BEFORE THE

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD

CALIFORNIA WATERFIX WATER RIGHT CHANGE PETITION HEARING)

JOE SERNA, JR. BUILDING

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

COASTAL HEARING ROOM

1001 I STREET

SECOND FLOOR

SACRAMENTO, CALIFORNIA

PART 2

Friday, March 16, 2018

9:30 a.m.

Volume 17

Pages 1 - 290

Reported By: Candace Yount, CSR No. 2737, RMR, CCRR
Certified Realtime Reporter

Computerized Transcription By Eclipse

APPEARANCES

CALIFORNIA WATER RESOURCES BOARD

Division of Water Rights

Board Members Present:

Tam Doduc, Co-Hearing Officer
Felicia Marcus, Chair & Co-Hearing Officer
Dorene D'Adamo, Board Member

Staff Present:

Andrew Deeringer, Senior Staff Attorney
Conny Mitterhofer, Supervising Water Resource Control Engineer
Jean McCue, Water Resources Control Engineer

PART 2

For Petitioners:

California Department of Water Resources:

Jolie-Anne Ansley
Cathy Cavanaugh

INTERESTED PARTIES:

For State Water Contractors:

Stefanie Morris
For Sacramento County Water Agency, Local Agencies of the North Delta, et al.; Daniel Wilson, South Delta Water Agency, et al.; and County of San Joaquin, et al.:

Osha Meserve
Aaron Ferguson
Thomas H. Keeling

APPEARANCES (Continued)

INTERESTED PARTIES (Continued):

For California Sportfishing Protection Alliance (CSPA), California Water Impact Network (C-WIN), and AquAlliance:

Michael Jackson

For California Water Research:

Deirdre Des Jardins

For Central Delta Water Agency, South Delta Water Agency (Delta Agencies), Lafayette Ranch, Heritage Lands Inc., Mark Bachetti Farms and Rudy Mussi Investments L.P.:

Dean Ruiz, Esq.

For Restore the Delta:

Tim Stroshane

For Clifton Court, L.P.:

Suzanne Womack

I N D E X

SACRAMENTO COUNTY WATER AGENCY, LOCAL AGENCIES OF THE NORTH DELTA, ET AL., DANIEL WILSON, SOUTH DELTA WATER AGENCY, ET AL. AND COUNTY OF SAN JOAQUIN, ET AL.

CENTRAL DELTA WATER AGENCY, SOUTH DELTA WATER AGENCY (DELTA AGENCIES), LAFAYETTE RANCH, HERITAGE LANDS INC., MARK BACHETTI FARMS AND RUDY MUSSI INVESTMENTS L.P.:

Friday, March 16, 2018 9:30 a.m.

PROCEEDINGS

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CO-HEARING OFFICER DODUC: Good morning, everyone. It is 9:30.

Welcome back to the Water Rights Change Petition hearing for the California WaterFix Project.

Since it is Friday, we will forego all the usual introductions. You know where we are and who we are and all that.

And I do see at least one new face. So take a moment right now and identify the exit closest to you. In the event of an emergency, we will evacuate using the stairs down to the first floor and we will meet up across the street.

Secondly, this is being recorded and Webcast, so please always speak into the microphone, and you might have to move it a little closer to you, and begin by identifying yourself and stating your affiliation for the record.

Our court reporter is back. Thank you, Candace.

If you would like a copy of the transcript before the end of Part 2, please make your arrangements directly with her.

And, finally and most importantly, to prevent being accused of noise annoyance, please take a moment and put all your noise-making devices to silent, vibrate or do not disturb.

Right. A couple housekeeping matters. I have been advised by Miss Mitterhofer that we have been able to reserve this room for Monday. So we will be meeting here on Monday instead of the Sierra Room, which was previously Noticed.

Secondly, I believe someone left a charger here last night. So if you are missing a charger, please come up and talk to one of the staff.

Are there any other housekeeping matter?

Oh, actually, I have one thing. In my continuing effort of ensuring law-abiding -- law abidance of traffic rules and regulations, let me note something.

For those of you who enter the parking garage on the tenth floor, and there is that stop sign that you stop at? There is no stop sign for the people on your right.

So be careful lest you run into somebody, like the Hearing Officer. I won't name names because I did not get a positive ID, but there was someone who looked suspiciously like a party representative during that

this morning. So keep that in mind, please.

With that, Miss Morris.

MS. MORRIS: I apologize. I believe there's one housekeeping item.

Miss Wehr for Grassland Water District had asked if Dr. Petrie could go this Monday. And then she sent a subsequent request that he be able to go on Monday, March 26.

And I may have missed it, in all honesty, but I did not recall in the Hearing Officers had ruled on that because the revised --

THE COURT: We --

MS. MORRIS: -- March 14th schedule has him still going before other groups.

CO-HEARING OFFICER DODUC: We did not give him or her a date certainty, but I believe it was -- her request was on or after Monday. So we will get to him when we get to him.

Is he on the list somewhere?

MS. MORRIS: Yeah. He -- He's -- But I think the schedule to go after this panel.

THE COURT: He --

MS. MORRIS: No, I'm sorry. After East Bay MUD.

CO-HEARING OFFICER DODUC: Yes.

MS. MORRIS: Okay.

MS. MESERVE: The issue is, he's in Vancouver, Washington, so he needs to fly down. So I think that's the practical problem Miss Wehr's having.

CO-HEARING OFFICER DODUC: Too bad we can't go to him.

(Laughter.)

CO-HEARING OFFICER DODUC: Yes, we do have that, and we'll try to work him in as best as we can, but I did not give her a date certainty.

MS. MORRIS: Thank you.

CO-HEARING OFFICER DODUC: But, actually, now that we've raised him up, it was her understanding that there was not a lot of cross-examination for Dr. Petrie, or is there?

MS. MORRIS: It may be quite expanded based on our experience with Mr. Hansen.

CO-HEARING OFFICER DODUC: All right.

MS. MORRIS: So it's unclear, but I -- I anticipate I may have to cover quite a bit more ground to make sure he's not going to be offering new opinions on cross-examination.

CO-HEARING OFFICER DODUC: So let's do this: Before we adjourn today, towards the end of the day, when we have a better idea of where we are in the

scheduling, if someone would remind me, we will revisit the issue of Dr. Petrie to at least try to ascertain if we need to get to him on Monday or not -- or we're able to get to him on Monday or not.

All right. If there is no other housekeeping matter, I will now turn to Miss Ansley to resume her cross-examination.

MS. ANSLEY: Thank you.

Good morning. My questions this morning are for Mr. Lambie.

John Lambie,
Josef Tootle,
Steffen Mehl,
Laura Foglia
and
Kerry Schmitz,

called as witnesses by Sacramento County Water Agency, Local Agencies of the North Delta, et al., Daniel Wilson, South Delta Water Agency, et al. and County of San Joaquin, et al., having previously been duly sworn, were examined and testified further as follows:

CROSS-EXAMINATION RESUMED BY

MS. ANSLEY: Can we look at SJC-225, please.

(Exhibit displayed on screen.)

MS. ANSLEY: Mr. Lambie, do you have that document in front of you, or can you see it on the screen?

WITNESS LAMBIE: Yes.

MS. ANSLEY: And this is your exhibit showing the data and contours for the South American Groundwater Subbasin?

WITNESS LAMBIE: That's correct.

Actually, these are not my contours. This is my figure reflecting Department of Water Resources contours.

MS. ANSLEY: Thank you for that clarification, yes.

Looking at this figure, does this figure also show recharge or subsurface flows from the Sierra Nevada foothills on the right side of the graph?

WITNESS LAMBIE: It does, in fact, suggest that there's a gradient down from the higher elevations in the east down toward the basin.

MS. ANSLEY: And does the distance between contour lines affect the rate of movement of groundwater in the aquifer?

WITNESS LAMBIE: It affects the flow rate; it does not affect the flux rate.

MS. ANSLEY: Isn't it true that the South

American Groundwater Basin is recharged from rivers such as the Consumnes, American and Sacramento Rivers.

WITNESS LAMBIE: I believe you are correct that it is recharged by all three rivers.

MS. ANSLEY: As well as other smaller streams; is that correct?

WITNESS LAMBIE: That may be the case. I'm less familiar with some of those small streams, like Deer Creek.

MS. ANSLEY: And isn't it also true that the basin is recharged from deep percolation of applied water?

WITNESS LAMBIE: I am not aware of where or where there are not agricultural canals, or those sorts of conveyance features that might leak in the South American Subbasin.

MS. ANSLEY: And are you aware of the relative contribution of the Sacramento River to recharge of the South American Subbasin?

WITNESS LAMBIE: Can you clarify what you mean as to "relative"?

MS. ANSLEY: Sure. So we've talked about a couple sources of recharge to South American Basin; correct? That -- We've talked about the rivers, the American River, the Sacramento River, the Consumnes

River.

WITNESS LAMBIE: Yes.

MS. ANSLEY: We've talked about the poten -- the recharge that you identify here on this contour map from the Sierra Nevada foothills, the eastern direction; right?

WITNESS LAMBIE: We discussed the rate of flow and the fact that there's water coming downslope.

MS. ANSLEY: Is it your understanding that there is subsurface flows from the direction of the Sierra Nevada's into the South American Basin?

WITNESS LAMBIE: Yes, there is flow coming from the east.

MS. ANSLEY: Does this clarify my question asking you if you know the relative contribution of the Sacramento River to the recharge -- the annual recharge of the South American Subbasin?

WITNESS LAMBIE: No.

MS. ANSLEY: It -- It doesn't clarify my question.

WITNESS LAMBIE: No.

MS. ANSLEY: Do you know what percent of annual recharge -- And I understand this is asking for a -- a gross estimate because it would vary from year to year.

Do you have an understanding of the percent of annual recharge that comes from the Sacramento River to the South American Subbasin?

WITNESS LAMBIE: No, I do not. I have not examined that.

MS. ANSLEY: Okay. We will return to that.

On Page 5 of your testimony, you reference the testimony of Dr. Nader-Terani provided in Part 1 of this proceeding on river stage; is that correct?

And we can look at your testimony.

WITNESS LAMBIE: Yes, I believe I did.

MS. ANSLEY: You have that in front of you?

WITNESS LAMBIE: You're asking me to look at Page 5 of my testimony?

MS. ANSLEY: Yes. Are -- Are you at the proper place? It's Page 5, Lines 25 to 26. I just want to make sure before I go on.

(Exhibit displayed on screen.)

WITNESS LAMBIE: Yes.

MS. ANSLEY: And you've reviewed the testimony of Dr. Nader-Terani on river stage; correct?

WITNESS LAMBIE: I reviewed this testimony that is, you know, in writing. I did not look at any transcripts of what he may have orally testified to.

MS. ANSLEY: Okay. And if we could go back to

your -- your slide show presentation -- or your PowerPoint presentation, which is SJC-255.

(Exhibit displayed on screen.)

MS. ANSLEY: And I believe we want Slide 9. I had -- I hand numbered them so I don't --

(Exhibit displayed on screen.)

MS. ANSLEY: Yup.

And this figure from DWR-5-Errata is from Dr. Nader-Terani's Part 1 testimony that you reference in your -- your own direct testimony here; is that correct?

WITNESS LAMBIE: I have made that exhibit by taking his page and noting what is expressed by the lines. So those are my notations that says (reading):

"Note that the river stage is lowered at all intervals between the No-Action Alternative and H3."

And if you could scroll up, please.

(Exhibit displayed on screen.)

WITNESS LAMBIE: I mean, so I can see the entirety of the page.

(Exhibit displayed on screen.)

WITNESS LAMBIE: And I point out that this is an point of agreement among the experts. I find it's always helpful to point out. You know, I'm basically

indicating the river stage is lower at all times and that's what that model shows as well, that for all return frequency flows, that's the case. If you divert this water, the river stage will be lower. It's -- It's -- To those of us who are hydrologists, that's logical.

MS. ANSLEY: And you understand that Dr. Nader-Terani used the DSM-II model to calculate these exceedance probabilities of river stage.

WITNESS LAMBIE: Yes, I believe I -- I did --

MS. ANSLEY: But you did not --

WITNESS LAMBIE: -- note that that is the basis.

MS. ANSLEY: I apologize for interrupting you.

You did not use the DSM-II model.

WITNESS LAMBIE: No. I'm simply expressing those are his results of the DSM-II model. I developed my own model based on the flows in the Sacramento River and the rating curves produced by DWR for the Freeport Gage.

MS. ANSLEY: And, as you just testified, you use this graphic to point out a point -- I'm sorry. It says right there -- "a point of agreement among experts."

WITNESS LAMBIE: That's correct.

MS. ANSLEY: But your testimony does not offer a critique of Dr. Nader-Terani's modeling and conclusions regarding Cal WaterFix impacts on river stage; is that correct?

WITNESS LAMBIE: That is correct.

MR. KEELING: That mischaracterizes his testimony.

CO-HEARING OFFICER DODUC: Actually, Mr. Lambie.

MR. KEELING: It -- It was overbroad and, in that sense, mischaracterized his testimony.

CO-HEARING OFFICER DODUC: Miss Ansley.

MS. ANSLEY: It was actually a question.

Your testimony does not offer a critique of Dr. Nader-Terani's modeling.

CO-HEARING OFFICER DODUC: Does your testimony offer a critique?

WITNESS LAMBIE: No. My testimony takes his figure at face value.

MS. ANSLEY: And is it your understanding that this figure -- this -- these results by Dr. Nader-Terani are for the staged differences immediately downstream from the three proposed intakes?

WITNESS LAMBIE: That's what it seems to say at the very top. It says (reading):

"Probability Of Exceedance For Dally Minimum Stage Sacramento River Downstream From The Three Proposed intakes."

Yes, I believe that's what the figure is about. Again, I took it at face value.

MS. ANSLEY: Did you look at Dr. Nader-Terani's results for further downstream?

WITNESS LAMBIE: No, I did not.

MS. ANSLEY: Didn't -- In -- In terms of looking back at this graphic and this location, didn't Dr. Nader-Terani determine that the greatest impact on river stage downstream -- immediately downstream from the North Delta intakes would be during higher flows?

WITNESS LAMBIE: That's correct.

That figure seems to indicate that the greatest deviation is around a 20 percent exceedance flow, which is a higher flow than a 100 percent exceedance flow.

But it is at all points river stage below if you pull this water out. This is a -- You know, I have no quarrel with this graphic because it's intuitively correct. Whether it's explicitly correct, I can't say.

MS. ANSLEY: Can we now call up DWR-5-Errata, please.

(Exhibit displayed on screen.)

MS. ANSLEY: And can we look at Slide 80.

(Exhibit displayed on screen.)

MS. ANSLEY: All right. Did you look at Dr. Nader-Terani's results for the Mokelumne River for his DSM-II modeling of river stage?

WITNESS LAMBIE: No, I did not.

MS. ANSLEY: So you --

WITNESS LAMBIE: I can only cite to the pages I looked at.

MS. ANSLEY: Okay. And so you were not aware of this probability of exceedance for the South Fork Mokelumne at Terminous?

WITNESS LAMBIE: No.

MS. ANSLEY: Is it your understanding from reading probability of exceedance figures that involve stage that this figure, at least as you view it today, does not show a difference between the NAA and H3 or H4?

WITNESS LAMBIE: I'm not sure how to answer that, other than I think the figures are low enough resolution that I can't give you an opinion.

MS. ANSLEY: And why would you say it's low resolution?

WITNESS LAMBIE: Because the width of the lines expressed in the legend is difficult to discern

as compared to the width of the line in the graphic.

There's not enough use of color or pattern to discern whether he's indicating one is above the other or another.

MS. ANSLEY: Could --

WITNESS LAMBIE: It's -- It's just a poor quality graphic. I haven't gone through his results so I can't give you an opinion as I sit here.

MS. ANSLEY: All right. Perhaps we could zoom in on those lines. Just any portion of them.

(Exhibit displayed on screen.)

MS. ANSLEY: Is it your understanding that what could be represented here is that the lines are so close together that you can't resolve the differences between the lines on this graphic?

MS. MESERVE: Excuse me.

Is this a black-and-white figure? Is that part of the problem --

MS. ANSLEY: No --

MS. MESERVE: -- that there should be colors?

MS. ANSLEY: -- it's not, actually. It's from Dr. Nader-Terani's DWR-5-Errata which were the slides presented in Part 1.

WITNESS LAMBIE: The -- The only thing one can discern -- or I would be prepared to -- to offer, is

that the aggregate line is thicker than the individual lines shown on the legend.

Which one is above the other? Cannot say.

MS. ANSLEY: Okay. Turning back to the details of your analysis.

On Page 8 of your testimony, which is SJC-223.

(Exhibit displayed on screen.)

MS. ANSLEY: Lines 1 and 2.

You state that you focused your analysis of Cal WaterFix impacts on Scenario Alt 4A H3; is that correct?

WITNESS LAMBIE: Yes. It describes it as "operational scenario H3 for Alternative 4A."

MS. ANSLEY: Is there a reason you did not provide any analysis of H4?

WITNESS LAMBIE: No. I was speaking with counsel, and the decision was made to select H3 as a reasonable representation of Project conditions.

MS. ANSLEY: And so, similarly, you did not do any analysis of -- So you yourself -- When you present it here today, you did not conduct any analysis of H4?

WITNESS LAMBIE: That is correct.

MS. ANSLEY: And you also did not provide any analysis of the scenario that we here call the Biological Assessment H3+.

WITNESS LAMBIE: That is correct. I only analyzed H3 as a representative case.

MS. ANSLEY: Can we look at SJC-255.

(Exhibit displayed on screen.)

MS. ANSLEY: Can I -- Can we go to Slide 11.

(Exhibit displayed on screen.)

MS. ANSLEY: Do you see that there?

And I think it would be helpful to look at the right-hand screen which tends to be sharper and hold the colors better, or if you have it in front of you.

You have that there?

WITNESS LAMBIE: I do. I've got my paper copy in front of me.

MS. ANSLEY: Okay. Great.

And I'm just going to use this graph as a framework for my questions to understand the steps you took in your analysis.

So looking at this figure, are the dashed lines indicators of flow downstream of the North Delta diversion intakes in your analysis?

WITNESS LAMBIE: That is correct.

Based on an exceedance frequency for those months.

MS. ANSLEY: And did you use your representations of flow upstream, which I believe is

the solid lines, and flow downstream of the North Delta intakes to estimate changes in groundwater recharge?

WITNESS LAMBIE: They were incorporated in part. They -- They represent the change in flow, which, when taken through rating curve, results in a change in river stage, which results in a stage in the wetted area in contact with the surface water. So that's the piece of the calculation those represent.

MS. ANSLEY: But these flows are sort of the -- if you will, the -- the base input to the rest of the steps of your analysis.

WITNESS LAMBIE: Yes. The solid lines represent the Freeport Gage flows of history between 1951 and 2009. And the dashed lines represent the . . .

I've struggled with the terminology.

Alternative 4A operational scenario H3 frequency of diversion rates.

MS. ANSLEY: And --

WITNESS LAMBIE: So it's a statistical matching.

MS. ANSLEY: I understand. And you'll have to be slow with -- patient with me because I struggle with the terminology a little here, too.

I'd like a point of clarification. Just now,

you said that your time period was 1951 to 2009? I -- I -- My recall of your testimony is it's 1951 to 2003, and just a spot of clarification so I'm saying the right time period.

WITNESS LAMBIE: You know, as I sit here, I'm not 100 percent certain.

That's right, it has to be through 2003, because your model only produced information through 2003. So thank you for helping me clarify.

I used 1951, the beginning of Project operations, till the end of the forecast scenario provided by the Department of Water Resources.

MS. ANSLEY: Okay. And pardon my -- my slow plodding.

But so we -- So the plotted lines on this exceedance figure indicate historical Sacramento River flow measurements 1951 to 2003.

WITNESS LAMBIE: That is correct.

MS. ANSLEY: And the dashed lines on this figure were estimated by subtracting CalSim North Delta diversion output for Alt 4A H3 from the historical flows denoted by the solid line; is that correct?

WITNESS LAMBIE: That is correct.

MS. ANSLEY: And then also to confirm:

You took the rates of diversion from the

CalSim modeling -- Excuse me. Start over.

Just to confirm: So you took the rates of diversion from the CalSim modeling output for Alt 4 H3 by month for 1951 to 2003; correct?

WITNESS LAMBIE: Yes, by looking at all Januaries and all Februaries and all Marches and applying this statistical return frequency analysis.

So it's not about March 1951. It's about all Marches across that period.

MS. ANSLEY: And you -- And the historical base flow measurements you obtained from the same months, obviously, for the his -- from historical gauge information.

WITNESS LAMBIE: Yes.

MS. ANSLEY: The Freeport Gage.

WITNESS LAMBIE: I believe it is the Freeport Gage begins operating as the Federal project begins operating, so there's data steadily from 1951 forward on a monthly basis.

MS. ANSLEY: And you used this information -- And then you used information from C2VSim, the Model C2VSim, to convert river flow to groundwater recharge; is that correct?

And I understand there was a couple steps in between. Wetted stage -- state, wetted perimeter,

groundwater recharge; is that correct?

WITNESS LAMBIE: I find the question a little bit ambiguous but let me take it, I think, with its intent.

I used the rating curve for this point in space from DWR C2VSim Model which works to look at groundwater surface water exchange.

So, again, the flow rate through that rating curve results in a stage height in the river.

I believe what I'm doing in my analytical model is what that numerical model attempts to do.

That numerical model as constructed today in the public release is not able to change the wetted perimeter. The new code can and will. It's due for release, I believe, this month.

MS. ANSLEY: So it went from flows to -- The rating curve turned out stage and -- and also then used the stage differences to calculate groundwater recharge.

Or you -- It went from stage to groundwater recharge, and then you calculated the reduction in groundwater recharge; is that correct?

WITNESS LAMBIE: The stage height controls the wetted perimeter of the river, which controls the area in flow in contact with the river.

And then you apply the pressure gradient across the side wall of the river into the aquifer.

MS. ANSLEY: And is there a reason why you didn't use Dr. Nader-Terani's calculations of river stage?

WITNESS LAMBIE: I prefer to rely upon my own work.

I've examined DSM-II historically and I . . . I prefer to rely upon my own work.

MS. ANSLEY: Isn't it true that the CalSim Alt 4A H3 modeling scenarios include estimates of climate change, sea-level rise, and changes in upstream development?

WITNESS LAMBIE: I believe I read text to that effect.

MS. ANSLEY: Isn't it also true that CalSim Alt 4A H3 modeling scenario includes regulatory conditions that are different from the historical time period from 1951 to 2003?

WITNESS LAMBIE: It -- It may. I -- I -- I can again only infer from that general text characterization as to what those outputs may contain.

MS. ANSLEY: So, as you sit here today, are you saying that you're not aware of the assumptions and inputs of the modeling scenario Alt 4A H3?

WITNESS LAMBIE: That would be a fair statement.

I'm aware of the outputs, and I'm aware of the text that describes what was considered, but I personally have not examined the inputs to CalSim and what they might be predicated on for an individual time period in an individual water year.

MS. ANSLEY: So a comparison between historical base flows using the time period 1951 to 2003 with diversions estimated or projected by CalSim Alt 4 H3 would not tell you the effects attributable to the North Delta diversions distinct for effects attributable climate change, upstream development, sea-level rise and regulatory changes; is that correct?

MR. KEELING: Objection: Compound; vague and ambiguous.

MS. ANSLEY: I can -- I can run through them one at a time if you like.

CO-HEARING OFFICER DODUC: Let's do that.

MS. ANSLEY: Okay. So your analysis is a comparison between historical flows without the North Delta diversions and diversions under the Alt 4A H3; is that correct?

WITNESS LAMBIE: That is correct.

MS. ANSLEY: And so a comparison between

historical base flows and the CWF Alt 4 H3 modeling scenario would not isolate the effects attributable to the North Delta diversions from changes in upstream development; is that correct?

WITNESS LAMBIE: Looking at the actual time history of flow in the Freeport Gage versus the proposed diversions would not specifically isolate that upstream development.

MS. ANSLEY: And it would not also isolate the North Delta diversions from the effects attributable to climate change; is that correct?

WITNESS LAMBIE: Looking at the historic flows that have experienced any number of types of water years with the diversions proposed would represent a reasonable spectrum of climatic conditions.

The term "climate change" seems to be used ubiquitously to indicate some change in hydrology different than we've seen historically.

So I can't affirmatively state that that does or does not consider climate change. It considers a great deal of climate variability.

MS. ANSLEY: But it does not specifically -- The comparison would not isolate any projected changes due to climate change.

WITNESS LAMBIE: I take your question to mean

climate change into the future might look differently than climate change historically.

MS. ANSLEY: Well, how about I ask:

Is it your understanding that CalSim CWF Alt 4 H3, that the CalSim model includes projected changes due to climate change into the future?

WITNESS LAMBIE: That's what the text indicates.

MS. ANSLEY: Okay. So back to my question.

If you were comparing diversions at the North Delta intakes under Alt 4A H3 against historic base flows from 1951 to 2003, your comparison would not isolate the effects attributable to the North Delta diversions distinct from the effects attributable to climate change; is that correct? Projected climate change.

WITNESS LAMBIE: Thank you.

It -- It doesn't look at what Department of Water Resources has projected climate change might look like for the hydrology of the Freeport Gage.

MS. ANSLEY: And I acknowledge your point, that the time period would capture a great deal of hydrologic variability.

And then, since we're going through these one by one, similarly, a comparison with Alt 4A H3

diversions of the North Delta intakes with historical base flows would not isolate the effects of sea-level rise.

Is that correct?

WITNESS LAMBIE: Sea-level rise?

MS. ANSLEY: Yes. Projected sea-level rise.

WITNESS LAMBIE: From?

MS. ANSLEY: Well, it would not isolate the effects of sea-level rise distinct from the effects of the North Delta diversions, the effects on river stage or flows; is that correct?

WITNESS LAMBIE: It would not determine anything to do with projected sea-level rise in the future.

MS. ANSLEY: You're saying it would not -- This -- Your comparison would not isolate the impacts attributable to the North Delta diversions distinct from sea-level rise; correct?

I just want to make sure I understand your answers.

WITNESS LAMBIE: I'm struggling a little bit because, by "sea-level rise," I believe you mean forecasts of sea-level rise due to climate change.

All of the data on the Freeport Gage, of course, picks up the tidal impoundment, if you will, of

water that happens each and every day, so there's a tidal rise.

I want to make sure we're clear as to what, you know, the Freeport Gage reflects.

MS. ANSLEY: I think what this series of questions is intended -- And we can clarify and go back over it.

But we're talking about that there are assumptions in the Cal WaterFix Alt 4A H3 modeling scenario that includes projections of sea-level rise, climate change and upstream diversion that are not . . . that would not be captured in your use of historical base flows.

Do you see that? Or can we agree on that?

WITNESS LAMBIE: I'm --

MS. ANSLEY: I'm sorry. Upstream development, not upstream diversion.

WITNESS LAMBIE: Could I have the question again? I'm sorry.

MS. MESERVE: But in terms of the vagueness of this question, would it help to put a specific date on what future condition you're talking about?

MS. ANSLEY: No, I don't think it actually would.

But what we're talking about, if Mr. Lambie is

not familiar with, is that under the Alt 4A H3, there have been projections -- what we call here the early long-term -- there have been projections of sea-level rise, climate change, and upstream development that are assumptions in the water scenarios used to determine the impacts of the Cal WaterFix.

CO-HEARING OFFICER DODUC: Miss Ansley.

MS. ANSLEY: Yes. Thank you.

CO-HEARING OFFICER DODUC: Perhaps I might try.

Mr. Lambie, the diversions that you use from the modeling output to calculate your dashed lines, those diversions have built in into their assumptions projections of climate change, sea-level rise, and upstream development.

I think she's asking is: Do you see . . .

Is there in your mind any disconnect between comparing actual data that you obtained for your base flow, actual historical data, versus a scenario that has all these projections in it?

And would that analysis -- How would that -- How would your analysis account for those projections that are inherent in the diversions but not, of course, in the baseline?

WITNESS LAMBIE: Well, I -- I think the fair

thing to tell you is, of course, I looked at the inputs -- or, rather, excuse me -- the outputs for water delivered to the Freeport Gage in the CalSim H3 Alt 4A. I chose to testify based on reality.

What the Department purports to have done in the CalSim modeling is to have taken those historic water years and said: If we apply all of these future conditions and this and thats to the watershed hydrology in those years, here's how much water we will deliver through the Freeport Gage for diversion.

It's less water. So I was a bit surprised by that. I thought, oh, they're going to find some new water. Well, to their credit, they didn't.

What they -- What this reflects is a more generous assertion as to what the impact of these diversions is in terms of the relative percentage of flow in the river.

If I was to take the CalSim -- excuse me -- H3 Alt 4A flows delivered to the Freeport Gage for diversion, the percentage diverted out of these rivers would be greater.

CO-HEARING OFFICER DODUC: And was there a reason you chose not -- Was there a reason you chose to use historical data for your baseline rather than the No-Action Alternative that was modeled?

WITNESS LAMBIE: I have a strong bias towards reality.

CO-HEARING OFFICER DODUC: And so you acknowledge that, in using historical data to establish your baseline, that baseline does not have the projections of climate change, sea-level rise, and upstream development that the Department put into their modeling assumptions.

WITNESS LAMBIE: That is correct. I did not look at the No-Action Alternative's base flow at the Freeport Gage. I looked at the delivered water under Alternative 4A Scenario H3.

MS. ANSLEY: Okay. Can -- That was very helpful and perhaps much better worded than mine.

And if I could just ask, for the clarity of the record, one confirming question on this.

So, is it your understanding now the analysis that you conducted would not show or distinguish the -- the impacts of the North Delta diversions under the Cal WaterFix from the modeling assumptions of climate change, sea-level rise, and upstream development; is that correct?

WITNESS LAMBIE: No. I find myself unable to agree with that statement.

MS. ANSLEY: Okay. All right. I will -- I

will move on, then. I think we have enough.

Are you very familiar with CalSim modeling?

WITNESS LAMBIE: No. I would say I am marginally familiar with CalSim modeling.

I analyzed CalSim II some 10 years ago to look at its method, if you will, of looking at groundwater/surface water exchange.

MS. ANSLEY: Would you say that you're very familiar with the modeling assumptions and how CalSim works?

WITNESS LAMBIE: I know how a decision support system model works. I don't know CalSim II.

MS. ANSLEY: I understand that the -- the -- Oh maybe we need to zoom out a little.

(Exhibit displayed on screen.)

MS. ANSLEY: I think the graphic we're looking at is for the South American Subbasin.

Whoop.

This is the South American Subbasin; correct?

Or this is Alt -- This is both basins; is that correct?

WITNESS LAMBIE: This is the Sacramento River at the Freeport Gage, which is what controls the stage for impacts to both basins in my analysis.

MS. ANSLEY: Okay. So the same analysis was

used for the Sacramento River, the same general analysis of comparing historical flows, what you call actual conditions, with CalSim Alt 4A H3 diversions was the same for your . . . for your analysis of both the Sacramento River and the Mokelumne River; is that correct?

WITNESS LAMBIE: I'm sorry. I need the question again.

MS. ANSLEY: Yeah. It wasn't great.

You looked at both the Sacramento River and the Mokelumne River; is that correct?

WITNESS LAMBIE: Yes. I looked at the historic flow at the Freeport Gage, and I assembled the historic flows and at -- in the Mokelumne. I did that by looking at the Upper Mokelumne gage above Camanche and . . . I'm trying to get the name of the other one.

And then I looked at the diversions below that from Woodbridge ID. And I think that's it; right? East Bay MUD's take -- Oh, excuse me. East Bay MUD has to come out as well.

So I removed East Bay MUD's diversions and I removed Woodbridge Irrigation's diversions for both ag and municipal, and that gave me a good approximation of what the watershed would then be yielding at the bottom. So I used that hydrology for the Mokelumne.

MS. ANSLEY: And it was the same time period; correct?

WITNESS LAMBIE: Correct, yes.

MS. ANSLEY: Okay. So you used historical flows from 1951 to 2003.

WITNESS LAMBIE: That's correct.

MS. ANSLEY: And that was --

WITNESS LAMBIE: I had to take some extrapolations of the East Bay MUD data and the Woodbridge data because, of course, it did not use that period, but the USGS gage did to give me an idea what the watershed had in it.

MS. ANSLEY: And that was -- And that was your baseline, was the historical flows as you've just adjusted -- testified to adjusting.

WITNESS LAMBIE: Right. I sort of adjusted Mokelumne historic flows at, let's call it, Dead Horse Island.

MS. ANSLEY: And then you accounted for historic Delta Cross Channel operations?

WITNESS LAMBIE: Yes.

MS. ANSLEY: To -- To reach your baseline; correct?

WITNESS LAMBIE: No. No. I used the historic operational frequency of the DCC and the quasi-rule

curve in that Bureau of Reclamation document I referenced to determine under their operational condition scenarios when the Delta Cross Channel would have been open historically and how much flow it was able to divert.

