water through new wells?

A. Correct. So overall the field in time will decline.

Q. Okay, I just want to understand, you did two different studies, and one -- I just want to understand why you did that. One is up to a certain date?

A. Yes, it was by April -- At that point we thought we had covered everything, so we put together a report so it would be timely. Then -- Coleman didn't wait, I'm just

saying that time passed. And then I was asked to do one -- in preparation for this hearing, to update the volumes and then also the concern of the Monument Number 1.

Q. So as far as the conclusions you've reached in your study, if you don't mind going over them again, you determined that the radius of influence in the Juniper SWD Number 1 --

A. Uh-huh.

Q. -- the updated radius is from 231 to 292 feet?

A. Correct.

Q. That's based on the volumes that will have been injected up until what time?

A. September of 2006. I'm on page 7 of the updated conclusions.

Q. Which would correspond to an acreage -- a radial acreage area of 3.6 to 6.1 acres?

A. I believe it's 3.8 to 6.1 acres.

Q. 3.8. And that's over the entire Mesaverde interval that you have been injecting into the well?

A. That's correct.

Q. Now your subsequent estimates of how long it would take to reach the other wellbore, you reduced that, right, to include only the lower interval?

A. Right.

Q. And that time was, I believe --

A. It's between 52 and 74 years to reach a radius of 1885 feet.

Q. That's based on an injection rate of 2000 barrels a day?

A. That's correct.

Q. How did you determine that?

A. That was given to me by Mr. Hanson, it was his estimate of the maximum that he could probably push down the tubing and into formation with the equipment they have ordered. It's probably a maximum, I don't think you're going to be able to push much more.

Q. And on the water analysis, you had -- I guess you had two different readings for the Cliff House?

A. That's correct.

Q. Can you elaborate on why those are maybe so much different from each other?

A. Well, they --

Q. I'm sorry, they --

A. Go ahead.

Q. Okay, they were for two different wells?

A. Correct.

Q. Okay. So in the Juniper Well Number 1, the sample in the Cliff House -- Now this is the La Ventana section specifically, or do you know?

A. It was perforated and swabbed. I assume the

perforation was the entire 501 feet through the Point Lookout-Menefee-La Ventana, and probably taken on a swab run, would be my guess.

You know, I wasn't there in 2002, but usually when an injection well is drilled they perforate, then they say get a water sample to make sure that it is a saline water -- I believe an unprotectible water, if you're using that terminology -- and that's what that sample was taken for.

Q. So that's not a representative sample of what might be in the La Ventana by itself?

A. Well, it is because it was -- takes -- water from the La Ventana was in that interval. Now I suppose it could be argued that it is some type of mean value, but at 27,000 TDS you're going to have to have a very, very saline water somewhere in there to mix with the very fresh to get the 27,000. You know, it's -- no matter how I look at it, it's fairly highly saline. It doesn't quite make brine; brine would be about 34,000, which is seawater.

Q. Do you feel like the water in the La Ventana section is protectible -- should be protected?

A. Well, at this point I think you have two things: one, my opinion and, two, what the regulation is. The regulation of 10,000, the second sample of RFT of being somewhere around 10,000 -- you know, it's -- 9700 is under

10,000, therefore I could say in that well it's protectible. But I'm not sure what I'd ever use 10,000 TDS water for, other than to make salt.

So my own opinion is, frankly, at these values or these levels, this really isn't very good water, and I can't foresee a use for it at this point, other than to make brine or salt out of, which is used in some other basins.

Q. Is it hydrologically connected to more saline water that's found deeper in the Basin?

A. It may be. The vast difference between the outcrop and the Coleman area is indicating a pretty drastic gradient, and that's fairly common of most formations, the San Juan Basin. The Fruitland is the one I'm most familiar with, where -- very north in the Basin right on the San Juan Mountains, you have fresh waters less than 1000, but by the time you make the New Mexico state line you're at 20,000. Down here we're in the 12,000-to-20,000 range.

So I would assume, and I believe one of the maps does show, a more highly concentrated sample down near Fruitland was taken, about 40,000 TDS. So I would assume it.

As to exactly what the flow direction is, that's -- some of the data is starting to say that outcrop is one system and deeper basin is another system. That's some of

the dating isotope data from the Fruitland, just age-datingwise.

Q. Is your conclusion, then, Mr. Oldaker, that this injection into this well is not going to have any effect on the Monument Number 1 or Number 2?

A. I think I would word it that the injected waters will not reach the Monument Number 1 or Number 2.

EXAMINER CATANACH: Is there anything further of this witness?

MR. CARR: Nothing further.

EXAMINER CATANACH: Okay.

MR. BROOKS: I'd like to ask a couple questions if I may, Mr. Examiner.

EXAMINER CATANACH: Sure.

EXAMINATION

BY MR. BROOKS:

Q. I suffer from the same limitations as Ms. MacQuesten in that I'm not a technical person, but the combination of Ms. MacQuesten's questions -- one of Ms. MacQuesten's questions and the Examiner's last question raise an issue to me, to try to understand exactly what this testimony is -- the effect of it is.

If I understand correctly, what you did in the studies, while it may have been difficult to do, is conceptually fairly simple, and let me state my

understanding, and you tell me if I'm correct.

You calculated, using the porosity of the formation and its thickness, the amount of pore space in the injection formation that you thought could absorb -- could -- I won't say "absorb" because that's a technical term --

A. Displace.

Q. -- water, and then you calculated the amount of water that's being injected, and you determined how much lateral extent of the formation would be necessary -- would -- to receive that amount of water. Is that a correct summary of what you did?

A. Yes.

Q. And in response to the Examiner's last question you said your opinion was not that -- the opinion you're giving is not that the injection will not affect the Monument Well Number 1, but that the injected water will not reach the Monument Well Number 1; is that correct?

A. The injected water will not reach the Monument Number 1. There are enough unknowns, whether pressure reaches it, whether there's a heterogeneity between the two wells, whether there's -- to say blanketly that there is absolutely no effect is kind of hard to do, but I can pretty well come to the conclusion that the injected water has not reached the Monument Number 1 and is quite far from

it.

Q. There is native water in this formation, is there not?

A. Yes, it was sampled originally, yes.

Q. And when this native water is displaced it will go somewhere, right?

A. Yes.

Q. And while your study, correctly for your methodology, assumed that the formation was infinite, in fact we know that the formation is not infinite, correct?

A. Not exactly. It depends on if the -- if I was calculating radiuses in miles upon miles where I might reach the boundary of the formation, then we could say that we have reached a finite boundary. But at these radiuses the formation might as well be infinite. We haven't violated that assumption, I guess, is the best way of putting it.

Q. Well, what I'm trying to get to is, is there anything in your study that would negate the possibility that the displaced water will find an outlet -- displaced native water will find an outlet in the unplugged well that's within this radius?

A. It may, but it -- since the heads in the two formations -- We have several assumptions we've got to go through here.

Q. Right.

A. First, we assume that in the Monument Number 1, that the formations are in connection through the well.

Then, two, we pretty well know from literature that heads in those two formations are different. We don't -- you know --

Q. Which two formations?

A. That would probably be Cliff House to the Fruitland, possibly, or down to the Dakota. I don't know that much about the Monument --

Q. Okay.

A. -- but I'm just saying, heads in those formations are different. Therefore cross-flow may have been occurring for the last 50 years. Okay, into the formation or out of the formation is a debate, because we don't know those heads.

