SUPERIOR COURT OF CALIFORNIA

COUNTY OF RIVERSIDE

DIAMOND FARMING COMPANY, a California corporation; and WM. BOLTHOUSE FARMS, INC., a Michigan corporation, Plaintiffs, vs. CITY OF LANCASTER; ANTELOPE VALLEY WATER COMPANY; PALMDALE WATER DISTRICT; PALM RANCH IRRIGATION DISTRICT; QUARTZ HILL WATER DISTRICT; ROSAMOND COMMUNITY SERVICE DISTRICT; MOJAVE PUBLIC UTILITY DISTRICT; DOES 1 through 200, Inclusive; and All Persons Unknown, Claiming any Legal or Equitable Right, Title, Estate, Lien, or Interest in the Property Described in the Complaint Adverse to the Plaintiff's Title, or any Cloud Upon Plaintiff's Title Thereto, Defendants. AND OTHER RELATED ACTIONS.	Case No. 353840 (c/w Case No. 344668 and 353840) Volume 2 of 3 Pages 163 - 414

REPORTER'S TRANSCRIPT OF ORAL PROCEEDINGS

BEFORE THE HONORABLE JOAN F. ETTINGER, COMMISSIONER PRESIDING
DEPARTMENT 10
Tuesday, August 6, 2002; ~~Wednesday~~ Thursday, August 7, 8, 2002

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(Appearances continued to the following page.)

Reported by:
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Certified Shorthand Reporter
Official Court Reporter
Riverside County Superior Court

(Appearances continued from the previous page.)

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RIVERSIDE, CALIFORNIA - TUESDAY, AUGUST 6, 2002

THE COURT: Mr. Dunn?

MR. DUNN: Thank you, your Honor.

Q. (BY MR. DUNN:) Mr. Scalmanini, before the lunch break, you had described the basin boundaries as your opinion in general terms.

You had mentioned earlier that one of the significant criteria for basin boundary determination is the water level difference on each side of a fault line.

Can you, on this exhibit, which is Exhibit Number 11 -- excuse me -- 127 -- 126, show on a segment-by-segment basis now in detail how that concept is illustrated as part of your opinion here.

MR. JOYCE: Your Honor, I would interpose an objection. This very issue was addressed at his deposition. In his deposition, he testified that he had not done an analysis in an attempt to quantify the underflow across any of the boundary lines. And I gather that now that's exactly what's being elicited from him.

THE COURT: I don't think you're asking for the flow rate.

MR. DUNN: I don't have any intention of doing that.

MR. JOYCE: Okay. You're limiting it strictly to a line analysis?

THE WITNESS: A what?

MR. DUNN: Hopefully, in plain --

MR. JOYCE: What do you call it? Water contours?

THE WITNESS: Let me answer the questions. Don't use

words like "hydrographic" if you don't know what they mean.

THE COURT: The question is, you want me to explain how the fault line acts as a barrier?

MR. DUNN: Thank you.

THE COURT: I have to have these things in real simple terms, but --

MR. DUNN: We're trying.

THE WITNESS: Okay. Well, how about if, before we walk around the basin, we illustrate what is meant by this water level difference or head difference across the boundary.

Q. (BY MR. DUNN:) Would you do that for us first, please.

A. There's another -- yet another schematic illustration which we premarked as Exhibit 112.

Q. All right. Let me hold you just for a moment while we all get out Exhibit 112 so that we all have it in front of us.

And we'll put it up here on the ELMO so that people can generally see what it looks like.

A. Okay. If I -- I'll walk up there and point to it.

Q. Would you please?

If that's okay with the Court.

THE COURT: Yes.

Q. (BY MR. DUNN:) Up on the ELMO is Exhibit Number 112.

Hold on one second, Mr. Scalmanini.

All right. Thank you.

A. Okay. In my discussion this morning of how you get from calling it in generic definition of the term "groundwater basin," the application of that to a specific situation in nature -- is that a pointer?

Q. Yes, sir.

A. I can use that.

MR. DUNN: May I approach, your Honor?

THE COURT: You may.

MR. DUNN: Thanks.

THE WITNESS: It's an electronic-type pointer?

Q. (BY MR. DUNN:) Yeah.

A. Well, then I can probably sit over here and just point. The trouble is I can't read it from that far away either.

All right. So I said a collection of criteria had been developed and written down by a man named Richter a number of years ago. And the criteria vary in how applicable they are to a physical setting in nature as to whether or not any of the criteria legitimately forms the boundary of a basin. Some of the criteria are more preferable than others if they conveniently exist in the natural setting.

Q. So if I hear you correctly, is it fair to say that some of the criteria are a stronger indicia of a boundary than other criteria? Is that fair to say?

A. That's correct. That's exactly right.

Q. All right. Please continue.

A. Okay. So the most preferable boundary criteria are those -- as summarized in this illustration, is groundwater basin boundaries with no appreciable underflow. Meaning that when you get to the boundary, there is no -- just that -- appreciable underflow.

Q. Now, I'm going to interrupt you again.

When you say "appreciable underflow," does that mean there could be some type of underflow?

A. Yes.

Q. All right.

A. But ultimately, in terms of the available groundwater supply inside the boundaries, that's not a significant component of that water supply.

Q. All right.

A. All right. What -- though this looks busy, you know, what I really want to focus on is ultimately this fault that's drawn in here in the middle. But in generally the same shape as we saw with the schematics earlier, we'd have some outermost boundaries, which could be called the watershed boundary, the water that falls on the ground surface is going to be trapped inside those. Okay? And then we have various factors underground that influence whether or not water can be stored and readily flow in those subsurface materials. So over here at the outside, bedrock generally considered to be nonwater-bearing, of no consequence as water supply.

Q. This exhibit, it is, in fact, labeled as bedrock; is that correct?

A. That's correct.

Okay. Focusing on the fault for a second, looking --

Q. Which is indicated where?

A. Which is more or less a vertical line through the middle of this drawing.

Q. Okay. With the arrows at the bottom?

A. Suggesting that on one side of the fault, the earth

materials have been moved up; and on the other side of the fault, the earth materials have moved down. So they don't align well across the fault as they might have before the fault moved. Okay. That's right here.

And you can see a line that comes down through the subsurface and abuts the fault labeled "water table" on the left side of the fault, and you can see another line labeled "water table" on the right side of the fault. And today -- earlier, when I talked about significant water level differences, this is what is schematically illustrated here, that the fact that this fault has, I'll call it, sheered the earth materials and offset them from one side to the other, then this is relatively impermeable and will, in effect, in the subsurface, dam up water on one side versus the other.

An analogy would be an earthen dam. That it (sic) can go look at one in countless places in California and there's a lake dammed up behind the earthen dam. The water levels are very high relative to what the water levels might be in the downstream creek bed or whatever is downstream of the dam location.

Does the earth -- is the earthen dam 100 percent impermeable? Basically, no. Man puts relatively low, low permeability material in the core of that dam to keep it from leaking and ultimately failing, although we've had a lot of instances of cases in the news about dams that have failed, including a couple of -- here in Southern California, historically.

But fundamentally, you know, we try to impede the permeability as possible, but there's still some leakage. For

all practical purposes, all the water's impounded behind the dam. For all practical purposes, in the subsurface, groundwater is impounded on one side and may, in consequence, leak across this fault, but is of no significant contribution to the available water supply on the other side.

That schematically is what I was trying to describe with the discussion of water level differences earlier before lunch.

Q. Okay. Now, how does that relate to the boundary lines that you have determined here for this basin?

A. Well, the best way to answer that is when you asked me when I interrupted you.

Q. All right.

A. Which is basically to walk around the boundary.

Q. Let's do that in a segment-by-segment basis.

A. Okay.

Q. And before the lunch break, we ended up just before we were going to get to that southeast corner and sort of get into a detailed explanation of that. Let's avoid that for the moment. Let's kind of go around the basin boundaries and end at that southeast corner.

Can you do that?

A. I think I can. If you'll allow me to just stand there and sort of -- I don't have it memorized from segment to segment, so I'll just stand there and point and work my way around the boundary.

MR. DUNN: If that's fine with the Court.

THE COURT: He can do that.

Would a highlighter where he can highlight on the map be

of any benefit?

MR. DUNN: Actually mark it?

THE WITNESS: Well, what we'll end up with -- I mean, I have a highlighted version if you want it, but we'll end up highlighting the whole thing.

THE COURT: Well, then, let's not do that.

Q. (BY MR. DUNN:) Now, Mr. Scalmanini, what you will need to do for the record is take this -- when you go by area -- excuse me -- segment by segment, you need to identify for the record which segment on this exhibit you're referring to.

A. Okay.

Q. And, again, what we would like to have you do, if you would, please, is end up in a southeast corner, because it's noticeably different --

A. Right.

Q. -- from the other red line on the -- apparent on the exhibit.

A. Okay. Well, the first segment can be fairly large.

Q. Okay. Can you identify that, please.

A. If I start in the southeast corner on the south side of the basin, that -- the red line that's mapped here, which is originally Bloyd's line, has a collection of black dots and the red line. And basically -- and that's identified over here in the legend as saying that this entire -- from the southeast limit of that boundary line almost to the far western side of the south boundary --

Q. Okay. Is there a point of reference there on that southwestern boundary?

A. Well, let's just say that it is the boundary between township, correction -- yeah. The townships that are on either side of range 16 and 17 west. That would be this north/south line. Okay. On the west side is so-called range 17 west. On the right side is so-called range 16 west. Okay.

Okay. So from as far southeast as Bloyd went to that location along the southern boundary, the boundary is basically an unnamed fault associated with the San Andreas Fault zone, meaning that this entire area down here is, I'll say, associated with the San Andreas Fault zone's, a major fault that extends in a northwesterly direction immediately south of this basin.

Q. Just so we all understand, when you say "the San Andreas Fault, " we're talking about the commonly known San Andreas Fault down here in California?

A. The San Andreas Fault. That knocked down San Francisco, et cetera.

So the earliest investigations and subsequent have identified that same boundary based on the fact that there is significant measurable water level differences across a very short distance, which was an application in the -- this case to the illustration I just had in exhibit number -- whatever that was.

Q. 112?

A. 112. Okay.

Complicated by the fact that the geologic materials on the south side of this fault are not exclusively, but for all practical purposes, all mapped to be consolidated bedrock.

Q. Okay. Does it make a difference if it's not exclusively

consolidated bedrock material, in your opinion?

A. If it's not exclusively.

MR. ZIMMER: It's vague. Objection. Vague.

THE COURT: Well, is there --

THE WITNESS: Not to me, it's not.

THE COURT: Is there a generally accepted definition of "exclusively bedrock" in civil engineering terms?

THE WITNESS: Well, being the same as what I call straight English. Exclusively, is it all bedrock or not? And the answer is no. And so are there -- is there a place where you can find something other that pure bedrock somewhere along this several miles of length?

THE COURT: I'll allow that.

THE WITNESS: And does it make any difference in terms of defining a boundary, no.

Q. (BY MR. DUNN:) Okay. Why?

A. Because, as I think I said earlier today, we don't get perfection in nature. So it would be nice if nature had deposited water-bearing materials in nice, neat, clean boundaries with hard, you know, boundaries around them. But it didn't. And so there are places where, for example, a surface stream might drain out of the mountains and down into this valley, this being the big Antelope Valley. Okay. Where it does that, it cuts through on the surface and in the immediate subsurface, what might be considered the perfection of a fault boundary or hard rock baundro (phonetic). So there can be some relatively shallow materials in the subsurface that would allow water to flow in the bed of the stream or something like that.

That is of such small consequence both laterally and vertically that it's fair to draw a boundary across it and say I can account for the flow that takes place in that small, quote, unquote, "gap." But it doesn't say now I have to go chasing for some untold distance, you know, upstream trying to find where that's totally enclosed in.

Q. Okay.

A. All right. Okay. So that's the first lengthy segment.

Q. And that runs essentially from the southeast corner to the southwest corner on this exhibit.

A. Almost all the way. Yeah.

Q. What would be the next segment?

A. Well, the next segment, we could go -- the rest of the south boundary, you know, the last -- it's about -- about 5 miles. Okay. From that -- that range break. You know, from the end of the fault.

Q. You know -- I'm sorry. I'm going to interrupt you. I didn't ask you a question.

That first segment, what's your best estimate as to the length of that in miles? Just to give us an understanding of the size of the area that we're dealing with.

A. Almost 50 miles.

Q. I'm sorry. 50?

A. Almost 50, 5-0.

Q. Okay. Please continue.

A. So the next five.

And then turning the corner, so to speak, around the western-most tip of the basin and then proceeding northeasterly

to the Cottonwood Fault, the boundary consists of the contact between unconsolidated sands and gravels that form an aquifer system on the inside and consolidated nonwater-bearing materials on the outside. Okay.

Q. Okay.

A. So the solid red line, no dashing or hatching or anything to color this, is that bedrock contact.

Q. So if I understand your testimony correctly, are you saying that there's a difference just in the -- in the porous nature of the material on either side of that segment of the red line that you just described? Is that what you're saying?

A. Yes.

Q. Okay.

A. Both porous and -- well, yeah. Porous nature and permeable nature.

Q. All right.

A. Both.

Okay. So we are now to what might be called the northwest corner of the basin. And now proceeding generally east, maybe slightly southeast direction, for about, say, 4, 5 miles, is the mapped Cottonwood Fault. And then another couple of miles is a continuation of that fault, but not firmly mapped.

Just let me check one thing here. Yeah. Where approximately located. And so the next segment could be from that northwesterly corner along the Cottonwood Fault to where the Cottonwood Fault intersects the so-called Randsburg-Mojave Fault which extends at great lengths across the Mojave basin and Neenach basin.

Q. And the total length of that segment would be what, according to your best estimate?

A. Looks like about 6 or 7 miles.

Q. All right. And would you see -- or would you expect to see, rather, the type of fault displacement scenario that we have here on Exhibit 112 that's up on the ELMO? Is that what it's illustrated there? Or is it something different?

MR. JOYCE: Well, your Honor --

THE WITNESS: To be honest --

MR. JOYCE: Excuse me. I would object that that's three questions in one. It's compound.

THE COURT: The last question?

MR. JOYCE: He went from hypothetical, is the condition as illustrated, to is it identical. I mean, he's --

THE COURT: Well, is it what's up there, is it different.

Why don't you just rephrase.

Q. (BY MR. DUNN:) See Exhibit 112 up on the ELMO?

A. Yes.

Q. Is that indicative of this segment that you just described?

A. I'm not sure that -- because here, the -- on -- the previous investigators have not used water level difference to postulate a fault. They've used the fault itself. Okay.

So down here where I said, you know, "unnamed fault associated with," and then this dot pattern indicates that the reason the faults are unnamed is that they're postulated to exist from significant water level differences, up here along the

Cottonwood Fault, that wasn't the case. He called the Cottonwood Fault the boundary.

Okay. Then from the intersection of the Cottonwood Fault and the Randsburg-Mojave Fault, the basin, I'll say, jogs a very small segment up the Randsburg-Mojave Fault about, I'll say -- nominally looks like maybe half-a-mile to the intersection with what's been alternately called the Rosamond Fault and the Willow Springs Fault, the same fault that's had two different names historically in reports. So the short distance there is the Randsburg-Mojave Fault. And there, the investigators have included some postulation of the exact location from the significant water level differences.

Then beginning at the intersection of Randsburg-Mojave and Willow Springs Faults, the boundary or next segment extends a -- I'll say a couple of miles in a southeasterly direction based on a postulated fault from significant water level differences. And then there is mapped faulting of that -- as I said, it's been called Rosamond and Willow Springs, alternately, for several miles -- about 5 or 6 miles to -- basically, to the east. And then a continuation of that faulting, but in terms of an estimated location as compared to a precisely mapped location, for another about 8 miles along -- well, what's become a boundary immediately north of Rosamond between the Antelope Valley and Fremont basins.

I'll tell you in passing that there -- the -- the mapping of the fault is, in part, supported by observed significant water level differences across the fault along that -- the segment that I just described.

Q. And I'll ask you, again, is that indicative of something that we would see in Exhibit 112?

A. Yes. That's exactly indicative of what we see in Exhibit 112.

Q. All right. Okay. What would be the next segment?

A. All right. The next segment, I'll call a -- the short gap that we talked about this morning. It's -- I didn't specifically point it out, but it's in the general vicinity immediately north of Rosamond. I didn't put the Tropical Hills on this map, but the Tropical Hills are, I think, immediately north and slightly west of Rosamond. And immediately east of that is the gap that we talked about that's identified in both -- one of the two places where there's some flow across the boundary. This one, I think, was --

Q. And you're referring to something.

What are you referring to?

A. I'm referring to Bloyd.

Q. All right.

A. And the one I discussed this morning that Bloyd reported the flow there of the quantity of the underflow through the throat of that gap is estimated to be about 300- to 700-acre feet a year. Okay.

Q. Okay.

A. Okay.

Q. And what does that mean, you have a gap and there's a number of acre feet that flow through as you just described?

MR. ZIMMER: Your Honor, I have to interpose an objection to that 300 or 700 feet per unit. That's somebody

else's calculation, not this expert's. He's also way beyond what he testified to at his deposition.

THE COURT: Well, I believe he's relied upon his other calculations.

But where is it in the deposition that it's beyond?

MR. ZIMMER: He did not rely upon that in his deposition. I think he would admit that.

MR. DUNN: Let me just ask him a question for foundation.

Q. (BY MR. DUNN:) Are -- these estimates of water, does that come from the Bloyd report?

A. Yes.

MR. DUNN: You want to withdraw that objection?

THE COURT: Wasn't the Bloyd report something he said he relied upon?

MR. DUNN: That he produced during his deposition. In fact, he gave you a copy.

MR. ZIMMER: He relied upon the Bloyd report, but he said he had no opinion with the flow into or out of this line drawn. He had not studied it, had not analyzed it, and did not know whether it was medium flow, a lot of flow, or no flow.

MR. DUNN: I suggest we take that up on cross-examination. We have a disagreement on that.

MR. ZIMMER: That's fine, your Honor. As long as it's noted.

THE COURT: We can do that.

MR. DUNN: One thing that's clear, it comes from the Bloyd report. And it's part of his opinion and it was produced

for plaintiffs' inspection. I don't think it should be an issue. If counsel wants to make it an issue on cross-examination, so be it.

THE COURT: All right.

Q. (BY MR. DUNN:) Anyway, Mr. Scalmanini, talk to us about what the Bloyd report said.

A. Well, I just said. Okay. So that's the one of the two, quote, unquote, "gaps" that's about a half-mile wide. An estimated 300 to 700 feet a year flow through the gap. What was the significance of that?

Q. Right. That's what I asked you.

A. Again, it's the recognition of the gap that we don't get perfection all the time in the real world. And we can map in this case tens of miles of boundaries that, you know, I'll call it, nicely fit criteria of, as summarized on that exhibit on the screen. That's 1- -- I forget now the number.

Q. 112.

A. You know, no appreciable underflow. We can argue about whether or not 300, 700 feet is appreciable. But the fact is that in contrast to seeing, you know, a significant, you know, cliff-like change in water levels as depicted in Exhibit 112, that there's, call it, a smoothness to the flow through this gap that's been identified, there's some flow. So it may not be a perfect boundary, but it's able to be handled in terms of ultimately analyzing the overall availability of water supply in this basin by recognizing it exists and accounting for any flow that goes across it, whether it's coming in or going out.

Q. All right. What's the next segment, again?

A. The next segment really can go a long way -- from where we are now is about the north -- we're in the middle of the north boundary, you know, in terms of length. And so we're immediately north of Rosamond Lake. And as you can see here, the red line is solid all the way around to the, call it, I say, two-thirds of the way down the eastern side.

Q. All right.

A. Okay. All of that with exception of a gap that I've already mentioned, but I'll describe again --

Q. And -- I'm sorry. I'm going to interrupt you. When you say two-thirds down the eastern side, can you be more specific as to a point of reference? Is there another perpendicular line there?

A. Well, I'll say that the -- that the reference would be to the vicinity of the Saddleback Buttes. And in terms of locations of map-type identifications, it would be about the midpoint of township 7 north.

Q. So I don't -- so for the benefit of the Court, can you just show from what point to what point.

A. Okay. So the boundary I'm talking about -- but I'll -- I really -- I'll break it into the subpieces in just a second. But from immediately north of the west end or west side of Rosamond Lake, a continuing -- around the perimeter in a northeasterly direction, turning northerly and extending around the Lancaster, North Muroc, and Peerless subbasins that were mapped by Bloyd, continuing to the extreme most northeastern corner of the Peerless subbasin, and then down the eastern side all the way past Rogers dry lake, past Edwards Air Force base,

and down to what I just said was about the midpoint of township 7 on this, is all mapped as a contact between unconsolidated aquifer materials on the inside basin side and consolidated basement rock mapped to be nonwater bearing or considered to be non- -- reported to be nonwater bearing on the outside of the basin.

Now, I probably should have stopped, but this morning we also talked about second place where there is a connection that is not literally bedrock. And that would be this throat-type gap between the northeastern, let's say, side or portion of the North Muroc subbasin or the overall Antelope Valley basin and the Fremont basin in the City of California to the northwest. And that one, I discussed, also, earlier, but the gap, I think, was -- is slightly more than a mile wide. And the annual flow in this case, which is outflow from Antelope to Fremont, is estimated to be between 100 -- excuse me -- estimated to be 100- to 500-acre feet per year.

Q. And that's according to what report?

A. Bloyd.

MR. ZIMMER: Same objection. We'll reserve and take it up later.

THE COURT: All right.

THE WITNESS: Okay. So we are now to this vicinity of Saddleback Buttes in the middle of township 7 north. And the balance of the mapped basin line by Bloyd extends in a southeasterly direction, I'd say, 12 to 14 miles along a fault -- an unnamed fault feature postulated from significant water level differences, which, again, would be as illustrated in --

Q. Exhibit 112?

A. Exhibit 112, yes.

Q. Okay.

A. So that takes us around the perimeter of what was mapped by Bloyd.

Q. So that takes care of the red line coming to the southeast corner?

A. That's correct.

Q. Now, does the color of the boundary line change from that point in the southeast corner?

A. The colors, plural, of boundary lines change, yes.

Q. Let me just give you the question: What is shown in that southeast corner?

A. Well, what I've attempted to show in the southeast corner is the fact that a number of different maps either with some discussion or without some discussion subsequent to Bloyd have, I'll say, closed in the basin. Bloyd stopped mapping. If you look at his map -- the exhibit number escapes me, but I'll look it up. 113.

Q. 113?

A. Yes.

And, your Honor, if you want, the highlighter might be useful at this point, or I can give you one that's already highlighted so you can see where it ends.

THE COURT: All right.

Q. (BY MR. DUNN:) Why don't we have you highlight --

THE COURT: We can have you highlight.

THE WITNESS: This one?

Q. (BY MR. DUNN:) -- Exhibit 113.

THE COURT: Do you have a highlighter? Otherwise --

THE WITNESS: I do, actually.

Q. (BY MR. DUNN:) Just so the record is clear, you have Exhibit 113 in front of you.

A. Actually, it's a smaller version that has the sticker on it. This doesn't have one of the little stickers on it.

Q. I need one with an exhibit sticker.

A. Okay.

Q. That'll be this one.

May I approach?

THE COURT: You may.

MR. DUNN: Thank you.

Q. (BY MR. DUNN:) So on Exhibit 113, you're going to use a yellow marker?

A. Yes.

Q. All right. You're going to get rid of the yellow marker and use the pink one?

A. I'm going to use the pink.

Q. All right.

A. In the hopes that it's a little more visible.

Q. I realize it's sometimes difficult to draw and talk at the same time, but you need to let us know what you're drawing on Exhibit 113.

A. All I'm doing is highlighting the outermost boundary of the basin, including the sub- -- the internal subunits as mapped by Bloyd --

Q. All right.

A. -- in order to ultimately illustrate the fact that he didn't close the basin in its southeastern corner.

Q. All right. Please continue.

(Pause in Proceedings.)

THE WITNESS: Okay. So the pink line highlights on Bloyd's original map the outside of the subbasins, which ultimately is an aggregate to be considered the groundwater basin in the Antelope Valley.

And as you can see, there's a gap in the southeastern corner that -- well, it would appear from just the physical size of the map or something along those lines he stopped down there. He discussed, you know, what effectively forms a boundary for practical purposes, but he didn't map it.

Q. (BY MR. DUNN:) When you say "he discussed," are you referring now to the Bloyd report?

A. I am.

So he left a gap. Okay. And so coming forward to Exhibit 126, the ends of the red line on 126 are the same as the ends of the pink line that I just illustrated on Bloyd's original map.

Q. Which is 113.

A. Which is 113. Okay.

Q. All right.

A. All right. And so in subsequent, I'll call it, reports on the Antelope Valley groundwater basin area, various investigators have either talked about or shown in mapping some differing boundaries down in this southeastern corner, I'd say, in effect, to do the same thing we're talking about here, which

is to close the loop, all generally recognizing that to the east is the so-called El Mirage drainage area and separate groundwater conditions.

What I -- so we have reproduced as best we can either from maps or from text descriptions what various investigators have mapped in this southeastern corner.

Q. Is that shown on Exhibit 126?

A. Yes, it is.

Q. Okay.

A. Okay.

Q. And for -- to clarify for the record, what is -- what are we looking at on Exhibit 126 in terms of those different interpretations?

A. Well, we are looking at mappings of surface hydrologic divide, a groundwater divide, and another what are called not well-described line, but map line by various investigators subsequent to Bloyd.

Ultimately, I think, it's recognized that there is no hard boundary feature, al a the types that we put on Exhibit -- this is 112, again, I think?

Q. 113. Excuse me. 112. You're right.

A. Where we have no fixed appreciable -- meaning no appreciable underflow at a fixed location. Okay.

So what I think it's fair to say Bloyd did is recognize that in that extreme southeast corner, from water level data, you can interpret the fact that water levels go across a peak or a crown. Okay. And the -- at the crown point on one side, water is flowing toward the El Mirage area, and on the other side,

water is flowing back toward the Antelope Valley basin. That's commonly known as a groundwater divide.

And while it's not a perfect boundary because it potentially can move, the fact that, you know, pumping occurs on one side versus the other can move the divide. So we can't map it at any one point in time and say it will always be there. But recognizing that, A, the gap is fairly small and, B, there is a divide, so at the divide there's no flow, that the boundary can be closed in the southeast corner that way. And that's the way I described it.

Q. Okay. So -- just so we're all in understanding with your testimony, we all understand the basin boundary as exhibited -- shown on Exhibit 126 is the red line that begins approximately in the southwest corner of Exhibit 126 and continues as you just described this afternoon until it comes all the way back around to the southwest corner --

A. East. Southeast.

Q. Southeast corner. I'm sorry. And there, the color -- I can't see very well from where I'm standing. The color changes from red?

A. Yes, that's correct.

Q. It changes from red to?

A. It changes from red to either purple or black.

Q. Purple or black. Until it begins again in red.

A. Right.

But the key, you know, hydrologic feature at approximately the location of the county line is a groundwater divide. It's not a physical feature in the sense of a

geologic-type feature, a fault of bedrock content. It's just not there. And so it has been, I'll call it, loosely mapped in this partially straight, partially curved line to the southeast corner. And there's some continuation of the outside boundaries as mapped by Bloyd and others down to the location of the drainage divide, which would be outside the county and into San Bernardino County.

Q. Okay. Thank you.

One last question, Mr. Scalmanini. Is your basin boundary consistent with your 35 years of experience in numerous projects and assignments of various types in countless number of -- or large numbers of groundwater basins in California?

MR. ZIMMER: Vague.

THE WITNESS: Yes.

MR. ZIMMER: Attempt to enter it as irrelevant matter.

THE COURT: I'm going to allow it just from the experience standpoint. We're still back to that legal question on how we're going to define it.

But you may answer.

THE WITNESS: Yes.

MR. DUNN: Thank you.

No further questions.

THE COURT: Well, actually, before we have cross-examination, I can't see all the specifics on that, but I'm looking at 114.

Do you still have that over there?

THE WITNESS: That's not this. 114?

THE COURT: Yeah. It's a little map on 114.

MR. DUNN: The Durbin boundaries?

THE COURT: It should be there somewhere.

And yours might have it too. It looks like there's subbasins --

THE WITNESS: Yes.

THE COURT: -- on all these.

THE WITNESS: Yes.

THE COURT: And from this map, it looks like the subbasins are, to some extent, divided by these faults.

THE WITNESS: That's correct.

THE COURT: All right. So what is there about a fault that sometimes would divide a basin into subbasins but at other times would divide the entire basin?

THE WITNESS: Okay.

MR. JOYCE: Thank you, your Honor.

THE WITNESS: If you took the groundwater course that I talked about earlier and you went through all this Richter criteria business, you would find that he organized boundary criteria into those with no appreciable underflow, which is what I have here is this illustration, and those with some underflow and those with free underflow. Okay. And he ultimately said that free underflow is not a good boundary unless you just absolutely have to use it.

You know, classic illustration of that, for example, would be along the coastline of a basin, you know, connected to the ocean in California. We draw the boundary line along the beach, but we recognize that the groundwater system extends offshore. So there's flow that can go across there. Fresh water

can flow out toward the ocean, or saltwater can come back in from the ocean. It's not a great choice, but we have to use it.

But the other two, no appreciable underflow and some underflow, faults are listed in both as a physical feature that can impede or retard groundwater flow. So the -- ultimately, the interpretation, you know, left to the investigator is to decide whether or not the fault truly impedes flow or simply retards flow.

Now, I'll try to show that situation with one more exhibit, if that's okay.

THE COURT: You may.

THE WITNESS: Okay. The number -- because the one you were referring to, your Honor, which was 114, doesn't have some key information that one might want to use.

So 115 that we prenumbered?

Q. (BY MR. DUNN:) Duell's map?

A. That's Duell's map.

Duell is yet -- we talked about this this morning. And, actually, we did talk about a number.

THE COURT: I don't see 115. I have 114 and 113.

(The Court handed the exhibits to Mr. Scalmanini.)

THE WITNESS: Okay. On -- this is 114?

Q. (BY MR. DUNN:) 115.

A. 115. Excuse me.

Okay. There are a couple of things mapped, including the same groundwater basin boundaries about which I've been talking. But within those, your Honor, are some of these faults that also cross the inside of the basin. And also included are a

number of lines -- if you want to get oriented, just look here. I'll point, then you can go back to that sheet of paper that you're looking at closely. But there are lines that are called contours of equal groundwater elevation plotted throughout. And there are arrows drawn perpendicular to those contours.

So, for example, if you look up here in the vicinity of Rosamond Fault on 115, you will see to the immediate north words that say "Willow Springs subunit." And you'll see some slightly curved lines labeled 2,600, 2,550, that are close to perpendicular to the Rosamond Fault. And then you'll see an arrow pointing in a southeasterly direction perpendicular to those lines that are labeled 2,550 and 2,600.

If you go south of the Rosamond Fault, you will see similar contour lines, several of them, labeled 2,150, 2,200, 2,300, 2,350. And those, also, at their end are close to perpendicular to the Rosamond Fault, and you see an arrow that's pointing in a southeasterly direction across the one that's labeled 2,150.

The fact that those contours line up and cross the Neenach Fault at an angle that allows -- and there's also some uniformity to the spacing of the contours, that there is flow across the Neenach Fault, and there may be some impedence across that fault, but it doesn't, if you will, stack water up in the dam concept like we talked about earlier.

And if you look closely across the Rosamond Fault, you'll see, for example, that if you continue up the 2,200 line and get to the Rosamond Fault and then go across it, you'll see that on that side, the groundwater surface elevation is at 2,550.

Okay. It's 350 feet higher. The flow direction is, for all practical purposes, parallel to the fault. And despite a significant head difference, we have flow going parallel to the fault. It's not going across the fault.

So there's -- ultimately, it's left to the investigator to interpret the physical conditions that are out there. If he sees the kind of conditions that will allow flow, for example, across the Neenach Fault like I just described, then it's considered to be potentially an impedence -- excuse me -- a retardance but not a full impedence. And where it forms the kind of conditions like I just described at the Rosamond Fault, then it's more like a bona fide basin boundary that fully impedes or, for all practical purposes, fully impedes flow.

THE COURT: All right. Thank you.

Why don't you have a seat.

And I think we can start with cross-examination. Who was going to start? Mr. Joyce or Mr. Zimmer?

MR. JOYCE: Thank you, your Honor.

CROSS-EXAMINATION

BY MR. JOYCE:

Q. Mr. Scalmanini, as a preliminary matter, have you brought with you today all of the materials that you have reviewed and/or extracted other materials from in order to assist you in your testimony today? In other words, do you have the entire Bloyd report with you today?

A. I have that.

Q. Okay. Do you have the entire Bulletin 118 from 1975 with you today?

A. Yes.
Q. Okay. Do you have the Durbin report with you today?
A. Yes.
Q. In its entirety?
A. Yes.
Q. And how about Carlson? Both Carlsons.
A. I think I have copies of both Carlsons. I don't know that I have the original versions that I have at the office.
Q. All right. And with respect to Todd, do you have the relevant inserts that you utilized from Todd?
A. Yes.
Q. Well, then, maybe that's a place to start.
THE COURT: Todd?
MR. JOYCE: Todd.
THE COURT: Okay.
Q. (BY MR. JOYCE:) You provided us with a definition of what a groundwater basin was that you've extracted from Todd; is that a fair statement?
A. Yes.
Q. Didn't Todd also make comment upon what a groundwater -- at least, comment upon the acceptability of the term within the discipline that you practice in?
A. Not that I recall, no.
Q. Didn't he say that it's a loosely defined term?
A. He used that -- that phrase in a footnote, yes. He didn't talk about its acceptability, just said it's loosely defined or implied, I think.
Q. And by "loosely defined," by that, I mean that there is

no universally accepted definition within the discipline, is there?

A. I wouldn't agree with that, no.

Q. You would not.

A. No.

Q. Can you tell me what the universally accepted definition is in?

A. I don't know that there's the universally accepted definition. I provided two. And I think they are in exactly the same words, but they provide exactly the same thing.

Q. Have you ever heard of a groundwater basin being described as an area which also included the recharge area?

A. Not that I can instantly think of, no.

Q. And you also listed in your reference material a -- an author by the name of -- I believe it's Schneider (phonetic); am I correct?

A. Schneider is correct, yes.

Q. Didn't she provide a definition of groundwater basin in her glossary at the back of her presentation or her text?

A. I don't know. I don't remember.

Q. Can you extract that, please, and look for me, if you would.

A. In her appendix under definitions, Ms. Schneider said, "There is no" -- "For groundwater basin, there is no single widely accepted definition. See discussion below."

Q. And that's -- then that's quoted or cited through her publication, which is a Groundwater Rights in California, Background and Issues, Staff Paper Number 2, at page 98; am I

correct?

A. That's correct. Dated 1977.

Q. Thank you.

And, in fact --

A. Hang on one second. Just to complete the story, you know, Todd was published in 1980.

Q. All right. And in 1980, when Todd's publication came out, isn't what he said -- and I will quote -- "In practice, the term 'groundwater basin' is loosely defined; however, it implies an area containing a groundwater reservoir capable of furnishing a substantial water supply"?