Its stated capacity is 3500 cubic feet second. So I was never diverting more than that into the Mokelumne by way of the DCC being open. It -- It's a fairly ornate calculation I had to do.

MS. ANSLEY: Did you provide -- That brings me to a question I was going to bring up later but seems like a good place.

Did you provide -- We have .pdfs of some of your tables and your calculations.

Did you provide your underlying calculations in either a spreadsheet form or a model form?

WITNESS LAMBIE: You have printouts of the spreadsheet. The calculations are all included therein. Nobody asked me for the native file.

MS. ANSLEY: But these spread -- If -- If we were to look at SW -- SJC-240.

(Exhibit displayed on screen.)

MS. ANSLEY: Can you see that? I know it . . .

WITNESS LAMBIE: Yeah.

MS. ANSLEY: Okay.

WITNESS LAMBIE: I'm -- I'm very familiar with it.

MS. ANSLEY: So I see -- If we looked at the first column, just as an example, your 5 percent exceedance column, and I see your calculation of -- of -- your first calculation of groundwater recharge right in the middle, 8,457.

Do you see that?

WITNESS LAMBIE: I do.

MS. ANSLEY: Because this is a .pdf, we can't check that calculation; is that correct?

WITNESS LAMBIE: That's correct.

MS. ANSLEY: Okay. Would it be possible to obtain that information?

WITNESS LAMBIE: Yes.

MS. ANSLEY: You still have your analysis.

WITNESS LAMBIE: Yes.

MS. ANSLEY: And we would again like to request that.

WITNESS LAMBIE: I'm glad to provide it with counsel's guidance.

MS. ANSLEY: Thank you. Okay.

Can we look at SJC-244, please.

(Exhibit displayed on screen.)

CO-HEARING OFFICER DODUC: Oh. How much additional time do you anticipate needing, Miss Ansley?

MS. ANSLEY: We're -- We're getting down to the end. Not more than 15 to 20 minutes.

CO-HEARING OFFICER DODUC: Let's shoot for 15.

MS. ANSLEY: I -- I definitely will.

I apologize. Can we go back for a minute to SJC-255, Slide 11.

(Exhibit displayed on screen.)

MS. ANSLEY: And so just so that I understand clearly the -- the calculations you did for the Mokelumne River.

Using the solid and the dashed lines as sort of a reference point for my questions, you use CalSim Alt 4A H3 modeling scenario to arrive at dashed line -- in a sense, to arrive at flows or diversions on the Mokelumne under Alt 4A H3+; correct?

WITNESS LAMBIE: Forgive me. I just need to refresh.

(Examining document.)

MS. ANSLEY: So you -- You -- You took these -- You took these dashed lines and you added your DCC factor to determine flows going into the Mokelumne; is that correct?

WITNESS LAMBIE: No. I -- Looking at the

calculations, I used the -- the base flow value, not the -- the value minus diversions.

I did that because that would represent the criteria condition under which DCC would have opened historically.

MS. ANSLEY: How about for your Cal WaterFix determination? You . . .

MS. MESERVE: Vague. Can you . . .

MS. ANSLEY: Representation.

WITNESS LAMBIE: I used the stage height for the Cal WaterFix based upon the change in stage in the Sacramento River that would arrive via the flow rate available in the DCC for the frequency of percentage time that the DCC has historically been open.

So what that represents is the relative change in stage in the Mokelumne by way of the diversions.

MS. ANSLEY: Okay. That -- That helps a lot actually.

WITNESS LAMBIE: It's -- It's an ornate calculation, but it's what one has to do when there's this DCC that operates with a great deal of variability and does not operate within the rule curve provided.

MS. ANSLEY: Okay. And now can we go back to SJC-244.

(Exhibit displayed on screen.)

WITNESS LAMBIE: And I just -- Perhaps for the clarity of the record:

When you were asking questions about SJC-240, that is specifically my calculation in relation to the South American Basin which has no bearing on all these other questions you're asking.

It -- It's Exhibit SJC-248 that reflects the outcome of all that we're talking about with regard to DCC diversions into the Mokelumne.

MS. ANSLEY: Thank you.

And to be clear, what I'm asking -- what I'm requesting from you is your underlying spreadsheets or calculations for -- that underlie both SJC-240 as well as SJC-248. I'm -- I'm asking for all of your underlying calculations.

WITNESS LAMBIE: Very well.

MS. ANSLEY: So looking at the -- and I hope you can see the screen.

WITNESS LAMBIE: Yes. Well . . .

MS. ANSLEY: This is the information you used in your groundwater recharge calculations?

WITNESS LAMBIE: This is the information I had available. These were the reported values of days open during these four operational periods of the year described by the Bureau.

The nomenclature is my own. I found it simplistic to call them early year, late spring, dry season, and winter to keep it straight in my head.

MS. ANSLEY: And if we can look at, just for an example, 2003.

WITNESS LAMBIE: Yes.

MS. ANSLEY: That would be 109 days open?

WITNESS LAMBIE: That is correct.

MS. ANSLEY: And I think, if I read over correctly, that's 100 percent open --

WITNESS LAMBIE: I believe --

MS. ANSLEY: -- during the early year percent open?

WITNESS LAMBIE: That's correct. Yeah, because reflected at the top of the columns on the far right that run -- runoff period length in days, I list right below that for each of them how many days there are in the period.

So for early year -- it's poorly labeled there, apologies -- there are 109 days. So the outcome in those columns of numbers below is simply the fraction of the number of days historically open in those particular years in those operating periods.

So 109 days out of 109 days means that it was open every single day.

MS. ANSLEY: Can we look at SJC-238, Slide 10, please.

Oh, Slide 1.

(Exhibit displayed on screen.)

MS. ANSLEY: And this is the source of your information on Delta Cross Channel, the operation; is that true? I believe you testified.

WITNESS LAMBIE: Yes, that's correct.

MS. ANSLEY: Now can we go to Slide 11.

(Exhibit displayed on screen.)

MS. ANSLEY: Oh, 10.

(Exhibit displayed on screen.)

MS. ANSLEY: Oh. Slide 10.

(Exhibit displayed on screen.)

MS. ANSLEY: I'm sorry. I said the wrong number.

And can you see this figure clearly? And -- And please let us know if you need us to --

WITNESS LAMBIE: I have a very sharp copy of it in front of me.

MS. ANSLEY: Okay. Good.

And doesn't this show that it was actually during the time period we just looked at for 2003, the early runoff period, that the DCC was closed for 109 days?

WITNESS LAMBIE: It does.

I had misread the figure.

MS. ANSLEY: And I don't want to interrupt if you're checking something, so please let me know when you're ready to go.

WITNESS LAMBIE: No, I'm -- I'm ready.

MS. ANSLEY: So does this indicate that your -- that your calculations in SJC-244 are not correct?

WITNESS LAMBIE: They would not consider the correct percentage time open for the DCC.

MS. ANSLEY: And can we look at SJC-250.

(Exhibit displayed on screen.)

WITNESS LAMBIE: Yes.

MS. ANSLEY: And the second column from the far right side, the DCC diversions-through-Delta calculations, do you see that?

WITNESS LAMBIE: Yes, I do.

MS. ANSLEY: And if your calculations regarding DCC operations are incorrect, is that the column in this table that would also be similarly incorrect?

WITNESS LAMBIE: No. There's no error produced by my mistake in this table. This table looks to see what the supplied water is down the Sacramento

versus the outtake at the -- the current intake pumps, and notes that the quantity of flow historically in the river which, as I said, exceeds that produced in the alternative scenario, that there's not enough water can pass through the DCC even if it's wide open to produce the water needed for diversion.

So what it simply points out is, if those are the actual conditions, there's a pull on the Delta pool and you will reverse the flow of the Delta.

MS. ANSLEY: So this column -- In your testimony, you don't say that -- Or this column does not incorporate the rule curve of percent open of the Delta Cross Channel gates?

WITNESS LAMBIE: That's correct. It was sort of observational as I went through it and was finding a -- a very strange error in condition of flow supplied.

And so it -- It isn't -- It isn't affected by the mistake I made there on the percentage open on the DCC. It's simply a statement of -- of flow supply by the two rivers into the Delta and what the DCC can do to shunt water from the Sacramento to the -- the Tracy intakes.

So it uses the peak operating capacity of the DCC as the criterion. If it can --

MS. ANSLEY: It doesn't incorporate percent open or closed?

WITNESS LAMBIE: Correct. It's just looking at, can 3500 cfs meet the demand that's residual. And the answer is, when it says "insufficient water," the answer is no.

MS. ANSLEY: But do DCC percent open or closed operations affect your conclusions regarding the Mokelumne River groundwater recharge?

WITNESS LAMBIE: Yes.

MS. ANSLEY: Okay.

WITNESS LAMBIE: That -- Those calculations are in error since I have calculated sort of backward how many times it's open.

MS. ANSLEY: And I just have two lines of questioning very quick.

Do you know the groundwater storage capacity for the South American Subbasin aquifer?

WITNESS LAMBIE: No, I do not.

MS. ANSLEY: Do you know the annual recharge --

WITNESS LAMBIE: No, I do not.

MS. ANSLEY: -- of the South American Subbasin --

WITNESS LAMBIE: No.

MS. ANSLEY: -- aquifer?
WITNESS LAMBIE: I've not examined that.
MS. ANSLEY: How about the East San Joaquin Basin, the annual recharge.
WITNESS LAMBIE: No, I have not explicitly examined that.
MS. ANSLEY: Do you have any understanding of the . . .
I understand that you just testified that you don't know the exact estimate.
Do you have any understanding of the . . . of the scope of how -- of -- of what that annual recharge would be to that basin?
WITNESS LAMBIE: No. I -- I see numbers vary in the press as to what the current condition of overdraft is, and it's somewhere in the order of 100,000 acre-feet. People quibble about whether it's 75,000 acre-feet per year. But that's the deficit, not the recharge.
MS. ANSLEY: And in your calculations as they stand now, you projected an impact under the Alt 4A H3 scenario of 700 acre-feet a year; is that correct?
WITNESS LAMBIE: Not with respect to the Eastern San Joaquin. That's --
MS. ANSLEY: I'm sorry. You're right.

With respect to the South American Subbasin.

WITNESS LAMBIE: That's correct. Those calculations are -- are fine.

MS. ANSLEY: And -- And -- But you're here saying that your calculations are not adequate for the East San Joaquin Subbasin because of the error in the DCC operation calculations.

MR. FERGUSON: Asked and answered.

CO-HEARING OFFICER DODUC: I think she's just circling back to . . .

Just answer, please, Mr. Lambie.

WITNESS LAMBIE: Sure. I don't mind.

The way I took the available divertible flow based on Sacramento River and the rule curve, I then applied a fraction percent frequency open. And that fraction percent open is -- is in error because I have misconstrued the -- the days open on the DCC.

MS. ANSLEY: Can we pull up the document that we gave the -- on our memory key or thumb drive? It's called South American Recharge.

(Exhibit displayed on screen.)

MS. ANSLEY: And can you scroll -- Can you pan all the way out so we can see the first full page just to make sure because it's a little confusing. It says "Draft" but there's Engineer stamps on the draft.

Are you familiar with this document?
WITNESS LAMBIE: No, I am not.
MS. ANSLEY: Can we go to the second page.
(Exhibit displayed on screen.)
MS. ANSLEY: And can we blow up that table.
(Exhibit displayed on screen.)
MS. ANSLEY: And with the understanding that you are not familiar with this document.
If you look at the -- the total under the average annual volume of inflows to the South American Subbasin, based on your experience with groundwater aquifers and your experience and your analysis here looking into specifically the South American Subbasin, do you -- So, solely based on your experience, is it your understanding that the annual average -- or the average annual volume of the South American Subbasin would be at least on the order of 185670 acre-feet?
WITNESS LAMBIE: Not to be rude, but you would just be asking me to read what the page says.
MS. ANSLEY: Oh, I'm not even actually asking you to confirm that the number is correct. I'm not asking you if you -- You've already testified that you're not aware about this. I'm just asking, is this -- In your experience and capacity as an expert in this field, would this be a number that looks about

like the right magnitude of volume of the annual recharge.

WITNESS LAMBIE: I have not analyzed the South American Subbasin and I'm not prepared to answer.

MS. ANSLEY: Can anybody else on the panel who might be familiar with this document answer?

CO-HEARING OFFICER DODUC: I would take the silence as a no, Miss Ansley.

MS. ANSLEY: I'll take -- I have my last two questions, then. I'm . . .

I think that -- I think that our point was, you could agree that 700 acre-feet a year of your calculated impact would be less than 1 percent of at least what this document calculates as the average annual volume of inflows in acre-feet for the South American Ba -- Subbasin; is that correct?

MR. KEELING: Objection: Argumentative; lacks foundation; vague and ambiguous.

CO-HEARING OFFICER DODUC: Miss Ansley, that was a nice try.

Do you wish to rephrase?

MS. ANSLEY: Without -- Without testifying that this number is correct, assuming that this number -- Without testifying that it is correct, but assuming for purposes of -- of the -- of . . .

I guess what I'm saying: I'm not asking you to attest to this number, but would you agree that your 700 acre-feet impact would be less than 1 percent of this average annual volume if this number was correct?

MR. KEELING: Same objection.

MS. ANSLEY: It's just a math calculation.

CO-HEARING OFFICER DODUC: How does --

WITNESS LAMBIE: Well, it would --

CO-HEARING OFFICER DODUC: How does the number 700 compare to 185,670?

WITNESS LAMBIE: I'm going to answer the question differently. It might seem a little political.

But what's important on that figure is the difference in storage and the average annual deficit is 19,050 acre-feet.

So adding an additional 700 acre-feet per year of deficit is adding on the order of -- Goodness sakes. It's a -- I can't get the number.

It's -- It's on the order of 3 or 4 percent, so it's -- it's a fairly significant addition to the overall difference in storage, assuming the work done.

I don't have any opinion as to whether the 185670 is correct, the 204. But as to the relevance of my analysis in relation to that, it's -- it's the

additional deficit and withdrawal that matters.

The basin, as per that document, is already in a condition of overdraft, and removing the Sacramento's leakage -- aka recharge -- into the basin by 700 acre-feet per year will simply increase that difference in storage annually.

And that's really the point of my testimony.

(Timer rings.)

MS. ANSLEY: And yesterday, you testified as to uncertainty.

WITNESS LAMBIE: Yes.

MS. ANSLEY: Is that correct?

WITNESS LAMBIE: Well, I actually don't remember using the word "uncertainty" yesterday, but it's a perfectly good word to use when modeling.

I think I -- I stated that no calculated numbers should be expected to be absolute. So I didn't want to read 49.

MS. ANSLEY: Do you have any estimate of the uncertainty in your calculations in projecting a 700 acre-foot.

WITNESS LAMBIE: I have some idea, yes. I looked at -- So the variability, if I took account of the pressure gradient, and I would be low on that by 12 percent. The deficit is larger that way. I

probably would expect the error bar in the other direction to be about the same.

So I -- You know, rule of thumb, it's sort of plus or minus 10 percent.

MS. ANSLEY: Okay. And these are my final two questions.

Are you aware that the CWF Project as proposed before the Board now includes 1,828 acres of tidal restoration?

WITNESS LAMBIE: No, I'm not aware of any of that.

MS. ANSLEY: So you're not aware that the analysis in the FEIR projected increased groundwater discharge due to those -- due to that habitat restoration?

MR. KEELING: Objection: Argumentative; and lacks foundation.

MS. ANSLEY: It's just his awareness.

CO-HEARING OFFICER DODUC: Miss Ansley, what was the question again?

MS. ANSLEY: I asked him if he was aware that the FEIR groundwater analysis found an increase in groundwater discharge due to habitat restoration of tidal areas.

CO-HEARING OFFICER DODUC: Are you aware,

Mr. Lambie?

WITNESS LAMBIE: I don't recall reading that in my review.

MS. ANSLEY: So your analysis would not -- Your analysis would not incorporate increased groundwater recharge from habitat restoration to the Cal WaterFix.

MS. MESERVE: Vague.

Can you describe which alternative you're discussing right now?

MS. ANSLEY: Sure. I'm discussing -- Now I'm discussing CWF H3+, the current Project before the Board.

MR. FERGUSON: As compared to?

MS. ANSLEY: I'm actually saying: Would his analysis incorporate the increase in groundwater dis -- recharge attributable to habitat restoration.

MR. FERGUSON: Vague --

MS. MESERVE: Vague --

MR. FERGUSON: -- and ambiguous.

MS. ANSLEY: And it is my last question.

CO-HEARING OFFICER DODUC: Stop.

Mr. Lambie, does your analysis consider potential increase in recharge due to restoration?

WITNESS LAMBIE: I -- I don't see that it

could. If this new concoction of an H3+ flow scenario, I don't have that information. So I -- If -- If that's the only place it's embodied, then, no, I don't have those numbers, so my analysis can't consider that.

And, again, I've done nothing in reading the groundwater chapter of the EIR that suggested to me as I sit here that there was any thought that this Project and its diversions would increase the recharge of the South American Subbasin.

MS. ANSLEY: I have no further questions.

CO-HEARING OFFICER DODUC: Thank you.

Ms. Morris, do you still need 15 minutes for your cross?

You're coming up, so I assume yes.

MS. MORRIS: Maybe more.

CO-HEARING OFFICER DODUC: Okay. Well, we will take a break after Miss Morris concludes her cross-examination.

And I assume that, when we reconvene, Mr. Herrick will be here, because he is up next.

MS. MORRIS: Thank you.

My questions are primarily for Mr. Tootle.

CROSS-EXAMINATION BY

MS. MORRIS: Good morning. How are you?

WITNESS TOOTLE: Good. Thank you.

MS. MORRIS: A couple quick preliminary questions.

Did you write your testimony marked --

MS. MESERVE: Might -- Excuse me.

Might you lay out the lines of questioning, please?

CO-HEARING OFFICER DODUC: Please.

MS. MORRIS: Would you like me to?

CO-HEARING OFFICER DODUC: Yes.

MS. MORRIS: Again, my questions are primarily for Mr. Tootle.

And I will be inquiring as to generally his experience with tunneling and -- and tunneling in the Delta.

I will be inquiring about some questions regarding geotechnical evaluations he based his opinions on.

And other general questions regarding the underlying basis for some of his other opinions.

CO-HEARING OFFICER DODUC: All right. Please proceed.

MS. MORRIS: I'm sorry. Mr. Tootle, did you write your testimony, which is marked as SJC-285?

WITNESS TOOTLE: I was the primary author.

MS. MORRIS: Okay. And who else assisted you?

WITNESS TOOTLE: Dr. Robert Pike was a co-author.

MS. MORRIS: Anybody else?

WITNESS TOOTLE: No.

MS. MORRIS: And it was Robert Pike?

WITNESS TOOTLE: That's correct.

MS. MORRIS: And he's not testifying here today.

WITNESS TOOTLE: That's correct.

MS. MORRIS: And did you have any assistance from counsel in preparing your testimony?

WITNESS TOOTLE: I did not.

MS. MORRIS: Have you spoken to anyone today -- I'm sorry.

Have you spoken to anybody about your testimony at this hearing other than counsel?

WITNESS TOOTLE: I don't recall.

MS. MORRIS: You don't recall if you've spoken to anybody about your testimony or this hearing?

WITNESS TOOTLE: Other than --

MS. MORRIS: Other than counsel.

WITNESS TOOTLE: -- counsel, yeah, I don't recall that conversation.

MS. MORRIS: Okay. And just to be clear, you are a witness for San Joaquin County so your counsel is

Mr. Keeling.

Is that who you worked with to prepare your testimony?

WITNESS TOOTLE: That's correct.

MS. MORRIS: And is he the only attorney you talked with to prepare your testimony?

WITNESS TOOTLE: I did have conversations with Osha as well.

MS. MORRIS: Have you --

WITNESS TOOTLE: During the preparation of the testimony.

MS. MORRIS: Have you -- Has anybody who's participating in this hearing approached you or asked you about questions they may ask you?

WITNESS TOOTLE: You mean other than the two people I just mentioned?

MS. MORRIS: Yes.

WITNESS TOOTLE: No.

MS. MORRIS: Okay. I'm looking -- looking at your bio, and I think you testified.

It says that you have done some tunneling -- You have some tunneling experience, and that's on Page 1, Line 6.

WITNESS TOOTLE: That's correct.

MS. MORRIS: Have you ever worked as a lead

Geotech Design Engineer on a large-diameter soft-ground tunneling project?

WITNESS TOOTLE: I have not.

MS. MORRIS: And I -- I looked at your bio on your company website, and it actually doesn't mention tunneling as one of your areas.

Would you agree with that?

WITNESS TOOTLE: Tunneling is --

MR. KEELING: Objection: Vague and ambiguous. Is she asking what it says in his Statement of Qualifications, or is she asking about his tunneling experience?

MS. MORRIS: Would you -- I thought I was clear. I said "your bio on your website."

CO-HEARING OFFICER DODUC: I thought it was pretty clear, too.

Overruled.

Mr. Tootle.

WITNESS TOOTLE: I'm sorry. Could you repeat the question?

MS. MORRIS: Can you just -- would you mind reading it back?

(Record read.)

WITNESS TOOTLE: I haven't looked at my bio on the company website in a while, so I guess I don't have

a good recollection of what it says.

MS. MORRIS: I -- I just -- For the record, I'm not marking this.

I just handed you a printout of your website. And if you could just look at it and confirm that it doesn't list tunneling as one of your areas of expertise.

WITNESS TOOTLE: (Examining document.)

It does not list tunneling.

MS. MORRIS: Have you personally provided geotechnical input for concept design on any tunnels?

WITNESS TOOTLE: Yes.

MS. MORRIS: And which tunnels?

WITNESS TOOTLE: A sewer tunnel for a project in South Central Contra Costa County.

MS. MORRIS: And how deep were those tunnels?

WITNESS TOOTLE: Approximately 150 to 200 feet deep.

MS. MORRIS: And what kind of soil?

WITNESS TOOTLE: Mostly claystone bedrock.

MS. MORRIS: Have you worked on any tunneling projects in the Delta?

WITNESS TOOTLE: I have been involved in projects that have -- have had tunnels as portions of their construction.

MS. MORRIS: But you were not responsible for that work. You were involved with the project, but you were not personally responsible for the work relating to the tunneling; correct?

WITNESS TOOTLE: I -- I did not do the specific tunneling design, that's correct.

MS. MORRIS: Thank you.

On what basis do you draw your conclusion that the geotechnical work done to date for WaterFix is inadequate for conceptual design purposes?

WITNESS TOOTLE: I based that on my -- on over 20 years of experience as a Geotechnical Engineer preparing conceptual design level reports for geotechnical projects -- or for projects that obviously include geotechnical aspects.

MS. MORRIS: But in your years of experience, only one tunneling project; correct?

WITNESS TOOTLE: That's correct.

MS. MORRIS: Thank you.

You testified that East Bay MUD has a similar tunneling project and they have a more thorough effort for geotechnical work.

Do you recall that testimony?

WITNESS TOOTLE: I do.

MS. MORRIS: Do you know that East Bay MUD has

not completed CEQA for their tunneling project?

WITNESS TOOTLE: That's correct. And they have more subsurface characterization than the WaterFix Project.

MS. MORRIS: I understand that.

Isn't it true that East Bay MUD has an existing aqueduct overlying the alignment that allows them to gain access to conduct geotechnical studies?

WITNESS TOOTLE: That's correct.

MS. MORRIS: Are you aware that DWR has attempted, through permission and court proceedings, to gain access to lands to do exploratory geotechnical work?

WITNESS TOOTLE: I'm aware they've attempted. And in many Projects, you need access to other properties that you don't known.

But simply not getting access isn't a very good excuse to not characterize the subsurface soils before proceeding with even conceptual design.

MS. MORRIS: In your work, have you dealt with land entry for exploratory geotechnical work?

WITNESS TOOTLE: Yes.

MS. MORRIS: Are you aware that some land entry permissions require locations where data is obtained to not be disclosed?

WITNESS TOOTLE: I'm sorry. Can you ask that question again?

MS. MORRIS: Are you aware that some land entry permissions, the landowners do not allow the location of the -- of the data to be disclosed pursuant to the land entry agreement?

WITNESS TOOTLE: I don't think I've personally experienced that restriction.

MS. MORRIS: Okay. If that were true -- I know you haven't experienced it, but if -- You know what? Never mind. It will call for a legal conclusion. I can hear the objection already.

You testified that you relied on an Internetic -- Internet article from Tunnel Talk to identify several -- and this is your words -- failed tunnel Projects; is this correct?

WITNESS TOOTLE: I don't recall using the word "failed."

MS. MORRIS: Well, looking at SJC-286, which is the exhibit you relied on.

(Exhibit displayed on screen.)

MS. MORRIS: It's talking -- It's talking about the failure of the segment lining; is that correct?

(Exhibit displayed on screen.)

WITNESS TOOTLE: I'll have to find that document.

Are -- Are you asking me if the article used the word "failure" or if I used the word "failure"?

MS. MORRIS: Well, I'm going to just read from your testimony, if you want to follow along, on Page 5, Lines 19.

It says -- You say (reading):

"While various techniques have been developed to mitigate such incidence, failures still occur . . ."

So, reading through that section, I will reask my question. And I'm sorry I used "failed" instead of "failure."

You testi -- Your testimony is based on -- about this failure still occurring is based on an Internet article from Tunnel Talk; correct?

WITNESS TOOTLE: Yes.

MS. MORRIS: Do you have any personal knowledge of the ground conditions or tunneling technologies that were used on those projects referenced in the Internet article?

MR. KEELING: Asked and answered yesterday.

CO-HEARING OFFICER DODUC: Let's just go down that route again.

Please answer.

WITNESS TOOTLE: I haven't personally been to the sites that are referenced.

MS. MORRIS: That wasn't my question.

The question was: Did -- and it is different from questions asked yesterday -- is: Do you have personal knowledge of the ground conditions where those failures occurred?

WITNESS TOOTLE: Could you define "personal knowledge"? I assume that meant I personally saw the conditions.

MS. MORRIS: I'm -- I'm -- I apologize. I'm not a geotechnical person, but I don't understand that geotechnical people see things. Rather, they do boring and other testing.

And I'm asking if you are familiar with the ground conditions, or you've looked at any of the reports for the areas in which those failures occurred.

WITNESS TOOTLE: I've read descriptions of what the ground conditions were at some of them, but I didn't personally see them.

MS. MORRIS: But the -- what you read was from Tunnel Talk; correct?

WITNESS TOOTLE: Primarily.

MS. MORRIS: Okay. And same question about

your knowledge regarding the tunneling technologies that were used in those alleged -- in those failed -- in those projects that had failures that were referenced on Tunnel Talk.

WITNESS TOOTLE: I'm sorry. Was that a question or a statement?

MS. MORRIS: I'll -- It's a question.

Do you have -- I'll restate the question.

Do you have any personal knowledge of the tunning -- tunneling technologies that were used on the projects beyond what you read in the Internet article on Tunnel Talk?

WITNESS TOOTLE: Not beyond what was published.

MS. MORRIS: Did you personally contact any of the people that were involved in these Projects to get more information on them and to have -- to gain a better understanding of what occurred on those projects?

WITNESS TOOTLE: I did not.

MS. MORRIS: In your professional . . .

In your profession, is it common practice to rely on comments from a website by individuals you do not know to form the basis of your opinion?

MR. KEELING: Argumentative; lacks foundation.

CO-HEARING OFFICER DODUC: Overruled.
WITNESS TOOTLE: I think it would depend on the source.
MS. MORRIS: In providing other expert opinions throughout your practice, have you relied on articles from the websites -- from a website?
WITNESS TOOTLE: Well, I did rely on an article from a website to calculate the volume of earth in the Great Pyramids of Giza, so -- I mean, that's one example of relying on an Internet SEARCH.
MS. MORRIS: And that was -- that was an Internet article or was it a published article that was just available on the Internet?
WITNESS TOOTLE: I -- I don't recall. I guess I'd have to go back and relook at the -- at the -- the site that I visited.
MS. MORRIS: So it's your testimony that it is common practice to rely on unpublished and unpeer-reviewed articles and comments in providing opinions in legal proceedings?
MR. KEELING: Objection: Mischaracterizes his testimony.
CO-HEARING OFFICER DODUC: Sustained.
MR. KEELING: Req --
CO-HEARING OFFICER DODUC: That's enough. You

can stop there.

MS. MORRIS: I -- I was just trying to clarify, because he added additional information and I wanted to -- I think that I'm --

CO-HEARING OFFICER DODUC: It was the way you phrased that, Miss Morris.

Perhaps you could rephrase.

MS. MORRIS: In your profession, is it common practice to rely on unpublished comments in providing -- in forming the basis of your opinion?

WITNESS TOOTLE: I think it would be common to base opinions on -- on spoken . . . comments that you received. You said published specifically. So I'm not sure what you meant by "unpublished" work.

MS. MORRIS: Are you trying to distinguish unpublished documents or comments from having a personal conversation with somebody who may be familiar with a project? Is that what you're trying to distinguish?

WITNESS TOOTLE: Well, I don't know. Your question included the word "unpublished," so I'm not sure exactly what you meant when you used the word "unpublished."

MS. MORRIS: In general, when looking at scientific reports, they are generally published by

some entity or university, and they are often peer-reviewed; correct?

WITNESS TOOTLE: That's correct.

MS. MORRIS: And my question was whether it's common practice to rely on an unpublished comment or document -- Let me -- Let me rephrase. Let's strike "comment."

Is it common -- Is it common in your practice to rely on unpublished documents to form the basis of an opinion?

WITNESS TOOTLE: I have to apologized. I keep getting hung up on the word "unpublished."

If somebody writes something and offers it, it's published, I think.

MS. MORRIS: Would you rely on Wikipedia to form a basis of your opinion?

MR. KEELING: Objection: Vague and ambiguous; calls for speculation based on an incomplete hypothetical.

(Timer rings.)

CO-HEARING OFFICER DODUC: Mr. Tootle, I believe what Miss Morris is trying to get at is:

What weight do you as an expert put on documents you see on the Internet which have not been published through a scientific source and have

undergone scientific peer review?

WITNESS TOOTLE: I think --

CO-HEARING OFFICER DODUC: Is it common to rely on those to form your expert opinion?

WITNESS TOOTLE: I think it would depend on the source, as I said earlier.

When you're looking for information on projects where problems occurred, where there was a failure or some other issue that wasn't anticipated, it's very difficult to find well-documented forensic data on some of those, particularly, you know, in areas of the world where they might not have a -- a national or a governmental body that would investigate such things.

Most people like to publish articles about their successes, so there's lots of published information on things that went well. But oftentimes, the things that didn't go well aren't very well-documented.

And so when you're searching for incidences like that, you have to search very deep, and sometimes you go to places that it might not be that common to find it because it's difficult to uncover.

People, as I said, don't naturally like to report things that didn't go right. They naturally

like to report things that well .

And so -- And I think I mentioned that in my testimony, that, you know, there are certain articles that people publish and they like to either brag or otherwise say how well everything turned out.

And so when you're looking for descriptions of things that didn't turn out very well, it's a lot more difficult.

MS. MORRIS: I have one more question on this, and then I have one other quick line of questioning.

CO-HEARING OFFICER DODUC: About five, 10 minutes?

MS. MORRIS: I would hope so.

CO-HEARING OFFICER DODUC: Okay.

MS. MORRIS: On -- Your testimony on Lines 21 on the screen, you say you -- you are relying on a discussion.

Is it common practice to rely on a discussion from a website by individuals you do not know and do not understand their qualifications to form the basis of your opinion?

CO-HEARING OFFICER DODUC: Mr. Keeling.

MR. KEELING: Compound; vague; ambiguous; calls for speculation based on an incomplete hypothetical.

But --

CO-HEARING OFFICER DODUC: I thought you would go for asked and answered.

MR. KEELING: I was about to, but I think he's already answered the question.

CO-HEARING OFFICER DODUC: How -- What -- Miss Morris, what are you expecting that's different than the answer he just gave in terms of -- of relying on different sources of data to find different types of information?

His answer in response to your last question was, it depends on the nature of the topic that he's being -- that he's researching and whether there is information available. And it --

MS. MORRIS: I -- I understand where you're going. Let me just -- And if you don't want to allow me to ask the question, I will move on.

But the question was related to a discussion, and that is the words that he used in his testimony. The earlier line of questioning --

CO-HEARING OFFICER DODUC: Um-hmm.

MS. MORRIS: -- went to comments and peer-reviewed articles.

And then, based on that questioning and your --

CO-HEARING OFFICER DODUC: Ah.

MS. MORRIS: -- attempt to ask the question, he answered and said that comments -- And so I'm following on his exact line and words "discussion."

CO-HEARING OFFICER DODUC: All right. So now we're applying it to discussions rather than documents or comments.

