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Attachment 12

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1 MONTEREY, CALIFORNIA

2 MONDAY, MARCH 30, 2026, 8:30 A.M.

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5 THE COURT: Good morning, welcome back. We are on
6 the record in the matter of City of Marina versus RMC
7 Lonestar, et al. 20CV001387. Appears all Counsel are present
8 or at least Counsel representing all the parties are present.
9 We can resume with Mr. Leffler. He can come forward. He's
10 still on the stand, still under oath and need not be resworn.
11

12 **CONTINUED DIRECT EXAMINATION**

13 BY MR. BETZ:

14 Q. Good morning Mr. Leffler, good morning.

15 Last week we touched on your background then we moved
16 onto your knowledge and familiarity with the Salinas Valley
17 groundwater basin then we moved on to work that you've done
18 over the last decade or so concerning alleged impacts on the
19 project and I'd lining to finish off that subject first of
20 all. Okay?

21 A. Okay.

22 Q. Let's turn to Exhibit 751. What is Exhibit 751?

23 A. This exhibit is the written rebuttal testimony
24 for the phase two proceedings with the AHO, which relate to
25 the WBSSM flow models.

1 Q. Can you summarize your conclusions or opinions
2 from this documents?

3 A. So this document is essentially a review of
4 those models, what the differences were in the models and it
5 goes into some of the agreements that we had about you know so
6 we were -- the two technical sides were working together to
7 make as many features of the model the same as possible. And
8 I guess just to highlight something on that, there -- this
9 document includes a list of agreements that we thought we had
10 that you know, in the end that we only learned that we didn't
11 have when the models came out. For example, the number of
12 model layers. We had agreed there would be 11 and then they
13 changed it to ten. And also on the ocean boundary condition
14 you know, we had agreement on what that would be and we didn't
15 know until the models came out that the MCWD model had changed
16 that. So it goes into some of those differences and
17 agreements and disagreements.

18 Q. When you say they changed the model layers from
19 11 to ten, to whom are you referring?

20 A. The MCWD and Marina experts.

21 Q. Other than summarizing agreements and
22 difficulties agreements are there any other conclusions or
23 opinions reached in Exhibit 751?

24 A. Yeah, I mean, basically you know, we came to the
25 conclusion that our -- the model that the Cal-Am experts had

1 developed better represented, you know, geologic conditions,
2 for example, with regard to the ocean boundary and so we --
3 you know, our conclusion was that our model was, you know, a
4 better model for predicting project impacts.

5 Q. Your model was named what?

6 A. The Cal-Am WBSSM Model, Water Board Study State
7 Model. 2023.

8 Q. Why was it better?

9 A. Well, again, one -- one example is that the way
10 it represented the ocean boundary condition where the water
11 seeps through the sea floor is -- you know, how it happens in
12 nature, how it physically happens. And that was -- that had
13 always been a feature of the model. I guess, just to back up,
14 so we all agreed to use the North Marina Groundwater Model as
15 sort of the basis for, you know, improving and updating the
16 models and it represented the ocean boundary condition with
17 seepage through the sea floor. And without any discussion of
18 changing that, they changed it to different vertical
19 boundaries within each aquifer. So like sort of a slice
20 through the aquifer that represented the boundary condition at
21 various distances off-shore.

22 Q. So why is that good or bad?

23 A. Well, the way that we did it on our end is
24 basically how it happens in nature. That's how it physically
25 happens. And so it's just a better way to represent it --

1 essentially it gave them another -- they use it had for a
2 calibration parameter in the model that, you know, shouldn't
3 have been done. I mean, we -- there was no need to do that.
4 And they adjusted the distances as part of there calibration
5 process and you know, it's just -- it kind of gave them
6 another knob to tweak, so to speak, in calibrations that is
7 not -- is really not how you want to do calibration.

8 Q. Moving on to Exhibit 786. What is Exhibit 786?

9 A. So this is the written rebuttal testimony for
10 the phase three models in the AHO proceeding which are the
11 sale out transport models.

12 Q. Can you briefly describe the summary or
13 conclusions reached in Exhibit 786?

14 A. So similar to the previous exhibit, it's a
15 review and comparison of those sale out transport models that
16 were done by each side and what the differences are and I
17 guess just to highlight one of the differences that was very
18 important is the -- so we know the ocean sale in it is 33,500
19 milligrams per liter TDS. So you have to set boundary
20 conditions in these models for Solute Transport. You have to
21 put in the ocean salinity. Because the water that would seep
22 into the ocean would have that salinity of 33,500. And in the
23 Dune Sand Aquifer boundary condition and the MCWD WBSSM they
24 used 29,800 milligrams per liter for ocean water salinity
25 instead of 33,500.

1 Q. They being who?

2 A. The MCWD and Marina's experts.

3 Q. Why was that wrong?

4 A. Because the ocean salinity is not 29,800
5 milligrams per liter, it's 33,500 milligrams per liter, and
6 the primary item that that impacts is the Ocean Water
7 Percentage that the model predicts.

8 Q. So by using improper TDS for the ocean, what was
9 the outcome of their models?

10 A. It was an under-prediction of the Ocean Water
11 Percentage.

12 Q. I paused for a minute.

13 MR. BETZ: Your Honor, I'm not sure if you had a
14 question or technical issue. Pardon me for watching the
15 Court.

16 THE COURT: No, I'm just trying to absorb this as the
17 testimony comes in.

18 MR. BETZ: Thank you. Just kidding then, I wasn't
19 watching.

20 Q. Is there anything else you wish to highlight as
21 it relates to Exhibit 786?

22 A. Well, again, I think it goes into a number of
23 different items related to those models. I would just say
24 overall, you know, when both this one and the previous exhibit
25 we did, you know on our side we did what we could to

1 accommodate the changes that the other experts wanted such as
2 moving the southern boundary condition or the location of the
3 southern boundary of the model further south. We accommodated
4 additional model layers that they wanted. So, you know, we
5 tried to do as many things as we could to accommodate what
6 they wanted, you know, within reason. I would say one of the
7 things to note about these models is that for the ocean
8 boundary in terms of the elevation, it does not use -- I think
9 we talked about last week fresh water equivalent heads in the
10 ocean. And you know, we had a disagreement about that. We
11 wanted to do it that way, include those, they did not, MCWD
12 and Marina experts did not. So in the end we just agreed to
13 not include fresh water equivalent heads and the main thing
14 that that impacts is again, Ocean Water Percentage, because if
15 you have a higher equivalent head in the ocean that would
16 drive more seawater inland and that -- you know everything
17 else being equal, that would tend to increase the Ocean Water
18 Percentage. So again, you know for both models actually that
19 results in a little bit of a under prediction of Ocean Water
20 Percentage.

21 Q. Thank you. Anything else you wish to highlight
22 or summarize from Exhibit 786?

23 A. No, I think that's sufficient for now.

24 Q. We previously discussed the HWG Group. Do you
25 recall that?

1 A. Yes.

2 Q. And initially I think you testified the HWG
3 Group contained five members representing various independent
4 interests. Do you recall that?

5 A. Yes.

6 Q. Were all five members paid by Cal-Am,
7 notwithstanding those separate interests?

8 A. So, to the best of my understanding, they --
9 they worked for their clients, respective clients and then
10 ultimately those clients were reimbursed by Cal-Am.