Three, we then need to have a hydraulic connection between the Monument and the SWD 1, which we're not -- right now we're assuming they're connected because they're in the same formation. But, you know, we deal with enough formations to know there could be a heterogeneity --

Q. Right.

A. -- we don't have that pressure data. After all that, there may be crossflow in the Monument Number 1, which has been occurring for 50 years. Whether the

displaced water of the SWD 1 is changing that, well, that's getting to be a lot of assumptions and questions before I can determine that.

MR. BROOKS: Thank you.

EXAMINATION

BY EXAMINER CATANACH:

Q. Do you know what the water saturation was in those formations?

A. I'd have to go back to look at the logs, but I assume the Cliff House pretty much has gas in it somewhere, but I don't believe it would be totally gas. The La Ventana seems to have a -- rather a large water saturation in terms of -- but I would expect probably all these formations -- frankly, all the formations in the San Juan Basin have some gas and possibly oil and water in them.

EXAMINER CATANACH: Anything further?

MR. CARR: No, nothing further.

EXAMINER CATANACH: Okay, this witness may be excused.

MR. CARR: That concludes our direct presentation.

EXAMINER CATANACH: Let's take a 10-minute break. I guess we want to proceed with your -- We'll do that. Let's take 10 minutes.

(Thereupon, a recess was taken at 11:22 a.m.)

(The following proceedings had at 11:38 a.m.)

EXAMINER CATANACH: All right, we're all sitting here, so we'll call the hearing back to order and turn it over to Ms. MacQuesten.

MS. MacQUESTEN: The OCD calls Steve Hayden.

MR. HAYDEN: Yes, I'm here.

STEVEN N. HAYDEN (Present by telephone), the witness herein, after having been first duly sworn upon his oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MS. MacQUESTEN:

Q. Steve, you have been previously sworn?

A. Yes.

Q. Could you state your full name for the record, please?

A. Steven Hayden.

Q. Where are you employed?

A. New Mexico Oil Conservation Division. I'm the District Geologist in Aztec.

Q. How long have you been the geologist in the Aztec District?

A. Six and a half years.

Q. Could you briefly summarize your educational background

A. I did a BS in geology at the University of New

Mexico. I spent six years in a PhD program, went through ABD in 1994, and I worked as consultant and then here.

Q. Have you ever testified as an expert geologist before the Division or the Commission?

A. Yes.

Q. Both, or just one?

A. Just the Division.

Q. All right. And at that time your credentials were accepted as an expert in geology?

A. Yes.

MS. MacQUESTEN: I would ask that Mr. Hayden be allowed to testify as an expert geologist in this case.

EXAMINER CATANACH: Any objection?

MR. CARR: No objection.

EXAMINER CATANACH: Mr. Hayden is so qualified.

Q. (By Ms. MacQuesten) Mr. Hayden, were you able to hear the testimony of Mr. Oldaker?

A. Yes.

Q. Did you hear him discuss that his calculations assumed a homogeneity of the geography?

A. Of the geology, yes.

Q. Geology.

A. Yes, I did.

Q. Do you have an opinion on the homogeneity of the geology?

A. Yeah, I have a background in sequence stratigraphy and lithostratigraphy, and I think that on this outcrop scale there's very little homogeneity, especially in the Menefee, but I think that on the -- overall, there's nothing in the Menefee that would connect between -- you know, as a direct stratigraphic unit, between the Juniper and the Monument Number 1.

I think that there are a couple of individual packages within the Point Lookout of what are referred to as parasequences towards the upper part that are probably continuous between the two, based on looking at depths corrected for -- corrected for topography and for regional -- or depositional depth. And those would be from -- in the Juniper well, in the uppermost part of the Point Lookout from about 3912 to 3925 and from 3941 to 3975. Those are what I've interpreted as upper shore face, which forms massive sandstones.

Q. Mr. Hayden, did you prepare a handout regarding the homogeneity of the geology in this area?

A. Yeah, I did -- I looked at the Point Lookout because I thought that that was probably the only place that was anything you can match up.

Q. All right. And do you have a copy of that handout in front of you?

A. Yes.

Q. I have handed that out to the Examiners and opposing counsel, identified as Exhibit Number 1. Could you walk us through what your findings are?

A. Well, basically if you look at the two diagrams, they're basically sections of well logs from the Juniper Number 1 and the Monument Number 1. They show the Point Lookout, and I put in interpretations on there. But really, the only thing I see that looks continuous are those two upper that I have given the footage for in the Juniper SWD Number 1. Other than that, I wouldn't expect any hydrologic communication between -- you know, as -- based on homogeneous sandstones.

Q. If the geology is not homogeneous, would that affect the calculations on the radius of influence?

A. Possibly in a quantitative sense at some level, but we're looking at orders of magnitude difference in the distance between the wells or the distance of the model, and the overall heterogeneity of everything we've looked at on a large scale, like your model, tends to look more homogeneous. Is that -- Did I say that clearly enough?

It tends to be small discontinuous bodies within the Menefee, which is the bulk of this, and within the lower Point Lookout that will tend to take water, but they won't be laterally extensive in the sense that they communicate for long distances.

Q. Could it affect, though, how far injected water would travel? In other words, if the geology is more -- and please use the right word if I don't use the right word -- more porous, it will accept more water?

A. Yes, that would be true, although the beds or the lithology within the Point Lookout that would tend to be continuous is probably fairly tight sands. They're known -- you know, the San Juan Basin is -- reservoir, and especially the Mesaverde. So I'm -- I don't have quantitative calculations on it, but from the standpoint of the geometry of the sands and from what I know of the nature of them, I don't think that they would conduct fluids that far.

MS. MacQUESTEN: Do you have any questions, Will?

MR. JONES: (Shakes head)

MS. MacQUESTEN: No more questions, thank you.

CROSS-EXAMINATION

BY MR. CARR:

Q. Steve, this is Bill Carr. Can you hear me?

A. Yes, I hear you.

Q. Okay. I've looked at your exhibit, and if I understand your testimony, the two intervals that from a geological point of view you're most concerned about are these upper two intervals that are shown, I guess, on the second page of your exhibit; is that right?

A. Let's see, it depends on how it was printed up. I guess the way I printed them was, the third and fourth pages were the --

Q. -- log sections --

A. -- the well logs --

Q. -- and then the second page says Juniper SWD Number 1 area of influence.

A. Yeah, I was just looking at -- you know, I took that off of the map. Those are the wells.

Q. And those are the two zones that under the Division's recommendation -- that's included within the area that needs to be squeezed off, the area in which injection will not be allowed; is that correct?

A. That's correct.

Q. Now we know that these zones are -- correlate across the area. We can't know for sure if they're connected, can we?

A. Well, based on my experience working on Point Lookout in the Basin, which I have some published stuff on this, those parasequences of which the -- you know, the upper two are what I was saying would connect, tend to run in the seaward sense, the northeast sense, from the upper Mancos through the Point Lookout and into the Menefee on a period of about three to four miles.