MS. MORRIS: Can we reread the question? I'm so sorry.

I would try to ask it but then I'm afraid I would just say it a different way and cause other issues.

(Record read.)

WITNESS TOOTLE: I think it depends on the context of the situation that you're commenting on.

MS. MORRIS: Okay. Thank you.

On Page 9, Lines 3 to 11 of your testimony, you reference a report completed by the University of Texas.

(Exhibit displayed on screen.)

MS. MORRIS: What's the name of that report?

WITNESS TOOTLE: I don't know the exact title of the report.

MS. MORRIS: Did you provide it as an exhibit to your testimony in this proceeding?

WITNESS TOOTLE: I did not.
MS. MORRIS: Can you provide it?
WITNESS TOOTLE: To my knowledge, it's still unpublished.
MS. MORRIS: Then I would move to strike this entire testimony regarding that report because, without the report or the basis for his understanding, I'm unable to cross-examine him about how that may or may not be different than the situation at hand and for the reasons that he relies on it.
CO-HEARING OFFICER DODUC: Response, Mr. Keeling?
MR. KEELING: I would ask the witness if we could get a copy of the unpublished report.
MS. MORRIS: He said he couldn't provide it to me.
CO-HEARING OFFICER DODUC: Mr. Tootle.
WITNESS TOOTLE: It -- It's an unpublished report that isn't under my control, so I -- I can certainly attempt to get a copy of it, but I can't make any solid commitments.
MS. MORRIS: Is it true that, because it is an unpublished report, it also cannot be submitted as an exhibit because -- regarding -- because there's potential implications for it being public -- being

made public before it is published?

MS. MESERVE: Objection: Calls for a conclusion.

MS. MORRIS: That's -- Do you want me to respond?

CO-HEARING OFFICER DODUC: I'm sorry?

MS. MORRIS: Should I respond? I didn't --

CO-HEARING OFFICER DODUC: Go ahead.

MS. MORRIS: I don't think that calls for a legal conclusion. It's a journal/whatever magazine. I don't know anything about support. It goes to whether or not they allow it.

A lot of scientific journals do not allow you to make a document public before it becomes published which means it cannot come into this record.

CO-HEARING OFFICER DODUC: All right. Overruled.

Do you know, Mr. Tootle?

WITNESS TOOTLE: I don't know the answer, but I think there's documents in evidence that might illustrate the same point that was being made in my testimony.

CO-HEARING OFFICER DODUC: Do you know what those are?

(Timer rings.)

WITNESS TOOTLE: EBMUD-178.

MS. MORRIS: I'm sorry. He did not cite to these -- These are not his exhibits. And he did not cite to them in -- in --

CO-HEARING OFFICER DODUC: He is responding to your cross-examination, Miss Morris.

MS. MORRIS: No. He's responding to my objection to not admit this testimony. And now he's relying on another party's evidence to support his opinions that he has not cited in his testimony, in direct testimony.

CO-HEARING OFFICER DODUC: Mr. Keeling.

MR. KEELING: The nature of this objection, although the word has not been surfaced, is hearsay. He doesn't have personal knowledge.

And so, at the very most, as this Board has said many times, hearsay objections go to weight.

CO-HEARING OFFICER DODUC: Mr. Jackson.

MR. JACKSON: Yes. I was -- I was going to make the same point.

Throughout this hearing, we've been encouraged to use and not repeat other people's testimony.

East Bay MUD has had this evidence in the record for a long time.

They are at a different point in the schedule,

so they could be asked the same questions when they testify, and bring Mr. Tootle back to then use that testimony to provide the background for his point.

The . . . In order to save time, it seems that, since it is in the record and will be used within the next week, I would ask that it -- it -- I would point out that I think it can be used in the way that Mr. Tootle is trying to use it.

CO-HEARING OFFICER DODUC: Miss Des Jardins.

MS. DES JARDINS: Mr. Tootle does refer to East Bay MUD's design things. He just didn't do a specific exhibit number. And it is in the record from Part 1. There was testimony on it.

So it's not true that it's -- she's not able to examine him on it. It just took a little looking at East Bay MUD's Exhibit List.

CO-HEARING OFFICER DODUC: Miss Ansley.

MS. ANSLEY: The DWR would join in Miss Morris' objection, the State Water Contractors' objection.

We come here prepared to cross-examine witnesses based on their case in chief. We do try to locate and read studies cited or -- or provided, or not provided even. I've certainly pulled art -- scientific articles from peer-reviewed journals.

But, here, we join their objections because essentially this would be surprise testimony that we weren't able to prepare for if there was something in that University of Texas report that he's relying on.

And also, it is not incumbent upon people seeking to cross to guess what other exhibits in the California WaterFix record would support somebody's conclusions.

It is incumbent -- It's the duty of the witness to let us know the basis upon which they are forming their direct testimony.

And so changing your direct testimony at the moment of cross is a big problem.

CO-HEARING OFFICER DODUC: All right. Well, we'll strike the addition that Mr. Lambie (sic) started to -- to cite.

MS. MESERVE: Mr. Tootle?

MR. KEELING: Mr. Tootle.

CO-HEARING OFFICER DODUC: I'm sorry. Mr. Tootle. I need a break.

And the objection will go to weight of evidence.

And, Miss Morris, are you concluding your cross-examination, or do you have one more question?

MS. MORRIS: I have several more questions,

then, report.

CO-HEARING OFFICER DODUC: Then let's take a break.

MS. MORRIS: Okay. Thank you.

CO-HEARING OFFICER DODUC: We will return at 11:20.

(Recess taken at 11:04 a.m.)

(Proceedings resumed at 11:20 a.m.:)

CO-HEARING OFFICER DODUC: All right. It is 11:20. We are resuming.

And before we turn back to Miss Morris, let's do some time checks.

Miss Morris, how much additional time do you anticipate needing?

MS. MORRIS: I -- I would say -- I think 10 minutes and it may go a little bit longer. It's one more line of questioning.

CO-HEARING OFFICER DODUC: All right. Mr. Ruiz is here.

Are you still anticipating 20 minutes?

MR. RUIZ: Good morning. No.

At this point in time, unless something changes in the next 10 minutes, we're not going to have cross for this panel.

CO-HEARING OFFICER DODUC: All right. So then

we will have Mr. Jackson next.

Are you anticipating 45?

MR. JACKSON: I worked on my -- I worked on my questions last night, and I think I can do it within 30 for sure.

CO-HEARING OFFICER DODUC: Within 30.

Mr. Stroshane?

MR. STROSHANE: I believe I'll have cross of about 10 minutes.

CO-HEARING OFFICER DODUC: All right. So that should take us to around roughly quarter after noon.

Miss Des Jardins, are you still anticipating 45 minutes?

MS. DES JARDINS: Yes, I am.

CO-HEARING OFFICER DODUC: So that means we will not get to your cross-examination until after our lunch break.

And then, Miss Womack, do you still anticipate 20 minutes?

MS. WOMACK: (Nodding head.)

CO-HEARING OFFICER DODUC: Just a nod.

So, at this time, I'm looking at estimating taking a lunch break from 12:15 to 1:15.

Miss Des Jardins will then, if she takes 45 minutes, goes to 2:30, and Miss Womack to 3:00.

How much -- Mr. Ruiz, am I . . .

MR. RUIZ: (Unintelligible.)

CO-HEARING OFFICER DODUC: Okay.

MR. RUIZ: (Unintelligible.)

CO-HEARING OFFICER DODUC: That's what I'm about to ask.

How long do you anticipate needing for Dr. Michael's direct?

MR. RUIZ: Five minutes.

CO-HEARING OFFICER DODUC: Perfect.

And Mr. Stroshane can do his -- Was it five minutes or so?

I mean, how much do you anticipate for cross, Mr. Stroshane? He did request to go first today.

MR. STROSHANE: My five-minute request was for Mr. Neudeck the other day.

My --

CO-HEARING OFFICER DODUC: Oh.

MR. STROSHANE: -- request today is for about 45 minutes.

CO-HEARING OFFICER DODUC: Then that -- We will end the day, then, Mr. Stroshane's examination of Dr. Michael.

Do I have all that clear?

Which means we should be ending roughly around

4:30-ish today.

All right. Miss Morris.

MS. MORRIS: Thank you.

Mr. Tootle, your opinion that it's premature to grant any Change In Point of Diversion Petition until similar studies are carried out along the proposed WaterFix alignment is based on the University of Texas studies as well as the East Bay MUD geotechnical work; correct?

WITNESS TOOTLE: Not completely.

MS. MORRIS: Those are the things you listed in your testimony.

What else are you now relying on?

WITNESS TOOTLE: My professional experience.

MS. MORRIS: Okay. Thank you.

Regarding the geotechnical work conducted by East Bay MUD -- So let me go back.

Looking at Page 9 of your testimony, Lines 8 through 12.

(Exhibit displayed on screen.)

MS. MORRIS: You indicate that the -- the Delta has softer and more variable sediments than the consultant had expected, and that they were, in fact, so variable that they had difficulty interpreting the results.

And to come to that conclusion and -- that follows about the findings having a "great significance for the evaluations of seismic site response and for the design of tunnel linings," you rely solely on that University of Texas finding; correct?

MR. KEELING: Objection: Mischaracterizes his testimony; prolix; compound; vague and ambiguous.

CO-HEARING OFFICER DODUC: Miss Morris' question, I thought, was pretty clear.

Dr. -- Mr. Tootle, are you able to answer or do you need her to repeat?

WITNESS TOOTLE: I think I can answer.

It's not solely based on that, no.

MS. MORRIS: Is -- Is the only other thing it's based on your professional opinion -- your professional judgment? Sorry.

WITNESS TOOTLE: My professional experience on -- based on, you know, all the other projects I've worked on, and seismic response analyses that I've been involved in performing over the course of my career.

MS. MORRIS: Okay. But you've already testified that you haven't done any Delta tunneling, so your experience -- your -- your professional judgment that these specific findings in this University of Texas report are critical for the design of tunnel

linings in the Delta is based on your professional judgment on one tunnel design and no work in the Delta; correct?

MR. KEELING: Objection: Mischaracterizes his testimony; this is truly vague and ambiguous.

She's shifting between a specific question about this University of Texas study and then larger statements about soil conditions --

MS. MORRIS: I can --

MR. KEELING: -- in the Delta.

MS. MORRIS: -- restate. I'm happy to restate.

CO-HEARING OFFICER DODUC: Restate, Miss Morris.

MS. MORRIS: Thank you.

Would you consider the -- am I saying this right? -- SASW, or is there some way you're supposed to say that that I just don't understand.

WITNESS TOOTLE: No. That's fine.

MS. MORRIS: Okay. Thanks.

Would you consider the SASW tests you reference on Page 9 of your testimony a type of geophysical testing?

WITNESS TOOTLE: It is a type of geophysical testing.

MS. MORRIS: And SASW is a kind of -- what is commonly known as non-destructive testing; right?

WITNESS TOOTLE: That's correct.

MS. MORRIS: And could you explain to me what is meant by "non-destructive testing."

WITNESS TOOTLE: Non-destructive testing would be testing that doesn't destroy the -- the substance that it is intended to evaluate.

MS. MORRIS: Let me see if I can break it down for people who are -- for me, for myself.

So, essentially, it doesn't require boring; right?

WITNESS TOOTLE: SASW, geophysical analyses, would not require a boring.

MS. MORRIS: There's other kinds of geophysical testing that accomplishes the same thing as SASW; correct?

WITNESS TOOTLE: Well, there are different types of geophysical surveys that can be done, all of which provide, I guess, different but related pieces of information.

MS. MORRIS: And would you consider PS, or shear and wave velocity testings, or loggings and bore holes a similar method to SASW testing?

WITNESS TOOTLE: They're similar in that they

measure shear-wave velocities of different types.

MS. MORRIS: And that was a bad word choice on my part. They -- They have similar results potentially but they're different methodologies for getting at the same result; correct?

WITNESS TOOTLE: Could you define what you mean by "result"?

MS. MORRIS: That you are measuring the shear and wave velocities.

WITNESS TOOTLE: They're both methods of measuring shear-wave velocities, yes.

MS. MORRIS: Thank you.

Are you aware that several PS velocity loggings and bore holes up to 500 feet were performed for the CWF Project?

WITNESS TOOTLE: I believe that is correct.

MS. MORRIS: Are you aware that DWR has performed over 210 bore holes/cone penetration tests at depths up to 500 feet for CWF?

WITNESS TOOTLE: I'm -- I couldn't quote the exact number, but I know they have performed some.

MS. MORRIS: But you didn't consider any of those geotechnical studies in your opinion that -- in your opinion stated on Page 9; correct?

WITNESS TOOTLE: Are you referring to the --

the sentence you read early (sic) about the evaluation of seismic response?

MS. MORRIS: I'm referring to your opinion that (reading):

"At a minimum, it would be premature to grant any Change in Point of Diversion . . . until similar studies were (sic) carried out along the proposed WaterFix alignment."

WITNESS TOOTLE: That opinion is based not -- or based largely on the number of explorations that have been performed for the WaterFix Project relative to the number that you would expect be done at this stage for any large or even small project.

So it's not the type of exploration but it's the quantity of exploration that I'm talking about in order to fully characterize -- or sufficiently characterize the subsurface conditions in order to -- to finish a conceptual design and move into a final decide.

MS. MORRIS: But you're aware that DWR is going to do additional geotechnical work and testing before it completes its designs for this Project; correct?

MR. KEELING: Objection: Argumentative; lacks

foundation; states facts not in evidence.

CO-HEARING OFFICER DODUC: Overruled.

WITNESS TOOTLE: I'm aware that they claim that they will do more work, yes, but --

MS. MORRIS: Okay. Thank you.

I have no further questions.

MR. KEELING: I would like the witness be allowed to finish his response.

CO-HEARING OFFICER DODUC: He actually answered her question, which was a --

MR. KEELING: Mr. Tootle --

CO-HEARING OFFICER DODUC: -- "yes" or "no."

MR. KEELING: -- did you actually finish your response?

CO-HEARING OFFICER DODUC: Stop.

Thank you, Miss Morris.

And Mr. Ruiz is gone, so Mr. Jackson.

MR. JACKSON: I have some questions first for Mr. Tootle and -- and that will be most of the cross-examination.

It will deal with his three opinions: The disposal of soils; the potential for failure during construction and operation; and -- and the lack of -- and the third is the lack of geotechnical information.

And then, for Mr. Lambie, it will be some

questions about using some of his slides.

It will be questions about what information would be expected in all of the rest of the SGMA water basins from the Delta upstream and how that might affect what happens downstream in terms of groundwater levels.

Could -- Mr. Hunt, could you put up CSPA-26, please.

And, again, it would be -- This is the Delta Reform Act, and it would be Section 85022(c).

(Exhibit displayed on screen.)

MS. MITTERHOFER: Mr. Jackson, could you please repeat the reference for Mr. Hunt?

MR. JACKSON: Yes. The . . . Let's see.

Actually, I think we'll start with . . .

Could you go back up to 85001.

(Exhibit displayed on screen.)

CROSS-EXAMINATION BY

MR. JACKSON: Mr. Tootle, could you read to yourself 85001(a), (b) and (c).

And that will -- that will be the source of a couple of questions, and then I will move through this document and ask you a couple of other questions and then go back to your testimony at SJC-285.

WITNESS TOOTLE: (Examining document.)

I have finished reading.

MR. JACKSON: In regard to your first issue, soils disposal, is it important, in your opinion, that the -- there be a consideration of the fact that, with soils disposal, we're disposing of the soils in what the legislature has highlighted as an important water quality -- water supply for the state, and that the direction is to enhance the quality of the water supply as well as the . . . as well -- I -- I guess what I'm talking about:

Is it important to take into account the environmental setting before you build a Project that's going to have this kind of spoils?

WITNESS TOOTLE: I think it would be important to take into consideration the impact that you could have on the environment and the water supply when designing a project and trying to come up with a plan to dispose of the soil -- the spoils. I think that's correct.

MR. JACKSON: Now, you indicate -- On -- On Page 3 of your testimony, you -- you've talked a little about just the magnitude of the amount of spoils; correct?

WITNESS TOOTLE: That's correct.

MR. JACKSON: Is this a larger volume of -- of

soils in an important wet -- watershed and wetland than many of the other projects that you indicated you reviewed?

CO-HEARING OFFICER DODUC: Miss Ansley.

MS. ANSLEY: Assumes facts not in evidence; and it also lacks foundation as to a lot of the preconditions he just put on that question, about it being an important watershed, and the spoils, and -- and I think it would go to -- that it assumes -- I have to reread the question but it assumes facts not in evidence.

CO-HEARING OFFICER DODUC: If we're talking about the Delta, I think we would all agree that it's an important watershed.

Am I missing something in terms of Mr. Jackson's question?

MR. JACKSON: I -- I don't know. I -- What I'm -- What I'm -- The -- The purpose of my question was to indicate that not only is it the amount of disturbance that we're talking about, but it's also where the disturbance is.

CO-HEARING OFFICER DODUC: And do me a favor and repeat your question, please.

MR. JACKSON: Sure.

You've indicated in your testimony that this

is a -- I think you used -- 13 and a half times the material it took to build the Great Pyramid in Giza?

WITNESS TOOTLE: That's correct.

MR. JACKSON: And that was -- That -- That description is only for demonstrative purposes; correct?

WITNESS TOOTLE: That's correct.

In talking about volumes of earth this large, sometimes it's hard for someone that's not used to dealing in those kind of qualities to picture and imagine the potential impact that a project of this size could have.

MR. JACKSON: And if we -- If -- If we use for demonstrative purposes the 13 and a half pyramids, and they were located on the Giza Plain in a dry climate like Egypt, that might be one thing.

But if we're going to do it in a wetland, that -- that might be different as well; correct?

WITNESS TOOTLE: I would agree. Could we move to 85022. Just move it up.

(Exhibit displayed on screen.)

MR. JACKSON: Would you -- In -- In looking at 85022(1) through (4), would you review the legislature's findings in this section of the Water Code.

WITNESS TOOTLE: (Examining document.)

I've completed reading it.

MR. JACKSON: In your professional experience in working on projects in and around Contra Costa and Yolo and -- the Delta counties, for want of a better term -- and within the -- the Delta watershed, is . . .

Did you take into account that the Delta is -- in forming your opinion, that the Delta is a distinct and valuable natural research -- resource?

WITNESS TOOTLE: I would agree with that statement.

MR. JACKSON: And would you agree with the legislator -- legislature's finding that this is a wetland ecosystem of hemispheric importance?

WITNESS TOOTLE: I would agree.

CO-HEARING OFFICER DODUC: So, Mr. Jackson, I'm now curious about where you're going with this.

I think we're -- we're all familiar to the Delta Reform Act, particularly the Chair to my right, and so what is the purpose of having Mr. Tootle reaffirm this?

MR. JACKSON: Because, in -- in his opinion, at the end of Page 4 --

CO-HEARING OFFICER DODUC: Perhaps we might go there.

MR. JACKSON: Of SJC-285.

Well, I do have a couple of issues that I would --

(Exhibit displayed on screen.)

MR. JACKSON: I can come back to the -- to this section.

So we'll -- we'll go to Page -- to Lines 23 to 28 of your testimony.

CO-HEARING OFFICER DODUC: On Page 4?

MR. JACKSON: On Page 4.

CO-HEARING OFFICER DODUC: Okay.

(Exhibit displayed on screen.)

WITNESS TOOTLE: (Examining document.)

Okay.

MR. JACKSON: When you looked at Section 23.B.118 (sic) Appendix A of the RDEIR, could you find any acknowledgment that we were operating in a wetland of hemispheric importance?

CO-HEARING OFFICER DODUC: Miss Ansley.

MS. ANSLEY: Okay. So, my first -- my first is a point of clarification. I don't believe that text says Section 23. I can that was just a quick misread just for the clarity of the record.

Then I object to the characterization of the Delta as a whole of the wetland, which has a specific

connotation and habitat type usually, so that's vague and ambiguous; and then I believe lacks foundation regarding "hemispheric proportions".

CO-HEARING OFFICER DODUC: Sustained.

Let's just focus on the question that you would like Mr. Tootle to answer without extraneous adjectives, Mr. Jackson.

MR. JACKSON: Am I clear that we just struck the reference to the Water Code?

CO-HEARING OFFICER DODUC: No.

MR. JACKSON: All right. Or the legislature's findings?

CO-HEARING OFFICER DODUC: Mr. Jackson, your question, I believe, to Mr. Tootle was whether, in his opinion, Section 3B.2.18 Appendix A of the RDEIR took into consideration the legislature finding from the Delta Reform Act.

Is that correct?

MR. JACKSON: Yes.

CO-HEARING OFFICER DODUC: Thank you.

Could you answer that question, Mr. Tootle?

WITNESS TOOTLE: I think I'm going to have to have the question repeated.

CO-HEARING OFFICER DODUC: The section you reference on Line 23 on Page 4 of your testimony, the

reference to the RDEIR, in your opinion, does that section took (sic) into account the legislative findings which Mr. Jackson just had you review from the Delta Reform Act of 2009.

WITNESS TOOTLE: That section makes reference to wetlands and other environmentally sensitive receptors in the Delta. I don't believe it used the same wording that was in the legislative.

CO-HEARING OFFICER DODUC: Do you, in your opinion, think that it considered those findings -- those intents -- the intention of the legislature from the 2009 Delta Reform Act?

WITNESS TOOTLE: This section acknowledges that there are sensitive areas, but I don't -- I can't speak to the intention of the author that wrote it.

CO-HEARING OFFICER DODUC: Thank you.

MR. JACKSON: Let me rephrase the question, then.

You indicate on Line 24 that -- 23 and 24, that there -- the RDEIR sets forth only (reading):

". . . Generic environmental commitments, not actual analysis of the (sic) impacts or potential injury to the (sic) public trust . . ."

You see that part of your testimony?

WITNESS TOOTLE: I do.

MR. JACKSON: And . . . what is the basis of your opinion that the potential injury to the public trust or the public interest is not adequately acknowledged?

WITNESS TOOTLE: I think it's primarily in the discussion of how the -- the disposal of the spoils would be handled.

There is reference made to obtaining different permits, one in particular the construction general permit. And the construction general permit is a BMP, or best management practices-based, permit. It's not an effluent quality-based Permit, which -- which means that there isn't necessarily limits on the turbidity or the toxicity of waters that could be released from a construction site but requires that the operators maintain good-housekeeping practices as an indirect means with which to try to limit toxic or turbid runoff from the construction sites.

And so it's -- it's definitely possible to comply with the Permits that are referenced in the mitigation measures and yet still discharge turbid and/or toxic runoff from the construction site, which would then go into the waters of the state.

MR. JACKSON: And that potential is dependent

upon exact locations of the disposal sites?

WITNESS TOOTLE: That would be one of the factors, yes.

MR. JACKSON: And are there other factors?

WITNESS TOOTLE: I mean, just the manage -- the . . .

I guess the degree to which the best management practices are followed would be under primary consideration.

MR. JACKSON: How can we know whether best management practices will be followed for disposal if we don't know where the disposal is going to be?

WITNESS TOOTLE: I'm sorry. Would you say that again? I might have --

MR. JACKSON: Sure.

WITNESS TOOTLE: -- lost the question.

MR. JACKSON: How can we determine the potential injury to public trust, or determine whether or not the public interest as expressed by the legislature is being followed, if we don't know yet exactly where the disposal locations are?

WITNESS TOOTLE: The locations would be a key component to making that determination.

MR. JACKSON: You indicated that, in your testimony on Line 5 at -- at . . . or -- excuse me --

Page 5, Lines 3 to 5 --

(Exhibit displayed on screen.)

MR. JACKSON: -- that there are issues which you feel are important in your professional judgment that are not -- I think you say the Petitioners show no awareness of this issue.

What do you mean about that in regard to the public trust?

WITNESS TOOTLE: Well, the -- the mitigation measures that are previously referenced do talk about potential for contamination.

My recollection is, they -- they estimate a very low percentage of the spoils would be contaminated. It wasn't clear what that estimation was based on.

But it appeared that it didn't -- My interpretation of what I read was that contamination, that sort of outside constituents that were brought into the Delta, didn't appear to include potential sources of contamination or detrimental water quality that could be derived from within the Delta itself, was the point I was trying to make with that part of my testimony.

MR. JACKSON: Thank you, sir.

Calling your attention to . . . Lines -- on

Page 5, Lines 8 through 11.

It -- You're talking about liners.

Do you know whether or not -- Do you -- Do you know whether or not there will be liners in the Project from review of the environmental documents?

WITNESS TOOTLE: Oh, I can't predict with certainty whether or not there will or will not be liners.

MR. JACKSON: And there's a different -- You seem to indicate there's a different set of problems depending on whether there are liners or whether there aren't; is that true?

WITNESS TOOTLE: That's correct.

If -- If there is contamination within the spoils and those are allowed to leach into the ground, then they could degrade the water quality of the groundwater in that area.

One way to prevent that would be to line the area so that the liquids that drain out of the spoils would not be able to infiltrate into the ground.

But with that mitigation method, the natural infiltration from rainfall or other things that would otherwise naturally recharge the groundwater would, therefore, be prevented from that recharge.

So you prevent one problem but at the same

time you create a potential other problem.

MR. JACKSON: So, in regard to the . . . spoils disposal, is it your position or your opinion that we basically should wait before we approve this Project to find out what's really going to happen with it?

WITNESS TOOTLE: Well, I think to base an opinion that the public trust and waters of the state won't be injured or, you know, won't be impacted -- sorry -- I think you would -- you -- You simply couldn't reference the construction general permit. As I said before, that would be an insufficient document, in my opinion, to draw a conclusion that the waters of the state would not be negatively impacted, for example.

MR. JACKSON: Thank you, sir.

Calling your attention to . . . your Point Number 2.

What do you mean by "loss of ground"? That's on Page 5 at Line 16 and 17.

(Exhibit displayed on screen.)

WITNESS TOOTLE: I meant to refer to an event that takes place during construction where an uncontrolled and unanticipated loss of ground around the tunnel enters the tunnel and, therefore, creates a

larger void around the tunnel than was anticipated.

MR. JACKSON: Hypothetically, if I owned the land on top of the location where this loss of ground happened, what could happen to my property and my family's human health and safety?

WITNESS TOOTLE: The ground surface could sink and, in an extreme case, actually enter into the tunnel excavation and create a large sinkhole.

MR. JACKSON: And is it your . . . opinion that we have enough information by which to judge what the effect would be, the -- the whole length of the tunnel?

WITNESS TOOTLE: A key component to making those kind of determinations are a good characterization of the subsurface soils beneath the -- or along the Project alignment which, in my opinion, does not yet currently exist.

MR. JACKSON: Thank you.

CO-HEARING OFFICER DODUC: Miss Ansley.

MS. ANSLEY: And I would say: Assumes facts not in evidence that any particular one instance would -- He has not laid any foundation that any incident in the manner which Mr. Tootle is speaking would have implications along the entire tunnel alignment.

CO-HEARING OFFICER DODUC: Overruled.

MR. JACKSON: Thank you.

Calling your attention to Line -- to Page 6 --

(Exhibit displayed on screen.)

MR. JACKSON: -- Line 13 or -- excuse me -- Line 19.

(Exhibit displayed on screen.)

MR. JACKSON: You indicate that (reading):

"Potential loss-of-ground incidents are a particular problem relative to -- relative to the planned WaterFix Tunnels under the Delta because . . ."

. . . of the condition of present subsidence on those islands; is that correct?

WITNESS TOOTLE: That's correct.

MR. JACKSON: Can you tell before you build a tunnel what -- whether or not there's going to be such loss-of-ground incidents?

WITNESS TOOTLE: Well, obviously, the intent of the designers would be to -- to limit that potential.

But, again, one of the key components to making that determination would have -- have a well under -- a very good understanding of what the materials are that you're going to be tunneling

through.

And so, without that information, it's very difficult to -- to -- to make those kind of -- or to -- to have your design specifically address all the potential conditions that will be encountered.

MR. JACKSON: Is it usual to make the conclusion as to whether or not it's likely to happen before you have full engineering and geotechnical work done?

WITNESS TOOTLE: In my experience, you would do the full work before making such an assertion.

MR. JACKSON: At Line 24 on Page 6, you -- you talk about fact that (reading):

"More than half of the length of the proposed WaterFix Tunnels cross islands that are subsided by as much as 10 feet or more below elevation . . ."

Why is it important, in your opinion, to make that particular observation?

WITNESS TOOTLE: Because these islands are that low in elevation, they're obviously lower than the adjacent water surface elevations in the river.

And so if you had a loss-of-ground event in a location that was at or near one of the levees that protect these islands, then the -- the previous example

of a sinkhole forming that I gave could result in a levee failure at that location and then inundation of those low-lying areas.

MR. JACKSON: And when you talk about on Line 27 the "injury would not" -- would not met -- would not "be restricted to a single island," is that some sort of domino effect from that potential?

WITNESS TOOTLE: There could be a couple different dominoes -- to use your analogy -- that -- that could occur.

When a -- When a Delta island becomes flooded, it does stress the adjacent islands. It can cause additional seepage pressure to be developed on the adjacent islands which could make those levees unstable as well. And if they're rendered unstable enough, then they could fall and then that island could be inundated.

Also, if you inundate an island and there happens to be a large wind event, you then create more fetch for the wind to carry across and generate wave action which could then batter an adjacent levee that isn't typically subjected to those kind of forces, and those forces could cause the levee to fail as well.

And so there could be a cascading effect, if you fail a levee on one island, on the adjacent

islands.

MR. JACKSON: Would the . . .

Is it possible that, if such an event happened in a big water year in the middle of the winter, that there would be cumulative effects to a number of islands?

WITNESS TOOTLE: If -- If the event we're talking about happened during the winter, then both of those things could be additive.

You would have more water stressing the adjacent levees due to the -- just the rains and the river stage and the flows that are there, as well as the potential for wind events. They often happen during the winter as well.

So, you would definitely have additive impacts during the winter months.

MR. JACKSON: Did you see, in your review of the conceptual level design, that that had been taken into account?

WITNESS TOOTLE: I didn't see that.

MR. JACKSON: And is that thought process or logic train the -- on Page 8, Lines 8 through 10 --

(Exhibit displayed on screen.)

MR. JACKSON: -- was that what you were thinking of when you made the comment that,

"after-the-fact apologies and explanations would (sic) bring little consolation"?

WITNESS TOOTLE: That's correct.

MR. JACKSON: On -- On Line 8 at or -- excuse me.

On Page 8 at Line 16 --

(Exhibit displayed on screen.)

MR. JACKSON: -- through 20, you write the opinion that (reading):

". . . Geotechnical site investigations to date do not meet the accepted standards for a project of any size, let alone a major project in the Delta."

So is it true to say that you are considering both the environmental setting in your reference to the Delta and the size of the 13 and a half pyramids at Giza spread out over the Delta?

WITNESS TOOTLE: I think both those are under consideration.

But I think, just relative to even small projects and not even necessarily just tunnel projects, projects in general, the amount of effort that's often put into conceptual designs and CEQA compliance is typically much more volumous (sic) -- voluminous -- sorry -- than -- than what currently exists in the

WaterFix Project.

So it's a -- It's specific to the things you mention but also much broader and in just general nature for projects across the state, in my experience.

(Timer rings.)

MR. JACKSON: So in con --

CO-HEARING OFFICER DODUC: How much time do you need?

MR. JACKSON: In conclusion --

CO-HEARING OFFICER DODUC: Oh.

MR. JACKSON: -- for this witness -- And then I have three or four questions.

I'm -- I'm sorry. I wasn't paying enough attention to the clock.

The . . . This is -- discussion we've just had is in the same opinion that the -- that you were asked about with the East Bay Municipal Utility District comparison; correct?

WITNESS TOOTLE: That's correct.

MR. JACKSON: Is what you have testified to today true even without that material, in your opinion?

WITNESS TOOTLE: Without the East Bay MUD-related material?

MR. JACKSON: Yes.

WITNESS TOOTLE: Yes.

MS. ANSLEY: Objection: I must be losing the -- What he testified to today? I'm losing track of what it is -- It's vague and ambiguous to what he testified to today.

MR. JACKSON: He's testifying -- I can make it --

CO-HEARING OFFICER DODUC: Thank you.

MR. JACKSON: -- clearer.

MS. ANSLEY: Thank you.

MR. JACKSON: Is the discussion we just had about Section 3 of your opinion on Page 8 that goes over to Page 9 just as true without relying on the information about the East Bay Municipal Utility District Project?

WITNESS TOOTLE: Yes, it would be.

CO-HEARING OFFICER DODUC: Miss Morris.

MS. MORRIS: I would just move to strike the answer.

Also, I don't think that it's relevant because the witness has already testified what he's relied on.

I thoroughly cross-examined him on what he relied on and now we're coming up with -- with new justifications for his opinion.

CO-HEARING OFFICER DODUC: Objection overruled; motion denied.

Mr. Jackson.