A. That sounds right. I'll look it up if I need to. It sounds like what he said, yes.

Q. I believe you'll find that in his book called Groundwater Hydrology at page 47.

A. That sounds about right.

Q. And let me ask this question: Would the area within a drainage basin satisfy that definition, i.e., in practice, a term loosely defined, but nonetheless one which implies an area containing a groundwater reservoir capable of furnishing a substantial water supply?

MR. DUNN: Objection. Vague.

THE COURT: Overruled.

You may answer.

THE WITNESS: You could probably draw boundaries around a lot of different things bigger than the groundwater basin that I've described that would contain a significant water supply, yes. So a watershed would be one of those.

Q. (BY MR. JOYCE:) And/or a drainage basin?

A. I think they're the same, but yeah.

Q. That's what I want to just -- that was going to be my next question: For the purpose of discussion, would you accept that within the discipline, if someone is talking about a drainage basin, that they are, in fact, talking about what we have been discussing here in pretrial matters as being a watershed basin or watershed boundary?

MR. DUNN: Objection. Speculation.

Q. (BY MR. JOYCE:) Within your discipline --

THE COURT: I'll allow it.

MR. JOYCE: I was going to withdraw it and rephrase it.

THE COURT: If you want to rephrase it.

MR. JOYCE: I will.

Q. (BY MR. JOYCE:) Within the discipline that you practice, is the term "drainage water" and the term "water basin" -- excuse me -- "watershed" interchangeable?

A. I'm not a surface water hydrologist, but I'll say I think practically, yes.

Q. Well, since you mentioned surface water, I want to make sure you understand something.

In the opening statement, a statement was made by Mr. Bunn -- I believe you were present at the time --

A. No, I wasn't.

Q. Let me tell you what he said. Mr. Bunn said that we need not concern ourselves with precipitation outside of your line that is falling in the mountains and the foothills because all of that precipitation reaches the valley floor as surface

runoff and none of it gets to the valley floor as under- -- excuse me -- as groundwater underflow.

Is that a correct statement?

MR. BUNN: Objection. That doesn't characterize correctly what I said.

THE COURT: Well, I'm going to just not worry that you said it. I'm going to take your question as: Is this statement a correct statement?

Q. (BY MR. JOYCE:) Let me put it to you this way, then -- I will make it my statement -- would it be true to say that all the precipitation within the watershed area of the Antelope Valley reaches the innermost boundaries of your proposed line only as a consequence of surface flow, i.e., there is no groundwater underflowing crossing your line anywhere?

A. The answer's, obviously, no. I probably acknowledged that today. I've described the fact that there is some subsurface flow in a few locations around the perimeter of this basin which allows water that would be within the overall drainage basin or watershed to flow, in some cases into, in some cases out of the Antelope Valley ground basin.

Q. And is it your testimony that the only two places where precipitation within the watershed area would cross your boundary line and make their way into your, quote, unquote, "groundwater basin" is at the two locations that you've identified where there's acknowledged underflow?

A. No.

Q. Are there other locations along your boundary line where there is acknowledged underflow of groundwater from outside of

your line to the inside of your line?

A. Well, as I defined "groundwater" in response to a question earlier today -- which is flow in porous media beneath the ground surface, in this case, in the saturated regime -- and I described, for example, that where a surface stream has a bed and there is saturated conditions in the bed, whether there's surface flow or not, if there is that condition and that crosses the boundary, then as I think I said, as I was going around here, it's not perfectly impermeable everywhere. And so it is possible for a small amount of what would be properly called groundwater to flow in the bed of that stream.

There is also the, I'll call it, possibility that in superficial soils in various places around the perimeter but particularly along the mountain fronts that precipitation, if sufficiently intends to saturate the sufficient soils for a short period of time, can contribute some flow which is, I'll say, in the immediate subsurface sometimes called mountain front recharge. And so a piece of the recharge to the basin in the strictest sense would be immediately below the ground surface but would not be down, I'll say, across faults in the classic sense of groundwater flow across faults.

But in the strictest answer to your question, that since some of that water got into this immediate subsurface, it would be below the ground. It wouldn't be surface flow into the basin.

Q. So would be, in fact, groundwater.

So far so good? Am I correct?

A. In that it's below the surface of the ground, yes. In terms that it's part of the groundwater body, meaning that it's

reached the saturated condition of the ground surface, probably not.

Q. All right.

A. It's a phenomenon associated with more or less the nature of rainfall events and how that rain needs to go someplace.

Q. Well, then let me see if I can get back to it this way: You've told us there's two locations where you concede there is groundwater underflow within the existing boundary line as you've drawn it.

So far so good?

A. Yeah. That's what's been reported in the ledger consistently, that's correct.

Q. You also agreed that precipitation falling within the watershed will makes its way from the outside of the line to the inside of the line in those locations where there are streambeds and surface runoff; correct?

A. Well, let me put it in context. You asked me if there's a possibility for water to flow in the subsurface.

Q. Mr. Scalmanini --

A. Hang on a second.

Q. Mr. Scalmanini, you hold on.

If I misstate my question, then I will try it again.

A. No. I'm answering.

THE COURT: Wait. If you can, you need to answer the question that is asked.

THE WITNESS: I did. Or I'm trying to.

THE COURT: If you need the question restated, just say

that. We can have it restated.

MR. JOYCE: And I will make an effort --

THE COURT: We can't be arguing back and forth.

THE WITNESS: Okay.

Q. (BY MR. JOYCE:) The question I'm asking simply requires you to respond affirmatively or negatively.

A. The answer is no.

Q. All right. So then in addition to the two leaky points and stream runoff in the form of surface water, what other kinds of infiltration should we expect to see of water across your line other than surface water?

A. I think I just described it.

Q. And what would that be? Just a mountain range?

A. Whatever might be flowing in the bed of the surface stream and this, I'll call, short-term phenomenon of mountain front recharge that results from, I'll say, intense -- such as you can use the word -- intense in this area -- precipitation that would saturate shallow soils and allow it to flow across the boundary. It's not what's known as classic groundwater subsurface flow. It is just that: It's a recharged phenomenon that occurs during rain events.

Q. All right. So then am I safe in assuming that it is your opinion that there are no aquifers adjacent to your proposed line, but outside of your line and within the watershed boundary at any point around your line?

A. That would be a gross overinterpretation of what I said. To say that there are no aquifers outside that line, no, I didn't say that.

Q. Are there aquifers between the watershed line and -- and outside of your line?

MR. DUNN: Objection. Lack of foundation as to watershed line.

THE COURT: Well, why don't you clue him in. I think you're talking about the one your expert has drawn that was --

MR. JOYCE: Well, let me -- let me take it back. I missed an entire part of my intended cross. You got me right back there.

Q. (BY MR. JOYCE:) Mr. Scalmanini, your degree is in engineering; correct?

A. Both of them are, yes.

Q. Okay. And what kind of engineering?

A. Mechanical and civil.

Q. And -- pardon me?

A. Mechanical and civil.

Q. Okay. And in civil engineering, one aspect or one discipline of that is surveying; correct?

A. Yes.

Q. Okay. You yourself do not do surveying work, do you?

A. I do not personally, no.

Q. And we've already had this discussion in your deposition, but the line that you have proposed is not readily surveyable, is it?

A. I wouldn't say it wouldn't be readily surveyable. I think I told you it hasn't been surveyed. It's a massive undertaking, but it's doable.

Q. Okay. And how do you survey a postulated fault?

A. Well, I'm going to say I'm not a surveyor, so I don't know how I would survey it. Okay. I'm licensed to practice surveying. It's a by-product of being a registered civil engineer, but I do not practice.

Q. I appreciate that.

As your training in civil engineering and the courses you took which involved surveying, did anyone ever suggest to you that there was an implied -- or there was an application that could facilitate an on-surface survey of a postulated fault?

A. Well, the one-word answer to your question is no, but that's because I never took a class in surveying in my training. Okay.

Q. As you sit here today, are you aware of any surveying technique that could be applied which would accomplish or facilitate delineating on the ground where a postulated fault was?

A. Yes.

Q. Okay. By surveying, that is.

A. Yes.

Q. And how would you do that?

A. Well, I would probably hire somebody to do it who practiced surveying as a regular part of his practice. But if -- to try to not just duck the question, there are ground surveying techniques in this case which I think would involve the accompaniment of a geologist who would identify on the ground features or locations where the lines that we've talked about today physically exist. And then a surveyor could create a legal description of that. That's one.

Q. Okay.

A. And the second would be to use, for example, Global Positioning satellite equipment that allows us to, I'll say -- again, using the same kind of references in the field -- to move from point to point and establish the so-called coordinates of those points and to ultimately connect those and create a -- a description of that line or lines, whatever they're doing. That's real globally how I would, quote, "do it," unquote.

Q. Okay. And in the first instance you're talking about is using the assistance of a geologist because you can go into the field and where a fault has been mapped geologically, usually because it manifests itself as a surface feature; is that a fair statement?

A. I think where it's been mapped, I think the answer to the question is yes.

Q. Okay. And a postulated fault is a fault that has not manifested itself on the surface. In other words, you can't take me out there tomorrow and show me on the ground where the postulated fault is, can you?

A. I couldn't, no.

Now, an investigator who has looked at sufficient water level data to come to a conclusion as to where, I'll call it, a significant break as was illustrated in Exhibit 112, I think, the one -- okay -- then that's what I meant by accompaniment of somebody who'd done that kind of work.

Q. Well, in the context of a postulated fault, that's really just an approximation or an estimate of the location, is it not?

A. Yeah. That's fair, yeah.

Q. Okay. And do you know -- and if I understand it correctly, your primary source or reliance for your line is Bloyd; is that a fair statement?

A. Well, it was the first. I don't know about the primary. Given that it was repeated by subsequent investigators, you know, I'd give them equal weight in that there was reinforcement or reinforcing their acceptance by investigators. But certainly primary in the sense of first, yes.

Q. Well, at the end, when forced to make a choice between Mr. Bloyd's proposed outer line or -- I take that back. I'll get back to that in a moment.

With respect to Bloyd's work as contrasted against that of Carlson, you opted to go with Bloyd and not Carlson; correct?

A. That's what I said just a little bit ago, yes.

Q. Okay. And the reason you did that is because you could not find within Carlson sufficient descriptive and/or supporting information that satisfied you as to why and how he went about drawing the lesser line that he did; correct?

A. Yeah. Sufficient is probably right. I mean, certainly, the methodology that he described or the tools, the interpretation that he made of work by others, meaning others between Bloyd and the time he did his work, which was nominally 30-ish years of time, that there had been additional drilling into the subsurface and there had been additional, I'll call it, surface geophysical work to interpret the presence of bedrock complex in the subsurface. And so there's a -- those are legitimate methods.

But that's -- that's all that they reported. And they didn't draw any changes to the surface geologic mapping. They didn't draw any cross-sections to illustrate the details in the subsurface. So given that lack and the fact that Bloyd's boundary aligns consistently with surface geologic mapping -- published geologic mapping, I would pick that if I had to choose between the two.

Q. And, in fact, in your deposition, we asked you to pick between the two.

A. That's correct.

Q. And today you made a selection between the two as well as adopting Bloyd as contrasted with Carlson.

A. Same as I did when you asked me in the deposition.

Q. Okay. And the question that I have is: In science, isn't one test of science reproducibility?

A. Not necessarily.

Q. Do you mean within the discipline, two people with the same training and education assigned the same task can come up with conflicting or different results, both being acceptable?

A. What I mean is that with the information available to Bloyd in the mid-1960s, he could apply -- whether he said so or not -- the kinds of criteria that I discussed this morning and come to a conclusion as to the extent of the groundwater basin. And nominally 33-ish years later with additional information, another investigator could apply the same criteria and come to a slightly different conclusion.

My interpretation of the fact that they're slightly different, you know, suggests that the additional information

allows that to happen. You know, as far as what I'll call a concept of a groundwater basin, that's reproducibility. The facts that it's not exactly the same does not invaluate (sic) the science that you apply to the conclusions.

Q. Well, if you apply it to science as you suggested, would we expect consistent reproducibility if the charge were to define the Antelope Valley groundwater basin?

A. With -- working with the same information multiple times?

Q. Currently. Two people given the same task --

MR. DUNN: Objection.

Q. (BY MR. JOYCE:) -- define the Antelope Valley groundwater basin.

THE COURT: Overruled.

MR. DUNN: Objection. Lack of foundation. Incomplete hypothetical.

THE COURT: Overruled.

You may answer.

Q. (BY MR. JOYCE:) All I'm trying to find out, Mr. Scalmanini, is with two people with your education, background, and training, given that charge, come up with the same line.

A. The exact same line?

Q. Yes.

A. I guess I'd say I'd be surprised if it was the -- exact same line that you could take, you know, two perfectly identically scaled maps and come up with a perfectly superimposable -- if you'll excuse the word -- conclusion. But

that in terms of description of the groundwater basin, I would think that they would.

Q. When you say "description," you mean a characterization of what the boundaries should be expressed in words as opposed to mapping.

A. That's correct.

Q. All right. And earlier, you had referred us to an exhibit taken from Bulletin 119; correct?

A. I don't think so.

Q. Excuse me. Was that 118? I apologize.

A. Yes.

Q. All right. And that was the 1975 version of that bulletin; correct?

A. That's correct.

Q. Are you aware that that bulletin has been updated since then?

A. It's not been updated. It's in the process of being updated.

Q. Well --

A. At least, that's the best of my knowledge.

Q. Are you familiar with Bulletin 118-80?

A. Yes.

Q. Publication date 1980?

A. Yes.

Q. That's approximately 5 years after the date of the same bulletin that you referred to?

A. Okay.

Q. Okay. And the bulletin you referred to is 1975?

A. That's correct. But just -- just to clarify, that -- if you're referring to 118-80 as the updated version?

Q. You have another update?

A. No. There is not yet. I used the present tense. Okay.

Q. It's in the process of being updated yet again?

A. That is correct.

Q. All right. So you used the 1975, it has been updated in 1980, and it is now in the process of being updated yet again; correct?

A. That's correct.

Q. All right.

A. Wait a minute. Wait a minute. Will you read me the title of 118-80, please.

Q. Groundwater Basins in California. A Report to the Legislature in Response to Water Code Section 12924, 118-80, January 1980.

A. Okay.

Q. It is State of California Resource Agency, Department of Water Resources.

A. Okay. Can I look at it for a second?

Q. Certainly.

THE COURT: You may approach.

MR. JOYCE: May I approach, your Honor?

THE COURT: You may approach.

(Pause in Proceedings.)

THE WITNESS: Okay.

Q. (BY MR. JOYCE:) What year did Bloyd's work come out?

A. 1967, I think. Yes.

Q. And is the State of California, the Resources Agency, Department of Water Resources a fairly reliable source?

MR. DUNN: Objection. Vague as to source.

Q. (BY MR. JOYCE:) In your opinion, do you look to that as a source of information to aid you in conducting your task as a civil engineer, especially the area of water hydrology?

THE COURT: I think he withdrew that question.

MR. JOYCE: I did. I'm sorry.

MR. DUNN: I was waiting for a ruling on the objection.

MR. JOYCE: I have a tendency to do that.

MR. BUNN: His objection to the latest question, he said, "do you look to that." Vague as to that.

Q. (BY MR. JOYCE:) Do you look to materials published by that agency in your normal day-in-and-day-out work? Is it a source you rely upon?

A. In general, yes.

Q. All right. And the Exhibit 109 that you provided to us is a depiction of what's generally referred to as the South Lahontan area? Did I say that correctly?

A. Lahontan.

Q. Lahontan. Thank you.

And that's a significantly larger area of California than what we're concerned with here, didn't you (sic)?

A. I think I testified earlier today that for purposes of mapping groundwater basins, that DWR, as it's known, Department of Water Resources, did that on a number of so-called hydrologic study areas, I think they were. And one of them was called the South Lahontan area. And this area would fall in the

South Lahontan area.

Q. And are you aware in the 1980 modification one of the significant changes was is that they modified the criteria for the establishment of a groundwater basin to include political boundaries?

A. I'm familiar with what went on in 1980 when they revised the boundaries, yes.

Q. So within the -- the area within the practice, it as of that point in time became acceptable to use a political boundary for the purposes of defining a groundwater basin; correct?

A. Well, I'll say it -- I don't know if it was acceptable, but it was done.

Q. All right.

A. And there's a -- there's a longer answer that needs to go than just "yes" or "no."

Q. In fact, in your deposition, we spent quite some time on this issue, did we not?

A. I don't remember if we did.

Q. Do you recall in your deposition discussing the San Joaquin Valley and the practical realities that apply to that nature and why you have to use political boundaries that rely to the plans?

A. Let's stick with 118-80.

Q. Okay.

A. The part of the charge to the department that reports back to the legislature --

MR. JOYCE: I'm going to object to what you perceive the charge to be. That would be hearsay.

And I will move on to my next question.

THE COURT: All right. Let's get the next question.

Q. (BY MR. JOYCE:) You are aware in the 1975 that they undertook to identify from their view, using the term "groundwater basins," various areas that were segregated and mapped distinct from others; correct?

A. Say that again, please.

Q. They mapped --

A. "They," DWR.

Q. Yes.

A. -- mapped --

Q. Groundwater basins.

A. Yes.

Q. Using that term; correct?

A. Yes.

Q. And, in fact, in your Exhibit 109, each of the separate groundwater basins are numbered, are they not?

A. Yes.

Q. And then you can refer to that publication and there's a table that tells you the name of the groundwater basin that corresponds to the number; isn't that true?

A. Yes.

Q. Okay. And do you have that table with you?

A. I think I do.

Q. Could you please locate Antelope Valley on that table and tell me what the number assigned to Antelope Valley was for the groundwater basin identified in that exhibit.

A. 6-44.

Q. Thank you.

THE COURT: All right. We need an afternoon recess. Is this a good --

MR. JOYCE: If I can take two minutes, and then I'll be done with this issue.

(Pause in Proceedings.)

MR. JOYCE: Your Honor, why don't we go ahead and do the break. I'll do it after the break.

THE COURT: We'll take a break.

(Discussion - Not Reported.)

(Recess.)

(Discussion - Not Reported.)

THE COURT: All right. We can continue.

MR. JOYCE: Thank you, your Honor.

Q. (BY MR. JOYCE:) Mr. Scalmanini, in looking at your Exhibit 126 -- which is the revised map; correct?

A. Yes.

Q. All right. And if I understand it, the only difference between this plate and the plate you produced at the time of your deposition is the relaying of this southern boundary line?

A. Yes.

Q. Having said that, let me ask a few quick questions so we understand something.

This outermost line that you have depicted here is Bloyd's line in every respect except for this area down here; is that correct?

A. Well, even down there, because there's no Bloyd line. The red line is Bloyd's line, yes.

Q. That's my point, is that in this area here, as you testified, Bloyd did not undertake to physically map a barrier or a boundary himself; correct?

A. From recollection -- I'll look if you really want to know -- I recall that he described one. He did not map one.

Q. I understand that.

So to the extent we would rely upon Bloyd coming down into this area, rather than looking at his efforts to map it graphically, we would look at his verbal description of what he called the boundary in that area; correct?

A. Yes.

Q. All right. And the rest of this is, as you understand it, essentially the same line that he found or that he mapped in his efforts; is that a fair statement?

A. I think the way I told you in deposition was that I -- we tried by using the surface geological references that he described as well as the map locations of faults to reproduce on a different base map what he produced on -- I forget the figure number -- and the exhibit number that I had up there earlier, yes.

Q. And the only issue I'm really trying to get at is simply this: Is that you attempted to use the same boundaries as described by Bloyd and, to the extent, mapped by Bloyd in the same manner that you perceived that he was attempting to draw a line.

A. That's correct.

Q. All right. And then if I'm also correct on your Plate 126, this dashed black line with these internal dashed

black line areas, as well as this little nub down here on the south, that is the result of the work by Carlson and others?

A. It's a reproduction of what Carlson and others mapped. It's not a result of their work.

Q. All right. Well, it's an attempt to give a graphic mapped depiction of what they proffered as, quote, unquote, "groundwater basin boundaries"; correct?

A. Yes.

Q. Okay. Did they call it a groundwater basin boundary, or did they call it a study area?

A. I don't remember.

Q. What is a study area?

A. I think the words speak for themselves. It's an area that's under study.

Q. Okay. You said that you also, in addition to looking at Bloyd, looked at Duell.

Do you recall whether or not Duell called the line that he was using a basin boundary line or a study area line?

A. Well, what I recall was that Duell reproduced groundwater basin boundary lines. He may have also had a study area line within which he was looking at establishing a monitoring network for groundwater quality purposes.

Q. All right. And in looking at Duell, could you discern whether or not Duell had made an effort to independently map a groundwater basin, or did it appear to you as if he was merely duplicating what you understood had been the work previously done by Bloyd?

A. Included in his work was a description of groundwater

zones. I don't remember whether he specifically used the term "groundwater basin," but he described the same groundwater zones as Bloyd and others between the time of Bloyd and his work.

Q. Okay. And did he call it a -- subbasins or subunits?

A. Well, the first, I don't know, reflection of that, he used the word "subdivision."

Q. Zones?

A. Yes, sir.

Q. All right.

A. And hang on a second.

(Pause in Proceedings.)

THE WITNESS: He subsequently uses the word "subunit."

Q. (BY MR. JOYCE:) Okay. He does not use the term "subbasins," does he?

A. Well, a quick reading, he uses both "zones" and "subunits," I'll say, somewhat interchangeably in the same paragraph.

Q. But never uses the word "subbasin."

A. I can't say never without rereading the whole thing, but I don't see it instantly.

Q. All right. And is it your testimony Bloyd used the term "subbasin"?

A. I should look. I think he used "subunits" and -- hang on a second.

Q. Actually, he used the words "subunits" and "subareas"; am I correct?

MR. DUNN: Objection. Document speaks for itself.

THE COURT: Overruled.

THE WITNESS: Okay. He used "zones," "subunits," "groundwater basin." He used all those terms.

Q. (BY MR. JOYCE:) Okay. To describe the areas within the outer line, what did he call them? Did he ever use the word "subbasin" anywhere in his literature?

A. Same answer as before: Without rereading the whole thing, I don't know.

Q. If I were to represent to you that I have read the whole thing, and that the word "subbasin" appears nowhere in there, do you have any reason to believe that I'm inaccurate in my observation?

A. I have no reason to believe that you're either accurate or inaccurate. My impression from the deposition sessions is that you don't know a lot about this subject, so I probably wouldn't buy what you told me about a technical report in any regard.

Q. I will be the first one to tell you that I am dumb, or -- to use your words earlier -- "dummy," but --

A. I don't think I used "dummy," did I?

Q. Actually, you did. My hydrograph didn't go over very well.

But putting that aside, Mr. Scalmanini, I do read English. And I will represent to you that nowhere does Bloyd use the term "subbasin."

My question is: Is there any reason you sit there today and can say, "Mr. Joyce, I think you're wrong"?

A. I'm not going to tell you I think you're wrong because I -- I'll have to reread.

Q. Well, I've got a very strong suspicion between now and Thursday you may have the opportunity. I will invite you to correct me then if I am wrong.

Mr. Scalmanini, Mr. Bloyd also used another term called "subarea."

Do you know what he was talking about?

A. Not without looking at its context.

Q. All right. We'll be coming back to that in a moment.

With respect to Durbin, do you know whether or not Durbin -- strike that. Let's go back to Duell for a moment.

Based upon your review of -- review of Duell's literature, could you discern whether or not Duell himself made an independent effort to define the boundaries of a, quote, unquote, "groundwater basin," or did he merely just redescribe the same geologic features that Bloyd had described in his earlier work?

A. As best I recall his work, he didn't do any independent new work to redefine or independently define.

Q. He just accepted Bloyd's verbal description of the geologic features and relied upon and essentially duplicated those; fair statement?

A. Yes.

Q. All right. Moving on to -- now -- let's see -- we have Bloyd and Duell.

In time, who would be the next most significant investigator that you were referring to in your direct examination, i.e., one of those many?

(Pause in Proceedings.)

THE WITNESS: That would include the -- the entire basin? As compared to just any investigation in the --

Q. (BY MR. JOYCE:) Just the next in time investigation that you thought was of the least significant note to consider in your table of references.

A. You can catch me on sequential dates here because I did everything alphabetically. But I think it was probably Galloway, Phillips, and Ikahara (phonetic), in 1998.

Q. Didn't Durbin come in between there somewhere?

A. No.

Q. All right. Did -- so Durbin came after them?

A. No.

Q. Okay. When in time did Durbin do his analysis?

A. 1978.

Q. All right. Did you include Durbin in your table of references?

A. Yes.

Q. All right. So Durbin came before Duell?

A. Yes.

Q. And after Bloyd?

A. Yes.

Q. All right. In looking at Durbin, were you able to ascertain whether or not Durbin referred to the area of his investigation as a study area, or as a groundwater basin? And I will concede up front that he did use the term "groundwater basin." But as far as how he labeled the area he was investigating, can you tell me how he labeled it?

A. Well, Durbin refers to the Antelope Valley water basin.

Q. Are you looking at his Plate 1?

A. I'm looking at his text: "The Antelope Valley water basin covers," parenthesis, "2,300 square kilometers."

Can I finish? I think I'm answering here.

Okay. "The basin is divided into groundwater subbasins by faults and other structural features. Zones of the Antelope Valley groundwater basin are the Lancaster, Buttes, Pearland, Neenach, West Antelope, Finger Buttes, North Muroc subbasins. The names and boundaries of the subbasins that were proposed by Bloyd 1967 are used" for "this report" -- excuse me -- "in this report."

Q. Can we preclude from what you just read to us that he did not do an independent investigation or independent effort to either map or define a line around what you have referred to as the Antelope Valley groundwater basin? Is that a fair statement?

A. That's, I'll say, difficult to tell. He goes through, I'll say, a sufficiently detailed -- as part of a modeling report -- description of the geologic features that form the groundwater basin and differentiate the significant water-bearing materials from nonwater-bearing materials.

Q. In reading --

A. Whether he did it independently or whether he adopted it from somebody else, I'm not a hundred percent sure.

Q. All right. Is there anything in the literature that he authored which would let you testify here today that he went out and did any field investigation to locate any of the geologic features that he was commenting upon as being boundaries?

A. He doesn't say that he didn't, but his report says that

his investigation was divided into two parts: One, the development of a mathematical model of groundwater flow and, two, use of the model to evaluate the impact of each water management plan, which presumably has been prescribed before that paragraph.

So with that, I would suspect as part of the modeling exercise he didn't do new independent fieldwork.

Q. Based on what you say your conclusion is, that he himself did not do any independent investigation in the field efforts to isolate or locate any geological features described as boundaries; fair statement?

A. Did not do any -- say that again.

Q. Infield investigation. Didn't go out on-site to locate where the fault was and to confirm it was where it was and anything like that.

A. That's correct.

Q. All right. Now, in looking at your Plate 1 -- or your revised Plate 1, in your table of references, and, in fact, in your deposition, you testified that for the geology, you relied primarily upon an author by the name of Dibblee; is that a fair statement?

A. That's correct.

Q. All right. And you had at the time that this map was prepared Dibblee available to you; correct? Strike that.

You had available to you at the time that your original Plate 1 was prepared Dibblee's work; is that a fair statement?

A. Yes.

Q. All right. And can you tell me where in Dibblee he locates the San Andreas Fault.

A. I think I pointed to it in passing. I think --

Q. I'm not going to mark on this, but am I correct to say that Dibblee maps as a geologic feature the San Andreas Fault essentially right down the middle of the Leona Valley?

A. Well, I don't know about right down the middle, but in that -- approximately where you just indicated, yes.

Q. Right -- in some places, a mile to a mile and a half south of where your postulated fault line is and other places approximately 5 miles south; is that a fair statement?

And as you move up towards the west, it even gets -- the distance becomes greater.

A. Well, I can't see the scale from here, but it is that the fault itself, the San Andreas Fault itself is to the south of the boundary of the groundwater basin, yes.

Q. All right. And can you tell me where in Dibblee he names this feature called "Unnamed Fault Associated with the San Andreas Fault Zone"?

A. I don't think that he does.

Q. Okay. With respect to the investigators, who is the first person to ever use the term to identify that line as "Unnamed Fault Associated with the San Andreas Fault Zone," other than you?

A. I think it's Bloyd.

Q. Okay. Can you get Bloyd out, please, and tell us where we will find that.

(Pause in Proceedings.)

THE WITNESS: Let's see. I'm looking on first page 20, where --

Q. (BY MR. JOYCE:) If you can give me just one moment, please.

Page 20?

A. Yes.

Q. Approximately what paragraph?

A. Start with the second.

Q. Before you read it, I'd like to see it if I could, please. If you just show me what you're referring to so I can see --

May I approach, your Honor?

THE COURT: You may.

MR. JOYCE: Thank you.

(Mr. Joyce conferred with Mr. Scalmanini off the record.)

Q. (BY MR. JOYCE:) I think you misunderstood my question, Mr. Scalmanini.

The question I posed to you is other than you, can you direct me to any other investigator of this area who has -- who has named this line, "Unnamed Fault Associated with the San Andreas Fault Zone," that phrase? That's what I'm looking for.

A. I don't know if I instantly can. I can think of collections of -- between Duell's work and Bloyd's work from instant memory that uses both "unnamed fault" and San Andreas Fault zone." I'll have to dig deeper to see if I can find somebody who used that exact collection of words.

Q. Okay. So -- wait a minute. What you're telling me is that based upon your current recollection, this phrase, "Unnamed Fault Associated with the San Andreas Fault Zone," is a phrase

created by you, which is a synthesis of other phrases used by two other investigators, at least off the top of your head, Bloyd and Duell; correct?

A. In the answer, yes.

Q. All right. And would you be at all concerned if you were to learn that the USGS has affirmed that Duell was in error in labeling that line that way?

A. Would I be concerned?

Q. Yes.

A. For the purposes for which we're here today, no.

Q. Would you at all be concerned about the integrity of his work --

A. No.

Q. -- if you were to learn that he was in error in that regard?

A. No.

Q. All right. Now, in looking at your Exhibit 126, it is your assessment that everything to the north of your line is in the Fremont Valley, or the Fremont groundwater basin?

A. Yes.

MR. JOYCE: Your Honor, I would like to mark as Plaintiffs' Exhibit 4 a hard copy of what is the vellum.

Q. (BY MR. JOYCE:) Mr. Scalmanini, I'm going to hand you this, if I may.

May I approach, your Honor?

THE COURT: You may.

Q. (BY MR. JOYCE:) And if I could, I'll represent to you, Mr. Scalmanini, that over the lunch hour, I had this vellum

created in the hard copy, Plaintiffs' Exhibit 4, off of your Exhibit 109, which I understand to be the Bulletin 118 from 1975.

Agreed?

A. Well, I don't know --

Q. I'm making a representation that's what it is.

A. I don't know what you did over the noon hour.

Q. What I want to make sure is that -- if you'll take out your Exhibit 109 so we can match up here.

A. (The witness complied.)

Q. In looking at Exhibit 109, do you agree that it labels the basin by number as 6-44?

A. It labels what basin?

Q. Well, if you look at the preceding -- the page which follows this Exhibit 109 in the bulletin, there's a table that refers us to the name of the groundwater basin depicted on this map.

We established that?

A. Yes. I understand that.

Q. All right. And on that table, isn't 6-44 the groundwater basin called the Antelope Valley groundwater basin?

A. In Bulletin 118, yes.

Q. Yes. Okay.

And if we look at 118, can we agree that basin 6-44, as mapped in 1975, ends approximately in this area right here? Is that the boundary as you understand it, basically looking at 109?

MR. ZIMMER: Can you do that again, Mr. Joyce?

Q. (BY MR. JOYCE:) Starting from this area right here, dropping straight down that dotted line, is that the

southeasterly boundary as reflected on 109?

A. Yes.

Q. All right. And then in looking at 109, doesn't that boundary extend -- strike that -- doesn't that boundary continue through this dark area and pick up and start moving to the northwest all along this line that I'm now tracing?

A. I don't know about going through the dark area, but --

Q. Well, if we ignore this one little segment of the dark area, is the southernmost boundary as depicted on your Exhibit 109 the bottom line of this dark area down to the southeastern corner?

A. Ask me the question again.

Q. If we ignore this one little section moving north to south but go strictly beyond that and to the south and start moving back towards the west, where is the bottom most point where we should draw the line as depicted on your Exhibit 109?

MR. DUNN: Objection. Vague in terms of for the record. There's just no way of knowing exactly what he's pointing out here. There's got to be some kind of point of reference.

THE COURT: I'll sustain that objection.

Q. (BY MR. JOYCE:) Let me ask the question this way: In looking at your Exhibit 109, they described in the legend younger alluvium and older alluvium; correct?

A. Yes.

Q. Okay. Is it your understanding that both the younger alluvium and older alluvium determined the basin boundaries as delineated here combined?

A. Here?

Q. Yes.

A. It would appear that way, yes.

Q. In other words --

A. Although, the extent of alluvium is not the limits of a groundwater basin.

Q. I appreciate that.

A. Okay.

Q. But what I'm trying to make sure I'm clear about is that you don't read this depiction as intending to exclude the old alluvium as water-bearing materials for the purposes of including it or excluding it within the basin boundaries; correct?

A. I'll say that I can't read at this scale with enough specificity to be able to answer your question.

Q. Well --

A. And -- let me finish.

Q. I'm sorry.

A. Okay. And in Bulletin 118, I don't think it says as to any kind of description of what the superficial or spacial extent of the groundwater basin is. What's shown in these figures is at a very, very small scale. Something in the quarter of an inch equals 25 miles. I'm talking about the original. I don't care what you did with the blowups. I'll call it very, very generally and conceptually illustrates the extent of alluvium which, if you want to literally interpret the outermost limits of the alluvium as being the edge of the basin, then that's what this shows.

Q. All right. Well, if it shows alluvium, can we then, at least, reach the conclusion that we have groundwater-bearing materials?

A. You mean, as to the specificity of this scale?

Q. No. As a concept.

A. As a concept, in general, yes.

Q. If the material that we're talking about is called "alluvium," whether it's either old or young, are we talking about groundwater-bearing materials?

A. Water-bearing materials, yes. Alluvium is considered to be a water-bearing material, yes.

Q. And your concern in my current exercise is that the scale may not facilitate a fair correlation of your line as contrasted with this proposed boundary line as outlined in your Exhibit 109; a fair statement?

A. Yes.

Q. Well, let's move up to the north area because I know the scale's going to have a lot of effect up there.

Your line runs down in this area; isn't that a fair statement?

A. Yes.

Q. And you agree that in Exhibit 109, even in the small scale that you have before you, that we have to conclude that the groundwater basin boundary depicted therein runs at least this far up to the north. Do you agree?

MR. DUNN: Objection. It's just vague from the oral description exactly where we're talking about on this particular exhibit.

THE COURT: Sustained.

Q. (BY MR. JOYCE:) Well, then, let me make the record very clear.

If we go from the Cottonwood Fault and the Willow Springs Fault lines, moving across to the east to the Rosamond Lake area, that essentially bisects what has been characterized as the Antelope Valley groundwater basin in your Exhibit 109 by about two-thirds moving from south to north.

Did I roughly characterize that correctly?

A. If you're trying to get a relative scale as to the location of the Willow Springs Fault, you know, somewhere between, I'll call it, the northern boundary of just north of Mojave as mapped by DWR and the southern boundary, I'd say it moves it half again as far north as the fault would be.

