STATE OF NEW MEXICO
ENERGY, MINERAL AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION

ORIGINAL

APPLICATION OF THE NEW MEXICO OIL AND GAS ASSOCIATION FOR AMENDMENT OF CERTAIN PROVISIONS OF TITLE 19, CHAPTER 15 OF THE NEW MEXICO ADMINISTRATIVE CODE CONCERNING PITS, CLOSED-LOOP SYSTEMS, BELOW GRADE TANKS AND SUMPS AND OTHER ALTERNATIVE METHODS RELATED TO THE FORE GOING MATTERS, STATE-WIDE.

CASE NO. 14784 AND 14785

VOLUME 9

June 27, 2012
9:00 a.m.
STATE LAND OFFICE
310 Old Santa Fe Trail
Morgan Hall
Santa Fe, New Mexico

THE COMMISSION:

JAMI BAILEY, Chairperson

GREG BLOOM, Commissioner

DR. ROBERT BALCH, Commissioner

MARK SMITH, Esq.

FLORENE DAVIDSON, COMMISSION CLERK

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EXHIBITS

(Note: In session at the 9:00)

CHAIRPERSON BAILEY: Good morning. This is the meeting of the Oil Conservation Commission on Wednesday, June 27th in Morgan Hall in the State Land Office building in Santa Fe, New Mexico. We are here for a continuation of consolidated cases 14784 and 14785. We do have sign-in sheets in the back of the room for public comment. Anyone who will be making public comments today, we will break before lunch and at 3:00 today to allow for public comments.

At this time we will be hearing direct testimony from Tom Mullins. You are still under oath from the previous meeting.

CHAIRPERSON BAILEY: Ms. Foster, you may present your witness.

TOM MULLINS

(being previously sworn, testified as follows:)

DIRECT EXAMINATION

BY MS. FOSTER

Q. Good morning, Mr. Mullins.

A. Good morning.

Q. I remind you you are under oath and this testimony today will be extremely limited. As a

result of the conversations or your testimony previously you were asked specific questions by Commissioner Bailey pertaining to your modeling; is that correct?

A. That is correct.

Q. As a result did you prepare Exhibit No. 18?

A. Yes.

Q. You prepared the exhibit and provided it to counsel who distributed it?

A. That's correct.

MS. FOSTER: And so at this time I would move in for the purposes of discussion?

CHAIRPERSON BAILEY: Any objections?

MR. JANTZ: No.

Q. If you could please walk the commission through the new exhibit.

A. Yes, I'm going to be referencing Exhibit 18, which is basically three PowerPoint slides followed by some Multimed model outputs referencing basically Slide 2 in response to Commissioner Bailey's question. She was asking -- she asked me with regard to 25 foot to groundwater.

One thing I want to point out to the commissioners in relation to the two models that

have been discussed, the HELP model and the Multimed model --

Q. Before you go on, I want the record clear. The reason we are discussing the 25-foot level now, is that referred to in the IPANM petition?

A. It's referenced within the tables associated with the amended version of Rule 17 and specifically it was directed towards the low chloride drilling fluids.

Q. As it pertains to the siting requirements of temporary pits?

A. Yes, as the siting requirements as well as the tables that are in the document.

Q. Thank you. You may continue.

A. Something that I wanted to point out that we were discussing. I'm referencing Page 2 of the exhibit, Conceptual Model. We previously discussed it had four foot of soil cover, 12 1/2 feet of waste and then had the vadose zone material. The HELP model generates the infiltration rate which is the input for the Multimed model.

Looking at the depths, one of the reasons that the Oil Conservation Division also in the prior rule utilized the 50-foot depths and the 100-foot depths, they had the same conceptual mode. That

infiltration rate is effectively running from the surface of the ground down, so when we are talking about -- we had some different discussion about what those depths were, whether we had the four foot of soil cover to the 12 1/2 feet to the 25 feet to get where we are at. In reality, we need to look at that as the output of the HELP model is the infiltration rate and that effectively would be mobilized from the surface because it's the effective infiltration rate down 25 feet to where it would encounter the groundwater.

The question I was asked was what was the time period in addition to what I believe is very important, is also the concentration of the chloride that will be reached, so I am moving now to Page 3 of the exhibit 18 that I prepared.

This is very similar to the slide on Exhibit 16 that I testified to previously. The difference is when we move down to the third line -- let me start at the top. This summarizes the 25 foot to groundwater for low chloride focus which is 1,000 milligrams per liter of leachate with 48 inches of cover, and I presented both Carlsbad and Aztec, New Mexico. So a southeast and a northwest representation.

The HELP model calculated infiltration rates of 1.53 millimeters per year for Carlsbad and very small, very low infiltration rate, .0107 for Aztec, New Mexico.

The question then became what was the time period in concentration basically directly underneath the pit or one meter or three foot lateral distance of 25 feet. For Carlsbad that would be 775 years, and that's principally associated with that infiltration rate.

In order to calculate the Aztec time period, 111,367 years, I could not resolve that. That's more a technical term utilized in the model so I had to base that off of the infiltration rate itself, so 1.53 infiltration rate divided by the .0107 infiltration rate effectively it was 143.7 mathematically with all of the digits that were carried in the math. So Aztec was effectively 143.7 times as long for the contaminant to travel.

Something that jumps out when you compare the difference between my prior slide or Exhibit 16 was the number of years, and the difference between the prior slide was 950 years for Carlsbad versus 775, so that would be a difference of 175 years. The reason that I'm pointing that out to the

commission is effectively that time period would be the same from when you reach the groundwater and you would move over 100 feet for all of the models.

Q. Mr. Mullins, if you could please clarify the statement you just made because I'm getting confused on your testimony. You stated in Exhibit 16 you had a number of 950 years. That was for the contaminant to go through the bottom of the pit, hit groundwater and move 100 feet to the receptor. That was the 950 years, correct?

A. That's correct.

Q. Okay. Now, in this exhibit, Exhibit 18, the Carlsbad reaching a three-foot lateral 25 foot depth is 775 years, so you are explaining the difference between the 950, and the difference really is that it's not moving laterally?

A. Correct.

Q. Thank you.

A. So that time period, if you wanted to reference for all of the various numbers that I have presented in my modeling, the aquifer is basically modeled the same throughout all of the cases. So it would be approximately 175 years to travel from three feet out to 100 feet, so 97 feet of additional distance would be 175 years.

The next item down was the years until maximum chloride concentration, and what I had in my representation is 1120 years for reaching the maximum chloride level. In the prior Exhibit 16 with 100 foot lateral distance it was 1350 years is the number that I had for my time step. The maximum chloride concentration that would be expected to be encountered in Carlsbad would be 13.3 milligrams per liter so we would be starting with 1,000 milligrams per liter of leachate traveling down 25 feet and resulting after 1120 years would be 13.3 milligrams per liter.

The Aztec, New Mexico northwest model was a little more challenging to work with. I wanted to -- I gave testimony previously that the contaminant would move and it would move in all instances, it just would move at a concentration that would be nearly impossible to detect.

The Multimed model has the capability to determine the maximum contaminant concentrations, so I ran that feature for Aztec, New Mexico for the infiltration rate presented and I obtained a contaminant concentration that would be likely measured after 111,367 years mathematically of .0006 milligrams per liter. So effectively this kind of

brings up that discussion that it's nearly impossible to resolve the contaminant being detected. It's a very low infiltration rate.

The material behind Slide 3 is the HELP model runs that support the information that I have summarized here for the 25 foot to groundwater.

Q. So the record is clear, that's Pages 4 through 15 of Exhibit 18 were prepared for you and are output for the Multimed model?

A. That's correct.

Q. And the four slides of your presentation were also prepared by you?

A. That's correct.

MS. FOSTER: At this time I move Exhibit 18 into evidence, please.

CHAIRPERSON BAILEY: Any objections?

MR. JANTZ: No objection.

MR. FORT: No objection.

CHAIRPERSON BAILEY: The exhibit is admitted.