MR. JACKSON: Thank you.

Thank you, Mr. Tootle.

Mr. Lambie.

You worked on some specific groundwater basins that you were asked to work on in -- in preparing your testimony.

You talked about a cone of depression in your testimony.

What is a cone of depression?

WITNESS LAMBIE: Well, to be clear, it was pointed out that I hadn't used those words in my written testimony.

A cone of depression is classically spoken of in relation to a single well or group of closely clustered wells withdrawing water and, as they do so, there is a hydraulic response that is non-linear and produces a hyperbolic/parabolic configuration to the water pressure surface. So you have this concentric set of circles that become ever closer and closer, and that produces a depression.

The areas of depression, I would call them, in those graphics are associated with more of the widespread extraction from any number of groundwater wells spread out over an area.

So I've perhaps overanswered, but there's sort of two -- two different things that are somewhat related.

But I think the second goes to what your question really is, which is, what's the broad area of groundwater depression produced by all this extraction?

Classically, a cone of depression is about a well.

MR. JACKSON: When -- When you describe the potential interaction between, for instance, the Sacramento River from Keswick Reservoir above Redding, through the -- the length of the river, are there going to be a number of places where the groundwater and the surface water are interacting?

MS. ANSLEY: Objection.

CO-HEARING OFFICER DODUC: Ms. Ansley.

MS. ANSLEY: Lacks foundation.

Mr. Lambie did not analyze the Sacramento River from Keswick Reservoir above Redding.

MR. JACKSON: He did not in his direct testimony. I believe I'm allowed to go beyond the scope and ask him questions in general.

CO-HEARING OFFICER DODUC: But start by --

MS. ANSLEY: The question lacks foundation.

CO-HEARING OFFICER DODUC: Start by asking

whether Mr. Lambie has done those kind of study, or is familiar enough to speculate about that.

MR. JACKSON: I'll withdraw the question and start in a different way, if that's all right.

Is there a . . . a relationship between surface flow and groundwater through which the . . .

Do they interact along a surface stream?

WITNESS LAMBIE: Yes.

MR. JACKSON: Is that interaction a -- a -- an important part of whether or not the groundwater in an area is rising or falling?

WITNESS LAMBIE: It has a bearing on it, depending on a number of conditions.

But, yes, the relationship between, say, the stage in the river and the groundwater elevation adjoining the river will affect the interaction.

I think the exhibit I showed of the USGS circular does a very nice job of just, if you will, being illustrative of two or three phenomena there.

MR. JACKSON: And in a system like the Central Valley, would you expect there to be such an interaction along the major rivers and streams?

WITNESS LAMBIE: Yes, of course. I would have many general expectations given my years of experience in hydrology.

MR. JACKSON: And if you added a -- any number of wells along those rivers and streams, would you expect that those wells could be affected by either the abundance of surface flow or the lack of surface flow?

CO-HEARING OFFICER DODUC: Miss Morris.

MS. MORRIS: Objection: Assumes facts not -- not in evidence.

MS. MESERVE: I think this might be an incomplete hypothetical.

Perhaps you could simplify it.

CO-HEARING OFFICER DODUC: Mr. Jackson, please --

MR. JACKSON: Sure.

CO-HEARING OFFICER DODUC: -- repeat and rephrase.

MR. JACKSON: You -- You describe the effect on a couple of SGMA Basins in your -- in your dir -- in your direct testimony; did you not?

WITNESS LAMBIE: That's correct.

MR. JACKSON: Is there any reason for you to believe that that's not taking place -- one of the basins was in the Sacramento drainage -- in the rest of the basins in the Sacramento drainage?

CO-HEARING OFFICER DODUC: Ms. Morris.

MR. JACKSON: Objection: Lacks foundation;

also relevance.

I think that it's -- there's not enough facts that this questioner has laid to show that the areas that Mr. Lambie investigated have the same type of soils, recharge, and other factors that would play into this analysis.

So, also, incomplete hypothetical.

MR. KEELING: I thought the point of the question was to see if he does have a basis.

CO-HEARING OFFICER DODUC: Are you able to answer, Mr. Lambie?

WITNESS LAMBIE: I found the question vague is all I would need rephrased.

CO-HEARING OFFICER DODUC: Okay.

MR. JACKSON: You talked in your direct testimony about the -- about response time.

What did you mean by that?

WITNESS LAMBIE: I did not provide testimony about response time. I think that was Dr. Mehl's testimony.

MR. JACKSON: Is there a . . . Is there . . .

When groundwater drops, is there a response time before it refills?

WITNESS LAMBIE: As a general matter, yes. If you withdraw groundwater, the well has what is referred

to as a hydraulic capture area that supplies that water.

It's a phenomenon I think most of the nontechnical people have a difficult time understanding.

But once you stop that withdrawal, the surrounding groundwater comes in to fill the hole you've made, to use simplistic terms. That's a relaxation from the extraction which looks to some like recharge. The actual recharge will come from the discharge of a river to fill that hole or the precipitation to fill that hole.

So it is a zero sum gain.

MR. JACKSON: So, in other words, if you refill the hole in the groundwater, you're taking water that would be available from the surface flow or from precipitation.

WITNESS LAMBIE: Yes.

I -- I often think of the eloquent word choice of C.B. Tice when he described it as the capture of water to a well. The well takes water that would otherwise discharge to some use, be it to a stream or to a plant.

MR. JACKSON: So when you use the water, either by export from the natural basin or by use

within the basin, you don't create any water.

WITNESS LAMBIE: It depends on your point of view.

For the basin, you have created water. As I stated in my opinion, because of the -- the drown drafting of these basins, they have induced more recharge from certain Reaches of the river and, therefore, the water budget has been increased. Those wells are now capturing flow that would have gone to evapotranspiration at the surface from native vegetation or they would have discharged to the stream.

So the irony of it I found when I thought about it was, you've increased the water budget by extracting groundwater.

CO-HEARING OFFICER DODUC: So, Mr. Jackson, you are now back to your 45 minutes.

How much additional time do you anticipate needing?

MR. JACKSON: No more than five.

CO-HEARING OFFICER DODUC: All right.

MR. JACKSON: I just want to follow up on that point.

CO-HEARING OFFICER DODUC: Let's give Mr. Jackson five to finish.

MR. JACKSON: In your description, is it fair

to say that you haven't considered the fact that, when you capture the evapotranspiration, you lost the riparian habitat?

CO-HEARING OFFICER DODUC: I don't know what that means.

Mr. Jackson.

WITNESS LAMBIE: I can answer the question if you'd like.

CO-HEARING OFFICER DODUC: Can you explain the question to me?

WITNESS LAMBIE: Sure.

MS. ANSLEY: I'm just going to lodge the objection before we get to the answer.

It's vague and ambiguous. We haven't laid any foundation for evapotranspiration in the basin from --

CO-HEARING OFFICER DODUC: Riparian.

MS. ANSLEY: -- vegetation, and so I'm not sure any foundation has been laid for this line of questioning on vegetation.

CO-HEARING OFFICER DODUC: Mr. Lambie.

WITNESS LAMBIE: Yes. I'd be happy to explain.

The -- The phenomena of withdrawing water from -- from a groundwater system will lower the water table and remove water that would naturally discharge

at the surface or into the root zone of plants.

And I believe the question goes to: If you're withdrawing groundwater, are you potentially, or in this case actually, impacting the riparian vegetation? Riparian being along the stream side.

Yes, you would. I mean, that's -- It was really well laid out in 1941 by C.B. Tice, like that's -- that's what's going on.

CO-HEARING OFFICER DODUC: Well, thank you for clarifying the question.

WITNESS LAMBIE: You're welcome.

CO-HEARING OFFICER DODUC: Miss Ansley?

And providing the answer.

Miss Ansley?

MS. ANSLEY: I'd also like to lodge an objection to this line of questioning. There is no foundation that the California WaterFix is withdrawing groundwater.

CO-HEARING OFFICER DODUC: Okay. So noted.

Move on, Mr. Jackson.

MR. JACKSON: Assuming that riparian habitat is a public trust asset for fish and wildlife, is the process you just described on -- a negative effect on the public trust?

CO-HEARING OFFICER DODUC: Miss Ansley.

MS. ANSLEY: Yeah. I mean, I think this lacks foundation.

It's not been demonstrated that -- that this witness is actually an expert in vegetation; and it -- it also has not been established that there is an impact on vegetation.

So there's a lot of vagueness here and . . .

And I think that it lacks foundation.

CO-HEARING OFFICER DODUC: So noted.

Mr. Lambie, just answer to the best of your knowledge.

WITNESS LAMBIE: I'm afraid I -- That's beyond the area of my analysis. I don't have an opinion on that.

MR. JACKSON: So . . . Thank you, Mr. Lambie. I'll follow up with others.

CO-HEARING OFFICER DODUC: Mr. Stroshane, we've gone over my estimate, but I believe yesterday you said you had cross-examination for Miss Schmit -- Schmitz.

Does anyone else have cross-examination for her? Because I would like to be able to dismiss her if no one else does.

MR. STROSHANE: My -- My questions actually will be for Mr. Lambie.

CO-HEARING OFFICER DODUC: Oh. So do -- Unless you have your -- Unless your counsels have redirect for Miss Schmitz.

MR. FERGUSON: No.

CO-HEARING OFFICER DODUC: All right. Thank you for joining us and thank you for sitting here patiently.

(Witness Schmitz excused.)

CO-HEARING OFFICER DODUC: So we will take our lunch break after Mr. Stroshane conducts his still 10 minutes?

MR. STROSHANE: I believe so, yes.

CO-HEARING OFFICER DODUC: I know I can count on you, of cross-examination.

MR. STROSHANE: No pressure.

SO my subjects include Mr. Lambie's familiarity with DWR's Water Available For Replenishment Report; his qualifications and experience relating to salinity intrusion; and potential for salinity intrusion into groundwater from Delta channels to subbasins he analyzed.

CROSS-EXAMINATION BY

MR. STROSHANE: Mr. Lambie, good morning.

I'm Tim Stroshane. I'm a -- a policy analyst with Restore the Delta.

WITNESS LAMBIE: Good afternoon. It's nice to meet you.

MR. STROSHANE: Are you aware that DWR published a report in early 2017, by my recollection, that man -- that was mandated by SGMA that provided all GSAs with estimates of water available for replenishment?

WITNESS LAMBIE: Yes. I moderated a session in which the DWR explained that through the Groundwater Resources Association of California.

MR. STROSHANE: I'm sorry. I couldn't --

WITNESS LAMBIE: I'm sorry.

I -- I moderated the session in which DWR made its initial presentation of that document in --

MR. STROSHANE: Ah.

WITNESS LAMBIE: -- the middle of January --

MR. STROSHANE: I see.

WITNESS LAMBIE: -- 2017.

It doesn't make me an expert on it. I have read it.

MR. STROSHANE: So you have read it, you say?

WITNESS LAMBIE: I have a decent familiarity with it, yes.

MR. STROSHANE: Okay. Do you recall that DWR included a section describing the Petitioned Project,

the subject Petition of this proceeding, and operation of its North Delta intakes as likely contributing to water available for groundwater replenishment to the San Joaquin River and Tulare Lake Basins?

WITNESS LAMBIE: Honestly, as I sit here, I don't recall that.

MR. STROSHANE: Okay. Would you agree, though, that the two basins that you analyzed in -- in your testimony are geographically nearest to the point of actual exports by the Petitioned Project as compared with most or all other San Joaquin Valley subbasins subject to SGMA regulation?

Would you like me to repeat the question?

WITNESS LAMBIE: No. I've just got to say it.

I think you're incorrect. I think the Tracy Basin is absolutely the closest.

MR. STROSHANE: To the North Delta intakes?

WITNESS LAMBIE: Yeah. They sit in it, I believe.

MR. STROSHANE: Okay.

MS. MESERVE: Can you clarify --

MR. STROSHANE: That was --

MS. MESERVE: -- the question?

You mean -- Are you talking about the South Delta intakes or the North Delta intakes? They're --

MR. STROSHANE: I'm talking about the North Delta intakes.

I'm sorry. I should -- Perhaps I should have --

WITNESS LAMBIE: My apologies.

MR. STROSHANE: I thought I --

WITNESS LAMBIE: I took it to be the Clifton Court Forebay you were asking about.

MR. STROSHANE: No. I'm referring to the North Delta.

I -- My -- My mind was thinking the North Delta intakes but I said "Petitioned Project," so . . .

And the Petitioned Project is for diversions in the North Delta.

WITNESS LAMBIE: Very good.

MR. STROSHANE: Does that affect your answer?

WITNESS LAMBIE: Your question was: Are those the two closest basins --

MR. STROSHANE: Yeah.

WITNESS LAMBIE: -- subject to SGMA regulation?

Plus or minus, yeah. The Consumnes is very close as well, the Yolo. I mean, there's a number that surround it. I analyzed those two.

MR. STROSHANE: Thank you.

I'm going to switch my topic now to the potential for salinity intrusion.

I have a few foundational questions about Mr. -- that relate to Mr. Lambie's qualifications and experience in relation to water quality and salinity intrusion.

Do I understand correctly that your qualifications as a hydrogeologist and engineer include analysis of water quality impacts in groundwater supply and water rights studies.

WITNESS LAMBIE: Yes. I've done both.

I've looked at salinity intrusion at the shoreline for, in fact, the Oregon Water Rights Petition and Certification for municipal supply.

And I've done any number of water quality studies for urban and agricultural supply in the State of California.

MR. STROSHANE: Okay. Thank you.

In your career, have you modeled, analyzed or described salinity intrusion in groundwater basins in California?

WITNESS LAMBIE: Yes.

MR. STROSHANE: Have you analyzed and estimated cost impacts of addressing salinity intrusion problems in the course of your professional career?

WITNESS LAMBIE: No, not as to the intrusion. I've -- I've dealt with water supplies where I had to address it, but not -- not as to impact of inland migration, no.

MR. STROSHANE: Or the cost of remediating salinity intrusion, anything like that?

WITNESS LAMBIE: I've simply contemplated that once you saline-impact a basin, I've said this: You know, it's ruined for millennia.

MR. STROSHANE: Okay. As a hydrogeologist, though, are -- are you aware -- can you suggest what factors are important when it comes to estimating costs of addressing or even remediating salinity intrusion? What cost -- If -- If you had the problem before you as a hydrogeologist and engineer, what factors would you consider?

WITNESS LAMBIE: The number one thing I would look to is, of course, what's been done in, say, Southern California and elsewhere to address saline intrusion. And that is direct injection of fresher water to create a hydraulic barrier, to push it back.

One of the more famous examples is the Santa Ana River down by Fountain Valley --

MR. STROSHANE: Um-hmm.

WITNESS LAMBIE: -- which I've analyzed.

MR. STROSHANE: Okay. Are you familiar with any studies or local groundwater plans, such as the Eastern San Joaquin Basin Groundwater Plan that analyzed or described effects of salinity intrusion to groundwater in either of the two basins that you analyzed?

WITNESS LAMBIE: Yes. I'm -- I'm broadly familiar with the Eastern San Joaquin's Groundwater Management Plan of 2005 that describes the issue of saline intrusion and its impact to the basin.

MR. STROSHANE: Have you analyzed or considered salinity effects of the reduction in exfiltration that you describe in your testimony that were part of the scope -- Let me -- Let me start this -- Please strike that.

Have you analyzed or considered salinity effects of the reduction in exfiltration to either subbasins that were the scope of your testimony?

WITNESS LAMBIE: No, not substantively. I've thought about it. You know, I've -- But it's beyond the scope of what I've done.

MR. STROSHANE: In your professional role, what are some of your thoughts about it?

WITNESS LAMBIE: That the fresher the water that's at the stream/aquifer interface, the better

effect it will have on the overall water quality.

So I've reflected on the data I've analyzed in the Eastern San Joaquin for total dissolved solids, specifically chloride. Of course, the less chloride that's in the water adjoining the basin, the -- the more that TDS issue we still have hanging out south of downtown, the better it will get.

But that --

MR. STROSHANE: And you were --

WITNESS LAMBIE: That's really not a very substantive analysis. It's just --

MR. STROSHANE: Right.

WITNESS LAMBIE: It's sort of intuitive.

MR. STROSHANE: In -- In your professional judgment, would such salinity -- would salinity intrusion to the extent that it may be increased by a Petitioned Project operations impose a burden on the GSAs in these subbasins trying to achieve compliance with SGMA?

CO-HEARING OFFICER DODUC: Miss Ansley.

MS. ANSLEY: Objection: Lacks foundation; it's also speculative.

There's been no evidence that there is salinity intrusion in either of the two basins as a result of the California WaterFix Project.

CO-HEARING OFFICER DODUC: Could you restate your question, Mr. Stroshane.

MR. STROSHANE: Certainly. Actually, I'll move on.

MS. ANSLEY: And he does not submit -- And this witness does not submit testimony on those sort of impacts.

CO-HEARING OFFICER DODUC: Of course, he can go beyond the scope of his testimony.

Just --

MR. STROSHANE: I will --

CO-HEARING OFFICER DODUC: -- rephrase your question, Mr. Stroshane.

MR. STROSHANE: I will move on.

CO-HEARING OFFICER DODUC: Okay.

MR. STROSHANE: Are you aware of any concerns of the City of Stockton and California water service companies, which both serve the -- the drinking water residents of -- of Stockton, over salinity intrusion affecting drinking water quality of waters pumped from wells for delivery to their urban customers?

WITNESS LAMBIE: Yes. I'm one of their customers.

MR. STROSHANE: So, right now, there is salinity intrusion occurring.

WITNESS LAMBIE: That's correct.

MR. STROSHANE: Okay. Based on what you covered in your -- in the scope of your testimony, do you have any reason to believe that salinity intrusion could increase from the kinds of exfiltration reductions that you described?

CO-HEARING OFFICER DODUC: Miss Morris.

MS. MORRIS: I believe this witness said he did not do the analysis to look at increased salinity, and so this question lacks foundation.

MR. STROSHANE: I'll -- I'll rephrase.

CO-HEARING OFFICER DODUC: Rephrase.

MR. STROSHANE: In your profession --

MS. MESERVE: And in terms of the vagueness, I believe it's vague.

Are -- Are you referring to salinity intrusion or salinity -- increases in salinity?

MS. MORRIS: Increases in sali --

MS. MESERVE: I think that may be part of the --

MS. MORRIS: Let me just rephrase my question.

In your professional judgment, given that there is salinity intrusion that has already occurred in the eastern sub -- subbasin, Eastern San Joaquin Subbasin, do you anticipate that the increment -- that

an increment of exfiltration reduction that might occur to the San Joa -- the East San Joaquin groundwater basin would potentially increase salinity intrusion at some point during each year?

CO-HEARING OFFICER DODUC: Miss Ansley.

MS. ANSLEY: Again, this assumes facts not in evidence.

CO-HEARING OFFICER DODUC: Yes. The entire thing is speculative.

MS. ANSLEY: Yes, it is.

CO-HEARING OFFICER DODUC: Mr. Lambie, can you speculate an answer?

WITNESS LAMBIE: Not really. There's too many outcomes that could be derived.

CO-HEARING OFFICER DODUC: Thank you.

MR. STROSHANE: No further questions.

CO-HEARING OFFICER DODUC: Thank you.

It is 12:30.

Before we take our lunch break, I forgot in my time estimates earlier to ask about redirect.

Do you have redirect? And if so, how much time are we expecting?

MR. FERGUSON: Yeah, I do. Probably three to five minutes.

MR. KEELING: I have three to five minutes.

MS. MESERVE: Same.

CO-HEARING OFFICER DODUC: All right. Well, we'll build that in as well.

But we will do our best, Mr. Stroshane, to get through your cross-examination of Dr. Michael today. But we will not be staying after 5:00.

All right. With that, we will return at 1:30.

(Lunch recess at 12:31 p.m.)

* * *

Friday, March 16, 2018 1:30 p.m.

PROCEEDINGS

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(Proceedings resumed:)

CO-HEARING OFFICER DODUC: It is 1:30. We are back in session.

And before we do anything else, Mr. Deeringer, you have a housekeeping item.

MR. DEERINGER: Sure.

So, the Hearing Officers are still considering DWR's Motions to Strike portions of the oral testimony of Misters Neudeck and -- or Mr. Neudeck and Dr. Shilling.

And the Hearing Officers would just request that we get a copy of the rough transcripts from those portions of the hearing, if it's available, just so that the Hearing Officers can more precisely consider the Motion to Strike and -- and see exactly what portions of the oral testimony were being objected to.

I might be misconstruing the nature. It might have been a motion of a different sort --

CO-HEARING OFFICER DODUC: Miss Ansley, could you --

MR. DEERINGER: -- so if any clarification's needed.

MS. ANSLEY: Yeah. I'm happy to review that. And if it's fine with the court reporters, I'm happy to provide the rough transcripts that we certainly do receive every day.

MR. KEELING: I -- I assume you're asking just for a copy of the transcript, not for some sort of inter -- interlineated or annotated submission.

MR. DEERINGER: That's correct. We're not inviting any additional briefing or argument on the motions. They were pretty well argued orally.

CO-HEARING OFFICER DODUC: All right.

MS. MESERVE: If there was further back and forth about it, I think we could -- We do not have the benefit of a rough transcript. Our -- Our -- Our clients can't afford that, so if --

CO-HEARING OFFICE DODUC: There will not be --

MS. MESERVE: -- it's being provided --

CO-HEARING OFFICER DODUC: Unless we -- After reading it -- Unless after reading it we determine otherwise, at this time we're not asking for additional arguments or joinders. We just want to review the transcript, as it were.

Miss Des Jardins.

MS. DES JARDINS: Yes. I have a followup.

I did request information from the Hearing

Officers on when to subpoena the CDFW witnesses.

I did issue a su -- I did give a subpoena to the process server earlier this week, and it should be served, and I'll send a Proof of Service.

It's for one witness, and I -- I chose the -- I had to give a specified range of dates in the subpoena, and so I specified the 27th, 28th, 29th, and 30th of March. I hope that's a sufficient date. If not, maybe you can work with CDFW.

And I also -- I am planning -- still planning on calling -- calling that witness, because I noticed the -- the schedule for some reason had deleted them. It's -- I just -- I hadn't given an update because I hadn't gotten the subpoena served.

CO-HEARING OFFICER DODUC: Okay. So that was just an update. There's no action needed on our part.

Hold on.

MR. DEERINGER: Just a quick followup to the housekeeping matter on the -- the transcript.

If possible -- Logistically, if it's possible --

CO-HEARING OFFICER DODUC: Hold on. Hold on. This is for Miss Ansley; right?

MR. DEERINGER: Right. Right. Thank you.

If it's possible just to get the relevant

portion of the transcript. We don't need the whole day's . . .

MS. ANSLEY: Okay.

MR. DEERINGER: So -- Okay. Great.

MS. ANSLEY: We'll -- We'll start -- We will pull up the transcripts and start -- and start looking.

I'm sure that we could definitely get them to you by Monday morning. We just need to pull -- We -- I haven't pulled them up yet. So I will pull them up and take a look to see if I can find the exact places you're looking for and excerpt a couple pages around it?

CO-HEARING OFFICER DODUC: Let's get some clarification.

Are you asking for the transcript of just the section that Miss Ansley or DWR has moved to strike, or are you asking for the entire discussion, including her motion/objection and all the various responses and joinders as well?

MR. DEERINGER: To prevent any need for further followup or additional requests on our part, I would just suggest that DWR err on the side of inclusion.

So probably starting with the first discussion of the Motion to Strike and concluding with when I

think Hearing Officer Doduc said we would take under advisement.

MS. ANSLEY: Okay.

MR. DEERINGER: Okay.

CO-HEARING OFFICER DODUC: All right. We will turn to Miss Des Jardins to do her cross-examination.

And then, at the end of today, we will revisit the schedule. Again, we do have a hard stop at 5:00.

And, Mr. Stroshane, that might mean you move quickly through your cross-examination or, as has been done with some other parties in this proceeding, you might ask someone else to return on Monday to complete your cross-examination for you.

Okay. Miss Des Jardins.

MS. DES JARDINS: Thank you.

I first have some questions for Mr. Lambie, or is it --

WITNESS LAMBIE: (Nodding head.)

MS. DES JARDINS: On the range of alternatives on the -- on the modeling and the range of alternatives in the Project.

And then I have questions for Mr. Tootle on tunneling, loss of ground, tunnel design, applicable codes and . . . other -- other -- other tunnel -- tunnel engineering issues.

So I'd like to bring up Exhibit DDJ-229. It's -- Yeah. It's under my exhibits.

CROSS-EXAMINATION BY

MS. DES JARDINS: So, Mr. Lambie, you testified that you analyzed Alt -- operational Scenario H3 for Alternative 4A; is that correct?

WITNESS LAMBIE: Yes.

MS. DES JARDINS: Okay. As input?

(Exhibit displayed on screen.)

MS. DES JARDINS: This is a copy of Page 262 from Chapter 3 of the Final EIR/EIS, which is on Description of Alternatives.

And I'd like you to read the highlighted sections, please.

WITNESS LAMBIE: Can you enlarge that for me?

(Exhibit displayed on screen.)

WITNESS LAMBIE: Thank you.

(Examining document.)

WITNESS LAMBIE: Okay. I've read the highlighted sections.

MS. DES JARDINS: Okay. So does this indicate that actual operations for the Project (reading):

". . . Will ultimately depend on the results of the adaptive management program."

WITNESS LAMBIE: That's what the words say on this page. I -- I don't know this document.

MS. DES JARDINS: This is the Final EIR/EIS.

WITNESS LAMBIE: Okay.

MS. DES JARDINS: The Chapter 3 on Description of Alternatives.

WITNESS LAMBIE: I have not read Chapter 3.

MS. DES JARDINS: And it -- Does it indicate that the analysis for Alternative 4A in the Final EIR/EIS utilizes H3+ modeling results?

Does it indicate --

WITNESS LAMBIE: That's what the words say. It reads (reading):

"While the analysis for Alternative 4A in the resource chapters utilizes H3+ modeling results, actual operations will ultimately depend on the results of the adaptive management program."

MS. DES JARDINS: The next sentence says (reading):

"Operations between H3 and H4 have been fully analyzed for Alternative 4A in the EIR/EIS."

WITNESS LAMBIE: Yes.

MS. DES JARDINS: And that --

CO-HEARING OFFICER DODUC: Miss Ansley.

MS. ANSLEY: At this time, I'd like to lodge an objection.

This may be somewhere, but so far she's asked him to confirm the wording of documents that he already said he did not read, and she is not asking his understanding beyond what is actually written on the page, just to confirm that.

MS. DES JARDINS: I -- I -- I --

MS. ANSLEY: So I do object to this -- this line of questioning.

MS. DES JARDINS: I was asking --

CO-HEARING OFFICER DODUC: Miss Des Jardins, let's again focus on asking specific questions rather than just reiterating what is on the page.

MS. DES JARDINS: I -- I was just about to get to that.

CO-HEARING OFFICER DODUC: Yeah. Let's get there. Thank you.

MS. DES JARDINS: So, according to these paragraphs, H3 is within the range of alternatives analyzed in the EIR/EIS?

MS. ANSLEY: Same objection.

CO-HEARING OFFICER DODUC: Miss Des Jardins.

MS. DES JARDINS: Is -- I'm just asking if H3, the alternative that he looked at, is that within the range of alternatives that are analyzed in the EIR/EIS?

MS. ANSLEY: Lacks foundation.

She's welcome to ask questions about his understanding of what modeling scenarios were considered in the EIR/EIS.

If she's asking for what his understanding is versus what this piece of paper says, and she's able to ask him his understanding of H3 and H4.

CO-HEARING OFFICER DODUC: Let's ignore this page for now.

Mr. Lambie, are you able to answer Miss Des Jardins' question with respect to the H3 alternative that you analyzed?

WITNESS LAMBIE: It appears to be that H3 is an end point as that text describes it. H3 is one end and H4 is the other.

MS. DES JARDINS: So -- So H3 would be on one end of the diversions. That's -- That's what you just indicated.

CO-HEARING OFFICER DODUC: I sense --

MS. ANSLEY: Objection: Vague and ambiguous as to "one end of the diversion."

MS. DES JARDINS: I meant, one end -- one end

of the operational scenarios. I apologize.

CO-HEARING OFFICER DODUC: Mr. Lambie, do you know that for a fact, or are you just guessing based on what you see in this document with which you are not familiar?

WITNESS LAMBIE: I am reading the page in front of me to understand what it says as far as operational scenarios.

It -- It only describes an operational range between H3 and H4 and that H3+ is something else.

CO-HEARING OFFICER DODUC: So you're not familiar enough to --

MS. DES JARDINS: Okay.

CO-HEARING OFFICE DODUC: -- answer.

MS. DES JARDINS: That's fine. We can move on.

CO-HEARING OFFICER DODUC: Let's do so.

MS. DES JARDINS: Also, Mr. Lambie, earlier, there were questions about you comparing model output with future sea-level rise and future level of development with current period data.

I wanted to ask: So, the -- Is it your understanding that the Project assumes 6 inches of sea-level rise, the -- the operations?

WITNESS LAMBIE: I have not --

MS. DES JARDINS: Okay. You're not sure.
WITNESS LAMBIE: -- focused explicitly on the different projected sea-level rise.
I've --
MS. DES JARDINS: Okay.
WITNESS LAMBIE: -- seen some numbers but to say I analyzed that would be a mistake.
MS. DES JARDINS: Okay. So would it have been helpful to have a model run without future sea-level rise?
MR. KEELING: Objection: Vague and ambiguous. Helpful to whom?
MS. DES JARDINS: Helpful --
CO-HEARING OFFICER DODUC: Sustained.
MS. DES JARDINS: -- to your analysis. Helpful to your comparison with . . . with real-world data.
CO-HEARING OFFICER DODUC: Miss Ansley.
MS. ANSLEY: I'm still going to object that that is vague and ambiguous; assumes facts in evidence; and lacks foundation.
I don't think we've established that -- what would be helpful to his analysis and what would -- what he did not include.
So I -- I think I'm -- I'm going to stick with

vague and ambiguous.

CO-HEARING OFFICER DODUC: Actually, I think I understand where Miss Des Jardins is going with this.

Mr. Lambie, you were cross-examined quite extensively about your comparison between a baseline and the model outcome. Remember you were -- With that graphic, you were subtracting export from the baseline.

And Miss Ansley emphasized that the simulation included assumptions regarding climate change, sea-level rise, and upstream operations.

I think what Miss Des Jardins is trying to ask is: Would your analysis be different? Will your conclusions change? Would it be helpful to have a similar set of output without those assumptions in there?

MS. DES JARDINS: With current development and current hydrology, and no sea-level rise.

WITNESS LAMBIE: As I understand the question, which is along the lines of how you have taken it, the -- it would be helpful, because I was thinking, well, the historic climate variabilities that I spoke to was in the natural hydrographs or the things that actually happened.

If there's an inference of sea-level rise in the -- the data, which that's -- that's how Miss Ansley

represented it, I can't confirm what's been done there.

But if there was a run to be made for, say, a No-Action Alternative in which sea-level rise was removed, then one would be able to see what type of water deliveries the DWR and the Bureau of Reclamation intend to make under this scenario.

So there's an overprinting there of one thing on top of another. So much as she parsed her questions, if they parsed their model, then you could see which pieces of it materially impact my analysis.

So you'd be preparing -- you'd essentially be preparing -- evaluating -- excuse me -- the natural S kindergraph during the period of historic project operations with these new overprints of how much water they would like to divert in those same types of water years.

So I think it would be helpful.

MS. DES JARDINS: And -- And so that might have helped distinguish the effects of climate change versus -- and -- versus -- and sea-level -- and sea-level rise in future development versus the effects of the diversions that went in your analysis?

WITNESS LAMBIE: Yes, it could.

I'm sort of shaking my head because there's so much equation -- People equate sea-level rise and

climate change in sort of the same period.

Climate change is one driver on sea-level rise. But climate change also has an impact on the hydrology that's going to occur in the State of California.

So, they're coincident, but they're -- and consequential. They just are not the same thing.

I don't know what they've done in their model to account for those two different phenomena that are occurring, man-made or otherwise.

MS. DES JARDINS: Thank you. That -- That -- That does clarify.

So my next question is for Mr. Tootle.

And I'd like to go back to your Exhibit SJC-285, which is your testimony, Page 6 at Lines 16 to 80. 16 to 18. Excuse me.

(Exhibit displayed on screen.)

MS. DES JARDINS: And here you state it's (reading):

". . . Unlikely that all" --

With respect to tunnel -- tunneling accidents it's (reading):

". . . Unlikely that all catastrophic problems can be eliminated simply by following applicable codes and best

practices."

I -- I wanted to ask you about the . . . Final EIR/EIS has to say about this, and that's -- Can we go to Exhibit SWRCB-102, the Final EIR/EIS, Chapter 9, Page 9-288.