Q. Well, let's see if we can get some additional help from Bulletin 118.

If you could, please, go to Bulletin 118 and tell me what groundwater basin is identified by the code number 6-46.

A. I'm pretty sure it's Fremont.

Q. So am I.

A. Fremont Valley.

Q. Okay. So in this Exhibit 109, we have the entire -- strike that. Let me start the question again.

In Exhibit 109, as proffered by you this morning, we have the two groundwater basins referred to by Bloyd in his study, both likewise identified on this Exhibit 109; correct?

A. Yes.

Q. We have the Antelope Valley groundwater basin, and we have the Fremont Valley groundwater basin; correct?

A. Yes.

Q. Okay. Any doubt in your mind that Bloyd's line and your

line does not match Bulletin 118?

A. No doubt.

Q. Thank you.

And just so I'm clear and the record's clear, that portion denoted 6-46 is the Fremont; correct?

A. In Bulletin 118, yes.

Q. Yes.

A. Yes.

Q. Okay. And the line separating 6-46 from 6-44 is this -- is, in part, this dashed line up here at the top that I am referring to, this dotted line. Is that what you understand to be what they're identifying as the dividing line between the two?

A. They used dashed or dotted lines to -- as boundary lines across alluvium to show edges of basins as they've mapped them elsewhere. So that's the line that one would interpret to be the line between 6-46 and 6-44, yes.

Q. Now, in other words -- in other words, you understood, in looking at your Exhibit 109, that the intent which was intended to be communicated was that that's the point of demarkation between the two groundwater basins called Fremont and called Antelope Valley.

A. Ask it again. What I did, or what they did?

Q. No. It was your understanding in looking at what they did that they intended to communicate to anyone reading Bulletin 118 that the point of demarkation between the two basins was that dotted line.

MR. DUNN: Objection. Lack of foundation, calls for speculation.

THE COURT: Overruled.

You may answer.

THE WITNESS: If one dug out this bulletin, you would at first blush look at that line and say that's what DWR maps as the line between the two basins -- groundwater basins, yes.

Q. (BY MR. JOYCE:) All right. And, in fact, if that same depiction is existent in the 1980 update, then we have another intervening 5 years where they apparently made no choice to change it; correct?

A. If that's true, I'll say yes.

Q. Let me see if I can locate -- in the interest of time, I'll come back to that.

Your Honor, can I just have a moment, please?

THE COURT: Why don't we take about a 5-minute recess. Everyone can stretch a little bit.

We'll let the witness step down.

(Recess.)

MR. JOYCE: May I proceed?

THE COURT: You may.

Q. (BY MR. JOYCE:) Mr. Scalmanini, I'm sorry. I've located the 1980 version. And there's essentially three issues I'd like to make sure I'm clear about.

If you can compare Figure 12 of the 1980 update to Bulletin 118 and just confirm that the map is essentially identical except that they have added one additional feature, and that is an outline around groundwater basins having problems.

Did I describe that roughly correctly?

A. Well, quote, "with special problems," yes.

Q. Yeah. And just so we're clear, neither the Fremont nor the Antelope Valley are depicted in the 1980 bulletin as being areas having problems; correct?

A. As having special problems, yes.

Q. All right. The area that -- the area indicated as having special problems is the Owens Valley area; fair statement?

A. Yes.

Q. Okay. And if you'll go back in Bulletin 118 in 1980, in the text, there is a description of the mapping process used in the 1980 update.

If you'll hand it to me, I can help you with that.

Okay. If you can just read into the record for me under definitions where it says "groundwater basin," just the first full -- excuse me -- first, the -- the first full paragraph.

MR. ZIMMER: For the record, this is from the 1980?

MR. JOYCE: Bulletin 118.

MR. DUNN: I believe it's not yet been marked as an exhibit.

THE COURT: We don't have that whole bulletin marked. We just have that page.

Why don't we mark --

MR. JOYCE: Your Honor, I will at the next recess if I can arrange to get a copy. I'm reluctant because this is Stanford University's --

THE COURT: We only really need to mark the portion that's being referred to.

MR. JOYCE: I was just reluctant to --

THE COURT: What is plaintiffs' next in order?

MR. ZIMMER: 5, I think.

THE COURT: 5?

Q. (BY MR. JOYCE:) Mr. Scalmanini, if you could, just look at that one section I'm most concerned about --

A. Well, it's a little out of context, but I'll read it: "In this report, the groundwater basins are defined on the basis of" geologic and hydro- -- excuse me -- "geological and hydrological conditions and consideration of political boundary lines whenever practical since Bulletin 118 (1975) identifies all of the State's basins solely on geological and hydrological bases. The additional purpose of this report is to identify those basin boundaries that reflect political boundaries and thus could be used for groundwater basin management purposes."

Q. Thank you.

And the only thing I was attempting to confirm -- if I could have that back, please, sir -- is that the 1975 bulletin, when issued, the intent was to depict all of the groundwater basins based upon boundaries which were premised upon hydrological and geologic conditions; correct?

A. That's what it says.

Q. Okay. And in the 1975 bulletin, there was no effort at that time to incorporate into basin boundaries political boundaries; correct? At least, in Bulletin 118.

A. There's, to the best of my recollection, no reflection in Bulletin 118 of any boundary criteria.

Q. Well, what I'm saying is they certainly were not contemplating drawing lines premised upon political boundaries in 1975 when Bulletin 118 was issued and published; correct?

MR. DUNN: Objection. Lack of foundation.

THE COURT: Overruled.

You may answer.

THE WITNESS: Same answer as I gave you before. You can't tell from reading Bulletin 118 what the department used as boundary criteria in defining groundwater basins.

Q. (BY MR. JOYCE:) I anticipated, Mr. Scalmanini, that was likely going to be a response I was going to get. That's the reason I wanted you to look at the 1980 bulletin to confirm that the first time political boundaries were included was in 1980; correct?

A. According to 118-80 -- okay -- they superimposed or utilized political boundaries. And the way the text reads, it would imply that they did not consider political boundaries as basin boundary criteria in the preparation of Bulletin 118.

Q. All right. And the whole point is whether we look at the map as it is depicted in Bulletin 118-80 or the Bulletin 118-75, these dotted lines do not depict political boundaries, do they?

A. They don't appear to. I don't know what they depict because they're not described anywhere.

Q. Well, if we can go back to 118-75, is there not in that publication a similar statement as to the basis for the lines drawn?

A. I don't remember there being one. Maybe --

Q. If you can take a look at 118-75.

A. Okay. And where would you suggest I look?

Q. Probably close to the beginning, because it's the same

place that it shows up in 118-80.

And all I want you to confirm is whether or not the content was to base the lines upon hydrologic or geologic procedures and/or conditions.

MR. DUNN: Objection. Speculation as to intent.

THE COURT: Overruled.

THE WITNESS: I'll give you the best answer I can.

Q. (BY MR. JOYCE:) All right.

A. It's a little bit long-winded. I don't see quickly a discussion in Bulletin 118 of boundary criteria.

Q. Okay.

A. And --

Q. Does Bulletin --

A. Hold on. Let me finish. I said it's a little bit long-winded. I'm answering.

Q. In that case, you said you can't answer my question, so I think we're done with the question.

A. I don't think we are.

Q. I think I am.

THE COURT: I'll allow you to go back into it on redirect.

THE WITNESS: Okay.

MR. JOYCE: Your Honor, I'd like to mark as next in order -- and I will defer offering it until after Mr. Sheahan and Professor Gorelick have had an opportunity to add some additional foundational information -- what I have -- what would be Mr. Scalmanini's Plate 1 with the vellum overlay of that section reproduced from the US- -- excuse me -- from the Bulletin 118-75

map that was introduced as Exhibit 109 this morning.

THE COURT: All right. We'll mark it as 6.

MR. JOYCE: That's correct, your Honor.

Q. (BY MR. JOYCE:) Now, yesterday at 1:30, Mr. Scalmanini, I was handed a stack of documents by your counsel indicating that those were the exhibits that you intended to rely upon today, and they were premarked. And one I'm holding in my hand, I do not know what number it was premarked.

Maybe I'll ask counsel to assist me.

(Counsel conferred off the record.)

Q. (BY MR. JOYCE:) I have what's marked as -- by counsel for the defendants on the back with a blue tag -- Exhibit 111. And it is entitled Groundwater Basin Boundary Criteria, DWR Bulletin 118.

Are you familiar with that document, Mr. Scalmanini?

A. DWR Bulletin 118?

Q. No. This actual document itself.

A. Yes, I am.

Q. How did this document come about? Was that -- somebody typed it up, or did you have somebody type it up, or did you direct somebody to type it up?

A. Having it typed up and directing somebody to type up in this case are one in the same, yes.

Q. But -- so as far as the content of it, you're responsible for picking and choosing what went into this piece of paper; correct?

A. Yes. Mm-hmm.

Q. Okay. Is the information set forth on here

all-inclusive of groundwater basin boundary criteria as set forth in DWR Bulletin 118? Or did you selectively --

A. This one?

Q. Yes. I guess -- first of all -- let me ask a foundational question -- where did this information come from?

A. Earlier, I think, this afternoon, you asked me was I familiar with the update of Bulletin 118.

Q. Okay. The update being?

A. And I said, you know, something along the lines of tense. You mean -- I said, "is being updated," not "has been updated." And then I didn't think about 118-80 as an update, so I was focusing on what is going on today. All right.

So what you see in this which we've already marked as Exhibit 111 -- okay -- are criteria extracted from information that's available from DWR today that --

Q. Let me hold you up one second if I may.

THE COURT: I'm going to let him finish his answer on this.

THE WITNESS: The Department of Water Resources is in the process of updating Bulletin 118 today. That's why I talked about the present tense. Okay.

I had told you a few minutes ago that I couldn't find quickly in here criteria used by DWR to delineate groundwater basins when it did this. Okay.

MR. BUNN: By "here" -- excuse me --

THE WITNESS: Here. I'm sorry. Bulletin 118. I couldn't find criteria in there.

And that is true as to 80, except they've added as a

factor for groundwater management purposes.

The subject of groundwater basins has been discussed by people, including myself. And I participated, I want to say, a year and a half or 2 years ago in a panel discussion on that subject with the principal, what I'll call, subject representative of Department of Water Resources on this subject, a man called Carl Haugo (phonetic) who is with their office of public affairs, and some assistance or words to that effect.

And I made note of the fact that it's interesting that you can look at the department's publications on groundwater basins and you can't find a discussion -- excuse me -- a definition of the term "groundwater basin" or a delineation of criteria whereby you would -- or a listing of criteria whereby you would delineate them.

MR. JOYCE: Your Honor, may I --

THE WITNESS: I'm still answering.

THE COURT: I'm going to let him finish. I think we're getting there.

MR. JOYCE: Tomorrow?

THE WITNESS: I think that the department took it as a charge that in updating, they ought to do both. And so what's reflected in this Exhibit 111 is an extraction verbatim from the draft publication that says that groundwater basins were delineated and separated from each other by the following features or conditions.

Now, this is a work in progress. But the listing of the six criteria that are up there, I think, is directly extracted from DWR, the current update, not the one 20 years ago.

THE COURT: Okay. The one that you've referred to is in progress.

THE WITNESS: That is correct.

Q. (BY MR. JOYCE:) All right. And then let me ask this question: I assume that the map has, likewise, been updated. Can you please provide that to us.

A. The map, to the best of my knowledge, has not been updated.

Q. And do you know whether or not they're going to make any changes?

A. I do not know. I can only tell you what criteria they have been able to extract as what they will use in defining boundaries between groundwater basins.

Q. Okay.

A. Or at the edges of groundwater basins.

Q. Well, to the extent that the 1975 bulletin was premised upon hydrologic and geologic features, do you know what the hydrologic or the geologic feature would be up at this dotted line that would support or justify its location at that point?

A. No, I do not.

Q. And if that were the case, then do you also notice that there's a dotted line separating the Fremont from the Antelope Valley over here, which is almost in the same place as your bottleneck before you? Do you see that?

A. Yes, I do.

Q. Okay. I presume you would conclude that that dotted line is the same -- same line that forms that -- that divide up at the top of your Peerless subbasin area?

A. Whether it's Peerless or North Muroc escapes me, but yes. Between that and whatever subbasin is in the Fremont basin, yes.

Q. Okay. And then down the southeasterly, this dotted line, you know what hydrologic or geologic feature supports that line?

A. I've told you already, I think, several times that DWR does not list in Bulletin 118 or in 118-80, to the best of my recollection, any boundary criteria. It just provides maps at a very small scale, as I told you in this case, probably something on the order of an inch equals 25 miles.

And as a result of that, it is, I think, for all practical purposes, impossible to look at this map at its original scale, in particular, but even at this scale, and be able to extract anything that says that DWR used any particular criteria as between basins at the edge. At the edge of basins, it appears that they used the extent of, quote, "alluvium."

Q. Okay. Is it your suggestion that they may have just used arbitrary reasons to put dots on this map?

MR. DUNN: Objection. Calls for speculation. Lack of foundation.

THE COURT: Sustained.

Q. (BY MR. JOYCE:) Okay. Well, would you agree that it would be inappropriate to use -- or to fix a line for arbitrary reasons?

A. No. I wouldn't agree that it's totally inappropriate to pick a line for arbitrary reasons, depending on what the arbitrary reasons are.

What I would say is that to pick that line, whether in 1980 -- excuse me -- '75 or '80, without explanation, with alluvium on both sides, and no criteria listed in the book, and then particularly to fast-forward to today and to look at their criteria as listed and to note that the third criteria is the same as what we talked about earlier originally from Richter and applied by me, you know, that a fault that crosses permeable materials generally forms a barrier to groundwater movement. This is usually indicated by noticeable differences in water levels and/or flow patterns on either side of the fault.

And in that light, it -- recognizing DWR criteria today and where the line is that you've been focusing on between 6-44 Antelope and 6-46 Fremont, that DWR, particularly if they were to perpetuate that line, you know, would violate the very criteria that it lists as a basis for defining the limits of the groundwater basin.

Q. My question, though, is do you agree that it would be inappropriate to assign or draw a line premised upon either convenience or for arbitrary reasons? Not supported by geology.

MR. DUNN: Objection. Argumentative. Asked and answered.

THE COURT: I think he answered it, depending on what the reasons were.

Q. (BY MR. JOYCE:) Okay. And do you agree that Bloyd provided a narrative of the methodology or, at least -- strike that -- a narrative defining the delineation of the groundwater basins in his study area?

A. Yes. I think that's a fair depiction of the way he

worded it, yes.

Q. If you could extract Bloyd and go to page 19, I'd appreciate it.

A. Okay.

Q. And under the heading "Delineation of Groundwater Basins," I'll quote -- just make sure I'm quoting this accurately -- "There are two major groundwater basins in the AVEK" -- that's A-V-E-K -- "area: Antelope Valley and Fremont Valley basins (Figure 2" -- excuse me -- "Figure 2). Each is divided into groundwater zones by faults, bodies of consolidated rock, groundwater divides, and, in some instances, by convenient and arbitrary boundaries."

Is that the first sentence under Mr. Bloyd's title "Delineation of Groundwater Basins"?

A. No.

Q. It's not the first sentence under that?

A. No.

Q. What is the first sentence?

A. "There are two major groundwater basins in the AVEK area: Antelope Valley and Fremont Valley basins (Figure 2)."

Q. All right. Then the second sentence. Thank you very much. See, I'm not even very good at English.

A. Yeah. I'm just starting to notice that.

Q. I lost hydrology at the beginning, now I'm losing at English too. How did I ever get out of college?

A. I'll admit I was just being picky.

Q. Did I quote the first two sentences accurately?

A. Yes, you did.

Q. Thank you.

And if I understood it earlier, you were referring us Mr. Bloyd's Plate Number 10; is that correct?

A. That's it.

Q. Is this it here?

A. No. Keep going.

Q. Okay.

A. It's either -- no. It's the next one under.

Q. All right.

A. That's it. The one I --

Q. Okay.

A. Yeah.

Q. In looking at Bloyd's Plate Number 10 --

A. It's actually Figure 10, but go ahead.

Q. Figure 10?

A. Yes.

Q. Thank you.

There's an area out here called the Rosamond-Bissell area.

Do you see that?

A. Yes.

Q. Okay. There's an area over here called Hi Vista area.

Do you see that?

A. Yes.

Q. There's an area down here to the south called the Foothill area.

See that?

A. Yes.

Q. Then he has an area called the Acton area.

See that?

A. Yes.

Q. Okay. Is it your testimony that Bloyd did not incorporate any of those -- strike that. Let me ask the question more precisely.

Is it your testimony that Bloyd did not incorporate into the Antelope Valley groundwater basin a portion of the Rosamond-Bissell area, the Hi Vista area, and the Foothill area?

A. Okay. I'll do my best. Okay. To --

Q. My question -- my question's very simply this: Based upon your understanding of what Bloyd did, was it Bloyd's intent to incorporate into what he called the Antelope Valley groundwater basin, the Foothill area, the Vista area, and a portion of the Rosamond-Bissell area, as delineated on his Figure 10?

A. I'm pretty sure the answer is no.

Q. All right. Then I would direct you to page 20 of his textural material.

A. Yes. Go ahead.

Q. And it says "Zones of the Antelope Valley Basin"; correct? That's the title?

A. Yes.

Q. Okay. The very first paragraph reads as follows, and I quote: "The subdivision of the Antelope Valley basin are the Lancaster, Buttes, Pearland, Neenach, West Antelope, Finger Buttes, North Muroc, and Peerless subunits, and the Hi Vista, Foothill, and Rosamond-Bissell area (Figure 10)."

Is that the first sentence?

A. That is the first sentence, yes.

Q. Okay. And I may not be a hydrologist, but I understand the term "and" to be a conjunctive term, which means to include; am I correct?

A. Well, I don't profess to be an English professor. I'm related to a couple, but --

Q. Well, as to two laymen in English, do you agree that the word "and" means to include?

A. Yes.

Q. Thank you.

A. That doesn't mean to be included in the groundwater basin. It's included in the word "basin." And that's a difference between the two.

Q. Now, are you telling me there's something different between the groundwater basin to something called a basin that's different than a groundwater basin?

A. Absolutely.

Q. Okay. What is a basin then? That's a term we have not yet explored. We've got watershed worked out.

A. In that context -- okay --

Q. I'm not talking context. I want to know within the discipline within which you practice --

A. Yes.

Q. -- called hydrogeology or engineering, whatever it is, what is the accepted definition of a basin? I agree.

A. No. I'm just trying to think of a decent textbook definition.

I think, again, in this context, he is not subdividing the Antelope Valley groundwater basin. He's subdividing the Antelope Valley probably -- well, some hybrid in this case of the groundwater basin and part of the watershed that drains toward the groundwater basin, but not the whole thing.

Q. Well, then --

A. It's clear -- hold on a second. Okay. It's clear that as regards -- what'd you call them? -- Foothill --

Q. That's what he called them.

A. Hi Vista -- yeah. Okay. And Rosamond-Bissell areas, and you mentioned Acton when you were at the map --

Q. The reason I mentioned Acton --

A. -- they're all within the AVEK area. And so, you know, he acknowledges them.

But, you know, subsequent reading of this document makes it clear and subsequent reading of other documents makes it clear that the Foothill area, the Hi Vista area, and the Rosamond-Bissell area, while they may be within AVEK's called service area, are not -- do not contain subsurface materials that -- that qualify. And he does not include them in his listing of the groundwater subunits or subbasins, whatever words he uses, as part of the overall basin.

Q. Fine.

If you go back to 109, which is the Bulletin 119 --

A. 118.

Q. -- 118 delineation of where old alluvium and new alluvium is present in that area, would you please confirm for me that you would agree that there is both old and new alluvium in

the area identified by Bloyd as the Foothill area to the south of your line.

A. No, I wouldn't agree. Bloyd did not include older or younger alluvium south of, quote, "my line," which is his line.

Q. No. No. I didn't say that he did. I'm saying that in Bulletin 118-75, the alluvial deposits depicted on your Exhibit 109 revealed the existence of old and new alluvium south of your line, but nonetheless, in the same area that Bloyd labeled Foothill area on his Figure Number 10.

MR. DUNN: Objection. Vague.

THE COURT: Overruled.

You're just referring to the little green on here.

MR. JOYCE: That's correct.

THE WITNESS: Literally interpreted, Bulletin 118 would suggest that there's alluvium that extends beyond the Bloyd line, which I've embraced.

Q. (BY MR. JOYCE:) Okay.

A. Now, hang on a second. Okay.

Q. I think --

A. Bloyd 118 is far from anything that can closely be considered a geologic -- call it a citeable geological reference. And as I tried to emphasize a couple of times, at the scale of about an inch to 25 miles, to try to extract even with photo enlargement, as you've done here, some precision as to the extent of alluvium from a document like Bulletin 118, which, you know -- and, particularly, 118-80, which is written for the legislature, primarily focused for them, is inappropriate.

And I've emphasized, I think, in discussion here today

that the line that we've mapped is our best effort to, in effect, superimpose what Bloyd first and others subsequently have mapped and described ultimately on a geologic map which is, you know, a genuinely citeable reference, meaning deliberately, and to show the line as best we could ultimately on a topographic base, which is what -- I can't remember the number now, but the Plate 1 from our report, the exhibit that hangs down there, to show that on a topographic base map.

Okay. Bulletin 118, the fact that there is discrepancy between, you know, boundaries via some photo enlargement is just an illegitimate approach to try to say there's differences between extent of alluvium.

Q. Well, all I really want --

THE COURT: And then, Mr. Joyce, I'm going to remind you we need to get to a stopping point in the next couple of points.

MR. JOYCE: The stopping point would be this.

Q. (BY MR. JOYCE:) Mr. Scalmanini, are there water-bearing aquifers to the south of your line?

A. What's your definition --

Q. Within a mile's distance moving south, can I go out there today and find productive groundwater-pumping wells?

A. Well, you'll have to put the term "productive groundwater-pumping wells" into some context for me.

Q. I mean somebody thought it was worthwhile drilling it, and they're presently using it.

A. Well, I can think of two wells that exist south of the line --

Q. Only two?

A. I can think of two wells, you know, south of the line, that -- about which I know something that, quote, "somebody thought it was worth drilling." And -- but there's -- there's, I'll say, a fair number of wells that are in existence that somebody thought were worth drilling, and they're not pretty productive.

And, secondly, in this case, your criteria that they are presently using, and the answer is no.

Q. Well, then let me ask you three questions, and I think we can wrap it up for the day.

Would you agree, sir, that whether or not your line is in the right place might be verifiable by checking out to see the nature, extent, and quantum of groundwater production on either side of it as contrasted to each other? Would that be one way of looking at it? Would you agree that's at least one thing we can do?

A. We could do that, yes.

Q. Okay. Would you also agree, sir, that that's not terribly hard to do because you can call the Department of Water Resources and they will give you the plotted locations of all wells in the area? True?

A. No.

Q. It's not true?

A. No.

Q. You cannot get the well location data from the Department of Water Resources?

A. You can try. Pardon me for laughing. I've been doing this for 30 years. I've been going to DWR digging out well

loggage for several decades. A, you don't get the plotted location of the well. And B -- hold on a second -- you don't get them all.

The Water Code was revised in 1951 to require that anybody constructing or modifying a water well submit a copy of a report called a Water Well Driller's Report to the State Water Resources (sic) documenting that. It's been fought over, sued over, people have lost licenses over compliance of that requirement.

To think that you can go to DWR and get, quote, "all the well information is a pipe dream."

Q. Then I apologize.

What you're saying is some people haven't complied with the law and didn't report and, therefore, their wells are not identifiable; correct?

A. That is correct.

Q. Some people did, though, didn't they?

A. Some people have, yes.

Q. In fact, a lot of people did, didn't they?

THE COURT: That's a lot more than three questions.

MR. JOYCE: I'm sorry.

Q. (BY MR. JOYCE:) The bottom line, Mr. Scalmanini, is you did not make any effort to ascertain the quantum or degree of any water production south of this line?

A. When did I not do this?

Q. You have not done it at any time up to the time of your deposition. I know that for sure.

A. It wasn't necessary for me to do that, to draw this

line, given the criteria. The existence -- think back to the exhibit that had criteria. Nowhere on there is groundwater pumping, well details, anything of that type. They are, I'll say, geologic and hydrologic criteria. And one is able to define the extent and limits of a groundwater basin without knowing that detail.

I have done some of that since then, but because -- now I recognize that some people want to make their boundary very much bigger. But I did not do it before and didn't think I needed to and still needed to.

Q. Are you aware the Water Department of Resources (sic) has mapped this area and on that map has plotted the well densities for that entire area?

A. No, I'm not.

MR. JOYCE: Thank you.

I have no further questions for today.

THE COURT: We're going to break for today.

I'll have our witness step down.

Does someone have a copy of your stipulation you entered into as to what I'm supposed to make findings on?

MR. ZIMMER: I do, your Honor.

MR. BUNN: It's quoted exactly in our trial brief, your Honor, the entire stipulation.

MS. FUENTES: Your Honor, it's also attached to my stipulation.

THE COURT: I looked at my notes. Looks like I'm supposed to make findings as to an area for including and excluding parties from the lawsuit, and where pumping from that

area has no effect on areas outside; right?

MR. JOYCE: That's correct.

MR. ZIMMER: That's basically it.

MR. BUNN: That's --

THE COURT: Am I getting evidence where I can make those findings?

MR. JOYCE: That's an interesting question we may have a legal argument about at the conclusion of defendants' case in chief.

THE COURT: I see someone shaking their head yes.

I was trying to think about this a little bit. The evidence I'm getting still goes to the basin, whether we call it a basin or we call it a watershed or we call it whatever.

MR. JOYCE: The area.

THE COURT: The area.

MR. ZIMMER: This is the area.

THE COURT: Now, we've concluded direct. I don't have any evidence on direct, and nor do I think any of the experts -- did they? -- make -- because the calculation part all comes later on. So how can I make a determination from what I'm hearing as to whether pumping is going to have an effect on the area outside -- outside the area?

MR. JOYCE: Your Honor, that's the very reason we opposed the motion to bifurcate at the time is because, analytically, this inquiry makes no sense without looking at the in-real-world effects of what's happening both around whose line.

MR. ZIMMER: I would say, your Honor, that that is the reason why we have used the watershed. Because outside the

watershed, even Mr. Scalmanini agrees, that pumping outside that line will not have any effect on pumping inside. And that's why everything else was deferred to Phase 2.

THE COURT: I've been reading piecemeal because none of these cases are quick.

MR. ZIMMER: Not at all.

THE COURT: Made me think how long my statement of decision's supposed to be when I ultimately do that. But the case --

MR. BUNN: You can start a new trend.

THE COURT: Yeah. Abbreviated version.

The cases do talk in terms of basin. They don't talk in terms of watershed. Although, they tend to use watershed too.

But, you know, I know what you're saying. Your concern is that when, ultimately, you make the calculations, if we've excluded areas outside the basin, somehow that could be an -- have some effect. I don't know. I'm not that far in these hydrology and engineering lessons.

If I were just to say what I'm looking at from the case law, I mean, they really do seem to talk in terms of basin. So what I'd have to be hearing from plaintiffs' expert is that there's some argument that the watershed is actually the basin.

But then I'm looking at what I keep thinking in terms of the stipulation as to what my ultimate findings are going to be. And we're not going to discuss it now because the staff gets off at 4:30 and they're all on overtime and we're in a state crisis and there's no money whatsoever for overtime.

MR. BUNN: Can I reserve the -- first thing on Thursday

to respond to then?

THE COURT: We have to. We have to talk about this first thing on Thursday before we get into any more evidence.

MR. ZIMMER: Can I reserve for second?

THE COURT: The entire stipulation is in the brief. Because I think I saw something referenced.

(Discussion - Not Reported.)

(Proceedings were adjourned.)

RIVERSIDE, CALIFORNIA - THURSDAY, AUGUST 8, 2002

THE COURT: Let's go through some time estimates first. Then you can respond if you wanted to.

MR. BUNN: I'm rearing to go, your Honor.

THE COURT: How long do we need to finish with Mr. Scalmanini for cross?

MR. JOYCE: Your Honor, I would anticipate 1 1/2, worst-case scenario; 2; 2, 15 -- 2 hours 15 minutes.

THE COURT: So we're looking at the morning.

MR. JOYCE: The morning.

THE COURT: And redirect?

MR. DUNN: There may be 20, 30 minutes of redirect.

THE COURT: All right.

MR. JOYCE: And I will make an effort to see if I can pare it down even more.

THE COURT: Then -- when we finish with him, who then is next?

MR. JOYCE: That would likely be Mr. Sheahan.

THE COURT: All right. And I take it he's here?

MR. ZIMMER: Yes, your Honor, he's here.

THE COURT: So we'll start him, but probably not finish him.

So then the question is this -- I'm trying to figure out how we can best accommodate the court schedule and your schedule, because Mr. Scalmanini is not available next week.

MR. DUNN: That's correct, your Honor.

THE COURT: And I take it, because some people are traveling distances, you don't want to come out just for Monday

and Tuesday to finish whatever we can.

MR. ZIMMER: I'd like to do that if we can.

THE COURT: Oh, you would? All right. Tell me what you want to do.

MR. ZIMMER: I talked it over. My feeling is just, generally speaking, that even court trials are better off getting as much of the testimony done as you can at one time, particularly in a case like this where you have somewhat complicated issues and facts so that -- so that you don't have to go back and reinvent the wheel every time. Otherwise, the trial ends up being longer than it should be.

I do recognize Mr. Dunn's desire to have Mr. Scalmanini hear the testimony of our experts. My suggestion was that we allow those to be videotaped so that he could watch those at his leisure and still have the opportunity to listen to the testimony, take the same amount of time as it would if he sat here in court. That way we can continue going on Monday and Tuesday, whatever else the Court wants to do the next week.

My problem is I've got another trial backed up the Monday -- following Monday, and my fall has about two trials every Monday throughout the fall until we get to, like, January.

THE COURT: Well, if we finish everything but Mr. Scalmanini's rebuttal, as I'm thinking, I can probably clear a Friday's calendar to give you a date certain on that.

How long do you think rebuttal's going to be?

MR. DUNN: I can't imagine it would take more than a single day.

THE COURT: That's what I'm thinking.

MR. ZIMMER: That shouldn't be too hard.

THE COURT: Do you have any opposition to just finishing everything we can possibly finish next week? And then -- and I'm not sure. You'd have to actually --

MR. JOYCE: Transcripts.

MR. ZIMMER: We can use transcripts in that time.

THE COURT: You can get the transcripts. It's just how important they think it is that he actually see him testify.

MR. DUNN: I don't --

MR. ZIMMER: I hadn't thought about it, but given the Court's comment, if you're going to work in a day later for Mr. Scalmanini's testimony, then -- on rebuttal, then there may very well be time to transcribe -- make transcripts. I think that would be sufficient to read the transcripts.

THE COURT: You can certainly get the transcripts.

MR. ZIMMER: Might even be faster because he can skim through what he wants and won't have to sit and watch the whole thing.

MR. DUNN: One of the concerns we have is that the -- having the experts sit through the direct examination -- as Dr. Gorelick and Mr. Sheahan have done -- also provides an opportunity for counsel to use your own expert's, you know, hearing and seeing what the other expert says to help him on cross-examination as well.

So while I'm comfortable with what Mr. Zimmer has proposed in terms of finishing up the rebuttal, there still is the whole issue that, in fact, we would start potentially cross-examination of both Dr. Gorelick and Mr. Sheahan without

having Mr. Scalmanini present. That puts us at a disadvantage that perhaps the plaintiffs have had.

THE COURT: Let's see how much progress we can make today. Let's do that.

MR. DUNN: If I can just offer a -- it may be possible -- I don't know if counsel's willing -- we haven't discussed this -- but to just -- put on just directs of both experts and then we come back. But that probably is not workable.

THE COURT: No. I probably should decide to continue my 2-hour court trial that I'm sure is a collection case to a day next week and just give you Friday, which would give you another day.

MR. JOYCE: We would be, in my estimation, getting real close to the end at that point. And the reason I suggest that is that I think, as this matter progresses, that the true issues in contest are going to become more significantly focused and narrowed and is not going to necessitate the same breadth we anticipated on the outside.

(Discussion - Not Reported.)

THE COURT: We need to really try to get this done as quickly as possible.

MR. JOYCE: The only other consideration, I think is somewhat important, is the fact that Phase 2 is presently calendared for April. The further we go out with uncertainty as to Phase 1, the more difficult it is to address Phase 2.

THE COURT: All right. Let's -- let's just briefly, though, allow some discussion on what the -- I guess the depth of

the stipulation is or what it encompasses. Because what I've heard is, you know, "we have this basin." And I've heard an explanation of the barriers. And I've heard that, really, there's no appreciable water flow from the basin to the areas outside of it, although water does pass to some extent. There's no, I guess it would be, quantitative information that I've gotten. Now, how, then, do I relate that to what the terminology of the stipulation is?

Which -- you've gotten away from the basin. You've gotten it to be, really, the area where -- that would pretty much include all the pumping that's going on.

MR. BUNN: And I'd like to answer that. I'd like to answer another question first, if I may, that you asked yesterday. And that is: Does the stipulation require you to make a finding of whether pumping on one side affects groundwater levels on the other? And then, after I answer that, I'll talk about the evidence that we've had so far. Because my answer to that is no, you don't. And the reason is that the parties have stipulated to that.

Now, let me explain what I mean. If you look at the language of the stipulation, it says, "Phase 1 will determine the area within which claims of groundwater rights will be adjudicated in this lawsuit and will include or exclude overlying properties from the lawsuit." That is intended to be a definition of what Phase 1 is.

Then it goes on: "The parties agree, and based on such agreement the Court finds, the groundwater production from outside the area does not have and has not had any legally

adverse effect on groundwater production inside the area and vice versa." That is intended to be in agreement about the effect of the boundary once it's determined.

And I remember just how we came up with this language in this stipulation. At that time, we already had Mr. Scalmanini's report out and knew what his boundary line was. And one of the properties of Mr. Zimmer, is Buttes' property, is outside that line. And the question was discussed, well, say we take Mr. Scalmanini's boundaries, what effect is that going to have on the property outside this line? And the defendants said, "We will stipulate that our pumping within the area is not adverse to your rights as to your property outside that line."

Now, that's not quite what the stipulation says. The stipulation is a little more general than that. What happened was, I started thinking, at that time we still believed that the purpose of doing Phase 1 first was to shorten and simplify and save judicial resources. And we -- turns out we're a little naive in that belief. But that's where we were going.

And I found myself thinking that it would not do us any good to come up with a boundary of the basin if we still had to go to Phase 2 and litigate whether pumping -- the effect of pumping outside the basin. We'd have to do everything all over again. And so I proposed that we stipulate.

THE COURT: So, in essence, you're saying any overlying property outside the line that I determine -- which, assuming it was your expert's line -- that you're not making any prescriptive claim.

MR. BUNN: That's correct. They have an overlying right

to whatever they can get out of the fractured bedrock or whatever it is out there, and we don't have any adverse claim to it. And that's exactly what we're --

THE COURT: Doesn't that do plaintiffs more -- isn't it better for plaintiffs to have a smaller line?

MR. JOYCE: May I respond, your Honor?

MR. BUNN: I'd like, if I could, your Honor --

THE COURT: Let him finish.