11 Q. Regardless of the payment coming from Cal-Am,
12 was it your understanding the group still acted independently
13 and unbiased?

14 A. Yes.

15 MR. BROCHARD: Objection, lacks foundation, calls for
16 speculation.

17 THE COURT: Why would that not be admissible lay
18 opinion testimony, this witness having worked with them and
19 hence, based rationally upon his observations and helpful to a
20 clear understanding of his testimony?

21 MR. BROCHARD: I don't think he's stated any grounds
22 for what he's basing it on.

23 THE COURT: I think he said he was a member of the
24 group and worked with them previously, did he not?

25 MR. BROCHARD: He says he still works with them and

1 they're all paid by the same person, but I don't know that
2 that provides a basis for opining on what their intent is.

3 THE COURT: Well, basically assessing whether they
4 acted independently in a non-biased manner. Now that
5 testimony itself, of course, may be subject to challenge on
6 cross examination or otherwise, but I don't think it's
7 inadmissible. Overruled.

8 BY MR. BETZ:

9 Q. Unless so directed, you may answer the question.

10 A. Can you repeat.

11 MR. BETZ: Would you be kind enough to read it back
12 please.

13 (Whereupon, the record was read as follows:

14 "Q. Regardless of the payment coming from Cal-Am,
15 was it your understanding the group still acted
16 independently and unbiased?

17 A. Yes.")

18 BY MR. BETZ:

19 Q. You stand by your answer?

20 A. Yes.

21 Q. What's the basis of that? Why do you say that?

22 A. Just from working with those individuals,
23 they're very strong-willed and independent minded, and it was
24 very clear that they had technical opinions that were their
25 own opinions regardless of who they were working for and, you

1 know, sometimes, you know, we had some, you know, lengthy
2 discussions about certain topics and it was just very clear
3 that everyone was coming at it from just a purely technical
4 angle and what their technical opinions were and it was just
5 very clear to me that everybody was very independent and had
6 their own personal opinions on technical issues.

7 Q. At some point did the HWG Group morph into
8 yourself, Dr. Johnson Yeh and Mr. Tim Durbin?

9 A. Yes.

10 Q. And you understand you're the three experts for
11 this case; is that correct?

12 A. Yes.

13 Q. And you were the three experts that testified on
14 behalf of Cal-Am before the AHO, correct?

15 A. Yes.

16 Q. Despite that, are you still providing fair and
17 unbiased analyses and opinions regarding potential impacts by
18 the MPWSP?

19 A. Yes.

20 Q. Why do you say that?

21 A. Well, again, it's just a continuation of -- I
22 mean, we ourselves want to know what's going to happen and
23 what we expect to happen. And we just want to do the best
24 technical work we can do and get the best answers to the
25 questions that are being asked.

1 Q. Thank you. I now wish to move on to a fourth
2 topic with Groundwater Modeling.

3 You're familiar with the term Groundwater Modeling;
4 is that correct?

5 A. Yes.

6 Q. Can you please again give us a sentence or two
7 about what Groundwater Modeling is as that term is used in
8 your industry?

9 A. Yes. It's basically a computer-based software
10 program that utilizes the equations related to groundwater
11 flow, and then you put in certain model inputs like the
12 aquifer parameters and recharge and discharge and then it does
13 computations to determine how groundwater elevations change
14 over time to different stresses in the basin.

15 Q. Are there different types of groundwater models?

16 A. Yes.

17 Q. Slowly, can you please list those types.

18 A. Yes. So there are transient -- Transient
19 Groundwater Flow Models, there are Steady State Groundwater
20 Flow Models, and there are Super Position Models.

21 Q. Let's pause there, please. Please briefly
22 explain what is a transient model.

23 A. So a transient model is -- it has a time element
24 to it. So you set up what are called stress periods and
25 within -- so, for example, maybe a stress period is a month.

1 And then you assign the recharge, which is like rainfall
2 percolation and other types of recharge. Discharge was like
3 the pumping. So -- and these things can vary over time from
4 one month to the next, like with seasonal pumping, it changes.
5 So it allows you to incorporate changes over time in whatever
6 time periods you want to define.

7 Q. What is a Steady State Model?

8 A. So a Steady State Model essentially eliminates
9 the time element and you would typically look at a period of
10 time, let's say a ten-year period, and you would say -- you
11 have to determine what is the average of say the recharge
12 elements and the discharge elements like the groundwater
13 pumping. So you can only have say one value for say
14 precipitation recharge and for pumping. And so it doesn't
15 vary, it's just constant.

16 Q. What is a super position model?

17 A. So a super position model basically sets all --
18 so backing up. So you have boundary conditions and models.
19 So typically you have a model domain of a certain area and
20 then at each boundary you have to assign, for example, what
21 groundwater elevations would be there. And so in a typical
22 model it would be, you know, you'd look at all the data and
23 say here's what the ground -- elevations are at say the
24 northern boundary and you assign those. And they may vary
25 over time if it's a transient model. But in a super position

1 model it re moves that and basically sets everything to zero.
2 So the boundary conditions are set at zero. And it also
3 basically re moves the recharge and the discharge components
4 as well. And so you set up this model and -- so it would be
5 first of all based on say a calibrated transient model for the
6 parameters and so forth. And then you set it up, as I
7 describe, and then you would introduce say a well and you
8 would start pumping. And then you could directly see what is
9 the drawdown across the model domain.

10 Q. Throughout these proceedings we've heard terms
11 such as flow model, sale out transport model, variable density
12 model. Are you with me so far?

13 A. Yes.

14 Q. How do those three types of models relate to a
15 transient steady state or super position model?

16 A. So those -- so a flow model -- so you can have a
17 transient flow model or a steady state flow model, for
18 example. The flow model focuses on predicting the elevations.
19 And within a given model you have say model -- what are called
20 model grid cells. So they might be say 200 feet by 200 feet.
21 And so the flow model predicts the elevations in each of those
22 grid squares given all the model inputs. And so you have the
23 elevations and then ones you have the elevations it can tell
24 you what the flow is between the different cells and between
25 ditch rent areas of the model. So that's a flow model.

1 Q. A flow model can be used for a transient steady
2 state or super position model?

3 A. Right.

4 Q. Tell us about a Solute Transport Model, how can
5 those be used for a transient steady state or super position
6 model?

7 A. So a Solute Transport Model builds on the flow
8 model. So you have a flow model first. Then a Solute
9 Transport Model tells you about the movement of solutes or
10 sometimes referred to as a constituents and so for example
11 total dissolved solids might be a Solute or a constituent.
12 Chloride might be a Solute or a constituent. And so what you
13 do is you again, you're boundary conditions have to assign
14 concentrations of say totals solids and you have to put in the
15 initial conditions and then you, you know, then you run the
16 model and over time it tells you what happens to the
17 concentrations in these different grid cells.

18 Q. A variable density model, how are those used
19 and/or how do they relate to a transient steady state or super
20 position model?

21 A. So when it's -- you introduce a variable density
22 as we discussed a little bit previously, the -- when you have
23 seawater or high concentrations of total dissolved solids in a
24 aquifer, there's -- that's denser than fresh water. And that
25 means that the equivalent head or the elevation that the

1 aquifer is experiencing is higher than if you don't have that
2 density from seawater. And so it accounts for that. It
3 accounts for the difference in effect active head or elevation
4 when you have denser water due to the high total dissolved
5 solids content.