(Note: IPANM exhibit 18 admitted.)

MS. FOSTER: Thank you. I have no further questions of the witness.

CHAIRPERSON BAILEY: Cross-examination?

MR. CARR: No questions.

MR. JANTZ: I have a few, yes.

CROSS-EXAMINATION

BY MR. JANTZ

Q. Good morning, Mr. Mullins.

A. Good morning.

Q. I want to clarify a couple things both in my own mind and for the record. The input for the 25 feet to groundwater low chloride focus -- and this is the Multimed model; is that right?

A. That's correct.

Q. Okay. So the inputs for this were identical to the inputs you used for the other runs that you did? I guess that's Exhibit 7?

A. Well, these would be identical to Exhibit 16.

Q. Exhibit 16. Okay. And are those inputs the result of the modeling for the HELP model which is Exhibit 7?

A. Yes. The output of the HELP model became the input for the Multimed model, that's correct.

Q. And that's Exhibit 16 and now 18; is that right?

A. 16 and 18 is what I was focused on talking about today.

Q. Okay.

A. Yes.

Q. So just to be clear, in terms of the precipitation values that you used, those were a result of the HELP model as well and that's an average; is that right? You used an average precipitation?

A. I used the U.S. Climate Data information for both Carlsbad and Aztec. I input the average monthly values and the HELP model would calculate a daily synthetic precipitation value for that, and that was utilized within the HELP model, the daily information.

Q. Okay. So is that like an average steady drip of water through the waste pit and the ground?

A. It varies daily based upon the -- what the synthetic -- how the synthetic is created.

Q. It's an everyday thing?

A. Yes. It's based upon, similar to Dr. Neeper's Julian calendar year, 360 days rather than 365.

Q. And that's some precipitation every day?

A. If there's no precipitation that day, which frequently occurs in New Mexico, it would have a zero.

Q. It would be zero?

A. It would have a zero precipitation value.

Q. And the liner permeability, was that --

MS. FOSTER: I'm going to object is to the line of questioning, Madam Commissioner. Mr. Jantz had the opportunity to cross-examine the witness on all of the IPANM exhibits. We are here today specifically to talk about the exhibits of Exhibit 18 so, you know, Mr. Jantz seems to be going into the underlying factors and everything back into the HELP model questions and the Multimed questions and I would object to that line of questioning.

CHAIRPERSON BAILEY: Mr. Smith, since this is direct testimony, are cross-examinations allowed for the entire direct testimony or only for this exhibit that's brought forth today?

MR. SMITH: I think that if work that he had previously done supports this exhibit, that can be gone into. I think that the models, questions about the models can be gone into. I don't know that Mr. Jantz can go back and cross-examine about Exhibit 16 unless it's laying a foundation for 18.

MR. JANTZ: If I may, Madam Chair, the basis the inputs for Mr. Mullins' -- the inputs, as I understand it, for Exhibit 18 rely on the inputs that were the outputs from Exhibit 7, the HELP

model. And in order to evaluate this or in order to help us evaluate this, we need to be able to be clear on what's going on with respect to those inputs and outputs as they relate to the exhibit.

CHAIRPERSON BAILEY: Mr. Smith has given us our guidance on that.

MR. JANTZ: Thank you, Madam Chair.

Q (By Mr. Jantz) So I need to be reminded, Mr. Mullins. When -- I believe it was Dr. Balch talked to you about sensitive parameters in the context of the HELP model. Was liner permeability one of those sensitive parameters?

A. No.

Q. It wasn't. Okay. So in terms of the results for Exhibit 18, let's just take years until maximum chloride contamination. The liner sensitivity, the parameter, not being sensitive, would it be my understanding -- was my understanding correct that an unlined pit would have the same travel time -- unlined pit would have the same travel time --

MS. FOSTER: Objection.

Q. -- as a lined pit?

MS. FOSTER: Again, these questions were asked previously concerning lined and unlined pits.

Mr. Mullins made it clear that this exhibit was in response to Commissioner Bailey's question and he stated that the inputs were exactly the same. So any questions about the HELP model really are inappropriate at this time because he stated the inputs are exactly the same. The output, therefore, the numbers will be the same and what he is going to be using for the Multimed model might have been different.

So if Mr. Jantz wants to ask questions about the Multimed model and those factors, fine. But now we are getting into giving him an additional opportunity to cross-examine the witness based on questions the commissioner made after OGAP already asked questions.

MR. SMITH: These were questions that you were asking about the HELP model; is that correct? Input for Exhibit 18?

MR. JANTZ: Let me rephrase the question.

Q. Would the contaminant travel times for a lined pit be identical to an unlined pit in this 25 foot to groundwater scenario?

A. No.

Q. They would not. What would the difference be?

A. If you had a liner it would be slower.
Q. How much slower?
A. I didn't run that particular case. It would be marginally slower. If I was going to estimate, it would be a few years.
Q. Hundreds of years or less than that?
A. Probably less than 100 years.
Q. So for the time frames we are talking about, greater than 100,000 years, it would be negligible between a lined and unlined pit?
A. That would be correct, especially in Northwest New Mexico, yes.
Q. Now, you said you didn't do that run. Did you do a range of other runs with various change in various variables in your Multimed model?
A. I believe I already testified to that to Commissioner Balch.
Q. Could you remind me of the answer, please, for the record?
A. You will have to ask those questions again. I remember that was already asked. I will be sure to remember that and --
Q. I appreciate that. My memory isn't so good. For this Multimed scenario, did you run -- did you model for liquid in the pit?

A. No. I think that you're misunderstanding. There is liquid in the pit, obviously, because it has the initial saturated level. I think you are mixing apples and oranges between the liquid in a lined pit versus the solid drill cuttings, which is what I modeled.

Q. Okay. So you didn't model it with any appreciable liquid in the pit?

A. Well, what's your definition of appreciable? If you look at the saturation levels that are in the initial conditions and you add that up, that could be a significant water level. I think that's represented in the HELP model, the total inches of water in the system.

Q. How many total inches was that?

MS. FOSTER: Objection.

A. You will have to reference the exhibit.

Q. Okay. On Page Hand No. Page 6 of Exhibit 18 you say the bulk density of soil is 1.73 grams per centimeter? Is that correct?

MS. FOSTER: Mr. Jantz, where are you pointing to on the exhibit? There are a lot of numbers on the Page.

MR. JANTZ: I'm sorry, the 1.73 bulk density, the second to last category from the bottom

of the page.

MS. FOSTER: Thank you.

MR. JANTZ: You are welcome.

A. And your question was? I'm sorry.

Q. Well, my question was: You cited the bulk density of 1.73 and is it grams per centimeter?

A. Grams per CC.

Q. That's the bulk density for -- is it loamy -- a silty loam?

A. Really the Multimed model takes into account two different parameters. First of all, I didn't vary any of the parameters from the Oil Conservation Division model in 2007 and 2009 so I want to state that. But the bulk density has multiple effects in the Multimed model. If we were utilizing organic decay factors and different things like that, then the bulk density of the soil would have an impact on biological decay factors which were not included.

But in general, the model of Multimed and HELP interrelate both the density of the soil and the porosity, so those two kind of go together. Specifically when one is input over the other, it kind of takes charge in control of the model in certain instances. As I recall porosity and its

input takes charge in the Multimed model unless you are dealing with decay-related issues. So I input the exact same figures that were input by the Oil Conservation Division but I'm not exactly sure where your question is going.

Q. Well, I just want to get a sense of the kind of soil that you are looking at in terms of the bulk density as well as the other --

A. I would have to specifically refer to the Multimed model. There's different classifications of soil characteristics within USDA classifications. So you can have more than one soil called a sandy loam, for instance, with different parameters associated with it. So rather than speak incorrectly, I would refer you to the Multimed model material, which should reference that.

Q. Was it your intention to have the same kind of soil throughout the vadose zone, the zone that water was traveling through?