Q. Okay.

A. So that would suggest that each of those connections between these two wells -- because the direction between the wells is roughly onshore-offshore, from southwest to northeast.

Q. But obviously we have information on two points, right? The two wellbores?

A. Right.

Q. And we just have to infer what's in between?

A. We have -- Yes, I'm inferring it from experience, working on the Point Lookout field and outcrop.

MR. CARR: And I think that's all I have, and I think you had to sit all morning for that.

EXAMINATION

BY EXAMINER CATANACH:

Q. I've got a couple of questions, Steve. Can you give me those -- the interval depths that you stated earlier again?

A. Okay, in the Juniper SWD Number 1, the top portion of upper shore face I had was from 3912 to 3925.

Q. Okay.

A. And then the bottom one was 3941 to 3975. Those would be the places where I'd expect the sands to be continuous, amalgamated and homogeneous, more or less.

Q. Okay. So in your opinion those sands would connect the Juniper SWD to the Monument Well Number 1 and

the Monument Well Number 2?

A. I would expect them to be continuous between those two, yes.

Q. So injection into those Point Lookout sands in the SWD, more -- they have the opportunity to reach those other wellbores?

A. They have more possibility than anything else I see of those wells, yes.

Q. And the other intervals within the Menefee, it's your opinion that they're less continuous over that area?

A. Yes, typically Menefee sands and coals are very discontinuous. The sands are lenticular if you look at them in two dimensions, or basically channel sands that run through the swamp. And the coals tend to be thin and discontinuous, within, oh, the neighborhood of a foot to two feet, and in between is a lot of siltstone that wouldn't be a good conductor of fluids.

Q. Do you have an opinion -- I mean -- Let me ask you this. Do those sands that you've outlined, that you say are continuous -- do those -- how does the porosity compare in those sands with the other sands in the wellbore?

A. Well, I expect it's quite a bit lower than the Cliff House. And I think that probably others would share that opinion because they're expecting it not to take

fluids, you know, on vacuum like the Cliff House is doing a lot of the time.

Q. How do those compare to the Menefee, do you think?

A. The Menefee actually -- probably individual sands within the Menefee are coarser grained and have higher porosity. You know, it depends on how they're cemented. The Point Lookout tends to be very fine-grained, and so the porosity -- well, the percentage may be up -- will tend to be very small pores, and its lack of good permeability probably would keep it from being a highly conductive source for fluids.

Q. So you might expect the Menefee to take more water than the Point Lookout in this well?

A. I might. It all depends on the geometry, you know, what is -- how these -- you know, the permeability and porosity connect. And I'm not a hydrologist, so...

EXAMINER CATANACH: Okay.

MR. CARR: Can I ask one more?

EXAMINER CATANACH: Yeah.

FURTHER EXAMINATION

BY MR. CARR:

Q. Steve, this is Bill. I want to ask one more question.

A. Sure.

Q. The second page of your exhibit is entitled area of influence. Did you --

A. Well, that was because I -- I took that from the map that was presented, that showed where the wells were.

Q. Okay, you weren't trying to calculate or testify as to the radius or the number of acres impacted?

A. No.

Q. Okay.

A. I was just showing -- in fact, I used the wrong footage and calculated the distance wrong. 1885 is right --

Q. Okay, that's all, thank you.

A. -- those wells. I didn't mean that there was a hydrologic influence, it was just the percent of area of influence from the Application.

EXAMINATION

BY MR. BROOKS:

Q. Steve --

A. Yes.

Q. -- this is David Brooks.

A. Yes.

Q. Can you hear me?

A. Yes.

Q. I just want to again do what I did with Mr. Oldaker and kind of summarize and see if I understand

correctly. If I understand, really, all that you have -- the only opinion that you have really given is that there are -- I don't want to -- I want to use the right word again, and we're talking -- the word you used was parasequences. I don't know what that means --

A. Okay --

Q. -- so I'm reluctant to use it, but there are some stringers or formations or rock -- continuous rock from one well to another here, which raise the possibility of fluid migration from the saltwater disposal well to the Monument well; is that correct?

A. Yes.

Q. Is that -- is there anything -- Have you said anything more that bears directly on this issue, other than simply that?

A. No, I don't think so.

Q. Okay, thank you. That's what I thought, but I wanted to be sure. Much of it was in a different language, so...

A. I'm sorry, parasequences are little packages that are put down by minor advances and retreats of the ocean on the coastlines.

Q. Yeah, and they're kind of a subdivision of a --

A. Right.

Q. -- of a -- subdivision of a formation or

something; is that correct?

A. Yeah, I'm sorry, maybe I should have explained that to start with.

MR. BROOKS: Okay, thank you.

EXAMINER CATANACH: Anything else of Mr. Hayden?

REDIRECT EXAMINATION

BY MS. MacQUESTEN:

Q. Steve, other than the correction of the footages on page 2 of the handout, are there any other corrections that you would need to make to that handout?

A. No.

Q. And this was something that was prepared by you to address this question of homogeneity in this case?

A. Yeah, I just brought it up to have something to refer to when I was on the phone.

MS. MacQUESTEN: All right. I would ask for the admission of Exhibit Number 1.

MR. CARR: No objection.

EXAMINER CATANACH: Exhibit Number 1 will be admitted.

And do you want Mr. Hayden to remain?

MS. MacQUESTEN: Would there -- Bill, do you want him --

MR. CARR: No objection to letting him go.

MS. MacQUESTEN: Steve, unless you're riveted by

this proceeding, we can let you go now.

MR. HAYDEN: Okay.

MS. MacQUESTEN: Is that all right?

MR. HAYDEN: That's fine.

MS. MacQUESTEN: Okay.

EXAMINER CATANACH: Thank you, Mr. Hayden.

MR. HAYDEN: Sure, thank you.

MS. MacQUESTEN: The OCD would call William Jones.

WILLIAM V. JONES,

the witness herein, after having been first duly sworn upon his oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MS. MacQUESTEN:

Q. Would you state your name for the record, please?

A. William V. Jones.

Q. And where are you employed?

A. Oil Conservation Division, Santa Fe office.

Q. What is your title there?

A. Engineer.

Q. And what work do you do with the OCD?

A. I am currently assigned to review saltwater disposal applications.

Q. Do you have anything to do with hearings?

A. I sometimes, on occasion, am assigned to be a

Hearing Examiner.

Q. Are you familiar with the OCD's administration of the Underground Injection Control program, the UIC program?

A. Yes, I am.

Q. Did you have any role in that program with the OCD?

A. For about a year I did. I was the UIC director for New Mexico.

Q. Now, you said you're an engineer. Are you a licensed engineer?

A. Licensed petroleum engineer.

Q. And what are your degrees in?

A. My degrees are in geological engineering and civil engineering.

Q. Have you testified before the Division before?

A. Yes, I have.

Q. Have you testified before the Commission before?

A. Yes.

Q. Were you accepted as an expert in petroleum engineering when you testified before those bodies?

A. I -- Yes, that was true.

MS. MacQUESTEN: I would ask that Mr. Jones be accepted as an expert in petroleum engineering.