6 Q. How do you determine which model to use for a
7 particular purpose?

8 A. So it depends on the questions you're trying to
9 answer and the model purpose and -- so yeah, it just depends
10 on your model purpose basically in terms of which model you
11 use.

12 Q. I'd now like to ask you about some definitions
13 before we address particular models. Okay?

14 A. Okay.

15 Q. First of all, what does it mean to build a
16 model?

17 A. So to build a model you would typically start
18 with a review of all of the available data and reports for an
19 area, you might do some additional field work to collect
20 additional data. And then you take all that information and
21 you build your hydrogeologic conceptual model or HCM and
22 that's basically a narrative and graphical write up and
23 depiction of what's happening with groundwater levels in terms
24 of say groundwater elevation contour maps and hydrographs
25 which show groundwater elevations over time, you compile all

1 the information on groundwater quality, you compile all the
2 information to characterize the aquifer parameters which is
3 hydraulic connectivity and storage coefficient. You look at
4 your recharge and your discharge. So basically you put
5 together all of the components that you need to feed into a
6 model in your hydrogeologic conceptual model, then you put
7 that into the model or the model code on your computer and do
8 your model layers and all the, you know, sort of building of
9 that model in the computer code.

10 Q. So this information is inputted into a computer,
11 correct?

12 A. Correct.

13 Q. And what does the output of that model look
14 like? So to be specific, of all the exhibits we have in this
15 case no one has attached as an exhibit the model or a model.
16 With that backdrop how -- what's the output, what can the
17 judge look at to determine whose model is correct?

18 A. Well, so there's various types of output you can
19 get from a model. And, for example, you can get drawdown
20 maps. So you can look at contours of drawdowns. So you can,
21 you know, say you introduce new pumping and you say how much
22 drawdown is this new pumping going to cause. And so you can
23 have a drawdown contour map that might show you where's the
24 20-foot drawdown, where's the ten-foot drawdown, where's the
25 five-foot drawdown. Typically those would be sort of like

1 rings around the pumping wells or cone of depression. So that
2 would be one type of model output. In this case you can look
3 at seawater intrusion front because we're working with Solute
4 Transport Models. So you can, under certain conditions, say
5 here's where the model predicts the seawater intrusion front
6 will be, and then on another set of conditions it will tell
7 you where would we expect the seawater intrusion front to be
8 under these set of model conditions. And so you can also get
9 groundwater elevation contour maps. And yeah, so there's a
10 lot of different outputs that you can get from a model.

11 THE COURT: Does the value of these models increase
12 when used as constant factors for each type? In other words,
13 uses the same basic assumptions for each type?

14 THE WITNESS: So you set up maybe scenarios, Your
15 Honor, maybe you're referring to scenarios. So say you have a
16 scenario of -- well in this case so we have a scenario where
17 we say well okay, there's no slant well pumping at all. And
18 there's everything else that's happening in the basin, you
19 know, the pumping, the recharge, whatever else is happening
20 dictates, you know, say where the seawater intrusion front is
21 going to be and what the groundwater elevations will be. And
22 then you just change say one thing, you introduce say the
23 slant well pumping. Everything else is the same and constant
24 from what it was before. And so the only difference is
25 introducing that slant well pumping. Then you run it again.

1 And then you can compare well what's different when we
2 introduce the slant well pumping. And whatever is different
3 would be attributed to the slant well pumping because
4 everything else was constant. I'm not quite sure if that
5 answers your question, Your Honor, but --

6 THE COURT: Well, you have. My question is, there
7 were different types of outputs that you can get from a model
8 I think was the expression that you used. And so you gave an
9 example of drawdown contours. So if you had that type of
10 output from a model and then you wanted to check concentration
11 changes from a different model, is it important to use the
12 same set of assumptions in the scenario that you're building
13 the model on so that you have some equivalency between what is
14 shown for drawdown and what is shown for concentrations of
15 constituent components of the water under the same set of
16 conditions?

17 THE WITNESS: Yes. I think, if I understand your
18 question correctly, yes, you would want basically to use the
19 same model to do both outputs. So you run the Groundwater
20 Flow Model and the Solute Transport Model, you have all those
21 results from both models. And so on the one hand you might
22 output okay, here's the drawdown contours, on the other hand
23 you might output well, what is the change in concentrations.
24 And yeah, so everything in both of those models is the same in
25 both model runs except you added in this example the slant

1 well pumping. But yeah, it's important everything else be the
2 same and constant.

3 THE COURT: Thank you.

4 BY MR. BETZ:

5 Q. A few more definitions, then we'll talk about
6 each of the models. Okay?

7 A. Okay.

8 Q. What does it mean to run a model?

9 A. So after you build the model and, of course, you
10 calibrate the model, then you quote/unquote run the model
11 which is basically you might, you know, start at a certain
12 point in time, let's say it's a transient model and you want
13 to simulate a 30-year period, and so you basically tell the
14 computer to execute the program and then it goes through a
15 series of iterations and computations and it figures out, you
16 know, what are the groundwater elevations after say a month
17 and what are the groundwater elevations after six months and
18 on up to 30 years. And so it sort of runs through that say
19 30-year period that you're simulating doing a series of
20 computations, which can take some time.

21 Q. You used the term calibrate. What does it mean
22 to calibrate a model?

23 A. To calibrate a model as part of your
24 hydrogeologic conceptual model you've compiled all the
25 groundwater elevation data. And so you have say, you know,

1 100 wells and you have -- each well has a time period of say
2 it has ten years of groundwater elevation data or 30 years.
3 So each of those wells plots in a certain model cell or grid
4 square. And so you take your output from the model in terms
5 of the elevations, you compare it to what was observed in the
6 field over time and you see how well they match. And then
7 there's other -- so that's groundwater elevations which is,
8 you know, one of the most common things that you calibrate to.
9 You may also calibrate to like the seawater intrusion front
10 changing over time as well.

11 Q. We've heard testimony about different scenarios
12 as it relates to models. What does that mean?

13 A. So yeah, again, so once you have built and
14 calibrated the model, then you can run scenarios. So
15 typically you're changing -- so you have what is called like a
16 baseline scenario. So that's just whatever those conditions
17 are in the model that you've -- you've input based on all your
18 data collections, you can run that -- run that forward and see
19 what happens just with those conditions. And then so that's
20 like your baseline scenario. And then you set up a scenario
21 of say introduce the new pumping well. And so the only thing
22 that's different is that as we were discussing is the pumping
23 well and you run that. So that's a scenario. A scenario of
24 adding a pumping well.

25 Q. We've heard testimony about during the AHO

1 proceedings different scenarios were brought up. Do you
2 recall that?