A. Yes. The assumption -- I stuck with the same assumptions used by the Oil Conservation Division which was a homogeneous vadose zone material in the Multimed model.

Q. Okay. Let's see here. I think I have one more line of questions. Can we look at Page 7?

Hand-numbered Page 7? I guess we have the area of the waste disposal unit is what, 167 square features? Is that right?

A. Yes, I didn't vary that from what the OCD put in.

Q. Is that a typical size of a pit?

A. Off the top of my head, you would have to do -- I didn't vary it specifically, but pits come in different sizes.

Q. Is this a typical size area for a trench or did you model trenches, I guess is a better question? Did you model trenches? Did you do a trench model for this?

MS. FOSTER: Again, I object. This is going back into cross-examination of IPANM's regular case. Mr. Jantz had full opportunity to cross-examine at that time. He also has opportunity to put a rebuttal witness on two months from now, so that witness can be discussing these issues. Again, we are here today specifically to talk about Exhibit 18 where this witness was asked specifically by the commission to do additional modeling using the same coefficient and the same parameters and come up with a different output based on the lateral distance. That's really the only variation here is the lateral

distance.

MR. SMITH: I think the only objection you really have at this point is asked and answered. And if the question has been asked, then you can make that objection. But if he hasn't asked the question, even though he had the opportunity earlier, I think he can still ask the question because we're talking about cross-examination. This is an opening of the direct again and I think that he can move forward with questions that have not been asked. Now, if he has asked them, you have your objection.

MR. JANTZ: Let me rephrase the question.

Q. For Exhibit 18 and the model run that you did, did you model trenches?

A. Effectively it would be yes, because the amendments to the Rule 17 would allow for trench burial under these burial-in-place conditions.

Q. And is the area of the waste disposal unit that you have here, the 167 square meters, is that a typical trench?

A. I don't know off the top of my head.

Q. Okay. That's all I have. Thank you.

CHAIRPERSON BAILEY: Ms. Gerholt, any questions?

MS. GERHOLT: No questions.

CHAIRPERSON BAILEY: Dr. Neeper, do you have any questions?

MR. NEEPER: I have about three questions, Madam Chair.

CROSS-EXAMINATION

BY MR. NEEPER

A. Good morning, Dr. Neeper.

Q. Good morning, Mr. Mullins. Your printout of Exhibit 18 did not include a print of the HELP model output. Am I correct?

A. That is correct. It was included earlier in the Exhibit.

Q. It was in the earlier exhibit?

A. Yes.

Q. What we did is catch me up on that because I couldn't find it. So the inputs here were the same as before we heard, except that the rainfall is different in Aztec than it was in the southern five problems; is that correct?

A. Let me be careful. The representation of Aztec, New Mexico's HELP model was presented in Exhibit 16, which encompasses not only precipitation but the evaporative zone effects and things like that.

Q. Yes. But the difference -- we have heard the words today that said all things were the same. I'm getting to the real difference is the rainfall was different in Aztec. You have expressed that your liners and soils and things were the same across the model?

A. The latitude, of course, would be different. The solar effects would be different. Specifically, I would have to reference if the humidity information was different but they were representative of Aztec, New Mexico. And that creates a daily synthetic which the HELP model utilizes for Aztec.

Q. Since Aztec was not printed in this exhibit, are you able to tell us what was, say, the annual average or the average peak thickness of the saturated layer on the liner in the Aztec model in the model that was run here today?

MS. FOSTER: I'm going to object. I think in discussion to Exhibit 16 there is information on Aztec, New Mexico. So I'm a little confused as to which exhibit Dr. Neeper is speaking to today. There was information and HELP model inputs and outputs on Exhibit 16, so I would ask him to clarify his question.

CHAIRPERSON BAILEY: Would you clarify so we can see the distinction between Exhibit 16 and Exhibit 18?

MR. NEEPER: I'm sorry, I can't state it any more clearly. I will have to withdraw the question. That's all. Thank you.

CHAIRPERSON BAILEY: Dr. Bartlett?

DR. BARTLETT: No questions.

CHAIRPERSON BAILEY: Mr. Dangler?

MR. DANGLER: No questions.

CHAIRPERSON BAILEY: Mr. Fort?

MR. FORT: No questions.

COMMISSIONER BLOOM: One question for you. Turn to Page 4 of Exhibit 18 and also Page 10 at the same time. Page 4 of Exhibit 18 under Carlsbad. Looks like there's some notes there on the run and I see this is the 20-year average, loam cover, good liner, chloride, mixing zone.

THE WITNESS: Yes.

COMMISSIONER BLOOM: Turn to Page 10 for Aztec. That mentions a 20-year pulse. I just want to know if that would affect what you modeled.

THE WITNESS: It meant the same thing. These comments I type in every run. I change 20 year -- 20-year pulse is effectively what that was.

COMMISSIONER BLOOM: All right. Thank you.

CHAIRPERSON BAILEY: Commissioner Balch?

DR. BALCH: I have one question as well. Just out of curiosity and you may not know the answer, what's the lifetime of the liner for the grades beyond its useful --

THE WITNESS: I should know that off the top of my head because it was previously testified to. There was a study and I want to say it's in the range of -- it was previously testified and represented by Dr. Stephens in his testimony. I want to say it's about 275 years. In his modeling he said the failure, meaning that the liner would effectively fail, so he presented testimony so that and that's where I would get that piece of information.

DR. BALCH: Thank you. That's all I have.

CHAIRPERSON BAILEY: I like quick, easy summaries. Once more. The model that you presented today does have vegetation?

THE WITNESS: Yes.

CHAIRPERSON BAILEY: What percentage of vegetation would be considered important to these calculations?

THE WITNESS: In all the calculations, first of all, I used the same vegetation standard, which was a poor vegetation condition specifically related to a leaf area index, I believe, of what's called 1.2 within the molds. It's a very minuscule amount of vegetation. I don't know how to characterize it from a view of the land, what it would look like, but its conditions were poor.

CHAIRPERSON BAILEY: So vegetation is important and this model run shows results with very poor cover of vegetation?

THE WITNESS: Yes.

CHAIRPERSON BAILEY: The maximum chloride concentration at the most direct route from the surface or the bottom of the pit to groundwater at 25 feet below the bottom of the pit, the maximum chloride is 13.3 parts per million? That's what the study says?

THE WITNESS: That's correct. With an initial leachate of 1,000 milligrams per liter, yes, that's correct?

CHAIRPERSON BAILEY: Do you know what the Water Quality Control Commission standards for groundwater for chloride concentration is?

THE WITNESS: I don't know off the top of

my head. If I was going to hazard a guess I believe it was around 250.

CHAIRPERSON BAILEY: That's right. That the Water Quality Control Commission doesn't consider it contaminated in chloride until it reaches 250 parts per million and this contributes 13 parts per million.

THE WITNESS: According to my modeling, that's correct.

CHAIRPERSON BAILEY: That does put perspective here, doesn't it?

THE WITNESS: I believe it does.

CHAIRPERSON BAILEY: So these results require some vegetation. They require a bottom liner but no top liner.

THE WITNESS: That's correct.

CHAIRPERSON BAILEY: And the contents of the pit stabilized.

THE WITNESS: Yes.

CHAIRPERSON BAILEY: And it passes the paint filter test?

THE WITNESS: Yes, three to one ratio, I believe.

CHAIRPERSON BAILEY: That's my quick soundbite. Thank you. That's all I have. You may

be excused. Do you have redirect?

MS. FOSTER: No, I don't. Thank you.

CHAIRPERSON BAILEY: That concludes direct testimony today. So I think, Mr. Smith, you wanted to have some discussion about rebuttals since we had scheduled to have rebuttal by Dr. Neeper?

MR. SMITH: No, I am hoping we can avoid the rebuttal argument until later. I think we should wait and see if it arises in the context of Dr. Neeper's testimony. I think the concern over rebuttal that arose from the rebuttal witness that Mr. Jantz intends to put on is better discussed once everyone has seen the statement of intent that Mr. Jantz produces. And if the rebuttal issue arises in the context of Dr. Neeper, we will have to deal with it in that context, but I think a general discussion of rebuttal is probably not going to be as useful as if we wait until we see the statement of intent from Mr. Jantz.