MR. CARR: No objection.

EXAMINER CATANACH: Where did you attend school,

Mr. Jones?

THE WITNESS: New Mexico State University.

EXAMINER CATANACH: Thank you. Mr. Jones is so qualified.

MR. CARR: I want to re-think my waiver.

(Laughter)

Q. (By Ms. MacQuesten) Mr. Jones, did you have a role in drafting any of the orders that we've been discussing today?

A. Yes, I did, I was the one that reviewed and drafted the SWD-806-A, which was the first amendment, to allow the Cliff House basically to be perforated, injected into. That happened about the summer of 2002.

And then I was here for the subsequent investigation into the Cliff House that happened from the EPA and the -- the two EPA offices and the Aztec office and the OCD here. And also the conference, I was there for the conference with Coleman on this issue about a year -- a little over a year ago. And also I was the one that drafted the 806-B.

Q. Okay. Were you involved in drafting the original order, 806?

A. No.

Q. So you were strictly involved in 806-A, extending to the --

A. -- Cliff House.

Q. -- Cliff House, and then --

A. -- and then the restriction from the Cliff House.

Q. Well, why did you go back and work on an order to restrict injection in the Cliff House?

A. The Cliff House was identified first by an EPA official in Farmington that's stationed in the BLM office as looking suspiciously fresh on the electric logs, and he contacted -- the story I got is, he contacted our Aztec office, and he -- and the BLM geologist, I think, contacted the Aztec office, and we became aware of it pretty quickly after that and immediately started looking at the logs through the Cliff House.

And the reason we had to look at the logs is because the Mesaverde is one huge pool, according to the Oil Conservation Division, when in fact it consists of members in the Point Lookout, the Menefee and the Cliff House, or more, as Steve Hayden and Alan Emmendorfer would tell you. But anyway, it consists of several members that -- despite it being one big pool, the members could have different salinities in each one.

Q. What was the EPA's concern about protectible waters?

A. I don't know if -- the original well that they keyed in on, but their concern was that the waters were in

areas that were not productive of oil and gas, and they were also less than 10,000 TDS, total dissolved solids, parts per million of total dissolved solids.

Q. Did the EPA provide you with the results of their investigation into the protectibility of water in this area?

A. They did.

Q. And do you have that today?

A. Yes.

Q. Is that what has been marked as Exhibit Number 2?

A. Yes.

Q. What does it tell you about the protectibility of water in this area?

A. It tells you that there's -- their calculations show a range of equivalent sodium chloride parts per million. That's the log. Inducing total dissolved solids from logs, you have to assume it's saturated with sodium chloride, and -- which we've had testimony about that already today. And their range on the Juniper SWD Number 1 from depths of 2085 feet to 2872 feet, ranges from 1600 parts per million to 6000 parts per million. I think they told us in the past 2000 to 8000 parts per million.

Q. Now this Exhibit 2 looks at other wells in addition to the Juniper --

A. Yes.

Q. -- Disposal Well Number 1, right?

A. Yes, we had a crash log-reading program where we looked at all the logs on all the injection wells that are perforated in the Mesaverde, and then we tried to find out if they were perforated in the Cliff House. And I say "we". We did it in our office here, and the EPA did it in Region 9, and the EPA also did it in Region 6 in Dallas.

Q. Looking at Exhibit Number 2, in the far right-hand column some of the wells are marked with an asterisk. What does that mean?

A. The EPA informed us that the asterisk means those are less than 10,000 TDS, which means they would be qualified as protectible by New Mexico's rules, under -- our definition of a protectible water is less than 10,000 TDS.

Q. When you drafted Order 806-A allowing injection into the Cliff House, did you investigate the available logs to determine if there was protectible water in the area?

A. No, I did not.

Q. Why not?

A. It wasn't our practice at that time to do that. At least it wasn't my practice to do that, so I didn't do that. So -- You have to know whether the production is -- whether the reservoir is actually productive and also

whether it's -- what the TDS is also, so just -- it's a backdoor calculation to arrive at that.

And we -- I'll tell you another reason why, is because we require water analysis of the injection zone that we're going to inject -- that the Applicant wants to inject in. So for that reason a log calculation would in general not be necessary.

Q. Once the EPA alerted you to their concerns that there were protectible waters there, what did you do with regard to the Juniper SWD Number 1?

A. Okay, the Number 1 was part of a big program that we looked at, and what we did with that well, the EPA told us about that well also, and --

Q. So they specifically talked to you about this well?

A. Yes. And they -- I'm sorry, your question was what did we do about it?

A. Well, once the EPA told you they had concerns, what did you do?

A. At that point we looked at all the other logs around the other wells, and on this particular well what we did was, I talked to the attorneys in the office about how you go about revising an injection permit. And that was it.

Q. Was this Juniper Saltwater Disposal Number 1 the

only well that gave you any concern after speaking with the EPA?

A. Oh, no, we have -- we had about, oh, three or four that were obviously what we considered a problem, and several more that we need to gather logs on to find out if there really is a problem on them or not. And the EPA had the same problem, they -- some logs are not available on wells, or some people didn't run open hole logs, and we have to use other logs in the general area.

So no, there were several other wells.

Q. Have other permits been amended to deal with this issue?

A. Yes. For instance, the Pot Mesa Number 1 was amended. We contacted the operator of the Pot Mesa Number 1, and they stated that they would be -- they didn't want the liability of injecting into a potential protectible drinking -- potential protectible waters, so they readily allowed us to amend the permit without going to hearing.

Q. Are there other amendments that are pending?

A. Yes, there are.

Q. Let me ask you about the conditions you put in Order 806-B regarding the Monument 1 and the Monument 2 wells.

A. Okay.

Q. First, the order describes the wells as being

within a half-mile radius. Why was that important to you?

A. Okay, the half-mile radius is our practice for looking -- and our requirement on Rule -- on Form C-108 we require the operators to turn in information on a half-mile radius, and it's our practice in New Mexico to require all wells to be cemented across the injection interval within a half-mile radius.

In particular, this well was -- the half-mile radius was a question about whether to use a half mile or more on this well, because it was potential protectible waters. So it's not a situation where we're just trying to prevent movement out of zone, we're trying to prevent further contamination of -- or further increases in salinity of that interval.

Q. When you were administering the UIC program in New Mexico, were you working with the EPA in that?

A. Yes.

Q. Are you aware of what the EPA's position is on the half-mile radius of review?

A. They are real happy with New Mexico's program. As I understand it, they -- sometimes we have conferences about using zone-of-endangering-influence calculations for radiuses of investigation, but in my opinion that has been to raise some of the other states from a quarter mile to a little more than a quarter mile, because they were

concerned about some of them calculating more than a quarter-mile radius.

Q. Do you believe the half-mile radius of review is appropriate for wells in the northwestern part of the state?

A. I think it's appropriate. That's what we require on -- that's what we required on other wells, and I think it's appropriate to require it in the northwest part of the state, and I can tell you why if you want.

I think the heterogeneity of some of these formations that -- and the lenticular nature of them means that if you inject the same volume of water it's going to move further along the bedding plains, and the higher permeability may be -- and usually higher porosity intervals, and so with -- it's -- especially the Mesaverde would be that way.