3 A. Yes.

4 Q. All right. Those are examples of scenarios?

5 A. Yes.

6 Q. What is a sensitivity analysis?

7 A. A sensitivity analysis, so once you have built
8 and calibrated the model you would look at okay, what would
9 happen and what would the model show if we changed a certain
10 parameter or group of parameters. So, for example, hydraulic
11 conductivity, let's say you calibrated the model and so you
12 have this sort of array of hydraulic conductivity values
13 because it could obviously vary by model grid cell, or you may
14 have zones of groups of model grid cells that are assigned to
15 a certain hydraulic connectivity. Then you say well, what if
16 we increase hydraulic connectivity by 50 percent. So say a
17 certain zone was ten feet per day. So if we increase that by
18 say five to 15, and then you would do that like typically
19 throughout the model domain you'd increase it by say a factor
20 or a percentage. Then you'd run the model and you see how
21 sensitive the model is to that change in terms of say how much
22 did the groundwater elevations change when we changed that
23 hydraulic connectivity.

24 Q. What does it mean for a model to crash?

25 A. So when a model is running, it's going through

1 these iterations and you set criteria to -- you want -- as it
2 goes from one computation to the next within a given time
3 step, you want it to sort of converge and get down to a very
4 small difference from one iteration to the next. So sometimes
5 what happens is it starts oscillating where it will keep
6 jumping around and the elevation won't kind of -- it can't
7 figure out what the elevation is at a given grid cell. And so
8 it won't typically go onto the next time step. And it will
9 just sort of get stuck. And then at some point it sort of you
10 know it just can't go forward.

11 Q. Can you give us an example of any models that
12 have crashed as it relates to this matter.

13 A. Well, the seawater intrusion -- what I refer to
14 as the seawater intrusion model 2025 when we added the slant
15 wells at the coast, it basically crashed and was unable to do
16 that simulation.

17 Q. Why?

18 A. Well, I think through our work we determined --
19 so they had made a change in the ocean boundary condition
20 between the seawater intrusion model 2024 and 2025.

21 Q. They being who?

22 A. So Montgomery & Associates who is the consultant
23 for the 180, 400 subbasin GSP developed the seawater intrusion
24 model.

25 Q. Please continue.

1 A. And so there was a change from what's referred
2 to as a constant head ocean boundary condition to a general
3 head boundary condition. And that general head boundary
4 condition has associated with it a conductance, what's
5 referred to as a conductance value which is sort of the ease
6 of how the water gets into the aquifer system. It had a very
7 low conductance value that was causing this problem.

8 Q. Does the purpose of a model effect how it should
9 be used to answer certain questions?

10 A. Yes.

11 Q. So you can create a model for one purpose but
12 has no relevance to another question?

13 A. Right.

14 Q. Can you give us an example as it relates to this
15 case.

16 A. So -- well, I think when it comes to model
17 purpose, what I would say is really the purpose in this case
18 was the relative difference. So what is the relative
19 difference regarding an impact. So, let's say, for example,
20 you know, what is the relative difference on the TDS at a
21 given well of not having slant wells versus having slant
22 wells. And are we looking -- so the relative difference
23 meaning will the concentration increase, will it stay the
24 same, or will it decrease. And so the most important question
25 is you know, which of those three things will happen. And so

1 that is really the purpose of what the models that we've
2 constructed here and what we're trying to answer. And it's --
3 so it's less important what is the absolute concentration that
4 we're starting with, you know, and how does that compare to
5 what is the absolute concentration that we end with. The --
6 really what we're trying to understand is what is the relative
7 difference. Does it improve things, does it keep them the
8 same or does it make things worse.

9 Q. Thank you. I now wish to turn to the many
10 models that have been created and used for this project. With
11 that, have you done any modeling work as part of your work for
12 the Monterey Peninsula Water Supply Project?

13 A. Yes.

14 Q. I'm going to try to do this in three different
15 phases. The first phase about which I have questions concerns
16 models run and analyzed prior to the AHO proceedings. Okay?

17 A. Okay.

18 Q. Let's start with can you list those models?

19 A. So starting in 2008 we have the Salinas Valley
20 IGSM Model, which I believe stands for Integrated Groundwater
21 Surface Water Model.

22 Q. Let's pause, I'm going to give these numbers.
23 Let's call that Model One. SVIGSM 2008. Is that okay?

24 A. Yes.

25 Q. What is Model Two?

1 A. So associated with that was the North Marina
2 Groundwater Model 2008.

3 Q. Let's give that a name. May I please call that
4 NMGWM 2008?

5 A. Yes.

6 Q. What is Model Three?

7 A. So then in 2015 we have an updated SVIGSM Model.

8 Q. What is Model Four?

9 A. Then also in 2015 we have an updated North
10 Marina Groundwater Model.

11 Q. What is Model Five?

12 A. And then there was a new model created referred
13 to as the CEMEX Model in 2015.

14 Q. What is Model Six done prior to the AHO
15 proceedings?

16 A. Then there was the -- another update to the
17 North Marina Groundwater Model in 2016.

18 Q. Called what? What's the name of it?

19 A. The North -- I think we call it the North Marina
20 Groundwater Model 2016.

21 Q. May I called that NMGWM 2016?

22 A. Yes.

23 Q. What is Model Seven?

24 A. Then we developed an update to the CEMEX Model
25 in 2017.

1 Q. Can we call that the CEMEX 2017 model?

2 A. Yes.

3 Q. Next?

4 A. Then we had the Weiss related models. So Weiss
5 Associates who's the independent consultant for the California
6 Coastal Commission. And we had in 2020 the Weiss modeling
7 that was done using the North Marina 2016 model.

8 Q. What shall we call that?

9 A. You know, Weiss 2020 I guess or North Marina
10 Groundwater Model Weiss 2020.

11 Q. That's Model Eight. And what is the ninth
12 model?

13 A. And then the -- so the Hydrogeologic Working
14 Group -- in 2020 the Weiss had issued their scope of work for
15 their modeling. And so we wanted to do some of that modeling
16 ourselves. And so we took their scope of work and we did some
17 modeling which we summarized in a report that's dated 2022.

18 Q. What do we call that model?

19 A. I think -- I don't know, we can call it the
20 HWG Weiss scope of work model.

21 Q. Let me try something else. Can we call Model
22 Nine NMGWM 2016 Geoscience 2022?

23 A. Sure.

24 Q. Don't just agree with me. Does that make sense
25 for our discussion?

1 A. Yes.

2 Q. I'd now like to go back through each of these
3 nine models and ask some questions. Are you with me?

4 A. Yes.

5 Q. So the first series of questions concern what we
6 called Model One, the SVIGSM 2008. You with me?

7 A. Yes.

8 Q. When was that model created?

9 A. 2008.

10 Q. What kind of model is it?

11 A. That's a Transient Flow Model.

12 Q. And we discussed the type of models a little
13 earlier today, correct?

14 A. Yes.

15 Q. Who requested that it be done?

16 A. That was done for the Regional Water Supply
17 Project. I believe it was part of the -- may have been part
18 of the CEQA analysis or just the impact. So analysis for the
19 regional project.

20 Q. You mean the RDP?

21 A. Yes.

22 Q. Who created that model?

23 A. So that model was created by a consulting firm
24 known as WRIME. And that's an acronym. It's W -- all caps,
25 W-R-I-M-E.

1 Q. For what purpose was that model created?

2 A. Well, I think originally they had created that
3 model to simulate the Salinas Valley for other purposes. And
4 then it was utilized subsequently for the RDP project.