And when we get to it, this covers (reading):

"Impact GEO-3: Loss of Property, Personal Injury, or Death from Ground Settlement during Construction of Water Conveyance Features."

So, I just wanted to ask you about that section. There it is.

(Exhibit displayed on screen.)

MS. DES JARDINS: Geology and Seismicity, 9-288.

Just type in "Page 288."

(Exhibit displayed on screen.)

MS. DES JARDINS: One more. Oh, no. That is it.

And at Line 13 -- Can you read the sentence regarding -- beginning with "Operator errors," or the paragraph.

WITNESS TOOTLE: (Examining document.)

I've read it.

MS. DES JARDINS: Okay. So this refers to

possible causes of large ground settlement during tunneling; is that correct?

WITNESS TOOTLE: It references things that could cause ground settlement.

MS. DES JARDINS: And it -- One of those is operator errors; is that correct?

WITNESS TOOTLE: That's what it says, yes.

MS. DES JARDINS: Is -- Is that your understanding as well, that that could be a cause of large ground settlements during tunnel construction?

WITNESS TOOTLE: That could be a cause of a -- a loss-of-ground event in the tunnel which could lead to settlement at the ground surface.

MS. DES JARDINS: What about -- Does it list "unfavorable ground conditions"?

WITNESS TOOTLE: Yes, it does.

MS. DES JARDINS: And that that -- that could -- Is that also your understanding of something that could result in a large ground settlement?

WITNESS TOOTLE: Yes.

MS. DES JARDINS: Would you consider -- So you have some experience with soils in the Delta from -- from projects you've been on?

WITNESS TOOTLE: That's correct.

MS. DES JARDINS: Would you consider the soils

in the Delta to be unfavorable ground conditions for tunnel construction based on . . .

WITNESS TOOTLE: I would consider the soil deposits in the --

CO-HEARING OFFICER DODUC: Hold on.

Miss Ansley.

MS. ANSLEY: Objection.

I believe that Mr. Tootle testified that he had no large-scale tunneling experience, in particular in the Delta, and there's been no foundation laid that he's aware of the soil types at depth that the tunnels will be going through.

CO-HEARING OFFICER DODUC: Mr. Tootle, are you comfortable enough answering Miss Des Jardins' question?

WITNESS TOOTLE: I think I could provide an answer.

CO-HEARING OFFICER DODUC: All right. We will consider, Miss Ansley, in weighing the testimony.

But go ahead and answer.

WITNESS TOOTLE: I would consider the soil deposits in the Delta to be highly variable, based on my experience, and the caption that you had me read talks about the appropriate tunneling equipment to be used for particular ground conditions.

And the ground conditions in the Delta, based on my experience, are highly variable. And so it's difficult to predict what type of conditions you may be tunneling through, particularly if you have insufficient subsurface characterization as part of your project.

MS. DES JARDINS: And that brings me to -- This paragraph also refers to "sudden or unexpected changes in ground conditions" as potentially resulting in large ground settlement during tunnel construction.

Would that be your understanding as well?

WITNESS TOOTLE: Yes. The -- And the high variability in the -- in the soil conditions in the Delta lead to just those types of unexpected changes being encountered during construction.

MS. DES JARDINS: Are you aware of propo -- any proposals to operate multiple tunnel machines in the Delta at once?

WITNESS TOOTLE: I don't have any specific knowledge about timing of different operations in the Delta.

MS. DES JARDINS: Okay. Thank you.

And then I -- If the Chair permitted it, I would like to ask him about a specific example that he references. And it's Exhibit DDJ-280.

(Exhibit displayed on screen.)

CO-HEARING OFFICER DODUC: Lay the foundation for this.

MS. DES JARDINS: That's not it.

Go up, please. Go back. That's not it.

(Exhibit displayed on screen.)

MS. DES JARDINS: No. Go -- No. That's not it. It's on -- I'm sorry.

Go back to the drive, the jump drive. That's not -- I apologize. It's on the first part of the jump drive.

MR. BAKER: I don't -- I don't have that loaded. I only have the South Delta Water Agency cross-examine files.

MS. DES JARDINS: I just -- I just gave you a jump drive with it on there. It's a green frog.

Let's -- Let's load that, and I'll go on to my next question first.

Actually, let -- let -- Let's just -- I'll go on and then we can go back later.

I'd like to ask you about applicable codes, too.

So let's go back to Exhibit SWRCB-102, Chapter 9 --

(Exhibit displayed on screen.)

MS. DES JARDINS: -- on soils and seismicity.
So I'd like to go to document Page 31.
(Exhibit displayed on screen.)
MS. DES JARDINS: Can we zoom out for a minute? I believe it's down at the bottom.
(Exhibit displayed on screen.)
MS. DES JARDINS: Keep going.
(Exhibit displayed on screen.)
MS. DES JARDINS: No. It's the next page. That's . . .
(Exhibit displayed on screen.)
MS. DES JARDINS: (Reading):
"Regulatory Design Codes and Standards for Project Structures."
Can you read the top at 17 to 18.
WITNESS TOOTLE: (Examining document.)
MS. DES JARDINS: Or 17 to 20, please.
WITNESS TOOTLE: (Examining document.)
I read it.
MS. DES JARDINS: Okay. So this indicates that the standards are standards for the Project.
I'd like to go down to one of the listed standards on Page 33 at Line 31.
(Exhibit displayed on screen.)
MS. DES JARDINS: And it's the (reading):

"American Society of Civil Engineers Minimum Design Loads for Buildings and Other Structures."

Are you familiar with this guidelines?

WITNESS TOOTLE: I'm familiar with them, yes.

MS. DES JARDINS: They're -- They're standard guidelines.

Are they incorporated in engineering -- in -- in building standards in California?

WITNESS TOOTLE: To my knowledge, yes.

MS. DES JARDINS: Okay. Can you read the section on the -- on 36 to 41 about the intent of the seismic provisions.

WITNESS TOOTLE: (Examining document.)

I've read it.

MS. DES JARDINS: So, this -- this paragraph defines a Maximum Considered Earthquake?

WITNESS TOOTLE: Is that a question or a statement?

MS. DES JARDINS: Yes. Does -- Does this paragraph define a Maximum Considered Earthquake?

WITNESS TOOTLE: It does.

MS. DES JARDINS: And how does it define the Maximum Considered Earthquake?

WITNESS TOOTLE: It's defined --

CO-HEARING OFFICER DODUC: Is there --
WITNESS TOOTLE: - as the --
CO-HEARING OFFICE DODUC: Hold on. We can all read.
WITNESS TOOTLE: Okay.
CO-HEARING OFFICE DODUC: What is the question you're getting to, Miss Des Jardins?
MS. DES JARDINS: I wanted to ask him how it defines the Maximum -- I'm laying a foundation for a question, but I -- I would like --
CO-HEARING OFFICER DODUC: Let's go to your question.
MS. DES JARDINS: So . . .
I -- I would like to lay the foundation, please.
CO-HEARING OFFICER DODUC: Why? We can see it. It's right there.
MS. DES JARDINS: So -- Because I have a series of questions based on this and I would --
CO-HEARING OFFICER DODUC: Okay.
MS. DES JARDINS: -- like it in the record.
CO-HEARING OFFICER DODUC: So ask -- ask your question.
MS. DES JARDINS: How does it define a Maximum Considered Earthquake?

CO-HEARING OFFICER DODUC: It's defined on Lines 38, 39, 40.

MS. DES JARDINS: Can you please tell me?

Does it define a Maximum Considered Earthquake as a 2 percent probability --

CO-HEARING OFFICER DODUC: Yes, it does.

MS. DES JARDINS: -- exceedance in 50 years?

I'd like --

MS. ANSLEY: Is -- Is she asking him if that's his understanding of the --

CO-HEARING OFFICE DODUC: Ah.

MS. ANSLEY: -- seismic provisions? Or is she asking him to read the page? Because I object to reading the page.

But he may be familiar with seismic provisions so you can confirm his understanding.

CO-HEARING OFFICER DODUC: What are you asking?

MS. DES JARDINS: This is incredibly important about whether these tunnels are going to fall apart in an earthquake or not.

Mr. Tootle, this is -- this is the design standard for above-ground buildings in California; is it not?

WITNESS TOOTLE: Yes, as they're defined in

the Code referenced.

MS. DES JARDINS: And this is buildings and structures -- above-ground structures in California are designed to the Maximum Earthquake -- to provide a low probability of collapse in such an earthquake; correct?

MR. JACKSON: Could the -- Could the questioner turn on her microphone?

MS. DES JARDINS: Oh, I'm sorry. Yes.

So buildings in California are designed to this Maximum Considered Earthquake standard to have a low probability of collapse in such an earthquake.

Is that your understanding?

WITNESS TOOTLE: That's my understanding.

MS. DES JARDINS: And the standard is 2 percent in 50 years; correct?

WITNESS TOOTLE: That is one of the criteria.

MS. DES JARDINS: To your knowledge, do these standards apply to below-ground structures such as the WaterFix Tunnels?

WITNESS TOOTLE: I -- I guess I'd have to do a more thorough reading of the Code to answer that question.

MS. DES JARDINS: I would like to go to Conceptual Engineering Report, Exhibit DWR-212.

And I'd like to go to . . .

(Exhibit displayed on screen.)
MS. DES JARDINS: Page 46, please.
This is the . . .
(Exhibit displayed on screen.)
MS. DES JARDINS: Can we zoom out a little?
(Exhibit displayed on screen.)
MS. DES JARDINS: These are the seismic hazards used for the design of the tunnels.
CO-HEARING OFFICER DODUC: Miss Ansley.
MS. ANSLEY: I object to her characterizing this document.
She can ask him if he's familiar with it and if he knows what these are.
CO-HEARING OFFICER DODUC: Let's do that.
MS. DES JARDINS: Is this a table of "Probabilistic Seismic Hazards for the tunnel -- Modified Pipeline/Tunnel Facilities"?
MS. ANSLEY: I -- I object again that she has not laid a foundation for this document.
We're looking now at an isolated Table 3-1. If he is aware of what this section of the document talks about, that's a different matter. But I don't believe there's a foundation laid for what section of the document we're in and what this table applies to and if he is familiar with this.

MS. DES JARDINS: Well, I -- I would like -- Under Manufactured Home Communities, it -- I should -- To the extent that we're going to -- the Board is going to rely on what's in these engineering reports for their ultimate decision, and in the Final EIR, I'd like to be able to ask some questions of the -- of the experts on what's in them.

I --

CO-HEARING OFFICE DODUC: Miss --

MS. DES JARDINS: -- could --

CO-HEARING OFFICER DODUC: Miss Des Jardins.

MS. DES JARDINS: Yeah.

CO-HEARING OFFICER DODUC: The objection is -- at least not yet, anyway -- to the line of questioning that you'll be pursuing.

The objection is that you have not established what this document is and whether the witness is familiar with this document, and specifically what this table is and whether he is familiar with this table.

That was the objection. It is sustained.

So let's go ahead and take the time to set that foundation.

MS. DES JARDINS: Do I need to go back? Let's go back up to Page 1.

(Exhibit displayed on screen.)

MS. DES JARDINS: And zoom out, please.
(Exhibit displayed on screen.)
MS. DES JARDINS: This is the Conceptual Engineering Report.
CO-HEARING OFFICER DODUC: Are you familiar with this --
MS. DES JARDINS: Are you familiar with this document?
CO-HEARING OFFICER DODUC: Yes.
WITNESS TOOTLE: Yes, I am.
MS. DES JARDINS: Okay. So let's go to Page -- In case this is in doubt, let's go to Page 45.
(Exhibit displayed on screen.)
MS. DES JARDINS: And this is Section 3.4.1.1. It discusses probable -- "Probabilistic Seismic Hazardous Analyses."
CO-HEARING OFFICER DODUC: Are you familiar with this section, Mr. Tootle.
WITNESS TOOTLE: Yes. It's been awhile since I've read it but I -- I have read it. I'm familiar with it.
MS. DES JARDINS: So what is a probabilistic seismic hazard analysis for a structure?
WITNESS TOOTLE: Well, a probabilistic seismic hazard analysis for anything, structure or site

improvements or whatever, is a -- an evaluation of the potential site acceleration, among other things, that a site could experience during a particular return period earthquake.

It considers -- A probabilistic analysis considers multiple earthquake fault hazards, and it considers multiple magnitude events that could occur along all those different faults, and it also considers that these earthquakes could occur at different locations along the faults.

And so it -- it's kind of a -- It's a statistical analysis of a large dataset that intends to take into consideration not just one specific magnitude or one specific distance to the -- to a project site, which are the two main input parameters that predict site acceleration, but multiple events happening and what the likelihood of any particular acceleration exceedance is at that site based on multiple potential seismic hazards.

MS. DES JARDINS: Can we go to the table on the next page, please.

(Exhibit displayed on screen.)

MS. DES JARDINS: So I'm referring you to Table 3-1.

And is this table of probabilistic seismic

hazards used in the analysis?

WITNESS TOOTLE: This is a table that appears to represent different peak ground accelerations for at least two different return periods --

MS. DES JARDINS: And --

WITNESS TOOTLE: -- for different locations along the project alignment.

MS. DES JARDINS: And you can read -- And so these are -- The return periods here are 500 years and a thousand years; correct?

WITNESS TOOTLE: That's what's stated on the table, correct.

MS. DES JARDINS: But the Maximum Considered Earthquake is about 2,500 years; correct? Under -- Under the ASCE standards?

WITNESS TOOTLE: That's one of the definitions of the Maximum Considered Earthquake.

MS. DES JARDINS: Yeah. So the once in a 2,500-year assertion, would these generally be stronger?

WITNESS TOOTLE: Yes. With -- Without exception that I can think of, it would be a higher level of acceleration.

MS. DES JARDINS: Okay. Can you read -- Let's -- Let's scroll down a little bit and read the

paragraph below it starting with "the preliminary probabilistic ground motions."

(Exhibit displayed on screen.)

WITNESS TOOTLE: (Examining document.)

MS. DES JARDINS: So, I just wanted -- Or let me know when you're done.

WITNESS TOOTLE: I'm sorry. Did you want me to read the entire paragraph --

MS. DES JARDINS: Yeah. Just --

WITNESS TOOTLE: -- or the entire thing?

MS. DES JARDINS: I wanted to ask you about the second sentence indicating (reading):

". . . ground motions should be confirmed and verified during preliminary and final design . . ."

It -- Aren't -- It -- I wanted to ask how this sentence relates to your recommendation about geotechnical borings and seismic analysis.

WITNESS TOOTLE: It affirms my opinion that --

CO-HEARING OFFICER DODUC: Hold on.

WITNESS TOOTLE: Oh, sorry.

CO-HEARING OFFICER DODUC: Miss Ansley.

MS. ANSLEY: I'm sorry.

Was that a question, a general question about how this relates to his --

MS. DES JARDINS: Recommendation.
MS. ANSLEY: -- opinion or is there a more specific conclusion that we're relating to here.
CO-HEARING OFFICER DODUC: Let's go with general for now.
MS. DES JARDINS: Yeah. So this says (reading):
". . . Ground motions should be confirmed and verified during preliminary and final design . . ."
Correct?
WITNESS TOOTLE: I -- I think that sentence affirms my opinion that additional subsurface characterization should be done in relation to, you know, preliminary and, obviously, final design.
MS. DES JARDINS: But -- But this -- This would be consistent with your rec -- your recommendation based on your experience that further subsurface exploration and better characterization of the -- the -- like the peak -- peak ground acceleration needs to be done?
WITNESS TOOTLE: Determining the peak ground acceleration is a key input that geotechnical engineering designers would use in evaluating seismic design criteria for any structure, including this one.

MS. DES JARDINS: And that would verify whether the proposed -- for example, the proposed tunnel lining design was strong enough for . . . for where it's proposed to be.

WITNESS TOOTLE: The anticipated peak ground acceleration would be a -- a key input parameter for determining the required strength of the tunnel, yes.

MS. DES JARDINS: Okay. Are you aware that an initial analysis of the WaterFix tunnel lining design showed that the joints could leak in a one-in-a-thousand-year event?

WITNESS TOOTLE: I don't have specific knowledge of that.

MS. DES JARDINS: I would like to ask you about that.

Can we go to Exhibit DDJ-141, please.

CO-HEARING OFFICER DODUC: Miss Ansley.

MS. ANSLEY: I'm sorry. He just said he has no knowledge of that.

CO-HEARING OFFICER DODUC: That does not preclude her from pulling up the document and asking him about it.

MS. ANSLEY: I guess we'll see.

CO-HEARING OFFICER DODUC: You have done it with other witnesses.

(Exhibit displayed on screen.)
MS. DES JARDINS: Zoom out a little. I'd like to show him to this.
(Exhibit displayed on screen.)
MS. DES JARDINS: So this is a 2010 document.
(Reading):
"Draft Report of the Initial Analysis & Optimization of the Pipeline/Tunnel Option."
Do you see that on the cover?
WITNESS TOOTLE: Yes.
CO-HEARING OFFICER DODUC: Are you familiar with this document?
WITNESS TOOTLE: I don't have a specific recollaction -- recollection of reviewing this document.
MS. DES JARDINS: Can we zoom out a little more.
(Exhibit displayed on screen.)
MS. DES JARDINS: Can you read down there where it says "DWR Internal" only?
WITNESS TOOTLE: Yes, I can see that.
MS. DES JARDINS: Would that have something to do with why you wouldn't have seen it?
WITNESS TOOTLE: That could be one of the

reasons.

MS. DES JARDINS: Thank you.

MS. ANSLEY: Objection: Calls for speculation.

MS. DES JARDINS: Can we --

CO-HEARING OFFICER DODUC: Yes, it did.

MS. DES JARDINS: -- go to .pdf Page 36, which is doc Page 4-12.

(Exhibit displayed on screen.)

CO-HEARING OFFICER DODUC: Miss Morris.

MS. MORRIS: I'd like to object on relevance.

This is -- The witness is unfamiliar with this document. It's a draft document. It says "internal for review purposes only," I believe.

And in addition to that, we don't know if it's been superseded. We don't know if this is the same tunnel alignment and whether or not it's changed.

So I believe that it lacks foundation and it's not relevant.

CO-HEARING OFFICER DODUC: Anyone want to take that on?

MS. MESERVE: Just to clarify, Miss Des Jardins:

Has this exhibit already been admitted and --

MS. DES JARDINS: Yes.

MS. MESERVE: -- accepted into evidence?
MS. DES JARDINS: Yes, it has, and there was testimony submitted on it in Part 1.
CO-HEARING OFFICER DODUC: Okay. For whatever it's worth, for whatever value there is, go ahead and ask your questions.
MS. DES JARDINS: So in -- Section 4.5.3 discusses preliminary seismic evaluation --
(Reading):
"Preliminary Evaluation of Tunnel Performance During Earthquake."
WITNESS TOOTLE: That's what is stated there, yes.
MS. DES JARDINS: And it says (reading):
"The seismic behavior of the tunnels was studied using closed-form solutions . . . was analyzed for axical -- axial and curvature and ovaling."
It states that?
WITNESS TOOTLE: That's my understanding of what it says.
MS. DES JARDINS: Yeah.
So is that a common initial analysis to do in a preliminary design, in your experience?

WITNESS TOOTLE: Yes.
MS. DES JARDINS: In fact, it's basically a standard?
WITNESS TOOTLE: It's common, I guess. I'd --
MS. DES JARDINS: Yeah. Okay.
WITNESS TOOTLE: -- have to have you define what you mean by "standard."
MS. DES JARDINS: Let's go down to the following page, because it discusses the results of the analysis.
Can you read the first two sentences of the very bottom.
WITNESS TOOTLE: (Examining document.)
I've read them.
MS. DES JARDINS: So, it indicates that the temporary de -- This analysis which indicated a (reading):
". . . Temporary de-stressing of segment joints could occur . . ."
And (reading):
". . . Resulting in a (sic) temporary" --
WITNESS TOOTLE: That's what it says.
MS. DES JARDINS: (Reading further):
-- "increase in the exfiltration."
WITNESS TOOTLE: That's a correct reading of

the words, yes.

MS. DES JARDINS: It -- Does that mean that the analysis showed that tunnel joints could leak in an earthquake?

CO-HEARING OFFICER DODUC: Miss Ansley.

MS. ANSLEY: Objection.

He's not familiar with this document. Asking what it means, I -- I think we need to put bounds on his answer in terms of the -- the weight of his answer and that he would only be speculating as to what the authors of this study, that he's not aware of, meant by the state.

MS. DES JARDINS: I --

CO-HEARING OFFICER DODUC: Yes. This will all go to weight.

MS. DES JARDINS: I -- I'm asking about common engineering understanding of the words "destressing of segment joints" and "temporary increase" and "exfiltration."

MS. ANSLEY: I'd also like to add: Lacks foundation.

He's already testified that he is-- he is not familiar with large-bore deep tunnels of the type being constructed under the California WaterFix.

CO-HEARING OFFICER DODUC: Mr. Tootle, to what

extent can you be of help?

WITNESS TOOTLE: I guess I can give you my interpretation of what's written on -- in this paragraph.

CO-HEARING OFFICER DODUC: And, Miss Des Jardins, are you seeking his --

MS. DES JARDINS: That's what I would like to know, is what his interpretation is of what's written in this paragraph, please.

CO-HEARING OFFICER DODUC: Go for it, Mr. Tootle.

WITNESS TOOTLE: Well --

MS. ANSLEY: And same objections for the record.

CO-HEARING OFFICER DODUC: Yes. Same thing: It will all go to weight.

WITNESS TOOTLE: The terms "temporary increase" and "exfiltration," I would interpret that to mean that, due to the seismic stressing on the joints, more water would leave the pipeline. That would be my interpretation of what "exfiltration" means as opposed to "infiltration."

MS. DES JARDINS: Yes.

WITNESS TOOTLE: And that that increase would be due to the seismic events of the destressing of the

joints.

MS. DES JARDINS: So destressing of the joints, if there's a gasket between the two joints and they're destressed, does that affect how well the -- the gasket works and how well the gasket holds the water in to the tunnels?

WITNESS TOOTLE: I think the -- the change in stress around the gaskets would impact the functionality of the gaskets.

MS. DES JARDINS: If you were designing -- If -- If you were working on the Project and you found this kind of issue, would you be looking at -- would you want to be doing further analyses?

WITNESS TOOTLE: I guess it would depend on the -- the impact of what the anticipated increase in exfiltration was.

MS. DES JARDINS: And -- And you can't tell that without knowing more details about the analysis.

WITNESS TOOTLE: Yeah. I would think you would have to do the design and analysis before making that determination.

MS. DES JARDINS: Okay. I'd like to go back to Exhibit SWRCB-102, please.

(Exhibit displayed on screen.)

MS. DES JARDINS: And I'd like to go to

Page 36.

(Exhibit displayed on screen.)

MS. DES JARDINS: This is Page 9-35.

And this refers to one of the standards as the (reading):

"State Water Project - Seismic Loading Criteria Report."

WITNESS TOOTLE: I believe that's what it says.

MS. DES JARDINS: And it says it (reading):

"Provides . . . design guidelines . . . selecting appropriate seismic loading criteria . . ."

WITNESS TOOTLE: Yes.

MS. DES JARDINS: So, I'd like to pull up Exhibit DDJ-143, which is the Seismic Lining Criteria Report.

(Exhibit displayed on screen.)

MS. DES JARDINS: Can you see that it says (reading):

"State Water Project Seismic Loading Criteria Report."

WITNESS TOOTLE: I can.

MS. DES JARDINS: Okay. I'd like to go to Page 3.

(Exhibit displayed on screen.)

CO-HEARING OFFICER DODUC: Are you familiar with this report?

WITNESS TOOTLE: I don't recall seeing this report, no.

MS. DES JARDINS: I did want to ask you . . .

Let's -- I'm sorry. I want .pdf Page 3. Let's scroll back. That's Document Page 12.

We need to scroll back up.

(Exhibit displayed on screen.)

MS. DES JARDINS: The Foreward. It should say "Forward."

(Exhibit displayed on screen.)

MS. DES JARDINS: Keep -- Keep going back up, please.

Keep going back up.

MR. BAKER: This is Page 3.

MS. DES JARDINS: Keep -- Keep going back up, please. It says "Forward."

(Exhibit displayed on screen.)

MS. DES JARDINS: Up.

(Exhibit displayed on screen.)

MS. DES JARDINS: Up.

(Exhibit displayed on screen.)

MS. DES JARDINS: Up.

(Exhibit displayed on screen.)
MS. DES JARDINS: Yeah, I think that's it.
I'm sorry. I'm having trouble finding it.
(Exhibit displayed on screen.)
MS. DES JARDINS: There it is.
Can you please read the paragraph that says, "These guidelines."
WITNESS TOOTLE: (Examining document.)
I've read it.
MS. DES JARDINS: So it says, the (reading):
". . . Guidelines are a suggested starting point."
WITNESS TOOTLE: That's a true statement.
MS. DES JARDINS: If guidelines are a starting point in -- in the . . .
Are they, like, specific objective criteria?
WITNESS TOOTLE: I think they're typically interpreted as being a minimum requirement.
MS. DES JARDINS: Okay. I'd like to go to . . . doc -- document Page 18, please.
(Exhibit displayed on screen.)
MS. DES JARDINS: And scroll down to the bottom, please.
(Exhibit displayed on screen.)
MS. DES JARDINS: Can you read suggestion

3.2.3 on tunnels?

(Timer rings.)

WITNESS TOOTLE: (Examining document.)

CO-HEARING OFFICER DODUC: And as he's reading that, how much more do you have?

MS. DES JARDINS: Probably -- I might have another 15 minutes, if you would have time, maybe 10.

CO-HEARING OFFICER DODUC: Let's give her another 10.

MS. DES JARDINS: Okay. So, this indicates that (reading):

". . . Seismic loading criteria that were used in the design of existing SWP tunnels . . . have not been found."

CO-HEARING OFFICER DODUC: Miss Ansley?

MS. ANSLEY: Yeah. I'm going to object if she's going to keep reading sentences from random documents into the record, then -- and then moving on.

He has no familiarity with this document. We haven't put this document --

CO-HEARING OFFICER DODUC: Miss Ansley, in that case, there's very little value; is there?

Let's just let her finish --

MS. ANSLEY: There is very little value to reading isolated sentences in the record because then

they hang alone without any ties to anything else.

And these documents -- These documents could be admitted with proper authentication into the record.

And if she wants to refer to documents --

CO-HEARING OFFICER DODUC: They are.

MS. DES JARDINS: These were --

MS. ANSLEY: -- and get them entered in the record, then she can cite them without asking the witness to verify what the page says.

MS. DES JARDINS: I -- These were introduced with authentication in Part 1 but the person who testified about it was not an Engineer.

This is the Seismic Loading Criteria Report for the Department of Water Resources which, arguably, governs the tunnel design. And it's very important for the assertion that these criteria somehow -- somehow prescribe design criteria.

MS. ANSLEY: If these documents are in the record, she may cite what they say, but it's -- it is pointless to have an Engineer read the sentences into the record.

MS. DES JARDINS: I'm trying to ask him about it, and I keep getting interrupted.

CO-HEARING OFFICER DODUC: Just let her finish, Miss Ansley.

MS. DES JARDINS: Yeah.

So this indicates that (reading):

". . . seismic loading criteria that were used in the design of existing . . . tunnels . . . have not been found."

CO-HEARING OFFICER DODUC: Miss Des Jardins, perhaps we might try this.

MS. DES JARDINS: Yeah.

CO-HEARING OFFICER DODUC: I understand your desire to have Mr. Tootle --

MS. DES JARDINS: Yeah.

CO-HEARING OFFICER DODUC: -- an Engineer, whom you would like to verify these standards and statements in this document; is that correct?

MS. DES JARDINS: Yes.

CO-HEARING OFFICER DODUC: Then I would suggest, rather than reading it, because what Miss Ansley is saying is that these documents are in the record, so there is no need to read everything back into the record.

If you might just ask Mr. Tootle to read to himself the statements that you are focusing on and ask him whether he agrees or disagrees or has any opinion about those statements.

MS. DES JARDINS: I was trying to frame a

question and I keep getting interrupted.

I just wanted to ask: Does this -- Does this specify any seismic loading criteria for tunnels?

MS. ANSLEY: He can answer that -- He can -- He can answer that if he's familiar with this document and he knows.

CO-HEARING OFFICER DODUC: That's what he's trying to do.

Mr. Tootle.

WITNESS TOOTLE: I -- I'm not sure if the context of the question is the document as a whole or the --

MS. DES JARDINS: This section --

WITNESS TOOTLE: -- for the purpose of that section --

MS. DES JARDINS: Yeah.

WITNESS TOOTLE: -- specifically?

My interpretation of the first sentence of Section 3.2.3 is that previous design criteria for the SWP tunnels could not be found.

I assume those documents are lost or unavailable to the author of this document.

MS. DES JARDINS: Okay.

MS. ANSLEY: And I'll lodge an objection to the witness interpreting an isolate section of this

document without understanding the document as a whole.

And he doesn't know this document, I think he already testified. So I do object to a question asking if a section -- or if a document contains something.

MS. DES JARDINS: I --

CO-HEARING OFFICER DODUC: It will go -- It will all go to the weight.

MS. DES JARDINS: I would like to be able to ask this line of questioning without repetitive objections.

This is a very critical thing, and I can do it if I can actually ask the questions.

I'd like to go to Section --

CO-HEARING OFFICER DODUC: Miss Des Jardins, you can ask, and then you may object at the end.

MS. DES JARDINS: Okay. Can we go to 3.2.2, please, which is the previous page.

(Exhibit displayed on screen.)

MS. DES JARDINS: Let's -- Let's go one page back, please, in this document, Page 16.

(Exhibit displayed on screen.)

MS. DES JARDINS: Can you read what it says with respect to pipelines.

WITNESS TOOTLE: (Examining document.)

I've read it.

MS. DES JARDINS: Does this indicate that . . .

Does this indicate that there's standards -- DWR has standards for buried pipelines, including recently designed pipelines?

WITNESS TOOTLE: I think this section says that (reading):

". . . Little documentation exists regarding . . . seismic loading criteria used for (sic) the design of existing pipelines . . ."

MS. DES JARDINS: Okay. That's . . .

And I'd like to go to Exhibit EBMUD-178, please.

(Exhibit displayed on screen.)

MS. DES JARDINS: And this is the East Bay MUD's Delta Tunnel Study Conceptual Design you referred to earlier.

I just wanted to go to Page 14, which describes East Bay MUD's proposed design.

(Exhibit displayed on screen.)

MS. DES JARDINS: Can you read the paragraph "The base design case."

WITNESS TOOTLE: (Examining document.)

I've read the paragraph starting "The base

design case."

MS. DES JARDINS: So East Bay MUD is discussing a 19-foot tunnel with precast concrete segments; correct?

WITNESS TOOTLE: That's correct.

MS. DES JARDINS: But they'll have steel pipes inside the tunnel?

WITNESS TOOTLE: That's correct.

MS. DES JARDINS: And the space between pipes and the lining will be filled with cellular concrete?

WITNESS TOOTLE: That's what the paragraph indicates.

MS. DES JARDINS: Would this be a stronger design than having the precast concrete segments by themselves?

WITNESS TOOTLE: I guess, my opinion, it would be more rigid. "Stronger" could mean a couple different things.

So if you could define that a little more detail for me, it might be helpful.

MS. DES JARDINS: Would this be less subject to leakage if it was stressed?

WITNESS TOOTLE: Leakage into the steel pipes?

MS. DES JARDINS: Leakage -- Leakage from the tunnel to the surrounding soil if it was stressed in an

earthquake.

WITNESS TOOTLE: In this configuration, the water in the -- in the pipes would not just have to exfiltrate through the lining of the tunnel or through the lining of the pipeline, which would be steel.

It would also have to exfiltrate through cellular concrete and then through the annular space of the segmented column supports of the -- of the primary tunnel.

So that would indicate a more difficult route for exfiltration.

MS. DES JARDINS: Well, it would be generally less likely to exfiltrate than precast concrete segments by themselves.

WITNESS TOOTLE: That would be likely, yes.

MS. DES JARDINS: Okay. Thank you.

I think that concludes my questions.

Oh, actually, no. I had one more set of questions.

Are you aware of any --

CO-HEARING OFFICER DODUC: I'm sorry. One set? What does --

MS. DES JARDINS: Very short.

CO-HEARING OFFICE DODUC: -- that mean?

MS. DES JARDINS: Are you aware of --

CO-HEARING OFFICER DODUC: What does that mean? Five minutes?

MS. DES JARDINS: Yeah.

Are you aware of any situation where public safety was ever endangered by construction or operation of the State Water Project?

WITNESS TOOTLE: I -- I couldn't cite a specific incidence.

MS. DES JARDINS: Okay. Thank you.

That concludes my questions.

CO-HEARING OFFICER DODUC: How are you doing, Candace?

THE REPORTER: Fine.

(Laughter.)

CO-HEARING OFFICER DODUC: No reprieve for anybody since the court reporter is ready to move on.