I don't want to get off into testimony as a geologist, but I can say that on the injection pressure increases that we get, the pressures don't break immediately in the Mesaverde, they break gradually, which shows to me that you've got a bunch of little intervals in the Mesaverde that fracture as you increase -- keep increasing the pressure. So it's always a judgment call about how high to raise the injection pressure on the Mesaverde.

So from that I would infer as an engineer that it was lenticular, and it would require at least a half-mile area of review.

Q. Do you believe -- How do you feel injection pressure affects the area of review?

A. I think that is the primary concern, is the pressure in the formation. The data I've seen on the Point Lookout shows that it's around 25,000 or so TDS *in situ* waters, and if you displace those waters into waters that are less than 10,000 TDS you contaminate them. So I would be concerned about that.

Q. How does injection pressure compare to porosity when you're looking at area of review?

A. First of all, the porosity in sandstones, as everyone probably knows, you've got a total porosity, and those sandstones are sometimes filled up with little pieces of clay that -- or little bits of clay that -- and so what you really want to use is effective porosity, which means connective porosity, porosity that is open to permeability. In sandstones, normally if you plot the porosity versus the permeability you get a general straight-line relationship, where if you go to carbonate rocks you don't have that at all.

So the porosity -- you should deal with effective porosity. And effective porosity is always less than total

porosity, by definition. So less porosity, the same amount of fluid you inject, you're going to push that injection front further, and the injected waters -- we assume the injected waters displace the *in situ* waters.

Q. Why is that important?

A. That's important because the *in situ* waters could potentially find any source of conduit, up or down, and our regulations are that operators have to permit wells to confine the injection fluid in the zone that they're injecting in, in that well and in the surrounding wells.

Q. What is the quality of the *in situ* waters surrounding the Juniper Number 1?

A. Juniper Number 1, I don't know. They should have -- It's been my experience in the Point Lookout, from looking at other submittals, that it's around 25,000 TDS. That would be the quality in the Point Lookout.

Now the quality in the Menefee I don't know, and the quality in the Cliff House, from the logs it looks like it's a little bit less than 10,000.

Q. So if the water injected into the Juniper Number 1 displaces water, which of those waters would it be -- explain to me why we care about the displaced water.

A. Well, the displaced water will mobilize, and when it mobilizes it creates -- It's mobilized by pressure, and if you had an observation well, let's say, a certain

distance away from the injection well, you build your pressure up in your injection well, over time -- the pressure degrades as it goes further from the injection well, but it still gradually increases -- the average reservoir would gradually increase. And at any observation well the pressure should gradually start building over time, and eventually -- the UIC program tries to prevent that head of water in that, quote, observation well or nonplugged well, as it may be, to move up and invade any protectible waters.

Q. So even if the injected fluids would not reach the Monument Number 1, we still need to be concerned about the displaced water?

A. That's my opinion, yes.

Q. Let's look at the specific conditions you put on Monument Number 1 in Order 806-B. One of the conditions was that they re-enter and re-plug that well by filling the hole from 1900 feet to 3900 feet. Why did you draft that condition in the order?

A. That -- When I investigated the Monument Number 1, it was shown that it was plugged with a plug below the entire Mesaverde group and above the entire Mesaverde Group. So that told me that the members of the Mesaverde are not isolated from each other, and they don't know what's between them but it's likely heavy water or some

kind of plugging mud. But in any case, the pressure that would hit would move up and cause some kind of migration or a differential pressure in the wellbore.

So I -- it's our practice to require cement plugs isolating and covering the injection interval, actually, so that's why we did that.

Q. Is that our practice in all the wells within a half a mile of the injection well?

A. Yes.

Q. Can the re-entry and re-plugging be done in this particular case?

A. I think it can. It's -- it's always a question of how much money you want to throw at something, but in this case you've got the surface pipe available. And nobody's recovered the portion of the surface pipe, it's -- it was actually cemented in place. You've got surface pipe to re-enter, and it's just a case of drilling fast so you stay in the well, in the hole, and drilling those plugs out.

I'm -- Mr. Hanson will tell you it's not that simple always, but it has been done by a lot of other operators.

Q. On the Monument Well Number 2, there were two requirements I'd like to ask you about. The first one is, you asked them to provide certain logs. What logs did you

want?

A. Any logs that were run on the well. In particular, temperature surveys or bond logs would be nice to have. Anything that would show lost circulation.

The reason I asked for those is, I went to the -- our database, and I opened up that well and I looked for the logs, and I didn't see any there. So that's why I asked for them. I wasn't able to find them on our database, and we routinely ask for that. If we do an injection permit, we don't see logs out there, we just ask the operator to supply the logs.

Q. Have you received any response from Coleman?

A. I -- Well, normally we don't see when -- the logs, they're sent to the District office and they scan them in. But I thought I checked this the other day, and I still didn't see the logs out there.

Q. The second requirement I wanted to ask you about, you require Coleman to provide information on the cement diverter tool. Why did you ask for that?

A. Because the information in our files shows that there was a two-stage job, and if you add all the cement up in those stages and you calculate the height, you come up with like -- I come up with about 800 feet below the surface, which would cover the Mesaverde.

But we know it was a two-stage job, we know a

diverter tool was used.

So if you look at the lower -- the lower stage, I think it was 260 sacks or something, but -- I don't remember my calculations, but -- Mr. Hanson is going to supply those. But they come up to basically -- up into the Mesaverde or to the base of the Mesaverde, for -- enough for the first stage.

So that means if the DV tool was set below the Mesaverde, we're okay, the stage two was just fine, it had plenty of cement.

But if it was set above the Mesaverde, then you might have the same situation that you have in the Monument Number -- might have the same situation, or a similar situation. And you would have a well that's only 100 feet away, which would be a lot more likely to be affected.

Q. How confident are you that the DV tool is set at the base of the Mesaverde?

A. Well, you know, I think Mr. Hanson said that Paul Thompson did this, and I think he does a good job. I think he must have researched something. We don't have Paul Thompson here to ask today about that, where he came up with that information, but it seems logical.

The only thing that -- because -- especially considering the Cliff House was such an enormous -- in engineering terms, rock, that -- it looks porous and

permeable and would cause trouble on a cement job, or dilute the cement job.

But when the well was plugged it was in -- what, 1975, somewhere around there? And what they were looking for in 1975 was not Fruitland, for sure. Maybe Pictured Cliffs.

If they were trying to save the -- It certainly wasn't the Mesaverde, they weren't trying to save production of the Mesaverde.

So you know, it's just supposition on our part. I really don't know why.

The diagram that was submitted in 2001 shows that it somewhere below the Mesaverde, but we don't have it in our -- we don't have the data in our files, and it should be available to whoever took over that well. I realize it's an old Tenneco well, but -- and everybody left in a hurry from Tenneco, so...

Q. Given what you heard today and the testimony about information on the DV tool, do you still want additional information, or are you satisfied --

A. I think it needs to be kept -- keep looking for it, because this is too important in that particular zone.

And also they testified they set the DV tool above the Mesaverde in the last well drilled. Well, this is the current day and time when you're protecting the PC

and the Fruitland, so that's logical too, but -- I think it's pretty logical that it's set at the bottom, but it is important to keep for looking for records, I think.