5 Q. Was the model created to determine whether the
6 RDP project would cause any harm or impact?

7 MR. BROCHARD: Objection, leading, lacks foundation.

8 THE COURT: It's an expert witness, leading is
9 permitted sometimes. This is an appropriate time. The other
10 one was lack of foundation. Foundation will need to be
11 established. Mr. Leffler started his response by saying "I
12 think originally they had created that model to simulate the
13 Salinas Valley for other purposes." I believe that is the
14 portion to which the objection is addressed. So if there's a
15 basis, like a recital in that model study that indicates what
16 its purpose originally was and Mr. Leffler is aware of that,
17 he can so indicate. But some foundation needs to be made.

18 BY MR. BETZ:

19 Q. Have you reviewed the SVIGSM 2008 model?

20 A. Yes.

21 Q. For what purpose have you reviewed it?

22 A. Just in terms of just trying to understand all
23 of the work that had been done in the Salinas Valley
24 groundwater basin.

25 Q. Did you analyze the work that went into that

1 model?

2 A. Well, I reviewed the report that they prepared
3 related to that.

4 Q. What report?

5 A. The report that was prepared in 2008 that
6 described the use of the model.

7 Q. Based on your review of that report and your
8 analysis of the output, did you have an understanding of the
9 purpose of that model?

10 MR. BROCHARD: Objection, assumes facts not in
11 evidence. He said he reviewed the report, not that he
12 analyzed any outputs.

13 THE COURT: Well, he did say that he reviewed it
14 trying to understand all of the work that had been done in the
15 Salinas Valley groundwater basin. That implies an analysis.
16 But you can further establish I suppose.

17 BY MR. BETZ:

18 Q. When you were reviewing the report, did you
19 analyze the findings and outcomes and analysis set forth in
20 the report?

21 A. Yes.

22 Q. Based on that review of the report, did you have
23 an understanding of the purpose of that model?

24 A. Yes.

25 Q. What was your understanding of the purpose of

1 that model?

2 A. So the purpose of that model is to, you know,
3 for the entire Salinas Valley to develop an understanding of
4 groundwater conditions and how surface water flows through
5 like the Salinas River and recharges the groundwater basin and
6 how those conditions change over time.

7 Q. Based on your review of the report did that
8 model show anything about seawater intrusion?

9 A. No, I don't believe that model directly showed
10 seawater intrusion.

11 Q. Did that model show anything about water quality
12 impacts as a result of the RDP?

13 A. Not the IGSM Model, no.

14 Q. Did it show anything about drawdown?

15 A. No.

16 Q. What about OWP?

17 A. No.

18 Q. Let's turn to the second model, the North Marina
19 Groundwater Model, the NMGWM 2008, what we called Model Two.
20 Are you familiar with that?

21 A. Yes.

22 Q. Okay. What work did you do as it relates to
23 that model?

24 A. Just reviewed that report.

25 Q. What type of model is it?

1 A. That's a Transient Flow and Solute Transport
2 Model.

3 Q. Who requested that it be done?

4 A. That was done to evaluate potential impacts from
5 the RDP project.

6 Q. How do you know that?

7 A. From reviewing the report.

8 Q. Have you extensively reviewed that report?

9 A. I've reviewed it enough to have an understanding
10 of it.

11 Q. For what purpose did you review it?

12 A. Again, just to, you know, so I had an
13 understanding of all the work that's been done in the basin.
14 And, in particular, this obviously relates to a preceding
15 project that's similar in nature.

16 Q. What did that model show about seawater
17 intrusion, if anything?

18 A. It basically showed that there were no negative
19 consequences from implementing the RDP project on seawater
20 intrusion.

21 THE COURT: For purposes of clarity in the record,
22 you referenced a couple of times RDP project. Can we
23 establish what that -- those initials stand for.

24 MR. BETZ: Yes.

25 Q. One of my favorite topics. What do you

1 understand the RDP to mean when you use that term?

2 A. I'm not a hundred percent certain but it may be
3 Regional Desalination Project.

4 Q. What do you understand that project to have
5 contemplated?

6 A. The installation of wells to provide the feed
7 water for a regional desalination plant.

8 Q. To be located where?

9 A. I think there were a couple of different
10 locations that were evaluated for the wells in the -- I think
11 a little bit south of the CEMEX property and a little bit
12 north of there.

13 Q. And were the intake wells a bit east of where
14 the Monterey Peninsula Water Supply Project intake wells were
15 to be or are to be?

16 A. They -- I think they were a little bit east of
17 the shoreline, yeah.

18 Q. Turning back to Model Two, what did it show
19 about water quality impacts as it relates to the RDP?

20 A. Well, I think it looked at the change in the
21 seawater intrusion front. I don't recall what it specifically
22 looked at, like change in TDS, like the MCWD wells or like the
23 more recent modeling.

24 Q. And as it relates to the RDP intake wells, do
25 you understand they were supposed to be vertical wells?

1 A. Yes.

2 Q. Turning again to Model Two, what did that model
3 show about drawdown, if anything?

4 A. Yeah, it had some predictions of drawdown which
5 were, you know, small and of a similar amount as what the more
6 recent modeling has shown in the area of MCWD wells.

7 Q. Did it show any harm as a result of drawdown?

8 A. No.

9 Q. Why do you say that?

10 A. Because it's -- the drawdown amounts -- it
11 indicates the drawdown amounts at the, for example, MCWD wells
12 to be 29, 30, 31. Although it didn't directly analyze that
13 from the available data, it indicated they would be less than
14 a foot.

15 Q. Out of how much potential drawdown or how much
16 potential capture water as we discussed on Friday?

17 A. Sorry, I'm not sure I quite understand the
18 question.

19 Q. Me neither.

20 On Friday you talked about 200 feet being available
21 for some form of extraction. When you say a couple inches or
22 less than a foot, what do you mean by that as it relates to
23 the total amount of quality of water from which extraction
24 could take place?

25 A. Yeah, so what we discussed previously was the --

1 in a production well, the water level when you're not pumping,
2 versus where the top of the screen is, and so, for example, if
3 you had say 200 feet of water in a well, production well above
4 the top of a screen, you would typically refer to that as
5 quote/unquote available drawdown. And so let's say you had a
6 half foot of drawdown related to pumping of another well. So
7 instead of 200 feet of available drawdown, you'd have 199.5.

8 THE COURT: All right. This might be an appropriate
9 juncture which to take the first mid-morning break. We'll
10 recess for 15 minutes. It's now 9:30.

11 (Recess held.)

12 THE COURT: We are back on the record. Mr. Leffler
13 is still under oath, need not be resworn. You can resume.

14 BY MR. BETZ:

15 Q. I now wish to turn to Model Number Three, which
16 was the SVIGSM 2015. Are you with me?

17 A. Yes.

18 Q. When was that model created?

19 A. 2015.

20 Q. What type of model is it?

21 A. Transient Flow Model.

22 Q. Who requested that it be done?

23 A. So this work was done for the CEQA process to
24 assist with the evaluation of potential project impacts.

25 Q. Which project?

1 A. The Monterey Peninsula Water Supply Project.

2 Q. And it was created to determine impacts?

3 A. No. So this is the regional model that in and
4 of itself is not determining impacts. It is -- provides input
5 to the North Marina model.

6 Q. Did it conclude anything regarding seawater
7 intrusion water quality drawdown or OWP?

8 A. No. Not in and of itself.

9 Q. So what use was it?

10 A. So it provides the boundary conditions for the
11 North Marina Groundwater Model which is -- so the North Marina
12 Groundwater Model sits within the model domain of the SVIGSM.
13 And so the SVIGSM provides boundary conditions.