CHAIRPERSON BAILEY: Mr. Jantz, when will you be able to submit that?

MR. JANTZ: I can get it to you mid week next week. Is that sufficient?

MR. SMITH: I do think when we spoke last Mr. Jantz said a week. I don't know whether that

meant five days or seven days but that would have been -- I don't know, what was a week from when we met last?

MS. FOSTER: Friday.

MR. JANTZ: If I said Friday last time I will do it by Friday.

CHAIRPERSON BAILEY: We will look to that by Friday. Mr. Fort?

MR. FORT: Thank you. Madam Chair, I do have a problem about rebuttal, and it's a procedural problem. Last week had I talked with y'all about the substantive issues about how rebuttal is drawn up, and to back up about Dr. Neeper, he's basically -- to put it in perspective, he testified before Mr. Mullins did. They actually testified out of order because he is an opposing party. I'm using this for the basis of getting to the real issue of what is rebuttal, because I believe that Dr. Neeper testified -- and I wasn't present. I understood it was on the Friday of the first week that testimony was taken and that the applicant -- there's two applicants, NMOGA and IPANM.

Applicants get to present their case-in-chief and then the opposing parties. Not all of us that are opposing parties were parties,

but then the defendant's or opposing parties' case-in-chief gets to go forth, and I believe Dr. Neeper is presenting his testimony in response. This is part of his case-in-chief, if you will. It is not rebuttal.

Now, getting back to what rebuttal is in terms of it follows -- I looked up a couple definitions, and this is what caught my attention. Most of the cases I was looking at what constituted rebuttal, it was done by the plaintiff or prosecution in response to the defendant's case when the defendant brought up new matters or new theories and that's what the rebuttal went to.

Now there's another term not found in your regulations called surrebuttal. And surrebuttal is the ability of the defendant to bring up new evidence that was brought up in the plaintiff's or applicant's rebuttal. Rebuttal belongs to the applicant. Surrebuttal belongs to the opposing party.

With that in mind, that is also -- there's three places that the word "rebuttal" appears in the oil and gas regulations. One is the one we are discussing today, and I will point out it says, "Unless you identify a witness or exhibit in your

prehearing statement, i.e. through your case-in-chief, you cannot admit it unless a party is presenting it for rebuttal or there's good cause shown why they did not include it in their prehearing statement."

That statement doesn't give a person or a party the right to rebuttal. Rebuttal is, in terms of -- well, let me go on. I will show you what rebuttal is because it shows up in the regs, which is surprising.

Again, it appears for adjudicatory hearings in the same manner. It doesn't give anybody a right to rebuttal. It just says they may present it if it is rebuttal, in rebuttal.

Now, under -- I believe it's the rule for compulsory pooling and in that rule it says there is a presumption in favor of a risk charge, but if a party opposes that they should present that evidence in a prehearing statement. But if a party or his attorney shows up on the day of hearing and they present evidence, it's going to be technical or geological evidence as to where the risk charge should not be the 200 percent. Then the hearing examiner, if requested, will grant a continuance on behalf of the applicant so the applicant can present

rebuttal evidence.

Those are the only three times it appears in all your regs, and they do explain what rebuttal evidence is. It's on behalf of the applicant, not the opposing party. The opposing party gets surrebuttal but only to issues brought up in rebuttal because once you finish your case-in-chief you are done basically, except for new matters.

So that's the problem. That's why when I look at Dr. Neeper and he is not doing rebuttal, he is actually doing part of his case-in-chief because he went out of order with Mr. Mullins. He did, I guess -- Mr. Mullins has had two parts to his direct. That's what he is doing here. However, for OGAP to present a rebuttal witness, they don't get to present a rebuttal witness, they present a surrebuttal, but there's nothing for them to -- we haven't presented or I should say the applicants haven't presented any rebuttal to OGAP's testimony. OGAP had an economist. I wasn't present.

That's the procedural issue I have. In addition to the substantive issues I raised, one, if it's admissible in your case-in-chief; and two, if it, in fact, has a direct bearing on the issues of the case.

The other thing implicit on the case, they don't say directly, but it has to be something new that was brought up in the opposing party's case that the applicant gets to rebut. I've said my piece.

CHAIRPERSON BAILEY: Please give us guidance here.

MR. SMITH: I guess I wasn't real clear. I don't want the commission to take up generally right now the notion of rebuttal in the context of what OGAP wants to put on. Mr. Fort, I think that your observations about Dr. Neeper are very helpful in the context of the hearing today but I do think everyone here should remember that this is not an adjudication. It is a rulemaking, and the two guiding principles will be to educate the commission so they can make a good determination on the petitions, and fairness, and those are the guiding principles.

Some of the aspects of what is and isn't a rebuttal I think will be helpful in determining what is or is not fair. But I think we need to take it up in the context of what is actually proposed to be presented by OGAP instead of now in the abstract so I would propose that we all come with girded loins

to do whatever battle we need to do about this, but do it on the day that Mr. Jantz wants to present his testimony or whenever it is that the commission decides.

MR. JANTZ: Madam Chair, members of the commission, just a point of clarification. I don't know if Mr. Fort was conflating OGAP with New Mexico Citizens for Clean Air and Water, but Dr. Neeper is New Mexico Citizens' witness, not OGAP's.

MR. FORT: I understand that. I do understand that. Thank you. I do understand that Dr. Neeper is a separate party. He is the spokesman for New Mexico Clean Air and Water and that's why I make this distinction about the order of how, in terms of the IPANM's witnesses, at least, as I understand it, went after Dr. Neeper testified the first Friday back in May.

CHAIRPERSON BAILEY: So Mr. Smith, at this time do we allow Dr. Neeper?

MR. SMITH: I think we had planned on Dr. Neeper giving testimony and we still should, and if there are any objections, assuming not everyone is on board with Mr. Fort's analysis, if there are objections to any of the questions we will deal with them when they come up. That would be my

suggestion.

CHAIRPERSON BAILEY: Dr. Neeper, are you prepared to testify today?

MR. NEEPER: Yes, I am prepared to testify today or later.

CHAIRPERSON BAILEY: Why don't we take a ten-minute break?

MR. NEEPER: Madam Chair, might we have 15 minutes? I would like to check Exhibit 16 because I could not ask that question without referring to something in Exhibit 16.

CHAIRPERSON BAILEY: Let's take 15 and come back at ten minutes after 10:00.

(Note: The hearing stood in recess at 9:53 to 10:08.)

CHAIRPERSON BAILEY: We are back on the record. Dr. Neeper, you are still under oath from the previous testimony.

DONALD NEEPER

(Being previously sworn, testified as follows:)

MR. NEEPER: Madam Chairman, if the slide system is uncomfortable for the commission we can try to go without it.

DR. BALCH: Do you have a paper exhibit?

MR. NEEPER: You have a copy of the

exhibits.

DR. BALCH: All of your testimony is based on the exhibits?

MR. NEEPER: What I have to say is based on the exhibits. There is one additional page for this exhibit. The Court has a copy thereof and counsel has been appraised of it. If there's objection, it can be used or not used based on Mr. Mullins' testimony.

My effort is always to clarify issues if I can, and so what I am addressing here is just an understanding of the situation as it is represented by Multimed. Multimed, as Mr. Mullins testified, starts with the input flow at the top of a long column of soil and a contaminated section of water here shown in blue, moves down at whatever speed it's going to move. That section may disperse a little, but he has taken the dispersion out of his calculation on you get just the flat interface moving down until it can reach groundwater at the bottom. That is the simple situation of how this is carried out in Multimed.

If there were other physics going on, it could be much more complicated. The model is capable of handling that, but this is a simple case

in our interest of how fast does it move?