Q. If they can't prove where it is, what would you suggest?

A. That's -- I didn't address that in 806-B. If they can't prove it, the most logical place for it is the lower part. However, there's got to be some kind of casing data out there that shows where it was set.

Paul Thompson could be asked to maybe say what happened on it.

Q. Okay, one other thing. There has been testimony from Coleman regarding how they interpret 806-B, and my understanding is, they believe it allows them to continue injecting while they do work on the Juniper well. You drafted this order.

What is your interpretation of this order? What were you intending to say?

A. I was there for the meeting that we had with Coleman, and I do remember them saying something about they needed that electricity out there, and -- but when I wrote the order I wasn't really thinking about that. But I wrote that order in May, and we had the meeting with them in -- I want to say it was October or November of the year before. So they had a lot of time, and it was time to get rolling

with it.

And the way I intended the order to read, it would have been that injection was only permitted into the Point Lookout-Menefee package, which would have been the fractured -- artificially fractured package that was frac'd together, and then the Cliff House was frac'd together, so we backed off, and -- between those two frac jobs, on the packer setting depth.

But the way I intended it was, as of the date of that order, that would have been the end of Cliff House injection. And then they would have six months to fix this well 1800 feet away.

MS. MacQUESTEN: Thank you, that's all the questions I have.

CROSS-EXAMINATION

BY MR. CARR:

Q. Mr. Jones, if I understood your testimony, you actually drafted SWD-806-A and -B?

A. Yes.

Q. Not the original order?

A. Not the original order.

Q. When there was a request to amend 806, the request that resulted in 806-A, that was just a letter request, was it not?

A. Yes.

Q. Did you look at the original application at that time?

A. I only looked at it in the amount of -- for the purpose of -- they were asking only for inclusion in the Mesaverde group, so adding the Cliff House was another member of the Mesaverde group.

As far as the notice required, I don't remember what we required on that, to tell you the truth.

Q. Are you aware that the original application filed for injection identified both the Monument Number 1 and Number 2 and indicated that there wasn't cement or casing in the Number 1?

A. I am aware of that.

Q. So there's no question here, Coleman did disclose that to you when --

A. They did.

Q. -- they filed the application?

A. They did.

Q. When I look at your Exhibit 2 -- and I don't think being a fine arts major or what -- English literature maj- -- would help me with this or not, but what is this?

A. Well --

Q. This is a -- Did this document come from the EPA?

A. Yes.

Q. And these are wells that they had some concern

about, at least the ones with the asterisks over on the far right?

A. Yes.

Q. Are these all Mesaverde wells?

A. Yes, I'm almost positive they are. There's -- Yeah, I think they're all Mesaverde.

Q. And are they in the general area of the Juniper?

A. The area, I don't know. I don't think they're necessarily in the same area.

Q. Now the number on this table that I'd be concerned about if I was trying to see if we had protectible water, what number would that be?

A. That would be the calculation number, the third column -- or basically the second column from the right.

Q. "ppm" --

A. -- sodium chloride.

Q. -- sodium chloride.

A. Yeah.

Q. If you take these numbers -- Have you taken them and averaged them to see what the sodium chloride is on all these Mesaverde samples?

A. I haven't.

Q. Would you believe it might be 14,800?

A. I wouldn't doubt it.

Q. That would suggest that at least generally

Mesaverde waters don't fall in the protectible category, would they?

A. Yes, I agree with that.

Q. But the number on this, on the Juniper 1, does, right?

A. Yeah.

Q. When you work on these, do you -- in drafting an administrative order, do you look at the well files?

A. Yes, I do, the well file of the well that's being -- I always do.

Q. Did you look at the well files on the Monument wells?

A. Yes, I'm almost -- yeah, I did, because I had to look for the plugs -- where the plugs were set.

Q. And if we -- When you were looking at the wells, you could tell who the original operator was, correct?

A. Yes.

Q. And when they were drilled?

A. Yes.

Q. And if we look at the Number 1 well, that was actually drilled by Linco Oil Corporation?

A. Okay.

Q. Do you know who Linco Oil Corporation is?

A. Probably Exxon by now.

Q. By now.

A. Uh-huh.

Q. They abandoned that well, it was a dry hole, was it not?

A. Number 1 was a dry hole in, I think, the Dakota or the Gallup.

Q. And then that well was plugged and abandoned?

A. Without setting pipe.

Q. And did the Division approve that?

A. The Division approved the plugging procedure?

Q. Are you aware that the lease expired?

A. The lease would expire --

Q. And years later, along comes Coleman?

A. (Nods)

Q. On the Monument Number 2, that was a Tenneco well?

A. Okay.

Q. It was also plugged and abandoned, was it not?

A. It was, but they ran pipe first, so I don't know whether it was -- somebody decided to run pipe and test it or run pipe and then take a lot of dryhole costs or something.

Q. Now that plugging was also approved by the Division?

A. It was.

Q. And that lease expired?

A. (Nods)

Q. And then along came Coleman; is that right?

A. And they're going after the Fruitland, and we're glad they are.

Q. Now, if Coleman wasn't out here, or if Coleman wasn't proposing to inject, how would the OCD characterize those wells? They're not Coleman wells, are they?

A. That would be a legal question. You know, I can tell you what I've heard from some of our legal staff about it.

Q. Would this be a well on their inactive well list, or a well in noncompliance, just because it's on their lease?

A. If it was plugged?

Q. (Nods)

A. What we consider plugged properly, it would be -- it would be, as I understood it, returned to the land owner, the plugged and abandoned, and released, as long as it's released.

Q. Would these wells be -- Is Coleman designated in your records as the operator of either of these wells?

A. I don't think so.

Q. If you don't know where Linco is or who they are, isn't this really an orphan well?

A. If there was anything wrong with it.

Q. And that's the well you want plugged and abandoned.

A. But there's nothing wrong with it if there's nobody injecting around it. If there's nobody injecting around it, it doesn't change the existing pressures in the Cliff House or the Point Lookout. And I agree that if one of those is more pressure than the other, than you may have some migration happening either up or down in those wells. But the major change out here would be a new pressure point.

Q. And is the well of no concern to you, other than the injection in the area?

A. It's of no concern, other than the injection.

Q. This is not a well that you would try and plug and abandon as an orphan well?

A. It's already plugged --

Q. And approved?

A. -- and abandoned, and approved.

Q. When you approved or drafted SWD Orders A and B, if I understood your testimony, at that time there was no check of water quality, no attempt to look at logs and check the background quality of the water; is that --

A. Well, Number A, but we always had a water analysis -- or we were supposed to have a water analysis in the file when we get a permit, or we ask for it later when

they perforate the injection zone for them to swab, we get a water analysis.