MR. BUNN: Because you gave me a day and a half, I've got this whole speech that I wrote out when I was driving here.

MR. JOYCE: You mean, you worked?

MR. TOOTLE: He's ready to go.

MR. BUNN: I worded this morning what -- I figured out what I was going to be saying.

And, also, this morning, I thought to print out the drafts of the e-mails going back and forth. And I think that's instructive as far as what -- what this meant. And with the Court's permission, I'm going to read from a couple of these drafts.

MR. ZIMMER: Your Honor, I have a suggestion.

MR. BUNN: And I'd be happy to testify that this is, in fact, the way it went, and this is the intention of the party.

THE COURT: Let me hear the suggestion.

MR. BUNN: Okay. I'd be happy to introduce these if the Court feels --

THE COURT: Hold on.

MR. ZIMMER: My concern is this, your Honor: I'm not exactly sure where this is going to lead us, that we will have

this discussion, I'm sure, at the end of the evidence no matter what happens. If we were talking about some very brief comment on what we think the stipulation means, that's -- I don't have any problem with that. But the problem is we've got three expert witnesses that are all sitting waiting. We have got 3 days to try to get them on.

MR. BUNN: This will not be long.

THE COURT: Let me give him another 5 minutes. Then we'll stop at this point. And if I need to bring you back early from lunch just to deal with this, we can do that.

MR. BUNN: Okay.

THE COURT: Okay.

MR. BUNN: The initial draft of our stipulation said, "Phase 1 will involve establishing the outermost boundaries of the groundwater basin in which conflicting claims of groundwater rights will be adjudicated and overlying properties identified and excluded with the understanding that the internal subbasin boundaries and the scientific significance of those boundaries will be deferred to Phase 2." You remember I made reference to that in my opening statement, that that was the -- deferring the internal subbasin boundaries was the principal subject of negotiation.

I then proposed the following -- maybe I should give a copy to the Court and you can -- and I'll give it to counsel as well.

MR. ZIMMER: If it's what you just read, I'm not sure I need a copy of it.

MR. BUNN: That's the first one.

I then proposed on the bottom of the second page, "Phase 1 will determine the area within which conflicting claims are adjudicated," et cetera, and added the sentence "groundwater production from outside this area is considered to have an insignificant effect," and then I gave the plaintiffs an alternative, which was equally acceptable to me, "or is considered not to have any adverse effect on the groundwater within the area and vice versa." This is considered -- I think clearly shows that my intention, at least, was to have that be an effect of the determination of the boundaries and not a finding that the Court had to make in order to come to the boundaries.

Then we have Mr. Zimmer's counteroffer in which, among other things, he changed it to, "The parties agree that groundwater production doesn't have any adverse effect," and changes the order of it. And that was fine with us, "the parties agree," because it was a stipulation. But we defendants also felt that we needed to have a court finding on that issue so that we could go ahead with Phase 2. And the final draft has us putting in that the Court finds based on such agreement that that happens.

So that's --

THE COURT: Okay.

MR. BUNN: -- that's my point on the first question, that determining the basin boundaries will have that effect. And that's legally -- I wasn't looking at the San Fernando case when I drafted this. But it's very similar in language to the San Fernando case, that that's what a groundwater basin boundary does.

Now, I do want to get to your other question because I can understand that the Court may be uneasy in determining a basin boundary that's going to have that effect without finding a factual basis for that stipulation and finding.

And you -- your Honor said at the beginning this morning that you understood the concept of the no-flow boundaries, the no appreciable flow, the gaps in the boundary where there is some flow, but not very much. And I would point your Honor, again, to the San Fernando case, which, on rereading, is extremely similar to our case. The trial court in that case found that between the Sylmar basin and the San Fernando basin, there were two gaps over which approximately 750-acre feet could flow in this state of nature. And based on that finding, the Court determined that groundwater production in one area could not significantly affect the other area.

In other words, there's a connection here between groundwater flow across the boundary and the effect that pumping on one side can have on the other.

Thinking back over Mr. Scalmanini's testimony, I believe he testified to that, but we didn't make it as clear as we could have, that the one implies the other. And the reason that we didn't was we anticipated the way this trial would go would be Mr. Scalmanini would testify to the basin boundaries. Then the plaintiffs would come up and say, but we shouldn't be using those boundaries because there's flow from one basin to the other, from the Antelope to the Fremont basin or the Leona Valley to the Antelope Valley. There's flow there. And if there's flow, that means the levels on one side can affect the other side, and,

therefore, we shouldn't use that boundary.

And in rebuttal, we were planning to get into the effects from one over the boundary to the other. Now, I realize when your Honor asked the question Tuesday night that I had said in my opening statement that Mr. Scalmanini would testify that pumping on one side of the line would not materially and significantly affect levels on the other. And I don't think we asked that precise question on his direct examination. But he is prepared to testify that -- to that. And I hope that the Court would allow us the opportunity to have him do that either in rebuttal or in redirect today.

MR. JOYCE: I will give them the opportunity to say that on cross.

THE COURT: All right.

MR. ZIMMER: Your Honor, if I could just be heard on this since I was involved in this stipulation.

The stipulation, even as you can tell from what Mr. Bunn has handed you, without getting into all the back and forth on that, originally, the defendants wanted the Phase 1 described as a groundwater basin. Because of the plaintiffs' view of this matter and, I think, what is reality, that groundwater basin is a loosely defined term. Because of the fact that it is used differently in different cases, depending upon the type of case and what legal issues are presented to the Court, because of the fact that it's used with different meanings in studies which are done by different investigators for different purposes that we were unwilling to have the Phase 1 be a determination of a, quote, "groundwater basin."

From the plaintiffs' perspective, a groundwater basin is simply one of many different terms -- zones, subunits, subbasins, basins -- to describe whether two parties are pumping from areas which derive from a common water source, whether they're hydraulically connected.

So the question wasn't so much whether we call it a groundwater basin as it was do the two -- are the two properties hydraulically connected? Are they pumping from a common source? Because that's what gives you a dispute because you're both pumping from the same common source. That's how you end up with a dispute. If you're not pumping from a common source, obviously, there's no dispute.

So at least, from the plaintiffs' perspective, that's why we would not agree to the groundwater basin term because it's not a term of art. It's just different terms that have been used to describe hydrogeologic character. It's in a valley. And that's why we use the term "area."

Now, in terms of the Court's question about quantification, I don't think that quantification needs to or should be done in Phase 1. I don't think the defendants needed to do that. I don't think we need to do that. To determine an area outside of which there is no legally adverse effect. We're just determining an area that we can -- that we can say and come up with a reasonably definable ascertainable area, outside of which we can all agree or the Court can find that there is no effect of pumping outside versus inside. And the reason that's so important is because we need to include all of the area in the lawsuit, include all of the area in the lawsuit which needs to be

included from a hydrogeologic perspective to then, in Phase 2, evaluate whether pumping in various locations, given all the inflow and outflow, will have any legally adverse effect on the plaintiffs' pumping, which, of course, is the legal issue that's presented to the Court.

So if there's a line, which I think there is, that the Court can determine which includes all of that area, then that is the area that's defined for Phase 2 or further evaluation. In other words, a study area.

I've talked to Mr. Dunn and maybe some of the others. And to me, the plaintiffs would like -- or the defendants would like to make some arguments with regard to a groundwater basin and what the existence of a groundwater basin means and what effect that has on prescriptive rights that are involved in this case.

Whether we define in this part of the case an area for litigation, we can do that and it can include the study area. And they can still, in Phase 2, make all the arguments that they want to make in terms of what a groundwater basin is, in their belief, from a hydrogeologic perspective, what it means, whether it means that all these areas are a hydraulically connected common source of water or not. So I think -- I don't think there's any -- any downside to the defendants. And that's why I've -- I saw a stipulation saying if -- when I was talking to Mr. Dunn this morning, I said, "We're simply defining an area for the litigation to give us some parameters for a study area outside of which we can say there's no -- there's no effect from pumping out here to pumping inside."

And if they were worried about a particular ramification of the Court's ruling in that respect, then let us know what it is. And if we can agree that that's not covered by Phase 1 or that that's -- that there's no effect to them from the finding in Phase 1, and that's a Phase 2 issue, then we're done. We can all go home.

But we did reach a stipulation. The stipulation is a Phase 1 area for all the reasons we've described. Our experts will testify that there is a line that works. It will discuss Mr. Scalmanini's line and a line that works and why his line doesn't work for an area outside of which pumping will not affect to any significant degree inside pumping and which will allow us to do in Phase 2 what we need to do, and that is to evaluate pumping inside, as we said the other pumping inside.

And I know the Court hasn't had a chance to look at all the cases in the area. And I know that the Court is concerned because the Court has looked at some of the cases and you see this term "groundwater basin" popping up. What I'd like to suggest to the Court, that it's not a term of art per se. It's been used in many different ways, in many different definitions, depending on what kind of a case it was procedurally, what legal issues were presented to the Court. Or on the scientific side, it's been used in many different ways, depending on the scope of the scientific study. And that's why we were talking about a negligence case, you're talking about a breach. There's many different -- or duty. There's many different ways to describe what a duty is and why somebody in a particular circumstance has that duty. But in this case, groundwater basin is not a decisive

issue. All we're doing is determining an area for purposes of the lawsuit.

Now, in Phase 2, they're still going to argue that groundwater basin means this and means that these parties are hydraulically connected. It doesn't mean -- it doesn't mean -- I know Mr. Tootle's concerned about -- there's the Buttes' property, which is our plaintiffs' property, which is outside of the Scalmanini line. There's, I believe, part of the Los Angeles County's property which is outside the county line. Or -- no? Or outside Scalmanini's line?

MR. ABBOTT: If I can answer counsel's question. I have two clients here: District Number 40, District Number 37. District Number 37 is in Acton. It's on the other side of whatever line Mr. Sheahan drew. It's on the other side of the line that Mr. Scalmanini drew. I have a second client, District Number 40, that has one well that is within Mr. Sheahan's line, but is outside Mr. Scalmanini's line.

THE COURT: All right. But didn't I hear that defendants are willing to basically stipulate they're making no prescriptive rights against the Buttes property if I accept this -- Mr. Scalmanini's line? Is that not good for the plaintiff? I mean, where am I missing? Isn't that what you -- isn't that --

MR. ZIMMER: Let me finish.

THE COURT: Isn't that the ultimate ruling that you're seeking at the end of this trial?

MR. ZIMMER: If they disclaim that -- any prescriptive rights on the part of that property, that doesn't change the area

within which you need to evaluate in terms of pumping and inflow and outflow that is necessary to -- to properly proceed with Phase 2.

I agree that if they disclaim prescriptive rights as to those properties, they're out of the case as to that legal entity, and I don't have any problem with that.

And in terms of Mr. Tootle's concern, if their area includes that, I'm not saying that once we actually sit down and look at the actual pumping values and the amount of flow over the line, that that -- that will have any effect on pumping somewhere else or not. It may not because of the insignificant nature or not. But as Mr. Joyce correctly pointed out in opening statement and otherwise, you do not want to exclude that property from the area because it could very well have a potential or significant effect on pumping. And that needs to be analyzed in -- by actually looking at flows in Phase 2.

THE COURT: All right. Well, let's do this: Let's --

MR. JOYCE: If I could answer the one question that seems to be perplexing the Court. The effect of the stipulation wouldn't be only that they are, in essence, saying we're going to stipulate. We have no prescriptive rights. Because what nobody has yet mentioned is that what they implicitly or expressly want -- and there's not a one of them that's going to deny it -- is they want the flip side of that too. And that is, is that if we are pumping outside of Mr. Scalmanini's line, you, the overlying owner, cannot challenge that pumping because the effect of drawing a line is to say it can't be adverse to you.

And the issue in this case, ultimately, is going to

return upon complex hydrologic issues concerning whether or not there's overdraft, and then more significantly, who caused it or who's causing it, if that's the case.

One of the issues is you have an interruption of water rights, overlying correlative rights, appropriate rights, prescriptive rights. If, in fact, there is overlying groundwater pumping occurring in the Fremont Valley area and if that would be, in a hydrologic sense, an effect upon the groundwater levels in any sense in the Antelope Valley area, then to exclude Fremont is to exclude from the equation whether or not the overdraft is a correlative result as opposed to an appropriative prescriptive result. You start doing that, you lose quantities of water that don't get considered.

Most significantly -- and I'll tell you my background getting here, and that was at the outset of this matter when I was first asked to look at it, I read a lot of water law cases because I don't do water law. And I did the same thing and I think I initially found myself in the same state of mind that I think the Court presently has. And that is that there's some magic and some truly defined significance to the term "groundwater basin." And that's what I thought. I thought, "Wow, man. This is going to be easy because all these cases talk about groundwater basins. All I have to do is find out where that is." Then I started reading more, and technological literature. At the time this occurred, I had not been educated. Since then I've got a lot smarter.

What I found out is that, depending on the litigation, the objective litigation, the area that gets adjudicated, it may

be a drainage basin, it may be a groundwater basin, it may be subbasin on the groundwater basin. Depending upon what the objective is. That's why when we got to the point where we talked about the stipulation, you will notice in the series of e-mails that I'm fairly silent until up to the last one. You will note that I was not available, and then I got available.

And what I said is, "Gentlemen, I will not accept any stipulation that cannot be scientifically justified and supported, beginning and end."

So my position is simply this: Is that unless they can say the pumping has no effect, they can't exclude it at this point in trial.

MR. BUNN: Your Honor, I know we don't want to belabor this, but Mr. Joyce made a statement that none of the defendants -- he said -- would deny that we're trying to establish a certain thing. And I vehemently deny that.

As a matter of fact, since Mr. Joyce has raised the issue, when we -- when your Honor invited us to go out and try to stipulate on the Phase 1 issue, we offered and still offer to exclude the effects of any of our pumping outside the line, which is de minimus --

THE COURT: I think what you all need to do when we do take the lunch break is spend some time talking about the ultimate result of what everyone is seeking and what stipulation you can reach in light of that. But --

MR. BUNN: We did spend, what, 10 hours on it Tuesday. I'm happy to try to do it again.

THE COURT: You need to spend a little bit more time

over the lunch hour in light of this.

But let's -- let's get Mr. Scalmanini back into the witness box.

MS. FUENTES: Your Honor, if I can take 60 seconds, and you can time me. I want to answer one quick question you had on Monday.

THE COURT: Yes.

MS. FUENTES: You asked if there was a case, specifically, a quiet title action, where bifurcated basins were the issue for trial. And nobody really responded. What I'd like to do is just direct the Court to the Corona Foothill Lemon Company case, which is discussed at page 6 of our brief, which specifically stands for the proposition that first you have to define a basin before you can move forward. And I've printed a copy of the case for the Court's benefit.

And if I can also direct the Court to the case of Wright versus Goleta Water District, again, which I printed for the Court's convenience, which is simply a case where the issues were bifurcated for trials, and the Court can see how this was handled previous.

THE COURT: All right. Thank you.

MR. JOYCE: Your Honor, in that regard, I would direct the Court to the recent California Supreme Court opinion in the Mojave case and, more specifically, ask the Court to read the hydrologic condition described by the California Supreme Court commencing on page 2 of the opinion and concluding on page 3. And I suspect after the Court hears all the testimony, the Court's going to find that there is a significant hydrologic

correlation between our fact pattern and that case. And the Court will note in that case that the area that was adjudicated was a drainage basin, not a groundwater basin.

THE COURT: All right. Thank you.

(Pause in Proceedings.)

THE COURT: Good morning. And you are still under oath.

MR. JOYCE: May I proceed?

THE COURT: You may.

MR. JOYCE: Thank you, your Honor.

Q. (BY MR. JOYCE:) Mr. Scalmanini, I want to, if I -- initially attempt to create at least some chronological relationship between the various investigations that have been done and, to some extent, referenced or relied upon by you.

If I could -- if you could just kind of go to your table of reference material in your report because that may assist in this exercise.

A. Go ahead.

Q. And if we use Bloyd as a starting point in time, then Bloyd would be an investigation undertaken in 1967, or at least the results in which were published in 1967; is that correct?

A. Yes.

Q. Okay. And in chronology, then, the next investigation would have been the Department of Water Resources Bulletin 118-75 published in 1975; is that correct?

A. On what subject?

Q. On the subject of groundwater basins and/or that addressed and/or involved the Antelope Valley groundwater basin area.

A. That would be a little bit of an overstatement, I think. But the Antelope Valley was one of -- I forget the exact number -- I think 450-something basins in California that were in that publication, yes.

Q. Okay. And then in time, the next investigation or -- or consideration of the area was Durbin in 1978; is that correct?

A. Are we limiting ourselves to this list, or --

Q. To this list.

A. Well, the one you just mentioned isn't on this list.

Q. Okay.

A. So --

Q. So if I understand --

A. If you want to mix and match dates to anything that has to do with the Antelope Valley?

Q. All right. Then let me ask this question: Durbin isn't on your list of references, is it?

A. Yeah, it is.

THE COURT: Durbin is.

Q. (BY MR. JOYCE:) You say it's not on this list.

What list are you referring to?

THE COURT: He's referring to the prior -- the 1975; right?

THE WITNESS: No. Durbin -- was an investigator for the U.S. Geological Survey -- prepared and calculated a mathematical model of the Antelope Valley water basin, and the results were published in the --

THE COURT: I'm going to stop you though. I think what was not on this list was the one right before this.

MR. JOYCE: I'm sorry.

Q. (BY MR. JOYCE:) Are you saying that the --

THE COURT: The 1975 paper or whatever it was.

MR. JOYCE: I apologize.

Q. (BY MR. JOYCE:) What you're saying is that in your reference materials cited in your report, you at that time had not yet considered the Department of Water Resources Bulletin 118-75; correct?

A. That wouldn't be correct.

Q. Okay. You had considered it but had not included in your list of references.

A. That's not correct either.

Q. Okay.

MR. BUNN: Your Honor, excuse me --

Q. (BY MR. JOYCE:) Maybe I'm having a problem in --

MR. DUNN: I'm sorry. Mr. Scalmanini is covering his --

MR. BUNN: That was my point too.

MR. DUNN: It's hard to understand him.

THE WITNESS: Sorry.

Q. (BY MR. JOYCE:) So -- well, then, maybe I can approach it from this vantage point: If you can at least confirm that the ones that I am most concerned about are chronologically correct, at least as I'm addressing them.

MR. DUNN: Objection. Calls for speculation as to what Mr. Joyce is concerned about.

THE COURT: Well, he's going to go through that.

Q. (BY MR. JOYCE:) I think -- you'll agree that Bloyd was in '67; correct?

A. Yes. I already said that.
Q. And DWR Bulletin 118 was '75?
A. There is a Department of Water Resources bulletin that I think was published in 1975, yes.
Q. Okay.
A. It's not on my list, so I'm a little lost as to -- you asked me to refer to the list.
Q. All right. Fine. But Durbin did his work and published results of his work in 1978; correct?
A. The paper was published in 1978, yes.
Q. Okay. And then in 1980, the Department of Water Resources did an update of Bulletin 118-80; am I correct as far as the timing?
A. Yes.
Q. Okay. Duell did a USGS monitoring network study in 1987; correct?
A. That's correct.
Are we -- are we sticking with chronology here?
Q. I'm just trying to make sure that I'm going chronologically as far as the ones I'm identifying. Okay?
A. Just the ones you're identifying.
Q. Okay.
A. Okay. Because it's not complete. But go ahead.
Q. That's fine.
And in 1995, Galloway did a study, did he not?
A. Are you talking about Galloway and others?
Q. Yes.
A. I don't think so.

Q. Is that a resource or a source identified in your table of references?

A. There's -- there's a report by Galloway and others.

Q. And what year do you reflect that as having been published?

A. 1998.

Q. 1998? All right.

Carlson and others did a water table changes analysis in 1998; correct?

A. Actually, the changes were over the period 1975 through '98, and it was, I guess you would say, published as an open-file report in 1998, yes.

Q. Okay. And the same year, Carlson and Phillips did a water level change -- or published a -- water level changes for a period of time preceding that date?

A. Yes.

Q. Okay. And then in the year 2000, the Department of Water Resources has updated Bulletin 118; is that a fair statement?

A. No.

Q. Okay.

A. I don't think so.

Q. Okay. In the year 2000, did they initiate a process to complete a review and a revision of Bulletin 118?

A. I don't know about the specific date. As far as I know, it's under work -- or in work. Whether it started in 2000, I don't know.

Q. Okay. And you understand the intent is to complete that

revision sometime this year.

A. No. I don't understand what the target date for completion is.

Q. All right. And Lighten (phonetic) and Phillips completed a -- strike that.

There is currently in draft but not yet published USGS groundwater model that was conducted by Lighten and Phillips; correct? You know what I'm referring to?

A. Well, I think I know what you're referring to. I don't know the authors. I know Phillips is one of the authors. I don't know the other. I don't know about Lighten.

Q. Maybe someone can focus. You know currently as we speak there has been sent out in draft and in circulation to interested parties a groundwater model for the Antelope Valley area that has not yet been published in its final form; correct?

A. You exaggerate a little bit. But if I can clarify what you've said, that yes, there is a report in preparation. It has been circulated not to interested parties.

Q. Okay.

A. But to cooperating agencies, which I think is basically the County of Los Angeles because they funded a fair piece of this work. So they were given the opportunity to review a draft. And as far as I know, the document is at the, quote, unquote, "peer review stage" within the USGS as part of the overall publication procedure.

Q. All right. You in your answer address an interesting issue. You said "peer review stage."

What does that mean?

A. Well, I don't know the details of the USGS publication procedures, but my understanding from having been through an exercise of reviewing and, I guess you could say, overturning the results of the USGS publication some 20 years ago and had an opportunity to, I'll call it, review all the files at that time that the investigator or investigators do their work, it is reviewed by supervisorial people at a local level. The GS has offices throughout the country. And, ultimately, the work, I'll call it, draft publication stage, is reviewed by independent peers within the USGS before it's published. And that is, as best I understand it, what's going on today.

Q. All right. And yesterday -- 2 days ago, we were talking about the current efforts of the Department of Water Resources to update Bulletin 118. And you, in fact, had provided or extracted from some source criteria for defining the parameters of a groundwater basin; correct?

A. That's correct.

Q. Do you have that original material with you that you would -- that you got that information from?

A. I might.

(Pause in Proceedings.)

Q. (BY MR. JOYCE:) Mr. Scalmanini, have you had a chance to locate that?

A. I have two pages here.

Q. May I see the pages you have?

A. (The witness complied.)

Q. Did you acquire these two pages by making a request of the Department of Water Resources in getting a hard copy from

them? Did you acquire them off the internet? What was your original source for these?

A. To be honest, I don't remember. I had staff do it.

Q. All right. You are aware that the Department of Water Resources maintains a Web page where the current published revisions can be located, are you not?

A. I guess I am. I don't spend much time chasing that kind of stuff, so --

Q. All right.

MR. BUNN: Your Honor, may I take a look at what Mr. Joyce is --

THE COURT: You may.

MR. JOYCE: I'll let you have Mr. Scalmanini's two pages. I have my own.

Q. (BY MR. JOYCE:) Now, Mr. Scalmanini, one of the criticisms you had of the efforts of the State Water Resources -- the Department of Water Resources was the audience for whom Bulletin 118 was original generated. And what you perceived, at least as far as the 1975 version was concerned, that it didn't have very much technical support for defining the groundwater basin area.

Is that a fair statement?

MR. DUNN: Objection. Compound.

THE COURT: Overruled.

THE WITNESS: I wouldn't call that a criticism.

Q. (BY MR. JOYCE:) Well, I think you said that the object of their efforts was to prepare information to make available to the legislature as part of the charge arising out of legislation

which originated with a mandate to undertake to do the Bulletin 118 analysis; correct?

A. I remember discussing 118-80 in the -- I'll call it the context of one of the charges was to report to the legislature, and the cover of 118-80 says exactly that. But I don't remember that I criticized or otherwise commented about why Bulletin 118 originally was prepared.

Q. All right. Well --

A. What I did say as far as what I'll call technical is that the illustrations are schematic, and I think the words I used -- you had it here in photo-enlarged form -- is that's not a citeable geologic reference.

Q. All right. And you could not find any significant textural description within 118-80 to assist you in determining whether or not it was a fair and reasonable representation of the area; is that a fair statement?

A. We're talking about 118-80.

Q. Yes.

A. Yeah. Yeah. Basically, that 118-80 says in passing that the original boundaries in Bulletin 118 were based on geologic and hydrologic considerations, and that, I think, for management purposes where practical in the update, the department took political considerations into account. And if you read elsewhere in the document, because they considered that there could be political frustrations to managing the resource if they didn't take political boundaries into account.

Q. What you're saying is that in addition to relying solely upon hydrologic or hydrogeologic features to define the

groundwater basin, they then added to acceptable boundaries political boundaries; correct?

A. That's what it says. That's not what they did, but that's what it says.

Q. All right. And in trying to provide us with the six areas of -- or six acceptable boundary criteria that you extracted from the current revised Bulletin 118 -- or the current revision, that was the second page of a two-page document that you had; correct?

A. That's correct. What I said Tuesday was that I had previously commented that if you look at Bulletin 118 or 118-80, you fail to find two key things. One, any definition of what a groundwater basin is, yet it maps and briefly discusses, as I said, 450-some groundwater basins in California. The second thing you fail to find is any definition of the bases on which the boundaries of those basins were defined. And in Bulletin 118, I'll call it, update, current, both of those details are addressed on the two pages that you've referred to.

Q. Okay. And you were offering up the information contained on the second of those two pages, but you did not offer the information reflected on the first of those; is that correct?

A. Well, I guess you could say sort of. Because what's offered on the first page is almost verbatim in terms of a definition, the same as what we had here. I didn't think there was any need to put it up -- on a third time.

And as far as the fact that technical criteria have been selected and applied in order to take the general definition of a groundwater basin to some specificity in any given setting, then

the department has now listed specific criteria -- technical criteria that it would use or has used, apparently, in its efforts to do this updating recently.

And I'll go a half step farther since you brought the exhibit out and I didn't. The list was basically put together -- I mean, for exhibit purposes, if needed, to support the fact that the criteria previously used by that, basically, list of investigators who either originally defined the boundaries of this basin or subsequently embraced them were consistent with the original criteria that I extracted from Bloyd's -- correction -- from Richter and these criteria which are listed by DWR today.

Q. All right. Well, in fact, though, on the first page of the two-page document, they give a full paragraph narrative of how they went about revising the map area reflecting the Antelope Valley groundwater basin in the year -- or at least as of May of 2002; correct?

A. I don't see any reference to the Antelope Valley.

Q. Well, doesn't it say that the methodology that they employed to outline groundwater basins within the State of California was as follows? And I will read and quote into the record: "The identification of current groundwater basins was initially based on presence and aerial extent of unconsolidated alluvial soils identified on 1:250,000-scale geologic maps provided by the California Department of Conservation, Division of Mines and Geology."

Next paragraph, quote: "Well completion reports for wells present in basin areas identified from the geologic map were then reviewed to identify the depth to the top of the water

table and the top of impermeable bedrock. If less than 25 feet of permeable material was present or if there was no groundwater within the permeable material, the area was eliminated from the map.

"The well completion reports were also reviewed to determine if water supply wells located within the delineated basin area were extracting groundwater from the permeable materials underlying the area or from the bedrock beneath the permeable material. If the wells only extracted groundwater from the bedrock, the area was eliminated from the map. This resulted in the elimination of some areas identified as basins and previous Bulletin 118 reports. If there were no wells present in basin areas identified from the geologic map and no other information on the geology underlying these areas, the areas were retained in the current version of the map until additional information could be collected."

Have I read that accurately, Mr. Scalmanini?

A. Yes.

Q. Okay. And Mr. Scalmanini, isn't there, in fact, a revised Bulletin 118 map showing the Antelope Valley groundwater basin as the Department of Water Resources believes it to exist available on the Web site?

A. I don't know. I didn't look for it.

Q. Was there a reason why you didn't?

A. I think I told you as regards Bulletin 118 originally. 118-80, the update that you didn't mention, in '82. And I'll just say those. That I didn't rely on those. They are schematic illustrations of groundwater basins.

Q. Okay.

A. And I emphasized, I think, at some length here on Tuesday that I wouldn't, you know, and I don't think anybody else should rely on something that at a scale of 1 inch equals 25 miles. I'll have to go to this 1 to 250,000 scale that you just read into the record. But that basically means an inch on the map they used equals 250,000 inches on the ground.

And so I think I've emphatically said that I didn't rely on that. It's not listed in my references. And I wouldn't rely on what's there today. I knew they were in the process of updating it. I frankly don't care what they come up with --

Q. All right.

A. -- as far as this conclusion that I've reached and the technical bases on which I drew these lines.

Q. Well, did you, in attempting to give, for the benefit of this Court, your proposed line, look at any well completion reports at all?

A. No.

Q. Did you look at any well production data anywhere around your red line?

A. At any time?

Q. At any time prior to the time your deposition was completed.

A. No.

Q. And, in fact, at the time your deposition was taken, you did not believe that the rate or the quantity of underflow from outside of your line into your line was an issue you needed to then concern yourself with; fair statement?

A. I wouldn't say that's a fair statement, no.

Q. All right. Well, let me ask you this question: Of all of the investigations or materials that I identified just a few moments ago, which of those was the most significant as far as attempting to quantify the amount of groundwater available in the area and/or the amount of groundwater making its way into the area from outside of the area?

MR. BUNN: Objection. Compound.

Q. (BY MR. JOYCE:) Would that be Durbin?

THE COURT: Well, it is compound, but I think it's a fair question.

If you can answer that.

THE WITNESS: Yeah. I don't think you can say which of those is -- what was the way you phrased the question at the end? -- significant or the most reliable or the most important or something to that effect.

THE COURT: Significant.

Q. (BY MR. JOYCE:) Let me ask you this question: Do you know what a groundwater model is?

A. Yes, sir, I do.

Q. Do you have the technical expertise and capability to generate a groundwater model?

A. I might argue it, my, quote, unquote, "advanced age" that I might be a little rusty in that regard. And I have younger, smarter people that do that. And I oversee it as compared to do it.

Q. All right.

A. But basically, yes.

Q. And did you understand Bloyd's investigation to be a groundwater model?

A. No.

Q. Okay. Did you understand --

A. Well, hang on a second. You could call a lot of things a model. But I think in the context that you're using the term, you're really talking about a numerical groundwater flow model; is that correct?

Q. I am.

And the significant term is "numerical"; right?

A. Yes.

Q. Because it's a quantification, is it not?

A. Well, there are lots of, quote, "models" used to quantify things. They don't all happen to be -- you know, run through computers. And in the 60s, we didn't do numerical groundwater flow modeling as we do it today. But we still had things that could be called models, meaning equations, that will allow us to calculate how much flow takes place across -- there's a boundary of a basin or a line period that we draw anyplace. So that science has been around for well over a hundred years.

MR. BUNN: Your Honor, could I again ask that the witness take his hand away from his mouth. I'm having difficulty hearing him.

THE COURT: Yes.

Q. (BY MR. JOYCE:) Sir, Durbin, in fact, created for the Antelope Valley area a groundwater -- a numerical groundwater model, did he not?

A. A numerical groundwater flow model, yes.

Q. In fact, in his investigative report, he provides quantification of the hydrology of the area. In other words, he gives us values as to what's happening in terms of flow, flow rates, source of water, those kinds of pieces of information, doesn't he?

A. I think so. I haven't read all of Durbin with regard to those subjects.

Q. In fact, isn't it true, sir, that at no time before the completion of your deposition you made the decision to not rely upon Durbin?

A. No, that's not true.

Q. Okay. Did you consider Durbin in your report?

A. Yes.

Q. Can I direct you, if I may, to your deposition commencing on page 108 --

THE COURT: Which volume?

MR. JOYCE: That would be Volume 2, your Honor.

MR. DUNN: Your Honor, I don't believe the witness has a copy of the deposition transcript.

THE COURT: He doesn't.

First, give me the lines on page 108.

MR. JOYCE: Commencing on line 19, your Honor. And I believe the discussion would continue over through page 111, line 11.

Your Honor, may I just read it into the record?

THE COURT: Hold on. Let counsel read it, because that's quite a bit. The only --

MR. BUNN: I'm sorry. What are the lines?

MR. JOYCE: It would be page 108, line 19, through page 111, line 11.

MR. DUNN: I'm sorry. The previous question was whether he considered Durbin?

THE COURT: Yes.

MR. DUNN: Can we give the witness a chance to read it?

THE COURT: I think counsel's offering it to the extent that you believe it's impeachment.

MR. JOYCE: That's correct, your Honor.

THE COURT: All right. It's -- any objection? I'm going to allow him -- I think it will be quicker just to let counsel read it into the record.

MR. JOYCE: That's what I intend to do.

THE COURT: And if he wants to follow-up on questions, you can follow-up on redirect.

MR. DUNN: That's fine.

MR. BUNN: That's fine. No objection.

MR. JOYCE: The question posed was, quote: "Did you, in terms of your analysis, consider the extent of movement of groundwater from the area to the south of this line generally to the north of this line, or did you assume that it was nothing?"

And I believe, your Honor, at the time that was being referred to was the San Andreas Fault rift zone.

MR. DUNN: Well, I object to that conclusion and speculation --

MR. JOYCE: Well --

MR. DUNN: -- and ask that that be stricken from the record.

MR. JOYCE: Noted. I will withdraw the observation.

The answer to the question, though, as reflected in the transcript is as follows: "Basically, neither. I didn't try to compute a flow rate, nor did I assume that it was nothing. I looked at the map. I called it interface from the end of the unconsolidated materials in the beginning of the consol- -- in the beginning of the consolidated materials. That is a legitimate boundary criteria for drawing the edge of a groundwater basin, and agreed with all the previous investigators who had chosen the same boundary and application.

"Are you aware of any studies which show the flow rate from one side of that red line we have been discussing to the other?

"Answer: I think that some recent work by the USGS may take that into account. Not just at that location, but elsewhere in the overall basin. That is to say, the magnitude of subsurface flows that may be taking place across any of the boundaries.

"Question: When you say you think that may be the case, what do you mean by that?

"Answer: Well, the GS is in publication on a -- of a report in its work to develop the numerical groundwater flow model of the Antelope Valley. And I would expect that in developing a calibrated model of the groundwater flow system in the valley that it would account for all the components of flow into or out of the groundwater basin, one of which would be any boundary-type flows, however small.

"Question: That's not published yet?

"Answer: That's correct. To the best of my knowledge, it was supposed to be published sometime this summer.

"Question: Are you aware of any study before the one that's not published that has evaluated the flow between these two areas, these two areas being the area south of the red line versus north?

"Answer: You are talking about in the West Antelope and Finger Buttes subbasins?

"Question: Right.

"Answer: No. It's possible that Durbin -- Durbin's work, which followed Bloyd's, and I think they would model, but I'm not sure if it was for the whole basin -- would have addressed any boundary-type flows as well.

"Question: You have not taken that into consideration in your report?

"Answer: No, I have, I think, made it pretty clear that, you know, I went through a set of criteria as to what constitutes the basins, boundaries of a groundwater basin, and tried to apply those. I didn't compute flows. I recognize that flow can and frequently does occur across very low permeability boundaries that are commonly used to define groundwater basins. I didn't try to compute whether it was big or small as a factor in determining whether or not a geologic feature constituted the boundary of a groundwater basin.