So I tried to understand that. I say how fast does it go, and what I am illustrating is that we can understand this without having to run a model. The volume flow rate in millimeters per year, which is the infiltration, is just the porosity times the saturation times the speed if we picture the saturation as a little column of water moving downward.

So I plug in some numbers, millimeters per year, characteristic porosity. I'm just making a guess as an illustration of .5, which is normal for many soils, and I just put in an arbitrary number of .3 characteristic for saturation and I say what is the speed? The speed comes out in that case at about 6.6 millimeters per year. The time to travel 100 feet is 4000 years. All right. It's in the order of thousands of years. We understand. I am with Mr. Mullins in understanding the results of his code and with this simple arithmetic we can understand what has happened.

I note, however, though, if the infiltration is one inch per year, and that does occur in New Mexico in places, the time to travel 25 feet by this same simple model is 46 years.

The point of this is that we need to consider more than a single model. We need for consider what's applicable for the entire state.

The protection inferred by the HELP model includes a liner. It depends in part on the liner, and I want us to remember that if a pit is buried in place with stabilization, often a backhoe is used and the integrity of the liner is certainly questionable in that case. So the liner becomes an important question.

Also an important question is the slope or what we consider to happen on the surface of the ground. Mr. Mullins stated that he used the 1 percent slope on the top of his pit which causes some water to run off. I could print out the code that shows that.

This is an old pit that has appeared in prior testimony of mine and I think it occurred in the testimony, my direct testimony this year. When I first visited this old pit in 2006, as best I could tell this was a flat area. I came back to do deeper sampling in 2007 and noticed a change in configuration. It's like there's a little gully right in this area, so I put a milk bottle out there just to indicate where it is so I could take a

picture.

This is up close. This is about 31 years after that pit was close, and what has apparently happened is a subsidence between the two years, between my two visits one year apart, a little subsidence in the soil to where a significant area of that ground surface being drained right down into the channel, into the hole.

So we want to remember that not all pits are vegetated, not all ground has a 1 percent slope, and we have to deal with all of the circumstances in the real world.

At this point I have a slide, one more page that I developed last night based on what I expected Mr. Mullins to say today regarding the Aztec model. I found out today that the Aztec particulars were printed but they were printed in a different exhibit from the southeast so I got hung up in my question due to my own ignorance. If there is no objection to using this slide, we can go ahead and the clerk has copies for the commission, but at this point there has been no prejudice in generating it. Nobody has seen the picture. It deals with the impact of the liner.

MS. FOSTER: Dr. Neeper did speak to me

first thing this morning and showed me the graph. I have shown it to Mr. Mullins and Mr. Mullins would intend to speak to it on the rebuttal testimony, so it would be no problem to have Dr. Neeper speak to it now if he wishes to as part of his case. We would have no objection.

CHAIRPERSON BAILEY: Mr. Fort?

MR. FORT: I have no objection but I want to explain that I still feel as in my previous argument, he is really doing part of his case-in-chief. One of the principle things that all this hangs on is that he is identified in his prehearing statement as part of his case-in-chief as a witness and his exhibits. So this may be that new testimony that Karin just mentioned for which there might be rebuttal. But still, so long as what he is doing is, if you will, his case-in-chief at this point regarding Mr. Mullins. That is the major difference.

Now, OGAP only had one witness listed in their prehearing statement, their economist. If their economist had something to maybe -- because Mr. Scott, Larry Scott went after her, if she needed to come back to say something, that would still be part of here case-in-chief or OGAP's case-in-chief.

The fact that a witness is not listed on the prehearing statement makes them not part of the case-in-chief, and it can only be, in my opinion, for surrebuttal. That's looking at what that term really means. And that unless it's something to rebut what any of OGAP's witness -- well, excuse me. The applicants have the right of rebuttal. Opposing parties have surrebuttal.

But again, I just want to point out why I think he is still doing his case-in-chief. He can bring up something new. Even though I might not like what he has to say, it's still part of his case-in-chief since he has identified it in his prehearing statement it's his case-in-chief.

CHAIRPERSON BAILEY: You made a point. Ms. Gerholt, any objections?

MS. GERHOLT: No objections.

CHAIRPERSON BAILEY: Mr. Dangler?

MR. DANGLER: No objections.

CHAIRPERSON BAILEY: Dr. Bartlett?

DR. BARTLETT: No objection.

CHAIRPERSON BAILEY: I need to poll everyone. Could we see the new exhibit?

MR. NEEPER: There are copies for the audience over here.

There is nothing on this slide that did not come -- I will state that more positively. Every point on this slide came from Mr. Mullins' exhibit. What I have plotted is infiltration from the HELP model for one of the southeastern sites or for southeastern sites, and you can see points that are here marked by V. That's how this is here.

But what we see for the most part is I can draw a straight line through a plot of the infiltration versus the average head on the liner. The implication from that is that there is a strong correlation between what the liner does and what you find is infiltration in this model. What I was looking for today was the final point, the Aztec point, which I had not simply had overlooked on the prior exhibits, and that was what I was trying to get in my questions.

The Aztec point, as I suspected, was essentially zero in infiltration and very, very small head. It's a point down here, so the line dribbles off, and we can say why is that? We would expect that kind of behavior at some point as you reduce the rainfall because you wind up essentially not having head on the liner and the liner then doesn't transmit until you get very little

transmission.

But what's going on in the linear part is the liner is determining what is being transmitted into the vadose zone underneath the liner. There's a very strong correlation here. In some of Mr. Mullins' printouts you can see tenths of an inch and that's annual daily average. So that's saying the liner is wet at times. His printouts also show an annual maximum which is sometimes --

DR. BARTLETT: Madam Chair, acting as Dr. Neeper's attorney in the odd way that we do and doing the same thing that other attorneys do for their witnesses, I would ask Dr. Neeper to give a little more explanation, as it is not clear in my mind from his talk about the meaning of the word "head."

MR. NEEPER: Thank you, Dr. Bartlett. Head is the layer of saturated liquid above any reference point, and in this case the reference point is the liner and head would be the layer of cuttings in which the porosity is saturated so it actually makes pressure, liquid pressure down on the liner. And it is the model or the recipe of the liner with various holes in it that then in this model transmits.

Madam Chairman, that concludes my testimony on this.

CHAIRPERSON BAILEY: Mr. Carr?

MR. CARR: No questions.

MR. SMITH: Excuse me, I'm sorry. Before you go on, the page you just handed out is Page 4 of what exhibit, Dr. Neeper?

MR. NEEPER: This is Page 4 of Exhibit R2. It should say on each page.

CHAIRPERSON BAILEY: It is on the bottom of the graph.

MR. SMITH: You might want to move this in.

COMMISSIONER BLOOM: Looking at Page 6 maybe.

MR. NEEPER: Page 6.

DR. BALCH: This is Page 6?

MR. NEEPER: Thank you. I have again been reminded that I should -- I can't move because that would be practicing law without a license but I can submit this exhibit for acceptance by the commission.

CHAIRPERSON BAILEY: Any objections?

MR. FORT: No objection.

CHAIRPERSON BAILEY: It is admitted.

(Note: Exhibit R2-6 admitted.)

CHAIRPERSON BAILEY: Ms. Foster, any cross-examination?

MS. FOSTER: Yes.

CROSS-EXAMINATION

BY MS. FOSTER

Q. Dr. Neeper, in preparing Page 4 of Exhibit R2 concerning the HELP model, are you aware in the manual there's eight pages discussing the integrity of liners? Did you take any of that discussion and expertise into consideration?

A. I did not consider what the HELP model thinks is durability or performance of liners. I did consider what things its model includes and it's based on presumptions of pin holes and other kinds of holes in the manual.

Q. Thank you. Just so I understand what we are comparing here, in your demonstration, your infiltration rate is listed in inches. Is it not the case in the HELP model the infiltration rate actually comes out in English units in millimeters?