Q. In this case, though, the application to inject had been approved, correct?

A. Yes.

Q. And it was amended; is that correct?

A. Yes.

Q. And then injection was occurring; isn't that right?

A. Yes, it was --

Q. And then the EPA arrives on the scene.

A. (No response)

Q. Is that the first time you were aware that there was a problem with the protectible waters in this area?

A. That was definitely the first time.

Q. And your response was this letter and amended order that direct that certain actions be taken on the well?

A. Yeah, not just to Coleman's well but to others also.

Q. But the other wells, and you're directing Coleman to take that action?

A. Yes.

Q. And these are wells that are, at least in your files, not wells that they operate?

A. Yes, they don't operate those.

Q. Now, you were at the meeting when Coleman came in a year ago?

A. I was.

Q. And you were, I think you testified, aware that they explained there was a need to get power out there before they convert the well?

A. I remember, I think, Mike Hanson saying something about that, but --

Q. And you were aware, were you not, that if they lost the well -- or lost the ability to use this for injection, that they would have to shut in production?

A. And I was also aware that we had given them permission to inject before into that.

Q. And when you look at the evidence here today, you are aware that they applied to get the power and entered a contract for it with Jemez Mountain on January the 4th, 2006?

A. That's what I've heard today.

MR. CARR: That's all I have.

EXAMINER CATANACH: Any redirect?

MS. MacQUESTEN: No, I would just move for the admission of OCD Exhibit 2.

MR. CARR: No objection.

EXAMINER CATANACH: Exhibit 2 will be admitted as

evidence.

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Jones, what has EPA directed the Division to do with regards to protecting this water?

A. Since then, I am not the -- I'm going to weasel out of this one. I don't know what kind of letters we've received, because I'm no longer the point person here on UIC program. But they are monitoring our efforts, and we did report our efforts to them on the last annual report that we sent in, just last month, actually. We sent two pages on what we had done to try to protect the Cliff House.

Q. Did you have some initial discussions with EPA?

A. Yes, there was initial discussions with both Jim Walker in Region 9, and also with log-analysis experts in Dallas, and also with Lisa Famm, the EPA coordinator for New Mexico in Dallas.

Q. Did the OCD at any time commit to not allowing injection into this interval in the whole Basin, or --

A. No, not to my knowledge. I can't speak for what -- Daniel might know more about what we've told the EPA exactly what we're going to do. But as I understand it, legally the only way to change permits is to go back to hearing internally here, and so we decided to try to work

with the operators and get them to voluntarily do it if they would. And some of them, as I said before, are concerned about liability of injecting into waters that people might get upset about them in the future.

Q. Let me ask you about Exhibit Number 2, the document from EPA. On that document the number that you seem to be concerned with is parts per million sodium chloride, and I assume that that's just sodium chloride. Are there other salts and minerals in that --

A. No. In fact, that's equivalent sodium chloride. That includes all of the ions in that water, but it's a calculation that you arrive at, assuming that the waters are totally sodium chloride. So it's not just sodium chloride and -- it's an equivalent sodium chloride for -- it's a representation of the total ions in the waters.

Q. Okay, so that would be a representation of the total dissolved solids in those wellbores?

A. Yes, sir.

Q. Okay. You've got a number of wellbores on this exhibit that have parts per million far in excess of 10,000 parts per million.

A. Yes.

Q. Which I guess goes to show the inconsistency of the -- or the variedness of the salinity of that formation. I'd be curious to know how OCD would propose to enforce

this type of situation from EPA when there is this kind of variedness in that formation.

A. And I'm glad you asked that, because that was the effort. And I think Steve Hayden was working on that part of it, trying to narrow down the areas of the San Juan Basin that was the most concern.

My approach wasn't that, because I don't have a map on my wall. I just pulled all the permits that were permitted in the Mesaverde and looked at all the logs I could find on those permits through the whole Basin.

And EPA -- I don't know exactly whether they concentrate in a certain area of all of the wells that were permitted in the Mesaverde. So it's -- as far as arealwise, I'm not a good person to ask. But I agree that this would need to be defined before you could come up with some kind of protection, and it needs to be done.

Q. I have not seen a wellbore diagram of the Monument Well Number 1. I assume that your concern is, there is a plug at the base of the Mesaverde and at the top.

A. That's -- That is the concern, the base of the Mesaverde and the top of the Mesaverde. We didn't submit an exhibit with that, did we?

Q. I assume that's in one of the administrative files.

A. It is, it's in the -- it's definitely in the last -- the data for it -- if -- and I think -- the data for it is definitely in the 806-B file. The actual diagram itself was submitted with the original application, 806 --

Q. Okay --

A. I've seen it in there.

Q. -- I will take administrative notice of the administrative applications in SWD 806 so that I may obtain that information.

This well, Mr. Jones, the Juniper well, has already injected a considerable volume of water into that upper Cliff House interval?

A. Yes, it has, and that's unfortunate. All we can do is start from here and go forward.

I might add also, that the -- as far as that particular well goes, and the injection in that well -- Coleman is injecting waters from probably an average of 12,000 to 15,000 TDS into waters that are, you know, 2000 to 8000 TDS. So there's been a large volume injected already, and I don't think it should continue. But it hasn't been as bad as putting Delaware water into it.

Q. It's your opinion that 806-B -- that Coleman is, in fact, in violation at this point of Order Number 806-B?

A. Yes.

Q. That was not your intent to let them continue to

keep injecting into that wellbore?

A. No, it wasn't.

Q. Does 806-B clearly state that, or is it sort of ambiguous?

A. 806-B is worded the same way we word all of our permits. It has the effective date on the end of the permit, and it has -- it has the statement that they have six months to do the remedial work on the surrounding wells, or the permit is no longer valid.

And that's the way -- I didn't put in an extra statement that said, you know, the Cliff House is no longer allowed as of this exact time. But the permit itself reads Menefee through the Point Lookout, and it has a date on the end of it.

Q. Mr. Jones, you've been present for the testimony here today by Coleman. Has your opinion on the Monument Well Number 1 or Monument Well Number 2 changed as a result of what you have heard today?

A. No, I would actually go with -- it still needs to -- the DV tool needs to be found, and the Monument Number 1 needs to be -- have those three or four plugs drilled out and the Mesaverde covered with cement.

Q. Do you have an opinion as to whether or not the area that has been calculated to be -- the area that might be affected is very small? Do you have an opinion as to

those calculations?

A. I would defer to the geologist and the hydrologist on that, except I do have an opinion that pressures that are transmitted through reservoir are not limited to the front of -- the water front that is being injected.

EXAMINER CATANACH: I have no other questions of this witness.

Anything else?

MS. MacQUESTEN: No.

EXAMINER CATANACH: This witness may be excused.

MS. MacQUESTEN: Mr. Catanach, I have one other listed. That's Daniel Sanchez. He is the current UIC Director. I don't feel I need to call him in this matter, but there were some questions raised about the UIC program and what is currently happening. If you would like me to present him, we can.

EXAMINER CATANACH: Well, you heard the questions that were asked of Mr. Jones. If Mr. Sanchez has further knowledge that might benefit us, I would request that he does -- that he do testify. But if he does not have any knowledge of that, then...

MS. MacQUESTEN: A little bit. Let's put him on then.

EXAMINER CATANACH: All right.