Later in the investigation of defining boundaries, the analysts can consider whether or not there is real small to no to very significant flows across the boundaries as a function of, I will call it, local conditions in those" areas. "In this case,

consolidated, unconsolidated boundaries."

Q. (BY MR. JOYCE:) Now, Mr. Scalmanini --

MR. DUNN: Objection. Rule of completeness. I'm not quite sure what the purpose of this so-called evidence was to impeach.

The preceding question was whether or not he considered Durbin's report. Mr. Joyce's lengthy reading of the deposition transcript indicates that, in fact, his witness testimony in the transcript is the same as his testimony in court that he had. The rule-of-completeness objection is inserted at page 108 where it refers to Dibblee's map and where it says that he did not -- excuse me -- 108 discusses Dibblee's map. And that wasn't made clear at all by Mr. Joyce in this reading of the transcript.

So to the extent that we just went through this whole exercise, there's been no impeachment.

THE COURT: Well, I think the question just -- prior question related to whether he considered Durbin.

MR. DUNN: Correct. And he testified in court that he had. This transcript says that he had. So where's the impeachment?

MR. JOYCE: Well, the impeachment is pretty close to the conclusion --

THE COURT: It said, "Question: You have not taken that into consideration in your report?" The question right after when he says, "It's possible that Durbin's work . . . would have addressed any boundary . . . flow."

MR. JOYCE: And that's, in essence, correct, your Honor.

MR. DUNN: Well, wait a minute.

THE COURT: I think the question's relating to that specific portion of Durbin versus not taking into consideration anything --

MR. DUNN: Then let the record reflect, again, that line 17 on page 110 of that deposition transcript is the answer to the question, question on the -- beginning on line 15, "You have" -- it's a bad question, quite frankly, it's a double negative: "You have not taken that into consideration in your report?"

And, again, on line 17 begins the answer: "No, I have, I think, made it pretty clear that" -- and then it continues.

So to the extent that there's been some kind of effort to impeach him on the Durbin report, that's been improper.

MR. JOYCE: Well, then let me ask this question. Maybe we can clear it up

Q. (BY MR. JOYCE:) Mr. Scalmanini, at the time you prepared your report, you knew that Durbin existed; correct?

A. Yes.

Q. At the time you prepared your report, did you look at any of the quantified flow rates reflected in Durbin in order to validate any of the lines you had drawn? And you're under oath.

A. Thanks for the reminder.

MR. DUNN: Objection. Move to strike the "under oath" as argumentative.

MR. JOYCE: Withdrawn, your Honor.

THE COURT: Sustained.

MR. JOYCE: And I apologize.

THE WITNESS: The blunt answer at this moment is I can't

remember for sure because I've looked at it subsequently in some detail. So the sequence of when I exactly looked and focused on what Durbin map as regards flow directions and flow boundaries, I'll call it, runs across dates. All right. But I'll try to explain, again, which I think I have numerous times in deposition, and I think --

Q. (BY MR. JOYCE:) I think --

A. Hang on a second. Okay.

Q. I think you've answered my question. I do not want a colloquy.

THE COURT: At this point, I think the question is answered, so I'll allow you to go into that on redirect.

MR. JOYCE: Thank you.

Q. (BY MR. JOYCE:) Can you as you sit here today, based on any work you've done, including any work you've done after your deposition was concluded -- strike that.

Let's, for the aid of clarity, address a term. That term I want to talk about is "recharge."

Is recharge the amount of water that eventually makes its way back into a groundwater system?

A. Well, the word "back" doesn't belong in there.

Q. All right. Makes its way into the groundwater system.

A. Yeah. You could lump the -- the -- a -- water that makes its way into a groundwater system as recharge. It would be overbroad to use "recharge" to include all the flow into a groundwater system, yes.

Q. Okay. And recharge comes from precipitation within a -- an area; is that a fair statement?

A. It includes that. It doesn't just come from that.

Q. Okay. Well, recharge can also occur as a result of man's activities. By way of example, if my client is a farmer and he extracts water and he spreads it for irrigation purposes, some of that water becomes recharge; is that a fair statement?

MR. DUNN: Objection. Incomplete hypothetical and certainly lacks foundation.

THE COURT: Overruled.

If you can answer whether that fact in and of itself would constitute recharge, you can.

THE WITNESS: Infiltration and depercolation of water from man's activities can be grouped in "recharge." It's sometimes broken out and called something else, but that can be grouped into the term "recharge."

Q. (BY MR. JOYCE:) That's all I was trying to make sure I was clear about.

And as far as natural recharge is concerned, that's generally a consequence of precipitation within a defined area; correct?

A. Well, that's a pretty exceptional oversimplification, particularly in this setting.

Q. Well, then let's get oversimple setting again.

Where does the new water come from?

MR. DUNN: Objection. Vague as to "new water."

THE COURT: You're talking about recharge.

MR. JOYCE: Yes.

THE COURT: All right. You may answer.

THE WITNESS: In this setting, the bulk of the recharge

has been documented to be from, basically, stream flow that comes out of the mountainous regions surrounding the basin and that infiltrates from the stream. And if I remember correctly -- but I can't remember whether this is including or excluding recent GS work, but I think it goes back in time -- generally recognized that precipitation on the valley floor itself effectively contributes almost nothing to, quote, "recharge" because it's too small and it -- meaning that it only rains out there, whatever, 3 or 4 inches a year. And so that's not enough quantity to fully saturate the surface soils and that ultimately depercolate to effectively -- or to effectively recharge the groundwater basin or the groundwater body below.

And then as regard -- well -- okay. So that's where the bulk of recharge, you know, or new water, as you called it, comes from.

Q. (BY MR. JOYCE:) All right. And so what you're saying is that --

A. I should say natural.

Q. Yeah. And so rainwater falling upon the valley floor generally is not a source of recharge because in a hydrogeologic sense, Mother Nature and the sun take it away before it has the opportunity to percolate back down into the ground soil; correct?

A. Could you differentiate between Mother Nature and the sun for me.

Q. They're one and the same in my mind.

A. Since you listed them both, I thought I'd get squared away on that.

Basically, yeah, that the -- I'll call it generally

sandy nature of the soils, or they may be even lumpy in places -- let's not get worried about the details of the soils, but the soils are such that they can hold the precipitation that falls on them, let's say, long enough for it to be consumed by a vegetation on the surface or to evaporate away and not effectively depercolate in any consequence to contribute to recharge.

Q. Okay. And then the water that is actually getting back into -- if the groundwater system is not attributed to precipitation reaching the valley floor but, in fact, precipitation in the mountainous or hill areas surrounding the valley floor; fair statement?

A. I think so.

Q. And if you were desirous of drawing a line at which point you know the point of demarkation where precipitation is contributing to the Antelope Valley as opposed to other geographic locations outside of the Antelope Valley, where would you draw that line?

A. Well, you're into the whole subject of water supply hydrology, you know, as ultimately ends up in a groundwater basin. So to account for all the water that, you know, as a result of, in this case, precipitation and runoff which contributes to stream flow which gets to the valley floor which infiltrates to provide recharge, you'd go out and look at the water supply at the watershed boundaries.

Q. Okay. And/or drainage basin boundaries, as the case may be.

A. Same thing.

Q. All right. And it's your testimony -- or, at least, it's your opinion that the significant quantity of recharge occurs through surface stream infiltration from out of the hills and mountains and down into the valley floor and then recharges at the termination point? And along the way.

A. Well, since you're into this impeachment thing, I testified about this before, which was that I can't comment today -- as to what the significant component of recharge is today because, A, I haven't studied that yet as part of trying to pick groundwater basin boundaries.

But thus far in this conversation, we've been talking about natural recharge, if you will. And in the years resulting from significant declines in groundwater conditions out there, the states built a water project. There's a canal system that now delivers what I'll call imported or supplemental water to the basin, and there's a faction of that that considers to recharge.

I've done nothing to differentiate between that or the natural recharge, but there's now another component of recharge that some might call, quote, "artificial" and -- but certainly supplemental to local precipitation in the watershed. That also becomes a part of the overall system.

I guess you could say if you want to play the game that I think you're playing, you might as well go up to Lake Oroville and figure out what the watershed that contributes to the canal system that gets to the Antelope Valley as a supplemental water supply.

Q. Mr. Scalmanini, let me assure you that I don't perceive this to be a game.

A. Fine. I do, so --

Q. As a component of recharge, is the recognized and accepted term called "underflow"? Or "subsurface flow"?

A. Well, as a form of recharge, no, there's not an accepted form that's called "underflow."

Q. Okay.

A. That has to do with -- I'll call the term "underflow," as I've used it and as I think is commonly used, affixes to water that would be -- and I think we talked about this the other day too -- in the, I'll call it, the bed of the stream so that if you see -- for example, water flowing on a surface watercourse is common for that streambed to have just that, a bed that is usually -- because of the characteristics of how the stream got there itself, that it has some porous permeable material that forms its bed, and some water can be in that bed of whatever extent the bed is. And it's that water which is, strictly speaking, in the subsurface that is, I think, referred to as underflow.

Q. Well, then let me ask you this question: What would you call -- strike that. Let me set the stage a little bit if I may.

As you move off of the valley floor and start moving up increasingly at higher elevations, up into the hills and then eventually into the mountain, there is not a radical demarkation between unconsolidated and consolidated materials, is there?

A. Along a stream channel?

Q. No. Along -- along any geologic reality of where you start moving away from -- from consolidated -- I realize there's a line you can draw where they're too neat, but what I'm

suggesting is that the subsurface gradient isn't a straight line, perpendicular drop; is that a fair statement?

A. What subsurface gradient?

Q. Maybe I can grammatically help you -- graphically help you.

A. Why don't you draw it over there to some reasonable scale.

Q. Whatever makes -- whatever helps you out.

THE COURT: Let's do this: Let's go ahead -- the court reporter's going to need a break. We'll take a 10-minute break. You can maybe just draw a little diagram on the break.

MR. JOYCE: That's fine.

THE COURT: And our witness may step down.

(Recess.)

Q. (BY MR. JOYCE:) Mr. Scalmanini, if we set this point right here as being the point at which alluvium meets consolidated bedrock or impermeable materials, working our way down the slope of the hills and the mountains, would we expect that where the alluvium begins that the alluvium would go like this?

MR. DUNN: I don't have an objection, but for clarification purposes, can we --

Q. (BY MR. JOYCE:) And "like this" would be straight up and down.

MR. DUNN: Could we do like an "A" and an "A-prime"?

THE COURT: We need to mark the drawing as next in order, which I think is 7.

MR. BUNN: No. Excuse me.

MR. JOYCE: It's 8.

THE COURT: What was 7?

MR. JOYCE: 7 were the two pages taken from the Department of Water Resources Web site. Actually, the copies that Mr. Scalmanini had relied upon.

THE COURT: All right.

Q. (BY MR. JOYCE:) And we'll use A.

The question I'm trying to find out is, the general proposition in Mother Nature when the alluvial conditions are created, they don't happen this radically, do they?

A. Meaning -- "radically," as a vertical line?

Q. Yes.

A. No. I think you can find that on Exhibit 107.

Q. Okay. And, in fact, you'll have the commencement of alluvial material, and as you work -- work your way towards the valley floor, that alluvial material has a tendency to get thicker and thicker and thicker as you go downslope; fair statement? And, again, we're talking in general terms.

A. Yes.

Q. Something like this? And/or maybe getting much deeper as we go? I mean, we can probably even suggest that it can go down like this.

MR. DUNN: Objection. Incomplete hypothetical. Objection. Assumes facts not in evidence in this case.

MR. JOYCE: I'm just trying to get a general feel for geologic topography.

THE COURT: I'm going to sustain the objection.

You can rephrase your question.

Q. (BY MR. JOYCE:) Mr. Scalmanini, what I'm really trying to discern is that the water-bearing or the kinds of material that will hold water once water's been introduced to it, from the point where they -- termination with unconsolidated materials, as a general proposition, have a tendency to get thicker and thicker in-depth as you move from the sides of the mountains and hills down into the valley floor; is that a fair statement?

A. General tendency. Okay.

Q. Okay. And when rain falls, some surface runoff may come from the top of the mountain, make contact with alluvial water-bearing material, and water, as a matter of Mother Nature's reality, has a tendency to try to seek the path of least resistance typically; is that a fair statement?

A. Yes.

Q. Okay. And it's also influenced by gravity?

A. Yes.

Q. Okay. And as it starts to flow across the surface of the alluvium and as the rain's falling likewise on the alluvium, it has a tendency to penetrate down into it, does it not?

A. That's exactly what I said a few minutes ago, yes.

Q. All right. So then we could expect --

A. And mind you, you know, it's flowing in a watercourse.

Q. Okay. Well, is it your understanding that in the entire Antelope Valley area that no precipitation on alluvium working up from the valley floor penetrates the alluvium and becomes then subsurface water?

A. We went through a definition of groundwater yesterday. And what I described to you --

Q. Mr. Scalmanini, my question is very simple. All I want to know --

A. No.

Q. So you would concede that some of that precipitation is going to become groundwater in the alluvium working upslope from the bottom of the valley floor.

A. Within the overall definition of the term "groundwater," which I described to you 2 days ago as being water that gets below the surface of the ground and is either contained in soil moisture or the so-called rest of the unsaturated zone until it gets to the water table, the water gets below the ground surface as a result of precipitation for some period of time, yes, it becomes, quote, "groundwater."

Q. All right.

A. Does it contribute to the groundwater body that is the saturated medium at depth in which wells are completed and from wells extract water, no.

Q. And how is it that you reach that conclusion? Or strike that. Withdraw the question.

Let me ask this question: If, on my illustration and my hypothetical, I introduce in this area a fault line that would be --

A. Fault line or a fault zone?

Q. Fault zone.

A. Okay.

Q. Fault zone would be analogous to your San Andreas Fault zone.

If it's your understanding that none of the water in

this alluvial material would get to the other side of that fault, at least not in any significant quantity; fair statement?

A. No. Not globally.

Q. Well, when you say "not globally," then do we understand that some of this water is going to cross over?

A. Which water?

MR. DUNN: Objection.

Q. (BY MR. JOYCE:) The water.

MR. DUNN: Vague as to location. I'm sorry.

THE COURT: I'll sustain the vague (sic).

Rephrase your question.

Q. (BY MR. JOYCE:) The water that is starting to become subsurface water in the alluvium moving downslope from Point A and to the point where I have identified a fault zone, which I will call B --

MR. BUNN: Objection, your Honor. Is he talking about the Antelope Valley now or --

MR. JOYCE: I'm talking about --

THE COURT: I think he's talking a hypothetical.

MR. JOYCE: I am.

THE COURT: But don't we have to have some determination as to how far down, whether it's in a basin or not in a basin?

Q. (BY MR. JOYCE:) Let's assume that this fault zone is down at the valley floor. Okay?

A. It's on the valley floor someplace.

Q. All right. All I'm trying to discern is whether or not the water that has now become subsurface water is going to get across moving downslope.

A. Okay. Well, the answer to your question is -- you're talking about some precipitation falling on those soils; is that correct?

Q. I'm talking about the water that has made its way into the soils as a result of precipitation and without giving any consideration to any man-made influences.

A. I understand that.

Q. Okay.

A. You have to break that water into two pieces.

Q. Okay.

A. Okay. There is the precipitation that falls on the alluvial soils, as you called them, inside or to the right of Point A, and there's the water that falls on the harder rock component to the left of Point A and gets into a watercourse and then passes Point A.

Q. Okay.

A. Okay. So let me answer both parts. Okay.

Q. All right.

A. So the part that falls on the ground to the right of Point A -- okay -- infiltrates into the ground. You can consider it to be analogous to irrigating your lawn to irrigating a flowerpot. The water is put on the ground surface and it infiltrates into the subsurface. Okay.

Soils in that region -- okay -- I haven't studied it in detail, but just generally, soils will hold water at the rate of about 1 to 1 1/2 inches of water per foot of depth. Okay. It rains in the Antelope Valley 3, 4, 5 inches a year. Okay. So if it holds 1 to 1 1/2 inches of water per foot of depth, the soil

does, and it rains that much, the soil can hold all that water in a few feet of depth. Okay. It will hold it by the tension on the soil particles.

It cannot depercolate to the groundwater body. There's just not enough there to do it. You have to bring the soil to a certain degree of saturation before water will move down.

So the precipitation that falls on the ground surface out there is within the capture zone of either sun and Mother Nature, as you described it, which includes plant materials. So effectively -- and, again, I haven't studied this to great detail because this really is Phase 2 stuff -- but effectively, as has been reported, incident precipitation on the valley floor does not depercolate enough because there's not enough of it. It's partially why they call it a desert.

Now, the other piece of water that you talked about, which is that in a watercourse, as I read -- again, this is Phase 2 stuff -- it comes in a creek or a river or whatever you want to call it, a surface watercourse past Point A. And it's flowing in sufficient quantity to stay in a watercourse. But ultimately, I'll call it, it fans out onto the valley floor. And once upon a long time ago, it may have run in this case to what's now called a dry lake bed. But in recent time -- and you can see the evidence from the air, for example, that there are these fanned-out washes that are creeks that disburse onto the valley floor as a function of just how intensely the water comes down. It infiltrates into the ground surface at much higher rates than what I just described and can ultimately bring the shallow soils to a sufficient degree of saturation to then depercolate and

become true recharge.

Q. Okay. Mr. Scalmanini --

A. Now, you want to get to the Fault B with regard to those two things?

Q. No. I want to start asking questions again.

A. Okay. You ultimately asked me a minute ago did the water ultimately get past Point B.

THE COURT: I don't think we know that if the water in the watercourse gets past Fault B. I don't think I have an answer yet.

MR. JOYCE: He's suggesting the surface flow will fall over Fault B and recharge the ground area.

Q. (BY MR. JOYCE:) Is that what you're saying?

A. Don't suggest anything from me.

THE COURT: Let's not argue. Let's get the answer to this question.

Q. (BY MR. JOYCE:) Let me ask this question: When you were talking about the surface flow a moment ago, what you're trying to tell us is the surface flow will continue down and cross over B and then percolate down into the groundwater area. Is that what you're trying to tell us? Did I summarize that fairly?

A. No. I'll summarize it.

Q. No. Then don't. I'll withdraw the question.

A. Okay. Fine.

Q. The question I'm really most concerned about here is this: Is that this water that is becoming underground water, once it gets down into the soil, then it's no longer exposed and

doesn't evaporate; correct?

A. Man, you don't hear very well. I just said that some of it does.

Q. Okay. But not all of it does, does it?

A. That is correct.

Q. All right. And, in fact, if we were to look at a geologic period of time and go out far enough, would you not expect, sir, that eventually enough water would accumulate behind B moving upslope so that it would manifest itself on the surface? On the assumption we're talking strictly Mother Nature, no influences of man.

A. I'll answer it the way I answered a question in your telephonic deposition. I can envision the condition where that might be the case and I can envision one where it might not be. That is to say, there is one complete universal answer to the question, yes or no, there isn't.

Q. Okay. Wouldn't you agree, though, that if this was truly an impermeable barrier, it would be a dam? And as a dam, then the water over a significantly lengthy geological time, back up from behind it and eventually keep rising and rising and rising until it manifested itself on the surface?

A. If it was truly impermeable.

Q. That's right.

A. And there's recharge that rains in this environment and sufficient quantities to produce runoff, et cetera, et cetera, yeah, then it's conceivable to think that that would happen.

Q. And if you take and add time as an additional factor and you look at it over a sufficient length of geologic time, it's

going to happen if that's a truly impermeable barrier; true?

A. That if that's a truly impermeable barrier, that's probably true, yes.

Q. And you're not aware of any surface manifestations of lakes, ponds, or anything of that nature south of the San Andreas Fault zone that you've mapped on your map, are you?

A. South of the San Andreas Fault zone, any impoundments? Well, yeah, I'm aware of impoundments south of the San Andreas Fault zone.

Q. What I'm talking about is on the line that you've drawn on your map, moving from the topographical area on your map down towards the San Andreas Fault zone that you've mapped, you're not aware of any historical evidence of any lakes manifesting themselves to the south side of that fault zone?

MR. DUNN: Objection. Vague.

THE COURT: Overruled.

You may answer.

THE WITNESS: Well, we can't use the schematic that you've drawn to discuss the question that you've drawn.

Q. (BY MR. JOYCE:) Okay. Well, the question I'm asking is simply this: In looking at all the material you've used in your investigation, is there any evidence that there was ever any surface manifestation of impoundments of water to the south side of the San Andreas Fault zone?

A. Okay. Which is not located at B schematically in the Antelope Valley. But fundamental answer is I didn't look and I don't have an answer one way or the other.

MR. JOYCE: All right. Let me read, if I could --

Q. (BY MR. JOYCE:) Let me ask this question, Mr. Scalmanini: Do you know the names of any surface water features that become the source of the recharge that you were talking about a moment ago?

A. Not well enough from memory to want to sit here and say it.

Q. I notice in looking at your plate that you've labeled a couple. You have the Big Rock and Little Rock down here in this area?

A. Yes.

Q. Okay. And you have Cottonwood Creek in this area?

A. Yes.

Q. Okay. And I'm not sure if I can tell or not, but in looking at your map, it shows that Cottonwood Creek coming in roughly at the apex between this northwesterly red line and the black line which runs north/south or in an angle north/south -- from the north in a southerly direction, which is labeled the Cottonwood Fault. Could you just confirm that I'm correct about that.

A. Yes.

MR. BUNN: Your Honor, is he looking at Exhibit 6?

MR. JOYCE: I'm looking at Exhibit 126.

THE COURT: 126.

MR. BUNN: 126. Thank you.

Q. (BY MR. JOYCE:) That appears to terminate -- or cross over the Finger Buttes subbasin that you've identified and into the Neenach; is that a fair statement?

A. Yes.

Q. All right. Would there be any significance if that creek, in fact, were further to the north and, in fact, crossed over what you have identified as Fremont Valley area and then crossed over the Willow Springs Fault and into the Neenach?

A. I don't know what you mean, would there be any significance. Yeah. The creek would be in a different place than it would in any reality. I guess you could call that significant. What do you mean by is there any significance?

Q. Well, how about this: If, in fact, it were as I suggest, to the north, and, in fact, crossed over the Fremont Valley and then crossed into what you've identified as the relevant area, i.e., the Antelope Valley, would pumping to the north of your line but in the vicinity of that creek bed have an influence upon the ultimate groundwater that would recharge the Antelope Valley area?

MR. DUNN: Objection. Hypothetical. Assumes facts not in evidence.

THE COURT: Well, I mean, it's ultimately the start of what we're going to get to in Phase 2.

I'm going to allow -- if the witness can answer it based upon the facts in the hypothetical.

MR. JOYCE: That's all I'm limiting it to.

THE COURT: It might be missing a few that we need. I don't know. But if he can answer it, I will let him.

MR. JOYCE: I will rephrase the hypothetical so I will make sure I've got it completely typed.

Q. (BY MR. JOYCE:) Mr. Scalmanini, I want you to assume --

A. I understand that.

Q. -- that the creek originates in the Tehachapi mountains to the northwest, that the stream runs down across a section of the Fremont Valley and then across the Willow Springs Fault line as mapped by Carlson in 19- -- or, at least, that you've referred to it here as Carlson in 1998. Okay?

MR. DUNN: Objection. Assumes facts not in evidence.

MR. JOYCE: Okay. Well, in that case, then let me mark as next in order and we'll get this straightened out.

THE COURT: Well --

MR. JOYCE: What's my next number?

THE COURT: It would be 9.

MR. DUNN: I'll withdraw the objection, your Honor.

THE COURT: Go ahead. Because for the hypothetical answer to have any validity, you'd have to establish all of the facts reported. So let's try to shortcut it a little bit.

MR. JOYCE: I understand.

Q. (BY MR. JOYCE:) If that were the surface watercourse, and if you further, then, were to assume that agricultural interest in the Fremont Valley were pumping groundwater within a -- a fairly close proximity to the watercourse itself, could that have any impact upon the amount of recharge that would have otherwise made its way into what you call the Antelope Valley groundwater basin? That's the hypothetical.

A. Okay. So the farmer in the Fremont basin, valley, whatever, is pumping groundwater?

Q. Is pumping groundwater.

A. From a well.

Q. From a well. Within the vicinity of the watercourse as

it crosses through the Fremont Valley and ultimately terminates in the Antelope Valley.

A. Okay. No.

MR. JOYCE: I will mark as next in order, which I believe would be Plaintiffs' Exhibit --

THE COURT: 9.

MR. JOYCE: -- 9. Thank you, your Honor.

Q. (BY MR. JOYCE:) This is an original USGS map by -- this is the -- one of the Carlson maps that I believe you referred to.

Can you just confirm that for me, Mr. Scalmanini?

A. Yes.

Q. Can you just show me where --

THE COURT: What do we want to call it for our clerk?

MR. JOYCE: This would be technically titled Regional Water Table 1996 and Water Table Changes in the Antelope Valley Groundwater Basin, California, by Carl S. Carlson, David A. Lighten.

THE COURT: We'll call it Regional Water Table Number 96.

Q. (BY MR. JOYCE:) In any event, Mr. Scalmanini, if you can just confirm for me that Carlson maps the Cottonwood Creek, does he not?

A. He shows it schematically, yes.

Q. Does Carlson show the Cottonwood Creek originating at the same point of apex that you show it in your map?

A. Well -- well, I can't see the origination of Cottonwood Creek on my map from here.

Q. If you would like to step down, please feel free to do

so.

THE COURT: You may.

(Pause in Proceedings.)

THE WITNESS: Well, I can't tell for absolute sure. The base that Carlson used is basically a photo mosaic of the ground surface. This is a topographic map. Our base map is a topographic map taken from a -- call it patchwork of published topographic maps.

I'm trying to get a line where Cottonwood Creek -- you asked where it originated. I can't tell.

Q. (BY MR. JOYCE:) The issue I was most significantly concerned about is, as depicted on your map, the Cottonwood Creek does not traverse any portion of the Fremont Valley; is that a fair statement?

A. Well, what's the limit of the Fremont Valley?

Q. Well, apparently, you have -- I would have to defer to you since you have suggested that the Fremont Valley is to the north of your line.

A. That's correct. And the Cottonwood Creek, you know, comes out of the mountains on what I'll call the Fremont Valley side of a line that I've drawn to differentiate between two groundwater basins.

Q. Okay. Well -- but am I correct that Cottonwood Creek, as depicted by Carlson, is over here coming roughly into the area?

A. No, it's not.

Q. Apparently even on your map, there's some manifestation of a creek or a stream in that same location that crosses Fremont

and terminates into the Neenach subbasin; correct?

A. There is a whole collection of what I'll call finger-like drainage courses that come off of the southeastern slope of the Tehachapi mountains and drain out and end in the valley -- the flat portion of the valley or valleys that are to the southeast.

Q. And, in fact, many of those cross over the northern portion of your boundary line across the Fremont Valley and into -- and terminate into what you have outlined as the Antelope Valley; correct?

A. That's correct.

MR. JOYCE: All right. Your Honor, I'd like the Court to take judicial notice of the California Supreme Court opinion in Mojave versus Barstow.

MR. DUNN: Object.

MR. JOYCE: And -- pardon me?

MR. DUNN: Improper subject of --

THE COURT: I'm not sure I can take judicial notice of an opinion.

MR. DUNN: It's a recorded case. It is what it is.

THE COURT: I can certainly -- it's going to be reviewed as part of the research, so --

MR. JOYCE: I was only interested in reading, from Mr. Scalmanini's benefit, a hydrologic condition described by the Court. I want to have -- have him explain an issue to me.

MR. DUNN: Well, objection. This is clearly outside the scope of his direct examination. We're concerned here with the Antelope Valley. What happened in a separate basin in Mojave and

what those facts were and -- I don't think -- if it's of any relevance at all, it's got to be of such marginal relevance to be outweighed by the time --

MR. JOYCE: I'll see if I can get a foundation. I may get there; I may not.

THE COURT: Okay.

Q. (BY MR. JOYCE:) Mr. Scalmanini, given that your interest is groundwater and groundwater hydrology, I assume that you intend to follow disputes in groundwater rights whenever you become aware of them?

MR. DUNN: I'm going to object to that because I attempted to ask him precisely other basins and other basin disputes --

THE COURT: I'll sustain that objection. I sustained the objection.

MR. JOYCE: Thank you, your Honor.

Q. (BY MR. JOYCE:) Let me go back, if I -- Mr. Scalmanini, to Bloyd for a moment.

In Bloyd, in his written literature, he attempted to give a written description of what he did to arrive at the lines he drew; correct?

A. What lines?

Q. Well, the subunits or subareas that he identified as being the subbasin units -- or subunits, rather. And then, in addition to that, he also gave a description of what he had attempted to do to delineate the groundwater basin itself.

A. Hang on a second.

Q. If you'll refer to page 19, it might be of assistance.

(Pause in proceedings.)

THE WITNESS: Yes.

Q. (BY MR. JOYCE:) In the very first paragraph, he says, "Each is divided" -- here he's talking about the two groundwater basins, I believe -- I'll just read the entire paragraph. Maybe we can get it focused. "There are two major groundwater basins in the AVEK area, Antelope Valley and Fremont Valley basins. Each is divided into groundwater zones by faults, bodies of consolidated rock, groundwater divides, and in some instances by convenient and arbitrary boundaries." Okay?

A. Yep. That's already in from today. But go ahead.

Q. All right. And then, also, on the next page, which is 20, he goes through the process of identifying the zones of the Antelope Valley basin itself; correct?

A. Beginning on page 20, yes.

Q. Okay. If I understand it, in your deposition, you confirm for us, and I believe you have here too, is that your map is, in essence, taken from Figure 10 of Mr. Bloyd's report; correct?

A. It's not literally taken from, but it is, I'll say, a reproduction of.

Q. A reproduction.

And Bloyd's Figure 10 was an attempt in his part to illustrate the subunits; fair statement?

(Pause in Proceedings.)

THE WITNESS: Yes.

Q. (BY MR. JOYCE:) Okay. What I'm really most concerned about is can you tell me which of the lines shown on your

Exhibit 126 are the convenient -- are the lines that were drawn as a matter of convenience by Bloyd?

A. I don't think I can.

Q. Okay. And is that because Bloyd, in his textual material, doesn't describe which lines he adopted as a matter of convenience; correct?

A. That is correct. If I remember correctly -- I have to look through the whole text, but what I remember correctly is that he -- using the quote that you just said, he described boundaries to the limit of his -- of his mapping. As I discussed in some detail, he didn't close in the southeast corner, but he described everything that he described as -- as I recall, as being either a fault, a body of consolidated rock, or a groundwater divide.

Q. All right.

A. I don't remember anything around the perimeter where he called it a convenient or arbitrary boundary.

Q. But isn't it also true that you can't identify what he was referring to as those lines drawn for the purposes of convenience or those lines drawn which were, in his view, arbitrary?

A. I just told you that --

Q. Mr. Scalmanini, all I'm trying to ask you is very simply this: Which lines did you understand Bloyd to be referring to when he said some of these lines are arbitrary and some of these lines are for purposes of convenience?

A. As regards the Antelope Valley, I understood none to be drawn for convenience or for arbitrary reasons. I assumed that

when he wrote the sentence that you just said, that is to say that he divided on several bases, including faults, bodies of consolidated rock, ground divides, and in some instances by convenient and arbitrary boundaries, he was talking about both the Antelope Valley and Fremont Valley. I did not look at what he did to draw boundaries around basins or subbasins in the Fremont Valley. I only looked at what he did in the Antelope Valley.

Q. Mr. Scalmanini --

A. He did not label any of those as "convenient" or "arbitrary."

Q. Well, then can you direct me to where he labeled the ones in the Fremont Valley as being "convenient" or "arbitrary"?

MR. DUNN: Objection. Outside the scope of direct examination.

THE COURT: Overruled.

MR. DUNN: Irrelevant.

THE WITNESS: I have not looked at how he did or didn't map any of the subbasin boundaries or outermost basin boundaries of the Fremont Valley other than where it abuts the Antelope Valley, so I don't know.

Q. (BY MR. JOYCE:) Okay. And --

MR. BUNN: Your Honor, the language that Mr. Joyce read from says in it that he's referring to subbasin boundaries. I don't know where Mr. Joyce is going with this.

MR. JOYCE: That's my -- exactly my point. I'm trying to find out which of these subbasin boundaries that Mr. Scalmanini has put on Exhibit 126 that he's taken from Bloyd

were put there, because Bloyd put them there either as a matter of convenience or because they're arbitrary.

MR. DUNN: Objection. Relevance. We're not concerned with subbasins in this phase.

THE COURT: Well, overall, it might have some relevance to his ultimate depiction of basin boundaries as to how it relates.

MR. JOYCE: To be more clear, your Honor, is that the red line Mr. Scalmanini has drawn is just the outer line of each of the subunits as mapped by Bloyd. If I don't know whether or not Bloyd chose by way of example to simply pick the fault rift zone as a place to draw the line out of convenience or if that's an arbitrary line, then I think that has some relevance here.

THE COURT: I'm going to allow you to go into it.

THE WITNESS: Okay.

Q. (BY MR. JOYCE:) All I'm trying to ascertain -- Mr. Scalmanini, I've read Bloyd from front to back and I cannot find in there whether in Fremont or in Antelope Valley where he tells us which lines were arbitrary and which lines were convenient.

Do you have any reason to believe that I didn't read it accurately?

MR. DUNN: Objection. Calls for speculation.

THE COURT: Overruled.

THE WITNESS: Are we talking about outermost boundaries, or all basin or subunit boundaries?

Q. (BY MR. JOYCE:) What I'm suggesting to you, Mr. Scalmanini, is that nowhere in any discussion of basin

boundaries, groundwater basin boundaries, subunits, zones, subareas does Mr. Bloyd ever tell us which lines he was referring to when he used the term "convenience and arbitrary" in his initial introductory paragraph describing what he did.

Do you have any reason to believe that I am in error in that observation?

MR. DUNN: Objection. Compound. There are two questions pending.

THE COURT: I'll sustain that objection. Just let's answer the first one, not about him being in error.

THE WITNESS: So what was the first one?

Q. (BY MR. JOYCE:) I'm simply asking you if you have any reason to believe that you can find in Bloyd texturally where he identifies what lines he was referring to when he used the term "convenient and arbitrary" in the introductory paragraph to what he was attempting to do.

A. I don't think -- I'll look line by line through the Antelope Valley, again, which is what I've, you know, referred to before and used as reference material as regards to this whole discussion.

I can't remember a place where he used a convenient or arbitrary bound as regards the outside or inside and said so. I described the same types or specifically the same physical features when we walked around Bloyd's line, whatever it was, mile by mile or segment by segment a couple of days ago.

MR. JOYCE: Your Honor, I would move to strike as nonresponsive. My question is simply --

THE COURT: I'll allow the answer. I'm going to deny

that. But I think we have an answer. Now let's get our next question.

MR. JOYCE: That's not responsive.

Q. (BY MR. JOYCE:) I will resay it one more time so we're clear.

Can you direct me to the page or anywhere within the text of Bloyd where he tells us which lines were placed upon his Plate 10 or any other plate he used in his report which he was referring to when he used in his introductory paragraph the term "convenience or arbitrary"?

MR. DUNN: Objection. Bloyd's report speaks for itself.