14 Q. Shall we then turn to Model Four then?

15 A. Yes.

16 Q. Okay. Model Four, otherwise known as NMGWM
17 2015. Correct?

18 A. Yes.

19 Q. Presume that was created in 2015?

20 A. Yes.

21 Q. What type of model is it?

22 A. That's a Transient Flow and Solute Transport
23 Model.

24 Q. Who requested that it be done?

25 A. So that was part of the CEQA process to evaluate

1 potential project impacts.

2 Q. For which project?

3 A. For the Monterey Peninsula Water Supply Project
4 or MPWSP.

5 Q. When you say it was created to determine model
6 impacts, what impacts were you looking at?

7 A. So that specific model was focused on drawdown
8 impacts.

9 Q. Let me take you a step back. When you use the
10 term model or project impacts, what are the different types of
11 impacts that you're evaluating?

12 A. So in sort of a bigger picture of what's been
13 done, there's basically three impact issue areas that have
14 been focused on. So one is the seawater intrusion front. One
15 is drawdown. And the other is salinity or TDS or chloride
16 changes at specific wells. And --

17 Q. Sorry.

18 A. And then there's a fourth area which is the
19 Ocean Water Percentage or OWP.

20 Q. When you say salinity, is that also synonymous
21 with water quality?

22 A. Yes.

23 Q. As it relates to Model Four, what did it show
24 about drawdown?

25 MR. BROCHARD: Your Honor, I'm going to object,

1 again, lacks foundation, but also undesignated expert opinion.
2 Cal-Am provided a chart of the opinion bases that its experts
3 were going to testify on. At his deposition Mr. Leffler
4 stated that what was listed on that chart were the only topics
5 and the only opinions that he was going to express. That
6 chart is an exhibit that we can show. It doesn't talk or it
7 doesn't list Mr. Leffler as discussing any of the models
8 before 2020. He hasn't opined that he has personal -- that he
9 personally worked on any of these models, but, more
10 specifically, it's not listed in the references that he had
11 indicated in his depo that he would be testifying about. And
12 then, on top of that, I think we've listed nine models here
13 that they seem prepared to talk about, and I know there's
14 more. At some point, unless -- most of these at least that
15 we've discussed so far were not relied on by the AHO. There
16 again, they're not listed on Mr. Leffler's chart as something
17 he is intending to rely upon for his opinions, at least as
18 stated at his deposition. So at some point we're going to get
19 to, and I think we're there, the undue consumption of time.

20 THE COURT: Well, the entire trial consumes a
21 significant amount of time and in order to be able to fathom
22 the significance and ultimate purpose of models, some
23 background information is necessary. What about the objection
24 based upon non-disclosure of this area of testimony,
25 Mr. Betz?

1 MR. BETZ: So first, on that issue, this is a lot of
2 background going into the work that he did and the eventual
3 models that he did rely upon, they all build upon each other.
4 It's background. Number two, on the undue consumption of
5 time, one of the issues here is our experts have worked on
6 this for decades, if not longer actually, doing work in the
7 field creating models building up to the models that also show
8 no harm, whereas the other side didn't do models, they just
9 picked apart an issue here or concern here. So yes, it takes
10 a little bit of time to explain the extraordinary amount of
11 work that went into --

12 THE COURT: So far I'm not really concerned about the
13 consumption of time argument. At this juncture anyway.
14 However, I don't -- I certainly don't know what was discussed
15 at Mr. Leffler's deposition or what may be referenced in the
16 reports that he authored, which apparently have come in. It's
17 probably a fair assumption that the most recent of these
18 reports did not occur in a vacuum and followed earlier studies
19 and reports. And I certainly can't say at this point that I
20 know that it hasn't been established yet in testimony. So I
21 just don't know what was covered in his deposition or how the
22 expert witness disclosure was articulated. So I would need
23 more information to be able to rule on that objection.

24 MR. BETZ: In addition, as it relates to what you
25 just mentioned, his expert disclosures, this will take a bit

1 but goes on to say Mr. Leffler will testify about the nature
2 of the water to be extracted by the project and whether any
3 harm will be caused by the project, those opinions include,
4 and it lists seven or eight very broad areas. It notes his
5 testimony will include testimony from the AHO proceedings.
6 And that all is background and eventual models that he will
7 rely upon which includes many of these to support the no
8 opinion. So he's laying a background of foundation, **no
9 whether are you difficulties eval there's no question to they
10 have been discussed since the inception.

11 MR. OSIAS: And, Your Honor, if I could just add,
12 there is already stipulated for admission into evidence
13 testimony from phase one and two and three of the AHO
14 proceeding. And within that proceeding the North Marina
15 Groundwater Model 2022 was offered into evidence and was
16 testified to. And the North -- and that's the NMGWM 2022.
17 That model is a modification of the North Marina Groundwater
18 Model 2016.

19 THE COURT: I do recall seeing references to that, I
20 believe, in the AHO referees report.

21 MR. OSIAS: And so the 2022 version modified the 2016
22 version, the 2016 version modified the 2015 version, the 2015
23 version is what the objection was targeting. So to the extent
24 you -- and you touched on it I believe to the extent his
25 testimony relies on 2022, without explaining how 2022 came

1 into existence from 2016, from 2015, you wouldn't have a full
2 understanding of what the 2022 model is.

3 THE COURT: Mr. Brochard?

4 MR. BROCHARD: Yes. My understanding is Mr. Leffler
5 didn't build any of those earlier models. So if he wants to
6 rely on them, that's fine, but he's not able to give personal
7 testimony as to how they were done. I believe that's Dr. Yeh
8 who is listed in their chart as to someone who will testify
9 about some of those earlier models. Now we have Mr. Leffler's
10 deposition transcript and I can just read from it quickly for
11 you on page 19. The question was I'm just trying to
12 understand if there's anything else that you intend to testify
13 regarding that's not listed in that table as you sit here
14 today. And I'll show the table in a second. The answer is
15 no. Again, as I sit here today, I intend to testify to the
16 opinions that are listed in my summary table.

17 And I don't know who has control of the screen but if
18 we can just look at Exhibit 844 briefly. This is the chart
19 that they were referencing at the deposition. This is what
20 was provided by Cal-Am's Counsel and this is the chart that
21 Mr. Leffler said contained all of the opinions and bases that
22 he would be testifying on. You can see lead expert his
23 initials are PL, number 1C he lists the 2024 SWIM model. He
24 lists the Weiss sensitivity studies. But if you look at 1D,
25 the 2022 transient model from HWG, that's Dr. Yeh. That's not

1 Mr. Leffler. And if you go down there's a reference in 1G to
2 the HWG 2017 transient model. Again, this is Dr. Yeh, not
3 Mr. Leffler who has been designated to testify on these
4 models.

5 THE COURT: All right. I don't see anything in this
6 chart that indicates to me on its face -- well, let's back up
7 a second. So Mr. Osias, ultimately which model was it
8 disclosed that Mr. Leffler would be testifying regarding?
9 Which model or models. And actually I'll confine that
10 question to the one that ultimately was the result of the
11 2015, 2016 modified models.