A. The printout of the HELP model is in English units, but I believe Mr. Mullins translated to millimeters.

Q. Millimeters not inches?

A. In his testimony.

Q. That's correct, but in your table you translated it into inches?

A. Oh, yes. This is for convenience of the way we often talk about infiltration. I could have said 25.4 millimeters.

Q. And in the review of the documentation, the HELP model, are you aware of the infiltration rates of 25 millimeters per year that I believe Mr. Mullins testified in his review of the statement?

A. I don't understand the question.

Q. Could you point to literature where it is discussed that you would have 25.4 millimeters of infiltration rate per year in New Mexico?

A. Yes, I could go find that literature because it deals with the recharge rates, but I did not do that. If you look back to my direct testimony, I utilized different soils, and in one case there was essentially no recharge. In the most extreme case there were about three-and-a-half inches per year of recharge all with the same measured subsurface moisture versus time. It depends on the soils heavily.

Q. I have no further questions. Thank you.

CHAIRPERSON BAILEY: Mr. Jantz?

CROSS-EXAMINATION

BY MR. JANTZ

Q. Dr. Neeper, could you go back to your slide of the graph please? So could you explain for me for clarification's sake the significance of head?

A. Head is what driving moisture through the liner. I do not know what recipe HELP model has, but it depends on the head across the liner.

Q. So the more fluid you have in a pit, the more it drives liquid through the liner?

A. The more -- the thicker the saturated layer sitting on top of that layer, the more liquid you will have transmitted by the liner and that is the key thing. There is another feature in that that you have to think about if you are doing this kind of model. That is, as you build up a saturated layer sitting on top of the liner, that encourages more evapotranspiration. You are maintaining a higher moisture potential in the region above the liner and you thereby would increase the evapotranspiration. But how much, you shouldn't take a guess at that. You would have to do the calculation to find out.

MR. JANTZ: Thank you. That's all I have.

CHAIRPERSON BAILEY: Ms. Gerholt?

MS. GERHOLT: No questions.

CHAIRPERSON BAILEY: Mr. Dangler?

CROSS-EXAMINATION

BY MR. DANGLER

Q. We can leave that slide up there where it is. Okay. So first let me ask you about the infiltration. This is like very basic, so bear with me because I'm really trying to understand this. Infiltration is not the same as the rainfall rate, is it?

A. Infiltration is not the same as the rainfall rate.

Q. Okay.

A. The rainfall happens on the surface of the ground. Infiltration is what passes some point that you name deeper in the ground.

Q. So is there a rough correlation? So when you said one inch of infiltration, is there any correlation between that and the average rainfall of the area?

A. There may be a correlation but it's going to be very dependent on the vegetation, the nature of the soil, the sunshine beating on the surface,

and it's for that reason in my own calculations I did not use rainfall, I took measured moisture at a depth in the soil and used that to drive the problem.

Q. Great. That helps me a lot. So we have the infiltration rate here on this column and you have the average head and this is the pressure that's building up from the saturated layer over the pit contents? Is that what I am interesting?

A. Again, this is from printouts of Dr. Mullins' HELP model so this is not my data, and the head is the average annual head as printed and the infiltration is the infiltration average annual that was used to drive the underlying Multimed model.

Q. Okay. And then the dots going up diagonally across this model, what do those dots represent?

A. Those dots represent my drawing a straight line or my attempting to draw a straight line through the data.

Q. Then you have a blue line that jags up and over, and what does the blue line represent?

A. The blue line connects the data points. You see one, two, three, four, five data points

showing those are southeastern points as labeled on the graph, and the Aztec point is not on there due to my own not finding it when looking for it in the printout.

Q. I guess I'm trying to understand the bulge that goes up the little carrot that goes at the top of the graph where it separates from the dotted line. What's that?

A. You are saying why does one point fall off?

Q. Yeah, I'm trying to understand that.

A. Yes. Not only does the average head on the liner fall off at that point, so does the annual average extreme point as printed by the HELP model. So you can say something is different right at that particular point. You don't get a perfect correlation. I can make a guess at it as one who works with these kinds of things, but I can't assert that my guess would be the truth. My guess would have to do with the frequency and intensities of the rainfalls as they happen there.

These things are sensitive to the timing because moisture comes in in pulses. If you have one big pulse a year, that could build up a big thickness on the liner. If you have many different

pulses you might not get anything on the liner, as perhaps illustrated by the Aztec data. So it's not surprising to find a point off the graph. What's surprising to me is how close you can come, rather than just a line or a smooth curve, rather than having a scatter of points on the page. It's trying to tell you there's a correlation here. There's a cause/effect going on.

Q. Okay. And as I understood your testimony introducing the slide, where Mr. Mullins was modeling that Aztec site it's barely not even on the graph there? Is that what I understood you to say there?

A. It could be on the graph. It's down close to the 00.

Q. And this may be really stupid and maybe obvious to everybody else but I'm still trying to understand this. Is your point being that as you get away from that extremely low infiltration rate and you start moving to different infiltration rates that the risk greatly expands because the pressure greatly increases? I'm trying to understand what that point was.

A. I can't address risk. I am simply addressing a feature of the model for our

understanding, and that is there is evidence that the liner is controlling the infiltration and so we must be aware of that when we set regulations. If we want to use the result of the HELP model broadly, we have to be aware of its limitations or what was implied by it.

Q. So I think I'm beginning to understand. Let me make sure I understand the point and hopefully this isn't insulting to the commissioners and helpful to them. What you are saying, therefore, is to get the low infiltration rate that would appear on this particular graph simply because of the way you graphed it, to get down in that area where the Mullins' modeling was, you have to have a very, very strong liner and that if you don't have that infiltration rate --

MS. FOSTER: Objection.

Q. I'm just trying to understand it.

MS. FOSTER: You are testifying, Mr. Dangler.

MR. DANGLER: I'm not trying to testify. I'm trying to understand it but I can stop and see if I am understanding -- if that's what we are meant to get from this.

CHAIRPERSON BAILEY: Objection overruled.

Q. Is that more or less what we are trying to get?

A. I can address the 00 point.

Q. Okay.

A. If the liner is holding that -- if the transmission through the liner requires a head, as soon as you don't have a head on it, you wouldn't get any transmission. However, if you had granular soil you would still have unsaturated flow through the soil. So I needed to know was there a 00 point or was that point somewhere else? Indeed, it's close to zero and that confirms the expectation if you get the head low enough there won't be a transmission through the liner by the nature of the assumption of liners.

Q. I think I get it. Thank you very much.

CHAIRPERSON BAILEY: Mr. Fort, any questions?

MR. FORT: Just a couple.

CROSS-EXAMINATION

BY MR. FORT

Q. Dr. Neeper, so when you get to the 00 point up there infiltration rate, basically no head, is that -- so you are confirming what Tom Mullins was testifying to?

A. That is correct. I'm not only confirming it, the only data on that chart are Mr. Mullins' data.

Q. Okay. Now, what difference does the four feet of cover do to getting the head on top of the liner?

A. I don't understand the question.

Q. Does that not reduce the infiltration?

A. In the four feet of head -- you are in effect asking me to repeat Mr. Mullins' testimony but I am then saying what I believe I heard Mr. Mullins say and what I understand from the HELP model.

Q. So you are --

A. In the top four feet there is evapotranspiration which removes moisture to the atmosphere. If you have a saturated layer in there, the pressure, the -- I'm struggling for the right word -- the moisture potential will be higher and the evapotranspiration will be higher.

So in effect, having a liner can increase the evapotranspiration and reduce the ultimate infiltration.

Q. Below the liner?

A. Below the liner.

Q. I have no other questions.

CHAIRPERSON BAILEY: Commissioner Bloom?

COMMISSIONER BLOOM: Just a couple questions. Good morning, Dr. Neeper.

THE WITNESS: Good morning.

COMMISSIONER BLOOM: So Mr. Mullins, when he was talking about the southeast, you referenced his testimony. I'm looking at Page 6 where he cites Page 2, infiltration rates as low as .03 millimeters a year to 0.1 millimeters per year on the high end. It quotes the study by Walvoord and Scanlon 2004. Those sort of infiltration rates would be depicted here?