THE COURT: Overruled. Although, I thought we had an answer that was -- although, did we just say no -- was essentially a no answer.

If you can answer this question, sir, "yes" or "no," I'm going to just have you do that.

MR. JOYCE: Thank you, your Honor.

THE WITNESS: Yes, I can answer it. And the answer would be no.

THE COURT: Okay. Thank you.

Q. (BY MR. JOYCE:) Now, Mr. Scalmanini, in formulating the map that you have formulated, you relied upon Bloyd's Figure 10; correct?

A. In part, yes.

Q. Okay. And Bloyd's Figure 10 was the figure that he referred to in the body of his textural description of his efforts when he was talking about the zones or the subunits; fair statement?

A. Yes.

Q. Okay. In the paragraph where he first starts off and says "delineation of groundwater basins," the very first sentence says, quote, "Again, there are two major groundwater basins in the AVEK area: Antelope Valley and Fremont Valley basins." Then he has a parentheses, Figure 2, parentheses, period; correct?

MR. DUNN: Objection. Asked and answered repeatedly over 2 days.

MR. JOYCE: This is foundation to the next question, your Honor.

THE COURT: Well, I think that's in the report. Let's just get to the next question.

Q. (BY MR. JOYCE:) The question I have simply is this, Mr. Scalmanini: Why didn't you use Figure 2 to illustrate the groundwater basins of both Fremont and Antelope Valley as depicted by Bloyd in his Figure 2 as opposed to the subunit map, i.e., Figure 10?

A. I'd say primarily maybe almost exclusively as regards Bloyd, because on the next page that you took me to, page 20, and continuing on, he provides a detailed description of each of the subbasins or subunits or zones, whatever word he used. And all with regard to the overall Antelope Valley groundwater basin.

I think I've said at least once, probably multiple times, that I looked at this question from -- I'll call it day one or minute one as has an entity or a physical feature known as an Antelope Valley groundwater basin previously been defined or not. Do we need to start from scratch, or can we pick up with previous investigations? And in --

MR. JOYCE: Your Honor --

THE WITNESS: -- in deciding whether or not I could draw this line on Exhibit 126, then I went back, in effect, to fundamental definition of a groundwater basin and then criteria that would allow you to draw lines and apply physical features to a given setting and to conclude whether or not there was a groundwater basin in that location.

And in doing so, I looked to see whether or not somebody like Bloyd -- in this case, Bloyd specifically -- had applied criteria that were consistent with that. And in his report, he goes through a discussion of those criteria on a subbasin-by-subbasin basis referring to Figure 10. So I used the mixture of the text that he describes and, in effect, applies the physical criteria or technical criteria to determining ultimately -- or initially the individual subbasins which in aggregate formed the total groundwater basin. And that's what I stated in Figure 10. It's why I used Figure 10 in context with his textural description.

Q. (BY MR. JOYCE:) Okay. Well, in his opening sentence in describing the two groundwater basins, he refers us to Figure 2.

And I would mark that next in order, which would be?

THE COURT: 10.

MR. JOYCE: Thank you.

Q. (BY MR. JOYCE:) I have it on the blowup here.

Is that an accurate reproduction of his Figure 10? His Figure 2? Excuse me.

A. I can't tell with the light shining on it.

Q. Do you have Figure 2 available to you, Mr. Scalmanini?

Would you agree, sir, that on Bloyd's Figure Number 2, which is referred to in the opening sentence of his description of the delineation of the groundwater basins, that he identifies Fremont Valley and Antelope Valley?

MR. ABBOTT: Your Honor, may the witness have a chance to examine the whole document? We only have a portion of it up on the screen.

THE COURT: We -- yes. The whole Figure 2.

MR. JOYCE: I believe he has just extracted the entire Figure 2 from his files.

THE WITNESS: No. This isn't Figure 2.

MR. BUNN: What's the title of it, please?

MR. JOYCE: It's Figure 2 from Bloyd.

MR. BUNN: Is there a title on it?

MR. JOYCE: Yeah. There's a map. A title on Figure 2.

MR. BUNN: Could you tell me what --

MR. JOYCE: I'm concerned about Figure 2.

MR. BUNN: I understand. Could you tell me what the tile is?

MR. JOYCE: I'll let Mr. Scalmanini tell you when he gets it out of his --

THE WITNESS: I don't have it.

THE COURT: You don't have -- do you have the Bloyd report? Somewhere we do.

Q. (BY MR. JOYCE:) It's page 6 of the report, Mr. Scalmanini. That might be helpful.

A. It's in the text?

Q. It may very well be part of the text report itself.

THE COURT: So we'll call it page 6 of the report.

MR. BUNN: Thank you, your Honor.

Q. (BY MR. JOYCE:) Do you now have it before you?

A. Yes.

Q. Just so we're clear so I'm not misleading anyone, I'm going to hand you 10. Just want you to compare your page 6 of Bloyd's report with what I've now marked as 10.

A. Okay.

Q. Okay. Is Plaintiffs' Exhibit 10 a true and correct copy of page 6 of the Bloyd report that you're looking at which sits before you?

A. Looks like it is.

Q. Thank you very much.

And on Exhibit 10, does not Bloyd identify the Antelope Valley?

A. On Figure 2?

Q. Yes.

A. Well, Figure 2 is --

Q. Just answer my -- does he identify the Antelope Valley in words on there?

A. He has the words "Antelope Valley" on this figure, yes.

Q. Okay. Does he also have the words "Fremont Valley"?

A. Yes.

Q. Does he also have a line which separates the two?

A. Yes.

Q. Okay. And in the legend, that line is identified as to what kind of line it is; is that not true?

A. Yes.

Q. What is the line that's identified in the legend?

A. Drainage boundary.

MR. JOYCE: Thank you.

I have no further questions.

THE COURT: All right. I take it cross is done.

So we'll start redirect after -- oh.

MR. ZIMMER: Your Honor, I have about --

THE COURT: I was going to exclude you from questioning.

MR. JOYCE: Did I do that?

MR. ZIMMER: I have a brief -- your Honor, it will probably take me 15 minutes, 20 minutes.

THE COURT: Let's do it after lunch.

I'm going to let the witness step down.

We need to, for my clerk -- we're a little confused on our exhibits. So let's go over the exhibits.

From plaintiffs' exhibits, I have a 1, 2 -- I didn't write down a 3, but I had a 4, 5, 6, 7, 8, and 9. And my clerk says 3 was Mr. Sheahan's something-or-other.

MR. ZIMMER: Slide 17, which shows two sets of boundaries.

MR. BUNN: It was a map that I borrowed from the plaintiffs for use in my opening statement.

THE COURT: All right.

MR. BUNN: And it had both sets of boundaries on it.

THE COURT: All right. It was not in the actual testimony. It was --

MR. BUNN: That's correct.

THE COURT: That's why I don't have it written down.

Nothing has been admitted. Do plaintiffs want 1 through 10 admitted first?

MR. JOYCE: Your Honor, can I reserve and I will make an offer right after lunch? Because I am not real sure. Some of them, I think --

THE COURT: Take a look at them.

And then I need to know if we're going to have any objections for 1 through 10.

For defense, I'll make sure mine corresponds with the clerk's: 106, 107, 109, 110, 113, 114, 115, 126, 112, and 111. Now, I could have missed one or two.

Madam Clerk?

MS. FUENTES: Your Honor, this morning, we submitted to your clerk an amended list which has all of the exhibits we may potentially use and the -- exact titles of them. According to my notes, you've gotten everything that's been used so far.

THE COURT: All right. Then what I want to do, because we need to make the minutes so far because I want to know if we want those admitted and have an objection on that.

MR. JOYCE: Thank you, your Honor.

THE COURT: Maybe we can get an agreement. If everyone agrees, I'll have the numbers to go over. If there's an objection, we'll talk about it and take up that objection briefly.

We probably should -- at this point, we're getting to enough, we have -- should handle them at the end of the --

MR. JOYCE: Afternoon?

THE COURT: Yeah.

MR. JOYCE: I apologize. I meant to do that, but I was not thinking.

THE COURT: That is all right.

So we'll break for lunch.

I'm going to ask just the attorneys to come back by 1:20. And that way you can make sure we've got -- we know what we're doing on the exhibits.

My court reporter will be back right at 1:30, so whatever's on the record we'll start right at 1:30. But I want to make sure we have a prompt start.

MR. JOYCE: Do we have any indication about tomorrow?

(Discussion - Not Reported.)

(Lunch Recess.)

THE COURT: Did we get an agreement on exhibits?

MR. ZIMMER: Your Honor, I talked to Mr. Dunn, and quite frankly, I spent most of the time trying to pare down my examination of Mr. Scalmanini. There are a couple of areas I'd like to talk to Mr. Dunn about -- about coming to an agreement about -- so we don't have to waste the Court's time arguing about things we don't need to argue about.

THE COURT: Why don't we see if we can't by tomorrow morning have a list.

MR. DUNN: As to the plaintiffs' exhibits, we can do that now if you'd like.

THE COURT: All right. I'm sure they won't object.

MR. JOYCE: Not in the least.

MR. BUNN: We've agreed that Plaintiffs' Exhibits 3, 4, 5, and 7 through 10 can be admitted.

THE COURT: Okay.

MR. BUNN: 1 and 2 were opening statement things and not admissible.

THE COURT: They're just marked for illustrative purposes.

MR. BUNN: Right. And Number 6, Mr. Joyce intends to furnish some further foundation later on.

THE COURT: All right. That's fine.

Then 3 through 5 and 7 through 10 are admitted.

MR. DUNN: Without objection.

THE COURT: All right.

MR. ZIMMER: I'm sorry, your Honor --

THE COURT: Quickest thing accomplished in this whole trial so far.

MR. ZIMMER: 3 through 5?

THE COURT: 3 through 5 and 7 through 10.

MR. JOYCE: And it was by agreement. Surprise.

THE COURT: All right. Mr. Zimmer, you're up.

MR. ZIMMER: Thank you, your Honor.

CROSS-EXAMINATION

BY MR. ZIMMER:

Q. Mr. Scalmanini, I expect that my questioning of you will be fairly brief.

If you could, I would appreciate it if you would answer "yes" or "no" when that can be done so that we can move through this without a lot of extra things that I'm not asking you.

Fair enough?

A. Okay.

Q. Mr. Scalmanini, is it a true statement, sir, that at the time of your deposition, you were not aware of any treatise that was commonly available as to what a subbasin is?

A. I think no.

Q. Did you testify to that at your deposition?

A. I don't remember being asked about a treatise as to what a subbasin was, to be real honest. But since I used the same reference material to define subbasins as basins, meaning the criteria I had here -- I forget the exhibit number -- and that's embedded in a treatise, if I was asked, you know, a treatise, that's probably what I would -- that's -- I would say I was embedded in that and I was aware existed.

Q. So is the answer no, you did not say that?

A. I don't remember.

Q. Do you remember testifying -- well, I guess you could get into some quibble about what a, quote, "treatise," unquote, is. Basically, you're not aware of anything that's commonly available in the way of a treatise on what a subbasin is?

A. That'd still be true. A treatise by itself on that subject, I'm not aware of. The fact that there is material inside of a bigger volume that might be considered a treatise and the subject of subbasins is just a small part of that, then I'd answer differently.

Q. I didn't ask you for an explanation, sir, why you said or did not say you said. I'm just asking you whether you said it.

You admit that you said it; correct?

A. Say the words again.

Q. In other words, when I'm asking you questions, I'm not asking you to explain why you said what you said. I'm just asking you whether you said it. And you can answer that "yes" or "no."

And I take it you said, "Yes, I did say it."

A. If that's what's written down and I didn't change it, then yes, that's what I said.

Q. Did you say, sir, at your deposition that the literature, including textbooks, is generally devoid of a treatise on the subject of what a basin is and what a subbasin is?

A. Yes.

Q. Is it true, sir, that a watershed basin can, in fact, be surveyed; correct?

A. Yes.

Q. Is it true, sir, that in mountains, there are permeable areas within a mountain?

A. Yes.

Q. We know that trees grow on top of mountains; correct?

A. I don't know about on top of, but trees grow on mountains, yes.

Q. They gain their water from the mountain.

A. Yes. What does that have to do with what you just asked me?

Q. I'm not asking you what it has to do. We can save that for argument later.

There are mountain springs that grow from mountains; correct?

A. There are springs that flow from the sides of the mountains, yes.

Q. And they grow from permeable area within the mountains that pull water; correct?

A. Fundamentally, yes.

Q. And it is true that groundwater accumulates in mountains as well as in valleys.

A. Yes.

Q. You agree, sir, isn't it correct, that pumping outside of a watershed generally would not affect pumping inside the watershed?

A. Generally, yes.

Q. And you agree that water in what you describe as a groundwater basin comes from the watershed, either by runoff or by migration of groundwater in addition to whatever's imported into the valley?

MR. BUNN: Objection. Compound.

MR. ZIMMER: Would that be correct?

THE COURT: Overruled.

THE WITNESS: Can you break it into its three parts again?

Q. (BY MR. ZIMMER:) Is it true --

A. I agree that it comes from runoff? Is that the first part?

Q. In other words, some water ultimately ends up in what you have described as a groundwater basin; true?

A. Some water does, yes.

Q. And in this particular case, that water gets there from

the -- one of three sources: The watershed, the runoff from the watershed, the migration of groundwater, and what's imported.

A. You -- the first subdivision was the watershed. Now, water falls in the watershed and then becomes runoff from the watershed. And I agree that that is a form of -- or mechanism whereby water gets to the groundwater basin eventually.

Q. Do you also agree that migration of groundwater that percolates in the fractured bedrock is also a part of what makes its way to the -- what you describe as a groundwater basin?

A. Can, yes. Not necessarily does, but can.

Q. And the only other source of water that's available is what's imported into the valley.

A. I don't know if I want to be held to the only other, but that's -- in this particular case, that's the predominant other component, yes.

Q. Is there anything else that we're missing here? Because you said that water that falls by way of rainfall inside the valley floor is insufficient to work its way into the water table. Is there any other source of water other than runoff, groundwater migration, and importation?

A. Not that I can instantly think of, but I haven't done that much work on that subject in the basin.

Q. It is true, sir, other than taking some data with regard to flow across what you've described as the boundary line in a couple of small areas, you have not done any study or evaluation of the amount of flow anywhere around the line that you have drawn; is that correct?

A. That's correct.

Q. There was some discussion of the USGS report, that new USGS report that's in the works now but has not been published, doesn't that report go into in much greater detail a more comprehensive evaluation of the Antelope Valley in terms of assessing in that study flow across these lines that you have indicated?

A. Much more comprehensive than what?

Q. Than what's been done in the past.

A. I don't think so.

Q. The new USGS study, you will admit, does study flow across the lines that you have drawn on your diagram?

A. My best answer to that is I haven't seen the new USGS study in any detail. Is that like its predecessor, which is the American Groundwater -- it documents a new tool, meaning numerical groundwater, it does Durbin, which is from the '70s if I'm remembering right. It accounts for all components of inflow and outflow to the Antelope Valley ground basin.

Q. And that includes flow across the line that you have drawn on your diagram as the line for the basin boundary.

A. That is correct. Both --

Q. That's all I asked, is whether it did.

A. Yes.

Q. Sir, you are a civil engineer and mechanical engineer by education; is that correct?

A. Yes.

Q. You are not a registered geologist; is that true?

A. That's correct.

Q. You are not a certified engineering geologist; is that

true?

A. Yes.

Q. You are not a registered geophysicist; is that correct?

A. Yes.

Q. You are not a certified hydrogeologist; is that correct?

A. Yes.

Q. And you're not a certified professional geologist; correct?

A. Yes.

Q. You do admit, sir, that groundwater can permeate through fractures in a fault zone; correct?

A. What do you mean by "permeate through fractures in a fault zone"?

Q. Can migrate as groundwater through fractures in a fault zone?

A. Meaning cross the fault through, I'll call it, breaks in the fault?

Q. Yes.

A. Is that what you mean? Yes.

Q. And logically speaking, the more fractured an area is, the more water you might expect to migrate through that fractured material.

A. Well, now we're talking about fractured faults or fractured material?

Q. Well, faults cause fractured material, do they not?

A. If you're asking about them flowing through the fractured material, that in general, logically, the more fractured a consolidated earth material is, the more potential

there is for flow to go through, yes.

Q. At the time of your deposition, you admitted that a water supply can, in fact, be developed in the Leona Valley; is that correct?

A. I probably speculated on that, but if you want to say admitted, that's okay.

Q. You didn't say in your deposition that you were speculating that, did you?

A. I don't remember.

Q. Do you remember testifying that there were (sic) sufficient thickness in aquifer material that water supply can be developed from groundwater in the Leona Valley?

A. Yes.

Q. Although you had not studied Leona Valley for purposes of your deposition?

A. That's correct.

Q. You admitted at the time of your deposition that you did not know where to draw a line in the southeast corner of your map; is that correct?

A. I don't think so. I think I ultimately said how I'd close it in, so to speak.

Q. You postulated that you could potentially close it in by using a groundwater divide; correct?

A. I don't know about postulation, but I would have -- I think I said that I could close it in by groundwater divide. It's how other investigators have done it. I didn't disagree with that.

Q. A groundwater divide can move, isn't that correct, over

time?

A. Yes, it can.

Q. That's because of the changes in head on one side versus the other?

A. Fundamentally, yes.

Q. You also have admitted that basin boundaries sometimes depend on the focus of the inquiry; is that correct?

A. Groundwater basin boundaries?

Q. Yes.

A. I don't think I admitted that, no.

Q. Did you say that basin boundaries sometimes depend on the focus of the inquiry?

A. I don't remember being asked about basin boundaries. I remember talking about study area boundaries can move as a function of the focus of the investigation. I don't remember basin boundaries moving as a function of that.

Q. But certainly study areas can move.

A. No question.

Q. Based on what you're trying to accomplish; correct?

A. That's what I just said. No question.

Q. You had not requested at the time of your deposition any materials from your client regarding well data on either side of your line; is that correct?

A. I have not what?

Q. Requested from your clients any information on well data or compiled any well data at the time of your deposition as to --

A. I certainly haven't compiled. I don't know whether I requested. No. Probably not.

Q. And you had not looked at the issue of whether a well placed on one side of the line would have an effect on pumping on the other side of your line at the time of your deposition; isn't that correct?

A. That's correct. Not within a focus, analysis, or anything like that.

Q. You have admitted, sir, that a boundary is rarely perfect. And in this case, that there's no acknowledgement that -- or strike that.

You do admit that a boundary is rarely perfect; correct?

A. Yes.

Q. And that there is some flow across; correct?

A. Yes.

Q. And you have admitted that pumping outside of your line could affect groundwater inside that basin line.

A. I think the way I was asked the question was could I conceive of the impacts of pumping on one side having an effect on the other. And I said I could conceive of conditions whereby the answer would be yes; and I could conceive of conditions whereby the answer would be no.

Q. And you also conceded that pumping outside the watershed would not have an effect on the groundwater inside.

A. I think I just answered that a minute ago by saying generally, yes.

Q. Can you tell me, sir, how many square miles are contained in the area that you have drawn with your line.

A. No, I can't. It's measured in hundreds, but I can't remember. I've never planimetered it if that's what you really

want to know.

Q. In the Carlson study, I recall that this more narrow line was described as, like, 940 -- do you have the Carlson study up there, Mr. Scalmanini?

A. I don't. It's down in that box down there. At least, I think it is. Or wait a minute.

Q. I think it's this one, Mr. Scalmanini.

MR. BUNN: I think you're looking for Exhibit 9.

Q. (BY MR. ZIMMER:) Do you remember seeing, Mr. Scalmanini, in the Carlson's report?

A. I think I've seen in a reference of places the number of miles, but I don't remember the numbers. I remember it to be in the number of square miles, but that's a very general answer.

Q. Do you know just generally whether it's less than a thousand square miles?

A. Can I get out this box down here for a second?

MR. BUNN: I don't know what the question is. He said it.

THE WITNESS: Whether it exceeds.

MR. JOYCE: The square miles.

(Discussion - Not Reported.)

MR. JOYCE: I found it, Mr. Scalmanini.

THE WITNESS: Okay.

Q. (BY MR. ZIMMER:) Referring for the record to a USGS -- U.S. Geological Survey Water Resources Investigation Report 98-4022.

THE COURT: Are we marking this?

MR. ZIMMER: Not at the moment, your Honor. I was going

to use it to refresh the witness's recollection.

THE WITNESS: Yeah. I assume their boundaries, meaning Carlson, et al., the Antelope Valley groundwater basin covers about 920 square miles.

Q. (BY MR. ZIMMER:) And that line is the more restrictive line that you have drawn on your diagram, your line; correct?

A. Yes.

MR. ZIMMER: Thank you, sir.

I have no further questions, your Honor.

THE COURT: Thank you.

Redirect.

MR. DUNN: I have no further questions. Other counsel may.

THE COURT: All right.

MR. BUNN: I do have a few, if I may, your Honor.

THE COURT: You may.

CROSS-EXAMINATION

BY MR. BUNN:

Q. Mr. Scalmanini, can you look at Exhibit 10, which is page 6 of the Bloyd report.

Do you still have it up there?

A. I do.

Q. What is the title of that figure?

A. Map of the AVEK area. It's A-V-E-K. And that's an abbreviation for Antelope Valley/East Kern. Showing location of stream flow gauges and weather gauges.

Q. And can you tell from the Bloyd report what the purpose of this figure is?

MR. JOYCE: I'm sorry. I don't mean to interrupt. Are we talking about 10 or 2?

MR. BUNN: 10.

THE COURT: We're talking about Exhibit 10, Figure 2, page 6.

MR. BUNN: You introduced it as Exhibit 10.

(Discussion - Not Reported.)

THE COURT: It's the same one we discussed on cross.

MR. JOYCE: Thank you.

THE WITNESS: Can I tell what it is? Is that the question you asked me?

Q. (BY MR. BUNN:) What its purpose is.

A. As far as referenced in the document, it's an illustration of the AVEK area. And so there's a line that shows the boundary of the Antelope Valley/East Kern area. And its secondary purpose is to illustrate the locations of various types of stream flow and weather gauges.

MR. JOYCE: Your Honor, I'm going to interpose an objection. Lacks foundation as to the source and the author of the map and what that person's expectation and intent was in preparing it.

THE COURT: Well, I'm going to allow him to testify on cross as to just generally his understanding of what it is. I think that's really what the question's calling for.

MR. BUNN: Yes.

MR. JOYCE: The question's phrased, is what was its purpose, not what was your understanding of its purpose.

THE COURT: Why don't we have a rephrasing of the

question.

Q. (BY MR. BUNN:) How is that figure used in the document?

A. It's used to illustrate the location of stream flow gauges, whether existing or proposed; precipitation; temperature and evaporation measurement locations; precipitation and temperature measurement locations; precipitation gauges; evaporation measurement devices; pans; and then, lastly, there are illustrations of an aqueduct system, whether it belongs to the Los Angeles Department of Water and Power or to the California State Water Project System, the aqueducts that cross or enter into the areas illustrated in the AVEK area. And there's an illustration of drainage boundaries around and across the AVEK area.

Q. At the very end of Mr. Joyce's cross-examination, he referred to a line on this figure which you identified as the drainage boundary; correct?

A. Yes.

Q. Is there anything on this figure that shows that that line is a groundwater basin boundary?

A. No.

Q. Does this figure show groundwater basin boundaries at all?

A. No.

Q. Now, you testified in your direct examination, I believe, that other researchers have used the Bloyd boundaries; correct?

A. Yes.

Q. When they used the Bloyd boundary, did they use the

drainage area boundary shown on Exhibit 10, which is Figure 2, or did they use the basin boundaries shown on Figure 10, which is exhibit something else?

MR. ZIMMER: Objection. Vague and speculation.

THE COURT: Well, I'm going to have you rephrase it somewhat because it might be vague as to what researchers were talking about. But I'll allow the question if you want to be specific as to the specific researchers.

Q. (BY MR. BUNN:) Would you mind explaining which researchers used Bloyd's boundaries.

A. Durbin and Duell are the two that immediately come to mind.

Q. And do you know whether they used the Figure 2 boundaries or the Figure 10 boundaries?

A. Clearly, the Figure 10 boundaries. Figure 10 of Bloyd. And I should say, and the text that describes the boundaries in Figure 10 of Bloyd.

Q. Now, Mr. --

MR. JOYCE: Objection as to the last comment as being speculation.

THE COURT: Overruled.

Q. (BY MR. BUNN:) Mr. Joyce also asked you about an area in the northwest portion of the Antelope Valley where Cottonwood Creek comes into the valley.

Do you recall that?

A. I do.

Q. And he asked you a question about whether pumping in the Fremont Valley would affect the amount of water that came into

the Antelope Valley and Cottonwood Creek.

Do you remember that?

A. I do.

Q. What was your answer?

A. It was -- let's see. The way I remember the question was whether or not pumping by, you know, farmers in the Fremont Valley would affect the flow and the stream and, in particular, that the flow that would then enter the Antelope Valley if it entered across the northern boundary of the groundwater basin as I've drawn it. And my answer was no.

Q. And on what do you base that?

A. I really need to draw you a picture to address that.

Q. All right. Please do that.

THE COURT: You may.

We probably need to change what's on the easel.

MR. BUNN: Could we identify this drawing that he's making as next in order, which I think is 127.

MR. ZIMMER: How are we identifying this?

MR. BUNN: Exhibit 127. Oh. I don't know what he's drawing yet.

THE WITNESS: This is what I'll call a simple schematic illustration of the ground surface shown here. And I'll crosshatch that a little bit. And then just a stream that's flowing, that can be Cottonwood Creek or any other one in this area. And I've shown a second line immediately below the bottom of the creek which I'll refer to as the bed of the stream. Okay. And then I've drawn a blue line across the stream channel with a little, I don't know, triangle at the top of it commonly used to

illustrate the water surface.

And so this would be looking through a slice of the ground with the stream incised at the ground surface. It's drawn not to a good scale because this bed would be very small in the context of that -- in this case, whether it be the -- well, it is the Fremont Valley where this creek supposedly crosses the Fremont Valley.

Q. (BY MR. BUNN:) So it's a cross section.

A. That's it. It's a cross section.

Q. And the direction up on the schematic is up in real life.

A. Yeah. The ground surface is at the top. And it's -- some distance below the ground surface is another blue line intended to show the so-called static water level in the groundwater body, that depth. So I'll label that, if that's okay, SWL for "static water line."

And it so happens -- well, let me say, one more thing that's on this figure is a schematic, I'll call it, as a matter of fact over to the right in close proximity to the stream that's intended to look like a well. So this is, in lay materials, a piece of pipe on end that is drilled down into the subsurface. And near the bottom of it, I've put some crosshatching that's illustrative of perforations in the pipe that would allow water in the ground basin to get into this well.

I've not tried to draw a pump, but inside this casing or pipe is a pump extending from the ground surface down or connected -- excuse me -- from the ground surface down to below the water table so that ultimately an operator can turn the pump

on or turn the electric motor, whatever other-type drive he has, he can turn that on. And there's a shaft -- in most cases in terms of agricultural application, there's a shaft that extends down to this pump. It turns the pump, and then the pump discharges up through the inner pipe and discharges to the surface for any irrigation purposes or other purposes at the ground surface.

If you go out and look at one of these in the field, you usually see a small concrete-type pedestal and electric motor on the top and a pipe coming out the side.

Q. Mr. Scalmanini, with respect, could I ask you to get to the point?

A. Yeah. When you turn this pump on, then it depresses the water surface immediately inside and immediately surrounding the well. Okay. And it creates what's commonly known as a cone of pumping compression around the well. And in doing so, then it creates a gradient. We talked about that term on the first day that basically says water will flow down this gradient into the well and picked up by the surface.

The extent by this depression is indicated by a number of factors that have to do with the characteristics of the aquifer material in which the well is completed but it only affects -- that is to say, the pumping only affects the groundwater surface below the saturated medium in the water level.

In the Fremont Valley, the static water level is hundreds of feet below Cottonwood Creek. And all of this material up here is unsaturated. That means the material above

the static level and above the pumping level. So there no effect that is propagated from the pumping of this well, agricultural or otherwise, all the way up to induce more water to come out of this creek that is flowing in the wintertime.

Practically speaking, the creek flows in the wintertime, and the agricultural pumping to which you refer takes place in the summertime. But discounting that temporal distance that there is no hydraulic connection between the groundwater saturated body and the surface stream or its immediate underflow.

So the stream and its underflow leak because water will flow into the ground which is unsaturated up here, but it leaks as a function of how permeable the terms are in the bed of the stream, and it leaks as a function of how much water there is in the surface stream. It does not leak more or less in response to pumping at great depth below the creek.

Q. So if I understand your testimony correctly, at least as to the recharge from Cottonwood Creek, groundwater pumping in the Fremont Valley cannot have an effect on the amount of that water that reaches the Antelope Valley.

A. Not out where Mr. Joyce crafted his question, out in the basin where a farmer pumps from the saturated groundwater. Meaning, the aquifer at depth, because it's hydraulically disconnected.

Q. Okay. Thank you.

You and Mr. Joyce had a conversation about reproducibility of scientific results.

Do you remember that?

A. Yes.

Q. Of the different investigators in the Antelope Valley that you relied on for your opinions, are they consistent in where the basin boundaries are located?

A. Consistent, yes; identical, no. But consistent --

Q. Would you explain the difference there.

A. Sure. I think I've described, you know, the application of certain we'll call technical parameters to apply to any local setting to defy the limits of something that you can call a basin that contains groundwater. And I've described how an investigator starting from scratch, I'd say, would today apply those parameters to define the extent of this basin.

I looked in hindsight 35 years later at what Bloyd did and could interpret from what he wrote that he applied those kinds of criteria. And with the amount of available physical information at the time, which would be 35-plus years ago when he actually did the work, he concluded what the boundaries were.

Q. Could I ask you to take your hand away from -- thank you.

A. A couple of subsequent investigators did not, apparently from the way they document their work, reinvestigate the specific details of the boundary, but then I'll call it a third that we're now to Carlson in about 1998 or 2000, whatever it was but nominally 30-plus years later, did look at additional available information in the intervening time. And based on borings into the subsurface which would allow you to add to what you know about the nature of materials underground and with the results of surface geophysical exploration, which is a way that man can, with remote-sensing, if I can call it that, devices determine the

nature of materials underground that Carlson, et al., interpreted, whether I'll call it bigger data set or more complete set of information using, I'll call it, the same basic technical parameters that the basin was slightly smaller.

So, you know, was science repeatable? Yes. Was it exactly duplicated? No. Because additional information allowed the application of scientific principles to come up with a slightly different physical, you know, drawing. But the repeatability of the science in its application was the same.

MR. BUNN: Okay. Thank you.

I have nothing further.

THE COURT: Anyone else?

MR. ABBOTT: I have no questions.

MR. TOOTLE: Your Honor, I just have a couple.

THE COURT: All right.

CROSS-EXAMINATION

BY MR. TOOTLE:

Q. Good afternoon, Mr. Scalmanini.

When you were first testifying, you drew us a picture of a free body diagram for hydrologic balance.

Do you remember that?

A. Yes.

Q. I believe it was Exhibit 107.

A. Okay. I'll take your word for it. You want to check the number?

Q. That's fine.

A. Okay.

Q. Later, in his cross-examination, Mr. Joyce attempted to

also draw almost a similar type of diagram. And I believe it was --

MR. BUNN: 8.

Q. (BY MR. TOOTLE:) Diagram Number 8.

Are you familiar or have you ever seen a diagram similar to that drawn for the Antelope Valley groundwater basin?

A. Well, "similar" would be stretching it, but there have been cross sections of subsurface to illustrate the nature of materials on both sides of the groundwater basin by a number of investigators over time. So the -- Mr. Joyce's was, I'll call it, a piece of a cross section, and there are more complete ones in the literature. But yes, they have been done.

Q. On your Plate 1, I believe it's Exhibit 126.

A. Yes.

Q. You have -- you walked us around the groundwater basin.

A. That's correct.

Q. And at that time, you also indicated that there was another line on the map marked "A-prime"; is that correct?

A. Yes.

Q. Can we take a look at that?

A. Sure. It extends -- the line you refer to, A-prime extends generally in a northeasterly/southwesterly direction from just across the southern boundary of the Antelope Valley groundwater basin across the so-called Lancaster subbasin, past the Rogers dry lake bed, into the North Muroc subbasin, and then across the northeasterly boundary of the -- of the overall groundwater basin.

Q. Did you prepare a -- a cross section? Or did you -- let

me rephrase the question.

Are you familiar with anyone who has done a cross section at that area?

A. Yes.

Q. Can you show us that cross section.

A. Sure.

THE COURT: What number is this?

MR. TOOTLE: I believe this would be 128.

MR. ZIMMER: 128.

THE COURT: Should we call it the cross section?

MR. ZIMMER: I think it's called "A-prime."

THE WITNESS: Properly called a geologic cross section.

THE COURT: If we can just -- "A-prime geologic cross section"?

Q. (BY MR. TOOTLE:) On this cross section, can you identify where the boundaries to the groundwater basin are that you drew?

A. Fundamentally, yes. The purpose of drawing a section like this is, in your mind's eye, imagine that you're underground and you're looking, in this case, west. So you're able to look at a profile of this basin underground, what materials are there from the ground surface down. That's what's on this figure.

And what is shown basically is an interpretation from various, I'll call it, available information as to if you were standing on that. In this case, a profile across the location of where this A-prime was located. So you're just to the east looking west. And you would see to your left this hatched material, and you would see it to your right that's bedrock.

It's consolidated materials we've referred to in here over the last few days.

You would also see so-called unconsolidated materials -- sands, gravels, silts, clays -- that are inside the boundaries of that bedrock.

So to the far right where the bedrock effectively comes to the surface, and if we extend this farther, would continue on up into the hills, we've reached the limit of the unconsolidated materials against the side of the basin.

And at depths in various locations, the bedrock is not uniformly shaped like a tub, but it generally has a basin-type shape, which is one reason that the word "basin" gets used. But you would encounter -- if you were moving down from the ground surface, you'd encounter this rock at various depths. But inside, you would encounter these unconsolidated materials. So you'd expect then that you could, in effect, see the entire profile of the groundwater basin along that particular section.

And then since you asked me about the limits, the main reason that we drew this was that, as I think I talked about on Tuesday --

MR. ZIMMER: It's nonresponsive.

THE COURT: Sustained.

We'll get our next question.

THE WITNESS: Well, I didn't finish on the left side, so --

THE COURT: All right.

THE WITNESS: The extent of the basin is basically where the fault is on the far left side. But it also shows the extent

of the basin vertically. That's the other point.

Q. (BY MR. TOOTLE:) Okay. Why did you draw the map?

A. I drew the map because groundwater basins and groundwater bodies have three-dimensional boundaries. Okay. And in all the mapping that we've seen until we looked at this, we were looking down from the ground -- or looking down from above the ground surface at the aerial extent.

When I testified a couple of days ago, I said there's a third dimension, and we never got to the fact that there's a third dimension. But in the subsurface, the basin goes only so far. And it's not vertical sides, you know, through the earth to great -- well, it is great depth, as it turns out, but it's not vertical. But there is a slope to the side that is dictated by how in geologic history these materials were placed there.

Q. Would it be a fair statement that if one was to draw water from these aquifers that those would be known as the common supplies within those boundaries?