MS. MESERVE: I wish she was weaker.

(Laughter.)

CO-HEARING OFFICER DODUC: While Miss Womack is setting up, Miss Ansley, do you wish to voice any of the objections that I stopped you from voicing earlier?

Actually, I should say repeating any objections that I stopped you from interrupting Miss Des Jardins with earlier.

MS. ANSLEY: I guess that I would have a

standing objection to the witness merely confirming that the sentence is what she reads.

MS. WOMACK: Okay. Suzanne Womack, Clifton Court L.P.

And I just have questions for Mr. Tootle.

CROSS-EXAMINATION BY

MS. WOMACK: Would the construction of the twin tunnels, as designed so far, maintain the Deltee -- Delta levee system, in your opinion?

WITNESS TOOTLE: Maybe you can define what you mean by "maintain the levee system." I'm not -- I'm not --

MS. WOMACK: Maintain. Keep it as it is. I guess maintain what is -- what we have today.

Thank you. That's a good clarification.

WITNESS TOOTLE: Well, there are a few locations where -- at the intakes, for example -- where they're going to essentially breach the existing levees to allow water to come into the system, so those locations, the existing levees, won't be maintained.

MS. WOMACK: You're co -- You're right. But, otherwise -- Okay. I'll move on.

This soil removal is my next area.

Soil or spoils. Sometimes it's soil and sometimes it's spoils.

Do you know: Will the dirt removed from the construction of the California WaterFix be the rich alluvial soils of the Delta farmland?

I -- I know you -- Do -- Do you know? I . . .

WITNESS TOOTLE: I don't have any expertise in farming --

MS. WOMACK: Okay. Sorry.

WITNESS TOOTLE: -- and how soils impact farming.

Some of the construction will go through the -- the at -- at-surface and near-surface soils.

MS. WOMACK: Um-hmm.

WITNESS TOOTLE: The tunnels themselves will be below the surface soils that are farmed.

MS. WOMACK: Okay. So, if -- So if the spoils or -- were barged to a place like Byron Tract, would a farmer be able to grow crops on this soil?

WITNESS TOOTLE: The -- The ability to farm in the location of the spoils storage --

MS. WOMACK: Yes.

WITNESS TOOTLE: -- would be either eliminated or significantly impaired.

MS. WOMACK: Okay. And would there -- Say, it went to Byron Tract, which is one of the places, which is near Discovery Bay.

Would there be a smell from them; do we know? Would there be a smell from spoils?

WITNESS TOOTLE: If there's organic material amongst the -- the spoils material, then it oftentimes gives off an odor, yes.

MS. WOMACK: Okay. Thank you.

Do you know if the spoils could be left temporarily to kind of dry out for a year or two and then moved? Is that possible? Is that something . . .

WITNESS TOOTLE: It's my understanding that that's the intent of the Project, to temporarily store the spoils, dry them out and reuse them for other various purposes.

MS. WOMACK: Okay. Have you done something like that? Is that something -- Is that something that's done? I mean, this is a huge amount of soil.

WITNESS TOOTLE: I don't -- I don't have specific experience doing this with --

MS. WOMACK: Okay.

WITNESS TOOTLE: -- this quantity of soil.

MS. WOMACK: Um-hmm.

WITNESS TOOTLE: But I was involved in analyzing and helping reuse some of the dredged spoils that RD 800 produced at Byron Tract as part of their maintenance obligations as an RD.

MS. WOMACK: Okay. And were those as deep?

WITNESS TOOTLE: No. They were -- They're dredged spoils, so they came out of the channels themselves --

MS. WOMACK: Oh, okay.

WITNESS TOOTLE: -- and so those -- I -- I don't recall the exact depth of the dredging.

MS. WOMACK: So a different type of material, though, than the deep tunnels.

WITNESS TOOTLE: It's different than the -- the material that would be removed from the tunnels, although this Project does envision dredge spoils being generated as part of the Project.

MS. WOMACK: Yes. Yes. I've seen that in many places. Thank you.

Let's see.

Oh. And would the spoils -- You talk about spreading out the soils. One foot -- At one foot, there would be 12,140 acres for the ground -- for the -- if it was spread out. And you say you would do that so that it would dry, because a foot of that is pretty significant.

Would the groundwater be able to recharge underneath that acreage?

WITNESS TOOTLE: I think I previously

testified to the fact that there are two likely scenarios during the drying process.

And so if the storage areas are unlined, then the water that is in the spoils will likely infiltrate into the ground.

If the storage areas are lined, then the liner would prevent the infiltration of the water that --

MS. WOMACK: Okay. I'm sorry. I heard the liner but I wasn't sure that junk, when it dries, would be impermeable.

Okay. Thank you.

You talked about -- The next part is about the groundwater.

You talked about a decant. What is a decant? The . . .

WITNESS TOOTLE: I intended to use that term to describe the water that will be coming out of the spoils.

And, you know, oftentimes, that's allowed to sit and let the sediment settle and then is discharged from the location.

MS. WOMACK: Okay. So is that good or bad water, or it's just decant water that separates? I don't know. I'm not . . .

WITNESS TOOTLE: Well, maybe you could define

"good" and "bad."

MS. WOMACK: Is "decant" a term that's good or it's just -- I -- I'm not -- I just don't know.

WITNESS TOOTLE: I guess I was trying to use the term to describe the process --

MS. WOMACK: Okay.

WITNESS TOOTLE: -- that was taking place, not the quality of the water.

MS. WOMACK: Okay.

WITNESS TOOTLE: But it could be -- it could be clean from a turbidity standpoint, or it could be sediment-ladened and, you know, highly turbid.

MS. WOMACK: Okay. So . . . So . . .

Is -- Has the California WaterFix allowed time for this process -- I'm sorry.

You -- Have you done decanting before with your -- with your experience? Do you have experience in decanting, I should ask first?

WITNESS TOOTLE: The previous project I referenced, that was a Reclamation District 800 project.

MS. WOMACK: Discovery Bay?

WITNESS TOOTLE: The process involved decanting of the water, yes.

MS. WOMACK: Okay. So you're familiar.

Is that some -- Has -- Had -- Do you know if the California WaterFix has allowed for this process to happen? Is this built into the process? Or is this something that's going to be . . .

WITNESS TOOTLE: It was difficult to ascertain that.

MS. WOMACK: Okay.

WITNESS TOOTLE: You know, you mentioned the 28,000 acres.

MS. WOMACK: Yes. That's a lot.

WITNESS TOOTLE: It's a large area, and sometimes it's hard for people to grasp how big that is.

MS. WOMACK: Yes.

WITNESS TOOTLE: And so I think this speaks to your question in that if -- To give some context, since we're sitting in Sacramento, most people are probably familiar with the Natomas Basin. It's just north of us here. It's about 7,200 acres in size. So if you were to spread everything out one foot to facilitate drying, you would almost four Natomas Basin-size areas to spread out all that area.

The timing is an issue, though. If -- If you don't want to take up that much space, you can -- you can pile it up thicker, but then it takes longer to

dry.

And if these materials are continuously coming out of the Project and you have very limited area, they can't sit there for time.

So it is a -- in my mind, an open question that isn't fully resolved.

MS. WOMACK: Thank you.

I -- Yeah, I -- I have a 600-acre farm, not to go on, but -- so I understand 600, but I don't understand -- Yeah, this is huge.

So, have you -- Do you -- Do you think the California WaterFix has allowed the budget for this process, it seems lengthy, or have they planned for that?

WITNESS TOOTLE: A financial budget or a budget --

MS. WOMACK: The budget just for decanting and the time and the movement of all this. Is that part of the budget, or do you -- do you know?

WITNESS TOOTLE: Well, it's hard to tell if the time is -- is anticipated in the schedule.

MS. WOMACK: Um-hmm.

WITNESS TOOTLE: Like I said, it depends greatly on how thick the deposits are -- are spread.

It also depends on the weather. It's very

difficult to dry out saturated soil spoils when it's raining. And -- And if it's not raining, if there's not much wind, or the humidity is very high --

MS. WOMACK: Right.

WITNESS TOOTLE: -- it doesn't dry as fast.

So, again, particularly if this project continue -- construction continues into the wintertime, it's going to be difficult to dry these out sufficiently.

And so whether that's been --

MS. WOMACK: Has that been --

WITNESS TOOTLE: -- interpreted into their schedule, I can't speak to that.

MS. WOMACK: Okay. Okay. That's another thing to look out for, though, another expense maybe. I don't know.

Okay. Moving on to the levees.

Do you agree with Mr. Bednarski's -- it's DWR-57 that you reference -- that there is a possibility of levee damage as a result of the proposed tunnel activities.

Do you agree with that?

WITNESS TOOTLE: I think there is that potential, yes.

MS. WOMACK: Okay. Do you believe any injury

as a result of the proposed tunneling would be mitigated by the California WaterFix potential measures?

Because they talk about potential measures. That . . . Would it be mitigated?

WITNESS TOOTLE: I . . . I think there's a good potential that mitigation measures that are spelled out right now are too vague to make a conclusive determination that it will not occur.

MS. WOMACK: Okay. Thank you. Thank you.

Let's see. Yeah.

So my next question are: What are the measures? But, yeah, you -- you're not aware of specific mitigation perhaps.

Okay. So, part of that is, they talk about in the California WaterFix, Mr. Bednarski's -- you reference it -- about an initial field reconnaissance of levees would be necessary for California WaterFix to determine that you could mitigate injury from the levee damage.

Are -- In your view, what sort of levee reconnaissance would you do to know about the mitigation?

Does that make sense?

How would you look at the levees to know what

you would have to do to mitigate injury?

WITNESS TOOTLE: It was unclear to me in reading his testimony how he would determine whether or not injury would result.

MS. WOMACK: Okay. Would you have to -- You -- You've done levees. Would you have to go on a levee and inspect it to kind of have an idea with each levee?

WITNESS TOOTLE: That would be a logical first step, yes.

MS. WOMACK: Yeah. Okay.

And would -- Let's say -- So, you'd go on the levees and you'd inspect them to see where they were.

And has -- Well -- And then you said also -- I was very fascinated with Mr. Jackson.

You talked about that it's not just the levee right in front but the whole -- If -- If there was a break and the levee -- the island flooded, then that could harm another levee over here (indicating) or over here (indicating).

Have they looked at all the levees? Do you know if they've -- what levees they've looked at? Have -- And -- And how they've looked at them?

WITNESS TOOTLE: Yeah. I don't have specific knowledge on what levees they've looked at or what

methodology was used.

But the point I was making earlier is that an -- an isolated failure in the wrong place on this Project doesn't just impact that isolated area, which for most projects, big or small, tunnel or non-tunnel, it is pretty common that an isolated incident impacts an isolated area.

But with this particular project, if you have an isolated failure of a levee, and you have this cascading failure of other levees, you know, that -- that isolated failure could impact a large number of people. It could impact water users in Los Angeles with the quality of water --

MS. WOMACK: Well, definitely with salinity if salinity came in.

Yeah. I just -- But you didn't find anything that would tell how they looked at these levees carefully to be able to know how they could mitigate.

WITNESS TOOTLE: It wasn't clear to me --

MS. WOMACK: Okay.

WITNESS TOOTLE: -- how that determination was made.

MS. WOMACK: Thank you. Because you -- I appreciate all you've done. You are an expert.

Okay. The last question -- Ooh, I'm going to

be early.

You are -- The -- The tunnel experts.

So do you know of any private firms that have successfully completed 35-plus-mile-long 40-foot diameter twin tunnels buried 140 to 200 feet underground in the Delta?

WITNESS TOOTLE: I cannot cite any specific company.

MS. WOMACK: No firms that you've -- Yeah.

Has DWR or -- I could -- I could make this two parts -- or the Bureau of Reclamation ever built these types of tunnels in the Delta?

WITNESS TOOTLE: Not to my knowledge.

MS. WOMACK: Thank you so much.

CO-HEARING OFFICER DODUC: Thank you, Miss Womack. I mean that sincerely.

Miss Meserve, Mr. Ferguson, Mr. Keeling, do you wish to give your witnesses a break before moving to direct (sic)?

MR. KEELING: I think that would be an excellent idea.

CO-HEARING OFFICER DODUC: Let's do that.

And we will return at 3 o'clock.

(Recess taken at 2:45 p.m.)

(Proceedings resumed at 3:00 p.m.:)

CO-HEARING OFFICER DODUC: All right. It's 3 o'clock.

Let's get back to business before we do further disclosures up here.

All right. Direct (sic), please. We'll -- I'll let you guys work among yourselves in terms of who goes first.

MR. FERGUSON: Okay. I will start with Dr. Mehl.

REDIRECT EXAMINATION BY

MR. FERGUSON: Dr. Mehl, yesterday, Miss Ansley asked you whether, with implementation of mitigation measure GW-1, DWR would be monitoring groundwater conditions for a total of 18 years.

Can you please explain your understanding of how Miss Ansley got to 18 years and whether this changes your opinion about the duration of the proposed monitoring and mitigation measure GW-1.

WITNESS MEHL: Yeah. I believe Miss -- Miss Ansley was referring to the -- the estimated 13 years of construction during which at that time there will be monitoring taking place, and then the additional five years of monitoring after commencement of -- of operations.

This -- This doesn't change my opinion because I -- I was focused on the -- on the operations side of it, so those -- those five years after operations, what my analysis was -- was looking at is how stream leakages would be affected during operations.

It could indeed be affected by construction as well, but that's not what I was looking at. I was looking at the -- the operations part of that.

And, so, regarding -- You know, there's operations and there's changes in stream flows that will happen during operations. That's also going to be influenced by -- There's other variables I mentioned yesterday with California hydrology, and the five years of monitoring during that period isn't long enough to -- to get a solid understanding of that variability.

MR. FERGUSON: Thank you.

Additionally, Miss Ansley asked you a serious of questions about the groundwater model you used to prepare Figure 1 in your testimony.

Do you recall those questions?

WITNESS MEHL: Yes, I do.

MR. FERGUSON: Can you please confirm which model alternative you used to produce Figure 1 in your testimony.

WITNESS MEHL: Yeah. It was as -- It was

corrected in the testimony and in the figures to Alt 4.

MR. FERGUSON: Thank you.

How did you obtain this model alternative?

WITNESS MEHL: I looked back through the -- the e-mails archives. It was dated from August of 2016. It was a -- a direct request to DWR.

MR. FERGUSON: Thank you.

Miss Ansley asked you whether you understand that Alt 4 -- excuse me -- Alternative 4 does not model physical diversions at the proposed North Delta diversions.

Do you recall these questions.

WITNESS MEHL: Yes, I do.

MR. FERGUSON: Can you please explain how the CVHM model you used models Sacramento River flows into the Delta.

WITNESS MEHL: Sure. The -- So, I'm looking at the groundwater models, the CVHM model. And it's actually -- It's driven from CalSim II outputs.

So those various scenarios that -- that we've heard throughout the day, the H3 and this and that, those -- those outputs from those CalSim runs are used as inputs to what's called the -- the Streamflow-Routing Package, SFR Package, in the CVHM model.

So there's basically a streamflow network that sits on top of the groundwater model. And that is being -- Data inputs from that are outputs from the CalSim model. So . . .

The North Delta diversions aren't actually -- In -- In that version of the Central Valley hydrologic model, CVHM model, the North Delta diversions are not explicitly represented. Water's being taken out of the Sacramento River at that point.

But that -- that doesn't change the -- the key point of my analysis, which is based on the -- the streamflows themselves are going to be changing. And the Sacramento River is in direct connection with the adjacent aquifers.

I mean, we know this. It's cited in the -- in the EIR.

So, to the -- to the degree that the streamflows are changing in both the Sacramento River and in the American River due to California WaterFix operations, there's a connection to the adjacent aquifers. They will respond to those changes.

That -- That is not a question. That's just groundwater mechanics; all right?

The question is, how much will they respond? That's still the -- the open question right now.

MR. FERGUSON: Does the fact that the CVHM model does not physically remove water from the Sacramento River at the proposed locations of the North Delta diversions change your opinions that were based on this modeling analysis?

WITNESS MEHL: No. I -- I was using those -- those model results to look at what are -- you know, what could be the potential changes and streamflows -- and stream leakages that are reflected by those streamflows, yeah.

Again, those models do have this time series of -- of different flow regimes in them from these various CalSim runs in there. So that is in those models.

So, when I was using these two, I was using them in that comparative way that everybody likes to do here -- right? -- compare the Alt 4 to the -- to the No-Action; okay?

So, in these models, they have the -- you know, the variability of California hydrology in there. They've got these variability. And all the stream aquifer interactions are also represented in there.

And so the -- the overall conclusion, using them in this comparative way, is just showing that there can be changes in the stream leakage in -- in the

system. And in -- in ways that I think I demonstrated yesterday that five years of monitoring might not capture that full range of variability. We saw that in in those results.

That doesn't change my conclusions.

MR. FERGUSON: Thank you.

That concludes my questions.

CO-HEARING OFFICER DODUC: Next, please.

MS. MESERVE: I just have a couple of questions to clarify the record with respect to a couple of Mr. Lambie's exhibits.

If we could please put up SJC-244 --

REDIRECT EXAMINATION BY

MS. MESERVE: -- which -- Mr. Lambie, to get started as that comes up.

(Exhibit displayed on screen.)

MS. MESERVE: This is the table you created to show the number of days that the DCC was open and closed; correct?

WITNESS LAMBIE: Correct.

MS. MESERVE: And for the clarity of the record, could you please describe what changes to this table would be necessary to correct the error that was identified earlier today?

WITNESS LAMBIE: I think it's -- It's easily

corrected, and the correction could be seen as -- in the middle bottom of the table.

It says, "Average percent open by operating period." The number next to it is the annual percent open and it shows, rounding off, 40 percent.

The correct answer is 60 percent. So it's open 60.2 percent of the time when you invert the numbers.

That's the easiest way to explain or -- yeah -- what the revision would look like.

To correct the calculations, one has to do it by operating period because the operating periods are of different lengths. But, in sum total, the year is 365 days long, and 60 percent of it, it's open.

MS. MESERVE: And, then, if we could please look at SJC-248.

(Exhibit displayed on screen.)

MS. MESERVE: And this is the calculations you did for the reduction and recharge to the Eastern San Joaquin Subbasin as -- Right?

WITNESS LAMBIE: That's correct.

MS. MESERVE: And how would that one error with respect to the DCC open and closed days be corrected in -- in this table?

WITNESS LAMBIE: Well, it -- it stems from the

mathematics in the table. The . . .

Each of the months has a -- a line titled "Mokelumne plus DCC diversions." You can see it there four lines there below the word "February."

Embedded in that calculation of how much water would be diverted according to the CalSim output, I then overprinted the percentage of time that the DCC has historically been open under those flow conditions, and so that gets applied.

So that's where the correction will -- will turn out.

MS. MESERVE: And then, just going back to your written testimony, which is SJC-223, to Page 23 of that is where you discuss the outcome of your calculations for the rejections and recharge to the Eastern San Joaquin Groundwater Subbasin; correct?

(Exhibit displayed on screen.)

MS. MESERVE: And that's on Line 8.

WITNESS LAMBIE: Yes.

It describes that the proposed new diversions would reduce the groundwater recharge by at least 300 acre-feet per year.

MS. MESERVE: And since your testimony in cross-examination this morning, have you had a chance to look at the difference that the use of the correct

number of days open and closed of the DCC would have on your calculation?

WITNESS LAMBIE: Yes, I have.

But I'd first like to say there's nothing, you know, wrong with that testimony. It would be at least 300 acre-feet per year.

MS. MESERVE: That was my next question.

So, reading Line 8, it says that at least 300 acre-feet per year.

And is that still your opinion?

WITNESS LAMBIE: Yes.

MS. MESERVE: And when correcting the number of days open and closed, what number in acre-feet of reduction and recharge did you get for the Eastern San Joaquin Subbasin?

WITNESS LAMBIE: It turns out it's 790 acre-feet per year. That's a function of it being open in the dry season, which is much longer, and -- and most of the water diverts them.

It removed some of the confusion in my mind as I've been doing this in November, going, well, it's open when they say it's going to be closed and it's closed it's going to be open. You'd have thought I'd realized I had it upside down.

But, as it turns out, because it's open

throughout the dry period of the year, and that's when a lot of water is diverted through the Delta intakes, the relative harm, if you will, or deprivation of the Eastern San Joaquin Groundwater Subbasin is even greater than the 60-40 percent open in terms of number of days.

So it has a -- it has a greater impact. It's greater than 300 acre feet per year.

MS. MESERVE: And looking at your testimony still on Page 23, Line 21.

(Exhibit displayed on screen.)

MS. MESERVE: It states that there would be -- it would equate to the perpetual removal of approximately 805 gallons per minute.

According to your corrected calculation, what would that number be?

WITNESS LAMBIE: That would be approximately 490 gallons per minute running continuously, chronically.

I mean, it's -- it's a statistically probabilistic number so, of course, it's time varying. But the net effect really, reliably, is that it would be as though you were extracting 490 gallons per minute for the -- I don't know how long this Project intends to operate.

MS. MESERVE: And just to conclude: Does the inversion of the days open versus closed in the DCC for each operating period affect any of the other conclusions in your testimony?

WITNESS LAMBIE: No.

MS. MESERVE: And does it affect any of the other exhibits that were submitted with your testimony?

WITNESS LAMBIE: Not other than the ones you've pointed out. I think all the revisions would flow in SJC-244 where the graphics of the data are shown as well.

MS. MESERVE: Thank you.

CO-HEARING OFFICER DODUC: Miss Ansley.

MS. ANSLEY: And we are going to move to strike this, but I'm happy to let them finish their redirect, as long as that's a placeholder.

CO-HEARING OFFICER DODUC: Let's do that.

MR. KEELING: Hi. Tom Keeling for San Joaquin County Protestants.

I have a couple of redirect for Mr. Tootle.

REDIRECT EXAMINATION BY

MR. KEELING: Mr. Tootle, do you recall, both in the form of objections and cross-examination, being challenged with respect to your qualifications to give the type of testimony you gave?

WITNESS TOOTLE: I do recall, yes.

MR. KEELING: Is it fair to say that your testimony is based, on the most general level, on your education and experience as a Geotechnical Engineer?

WITNESS TOOTLE: Yes. I would say that's the primary basis for the testimony that I provided.

MR. KEELING: Well, I'm very -- Could you enunciate very clearly where it is you received your Master's in Science and geotechnical engineering.

WITNESS TOOTLE: At the University of California at Berkeley.

(Laughter.)

MR. KEELING: I'm sorry. I -- I didn't catch that.

(Laughter.)

WITNESS TOOTLE: The University of California at Berkeley.

MR. KEELING: Thank you.

And -- And you also based your testimony on your 20-plus years of experience as a Geotechnical Engineer working in and around the Delta; is that correct?

WITNESS TOOTLE: That's correct.

MR. KEELING: Could you provide a brief overview of that experience for the Hearing Officers.

WITNESS TOOTLE: I'd be happy to.

So, as I said, I've practiced in California for over 20 years and much of that across the state, but in particular in the Delta.

And as it relates to large projects and small projects, there's a -- currently a project underway that I'm a principal in charge of that includes moving 20 million cubic yards of earth, bridges and levee improvements up and down the Central Valley, mainly along the San Joaquin River and some along the Sacramento River Reaches as well.

You know, there was a question earlier that I -- about my tunnel experience, which I interpreted to be specific to large-diameter tunnels constructed with tunnel-boring machines.

So there was one Contra Costa County example. But I guess if you were to expand, you know, the definition of tunnels to include microtunneling, boring and jacking construction methodologies as well as cut and cover, then that experience would expand very quickly to hundreds of miles of tunnel design and construction experience.

MR. KEELING: Most of that within the Delta?

WITNESS TOOTLE: Very -- I don't know if it's the majority, but -- of my practice, but a very large

portion of my experience has been in the Delta, yes.

MR. KEELING: I was referring to your tunnel -- hundreds of miles of tunneling work.

WITNESS TOOTLE: Yes. It includes the Delta, yes.

MR. KEELING: Mr. Baker, could you put up SJC-285, please, at Page 9.

(Exhibit displayed on screen.)

MR. KEELING: Mr. Tootle, I'd like to direct your attention to Lines 3 through 14.

Do you see that paragraph?

WITNESS TOOTLE: (Examining document.)

MR. KEELING: Do you recall being asked about that -- that -- the opinion expressed in that paragraph during cross-examination?

WITNESS TOOTLE: Yes.

MR. KEELING: Do I correctly understand that the gist of this paragraph is that it would be premature to grant the Petition until further geotechnical studies are carried out along the proposed twin tunnel adjust -- alignment?

WITNESS TOOTLE: That's a correct interpretation of that, yes.

MR. KEELING: And what sort of work would be encompassed in the phrase "carry out" as you used that

phrase.

WITNESS TOOTLE: It would be -- It would include preparing a plan to perform subsurface geotechnical explorations, as well as geophysical surveys, carrying those -- performing those explorations after the plan has been prepared, performing the geophysical surveys, and then the associated laboratory testing of the materials that are extracted from the borings, as well as the engineering analysis that would be needed in order to provide the input to the design and make the assertions that have been made by the Petitioners in this case in regard to the, you know, potential impact to the -- you know, the public -- I'm fumbling on my words.

Let me see if I can --

MR. KEELING: Public trust?

WITNESS TOOTLE: The public trust, yes. Thank you.

CO-HEARING OFFICER DODUC: Miss Morris.

MS. MORRIS: I would move to strike that answer. This question and answer are both outside the scope of direct.

Nobody asked in direct what other things he would look at. This is expanding his opinion and this was not -- I did not delve into this nor did DWR or

others on cross-examination.

CO-HEARING OFFICER DODUC: Mr. Keeling.

MR. KEELING: In cross-examination, the clear implication was that the opinion in this paragraph was based narrowly on some unpublished study. And I'm working towards what it is he's getting at.

MS. MORRIS: I asked that -- It's true I asked that question, but he's now expanding beyond.

I did not ask what other things he took in consideration. He just said his professional judgment, and now he's expanding on not what the basis of that opinion is but, rather, what kinds of things at a minimum would need to be completed, and that was not asked on cross-examination.

CO-HEARING OFFICER DODUC: It's a natural extension.

Overruled.

MR. KEELING: So, could you please explain to the Hearing Officers what your basis is for your opinion that further study -- investigation and studies of that sort would be needed.

And I'm talking specifically about further geotechnical studies.

WITNESS TOOTLE: In -- In my experience, again, whether the projects are small or large, or

tunnel-related or not, in California, there's obviously a certain entitlement and CEQA process that needs to be undertaken for all -- all projects.

And in my experience, the geotechnical evaluations and subsurface characterizations are often complete or nearly complete at very early stages in the civil design.

I want to separate geotechnical design from civil design.

Although these standards aren't necessarily codified, different jurisdictions have guidelines that they've published, and it's not uncommon, again, as I said, for a vast majority of the geotechnical exploration and characterization to be complete well ahead of the -- the civil design.

I think the Sacramento District of the U.S. Army Corps of Engineers would consider it standard to have 100 percent geotechnical design complete at 60 percent civil design.

Caltrans has similar guidelines, and so does the -- the Los Angeles County Department of Public Works where, you know, 80 to 90 percent of the geotechnical exploration and design would be complete at tentative map stage for a large project, for example.

MR. KEELING: You've done work with the Army Corps; have you not?

You've done work with the Army Corps; have you not?

WITNESS TOOTLE: I have, yes.

MR. KEELING: And with Caltrans?

WITNESS TOOTLE: Yes.

MR. KEELING: In your experience, what are the consequences of conducting or carrying out inadequate geotechnical studies prior to a project?

WITNESS TOOTLE: It can be very detrimental to the performance of the Project.

If -- If the geotechnical conditions aren't well understood, it could mean that large delays are encountered during the -- the construction of the Project. Cost overruns can be incurred.

If -- If it's -- If the project isn't in construction, it's just design, there could still be huge delays in design if all of a sudden geotechnical conditions are encountered when anticipated.

It could mean that the project needs to be relocated because the conditions aren't acceptable for the type of project being constructed.

And, you know, if a -- if an unforeseen geotechnical condition is encountered during

construction, it could lead, you know, to large scale failures of the project, and damage to property, maybe even life.

MR. KEELING: Mr. Tootle, do you recall that, earlier today during Ms. Des Jardins' examination, there were objections with respect to your experience and knowledge and understanding of soil conditions within the Delta.

Do you recall that?

WITNESS TOOTLE: I do.

MR. KEELING: To be clear: It's true, is it not, that you've acquired knowledge about soil conditions in the Delta based on your experience?

WITNESS TOOTLE: That is true.

MR. KEELING: Is it true that an understanding of Delta soil conditions is essential to you in your now over 20 years of work as a Geotechnical Engineer in the Delta?

WITNESS TOOTLE: It is essential, yes.

MR. KEELING: Would you please describe to the Hearing Officers the extent generally of your knowledge about Delta soil conditions.

WITNESS TOOTLE: Generally, the Delta soil conditions are highly variable, as I discussed earlier. They contain highly organic soils that are weak;

they're compressible. They include, you know, soils that are loose, so they're susceptible to either -- they're potentially susceptible to losing strength during seismic loading.

And, you know, there's a mixture of clays, mixtures of silts, sands, and all these can be very problematic, particularly if you're transitioning from one deposit into another very rapidly and you're not aware that that's going to happen.

Those are the types of conditions where less-than-ideal performance can be encountered during construction because you're not aware or anticipating the conditions that you run into.

MR. KEELING: Thank you.

That concludes my redirect.

CO-HEARING OFFICER DODUC: Thank you, Mr. Keeling.

Now, Miss Ansley, you have an objection and a motion to make.

MS. ANSLEY: Yeah.

CO-HEARING OFFICER DODUC: And as Miss Ansley's coming up, I assume the Department and/or State Water Contractors will have recross.

MS. ANSLEY: We do.

CO-HEARING OFFICER DODUC: Does anyone else

have recross.

MS. DES JARDINS: I wanted to reserve 10 minutes to possibly do recross.

Thank you.

CO-HEARING OFFICER DODUC: Okay. I'm looking at Mr. Jackson.

MR. JACKSON: (Shaking head.)

CO-HEARING OFFICER DODUC: No? Okay.

Miss Ansley, your motion/objection.

MS. ANSLEY: Yes. I am going to move to strike these corrections by Mr. Lambie, and the basis for my objections are these:

This morning, Mr. Lambie testified that these were very complicated, and I believe he used the adjective ornery (sic) calculations that went into his estimates of flows into the DCC potentially under the Cal WaterFix and historical conditions.

He did not provide us with his underlying analysis so that the exhibit where he puts forth his results, which is SJC-248, was something that we were unable to verify.

And now, apparently, on the fly, having learned that his DCC calculations were indeed reversed, he has changed the numbers without -- Obviously, we heard his average differences but we haven't seen any

calculations for the -- each month and each exceedance period in the analysis he did for 1951 to 2003 showing us the changes in DCC.

So we -- we never had the calculations to begin with. We certainly don't have the calculations for these changes.

But now we have a witness who's putting in a specific impact that has changed into the record which is beyond the scope of his direct.

I mean, I understand that -- that on rebuttal he can come back with corrected tables where we would have a chance to analyze the calculations and prepare.

But in this case, we not only didn't have the earlier calculations but now we don't have the final calculations.

Now, earlier, we could have asked him some more questions about how he calculated DCC, but since we knew he had calculated it incorrectly, we didn't drill down deep into his exact formulas for calculating DCC because we had caught the error -- the initial error.

So I would move to strike this completely new calculation based on an analysis now that we have never even seen and have no ability to verify the veracity of his now, I believe -- and I'm not trying to misstate --

he now says 790 acre-feet per year for the East San Joaquin Basin.

So it is a radical change. It is by his own testimony a complicated formulation in calculation.

And our time period for cross is now closed with Mr. Lambie, and indeed we don't have the chance to go through his -- his calculations and -- and verify how he even came up with those numbers.

CO-HEARING OFFICER DODUC: Response, Miss Meserve?

MS. MESERVE: Thank you.

I would notes first that this testimony has been on file since November 30th, and I have not received any requests for the backup spreadsheets beneath the calculations for Mr. Lambie.

And had I received such a request, I believe that, you know, we would have provided it, much like some of the backup calculations that we've had to request and have received through various ways through DWR for the same kind of material.

And I would note that, with respect to the change, because it's a spreadsheet, although as Mr. Lambie described, the cal -- coming up with the method of analysis for the reductions and recharge to the San Joaquin Subbasin was complicated. That doesn't

mean that it's complicated to correct a spreadsheet when one number is -- one or -- a small number of inputs are incorrect.

We are still happy to provide SJC-244 and 248, as discussed earlier, in the active format, as well as the corrected 248 by Monday so that DWR can have a chance to address this material as it wishes.

I guess the other thing I would note is that it was DWR's choice to decide to ask questions on cross and to identify the error that they had found.