A. Those -- I didn't look up just which the of the Walvoord and Scanlon studies he was looking at. There were a number of them, I think, in the Texas and New Mexico area, but the ones I looked at the most were out in Nevada. In any case, they weren't based on situations with liners, they were looking at flowing in very arid systems. And, in fact, even the IPANM -- excuse me, even the NMOGA, one of the NMOGA exhibits is from one of those studies. It wasn't Walvoord and company but one of the people who had done them and done more studies. And in that document he points out there's a wide

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region of ground where it flows upward. So it isn't always strictly downward or strictly upward. It can be going both ways in the same depth of soil but at a low rate and we don't always understand that. You will find in one of my publications dealing with that, and we were struggling to understand it at the time.

COMMISSIONER BLOOM: Could we turn to your Page 2 of your Exhibit R2, please. Look at Mr. Mullins' exhibit, Page 2. On the high end of the infiltration rate you see .1 millimeters per year. Here you are essentially running through HELP and Multimed and coming out saying if we had one millimeter per year we would end up with this time travel of 4500 years to 100 feet? Correct?

THE WITNESS: I must interpret this again. This is intended to show that with a pencil and paper, back-of-the-envelope calculation we can understand the results of the HELP model, not duplicate them. But we can get a speed just by guessing, get a speed that gives us the same order of magnitude time travel so we understand what is going on in the Multimed model. The importance of it is if you have places with higher infiltration, you will get a much higher speed.

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COMMISSIONER BLOOM: And does that make the infiltration rate one inch a year which would be equal to, I think you said, 25.4 --

THE WITNESS: 25.4 millimeters.

COMMISSIONER BLOOM: So that would be a faster rate, correct?

THE WITNESS: 25.4 times.

COMMISSIONER BLOOM: Okay. Then the time to travel that 25 feet is 46 years?

THE WITNESS: That's what I got. Let's see. 1,000 divided by 25 is 40 so it comes out pretty close.

COMMISSIONER BLOOM: And you said that I believe in response to some questions from Ms. Foster that one inch per year infiltration or even more can be found in New Mexico?

THE WITNESS: Yes, we certainly can expect that. Otherwise we would be more short of groundwater than they are sometimes.

COMMISSIONER BLOOM: Okay. And did you give us a source for that?

THE WITNESS: I did not. I said I think we can go one up, but perhaps a more relevant reference would be my own direct testimony in this hearing where I showed by varying the soil and using

the same measure moisture level at a 20-inch depth I could generate either almost no infiltration or up to several inches with standard soil. That is a slide back in my testimony. We can go back and look at it if you want to.

COMMISSIONER BLOOM: I don't think that will be necessary. That's all I have. Thank you.

CHAIRPERSON BAILEY: Commissioner Balch?

DR. BALCH: For the higher infiltration rates that you referenced and that I think Mr. Bloom was asking about, where would those be most common in New Mexico?

THE WITNESS: They would be most common in the more agricultural areas. If I were looking for that and if there were data available I might look at places in Rio Arriba County, places near Mora. We have very arid regions and we have less arid regions and I would be looking in the less arid regions. I'm granting you that most of our oil and gas activity is in arid regions but not all. We are making rules to cover the whole state.

DR. BALCH: On your cross-plot, I think Mr. Mullins had data for up to 1.6 inches of infiltration and that gave a .3 hydraulic head on the liner?

THE WITNESS: You are referring to a slide?

DR. BALCH: You are plotting Mr. Mullins data?

THE WITNESS: I am plotting Mr. Mullins' data.

DR. BALCH: Do you think -- how far up can you extend that straight line before it scattered the data?

THE WITNESS: I have no idea. It's not going to be linear because the process itself is not linear, so I was surprised to see that it looked linear. As you increase the level of saturation of the head, you are going to get more and more evapotranspiration back out the top, thereby reducing infiltration somewhere -- this is a non-linear process and I wouldn't extrapolate beyond data in this case. All I can do is try to illustrate. I'm not saying either truth or untruth of the numbers. I'm saying it's telling you something about how the HELP model operates.

DR. BALCH: One thing that I think is of particular interest is concentrations of chlorides, not necessarily the infiltration rate itself. What do you think the impact of an increased infiltration

rate is going to be on chloride concentrations once it gets down to the groundwater?

THE WITNESS: I'm giving you an opinion.

DR. BALCH: That's what I am asking for.

THE WITNESS: Yes. At the bottom of the contaminated layer I would expect the infiltration to be initially nearly saturated. That is many thousands parts per million chloride. Why? Because it has gone through some finite layer and it's able to dissolve whatever salt is in there all the way through. It doesn't care whether you start with low chloride or high chloride. If the chloride is in there it will try to dissolve it out.

So initially, I would expect a very concentrated infiltration moving downward. As time goes by, if the infiltration is adequate to begin to exhaust the supply of the contaminant in the buried layer, then the concentration from the downward moving material will begin to fall off. You will see that in my plots of the calculations I give.

DR. BALCH: All right. I don't think any of the models presented to us predict the salt bulge. Would that be correct? I know Mr. Mullins' don't in the Multimed model.

THE WITNESS: The Multimed model cannot

predict the salt bulge. It's just how fast is water flowing down.

DR. BALCH: Is there in other control in the model also on salt transport?

THE WITNESS: The salt bulge has to do with the up and down. Putting in -- if the salt is coming from ground surface, as the Nevada studies claim it is coming with the rainfall, then you put some into the ground and then with evapotranspiration it takes the moisture back out of the ground leaving the salt behind and the next pulse comes along and maybe washes it further down, but you reach some kind of a dynamic steady state if your infiltration is low enough. If your infiltration is sufficient you will just keep washing it on down.

Now, if you look at one of the calculations I did in what I call a tight soil, a soil containing a lot of clay, it moved down. It didn't form a bulge but it formed a gradient much like what you would see in Dr. Buchanan's calculations on the pit we excavated. If you look at the calculations I did in a more loose soil, a more sandy soil, you see a pulse of chloride moving down and it continues to move.

DR. BALCH: That leads to my last question which is about pulses. Most rain events in New Mexico are a pulse. They are a limited time and a range. Those can be 15 years apart or one year apart. At what point in your estimation are pulses close enough to where they are going to impact overall infiltration?

THE WITNESS: The only way I could answer the question myself was to put in measured moisture, and if you look at -- you have now backed me up to my direct testimony so I acknowledge that, but if you look at the slides from my direct testimony in that exhibit, you will find the chart of the measured moisture, volumetric moisture 20 inches under the surface. And in that, at that depth you will see pulses and they are different for different years. What's surprising was in a fairly dry year with more or less one major pulse you could still drive moisture downward with it. That's because it wasn't all taken back out the top, depending on the type of soil we have, the soil underlying the surface and the vegetation.

DR. BALCH: I guess I have one more question. A lot of the data going up had to do with time tables and for some of the models we are

looking at time scales on the order of thousands of years. With Mr. Mullins' testimony today he believed the liners would be degrading in 2- or 300 years, would it make more sense perhaps to model without liners at all?

THE WITNESS: I think we should model without liners at all. I modeled without liners at all, and I think the process of closing the pit, stabilizing the pit, stabilizing a trench fill, we have a difficult time trying to believe that a liner, a 20 mil liner survives all of that intact. Now, sometimes parts of it will. In one pit in which I participated in filling, the liner had been folded over the top and we found that right under -- I believe I testified I found the salt cake. We never found the bottom liner in that pit even though it had been lined. We did find chloride moving on down into the ground. I think the bottom of the chloride plume was 30 feet below ground level at that time.

DR. BALCH: I think Mr. Mullins testified that his models were not impacted by 100 years for the entire life of the model.

THE WITNESS: You and I have different understandings. I understood him to say he hadn't

run it without a liner.

DR. BALCH: Thank you.