MR. ZIMMER: Vague.

THE COURT: Overruled.

THE WITNESS: Yes.

Q. (BY MR. TOOTLE:) And can you -- I believe before you were interrupted -- would you complete your description as to what the boundary would be on the southern side.

A. The southern side would be the west side. And this particular section which we extracted from literature -- we didn't draw this ourselves -- extends basically to the faulting that forms the southern boundary. And so the unconsolidated materials would butt up against that faulting at the far left

side of this drawing.

Q. Have others drawn similar diagrams?

A. Yes. Not all in the same location, but, generally, previous investigators -- this being one of them, but this being more recent in time, this was prepared in the year 2000 -- in a report that was published in 2000, I should say. But earlier investigators, maybe not quite as pretty a picture, but same basic concept of illustrated both the consolidated and unconsolidated materials in the subsurface, yes.

Q. To the best of your knowledge, do any of those significantly differ from the drawing that we have here before us today?

A. Conceptually, no. And then specifically, yes, because they're drawn in different locations. This does not illustrate that the basin has that cross section uniformly anyplace you would do it.

Q. Right.

A. And so illustration -- other illustrations depict depth, width, and nature materials within the overall basin in different locations. So they don't look exactly like this.

Q. Do you feel that this diagram supports the boundaries that you showed on your Plate 1?

A. Absolutely, yes.

MR. TOOTLE: Thank you.

I have no further questions.

THE COURT: All right. Ms. Fuentes?

MS. FUENTES: No.

THE COURT: Mr. Connel; right? You haven't said a word

yet. This is your chance. No?

MR. BUNN: I bought him lunch and told him I was buying his silence.

THE COURT: Well, that's all right.

MR. ZIMMER: I'm surprised you didn't cut his tongue out.

THE COURT: Further cross.

MR. JOYCE: Thank you, your Honor.

RECROSS-EXAMINATION

BY MR. JOYCE:

Q. Mr. Scalmanini, in response to questioning by Mr. Bunn, he asked you how Figure 2, page 6, was used by Bloyd in Bloyd's report.

Did you understand that to be the purpose of his question?

A. I believe so, yes.

Q. Okay. And I think his words were, "How did he use the document," referring to page 2 -- excuse me -- Figure 2, page 6. And then you went through and listed a number of things that are reflected on Figure 2, page 6.

But what I would like to do is take his question a bit further and ask you to go through the report and show me where all those things are talked about by Bloyd so we can see how he used those things you were identifying.

A. Okay. I think the first reference to Figure 2 is on page 5, where he says, "The AVEK area, most of which is within the Mojave Desert region of Southern California (2)," so, to me, that says the AVEK area and the Mojave Desert region, as

illustrated in Figure 2. And the sentence goes on to say, "Lacks adequate natural supply of water to meet the long-term needs."

Q. Where would be the next place, moving from that page into the report, where Bloyd discusses the information reflected on Plate -- on Figure 2, page 6?

A. Next paragraph discusses the California aqueduct and says, "The tentative alignment of the branches of the aqueduct in the AVEK area is shown in Figure 2."

Q. Okay. And the next place?

A. I think -- I might have missed one, but at the top of page 8, he says that, "The AVEK area, which is about 35 miles north of Los Angeles, is in the southwestern part of the Mojave Desert region of California, Figure 2."

Q. Okay. And the next reference to Figure 2?

MR. DUNN: Objection, your Honor. This report speaks for itself. To have these continuing questions about what the language in a report says, the report speaks for itself. Regardless of what he says about the report, it doesn't change the fact of what the report says.

MR. JOYCE: Well --

MR. DUNN: Mr. Joyce is certainly as capable as anybody else in reading the report and picking out the language that he wants.

THE COURT: It's up to --

MR. JOYCE: The entire report is not before the Court.

THE COURT: His opinion is based on the report. I don't think the report is in evidence.

MR. JOYCE: Hasn't been offered, your Honor.

THE COURT: I'm not sure it's been marked.

MR. JOYCE: It has not.

THE COURT: So I'll allow some cross-examination on that.

Q. (BY MR. JOYCE:) And the next location in Bloyd's narrative where he refers to Figure 2 would be where?

MR. DUNN: Same objection.

THE COURT: Overruled.

THE WITNESS: Also on page 8.

THE COURT: You could just put it into evidence. It would be interesting to read.

THE WITNESS: "The AVEK boundaries enclosed most of the surface water drainage basins of Antelope and Fremont Valley, the surface water drainage basins of Peace (phonetic)and Lower Hungry (phonetic) Valleys, and part of the Santa Clara river basin (Figures 2 and 5)."

Q. (BY MR. JOYCE:) Okay. Where would be the next location where Bloyd refers us back to Figure 2, page 6?

MR. DUNN: Same objection.

THE COURT: Overruled. But I'll let you have a continuing objection.

MR. DUNN: Thank you, your Honor.

THE COURT: On that basis.

MR. DUNN: Thank you.

MR. BUNN: Your Honor, I'd kind of like to take you up on your suggestion here and see if we can offer the Bloyd report in evidence. If we have a copy that we can give to the Court, I would move that it be admitted.

THE COURT: Do we have any objection to admitting it?

MR. JOYCE: Can I ponder that, your Honor?

THE COURT: You may.

MR. JOYCE: Thank you. I'm not quite certain yet, one or the other. And I certainly at least want to consult before I did that.

Q. (BY MR. JOYCE:) The next place, Mr. Scalmanini?

A. There's a reference to a Figure 2 on page 9, but I do not think it's the Figure 2 in this report. It's the Figure 2 in the citation in this report.

Q. Okay. I'm only looking for the reference to Figure 2 as that Figure 2 is reflected on page 6.

MR. TOOTLE: Your Honor, can we take a minute so that the witness --

THE COURT: We can.

Do you want to take about a 5-minute recess?

MR. DUNN: Yes. Thank you.

THE COURT: All right.

(Recess.)

Q. (BY MR. JOYCE:) I'm not certain, I may need help by the court reporter.

After page 9, what would be the next report within the Bloyd report where he references Figure 2 on page 6?

A. Page 19.

Q. Page 19?

A. Yes. That's the next one I found.

Q. Okay. And there, he references for what purpose?

A. To note that there are two major groundwater basins in

the AVEK area. They're known as the Antelope Valley and Fremont Valley basins.

Q. Okay. And then he notes that by referencing the reader of his report back to Figure 2 appearing on page 6; correct?

A. Well, that might be how you interpret it, but basically he's making a statement that there --

MR. ZIMMER: Your Honor, that's --

THE WITNESS: -- no groundwater basins in the AVEK area.

MR. ZIMMER: That's not responsive. He didn't ask him for the interpretation. He asked what he said.

THE COURT: I'm going to overrule the objection. Let's get our next question.

Q. (BY MR. JOYCE:) Let me ask this question: Where he says there are two major groundwater basins, the Antelope Valley and the Fremont Valley, and then ends the sentence with the reference to Figure 2, does he anywhere in that paragraph discussing the two groundwater basins refer us to Figure 10?

A. Yes.

Q. Where?

A. Well, the next two or three sentences go on to say, "Each," meaning each of the groundwater basins, "is divided into groundwater zones by faults, bodies of consolidated rock, groundwater divides and, in some instances, by convenient and arbitrary boundaries."

Q. Is that a different --

A. "Previously available data and data contained during this investigation make it possible to provide the -- make the problem to define the boundaries of most of the subdivision

(Figure 10.)"

Q. And on this issue, then, my next question would be as to those zones that he identifies as being within the Antelope Valley groundwater basin, those are identified in the next page, 20 and 21, where he discusses the zones themselves; is that a fair statement?

A. Yes.

Q. And as we discussed 2 days ago, he identifies each of the subunits within the Antelope Valley and likewise identifies the three subareas, the Foothill area, the Bissell area, as well as the -- I forgot which one's on the west side -- on the east side. Excuse me. There's a third subarea. Can you help me with that?

A. Hi Vista.

Q. Thank you very much.

And, in fact, is not those three subareas within the outer line reflected and labels Antelope Valley on page 6, Figure 2?

A. This is going to take a few minutes.

Q. It's not in the folder. It's just in the text, Mr. Scalmanini.

A. I know it's in the text, but you asked me if these boundaries -- subbasins and areas were within the overall boundaries of what's shown in Figure 6, I think.

Q. Okay. That's correct, yes.

A. It's a little difficult to do kind of a visual overlay, but it appears that the answer to your question is yes.

Q. Thank you.

A. Or closely so.

Q. All I'm really trying to make sure that we're clear about is that the depiction or the delineation of the Antelope Valley and the Fremont Valley groundwater basins or groundwater areas or whatever else we want to call them reflected on page 6, Figure 2, would be sufficient in their outer diameter so as to incorporate the three subareas he talks about in his narrative report in addition to the subunits that you have called subbasins.

A. Yeah. Same answer. I think they would all fit on -- you could draw the features that you just listed on Bloyd's Figure 10, you could also draw on Figure 2. They would fit on that piece of paper, I think. Or they would come awfully close.

Q. Thank you.

And I think the last issue I just wanted to address is the issue regarding scientific reproducibility.

A. Wait a minute. Do you want to get the rest of the Figure 2s in this report?

Q. I got to the one I was interested in.

A. That was the question, so I wonder --

THE COURT: I think at this point you've --

MR. JOYCE: My intent, your Honor, was to merely demonstrate that Figure 2 used as a reference point by Mr. Bloyd was used by Mr. Bloyd to demonstrate his perception of the appropriate delineation between the Fremont and the Antelope Valley and, in fact, used a drainage basin outline to describe a groundwater basin.

THE COURT: That's fine. We'll get our next question.

MR. TOOTLE: Objection. Your Honor --

THE COURT: I'll let you go on it in redirect if you wish to.

Q. (BY MR. JOYCE:) In any event, my next area, Mr. Scalmanini, would be going back to scientific reproducibility. And it may be a given or it may be kind of silly to ask the question, but I would assume within your discipline that over time the techniques and the ability to do analysis has improved since Bloyd did his initial study back in '76; correct?

A. Yes.

Q. Okay.

A. No. Bloyd did his work in the 60s, not '76.

Q. Whatever point in time coming forward he did his work that science has gotten better in more recent years and in the intervening period of time; fair statement?

A. Yes. As has the availability of information with which to apply science, yes.

Q. Okay. And, in fact, quantification of flows and underground flows within as well as across boundaries has likewise improved over the same period of time; correct?

A. Don't know about that.

Q. All right.

A. The fundamental equations that Bloyd used to estimate those flows that I read into the record the other day, those equations haven't changed in the last 35 years. So --

Q. I wasn't suggesting that the -- that the equations had changed, but the technology and the scientific techniques

available to verify and quantify more closely and precisely the assumptions contemplated by the equations has improved over time, has it not?

A. Oh, wow. That's tough. Better read all those words back to me.

Q. Simply the ability to be more accurate has gotten better.

A. The ability to generate what I'll call for precise numbers, meaning you can calculate it to, you know, I'll say more decimal points, although that's not literally true, has definitely improved.

The ability to verify it in the field, to go out into the Antelope Valley to say I can measure something several hundred feet below the ground surface better today than I could 35 years ago is probably not true.

Q. Okay. Well --

A. So to -- we can apply tools today that didn't exist in the 60s and we can think that we understand the system better and I think that in fairness, we do. But to say that we can now quantify and go out and verify in the field that a subsurface flow across a boundary -- we can measure it, you know, no, I wouldn't agree with that.

Q. Well, in your map, which is Exhibit 126, at least for the purposes of an aerial illustration of the area in issue, we have both Bloyd and Carlson; true?

A. Yes.

Q. Okay. We know that this little dotted black line is representative of Carlson, is it not?

A. It's reproduced from Carlson, et als., mapping, yes.

Q. Okay. And I assume that when you map this, you are making an attempt to make sure that the Bloyd scale and the Carlson scale equated each other. In other words, that they were both done to the same scale so that they both either travel the same distances linearly as each other? In other words, an inch is an inch is a mile or whatever it happens to be?

A. The result is all to the same scale, yes.

Q. All right.

A. So there's one scale as relates to my Plate 1, which is 126.

Q. Okay. And this area where they differ in large part, I understand, would be this little piece down here; is that correct? Where this black dotted line is facially?

A. They don't differ at all down there.

Q. Okay. But that -- is this both -- both Carlson and Bloyd down in this area?

A. Oh, I think I've said pretty emphatically several times that Bloyd did not go down -- he did not map down to that area. He described a boundary, but he didn't map it.

Q. All right. Did Carlson map it down to that area?

A. I have to look.

Q. Okay. More importantly -- this is really what I want to get to -- is this upper area here the only real significant area that we're talking about where they differ?

A. No. I'd say probably not. There are also a couple of areas near the south boundary that are different. And arguably, they're significant also. In the vicinity of Palmdale and

southwest of Lancaster and over toward the Neenach Fault where he's highlighted, I think, some buttes as being outside the basin. Those are, I'd say, probably significant also.

Q. Okay. But if we were to contrast the -- well, if I understand what you're telling me, they have taken some other areas out that are circled by the dotted black line; is that a fair statement?

A. Yes.

Q. All right. I assume it's not your view that Carlson reduced the entire surface area of Bloyd's subunit map in half, did he? In other words, Carlson's line isn't one-half the total area of what Bloyd had mapped as his subunits, is it?

A. No. Not even close.

Q. Not even close.

A. No.

Q. Well, if the Department of Water Resources, in its revised Bulletin 118 that's presently in the process of being reviewed, has quantified the surface area of the Antelope Valley groundwater basin as being 1,730 miles -- or square miles, do you have any understanding or explanation as to how they came up -- strike that. Let me rephrase the question.

Do you know how they arrived at that figure?

MR. BUNN: Objection. Beyond the scope.

THE COURT: Overruled.

THE WITNESS: No, I'm not familiar with the figure. I've not seen it. And I have no idea how they arrived at it.

MR. JOYCE: Thank you.

I have nothing further.

THE COURT: Mr. Zimmer?

RECROSS-EXAMINATION

BY MR. ZIMMER:

Q. Mr. Scalmanini, you claim to have adopted Bloyd's line from Figure 10 in his report; is that correct?

A. Basically, yes.

Q. And you've indicated to the Court that other individuals have adopted Bloyd's same line, or some of them have adopted Bloyd's same line.

A. Yeah. Others have, yes.

Q. Some have; some have not. Correct? In other words, some other -- some other individuals have adopted Bloyd's line and some have come up with different lines.

A. In the sequence of what I'll call studies of the groundwater basin that Bloyd and the subsequent investigators to Bloyd until Carlson, which is -- what? -- 1998 or 2000, used the same boundaries.

Q. Who are you saying, used the same boundary?

A. We've already been through this. Durbin and Duell.

Q. And neither of those individuals did their own independent study to determine what they thought the boundary should be.

A. That's correct.

Q. And you did not do your own independent study to determine what the boundary should be. You adopted Bloyd; correct?

A. Well, you said this to me several times, did not do any independent study. I did not go and do field mapping.

Q. That's what I mean.

A. I applied technical criteria, looked at the existence of physical features as mapped by others that fit those criteria, and agreed that Bloyd that -- I'll call it, applied those in selecting outermost boundaries of a number of groundwater subbasins that in aggregate can be called a groundwater basin. So, you know, I didn't go do new fieldwork.

Q. That was my question.

A. I did not apply those standards to come to the same conclusion. I didn't just take Bloyd and adopt it.

Q. And nobody else has done that since Bloyd either.

A. Nobody else has done what?

Q. Actually gone out and done field studies to come up with their own line to form a location as opposed to simply adopting Bloyd.

A. Well, I did. I agree with that also.

Q. Who's done it?

A. That what -- I think we marked it, but if somebody can hand me a copy of Carlson, I'll try to read it from the text.

Don't tell me how to try the answer the question, please. I know what I'm trying to say.

THE COURT: No arguments.

Q. (BY MR. ZIMMER:) Did Carlson map a different line?

A. Carlson mapped a different line based by the subsequent work preceding him. There had been work in terms of geophysical separations and subsurface borings that log materials in the subsurface. He makes reference -- I should say "they, " Carlson, et al., mentions that in a brief paragraph on their map and then

drew different boundaries. They didn't do the work themselves. They took the results of other people's work and with a different set of data -- meaning a more expanded set of data -- applied the same technical criteria and drew slightly smaller boundaries.

Q. Did anyone who adopted the same line as Bloyd do field studies as opposed to simply adopting Bloyd's line?

A. As best I can tell, no, not as documented in the reports.

MR. ZIMMER: I have no further questions.

Thank you, sir.

MR. BUNN: Nothing further.

THE COURT: Anything further from the defense?

All right. We're -- our witness is done?

MR. BUNN: And as you know, we're going to intend to call Mr. Scalmanini on rebuttal later.

THE COURT: I understand. But for now, sir, you may step down.

Our next witness?

MR. ZIMMER: Your Honor, has the defense rested?

MR. DUNN: Except for moving in our exhibits.

THE COURT: All right. Which we'll hold off on till tomorrow so everyone can have a chance to look at whatever they wanted to look at.

MR. JOYCE: Your Honor, I don't want to engage in a futile exercise, but I'd almost be tempted to make a motion for nonsuit. But I'm not sure if the Court would be kind enough to entertain it, and I think she'd be inclined to entertain more. Will the Court entertain the fact that I have made the motion

and --

THE COURT: Tell me in a streamline motion.

MR. DUNN: We'd like to know what the basis of the motions are.

MR. ZIMMER: Your Honor, can we reserve this till later to discuss it so we can at least get this witness on?

THE COURT: We can do that. I'll note that you've made your motion with the basis for the motion and your factual statement to support that basis will be reserved till --

MR. JOYCE: That's fine. It won't take very long.

THE COURT: Then let's do that.

MR. JOYCE: Thank you, your Honor.

MR. ZIMMER: So the defense has rested subject to admitting exhibits.

THE COURT: And rebuttal.

MR. DUNN: That's correct.

MR. ZIMMER: At this time, your Honor, the plaintiffs call N. Thomas Sheahan.

THE CLERK: You do solemnly state that the evidence you shall give in this matter shall be the truth, the whole truth, and nothing but the truth, so help you God?

THE WITNESS: I do.

THE CLERK: Thank you very much, sir. You may be seated.

THE WITNESS: Thank you.

THE CLERK: Will you state your name and spell it, please.

THE WITNESS: My name is N., period, Thomas Sheahan,

S-H-E-A-H-A-N.

THE COURT: We're going to need another slight break. Let's go through all of the background information and the materials he reviewed and then before we get into the actual opinion, then we can take about a 10-minute recess --

MR. ZIMMER: That's fine, your Honor.

THE COURT: -- for the reporter. Because I think the other one was right around 5.

So go ahead.

MR. ZIMMER: Thank you, your Honor.

N. THOMAS SHEAHAN,

called as a witness by and on behalf of the Plaintiffs, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. ZIMMER:

Q. Sir, would you please state your name for the record and spell your last name.

A. Yes. N. Thomas Sheahan, S-H-E-A-H-A-N.

Q. Mr. Sheahan, what is your occupation, sir?

A. I am a hydrogeologist. I serve as principal hydrogeologist for the firm of Geomatrix Consultants Incorporated.

Q. And what kind of work do you do in your capacity with that organization?

A. Well, my work has generally for the past 40-some years been focused on groundwater studies; evaluations of groundwater flow; transport; water quality issues; in some cases, water rights issues; production of groundwater at -- for water supply

purposes for municipal, industrial, and agricultural uses; protection of groundwater supplies; augmentation of groundwater supplies through recharge; and evaluation of means for cleaning of groundwater.

Q. And Mr. Sheahan, can you tell the Court a little bit about your background in terms of education and experience that makes you qualified to testify in the area of hydrological issues and the issues that are involved in this particular case.

A. Yes. Well, I'm a graduate of the University of Missouri with a degree in geology and geography. I began my professional practice in 1960 working for the corps of engineers doing, principally, engineering geology type of work.

But in 1961, I became interested in groundwater. I began a graduate program at the University of Arizona in what was then called groundwater geology. That was a long time ago. Names have changed now. It's now hydrogeology.

And in 1965, I began working as a research groundwater geologist for a group which I'll refer to as the Layne Organization, L-A-Y-N-E. It's gone through a number of name changes, but it's essentially the same Layne Group. I was with the Layne Group from 1965 to 1972. And in that role, I both was a research groundwater geologist, and I participated very strongly in design and construction and development of groundwater resource collection facilities: Wells, pumps, pipelines, water treatment systems, geophysical analyses of groundwater resource, environments to locate groundwater resources, to evaluate water quality, and essentially the full range from investigation and consulting through design,

construction, and operation of groundwater systems.

In 1972, I moved to California and I became a consulting groundwater geologist with a firm of Brown and Caldwell. I served there as chief geologist for 12 years until the early '80s.

At that time, I changed to one or two other consulting firms over a couple-year period. I was with -- without going into too much detail, Woodward Clyde Consultants. I was with Geraghty & Miller. I managed the Geraghty & Miller -- that's a groundwater consulting firm -- managed their offices.

In 1990, I joined Dames & Moore. I served in the capacity there as principal hydrogeologist for approximately 12 years through a merger with another corporation called URS Corporation up until January of this year.

And in January, I left URS Corporation and opened an office for Geomatrix Consultants.

So that's been my history.

Q. Can you tell us, sir, a little bit about your licensure -- licenses and certification.

A. Yes. I'm licensed in California and Oregon both as a geologist, a registered geologist. I'm -- under that licensing, there are several certifications. Actually, I should say, there are two certifications. One is in engineering geology which, in general, is essentially the application of geologic principals to engineering structures and principally faults and the relationship of faults and their effects on the soil. The other specialty is hydrogeology, which is the application of geologic and other scientific principals to the development of groundwater

resources.

I'm certified as a specialist in both engineering geology and in hydrogeology in California. And I'm certified as an engineering geologist in Oregon.

I'm also licensed in California as a geophysicist. Geophysics is essentially the application of indirect techniques to the evaluation of geologic conditions. So I'm licensed in those areas.

Although it's not a license, I am also certified as a professional geologist under the American Institute of Professional Geologists, a national organization that has a -- what we think is a high set of criteria for the assessment of the certification process. So I've been a Certified Professional Geologist under that organization for a number of years.

Q. How does being a registered geologist assist you in rendering expert opinions in this particular case?

A. Well, in this particular case, we are looking to assess the effects eventually of groundwater pumping on from one place on groundwater pumping in another place. Groundwater exists in the geologic environment and various kinds of geologic formations. So as an underlying science, it's extremely important to understand the geology associated with the area in the vicinity of the Antelope Valley so that we can then apply other scientific techniques to evaluating the groundwater flow conditions.

Q. And how does being an engineering geologist assist you in rendering opinions?

A. Well, in this particular area, there are a number of

significant faults, and large fault zones as well as smaller faults. And there are some data that indicate that there are faults that have not been actually observed in the field but which are -- have been postulated. Having an understanding of the principles of engineering geology helps me understand the faulting systems and judgment on the effects of the faults of the groundwater system.

Q. Is there a different between being a civil engineer or mechanical engineer and being an engineering geologist?

A. Yes. Very much difference.

Q. What's the -- generally, what's the difference?

A. Well, engineers focus on defining things to build generally. If I were to build a road, I would hire a civil engineer because they do a very good job of building roads.

If I were to hire a dam -- sorry -- if I were to build a dam, I would hire a civil engineer to do those kinds of structures.

But if I were to want to do an evaluation of what is happening underground in a complex geologic environment, I would be more inclined to hire a hydrogeologist because a hydrogeologist has the science and background that deals with all of those aspects.

Q. Which brings me to my next question, which was how does being a certified hydrogeologist assist you in rendering opinions? And I suppose it's just in the way you just described.

A. Yeah. Essentially that. Hydrogeology is the science that focuses on all of the aspects of evaluation of groundwater resources and the effects of pumping and the effects of recharge

and water quality changes. All of the effects of groundwater in our geologic environment.

Q. How does being a registered geophysicist assist you in rendering expert opinions in this case?

A. Well, as I mentioned, some of the faults that we see on maps and other data -- so-called data that we see in other reports in this data refer to as postulated. What postulated means is that geology -- you know, an engineering or a geologist or any other sciences cannot go out in the field, walk in that area and look at the ground and see any evidence of faulting. But there are other data, other indirect data, such as water level differences that can be interpreted in such a way as to help us judge whether or not there may be a fault in those areas.

So my experience in geophysics is experience in using indirect data to help interpret the physical conditions in the subsurface. And so it applies directly to the evaluation of faults and the presence of faults and the effectiveness of faults in the groundwater system in this area.

Q. So, for example, in this particular case, we've had a great deal of testimony about something called postulated faults. Those are presumed faults; correct?

A. I would hesitate to call them "presumed faults." I think "postulated" is the correct term. And it's been used relatively appropriately. They are postulated as being a fault at that location, but they're postulated based on a set of indirect data.

Q. So that would be something that a geophysicist is especially good at interpreting because you're determining from

an indirect source what's happening underground.

A. Well, I -- all else being equal, I like to think so. Because a geophysicist is experienced at looking at indirect data and looking at physical interpretations underground. Whereas a geologist without any experience in geophysics would be very good at finding a fault at the surface but may not be as good as a geophysicist looking at the fault based on indirect data.

Q. Are complex lines one of the things that geophysicists look at?

A. Yes, geophysics -- all of the geologic professions look at contour lines.

THE COURT: Before your next question, may I get your definition of a fault?

THE WITNESS: Yes. A fault is a break in the earth's surface along which there has been movement. And by movement, I mean relative movement from one side to the other. And that movement can be lateral where one side moves left or right with regard to the other side. It can be vertical, or it can be any combination of those things. And the fault line can be anything from a vertical line to a horizontal line.

When I say "line," that's really a plane. And it doesn't need to be a straight plane or a flat plane. It can be almost any shape.

THE COURT: Is it, in essence, where the earth has moved so the planes are in a different location? Up next to each other?

THE WITNESS: Yes. In essence, it is. There are many places where the subsurface materials -- and I'll call them rocks

just for general purposes -- where the rocks are fractured, that is, that they are broken, that they have not moved, those are not faults. They're called fractures or joints. It's only where they have been moved such as the rocks are now juxtaposed on the other portions of the rock there are faults. So movement is an essential part of the fault.

THE COURT: All right. Thank you.

Q. (BY MR. ZIMMER:) Since we're on that subject, is a fault a clearly defined, you know, one crack?

A. In some instances, a single plane can be found that could be characterized as a fault. In other instances, we refer to fault zones which is a -- a zone of several maybe tens to hundreds to thousands of feet wide within which the ground is fractured as a result of movement of the fault.

In the area that we're looking at, we have two faults that are actually fault zones. We have the San Andreas Fault zone and the Garlock (phonetic) Fault zone. The San Andreas is in the southern portion of the Antelope Valley general area. And the width of the fault zone is approximately up to a mile -- a mile in width. And in that zone, there has been movement. You could characterize that as a whole series of parallel faults within that zone, but it's essentially a very intensely fractured crumbled-up zone due to movement of the two plates on either side.

The Garlock Fault is similar. The Garlock Fault occurs on the northwest portion of the Antelope and Fremont valleys. And it -- the zone is along the western boundary of those valleys. But it's a similar kind of thing. I'm not absolutely

sure that the movement there is lateral as it is with the San Andreas Fault, but it's, to a large extent, a lateral movement.

Q. Again, would that be described as a fault zone of highly fractured material?

A. Yes, it would.

Q. Mr. Sheahan, what were you asked to do in this case, sir?

A. Well, in general, I was asked to look at the geology and the hydrogeology in the vicinity of the Antelope Valley, to familiarize myself with the other physical and physiographic characteristics, the topography, the -- again, the geology, variations in the geology, the -- the nature of deposition of the materials so I would have an understanding of the subsurface conditions, and, to some extent, the climate. All those types of things that might apply to the groundwater resources in the area.

Q. Can you tell us, sir, what generally you have done in this case from start to finish generally in terms of looking at things and doing analysis and going to the scene and attending depositions, all that kind of stuff.

A. Okay. I can't seem to slide up closer to the microphone, but that's all right.

In general, I began by reviewing maps of the area to familiarize myself with the general topography, the cultural development of the area, roads and streets and surface features. I also looked at other documents that I obtained either from my own resources through my own librarian or that were provided from one source or another. Some of these documents are documents

produced by agencies such as the United States Geological Survey, by California State Department of Water Resources, by other authors.

So I generally looked at a number of documents, reviewed those to absorb the information that they provided concerning the hydrogeology of the area.

I also made several trips to the area. Just to, again, familiarize myself. I looked in the field at the geology, the topography, the conditions, the cultural development and so forth. And so I did those kinds of things.

Q. In addition to that, did you receive a copy of a report from Mr. Scalmanini?

A. Yes. One of the documents that was provided to me was a report. I believe it's -- now I guess I should make a reference to the date, but I believe it's January of this year. Excuse me a moment. I think I have that. I think I have that date referenced. Yes. January of 2002. The report is titled Technical Memorandum, Ground-Water Basin and Subbasin Boundaries, Antelope Valley Ground-Water Basin.

And I'm not sure I have all the other things that are on the cover page. But yes, that's a report by a firm called Luhdorff & Scalmanini.

Q. Did you also attend Mr. Scalmanini's deposition?

A. Yes. Mr. Scalmanini was deposed on 3 separate days, and I attended all 3 days.

Q. In addition to that, have you done any other general things in terms of reaching your conclusions and opinions?

A. Well, I've been in court since almost the beginning. I

missed the early session when the lawyers were talking, but I believe I've been here since -- since Mr. Scalmanini began testifying. And so I've listened to all of his testimony here as well.

I've also done some other studies of my own. I've looked at other documents such as the Phase 1 stipulation. I've considered, you know, a number of things with regard to that.

MR. ZIMMER: Did you want to take a break?

THE COURT: Good time for a break? All right. We'll be in a 10-minute recess. You may step down.

(Recess.)

(Discussion - Not Reported.)

THE COURT: Let's have Mr. Zimmer finish on whatever information he wants to go. Then I'll let defense go on voir dire.

You're not saying, though, he's not qualified.

MR. BUNN: It would be as to the basis of his opinions.

THE COURT: All right.

MR. ZIMMER: The thing I would suggest is I'll just ask him what his general opinion is and then that'll frame-up the issue, I think, for Mr. -- what Mr. Bunn wants. Then we can --

MR. BUNN: I don't care.

THE COURT: Well, we'll let you do that. I mean, I still need to rule on the motion in limine, although I was inclined to deny it. But let's -- so for that reason, I'll let you ask that. If you can convince me otherwise, I can always strike if anything specific comes out.

But go ahead then.

MR. ZIMMER: Thank you, your Honor.

Q. (BY MR. ZIMMER:) Just a couple of quick things here.

Sir, you provided a 10- or 11-page resume, and I don't want to bore everybody here to tears with all of this. Is it fair to say you belong to all of the traditional professional affiliations and associations?

A. Well, I belong to many of them. I can't afford to belong to all of them, but I belong to the Association of Engineering Geologists for decades. And I belong to the -- what I consider to be the leading groundwater technical organization in the United States, which is the National Groundwater Association. Incidentally, I've served as a -- as a member of the board of that. I've served as the -- the chair of the certification committee for certifying hydrogeologists under their rules. And I belong to the California Groundwater Association and some others. I'm not sure I can remember them all. Inland -- the Inland Geological Society and so forth, yes.

Q. And you've been involved with various groundwater issues in California and, in particular, Southern California?

A. Yes.

Q. And you published numerous different articles in your field?

A. Yes, I have.

Q. Sir, can you tell us generally what your opinion is in this case?

A. Well, yes. In general, I've reviewed the Plate 1 and the revised Plate 1 that Mr. Scalmanini presented in his report and presented during his testimony today, which I believe a copy

of it is up on the board. If I'm not mistaken, I believe is Exhibit 126, but I'm not sure of that.

I've reviewed that with regard to the requirements of the Phase 1 stipulation, and it's my opinion that the boundary line -- in fact, any of the boundary lines shown on Mr. Scalmanini's Plate 1 do not meet the requirements of the Phase 1 stipulation for an area because they do not include other appropriate areas, which areas I have included in Exhibit B, a map that's included with my report on this matter.

MR. DUNN: Objection. Move to strike the witness's opinion testimony as to the legal effects of the Phase 1 stipulation on the grounds that it would be up to the Court, not this witness, to decide what evidence and testimony comports and does not comport with the Phase 1 stipulation.

THE COURT: Well, I --

MR. BUNN: Again, I would hope to get into that in a minute on voir dire.

THE COURT: I'm going to overrule the objection because I believe what he's doing is simply taking the language of the stipulation as to whether it affects or doesn't affect that, essentially, language and giving his opinion as to what areas that would include. I don't think that calls for him to come up with a legal analysis.

So I'll overrule that. Let's have Mr. Bunn voir dire.

MR. BUNN: Thank you.

VOIR DIRE EXAMINATION

BY MR. BUNN:

Q. Mr. Sheahan, are you familiar with the designation of

expert witness which went into the -- what your testimony would consist of in this case?

MR. ZIMMER: And, your Honor, that's going to be asking about a legal question.

THE COURT: We can save some time, because I've looked at the designation.

MR. BUNN: Okay.

THE COURT: And the designation does not -- well, it basically --

MR. BUNN: Let me go on then, if I could.

THE COURT: Okay.

Q. (BY MR. BUNN:) In preparing your report, you set five tasks for yourself, did you not?

A. That's -- yes, that's the way to characterize it. I tried to organize the work that I did into five tasks to assist in communicating what I was doing and in communicating the results of my work.

Q. And Task 1 was to review and critique the L & S Technical Memorandum; correct?

A. That's correct. And I've defined in my report that L ampersand S refers to Luhdorff & Scalmanini.

Q. Mr. Scalmanini's report.

A. Well, it's not clear from the report who wrote the report. The report is not signed. As I recall, Mr. Scalmanini testified during his deposition that he wrote parts of it, but he had staff members working for him write other parts of it. So I refer to it as the Luhdorff & Scalmanini report.

Q. And Task 2 was to review the Phase 1 stipulation to

develop an understanding of the requirements for Phase 1 that are stated therein; correct?

A. Yes.

Q. Then you go on with Task 3, select scientifically based and other appropriate methods for defining the boundary of an area that would meet the requirements of the Phase 1 stipulation; correct?

A. Yes.

Q. Then you go on to Task 4, determine whether the boundaries shown on Plate Number 1 of the L & S Technical Memorandum define an area that meets the requirements of the Phase 1 stipulation; correct?

A. Yes.

Q. And finally, define the boundary of an area that meets the requirements of the Phase 1 stipulation using the methods selected as part of Task Number 3.

I correctly read that last one, didn't I?

A. I believe so.

Q. Now, in your review of the Phase 1 stipulation, did anyone tell you what that meant, or did you come to your own conclusion on reading it?

A. Well, as my report indicates, my task was to read it and review it and to determine based on my expertise as a hydrogeologist what the requirements of the Phase 1 stipulation were. No one told me that. That was my job to do that review.

Q. And using your expertise as a hydrogeologist, did you come to a conclusion about what the phrase "legally adverse" means in the Phase 1 stipulation?

MR. ZIMMER: Sounds like a legal opinion, your Honor.

THE WITNESS: No.