They could have asked for the backups and -- you know, and then dealt with it on rebuttal, if they wanted to.

And I think for us, we are entitled to correct the record, since it was relatively straightforward to do so, given the small change that was necessary, and to make sure that it was clear that the underlying estimates were -- were not larger than what would be estimated with the corrected numbers.

And so I would ask that the testimony correcting this -- this reversal of figures that we have come across be allowed to stay in the record for clarity.

Thank you.

MR. KEELING: And I would add that this is

certainly not the first time in these proceedings that a mathematical error in a witness' charts or calculations has been identified during the hearing, and not the first time that, thereafter, within the hearing they've said, Mr. or Ms. so and so, have you taken a look at the error? Yes, I have. Have you corrected it? Yes. Give us your new calculations.

And it's been perfectly fine.

And if the -- DWR wants the new calculations, if that's what they're calling them, we're certainly happy to give them that and they can examine.

CO-HEARING OFFICER DODUC: Miss Morris, do you have something to add?

MS. MORRIS: I just wanted to join.

And I would note that we have had lots of corrections and erratas of testimony, that is true.

But taking and redoing a calculation based on a different table and based -- He changed things in the table and redid a calculation from cross-exam this morning until redirect.

That is new evidence, that is a new opinion, and it should be struck.

MS. ANSLEY: And --

CO-HEARING OFFICER DODUC: Miss Ansley.

MS. ANSLEY: And I understand that he's

providing us with the final results of his change, but I don't have the corrected tables to even I guess even on a superficial level take a look at the -- the -- His exhibits have a DCC diversion correction or addition to -- to the flows of the Mokelumne River, and it goes for every exceedance for every month for the entire time period of his analysis.

So, he's telling us the end result, but I don't even have the -- the base tables for each of those -- He then has an exceedance for each month, but I don't have the underlying data for any of that. I just have his 790 acre-feet now.

CO-HEARING OFFICER DODUC: I understand.

MS. ANSLEY: So I -- of course, I will redirect if required if my Motion to Strike is denied, but I am hampered in the sense that, you know, now I'm not dealing even with the right analysis.

CO-HEARING OFFICER DODUC: And I had a question for you:

In voicing your motion earlier, you had mentioned something about the time for cross has passed and you, therefore, had not delved into his calculations.

I'm not sure I understand that. Obviously, now that this has been brought up and his

recalculations has been brought up in redirect, it is within your scope of recross to delve into how he redid those calculations.

MS. ANSLEY: I guess we could. We -- Of course, we don't have the benefit of any corrected tables, but I guess we can ask what questions we can formulate on how he calculated DCC now and it'll have to be subject to later verification if he did it this time correctly.

But once we finish our redirect (sic), if we later find that he did it incorrectly, of course, the time for cross will be over. It will be a different phase of the hearing.

CO-HEARING OFFICER DODUC: Anyone else?

MS. MESERVE: That would be the purpose of rebuttal.

I mean, I guess it was mentioned earlier that we would be free to correct this testimony on rebuttal and I don't think that is correct.

I think that we would be free to respond with surrebuttal to whatever DWR submits on this topic, so just to clarify.

CO-HEARING OFFICER DODUC: All right. Mr. Jackson, and then Miss Des Jardins, and then I'm going to close this discussion.

MR. JACKSON: The C-WIN parties would like to join an opposition to the Motion to Strike. We have a simpler reason for it, and it's two -- two-part.

The first is that there was nothing inconsistent about his testimony. It was 300, and it turns out to be higher than that. So the -- His testimony, being conservative, is still true and can't -- and shouldn't be stricken.

The -- The second point is that . . . the real decision about whether or not the engineering tables are correct is answered by the question of whether or not the alleged mistake was up or down.

Clearly, if it had been less than he said, it might be worth delving into. Since it's more in terms of the number, I don't see the prejudice.

CO-HEARING OFFICER DODUC: Miss Des Jardins.

MS. DES JARDINS: I just wanted to say: I think one of the key things is that Mr. Lambie isn't relating as true things which aren't in evidence, unlike Petitioners' earlier testimony with Snug Harbor where they said, "Oh, we looked at it, and it didn't make a difference."

He's actually providing here some corrections that could be cross-examined. I agree it's not ideal to do it during testimony, but it wasn't covered during

testimony.

And -- And for that reason, I -- and it doesn't seem to be such a major change that it radically affects the -- the underlying structure and calculations.

So -- So for that reason, I also join in opposition.

CO-HEARING OFFICER DODUC: Any final arguments?

All right. Let us take a short five-minute break to discuss this. We'll return at 3:40. Actually, 3:41.

(Recess taken at 3:36 p.m.)

(Proceedings resumed at 3:41 p.m.:)

CO-HEARING OFFICER DODUC: We are back in session. Take your seats, please, everybody.

With respect to the Motion to Strike from the Department, which was joined in by State Water Contractors, that motion is denied.

Miss Ansley and Miss Morris, you will have the calculations, the charts, the spreadsheets, whatever it is, that Dr. Lambie used to conduct his analysis, and you may use that in preparing your rebuttal to his redirect testimony.

That redirect is a reasonably expected

outgrowth of the cross-examination that was conducted earlier.

However, I will allow you, Miss Ansley and Miss Morris, the opportunity to conduct recross based on now the new calculations, the new figures, that was presented in redirect.

You may, to the extent that you can do so now, delve into his calculations, his methodologies, for developing those conclusions and those data points.

You have the opportunity to do that now in recross as well as on rebuttal after you receive the materials that will be provided.

MR. KEELING: Further clarification, if it please the Hearing Officers:

We will be happy to submit a revised -- an errata document that reflects those changes as well into the record.

Is that -- Would that meet your --

CO-HEARING OFFICER DODUC: And the underlying data, spreadsheets, whatever it is that Dr. -- Mr. Lambie used.

MR. KEELING: Thank you.

MS. MORRIS: I do request the spreadsheets, and I do not think it's appropriate to submit an errata to the testimony.

If he wants to -- If it's going to be allowed to be corrected, it should not be corrected in writing. He's done it on the record. That's kind of bad enough.

CO-HEARING OFFICER DODUC: Fine.

MS. MORRIS: And in addition to that, I would just note for the record that we are -- we do not have adequate time to prepare cross-exam in five minutes or 10 minutes from when we're heard this new opinion.

CO-HEARING OFFICER DODUC: Fine. Then you may wait until you get the calculations and spreadsheets and other information that will be provided and use that in your rebuttal.

Does that mean you waive cross-examination --

MS. MORRIS: No.

CO-HEARING OFFICER DODUC: -- recross?

Oh, gee.

MS. MESERVE: And with respect to the spreadsheets, the files may be quite large, so I can certainly find a way to get those to DWR and the State Water Contractors.

Would it be okay just to say that, if anyone else wants it, they should contact me rather than try to serve the service list with that? I don't think I even can, is what I'm saying.

CO-HEARING OFFICER DODUC: Mr. Jackson, did

you have an opinion to offer?

MR. JACKSON: Yes.

As a representative of the service list, we -- Please. I mean, most of us can't handle it, don't know what it is, and it's really, really large, I'm sure.

CO-HEARING OFFICER DODUC: All right. Miss Meserve, please make sure you send that to the Department -- to the Petitioners as well as State Water Contractors and to any other parties who may make that request of you.

MS. MESERVE: Yes.

CO-HEARING OFFICER DODUC: All right.

And now you may conduct your cross -- your recross.

Given that --

MR. FERGUSON: Chair --

CO-HEARING OFFICER DODUC: I'm sorry.

MR. FERGUSON: Chair Doduc, before we start with the recross, would you mind surveying who they anticipate --

CO-HEARING OFFICE DODUC: That's what I was --

MR. FERGUSON: Because maybe --

CO-HEARING OFFICER DODUC: I am --

MR. FERGUSON: Thank you.

CO-HEARING OFFICE DODUC: -- getting there,

people. I do know how to do my job.

MR. FERGUSON: Thank you.

CO-HEARING OFFICE DODUC: Miss Ansley, Miss Morris.

MS. ANSLEY: We were going to clarify that right now.

CO-HEARING OFFICER DODUC: Yes.

MS. ANSLEY: I have questions, obviously, of Mr. Lambie, and I only have actually a couple questions. It will not take long.

Miss Morris has questions for Mr. Tootle. And we were wondering with your indulgence if she could go first -- thank you -- and I will go after her.

CO-HEARING OFFICER DODUC: And what about Dr. Mehl?

MS. ANSLEY: No. I think that we're done with Dr. Mehl and the other witnesses.

CO-HEARING OFFICER DODUC: All right. And as far as your recross is concerned, how much time do you anticipate needing with this ex -- this further questioning of Mr. Lambie's analysis?

MS. ANSLEY: With Mr. Lambie's analysis, it could take -- It is only about five questions but one of them is quite a -- you know, could be quite a narrative.

So I -- I hesitate, but it's -- It could be -- It could be 20 minutes depending on if I like the answer.

CO-HEARING OFFICER DODUC: Okay. The only reason I ask is to determine whether we can get to Dr. Michael today, and it sounds like we can.

MS. MORRIS: (Nodding head.)

CO-HEARING OFFICER DODUC: We can. All right.

MS. MORRIS: Thank you.

A couple of followup questions for Mr. Tootle.

RECROSS-EXAMINATION BY

MS. MORRIS: Mr. Tootle, you just testified that you have hundreds of miles -- or a hundred -- or around a hundred miles of microtunneling experience; correct?

WITNESS TOOTLE: That is incorrect.

MS. MORRIS: That is incorrect?

WITNESS TOOTLE: That is incorrect.

MS. MORRIS: Okay. Would you tell me how many miles you have of microtunneling experience.

WITNESS TOOTLE: Microtunneling might be on the order of tens of miles. I -- I -- I couldn't tell you off the top of my head. I didn't calculate that before coming.

MS. MORRIS: And the rest of your experience

is with boring and jacking tunnel?

Help me with the terminology. Boring and jacking?

WITNESS TOOTLE: The -- I guess the construction methodologies that I mentioned include microtunneling, boring and jacking, and cut and cover.

MS. MORRIS: And the projects including those three methodologies, how many are in the Delta?

Let me start this: How many projects total with those three tunneling methodologies?

WITNESS TOOTLE: I assume you mean with any one of the three as opposed to --

MS. MORRIS: Correct.

WITNESS TOOTLE: -- all three.

It's hard to come to a number. It's probably over 90 percent of the projects I've worked on.

MS. MORRIS: 90 percent of the projects you've worked on and you don't have -- you're not sure. Is it 10? 20? 30? Can you speculate?

WITNESS TOOTLE: I guess I've worked on thousands of projects during my career, so . . .

MS. MORRIS: I'm going to have to step back.

You've worked on thousand -- 90 percent of your work has been on tunneling?

WITNESS TOOTLE: No. I said that any one of

those three types of construction methods to install a tunnel have occurred on about 90 percent of the projects that I've worked on.

MS. MORRIS: But I'm asking for -- I asked you for your experience with tunneling and what projects you worked on in the tunneling aspect.

MR. KEELING: Vague and ambiguous; asked and answered.

CO-HEARING OFFICER DODUC: Miss Morris, what was the question again?

MS. MORRIS: I asked this witness about his experience with tunneling projects that he worked on.

CO-HEARING OFFICER DODUC: Um-hmm.

MS. MORRIS: And he said 90 percent. And then I clarified the question because he was talking about projects that included tunneling but he was not the tunneling person. So I was going back to make sure the record was clear.

And my question is: How many projects has this witness worked on where he is responsible for the tunneling?

CO-HEARING OFFICER DODUC: That is clear enough.

Please answer.

WITNESS TOOTLE: So I -- I've been the

Geotechnical Engineer providing the design, input parameters and/or observed in the construction of that number of projects that I referenced. So if that's what you meant by "experience," that would be my answer.

MS. MORRIS: I asked you earlier in your testimony for your tunneling experience, and you named one project. And now you are testifying, I believe -- and/or we are horribly miscommunicating, which is quite possibly the case -- and now you're saying 90 percent of your work is dealing with tunneling.

MR. KEELING: Mischaracterizes the witness' prior testimony; and argumentative.

MS. MORRIS: I believe this witness is not answering the questions.

CO-HEARING OFFICER DODUC: Miss Morris, let's ask the question as straightforward as possible without characterizing what you believe you thought he said.

MS. MORRIS: How many projects have you worked on where you were the person responsible for designing a tunnel project?

WITNESS TOOTLE: Can you define what you mean by "tunnel."

MS. MORRIS: Okay. I was limiting myself to the redirect, which is -- What I heard is between

microtunneling and boring and jack -- jacking, you have worked on hundreds of miles of tunneling.

So I am talking about any tunneling.

WITNESS TOOTLE: I think I've answered the question in the context of any tunneling, if "any tunneling" is defined as using a tunnel-boring machine construction methodology, a microtunneling construction methodology, a boring and jacking tunneling construction methodology, or a cut and cover tunnel construction methodology.

When I answered your previous question, I understood or I inferred that the context and the intent was specifically to large-diameter tunnel-boring machine tunnels, which is a specific unique subset of tunnels, and that's how I answered that question.

But in the broader sense of tunnels, as I just defined them, it's not limited to -- to just that one project.

MS. MORRIS: So how many projects is it?

WITNESS TOOTLE: I don't know the exact number of projects I've worked on. It's probably in the thousands, and I'm estimating approximately 90 percent of those projects have included these other tunnel construction methodologies, and I've been the Geotechnical Engineer that's provided the design input

parameters and/or observed the construction of these tunnels -- these -- these tunnel-related -- or the tunnels that are related to those projects.

MS. MORRIS: And what's the -- Could you give me the diameter of the projects that you worked on for the tunnels. Are they pipes? What's the size?

WITNESS TOOTLE: Well, some of the microtunneling are on the order of inches.

But, you know, there are larger conduits that, you know, are feet or tens of feet in diameter.

MS. MORRIS: Is that the largest that you worked on, tens of feet?

WITNESS TOOTLE: Yes.

MS. MORRIS: And isn't it true that bore -- the other types of tunneling that you discussed that are not tunnel-boring machine are -- don't use pressurized phase control?

WITNESS TOOTLE: That is correct.

MS. MORRIS: And so the only experience you have with that type of tunneling methodology is the one project you mentioned earlier in your testimony on cross-exam.

WITNESS TOOTLE: That's correct.

MS. MORRIS: I have no further questions.

CO-HEARING OFFICER DODUC: Miss Ansley, do you

have questions for Mr. Tootle?

MS. ANSLEY: I do not. I only have questions -- We tried to coordinate. I --

CO-HEARING OFFICE DODUC: All right.

MS. ANSLEY: -- have questions for only Mr. Lambie.

CO-HEARING OFFICER DODUC: Thank you very much, Mr. Tootle.

Oh, do you have questions, Miss Des Jardins, for Mr. Tootle?

MS. DES JARDINS: Yes, I do.

CO-HEARING OFFICER DODUC: Perhaps we might get to Miss Des Jardins' questions first. She says 10 minutes at most for Mr. Tootle.

MS. DES JARDINS: I requested five.

CO-HEARING OFFICE DODUC: And that way, he can take his leave.

RECROSS-EXAMINATION BY

MS. MESERVE: Mr. Tootle -- This is Dierdre Des Jardins with California Water Research.

Mr. Tootle, you listed the kinds of different subsurface construction, including tunnel-boring machine, microtunnel, and boring and jacking, and cut and cover.

Did -- All of those required geotechnical

exploration; correct?

WITNESS TOOTLE: That's correct.

MS. MORRIS: And they required -- And so you're familiar with the, you know . . . the amount and kinds of geotechnical exploration that's required to give appropriate design parameters for these kinds of subsurface structures; correct?

WITNESS TOOTLE: Yes, that's correct.

MS. MORRIS: And would a larger structure require more or less borings than some of these smaller structures?

WITNESS TOOTLE: Well, if you mean "larger" in the sense of length?

MS. MORRIS: Larger in the sense of diameter.

WITNESS TOOTLE: I guess the answer is, yes, it might just be a minimal increase.

MS. MORRIS: Okay. But . . .

So are there some commonalities in the kinds of subsurface borings that are done amongst -- I mean, in terms of number of cross-links, you know, ground conditions, et cetera?

WITNESS TOOTLE: Well, I guess the -- in the -- in terms of ground conditions, then the matter of what the type or -- type or size of the tunnel or the construction methodology used, and the -- the

subsurface, the soil conditions would be the same, I guess.

MS. MORRIS: Okay. So -- Thank you.

CO-HEARING OFFICER DODUC: Thank you, Miss -- Thank you, Miss Des Jardins.

And that concludes, I believe, your participation for now, Mr. Tootle.

Thank you very much and Go Bears!

WITNESS TOOTLE: Go Bears!

(Witness Tootle excused.)

RECROSS-EXAMINATION BY

MS. ANSLEY: Good afternoon, Mr. Lambie.

WITNESS LAMBIE: Good afternoon.

MS. ANSLEY: Was I correct in my characterization of your testimony this morning that you described your DCC comp -- calculations as complicated?

WITNESS LAMBIE: I don't think that's exactly how I characterized it. They're -- They're "ornate" was the word I used, not "ornery" --

(Laughter.)

WITNESS LAMBIE: -- because they required, you know, taking one component, the base flow frequency, and then looking at all the various criteria around the -- the DCC, how it would operate.

And I'm, frankly, relieved by the question because I was scratching my head going, how on earth is it open all the time when they say it won't be open in flows above 25,000 cfs?

Lucky me, I -- I held the rule curve in calculations, so, you know, preparing any of this was -- was just a matter of reversing the number of days open, percentage open, so the rule curve still applied.

So it's an ornate calculation but it's -- it's not particularly complex. It has about four cascading steps to it for the Mokelumne.

MS. ANSLEY: It has four cascading steps. Okay.

WITNESS LAMBIE: I think that's right.

MS. ANSLEY: Can we call up your SJC-248, which is what we have, I believe, for your calculations for the Mokelumne.

WITNESS LAMBIE: Right.

MS. ANSLEY: Do you have that there?

WITNESS LAMBIE: My copy is microprinted so I'll be grateful if it's on the screen.

(Exhibit displayed on screen.)

MS. ANSLEY: And if you need anything blown up on the screen -- screen, that's -- that's fine. I'm

not trying to --

WITNESS LAMBIE: All right.

MS. ANSLEY: -- make you read the screen.

It is -- It isn't -- Am I correct that this is your -- your exhibit showing results of your calculations for the Eastern San Joaquin Basin?

WITNESS LAMBIE: It shows some of the fundamental inputs to it, and it shows the outcomes for each month or each operating period fractionated.

So there's four groupings by the four stated DCC operating periods.

There's the early year runoff, as I call it, which I believe the first pages are dedicated to.

There's the brief late-spring period.

Then there's what I've termed the dry period, which is five months of the year.

And then there's what I call the winter period, which is the closest thing to a normal quarter. It's December through -- No, excuse me. It's November through January.

So that's how it's built, and you have all those calculations in this 248. So they first go by operating period and then they sum all together.

MS. ANSLEY: Okay. So what we have on here are the results; correct?

We see -- If you look at the line under -- We're using February as an example here. And I'm looking at the line -- at the row that says "DCC-rated Diversions."

WITNESS LAMBIE: Right.

MS. ANSLEY: Do you see that row?

WITNESS LAMBIE: I do.

MS. ANSLEY: And this is the row that was subject to correction; is that correct?

WITNESS LAMBIE: No, it was not.

MS. ANSLEY: Which row would be subject to correction on this ch -- on this chart for February, just using that as an example?

WITNESS LAMBIE: It would be the "Mokelumne Plus DCC Diversions" that would be corrected. That's where the temporal frequency of percent open would be applied.

MS. ANSLEY: Then what is the significance -- What is the 2,000 -- Using the 5 percent exceedance as an example and the DCC-rated diversions, what is the 2,673?

WITNESS LAMBIE: That's the apparent 5 percent exceedance rate in the typical month of February in the CalSim outputs that says "through-Delta diversions."

So the three Delta diversions were treated as

that's how much water is to be shunted via the Delta Cross Channel.

So frequency analysis was performed on those numbers within the CalSim outputs.

MS. ANSLEY: Are you saying that you used the DCC output from CalSim in your calculations? DCC flow output from CalSim in your calculations?

WITNESS LAMBIE: I took, yes, the CalSim through-Delta diversion rates as what needed to pass through the DCC.

MS. ANSLEY: Are you talking about the -- You used CalSim diversion rates, the NDD diversion exports; is that correct?

WITNESS LAMBIE: No, not for that portion of the analysis. That portion of the analysis relied on what is in the CalSim outputs I have that's called "through-Delta diversions."

MS. MESERVE: I have somewhat of a concern here that we're going outside the scope of redirect.

This isn't an opportunity to ask more questions about things that don't have to do with the correction.

CO-HEARING OFFICER DODUC: But they have to do with the calculations.

MS. ANSLEY: They do have to do with the

calculations on the DCC.

Isn't this number on this row that you said is DCC-rated diversions, isn't that actually South Delta exports?

WITNESS LAMBIE: I don't believe so.

MS. ANSLEY: It's not South Delta exports?

WITNESS LAMBIE: No, I don't believe so. It's meant to be the through-Delta diversions in the CalSim output.

MS. ANSLEY: What -- What is your understanding of through-Delta diversions? I think we're a little confused about that row.

WITNESS LAMBIE: My understanding in the CalSim outputs is that there is a quantity of flow taken through the Delta from the Sacramento. It is what is the function of the Delta Cross Channel.

MS. ANSLEY: And just to close the loop on that:

Do you recall what the arc number is from CalSim for that so we have a better understanding of your -- your DCC-rated diversions?

WITNESS LAMBIE: You just used a term I don't have any comprehension of, "arc."

MS. ANSLEY: And -- And which -- For this row, which CalSim output did you use, then? Maybe that is a

better way to put it.

WITNESS LAMBIE: I would have to take a hard look at what I've utilized.

I, again, analyzed Scenario H3 within Alt 4A. And I've taken the through-Delta diversions is what's reflected there.

MS. ANSLEY: Let's go back to what you said is the rows that would change in this chart per your corrections to testimony.

I believe you told me that it was the "Mokelumne plus DCC conversion" rows that would be the change.

WITNESS LAMBIE: That's right. It's where there's embedded in the calculations a factor called, in this case, early year open is what I named it. It's -- It's a universal variable that looks to say: Okay. If I'm going to take water through the Delta, how often in that period is it open?

And looking at February, you would see that only at 70 percent exceedance flows and below -- most people have a hard time, even I do, to remind myself that those are very low flows -- would there be water coming through the DCC, and only when those are called upon and the conditions -- the -- the driving condition there is, base flow in the Sacramento is not allowed

unless that number is below 25,000.

So there's a bunch of logic that's stacked in there that follows the rule curves, follows this.

So that's where that number would change, the -- Yeah. I don't know if I need to read it for the Hearing Officer, but I'll explain that.

Say, the 70 percent exceedance, the DCC-rated diversion is 1085. The Mokelumne plus DCC conversions corrects that for the frequency at which the DCC is open in that period of year. That number will have changed because the percentage open has changed. When I run, that part of it becomes much lower because it's not open in winter.

MS. ANSLEY: In making that reduction that you just spoke of --

WITNESS LAMBIE: Um-hmm.

MS. ANSLEY: -- is it your understanding that CalSim already recognizes the DCC gate closure when it returns a -- a DCC operation flow, your rate of diversion row here?

WITNESS LAMBIE: No. I have no understanding about that.

I mean, I just -- I don't understand your -- your point.

MS. ANSLEY: All right. I -- I want to move

to a different question here.

For those two rows, what other exhibit in your testimony would show me the calculation that results in -- this is for an example -- the 2,673 for the 5 percent exceedance? Where would I find that?

WITNESS LAMBIE: If you'll give me a minute.

MS. MESERVE: Objection: This -- This is outside the scope of the redirect.

This was already explained that the calculations don't change on this row, so I'm not sure why we're asking questions about it now on recross.

CO-HEARING OFFICER DODUC: I did say that I was allowing her to do some questioning about the calculations themselves. So it is within the allowance that I provided in overruling her motion, Miss Meserve -- I'm sorry -- denying her motion.

MS. ANSLEY: Okay. And then I -- I actually -- So, I don't know if I got an answer to that because I have the same question for the next row, Mokelumne plus DCC diversions.

Do you have another exhibit in your testimony that would explain or show where those two numbers came from?

Oh, and by "those numbers," I mean --

WITNESS LAMBIE: I'm sorry. I was trying to

answer your last question.

MS. ANSLEY: Okay. Go ahead. I'm sorry. Go ahead if you need more time.

WITNESS LAMBIE: I apologize. I'm not trying to waste time here. I'm looking to see where -- where it's provided.

I see it's . . . Excuse me.

The answer is, it's in the materials that support the graphics, I believe, at SJC-237.

(Exhibit displayed on screen.)

WITNESS LAMBIE: So the -- the only depiction I've given you of those results is in that SJC-248.

(Exhibit displayed on screen.)

WITNESS LAMBIE: There are underlying materials if you'd like to have those.

MS. ANSLEY: 237 and -- Oh, and 238 (sic)?

WITNESS LAMBIE: Correct. What -- What produces 237, not 238, is a series of calculations around the -- the Sacramento and the Mokelumne, corrected -- or looking for the water that's in the CalSim outputs.

MS. ANSLEY: Is -- Is 237 the Sacramento River?

WITNESS LAMBIE: Yes.

I'm saying that the -- the information that

produces 237 is in the spreadsheet that produces the information I believe you're looking for.

In other words, 248 explains what the diversions are as far as numbers. Those -- Those don't change, at least for the San Joaquin Basin.

So the basis for them essentially, as far as your -- your desire for calculations, is -- is right there.

MS. ANSLEY: On these graphs?

These appear to be Sacramento River. Are these supposed to be Mokelumne as well?

WITNESS LAMBIE: (Clearing throat.)

Excuse me.

May I -- If we can go back to 248.

(Exhibit displayed on screen.)

WITNESS LAMBIE: The numbers for DCC-rated diversions, those are the numbers I have derived from looking at the CalSim output and the Mokelumne River flows and Sacramento River flows.

So what appears in 237 is graphics from the spreadsheet that's holding those calculations.

MS. ANSLEY: But those are just showing the -- the --

WITNESS LAMBIE: So --

MS. ANSLEY: -- numbers in the spreadsheet

graphically. They're not showing me the calculations or the formulas or the output from CalSim; right?

WITNESS LAMBIE: That's --

MS. ANSLEY: This is a graphical representation of the same numbers in your 230 -- 248.

WITNESS LAMBIE: I'm no doubt muddling up the record here.

248 contains the results of doing a frequency analysis on the CalSim request for water at the through-Delta column, if you will.

So I've done it statistically for the period 1951 through 2003 as to what the percentage exceedance flows are asked for as through-Delta water. And those are the results.

Again, if you'd like the underlying calculations, I'll leave that to counsel, but they're available.

MS. ANSLEY: Okay. Yes, of course, we would.

I'll -- I'll move on to my next set of questions. There's only a few.

So my understanding is, and please -- this is a question.

Is it true that you use your rule curve to estimate DCC flow both for your historical baseline and your diversions under CWF Alt 4A H3; is that correct?

WITNESS LAMBIE: I'm struggling with your question. It's -- You're asking if --

MS. MESERVE: Objection: Asked and answered.

Wasn't this already covered in your direct -- in your first cross?

MS. ANSLEY: I don't think so. I'm just making sure now I understand the DCC calculation.

I have one . . . maybe four questions left.

I'm just trying to make sure that I close the door on --

CO-HEARING OFFICE DODUC: Understood.

MS. ANSLEY: -- DCC.

CO-HEARING OFFICER DODUC: Let's give Mr. Lambie a chance to think about it.

WITNESS LAMBIE: I -- No. I need the question back.

CO-HEARING OFFICER DODUC: Okay.

WITNESS LAMBIE: I think I understand it but I don't want to -- I didn't really hear it. So can --

MS. ANSLEY: So am I correct in my understanding that you used your rule curve to estimate DCC flow -- what you're calling a rule curve to estimate DCC flow both for your historical baseline calculations and your CWF Alt 4A H3 calculations; correct?

WITNESS LAMBIE: I'm going to answer as best I can.

MS. ANSLEY: Sure.

WITNESS LAMBIE: The -- The rule curve is applied to all flows, so if -- In other words, if the -- the reason that the base flow Sacramento for diversions appears in this area of 248 --

Could I have that back up? I want people to follow the answer.

(Exhibit displayed on screen.)

WITNESS LAMBIE: The -- The rule curve simply says if it's above 25,000 cfs, cubic feet per second, it's not allowed to be open. And if it's below 5,000 cfs, I believe it is, it's not allowed to be open. In between those two, it's allowed to be open.

So that's the -- one of the primary drivers on whether or not these requested flows would be available in these months. So that's applied -- Those rule curves are applied throughout.

So if -- if the Project, if you will, is looking for water through the Delta and those rules cannot be met, then that's one of the things that flagged there's just not enough water. There's not enough water coming out of the San Joaquin; there's not enough water available via the Sacramento. You're

pulling on the Delta pool. So those -- those -- those are portions of the rule curve that were applied.

And I think that's as good an answer as I can give you as I sit here today.

MS. ANSLEY: For those historical time periods, and your application of the rule curve for these exceedances, did you ever go back and match up your diversions of DCC with actual DCC diversions in those years?

WITNESS LAMBIE: I don't believe I have data for actual DCC diversions.

MS. ANSLEY: So, in other words, you didn't try to calibrate your DCC diversion calculations with actual DCC diversions from that time flow -- or from that time period.

WITNESS LAMBIE: That's correct. I did not have a source of DCC diversion data. I had a rule curve.

MS. ANSLEY: And this is my last little one to two questions.

You've now changed your testimony, based on your new calculations, to estimate that the potential reduction in groundwater recharge for the East San Joaquin Basin is now 790 acre-feet.

Do I have that correct?

WITNESS LAMBIE: Acre-feet per year each and every year, yes. That's the chronic depletion.

MS. ANSLEY: Can we call up your -- your PowerPoint presentation real fast?

That is --

CO-HEARING OFFICER DODUC: Exhibit number, Miss Ansley?

MS. ANSLEY: Exhibit SJC-255.

Can we look at Slide 5, please.

(Exhibit displayed on screen.)

MS. ANSLEY: Okay. Do you see that there?

WITNESS LAMBIE: Yes, I do.

MS. ANSLEY: Do you know the percent of annual groundwater recharge for the East San Joaquin Basin is comprised -- Do you know how much 790 acre-feet makes up of the annual re -- groundwater recharge for the East San Joaquin Basin?

WITNESS LAMBIE: No, I do not.

MS. ANSLEY: Will you agree, looking at this figure, that the East San Joaquin Basin is larger than the South American Subbasin?

WITNESS LAMBIE: Yes. That's self-evident. It is much larger than the South American.

MS. ANSLEY: I have no further questions at this time.

CO-HEARING OFFICER DODUC: Thank you, Miss Ansley.

Thank you, Mr. Lambie.

Thank you, Miss Meserve, Mr. Ferguson, and Mr. Keeling.

(Witness Lambie excused.)

CO-HEARING OFFICE DODUC: Mr. Keeling, before you leave, I have a question for you.

Perhaps you've already informed us and I have just lost track, but when do we expect to hear from Supervisor Miller?

MR. KEELING: Well, I guess I turned my mic on for that very reason.

This fits into the scheduling clarification I hoped we could get before we leave today, because, as I understand it -- Is Mr. -- Dr. Michael going to be testifying today?

CO-HEARING OFFICER DODUC: Yes, Dr. Michael is going to be testifying today and Mr. Stroshane is going to do a very abbreviated version of his cross-examination.

MR. KEELING: Then I would anticipate that, on Monday, we're going to complete cross-examination of Mr. Michael and go to Mr. Nomellini, after which we have the Water Forum witnesses.

And after that, we have the San Joaquin County's Director of Transportation. We have Mr. Belaji. And it's on that panel that Ms. -- Ms. Katherine Miller.

She is not available Thursday. We thought we were going to be Monday and -- but she is available Friday. So I'm hoping to put her on at the end of that panel if it goes that way. I -- I -- I'm . . .

So two things: Can I tell -- Mr. Belaji, like all of these folks and like you, has a busy schedule -- that he doesn't need to show up -- show up here on Monday given the wake? It looks to me like we're Thursday at the earliest for him.

CO-HEARING OFFICER DODUC: That is correct.

MR. KEELING: And could I assure Supervisor Miller, who's made room for Friday, that we can get her in on Friday for her three minutes?

CO-HEARING OFFICER DODUC: I believe we can accommodate her Policy Statement.

MR. KEELING: Thank you very much.

MS. MESERVE: And just with respect to the -- We've got the Transportation Panel, which is the three county, and then there's two Yolo County panels that come right after that.

So is that looking toward Friday, so I could

update Mr. Pogledich?