CHAIRPERSON BAILEY: He asked all my questions. I have none for you. Dr. Bartlett, do you have any redirect for your client?

DR. BARTLETT: No.

CHAIRPERSON BAILEY: You may be excused. We had not scheduled any other testimony today, whether we call it direct or rebuttal or whatever label we want to put on it.

MR. NEEPER: Madam Chairman, we may have a point of order. At one point you were trying to set up a schedule for a meeting in August. I did submit my calendar to the clerk and I am gone during part of that.

CHAIRPERSON BAILEY: Let's pull out our calendars and see when is the next time that we can meet. It appears as though July 4th, which is a holiday, through the 16th is not a good time. July 17, 18, 19th and 20th, Tuesday through Friday, is anybody available or not available for July 17, 18, 19 and 20?

MS. FOSTER: I am not available.

CHAIRPERSON BAILEY: That's right. You had a long period of time. What were your dates

that you were unavailable?

MS. FOSTER: July 15 through August 10.

CHAIRPERSON BAILEY: That leaves none in July. August, we are looking at August 22nd through the 31st. Are people not available during that period of time?

MR. JANTZ: I have a hearing in district court at some point during that time. Let me quickly look at the order.

CHAIRPERSON BAILEY: Are we all available August 22nd and 23rd?

MR. JANTZ: I don't have anything.

CHAIRPERSON BAILEY: Yes? All right. Let's schedule August 22nd and 23rd for the next meeting date for a continuation of these consolidated cases 14784 and 14785. At that time -- well, by Friday we will have information from Mr. Jantz so on August 22nd we will be begin with -- I'm not going to put a label on it -- discussions. Any further testimony by anybody?

MS. FOSTER: Madam Chair, I am assuming that Mr. Mullins -- well, Mr. Mullins will be the expected rebuttal witness that I will put on to OGAP's testimony. However, I would need some time for Mr. Mullins to prepare rebuttal exhibits based

on OGAP's, so I'm guessing OGAP will go for the better part of the first day and then I will need time to put my rebuttal witness on if we deem it necessary. At this point I don't know but it would be Mr. Mullins' testimony.

MR. SMITH: But we do know that Dr. Buchanan is going to testify?

MR. CARR: Yes, I assume these dates are fine. I believe they are.

CHAIRPERSON BAILEY: Just in case, the suggestion has been made to also pencil in the following week, August 27th through 31st just in case.

MS. FOSTER: That would be fine.

MR. SMITH: I may have difficulty on the 27th but I will have to check.

CHAIRPERSON BAILEY: Is everybody else available?

DR. BARTLETT: This will be at the Wendell Chino building?

CHAIRPERSON BAILEY: Yes, in our regularly scheduled Porter Hall. Mr. Smith may not be available the 27th. Let's pencil in the 28th, the 29th, the 30th and 31st if we need those dates. That will conclude the hearing. On the 22nd we will

have Mr. Jantz' person. Then the 23rd would Mr. Mullins be able to respond?

MS. FOSTER: I hope so. Again, I have asked for OGAP's exhibits that they intend to present on the 22nd and as soon as he can give us the exhibits obviously we will be able to speed up our response if necessary. I'm hoping, yes, ma'am.

CHAIRPERSON BAILEY: Dr. Buchanan on the 23rd possibly going into the 28th.

MR. CARR: Right.

MR. SMITH: The OGAP exhibits will be forthcoming with the statement of intent on Friday?

MR. JANTZ: Absolutely. Yes.

CHAIRPERSON BAILEY: All right. Then we will continue this hearing.

MR. SMITH: We have public comment.

MS. GERHOLT: Madam Chair, what time will we resume at Porter Hall?

CHAIRPERSON BAILEY: At 9:00 o'clock. Garrett VeneKlasen?

THE WITNESS: Madam Chair, would you like me to stand here?

CHAIRPERSON BAILEY: Would you like a sworn or unsworn statement?

THE WITNESS: Sworn.

GARRETT VENEKLASEN

after having been first duly sworn under oath, testified as follows:

CHAIRPERSON BAILEY: You will be subject to cross-examination. We limit public comments to five minutes.

THE WITNESS: Madam Chair, members of the committee, my name is Garrett VeneKlasen and I represent Trout Unlimited as their New Mexico public land coordinator. As a lifelong resident and avid hunter and angler of this fine state, my organization is concerned about the future of New Mexico's valuable groundwater and surface waters, and important and often limited quality fish and wildlife habitat. TU's basic mission is to protect coldwater fisheries and their watersheds across the U.S. Watershed health begins at the top of the highest mountains and includes all of the lands that eventually lead to the bottom of any and all of our precious drainage.

We strongly support the NM OGCC maintaining the current Pit Rule, which includes the closed-loop, below-grade tanks and sumps rule based on its scientific and pragmatic approach protect New Mexico's important resources. As oil and gas

development increases in this state, the Pit Rule becomes even more important in providing the public and the environment a moderate sense of safety and well-being. The oil and gas business, by its very nature, is an often dirty business. The current Pit Rule provides a level of protection as well as an economic investment that minimizes risk for all who depend on New Mexico's resources. Not having the Pit Rule is a poor economic investment with a high risk return for all of New Mexicans. New Mexicans sportsmen contribute nearly 500 million dollars annually to our state's economy and support more than 8,000 jobs state-wide. This is a sustainable, rapidly-expanding economic driver that relies upon healthy watersheds and large expanses of unfragmented back country.

During the 2007 rule making hearing for the Pit Rule, ample evidence was provided from the numerous state agency professionals that work in this state's regulatory body -- evidence supporting increasing protection measures because of incidences of soil and water contamination, infiltration and leaks from unlined pits, temporary pit liner failures and pit tears. There are many vulnerable areas within the hydrogeology of this unique country

and the current Pit Rule helps protect all of us including the oil and gas companies, from short-term and long-term harm.

The use of closed-loop systems and protective pit tanks are being used in other highly productive oil and gas states, specifically Wyoming in the Pinedale Anticline and Jonah fields and it is a recognized part of the cost of doing business. We must stress that Trout Unlimited is not against energy development when done responsibly and with respect to the public and private landscape. However, taking unnecessary risks with our health and environment and for the future of our generations is something we consider irresponsible.

With these considerations in mind, we respectfully ask the Conservation Commission to maintain the status quo of the Pit Rule.

I want to quickly address one of the committee member's comments about rain events in our state. I spent a lot of time outdoors. I'm a hunter and fisherman, spent a lot of time in the Aztec area in the San Juan and I have seen some of these three-inch rain events and I have seen the San Simon Canyon run at 2,000 CFS. It's a dry wash that goes from no water to 2,000 CFS. I have seen rain

events that cover 50 to 100 square mile area, and I have seen the ground move from the rain events. I have seen three inches of standing moving water across miles and miles of country. And I am curious to see what the rain events do. I don't know if that was necessarily addressed in some of the data that was presented today. These rain events happen all over the state. As we develop places like Mora County and Rio Arriba County that have really, really fragile watersheds that affect native species of trout, the cutthroat trout, for example, I am curious to see what the rain events do to the watersheds.

So I think it's important to think long-term and be visionary. I think we have a moral obligation to our kids to be responsible and not prevent development, but do it responsibly. I think that's the message I want to convey. Thank you very much for your time.

CHAIRPERSON BAILEY: Any questions for this commenter? Thank you. Any other business before the commission today? Then we will see each other August 22nd.

(Note: The hearing was adjourned for the day at 11:12.).

REPORTER'S CERTIFICATE

I, JAN GIBSON, Certified Court Reporter for the State of New Mexico, do hereby certify that I reported the foregoing proceedings in stenographic shorthand and that the foregoing pages are a true and correct transcript of those proceedings and was reduced to printed form under my direct supervision.

I FURTHER CERTIFY that I am neither employed by nor related to any of the parties or attorneys in this case and that I have no interest in the final disposition of this case.

JAN GIBSON, CCR-RPR-CRR
New Mexico CCR No. 194
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