12 MR. OSIAS: Yeah. So to help explain my answer, if
13 we can turn to page 5, which has an opinion about drawdown.

14 THE COURT: Page 5 of --

15 MR. OSIAS: Of Exhibit 844 which is on the screen.

16 THE COURT: Can we go to that please.

17 MR. OSIAS: And, of course, as you've already heard,
18 we have three experts and they work together as HWG. And I
19 think you already saw that many of the AHO technical reports
20 have three signatures on them. Okay? But for purposes of
21 efficiency and avoid some redundancy you can see the initials
22 that Mr. Brochard was pointing out which is JY, stands for
23 Dr. Yeh, PL stands for Mr. Leffler. So I mean, we know and
24 could extract testimony that he worked on all of these and
25 he's familiar with all of them. You've heard about the WBSSM.

1 You'll see that that's referenced in 4A and 4B. The one we
2 were just mentioning on this table is labeled HWG 2022, that's
3 the 4E model. Okay? That's about one, two, three, four lines
4 up from the bottom. And that does have Dr. Yeh's initials
5 next to it. But Mr. Leffler's opinion I'll just go -- I want
6 to make sure you saw where I -- so 4E which is, you go to the
7 right you see HWG 2022. Can I borrow the pointer? Your
8 Honor, right here.

9 THE COURT: No, I see it. I have the copy here, I
10 see it. It's four lines up from the bottom.

11 MR. OSIAS: So that is the NMWGM 2022. Okay? Now if
12 I can just add one more thought, or did you have a question
13 for me?

14 THE COURT: All right. But that, of course, refers
15 to Dr. Yeh.

16 MR. OSIAS: Yes. I was going to say, now we see that
17 Mr. Leffler is going to talk about the SWI 2024. He's going
18 to talk about Kincaid's work which related a lot to the WBSSM.
19 And on the next page we have him talking about what's on the
20 final report. And for him to be able to talk about those
21 subjects, they all build upon his knowledge of this model. So
22 he's not going to testify how the 2022 model was built. That
23 will be Dr. Yeh. I think he was going to recite in the
24 question that he was asked what did it show in terms of
25 impacts. Okay? Which is not about model construction or why

1 the 22 was an improvement on the 16, which was an improvement
2 on the 15. That's Dr. Yeh. But to understand his ultimate
3 testimony, if we can go back one more page, on drawdown, there
4 is a cumulative story here. This is still page 5 now. I just
5 went back one page. So this is his opinion on drawdown
6 injury. And sorry that it's indented but there's a heading
7 four. Do we see that, Your Honor, where it says his
8 opinion -- this is their opinion I should say, all three
9 experts. There will be no drawdown injury to MCW's
10 groundwater supply or wells caused by the project. That is
11 his opinion as it is Dr. Yeh's opinion, as it is Mr. Durbin's
12 opinion. And although he's going to rely primarily, he
13 meaning Mr. Leffler, on the things with his initials, those
14 opinions and that reliance is built upon his familiarity with
15 everything that came before. So without making him go into
16 all the details of each of these models, which he won't
17 because Dr. Yeh will, except for the ones that he himself
18 constructed, showing a consistency of the results informs his
19 ultimate opinion on what he relies upon. That would be I
20 think our position.

21 THE COURT: Well, his comments so far, for instance,
22 about the 2015 SVIGSM Transient Flow Model were relatively
23 abbreviated. To the extent that he explains the relevance of
24 each of these steps to his ultimate opinion, I think a certain
25 amount of that testimony is appropriate and foundational to

1 his opinion. In terms of how these models were created, I
2 don't think he's testifying and he certainly would not if it's
3 not indicated to be expressly an area of his testimony in the
4 disclosures, he is not to testify about how the models were
5 created. He can talk about what type of model it was, what it
6 showed, what the relevance of that is to his ultimate opinions
7 basically but that should be the extent of the testimony.

8 Mr. Brochard?

9 MR. BROCHARD: In that case it's going to be
10 absolutely duplicative of Dr. Yeh and Mr. Durbin, because if
11 you look here, just focusing on number four that Mr. Osias
12 chose to focus on, the opinion, just one opinion, is that
13 there will be no drawdown injury to MWCD's groundwater supply
14 or wells caused by the project. The only bases that
15 Mr. Leffler is designated to talk about is the SWI Model 2024.
16 That model is the Montgomery model. It has no relation to the
17 prior models. It doesn't build upon the 2008, the 2015 and
18 the 2017 models. It's a different model built by a different
19 group that Mr. Leffler is not a part of creating, but nobody
20 in the HWG is a part of creating that. That model has --
21 there's no background, these other models and any background
22 on them has nothing to do with the SWI Model 2024, which is
23 the only model up there that is listed as a bases for
24 Mr. Leffler to testify about. If he's going to testify about
25 the background of all the other models, then it's going to be

1 necessarily duplicative of Dr. Yeh's testimony, and if he is
2 also going to testify about the 2023 models and the 2022 model
3 and whatever model was used in the 2015 Draft EIR.

4 THE COURT: Well, the prohibition is a determination
5 under Evidence Code Section 352 by the Court that testimony is
6 unduly cumulative. As far as cumulative nature of testimony
7 is concerned, we're not at that point yet. My standard
8 admonition, Counsel, in any case is if you have multiple
9 experts talking about the same topic or general topic you
10 better call your best ones first because if it gets unduly
11 cumulative, it will be excluded.

12 What is the relationship, and this is directed to
13 Cal-Am Counsel, what is the relationship between the SWI Model
14 2024 and the NMGWM 2015 Model Number Four that's currently the
15 subject of the current objections?

16 MR. OSIAS: So they're created by different entities.
17 The SWI Model 2024, that is the label on Exhibit 844, is
18 Mr. Leffler's modification to a model prepared by Montgomery &
19 Associates for purposes of evaluating project impacts.

20 THE COURT: All right. I thought you represented to
21 me he did not participate in creating that model?

22 MR. BROCHARD: So the SWI Model was prepared by
23 Montgomery & Associates. I think what Mr. Osias is saying is
24 that he took the model that somebody else prepared and then he
25 made some adjustments to it, and he's going to try and testify

1 about that. And we'll address that at a different time. But
2 that --

3 THE COURT: Well that's a little bit different than
4 what was originally represented to the Court, that he did not
5 take part in preparing that model. Which is what I understood
6 you to be saying before. Perhaps I misunderstood.

7 MR. BROCHARD: That is what I am saying. What we
8 have been referring to as the SWIM Model during this
9 proceeding, Mr. Leffler did not prepare. What Mr. Osias is
10 saying is the reference to the SWIM Model there is a reference
11 to a version of it that Mr. Leffler has made some adjustments
12 to. But it still has no relation to the 2017 or the 2015
13 models.