DANIEL SANCHEZ,

the witness herein, after having been first duly sworn upon his oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MS. MacQUESTEN:

Q. Would you state your name for the record, please?

A. Daniel Sanchez.

Q. Where do you work?

A. For the Oil Conservation Division here in Santa Fe.

Q. What is your title there?

A. Compliance and Enforcement Manager and UIC Director.

Q. How long have you been UIC Director?

A. Two years now.

Q. You've listened to Mr. Jones's testimony about the EPA's concerns about the Juniper Saltwater Disposal Number 1. During your tenure as director of the UIC program, what contact have you had with the EPA regarding this well or their concerns about protectible water in this area?

A. We've had a few discussions on protectible waters which came up after this Coleman incident with the Cliff House. And part of our responsibility through this program is on an annual basis to renew our application for our

grant through that program, and one of the issues that came up and was required by the EPA was to at some point contact and set up a meeting with the EPA Region 6 and Region 9 on the matter of the Cliff House and to continue to investigate any other wells that may be injecting into that formation.

Q. Has that meeting taken place?

A. No, not yet. The report went out probably about a month ago, the final report and application for the grant, and EPA's final report on that grant -- the draft was issued last week, and the final will probably issued sometime in November, sometime in this month, at which point we can go ahead and set up that time in that meeting.

Q. Has any of the investigation been done that the EPA suggested?

A. Not at this point, but I -- well, I -- I'm sorry, I know Will has looked into some of the wells in question, but I think what the EPA was looking for was for us to get with Region 9, who actually brought this up a little over a year ago, and discuss it with them further to see if there were any other additional wells that we may need to look into.

Q. Is the EPA aware of the existing order on the Juniper Saltwater Disposal Number 1?

A. Yes, they are.

Q. And have they expressed to you any opinion on that?

A. Yes, they did, and it was that the well should be shut in, in terms of that particular formation, the Cliff House.

MS. MacQUESTEN: No other questions.

MR. CARR: No questions.

EXAMINATION

BY EXAMINER CATANACH:

Q. So the Division at this point doesn't know how it's going to enforce this in the future?

A. No, not at this point.

EXAMINER CATANACH: Okay, I have no further questions.

MS. MacQUESTEN: That concludes our presentation.

EXAMINER CATANACH: Okay, you may be excused. Thank you.

I don't know, did you guys want to give closing statements at all?

MS. MacQUESTEN: (Shakes head)

MR. CARR: I do.

EXAMINER CATANACH: I figured you would.

MR. CARR: Then why did you ask?

(Laughter)

MR. BROOKS: Well, a few times we've talked you

out of it. Only late at night.

MR. CARR: Are you ready?

EXAMINER CATANACH: You may proceed, Mr. Carr.

MR. CARR: Thank you, Mr. Catanach.

We came before you today, we had suggested meeting with you before, and I think perhaps if those meetings had taken place some of the confusion that I think has come up today might have been able to be addressed and resolved.

But Coleman came before you today having filed an application for an injection permit. In that permit application, having identified the Monument Wells 1 and 2, having told you that there was no cement or casing in the interval that we've been talking about in the Monument 1 -- and it was proved.

And we believed, and I think really do believe, that we've made a good faith effort to comply with all directives with the Division.

When the problem popped up, we talked with Ms. MacQuesten. We came in, we did meet, and we explained to you what the problems were with. And at that time we agreed to do what we had to do to get electricity as fast as possible, which we have been doing, so that we could limit the injection and proceed with the remedial work.

We also had this area-of-review study prepared

because we felt that that was important because it would tell us whether or not anything was getting away while we got this matter in line with what we understood you were asking us to do. And we have been trying to do that.

We believe what has happened has not -- does not pose a threat to fresh water at this point in time and is not going to.

We've looked at the wells we're asked to plug and abandon. These are not Coleman wells, they're not on our inactive well list, or we're not going to be held up, you know, under the enforcement rules for these because they're operated and have been operated by other people. They were drilled, they were plugged and abandoned, and that was approved.

And so we found ourselves a year ago with an injection well that we needed so that we could keep production on, and all of a sudden we were required by the Division to do something about it. And to date we're committed to over a half million dollars to protect the La Ventana and -- I'm not saying this isn't a problem, but I'm saying that we did not try to get into this problem, and we have been trying to work with you every step of the way.

And we really believe that if these wells have to be plugged, that they really are orphan wells, that there is a fund that is designed to tend to those -- we're

already in $500,000 on this -- and that the appropriate thing to do would be to use those funds, which we've contributed to, and that what we should do is get those wells plugged by doing it under those funds and let us get on as we're continuing to do, to get the power in, the pumps on the well, and get this injected into the interval that you want us to inject into. And so that's why we're here.

And also I will you, thought that it was worthwhile, since we have reasons for not meeting, to meet, and I agreed with Gail that it would be important to put it on the record, because from our point of view too, we've been out there working. We want you to know that.

EXAMINER CATANACH: Thank you, Mr. Carr.

Anything further?

MS. MacQUESTEN: Just this: We're dealing with some difficult issues in this case and in all of the cases that we've faced that relate to environmental concerns, and our knowledge of what we need to protect and how we need to protect it changes over time. And in this case we are trying to deal with the information that we have available to us now that we may not have had in the past.

And we are aware now that there is a concern for protectible water in the area. That makes this case a little different from many saltwater disposal well cases

where you're just looking at migration of fluids. In this case we're looking at migration that may impact protectible water.

Because it is such a serious issue, because we're dealing with such new concerns, and because we are trying to craft some sort of solution for this, we thought it was better to come to hearing rather than work through just meetings with Coleman, and I think that process is valuable for us to do.

We do still believe that that problem exists. We still do believe that Order 806-B is the best way to address that problem.

Mr. Carr has raised the issue of asking that the orphan -- what he calls the orphan wells be plugged now by the OCD using the reclamation fund, and that is a new suggestion that we haven't heard before in this case, at least to my knowledge, and I'm not aware of that being done in other cases involving saltwater disposal wells, where you look at wells within the area of review.

It has been the OCD's position that the entity that seeks to utilize a saltwater disposal well and will benefit from that saltwater disposal well is the entity responsible for taking care of any problems, in order to get the permit to do what they want to do. And I think we would maintain that position in this case as well.

EXAMINER CATANACH: Is that it?

MS. MacQUESTEN: That's it.

EXAMINER CATANACH: Thanks.

MR. CARR: Thank you.

EXAMINER CATANACH: All right, there being nothing further in this case, Case Number 13,812 will be taken under advisement.

And this hearing is adjourned.

(Thereupon, these proceedings were concluded at 12:55 p.m.)

* * *

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 13812 heard by me on November 9 2006.

David R. Catanach, Examiner
Oil Conservation Division

CERTIFICATE OF REPORTER

STATE OF NEW MEXICO)
) ss.
COUNTY OF SANTA FE)

I, Steven T. Brenner, Certified Court Reporter and Notary Public, HEREBY CERTIFY that the foregoing transcript of proceedings before the Oil Conservation Division was reported by me; that I transcribed my notes; and that the foregoing is a true and accurate record of the proceedings.

I FURTHER CERTIFY that I am not a relative or employee of any of the parties or attorneys involved in this matter and that I have no personal interest in the final disposition of this matter.

WITNESS MY HAND AND SEAL November 15th, 2006.

STEVEN T. BRENNER
CCR No. 7

My commission expires: October 16th, 2010