CO-HEARING OFFICER DODUC: Miss Meserve, you're probably better that I am at this point at estimating, so I'll leave that up to you.

MS. MESERVE: Okay.

CO-HEARING OFFICE DODUC: Mr. Deeringer, you had another housekeeping matter. Let's take care of that before I forget.

MR. DEERINGER: Yes. I apologize for going back and forth on this.

But, earlier, I'd indicated -- or I'd asked if DWR would prepare a rough transcript of the day we're -- there was a Motion to Strike concerning the testimony of Dr. Shilling and Mr. Neudeck.

I've been informed that actually our own court reporter service is able to provide a rough transcript for that day, so there's no need for DWR to provide one.

MS. ANSLEY: Thank you for that followup. I'll tell my associate she can stop pulling rough transcripts.

CO-HEARING OFFICER DODUC: Yes.

And one -- one other clarifying matter so we close the loop on everything.

I believe, Mr. Feeling, based on Miss Morris'

objection, which I will assume Miss Ansley concurred with, you do not need to prepare an errata for Lambie's -- Or was it Miss Meserve? I don't know. One of you.

You do not need to submit an errata for the correction that he made as part of his redirect.

MS. MESERVE: Are we still waiting for a ruling on whether the additional spreadsheet provided by DWR would be admitted or has it been discussed?

CO-HEARING OFFICER DODUC: We are still waiting for that, I believe. Yes.

MS. ANSLEY: I'm sorry. What additional spreadsheet was that?

CO-HEARING OFFICER DODUC: That was Miss Des Jardins' objection; right?

MS. MESERVE: Well, there were several, but, yeah, it was the -- basically the operational spreadsheet that was made at the request one of the preceding --

CO-HEARING OFFICER DODUC: Oh, that one. That's Miss Nikkel.

MS. ANSLEY: Oh, that's Miss Nikkel's motion, yeah.

CO-HEARING OFFICE DODUC: It was --

MS. MESERVE: I was just wondering if it was

still outstanding.

MS. ANSLEY: Yeah.

CO-HEARING OFFICER DODUC: We're sort of, you know, here all day, Miss Meserve.

MS. MESERVE: I'm not -- I wasn't pressing anything. I was just wondering.

Thank you.

CO-HEARING OFFICER DODUC: All right.

Thank you, Dr. Michael, for bearing with us, and . . .

Oh, and Dr. Michael, please stand and raise your right hand.

Jeffrey Michael,

called as a witness by the Central Delta Water Agency, South Delta Water Agency (Delta Agencies), Lafayette Ranch, Heritage Lands Inc., Mark Bachetti Farms and Rudy Mussi Investments L.P.:, having been duly sworn, was examined and testified as follows:

CO-HEARING OFFICER DODUC: Thank you.

DIRECT EXAMINATION BY

MR. RUIZ: Good afternoon, Dr. Michael.

Dean Ruiz on behalf of the SDWA Protestants in this matter.

Dr. Michael, did you prepare a written testimony in this matter?

WITNESS MICHAEL: Yes, I did.

MR. KEELING: Is that SDWA-265?

WITNESS MICHAEL: Yes it is.

MR. RUIZ: Did you also prepare a PowerPoint presentation?

WITNESS MICHAEL: Yes, I did.

MR. RUIZ: And is that SDWA-266?

WITNESS MICHAEL: I believe that's the case, yes.

MR. RUIZ: And it happens to be mislabeled SDWA-292 on the actual PowerPoint but it's actually 266; correct?

WITNESS MICHAEL: Correct.

MR. RUIZ: At this time, can you please summarize your testimony.

WITNESS MICHAEL: Sure.

So, my name is Jeffrey Michael. I'm the Executive Director of the Center for Business and Policy Research and a Professor of Public Policy at the University of the Pacific.

I'm an economist. And I've been studying these issues for a number of years in the -- through my dissertation research in the 1990s, was on the

economics of Endangered Species Act and regional economies in another state, but when I came to California 10 years ago, got involved in related issues here and have been involved in a number of studies around the Delta, including the Delta Protection Commission, Economic Sustainability Plan, and some of the work that you'll hear about here today.

So . . .

(Exhibit displayed on screen.)

WITNESS MICHAEL: My testimony covers three main points, so this is -- these are the three areas I'll be talking about.

The first is to look at the impacts on small businesses in the Delta economy, particularly those serving recreation and local communities.

The second is to talk about benefit-cost analysis and its relationship to the public interest questions in Part 2.

And the third is to talk about the financial feasibility of the proposed operations and the Project as described in this Petition and the risks that financial feasibility poses to public interest and the environment.

(Exhibit displayed on screen.)

WITNESS MICHAEL: So the -- the first topic,

thinking about impacts on recreation and small business in the Delta.

The Delta's got a significant recreation economy. It's not as large as its agriculture economy but it's still very important. We've estimated in -- in 2011 that it supports about 3,000 jobs, directly or indirectly, not terribly different than what the EIR estimated independently of our work.

I agree with this statement from the WaterFix Final EIR that says (reading):

> "Recreation-dependent businesses including marinas . . . may not be able to economically weather the effects of multiyear construction . . . and may be forced to close as a result."

Now, the reason I agree with that is the third bullet there about how these businesses are poorly equipped to survive and recover from the WaterFix impacts.

The first thing to note is that these recreation and tourism enterprises are very small businesses with thin margins. We're not talking about the Disney Corporation. We're talking about very small independently-owned operations that don't -- that are not well capitalized and are not in a good position to

handle disruptions to activity.

It's a very large project, a very lengthy project, so if they have negative effects, it -- it could indeed cause a business closure.

And then there's a third problem that's important to thinking about the long-term environment of the Delta as a place, is that the Delta's got a regulatory environment that is legendary for business investment in -- in a state, which is -- It's -- It's extremely difficult in a state that's already legendary for problems with business investment and -- and regulation.

And, so, it means it's a context which is critically important to support the existing businesses and make sure that they can survive, because if you lose them, you're really going to lose the -- the character of the community.

(Exhibit displayed on screen.)

WITNESS MICHAEL: Just to briefly illustrate that last point, this is a -- a slide that was prepared as part of the Economic Sustainability Plan and it was to illustrate the entitlement process to getting -- to making any sort of business investment in the Delta.

And all I'll -- I'll add is that there are additional layers on the already-burdensome process

in -- in California.

The economic development consultants that I worked with on this said the only place that they've seen that might compare to this regulatory environment for business is the Lake Tahoe Basin. And, you know, Lake Tahoe is a world-class recreation resort and it's sometimes difficult to make projects penciled there.

So, in that context, we need to think about, you know -- It's important for the businesses that are out there to get to the other side of the Project with the impacts.

And, so, how do you solve that problem if you've got a big construction project? How do you mitigate that project?

(Exhibit displayed on screen.)

WITNESS MICHAEL: And the WaterFix Project, you know, they're -- This is not the first time somebody's proposed a -- a big construction project that impacts small businesses, and so there are some precedents that we can look at.

And on this slide, I've just taken a graphic from a -- a current project in California. The largest tunneling project that I'm aware of currently in California has similar issues. And this is the Los Angeles Metro that's tunneling underneath

neighborhoods in California.

And that's a Project that, when finished, will, you know, help those neighborhoods and improve mobility, but during the process, it's created some issues for the small businesses.

So Los Angeles Metro has taken the approach of a Business Interruption Fund that, during the construction of project, compensates small businesses impacted by the construction for lost sales.

This sort of mechanism would be highly appropriate in the -- in the context of the WaterFix but has not been proposed. It's not part of the Proposed Project or its mitigation standards, and so it creates a -- a lot of risk for the Delta recreation economy.

Move on to my second topic --

(Exhibit displayed on screen.)

WITNESS MICHAEL: -- which is about switching gears from a local to statewide perspective to talk about benecut (sic) -- benefit-cost analysis.

And it's a critical role in determining if the Project's in the public interest, and the fact that this type of analysis is extremely well established with the -- with the Petitioners and other types of projects, large infrastructure projects proposed in

California.

A few relevant citations include the Department of Water Resources Economic Analysis Guidebook that says this about benefit-cost analysis, that it should answer questions such as (reading):

"Should the Project be built at all?"

"Will the Project have a net positive social value for Californians irrespective to whom the cost and benefits accrue?"

Basically, the Department of Water Resources in their own guidelines has defined benefit-cost analysis as a primary tool of determining if a project is in the public interest.

This sort of -- This is also a finding in a recent State Auditor Report of the tunnels. We see benefit-cost analysis playing a primary role in consideration of the California Water Commission today.

And I could go on and on about examples of that.

The WaterFix --

(Exhibit displayed on screen.)

WITNESS MICHAEL: -- has not submitted benefit-cost analysis to supports this position and has

not actually completed a benefit-cost analysis for this project.

It's a bit unprecedented, in my view, in the State of California for that to occur.

In order to -- And the public has -- has suffered from an information gap for this information not being out there the way it is for other projects.

In our center, we've endeavored -- so, as we've been studying the Delta and the Project, we've endeavored to produce a cost-benefit analysis of the California WaterFix.

So, you know, I could talk for an hour about this paper that's submitted into evidence. I forget the exact exhibit number, but it's -- it's there.

And I'm just going to summarize and call your attention to a few key points from the -- the final table here.

This report that we published in August 2016, there's two scenarios here. And there's no pessimistic scenario. It didn't seem necessary to sort of come up with assumptions that generated a lower ratio, but the optimistic scenario in the basin area.

So let me first start with the opti -- what I call the optimistic scenario.

My goal here was to try to estimate the values

that Dr. David Sunding with the Brattle Group would have come up had he done a benefit-cost analysis of the Project as defined in the EIR.

He has done some economic consulting for DWR related to BDCP and the WaterFix but has not done a statewide benefit-cost analysis.

But I could derive values from the -- from the types of analysis that he has done and look at that from the lens of the EIR and the water yields and the operations that are described there.

Doing that resulted in a net benefit of negative -- about negative $8 billion and a benefit-cost ratio of 0.4.

The base scenario uses -- still tries to use DWR as much as possible as the source for values of water supply and other things. But rather than taking the values from a study produced to -- to advocate for the tunnels, it's taken from things like the California Water Plan, which generates lower values of -- of water supply.

And I've also adjusted a few of the values with things that I think are more appropriate. In doing that, the net benefit is negative $10 billion and the benefit-cost ratio drops to 0.23.

Two other things I'll point out here in terms

of the -- Without going through every line of benefits and costs, one that I point out to people listening to the public debate who are surprised to see this as the Earthquake Risk Reduction benefits line.

The optimistic scenario is taken directly from Dr. Sunding's report as a present value of $436 million or about two and a half percent of the construction costs of the tunnels. I -- I think the values is too high.

But, nevertheless, you know, that's a -- that's a debate that has no important impact on the benefit-cost ratio because we're -- we're arguing about large numbers but small in the context of a -- of a project of this cost.

The second line to pay attention to is the Export Water Supply line. Basically, the Project rises and falls on the water yield economically. That's pretty clear from the analysis that's been done.

I'll talk a little bit more about that when we get to financial feasibility.

The thing I will point out --

(Exhibit displayed on screen.)

WITNESS MICHAEL: -- there is no pessimistic scenario there. In fact, the analysis includes many assumptions that favor WaterFix. Some analysis, like

the Final EIR, actually have lower water yields than what I used here, which was the Biological Assessment Draft, which was the most recent document with modeling in it that was out at the time I -- I wrote it.

I assumed no environmental costs for the Project. That's a very generous interpretation of the no-jeopardy finding, although there are some environmental costs.

We're assuming static technology when we know that it's advancing. We don't consider at all the risk of cost overruns, even though we know that they're substantial and probably should be included.

Not all areas of public social costs are in there. Some areas that you'll hear -- have heard about in this hearing, things like upstream interests, recreational interests, I have not estimated a value for that. I didn't feel like I had a good basis of it. Low discount rates and others.

So, certainly there's -- the analysis is set up in a way as not to be prejudiced against the -- the WaterFix.

(Exhibit displayed on screen.)

WITNESS MICHAEL: This slide about how -- how -- The water yield's important. How high would it need to be to get that benefit-cost ratio equal to one?

And when I prepared this, what I had in mind was the boundary analysis that I had heard talked about in Part 1 and I thought was going to be the framing for this analysis.

And my question was: Is there anywhere within those boundaries in which we would get a benefit-cost ratio equal to one?

Now -- Now we're talking a more specific proposal, H3+. But basically using this experiment, if I can assume that we can increase water yield without harming the environment or other third-party costs -- Which I think is a pretty heroic assumption. But if one were able to do that, how high would that water yield have to be to get this benefit-cost ratio up to one?

What I found is that even using the optimistic numbers, we need to get that yield up to 1 million acre-feet, which exceeded the most optimistic water yield in the -- the boundary scenario with the highest water yield.

So there was no overlap between the boundaries and any scenario that I could see.

(Exhibit displayed on screen.)

WITNESS MICHAEL: Finally, the third topic area is financial feasibility, related to benefit-cost

but not exactly the same. It's a more narrow analysis looking specifically at the agencies that would pay for the Project.

I'll note that an earlier ruling by this Board said, quote (reading):

"The Petitioner should show that there are feasible operations available to meet any performance standards."

And yet the Petition has contained no evidence to support financial feasibility.

The term "feasibility," economic and financial analysis is essential to it. It's -- I'm not aware of any feasibility assessments of projects this major that don't include economic and financial analysis. And, generally, it's done in an integrated way consistent with the engineering, operational and environmental analysis, the evidence that you've heard to date.

The next couple slides just hammer home --

(Exhibit displayed on screen.)

WITNESS MICHAEL: -- this point that this is what feasibility means.

(Exhibit displayed on screen.)

WITNESS MICHAEL: CEQA talks about economic feasibility. California Water Commission has produced some nice information on economics lately.

This graphic I particularly like. What informs project feasibility? Shows how engineering and financial analysis is tied together, and that most of those building blocks there refer to cost -- benefit-cost and finance, the areas of which no evidence has been submitted by Petitioners.

(Exhibit displayed on screen.)

WITNESS MICHAEL: Other DWR documents illustrate that financing is the -- the most important factor for feasibility.

(Exhibit displayed on screen.)

WITNESS MICHAEL: Then, finally, the Department of Water Resources Economic Analysis Guidebook.

I'm -- I'm not going to read the full quote here that -- that summarizes exactly what DWR is looking for in a financial feasibility analysis.

I'd actually pull your attention to the -- to the bottom line that says (reading):

"Within DWR, State Water Project Analysis Office performs financial feasibility analysis (sic) for proposed State Water Project facilities."

So the WaterFix is a proposed State Water Project facility, so presumably this type of analysis

has been performed by the Department of Water Resources, yet we -- we have not seen it submitted as evidence here.

This is a concern because there's evi -- plenty of evidence out there that the Project has --

(Exhibit displayed on screen.)

WITNESS MICHAEL: -- financial problems.

In particular, if you're following the news and events of this fall, we'll know that, when the Project was taken to water agencies and presented to them to vote for financial support, it -- it did not receive a resounding financial investment.

Westlands Water District voted explicitly seven to one against the Project and found it to be "not financially viable."

Other water agencies sort of approved partially or caveated. Santa Clara approved a one-tunnel concept with a lot of conditions attached to it.

Really, only Metropolitan Water District approved the -- the proposal that they face. But I'll -- I'll point out that the presentation to Metropolitan, and a lot of these other agencies, were based on staff reports of operations and financings that vary substantially from the analysis that you've

been looking at in this Petition and what's presented in the EIR, and that's -- that's very important.

So I would assert that none of these agencies actually approved to provide any financing of the Project as presented in this Petition in the EIR.

Now, specifically, what the agencies have done in their operational analysis is, as I recall the initial testimony -- and I read what Miss Buchholz, how she introduced the Project -- said that WaterFix is a pro -- it's an infrastructure and it's a set of operations; right?

So, what was done in these -- in this analysis was basically to take the operations out of the Project and put it into the No-Project Alternative.

So they didn't use the No-Action Alternative in the EIR. They assumed that all these -- you know, the OMR rules and outflow rules and stuff that are part of the WaterFix Project were now part of the no-Project condition.

Now, as a result of that, that increases the water yield of the Project from 200,000 acre-feet on average to 1.3 million acre-feet on average. And, as I said before, you know, that 1 million-acre threshold is fairly critical.

So the next slide, we're going to talk --

shows how --

(Exhibit displayed on screen.)

WITNESS MICHAEL: -- the cost of water through investing in the WaterFix Project varies with the yield of the Project and why this representation is so important.

Now, for these specific calculations, I had Dr. Rodney Smith -- who's a consultant who's worked extensively with agencies on financing infrastructure and water transfers -- calculate this for me in the way that he would for an agency client.

And the key thing here is to look how the cost per acre-foot of the water yield varies substantially as the yield changes.

And the far left over there is the 200,000 acre-feet that is in the EIR No-Action, Biological Assessment, and the modeling that you've analyzed here comparing -- that we've been looking at in -- in this hearing with No-Action versus the Proposed Project. That's roughly 200,000 acre-feet and is a cost per acre-foot of close to $7,000 an acre-foot.

In contrast, the calculations that water agencies were looking at and was presented by their -- by their staff, particularly Metropolitan Water District, 1.3 million acre-feet, you see the cost per

acre-foot is down around a thousand dollars an acre-foot.

So this is a vast difference which affects the Project's financial feasibility.

Clearly, using the assumptions that are in place in this hearing, the Project is not financially feasible. That's -- I've heard that statement made even by consultants for the Project itself.

If you adopt a different set of assumptions, then -- and we compare it -- you know, a simple feasibility analysis as compared to the cost of alternatives, then you can say, well, it works for urban but it doesn't necessarily work for ag and that's kind of the way we saw the votes come down this fall related to it.

And -- But the problem is that, as proposed, the majority of the water from the WaterFix and the majority of the cost ag -- cost allocation would go to agriculture.

And so that's the relevant value for financial feasibility, and it -- it fails even under this optimistic baseline to satisfy what would be needed for the agricultural contractors.

(Exhibit displayed on screen.)

WITNESS MICHAEL: So this is important because

there's serious risks to the public and the environment from ignoring financial feasibility analysis and not showing that the WaterFix operations satisfy it.

When the State engages in Projects that aren't financially feasibility, that creates risk for state taxpayers. It might create risks for the State General Fund.

Agencies can find that they have to shift funds from discretionary programs which can harm environmental programs, or they may be unable to complete mitigation actions financially or they might even be able to only build one tunnel instead of two.

So these are significant changes that can result as a -- as a result of a lack of financial feasibility.

There's also concerns about future operations, that it creates economic and financial needs to increase water exports in the future that can have a significant influence on regulatory decisions, some of which will be -- come before this Board.

So I've heard testimony about and understand there's Temporary Urgency Change Petitions during dry years, or something, that comes before this Board.

And so in a financial plan for something like the WaterFix, it would be very important for that

financial plan to show how they would pay over a billion dollars of debt service during a drought like we just faced so that they would have set aside the appropriate reserves and make sure that that financing was in place, which would be very expensive and difficult.

But it's anticipated that they're going to have issues paying the debt service during a drought, and so it would be important to -- to show how that would be done so that they aren't back in a financial emergency before this Board asking for a Temporary Urgency Change Petition during a dry year because of financial considerations which should have been dealt with at this point.

CO-HEARING OFFICER DODUC: And, hopefully, your last slide is --

WITNESS MICHAEL: This next side is the end, so in summary and conclusion --

CO-HEARING OFFICER DODUC: Our buzzer is not working so . . .

WITNESS MICHAEL: All right. So summary and conclusion: WaterFix has a potential to permanently harm Delta small business and there's no Business Interruption Fund or appropriate mitigation in please.

Benefit-cost analysis is critical to -- Is

this off? Did I hit it -- is critical to public interest.

There's -- I had it off for a moment. I'm sorry.

There's evidence that the benefit-cost ratios below one, operations are not financially feasible based on the -- the best evidence that's out there to date, and that's a problem as well.

Thank you very much.

CO-HEARING OFFICER DODUC: Thank you.

Mr. Stroshane.

MR. STROSHANE: Before I begin, I did want to thank the Hearing Officer, Miss Ansley and Miss Morris, who appears to have left, for enabling me to go first on this.

CO-HEARING OFFICER DODUC: I'm only sorry that your time is cut short.

Again, I offer, if you could coordinate with someone to ask your questions Monday, that would be more than --

MR. STROSHANE: We're going to be seeking that, so what I don't get to today, I'm hoping we can somehow --

CO-HEARING OFFICER DODUC: Mr. Jackson or somebody?

MR. STROSHANE: I've -- I've approached him. He's not here on Monday actually.

CO-HEARING OFFICER DODUC: Oh, all right.

MR. STROSHANE: But thank you for your concern.

CROSS-EXAMINATION BY

MR. STROSHANE: Dr. Michael -- Oh, my subjects that I --

CO-HEARING OFFICER DODUC: You know what, Mr. Stroshane? Time is at a limit. Go for it.

MR. STROSHANE: Well, I'm just going to say it's easy. Financial feasibility analysis.

CO-HEARING OFFICER DODUC: Okay.

MR. STROSHANE: Okay. Fasten your seat belt.

I'm -- Could -- Could I -- Could you please bring up SWDA-265, which is his written testimony, and go to Page 13, Lines 1 through 8.

(Exhibit displayed on screen.)

MR. STROSHANE: Thank you.

Do you see, Dr. Michael, that you provide here a list of factors that inform project feasibility?

WITNESS MICHAEL: Yes, I do. That list came from the California Water Commission.

MR. STROSHANE: And you've anticipated by next question.

Do you recall how recent this Water Commission document was prepared?

WITNESS MICHAEL: It was presented in 2016.

MR. STROSHANE: Thank you.

And do you see just below this list that you state that Petitioners failed to provide evidence regarding four of these eight components of feasibility analysis as identified by the Water Commission?

WITNESS MICHAEL: There are four of them that relate to my testimony that they provided no evidence on. I'm not --

MR. STROSHANE: Okay.

WITNESS MICHAEL: -- aware of the other ones.

MR. STROSHANE: Okay. And what are those four factors exactly which -- for which no evidence was submitted to this proceeding?

WITNESS MICHAEL: The financing construction planning, cost allocation, benefit-cost analysis, and cost estimate, to my knowledge. But perhaps that is presented in some other form actually.

MR. STROSHANE: Thank you.

Why do you consider the -- these omissions from this proceeding to date to be significant?

WITNESS MICHAEL: They're significant because, as discussed in my testimony, that if a project doesn't

have adequate financing, that can lead to significant changes to the project or the failure to meet commitments that are made in the project.

MR. STROSHANE: In your professional opinion, are any of these factors related to the public interest?

WITNESS MICHAEL: I think the economic interests and the cost interests are very much related to the public interest.

There's a substantial public interest in the cost of water.

There's a substantial public interest in the need -- potential need for subsidies which would divert funding from other public programs or put, you know, government agency budgets under strain and in any other way, yes.

MR. STROSHANE: In your professional opinion, are there ways in which any of these factors also relate to protection of water quality, fish and wildlife, and public trust resources which are hearing issues of concern right now?

WITNESS MICHAEL: Yes, because they're linked to the Project operations. And so the financial issues and concerns could drive a need for change in Project operations which would have significant environmental

effects.

MR. STROSHANE: Thank you.

Can we go to Page 14, Lines 20 through 26, and Pages -- and Page 15, 1 to 2.

(Exhibit displayed on screen.)

MR. STROSHANE: See if you can kind of straddle the turn of the page perhaps.

(Exhibit displayed on screen.)

MR. STROSHANE: Thank you.

Dr. Michael do you see that, in this passage, your testimony addresses risks that an infeasible project creates for the environment and public interest?

WITNESS MICHAEL: Yes.

MR. STROSHANE: Are you speaking here -- Or are you writing here you intend to be -- that these are conceptually risks or hypothetically risks in this passage?

WITNESS MICHAEL: I suppose, yeah, these are . . .

These are things that could occur if WaterFix were to go forward without adequate financing.

MR. STROSHANE: But you weren't being specific at that moment in the writing to -- to -- to WaterFix.

WITNESS MICHAEL: Well, I think it -- I mean,

I think it is specific.

I guess I'm a little confused on --

MR. STROSHANE: No matter.

WITNESS MICHAEL: -- what you're asking.

MR. STROSHANE: I'll move on.

WITNESS MICHAEL: All right.

MR. STROSHANE: Speaking conceptually or hypothetically:

In your view as an economist, might cost overruns also be a potential risk associated with a public works project?

WITNESS MICHAEL: Yes, cost overruns are a concern.

MR. STROSHANE: In your experience as an economist, can cost overruns pose risks to the public interest?

WITNESS MICHAEL: Yes, they can, particularly when, you know, the excessive cost has to be paid somehow.

So it's -- You know, the nature of that risk and the problem depends upon the -- upon the financing plan, but it -- those inadequate financing can come back to hit the government agency and affect government services.

I work in Stockton, California, which has

endured enormous cuts to the public interest and public services because of inadequate financing and commitments that that agency made.

MR. STROSHANE: So -- So you've actually anticipated my next question. I was going to ask for an example.

Are you -- Are you familiar with the economic concepts of ability to pay and willingness to pay?

WITNESS MICHAEL: Yes, I'm familiar with them.

MR. STROSHANE: How might you relate them to assessing the Petitioned Project's financial feasibility?

WITNESS MICHAEL: Right.

So, ability to pay. Another term that might be used for that would be "capacity," you know, how -- what is your financial capacity?

Willingness to pay would look more at -- at what's in your financial interests. I can refer . . . to -- I get nervous about what I refer to because I've been sitting through this hearing all morning.

So I don't know whether these documents are in evidence, but I remember -- I remember an analysis that a consultant did for the Treasurer's Office that looked at this.

For example, when they looked at the

agricultural producers, they looked at their capacity to pay. And the capacity to pay was defined, you know, how much could they pay for water that would drive the profitability of their farming to zero?

And, you know, that's an example of capacity to pay. You know, how much could they pay before they're -- they're bankrupt?

However, it would not be in the interest of those farmers to incur a Project which is driving them to bankruptcy. Their willingness to pay would consider, you know, the decision and investment and then what their -- it made their -- you know, what was the most profitable investment for them.

MR. STROSHANE: So are these two concepts of ability to pay and willingness to pay, then, related to the public interest?

WITNESS MICHAEL: The ability and capacity to pay is related in the sense that, you know, when you exceed that, that's when -- when, you know, you have the potential for the risks of costs to fall back on to another entity or, you know, for example, to impact taxpayers.

You know, the willingness to pay is a bit more of a -- of a . . . private decision so --

MR. STROSHANE: Okay.

WITNESS MICHAEL: -- I think there's some public interest in good private decisions but -- but I think not to the extent there is in the ability to pay.

MR. STROSHANE: Dr. Michael, are you familiar with the phrase "beneficiaries pay" in relation to the Petition Project.

WITNESS MICHAEL: Yes, I am.

MR. STROSHANE: As an economist, when you hear that phrase, what groups of people -- public agencies or other people in society does it make you think of in association with the Project?

WITNESS MICHAEL: The way it has been used is that water agencies which are recipients of water from the State Water Project and Central Valley Project would pay the costs of the Project.

MR. STROSHANE: As a professional economist, do you have concerns about whether any of the beneficiaries that you're aware of for the Project -- who would benefit from the Project are able -- or have the capacity, in your terms, and may be willing to pay for it?

WITNESS MICHAEL: I am not concerned about whether the Metropolitan Water District has the capacity to pay for their share. I think they have that financial capacity.

I am concerned that they may make a commitment that's not in the best interests of their rate payers, but I'm not concerned about their capacity to -- to finance their share.

MR. STROSHANE: Thank you.

WITNESS MICHAEL: The other ones, I think I do have concerns about.

MR. STROSHANE: Thank you.

Can we go to Page 16, Lines 5 through 18.

(Exhibit displayed on screen.)

CO-HEARING OFFICER DODUC: Just a heads-up, Mr. Stroshane: Three minutes.

MR. STROSHANE: Dr. Michael, do you see that on -- at Line 18 in this passage, you mention a Metropolitan Water District white paper that you quote and cite to?

WITNESS MICHAEL: Yes.

MR. STROSHANE: Are you aware that Metropolitan Water District last summer produced three white papers that addressed many subjects having to do with California WaterFix which is here the Petition Project?

WITNESS MICHAEL: Yes, I am.

MR. STROSHANE: Are you aware or familiar with the finance white paper, which I believe is the third

one that was produced by the Metropolitan Water District of Southern California last summer?

WITNESS MICHAEL: I had -- I did -- I have read it.

MR. STROSHANE: Okay. And . . .

So you have read it. Okay.

WITNESS MICHAEL: Yes.

MR. STROSHANE: Please bring up RTD-1008 and go to Page 3 .pdf, right column, please.

MR. BAKER: What was the exhibit number again?

MR. STROSHANE: 1008.

(Exhibit displayed on screen.)

MR. STROSHANE: Okay. Can you scroll down to -- a little ways to Page -- .pdf Page 3.

(Exhibit displayed on screen.)

MR. STROSHANE: Yeah. Just below this -- this graph.

(Exhibit displayed on screen.)

MR. STROSHANE: Yeah. Thank you.

And can you enlarge and center to the right -- the right-hand column.

(Exhibit displayed on screen.)

CO-HEARING OFFICER DODUC: And this will be your last question, Mr. Stroshane.

MR. STROSHANE: Ooh, I better make it good.

(Laughter.)

MR. STROSHANE: So do you see that this passage states that "Pending completion of the validation action" -- I'm sorry. I need to establish a little bit of foundation.

Are you familiar with the validation suit that was filed by DWR last fall?

WITNESS MICHAEL: I'm aware of it, but I'm not very familiar with it.

MR. STROSHANE: That's okay.

Are you familiar with the purpose of the validation suit?

WITNESS MICHAEL: Somewhat.

MR. STROSHANE: Okay. Do you see that this passage states that (reading):

"Pending completion of the validation action, private placement bond sales with the Finance Joint Powers Authority would allow funding for project implementation to proceed."

You see that bullet there?

WITNESS MICHAEL: Yes, I see it.

MR. STROSHANE: Okay. And do you see also that the next bullet states that (reading):

"If DWR does not have the authority,

a process would be established leading to the potential conveyance of interest in the project to the Finance JPA or designee to proceed."

Do you see that?

WITNESS MICHAEL: Yes, I do.

MR. STROSHANE: Have you heard of Joint Powers Authority?

WITNESS MICHAEL: I have heard of them, yes.

MR. STROSHANE: Are you familiar with what they are, just briefly.

CO-HEARING OFFICER DODUC: Very briefly.

WITNESS MICHAEL: On a -- On a --

MR. STROSHANE: Yeah.

WITNESS MICHAEL: -- surface level, yes.

MR. STROSHANE: Okay. Can JPAs include private sector partners, to your knowledge?

WITNESS MICHAEL: I don't have knowledge of that.

MR. STROSHANE: Okay. Are you aware -- Let's see.

In your career as an economist, have you studied Joint Powers Authorities?

WITNESS MICHAEL: No, I have not.

MR. STROSHANE: Okay.

CO-HEARING OFFICER DODUC: And, Mr. Stroshane --

MR. STROSHANE: I did it.

CO-HEARING OFFICER DODUC: -- that is it.

MR. STROSHANE: I got through all my financial feasibility questions.

Thank you very much --

CO-HEARING OFFICER DODUC: Excellent.

MR. STROSHANE: -- Dr. Michael.

And I will seek other -- other oracles --

CO-HEARING OFFICER DODUC: Thank you.

MR. STROSHANE: -- for my next --

CO-HEARING OFFICER DODUC: Miss Meserve, this had better be fast.

MS. MORRIS: Were you wanting to make a decision about Miss Wehr's request for the morning of the 26th for Dr. Petrie?

I'm not aware of anyone objecting to it if you were okay with that.

CO-HEARING OFFICER DODUC: We'll play it by ear. I don't expect we'll get to him in any case.

MS. MORRIS: Okay. Yeah. Just you had said you wanted this revisited at the end of the day. That's why I'm bringing it up.

CO-HEARING OFFICER DODUC: Okay. Thank you.

Goodbye, everybody. See you Monday back here in this room at 9:30.

(Proceedings adjourned at 5:02 p.m.)

State of California)
)
County of Sacramento)

I, Candace L. Yount, Certified Shorthand Reporter for the State of California, County of Sacramento, do hereby certify:

That I was present at the time of the above proceedings;

That I took down in machine shorthand notes all proceedings had and testimony given;

That I thereafter transcribed said shorthand notes with the aid of a computer;

That the above and foregoing is a full, true, and correct transcription of said shorthand notes, and a full, true and correct transcript of all proceedings had and testimony taken;

That I am not a party to the action or related to a party or counsel;

That I have no financial or other interest in the outcome of the action.

Dated: March 22, 2018

_____
Candace L. Yount, CSR No. 2737