THE COURT: Well, I'm going to overrule the objection. And the answer was "no."

THE WITNESS: Yes.

Q. (BY MR. BUNN:) Did you use an understanding of the phrase "legally adverse" in coming to your opinions in that -- this matter?

A. No. And, in fact, just the opposite. I was able to understand from that phrase that -- and from my understanding of the English language that "legally adverse" modified the word "effect." "Effect" is a physical condition, and I can determine what effects there are of groundwater pumping which, if I recall right, that's what the Phase 1 stipulation is referring to. And I concluded in my report that in an instance where there was no effect whatsoever, it wouldn't matter whether it was legally adverse or otherwise. And I was very careful in the report to explain that. So the only thing that I looked at was the physical effect.

Q. You state in your report at page 8, "The Phase 1 stipulation refers to both physical, or scientific, characteristics, ('groundwater production') and legal characteristics ('legally adverse effect'). Thus, the Phase 1 stipulation intends to address both of these aspects as appropriate in selecting the Phase 1 area boundary."

Is that a correct quotation from your report?

A. Yes, it is.

Q. And going back to your Task Number 5, it was, in fact,

to select a boundary that meets the requirements of the Phase 1 stipulation, was it not?

A. It was more than that. But in essence, yes.

Q. I'm sorry if I misquoted it.

THE COURT: Well, just Task Number 5.

MR. BUNN: Yes. Task Number 5.

THE WITNESS: Yes. Task Number 5 has added to it, though, the phrase using the methods selected as part of Task Number 3.

Q. (BY MR. BUNN:) Okay. And Task Number 3, then, talks about selecting scientifically based and other appropriate methods to define the boundary.

A. Of an area that would meet the requirements of the Phase 1 stipulation, yes.

Q. And did you do that?

A. Which?

Q. Task Number 3?

A. Yes.

Q. Did you do Task Number 5?

A. Yes.

MR. BUNN: Okay. Your Honor, I would move to exclude the testimony of the witness to the extent that it does not constitute a critique of Mr. Scalmanini's work. I have no problem with Tasks Number 1 and 4.

THE COURT: All right. Well, the motion in limine was brought primarily on the grounds of failing to produce the reports.

MR. BUNN: I just felt that it was appropriate to --

THE COURT: I think what you're really doing is you're expanding and focusing on a claim that the expert witness designation was more limiting than what he actually testified to at deposition --

MR. BUNN: Correct.

THE COURT: -- correct? All right.

Now, the way I look at this, first of all, as far as the reports go -- and I've looked at that Bonds -- I think it was Bonds versus Roy (phonetic). But that's a different issue. That was a medical malpractice case -- I think that's the one where they did not, either in the expert witness designation or at time of deposition, proffer any opinions on standard of care. But at time of trial, they wish -- the doctor wished to testify as to standard of care. And that was excluded.

We have something a little different here. The expert witness designation is probably vague. We can all do better, again, in hindsight. What it says is an evaluation and critique of the scientific evidence proffered by the defendants at trial, including without limitation of science implied and the opinions rendered by the defendants' expert witness who testify.

Now, I looked at both of them. I think the both of you used the same language. What does that mean? What is an evaluation and critique? Does that really mean that they're not, as they're evaluating and critiquing, going to give their own opinion? I suppose a very narrow reading would say all they're going to do is evaluate and critique and have no independent opinion. But, I mean, we're all --

MR. BUNN: Your Honor, that's not the point that mine

was directed to.

THE COURT: It is, isn't it? Because what you're saying is he did not have in his designation the fact that he was going to give opinions of boundaries.

MR. BUNN: No. That's not it.

THE COURT: Okay. What is it?

MR. BUNN: I don't have a problem with his testifying as to his opinion on the scope of Mr. Scalmanini's work, which was to define a groundwater basin boundary.

If you look at our designation --

THE COURT: I think we're saying the same thing. He wants to offer his own independent opinion as to what the boundary is.

MR. BUNN: No, ma'am. He wants to define a, quote, unquote, "Phase 1 boundary" based on the requirements of the Phase 1 stipulation. And he will testify, I assume, that that's not a groundwater basin boundary at all. It's something completely different. And that's what I would move to exclude.

If he wants to testify about what the groundwater basin boundary is, I think that's great. I'd move to hear it. But he wants to testify to something completely different based on his understanding of the requirements of the Phase 1 stipulation.

THE COURT: All right. Well, I think --

MR. BUNN: And I do have a short legal memorandum here about --

THE COURT: Isn't the problem, though -- I mean, at one time when we bifurcated this, the idea was we were going to determine a basin. Now, from that point on, you all met, you all

conferred, and you came up with a stipulation. And your stipulation is not having me determine truly what a basin is. You're wanting me to determine the area within which claims of groundwater rights will be adjudicated.

Now, that area may be the basin. It may be broader than the basin. I don't know. We're still getting to all of that. But you chose to -- for whatever reason -- I'm not sure -- chose to stipulate to this particular terminology.

MR. BUNN: At this point, I'm not sure either, your Honor.

THE COURT: I'm not sure -- we may want to revisit exactly where we're going on this. Good thing about a bifurcated trial is it's not final judgment. We can fix this as we go along.

But the true -- what we need to determine is probably what is in the stipulation, what areas are going to be adjudicated ultimately?

Now, I kept thinking maybe it was a good thing for plaintiff that they were going to disclaim their rights. But then as I was thinking about it more, then what you're probably going to say is they don't have overlying rights because it's outside of the area of the basin, so you're really not disclaiming anything to their property. I'm not sure, but I think that's probably why they're not wanting to go there. That's the only reason I could think.

MR. BUNN: We would stipulate they have the right to pump whatever quantity of water they can get out of the ground on that property and use it on the property.

But that's a little bit off the point. We did choose to enter into this stipulation. Mr. Joyce and Mr. Zimmer, at the time they did their expert designation, they had Mr. Scalmanini's report in hand. And they designated that what they were doing was not -- they did not designate -- select an area that meets the Phase 1 stipulation. They said, "Critique Mr. Scalmanini's report." And Mr. Scalmanini's report deals solely, I think you'll agree, with basin -- boundaries of the Antelope Valley groundwater basin.

So they had an opportunity to say at that time and we want to suggest a whole different basin than Mr. Scalmanini. They did not. They waited till two weeks before the trial to spring that on us.

THE COURT: Wasn't it at the time of the deposition?

MR. JOYCE: Day before.

MR. BUNN: That's right. Which was --

THE COURT: Which just happened two weeks before trial, which was probably scheduling and I know there were some problems there.

I mean, I'm not -- it would be a different thing if it wasn't testified to at the deposition. I would agree with you at that point in time you can't give your deposition testimony. But I think there's that area where, when your deposition testimony differs from what is in your expert witness designation, that we are governed by the testimony, especially -- you know, I just -- I'm not -- I'm convinced that you all are not surprised in any way by the fact that plaintiffs' experts want to give some boundary area, whether they call it watershed basin boundary, or

just the area as set forth in the stipulation. I mean, that's what this whole phase was about to some extent. So I can't believe there's any surprise that they don't have their independent opinion of what the area is, no matter what we want to call it.

I don't think the fact that there wasn't a report produced is any basis for exclusion, because I can't find anything that required a mandatory duty to prepare a report. So the fact there was no report done when the exchange took place, once he did prepare a report, it looks like it was provided as soon as it could practically be done. So I don't think that's a basis.

So then I really do think your basis for exclusion is that it was not set forth in the designation.

MR. BUNN: That's -- that's only part of it.

THE COURT: And you're right. I think these words could have been written better. On the other hand, at the time of his deposition, when he did go set forth everything, I think I gave you a chance to go through and depose him. And I have no doubt that we're pretty thorough in looking at -- some are exhibits. We probably have as much exhibits as testimony.

MR. BUNN: We never got to his opinions, your Honor. Never got to his opinions in that one day of decision (sic). And we were unable to schedule another day.

THE COURT: All right. So what is your question?

MR. BUNN: But the thrust of my motion is not the expert witness designation. It's the fact that Mr. Sheahan's conclusions are based entirely -- and I can cite you chapter and

verse from the deposition, but I think it's right here in his report, based entirely on his legal conclusion about what this Phase 1 stipulation requires. That is impermissible testimony for this witness.

THE COURT: Well, I'm not sure he's making a legal conclusion. He's taking, is he not, this -- the language, the area within which claims of groundwater rights will be adjudicated -- actually, the area -- the area will include or exclude overlying properties from the lawsuit.

All right. He's taking that --

MR. DUNN: Well, can I --

MR. BUNN: Just as he couldn't --

THE COURT: To some extent. And then he's taking his geological interpretation to say the overlying properties should be included in the whole watershed because pumping's going to have some significance on it.

MR. DUNN: Well, can I weigh in on this just briefly?

THE COURT: You can.

MR. DUNN: And I think it probably ties in several days together of discussion on this.

THE COURT: Before you say anything, is this really a good stipulation?

MR. BUNN: No, ma'am.

MR. DUNN: No.

MR. BUNN: Had we to do it over again, we certainly wouldn't do it again.

THE COURT: Do plaintiffs truly like it?

MR. ZIMMER: Your Honor, I think the stipulation will do

what we need to do in this phase and leave us with --

THE COURT: Well, this is where I keep going back to -- you'll get a chance to be heard on it.

MR. DUNN: Okay. I'm sorry.

THE COURT: Just hold the thought.

MR. DUNN: I'm sorry.

THE COURT: But is not -- do we not go back to the Complaint? It's quiet title. We go back to what they're trying to do, which is quiet title rights of their overlying property, would we not have to include in whatever area all areas to which they have overlying rights when I absolutely make that final determination? So --

MR. BUNN: Part of the determination is a determination of that area. But I remind you to -- what Ms. Fuentes called your attention this morning. That's got to be done first so that we can then go through further technical investigations to determine the nature of those rights, how much the water is coming into that area. And there's going to be a big difference if we choose basin or watershed. The amount of water coming in is very different in those two things.

THE COURT: That probably will make a big difference.

But let's say we choose your basin. The minute we choose your basin, a lot of plaintiffs' property is not overlying that basin.

MR. BUNN: One piece.

THE COURT: All right. Now, I'm still thinking the reason they didn't want to stipulate on that is because if they have no overlying rights, I'm thinking they're thinking your

disclaimer's not going to have any effect upon whatever prescriptive rights might be happening against their property that's not overlying the basin.

MR. BUNN: I don't think so, your Honor, but I suggest you ask them.

MR. ZIMMER: I think it's both -- it's both that and the fact that you don't have the proper study area to be able to evaluate the hydraulics in the area.

For example, you could draw this area so narrow that you had one square going back to my opening statement of one parcel of plaintiffs' property and one appropriator's pumping. And if you simply looked at that, you could not properly assess hydrogeologically whether the pumping here is affecting the pumping here, because you need to understand the hydrogeology of the entire area to be able to properly assess that because there could be another pumper not in this lawsuit on the other side of -- just outside whatever this narrow line is who's also pumping. And if he's pumping, he's going to have the effect of potentially drawing down our well. And rather than the defendant appropriator doing it, taking the hostile adverse action, it's actually somebody else who's causing that effect. And if it's somebody else who's causing that effect, then they don't get prescription.

MR. JOYCE: Your Honor, to take that issue one step further, the way the stipulation was drafted -- and we've had discussions about this amongst counsel after the stipulation. And one of the issues I expressly address is that it is your intent or do you mean to say that the Court were to adopt a line

that on the outside of which there was pumping, that that pumping could not then be considered in analyzing whether or not it may or may not be a source of any adverse results manifesting themselves within the area. And the answer to that question by them was yes. Which means then, as exactly what Mr. Zimmer's pointing out, is that you don't get to analyze scientifically hydrologically whether or not a depressed water table may or may not be the result of activities occurring elsewhere. Therefore giving them the presumptions, it must be us. If it must be us, then it must be adverse. That's what they're trying to get into.

THE COURT: Wouldn't we --

MR. BUNN: I --

THE COURT: I'm not sure that's it. Wouldn't we still -- if there's pumping outside the basin when we're actually determining all of the flow and these technical things, is that not still part of the calculations?

MR. BUNN: Yes and no.

MR. JOYCE: No. Because --

MR. BUNN: They stipulated, you'll recall -- we all stipulated --

MR. JOYCE: Your --

MR. BUNN: -- that --

MR. JOYCE: That is not legally adverse.

MR. BUNN: Am I making your point?

MR. JOYCE: You are.

MR. BUNN: They agreed that we didn't need to consider the pumping outside the area because it wasn't significant.

MR. JOYCE: No. No. No.

MR. DUNN: Can I try and break through this?

THE COURT: Go ahead.

MR. DUNN: And I apologize and I didn't mean to cut off anybody, but as I understand it -- and help me out, Mr. Sheahan -- Mr. Sheahan, as I just heard, he has a line that we've all seen and we're aware of. And if it's fair to say, what Mr. Sheahan is telling us is that on his line, he didn't consider this whether it's legally adverse or not. What he did for his work is he just says, "I'm going to pick a line where there's no impact" --

MR. JOYCE: Where there can be no impact.

MR. DUNN: Right. And if I understood him correctly -- and I don't want to put words in anybody's mouth -- and the result of that under his thinking is if there's no impact at all, then we don't get to the legally adverse issue.

MR. ZIMMER: Can't be legally adverse.

THE COURT: In other words, anything outside that line has no impact.

MR. JOYCE: Right. Now.

THE WITNESS: If I may interject, that's only partially correct.

MR. DUNN: Oh, I'm sorry.

THE WITNESS: But to the extent it's partial, that is correct.

MR. DUNN: And, generally, that line is going to be outside the line that Mr. Scalmanini has come up with.

THE COURT: Right.

MR. DUNN: Okay. I've -- I am prepared on behalf of my

client to agree that Mr. Sheahan's line, in fact, is a -- I'm going to call it a watershed line. You can call it whatever you want. It's outside here. And I'm prepared to stipulate that there is no impact at all. Okay. So --

THE COURT: On anything outside that line.

MR. DUNN: Yes. For purposes of this case.

THE COURT: I think everybody would stipulate to that.

MR. BUNN: Yes.

THE COURT: If we're outside the watershed --

MR. DUNN: So I think we're making progress. Because I know Mr. Sheahan is here at least in part to establish that, and I on behalf of my client will stipulate to that.

We're still stuck with this Phase 1 stipulation, that language. I just want to say that I wasn't involved in any way in drafting the stipulation.

THE COURT: He's disclaiming.

MR. DUNN: It was already signed. They were bugging me to sign the darned thing, and I did it. Anyway --

MR. JOYCE: I want to --

MR. ABBOTT: Is that your signature, Mr. Dunn?

MR. JOYCE: I want to side a little bit with Mr. --

THE COURT: I have to say I was concerned on the stipulation that everyone has concerns over being the basis of adjudicating basin. I mean, what are we doing here?

MR. ZIMMER: That goes back to whether you're adjudicating basin.

MR. ABBOTT: Let's look at the practical aspects.

THE COURT: -- just establishing quiet title. I'm

trying to get through the books to see if it helps, but they sort of lump it all together.

MR. ZIMMER: I don't think we're adjudicating basin. We're adjudicating whether there's descriptive claims. The defendants will make arguments based on what they consider the basin to be or how they define basin in Phase 2. That's why I said before along the lines of what Mr. Dunn is saying is that agreeing to this -- this outside line indicating that pumping outside there will, as a matter of law, be determined by the Court to have no legally adverse effect on pumping inside. That gives us our study area.

And then in Phase 2, we're all going to go in and look at pumping inside the study area and figure out how that all works hydrogeologically and whether the defendants have true prescriptive claims against the --

THE COURT: Wouldn't it be better to -- since we all agree on the watershed, that anything outside that we don't have to worry, isn't it better to have all of the calculations when I'm trying to make a determination as to whether the pumping has any adverse effect? In other words --

MR. ZIMMER: You will.

THE COURT: But I don't know how much more it costs. In other words, if we run two scenarios, run the scenario of the basin as it's outlined and then run the scenario of the entire watershed.

MR. ZIMMER: Well, your Honor, the -- what's wrong with that is you don't ever have to get the calculations in Phase 1.

THE COURT: Well, that's what I'm saying, though,

what -- maybe we don't really need any real findings in Phase 1. Again, I -- my take on it initially was that the defendants collectively thought what we now see as a basin that has subbasins, those subbasins were much more separate than they were. And that is -- has proven not to be the case.

So since that's not the case, then do we really need to make a determination and can I, legally based on what I'm getting here, which is no -- really, none of the scientific calculations that you need to go through all this, can I make a determination, and can they exclude that -- I guess it's the gray area between what is the basin and what is the watershed without having any scientific calculations done?

MR. ZIMMER: Well, you will be able to do that based on scientific testimony of Mr. Sheahan. But there's no effect --

MR. BUNN: Well, Mr. Abbott's been waiting patiently. Let him go first. But I have something to say.

MR. ABBOTT: When we look at the practical aspects of what we're dealing with, we've got the Buttes property out here, which is outside Mr. Scalmanini's line but inside Mr. Sheahan's line. And if you use Mr. Scalmanini's line, the defendants can disclaim, you know, no legally adverse effect on their own lying rights to that property.

We've got one well of District Number 40 that's south of Mr. Scalmanini's line but within Mr. Sheahan's line.

You've got how many wells?

MR. TOOTLE: I know I have one south and I have -- I don't -- Fremont Valley too. So I have at least two.

MR. ABBOTT: And Palmdale's got two wells south of

Mr. --

MR. BUNN: Yes.

MR. ABBOTT: -- Scalmanini's line. And the troubling part is, from what I understand plaintiffs, they don't want to kick those wells loose from the case.

MR. JOYCE: It's not wholly correct, Steve -- sorry -- Mr. Abbott. It's not that we're not wanting to kick those loose. The concern is fairly simplistic. Is it -- the way you all insisted upon tying the words together in the stipulation is, is that once the line gets drawn, then the next thing that has to happen is she has to then make a finding that that line is the line within which and out of which there is no, quote, "legally adverse effect." As soon as she does that, then any pumping outside of the line, whether it's yours or anybody else's, would not, cannot be considered for the purposes of doing the necessary quantification and tracing the source of any problems there are, if there are any, to where they're coming from.

So back to what I said earlier where you guys get to is you suddenly get to say, "Gee, your water tables are going down in the Neenach area, Mr. Joyce, which is where one of your pieces of property is. And guess what? We drew this line here cutting this off. Here's the Neenach, here's my property. And your water levels are going down. It must be because what we're doing down here. Where, in fact, it would be a result of what's happening north of here."

MR. ABBOTT: I don't think we are precluding that argument.

THE COURT: Are you going to disclaim any pumping for

the areas outside the line?

MR. BUNN: They have all the rights to the water outside the line.

THE COURT: Outside the line. So no matter whether the well is within the line or outside the line, no one's making any prescriptive claims on the property outside the line.

MR. BUNN: That's correct.

And, your Honor, I'd like to make a suggestion --

MR. JOYCE: Your Honor, I didn't articulate -- let me one more time. The issue is going to become -- in Phase 2 is whether or not what's happening in the concentrated appropriative municipal area down here whatever the area is ultimately chosen to be.

Once the line is drawn, though, you of necessity then have to incorporate as are the fact finding of that line a factual determination -- factual legal determination. That is, that any pumping outside of that line is not, quote, unquote, "legally adverse." That's where the problem comes in, because then if there's a manifestation within the area on a piece of property that my client owns in this area and there's a declining well, that that should be the case. Then they get to advance the proposition that it has to be a result of their activities or some other activity within the area. But more importantly, because of the way it was worded, cannot, as a matter of law, be the result of any activity happening to the north.

MR. BUNN: Your Honor --

THE COURT: I'm not sure that's what legally adverse

means.

MR. JOYCE: That's what they intend.

MR. BUNN: May I make a suggestion? First of all, I think the short answer to what Mr. Joyce is saying is what -- they agreed to do it that way.

MR. JOYCE: They give it up. Take the adverse out.

MR. BUNN: That's just what I was about to propose. I would suggest that we dump the Phase 1 stipulation. I'm prepared to --

THE COURT: I think that idea --

MR. BUNN: I'm prepared to stipulate on behalf of my client, to take a line from Mr. Dunn, that we can consider all the inflows into the groundwater basin and everything that affects those inflows. That's what I would stipulate to.

But I still would like a determination by the Court that plaintiffs' overlying rights are limited to the groundwater basin as defined by Mr. Scalmanini. Or perhaps Mr. Sheahan does have an opinion on that subject.

THE COURT: But that is also based on your stipulation to disclaim any prescriptive rights on overlying land out.

MR. BUNN: It's not based on the -- well, we'll still do that.

MR. TOOTLE: We'll do that.

MR. ZIMMER: We can't do that, your Honor.

THE COURT: Why not?

MR. ZIMMER: Because we are litigating this case and there's a collateral estoppel issue. And if it turns out that pumping from one of these other people out here is affecting our

pumping, then we would be collaterally estopped arguably because we have a judicial ruling that this pumping outside that line is not legally adverse to our pumping. It doesn't have an effect on it.

MR. BUNN: I just said we'd take that out.

THE COURT: He's going to take that out.

MR. ZIMMER: What is the -- what is the downside from a legal standpoint to having the Court determine an area outside of which there's no effect?

MR. JOYCE: Whatsoever.

MR. ZIMMER: So pumping outside versus pumping inside. Someone tell me what the problem is with that from the legal standpoint.

MR. BUNN: Your Honor, this is just where we got wrong when we talked about no effect.

THE COURT: But, see, it's not --

MR. BUNN: That's not what we should be talking about. We should be talking about the area within water rights are determined.

THE COURT: It's the water rights area.

MR. ZIMMER: That comes down to hydraulically connected properties.

THE COURT: Right. And what I think -- I mean -- and I am certainly less than all of you on the technical part of this. But I still think in the real part of this trial we can consider the effect of pumping inside and outside and how all the water gets in and all the water leaves and all of that.

MR. ZIMMER: We can certainly do that.

MR. DUNN: Correct.

MR. BUNN: We can do that.

THE COURT: So if we consider all of that, I think it's -- the legally adverse probably is the problem in the stipulation. I mean, you're willing to disclaim and I would think that would take care of a big part of the trial, the -- any prescriptive rights you have as to the property outside whatever we agree that a basin is; right?

MR. BUNN: That's only one out of many properties.

THE COURT: That gets rid of something.

But then when it comes to all of the overlying property, we're still going to do all the calculations, are we not, for what comes in, what comes out, how much is used, what your pumping does, what your pumping does, and it doesn't matter if it's inside the area or outside the area. And then I come up with something; right?

MR. ZIMMER: Well, there's no --

MR. BUNN: It doesn't matter in terms of effect whether it's inside the area or outside the area. I contend that it does matter in terms of defining overlying rights.

THE COURT: I'm looking at it at that point from the quiet title. Okay. Which basically is going to turn again on you. I think your burden of proof of establishing open, notorious, hostile --

MR. ABBOTT: They've put in the deeds and leases --

MR. JOYCE: That's exactly right.

THE COURT: And all of that. And I just think we're complicating things with this stipulation.

MR. BUNN: Well, ultimately --

THE COURT: Because I'm not convinced these experts are so far off on what they're saying. There's obviously a basin? What -- similar to what's been outlined. It's been recognized by quite a few different experts.

MR. JOYCE: I would --

THE COURT: I'm not sure you're going to say there is a basin.

MR. DUNN: And there's a watershed too.

THE COURT: And there is a watershed. What I'm not clear of is in between this basin and the watershed if there isn't another basin coming up there somewhere. Maybe there is; maybe there isn't. But, you know --

MR. BUNN: And I would be perfectly happy to litigate, if we need to do this, whether the two basins are sufficiently connected to be called one basin. And, as a matter of fact, I think if we put Mr. Scalmanini and Mr. Sheahan and Dr. Gorelick together, they will come to the right answer on that.

I do want to point out, though, that there's another significance --

THE COURT: Isn't there another basin up there?

MR. BUNN: Fremont Valley.

MR. TOOTLE: Fremont Valley.

MR. ZIMMER: Your Honor, it depends on how you define a basin.

MR. ZIMMER: The problem is you then want to define a basin a different way because they think legally it means something. The fact is they do not describe it the same as any

of these people. And after Mr. Sheahan's testimony, I think that will be crystal clear.

MR. BUNN: If they want to use the same tests as in the San Fernando case.

MR. ZIMMER: If you let me finish Mr. Bunn.

MR. BUNN: These areas are considered one basin or two --

THE COURT: Let Mr. Zimmer finish.

MR. ZIMMER: If you want to take the term "legally adverse" out of the stipulation, stipulate that this is the area of the litigation, and this will be the area that we're going to consider in the litigation, we can go to Phase 2 and we can argue with basins what they mean, what they are, what -- how these areas are interconnected hydrogeologically.

THE COURT: That's how I see it should happen, but --

MR. ZIMMER: And I would consider doing that.

MR. JOYCE: Your Honor, I would consider adopting Mr. Zimmer's suggestion on this condition: One, legally adverse is out. Two, no reference to groundwater basin. It's just the area. That way we get a geographic surface. We know who's in it, we know who's out of it. Because I do not concur with Mr. Scalmanini's depiction of what the, quote, unquote, "groundwater basin" is. And if we're going to start arguing about that for legal significant purposes in Phase 2, I want that to be left as an open issue.

MR. ZIMMER: Absolutely.

THE COURT: I think it would be. I wouldn't be making any findings because I'm sure there is room for dispute, again,

as to the exact boundaries.

MR. BUNN: And in that regard, it's probably wise to get that done now.

THE COURT: I don't think so.

MR. BUNN: That portion of it. Because the -- there's a scientific reason as well as a legal reason. And the scientific reason is that the future evaluations of this area are all done in terms of a safe yield of that basin.

MR. JOYCE: Now he's getting to the very issue I was concerned about.

THE COURT: But I keep going through these cases and I'm not finding any real findings with respect to basin that's made ahead of time. It looks like there's basically what you all were willing to stipulate to at this point, a general agreement as to what area the over- -- basically, the overlying area is going to include.

MR. BUNN: Well, I'd refer, again, to the Corona Foothill case that Ms. Fuentes cited this morning, which says, in so many words, you've got to define the basin before --

MR. JOYCE: Your Honor --

THE COURT: Does it say define it ahead of time?

MR. BUNN: Yes, it did.

THE COURT: But, I mean, in an absolute separate phase without all of the technical calculations? No.

MR. BUNN: It didn't say anything about the trials, no.

THE COURT: And see, I think you're right, you have to define the basin. But I'm concerned at this point in truly being able to define it the way it should be in this context without

all of the mathematical computations that eventually have to happen. I don't know. These cases are of prominent importance when -- and even though you say we're not adjudicating a basin, I kind of go back and forth on that. I think we are adjudicating the basin to the extent it is a quiet title prescriptive rights case, they still seem to suggest those are basin adjudication cases.

So when we're --

MR. ZIMMER: The difference I see in that, your Honor, just to clarify, that is, you're determining water rights. Considering water rights only because they're hydraulically connected. The term "basin boundary," "subdivision," "subunit," "drainage basin," these are all just factual geologic terms which are discussed in these cases in the discussion of whether they're hydrogeologically connected.

THE COURT: But I think once we determine these water rights, we're, in essence, adjudicating a basin.

MR. DUNN: Right.

MR. BUNN: The distinction is that it's not a general adjudication in the sense that not all water rights --

THE COURT: We don't have everybody there.

MR. DUNN: Yes.

MR. BUNN: Yes.

THE COURT: But it's an adjudication to the extent that these are prescriptive claims.

MR. DUNN: Yes.

MR. JOYCE: That's correct.

THE COURT: Now, the concern is when you get this kind

of stipulation and then we're going to go to all this work and get a determination -- and I'm not sure what an appellate court would do with a faulty stipulation.

MR. BUNN: Well, I think that everyone's now said that they -- they're at least willing to take "legally adverse" out of the stipulation.

THE COURT: This is what I would like to see, although I know we spend a lot of time. But you're better off to spend the time now so we don't create a bigger problem next year. Talk about this. In fact, come back tomorrow because you're all here, you have your hotel rooms. And if you -- need be, we can talk about it tomorrow. I would still like to see because even though, you know, there's a little bit of back and forth with the experts on the questioning, I think all of these experts generally speak the same language and can probably work out an agreement among themselves that you might all agree to.

MR. DUNN: Yes.

THE COURT: If you all agree, again, to do it in terms of somewhat of a mediation privilege, in other words, nothing that is said during their discussions can never be held against them at any point in time, you might be able to make a lot of progress on this type of thing.

MR. DUNN: I can speak from experience that that is generally how it is done.

MR. BUNN: And I would say, too, that if we get down to where I think your Honor is driving us, resistant though we may be, if we get down to that point, it's really going to come down to do we include the Leona Valley and the Fremont Valley within

the territory to be adjudicated? And I'm happy to leave that up to the experts.

THE COURT: All right.

MR. JOYCE: Well, you can address that issue depending upon what you're trying to get out of Phase 1. If you just merely want a line on the geographic surface, then we're going to say these are pumping within this line and any adversity between the pumping in and ownership in is the area we're focusing upon, but not call it a groundwater basin, not intend to exclude from Phase 2 the consideration of effects of pumping outside of it. Not excluding any of the Piper (phonetic) hydrologic issues that are going to have to be investigated. Then you're getting to a closer point. But you guys have been locked --

MR. BUNN: Can we go work on that, your Honor?

THE COURT: I think you need to. We want everyone back --

(Discussion - Not Reported.)

THE COURT: We need a better stipulation. I really think we do.

MR. DUNN: I do too.

THE COURT: I'm not so concerned -- I mean, if you want to include all of the overlying property, but I think if you do that, you're probably getting into a different basin maybe; maybe not.

MR. ZIMMER: That doesn't matter, though, if it's hydraulically connected.

THE COURT: If you're willing to stipulate that the only prescriptive rights you're seeking are the ones as to this basin,

it might be better to exclude the other one and just deal with this as long as you can take into account all the pumping anywhere and all the inflow and outflow and whatever those terms are.

MR. DUNN: Sure.

THE COURT: I don't know.

MR. DUNN: I think that sounds exactly right.

THE COURT: No? He's --

MR. DUNN: No?

THE WITNESS: If you like, I'd be happy to explain.

MR. JOYCE: -- by the Department of Water Resources seems to suggest that the acreage or the square miles is about twice the size of this. And really, the most revised Department of Water Resources map carries this area up to a groundwater divide right up here and then carries Fremont running north of that. So there's a groundwater divide up here.

Am I right, Tom, about this?

THE WITNESS: Yes.

MR. JOYCE: And so all I'm saying, that's one of the issues that I'm concerned about not shutting the door on right away.

THE COURT: That would be all within the same basin. You're saying, this basin other --

MR. BUNN: He's proposing different boundaries for the basin.

MR. JOYCE: It would take this northerly line a bit further north.

MR. DUNN: Okay.

MR. JOYCE: And I'm not suggesting that I necessarily need that for the purpose of what we're concerned about litigating within the, quote, unquote, "phase area" for having properties in or out. I'm concerned if we're going to later on try to talk about the hydrology and the influence that we get the right basins that we're talking about the right area. And that's my concern.

THE COURT: I think everyone wants to do the same thing. And I -- you know, I don't really think -- and I don't think you can possibly define in concrete terms a boundary anyways. Because it seems like it does move a bit.

MR. JOYCE: It's a moving target.

MR. ZIMMER: As close as I can get is a watershed.

THE COURT: Up, down, all of that.

I mean, even though I know you don't like the idea of the watershed, if you use the watershed, just an altogether limiting, I'm not sure that is such a bad idea. But I think you're better off if you can eliminate some more because I think it's going to make a big difference in all of the mathematical calculations that go into the flows and different things.

But I think you should sit down with attorneys and experts and not argue and simply explain where you're at and come back and see if you can't work something out.

And we can spend tomorrow to the extent you need some time to do that. I can monitor you every now and then, see where we're coming from.

MR. ZIMMER: If we're going to do that, your Honor, I'd better do that tonight so that we don't have more down time.

MR. BUNN: He wants another glass of wine, I think.

MR. ZIMMER: No. No. I don't drink.

THE COURT: You'd better find a good one.

(Discussion - Not Reported.)

MR. ZIMMER: I just like to make as much production time and court time as we can. If we can come to an agreement, let's do it.

MR. JOYCE: Pretty soon the cost of Phase 1 is going to exceed the value of Phase 2.

THE COURT: I still think if you take out some of the language of the stipulation, then there's really nothing to determine, is there? If you all agree it's a watershed area, you take out the "legally adverse" language.

MR. BUNN: The Court still has to determine the area within which rights are to be adjudicated. That's essentially --

MR. JOYCE: But that does that, Tom. And then once you're there, then you can really address in the fair, full, and comprehensive manner the interrelated hydrology of what's happening within that area in Phase 2. That's where it's going to become important.

If you can demonstrate in Phase 2 that there is no -- no conceivable significant correlation between production on one side or the other side, then guess what? That's where the evidence is going to take her or she's going to come to the conclusion that anything from this side has no impact.

MR. BUNN: Well --

MR. TOOTLE: Your Honor --

MR. BUNN: -- I think that's more to what the plaintiffs

are saying than they're sharing with the Court.

MR. TOOTLE: Your Honor, the Complaint originally said quiet title over the aquifer. They never define the aquifer. And clearly, the aquifer does not extend to the watershed.

MR. JOYCE: Back to their Exhibit D to their trial brief, their own citation said that it is not yet clear in California law whether or not overlying rights extend this to the boundaries of the, quote, unquote, "groundwater basin" or the watershed when they're not conterminous. I don't know the answer to that.

MR. BUNN: I didn't argue with you when you first said that. You're taking that out of context.

THE COURT: Isn't an aquifer, basin, whatever we want to call it. But whether or not -- it's not so much that -- how would we put this? I think all they want to be able to do is show the effect on the area outside the basin but up to the watershed.

MR. ZIMMER: Yeah. Because that's where all the water comes from.

MR. BUNN: I said my client will stipulate to that.

MR. DUNN: We will stipulate to that as well.

MR. ABBOTT: Yes.

MR. DUNN: We'll include all that water.

MR. BUNN: The problem that I have is ultimately you need to define supply and demand at a basin level. We've cited cases up the wazoo (phonetic) that say you have to do that. That's what safe yield is all about. As long as we can do that, I have no problem taking into account all inflows to the basin

and all effects on those inflows from outside the basin.

MR. DUNN: Sure.

MR. ZIMMER: Your Honor, to make this simple, if you guys want to agree that the area is the watershed, I will agree that we're not going -- that you can still make safe yield arguments based on your basin concept as you believe it to be.

MR. BUNN: I'll have to think about that.

THE COURT: All right. Go meet and confer.

I'm going to deny the motion in limine to exclude testimony. I can't see any basis as to why we want to exclude an expert's testimony on something that is as of paramount importance of this.

And I do not see this as any type of surprise or sandbag. I mean, the real question is whether you should have had a right to a further deposition and whether you could have possibly accomplished that. But I don't think that's being raised. So the motion in limine is denied.

But we will resume at 9:30 since it's --

MR. BUNN: And, your Honor, I also made an oral motion to exclude based on legal opinion. And do I take it that the Court's denying that as well?

THE COURT: I'm encompassing it all together.

(Discussion - Not Reported.)

(Proceedings Adjourned.)