14 MR. OSIAS: I was going to continue.

15 THE COURT: Please.

16 MR. OSIAS: It's a different model that produced
17 similar results --

18 THE COURT: "It" being SWIM model 2024?

19 MR. OSIAS: I'm sorry. What's labeled here in 4D,
20 yes, is a model created by Mr. Leffler from the Montgomery &
21 Associates model that produced similar results to the model
22 that the team prepared, meaning the WBSSM model that Cal-Am
23 prepared, and you'll see the technical memorandum for that was
24 signed by all three, and he's aware of that. And so the
25 importance -- I'm trying to relate this to your question, a

1 relationship. When different authors and different models
2 created at different times produce consistent results, it
3 lends input to the opinion of the expert. And so even on this
4 one question of drawdown, which is just part of the questions
5 we're all looking at here, the history of modeling in the
6 three periods that Mr. Betz referred to before the AHO, during
7 the AHO proceeding. So during the AHO proceeding was the
8 WBSSM and HWG 2022 which are shown on this page as 4A and 4E
9 rows. And the one that's showing in row 4D and frankly the
10 one showing in 4F all have consistent results. That's
11 relevant to Mr. Leffler's opinion. And as compared to
12 divergent results. They do not have divergent results.

13 THE COURT: Is he going to testify that the
14 consistency of those other topics bears upon or contributed to
15 his conclusions in the SWI Model 2024?

16 MR. OSIAS: I believe so. I mean, I don't know that
17 I had that specific question for him but the -- if I can just
18 look backward to this trial for a minute, we heard direct
19 testimony and my cross examination to the Plaintiff's and
20 Cross-Complainant's experts about where the FO-SVA was and
21 whether that impacted OWP or drawdown or any of these other
22 factors. And one of the modifications that Mr. Leffler made
23 to the SWI Model 2024, one, was to put the slant well project
24 into that model. Because it didn't have the slant wells in
25 it. So you couldn't assess the impact. He was able to do

1 that because he had done so many other models and contributed
2 to them involving the slant well project. Then he also
3 adjusted, I believe, the FO-SVA to say would it matter if we
4 made it like EKI said it should be. And that goes to his
5 opinion.

6 So I do believe his prior involvement enabled him to
7 do the work that is in the model labeled SWI Model 2024, and
8 to assess the results of it. And that it lends support to his
9 opinion.

10 MR. BROCHARD: Can we go to page 1 of the document
11 for a second, Your Honor? Just the top of the document.

12 THE COURT: Sure.

13 MR. BROCHARD: This is what they produced. Opinion
14 basis. This is the basis for the opinion and the person who's
15 going to provide it. And nowhere in this document is
16 Mr. Leffler's initials listed under anything -- on any model
17 other than the SWI Model 2024. And I'm not objecting to him
18 at this time to him testifying about that model but that's not
19 what we're talking about right now. We're talking about a
20 2008 or a 2015 model that's not related to the SWI Model and
21 that Mr. Leffler has not stated that he created.

22 THE COURT: Well, that would be two different forms
23 of objections. Mr. Betz?

24 MR. BETZ: The testimony we're eliciting goes into
25 all the background work he did to eventually get to these

1 opinions. So they're not in isolation.

2 So yes, the eventual summary sheet has a summary of
3 the opinions and specific bases but it's not in a vacuum.

4 MR. BROCHARD: Your Honor, I would just say at this
5 point he hasn't testified that he made any of these models.
6 So he's not testifying as to what he did. He's trying to
7 establish that he has reviewed these and, therefore, he has
8 done a lot of work and that supports a later opinion. It's a
9 bases for his opinion. But it hasn't been listed as a bases
10 for his opinion. They told us these are his opinions, these
11 are his bases, they don't include a 2015 model. The 2017
12 model is listed. The 2017 Transient Model is listed in this
13 chart and Mr. Leffler is not designated to be the person to
14 talk about it. It's not listed as a bases for his opinion.

15 MR. OSIAS: I'm sorry, Your Honor, but isn't that 1I
16 on page 1 that Mr. Brochard wanted to look at? That's the
17 2017 --

18 MR. BROCHARD: 1G says 2017 transient. 1I says 2017
19 analytical. It's not the Transient Model.

20 MR. OSIAS: If we went to look -- I'm sorry, if we
21 went back to the exhibit, and I can dig it up if you want, for
22 the technical memorandum on here you'll see Mr. Leffler's
23 signature on them. And I think the question is can his past
24 background be recited and made outputs of these models as part
25 of the reason his opinion that he offers. And he will have an

1 opinion on this page, it's opinion one, up here at the very
2 top. And on the page 5, we were looking at it, was opinion
3 four, he has that opinion. The bases are identified but what
4 leads into the bases is all the work he's done today for over
5 a decade. And we understand the Court's advice to be
6 abbreviated on this.

7 THE COURT: It really should be. I mean, its only
8 relevance would be to the extent that it provided some
9 background for his conclusions in his ultimate report --
10 reports that he is testifying to as designated. It would be
11 highly unusual to think that he simply created those on a
12 black slate -- a blank slate rather. So I -- the testimony
13 will be allowed, but if it purports to go beyond how those
14 other models provided an informational basis for his ultimate
15 report or reports for which he has been designated to testify,
16 then it would be excluded. And if there's a 352 problem,
17 we'll take it up when the other experts start piling on.

18 So with that said, objection is overruled. You can
19 proceed. But keep it abbreviated.

20 MR. BETZ: Is there any chance you can find the last
21 question.

22 (Whereupon, the record was read as follows:

23 "Q. As it relates to Model Four, what did it show
24 about drawdown?"

25 BY MR. BETZ:

1 Q. Can you please answer that question.

2 A. So just to make sure I'm on the right model,
3 we're talking about the North Marina Groundwater Model 2015?

4 Q. Correct.

5 A. So it showed there was no harm related to the
6 drawdown.

7 Q. To answer the question that we've been
8 discussing, as you may have heard, why did you review the
9 NMGM -- sorry, the NMGWM Model Four, the NMGWM 2015 as it
10 relates to your ultimate opinions?

11 A. So that model was created with the input from
12 the Hydrogeologic Working Group. Geoscience was -- the model
13 was but each HWG member, including myself, participated in its
14 development. And so the results of that model, which you know
15 feed into subsequent versions of the model, just feeds into my
16 overall opinions on the various potential impact issues.

17 Q. What did that model show about seawater
18 intrusion, if anything?

19 A. So I don't know that that model explicitly
20 expressed that. I don't think we -- it explicitly expresses
21 seawater intrusion front.

22 Q. What about water quality impacts?

23 A. I don't believe it expressly said what those
24 were either.

25 Q. What about OWP?

1 A. That did not come out of this model but it came
2 out of a subsequent one.

3 Q. Next model is Model Five, known as the CEMEX
4 Model 2015. Have you reviewed that model?

5 A. Yes. And I've --

6 Q. Okay. Did you participate in creating any
7 portion of it?

8 A. Yes. Again, the HWG participated in developing
9 that model.

10 Q. Including you?

11 A. Including myself.

12 Q. What type of model is it?

13 A. So that's a Transient Flow Solute transport and
14 I believe it's also variable density model.

15 Q. What did it show about seawater intrusion, if
16 anything?

17 A. It did not conclude anything on that.

18 Q. What about water quality impacts?

19 A. No conclusion on that.

20 Q. Drawdown?

21 A. No conclusion on that.

22 Q. OWP?

23 A. Yes. It made a conclusion about OWP.

24 Q. Which is what?

25 A. It was in the '90s I think, if I remember

1 correctly. It might have been 93, 96 percent.

2 Q. And did that conclusion bear on your ultimate
3 opinions that we'll get to?

4 A. Yes.

5 Q. Next model is the sixth model. NMGWM 2016. Are
6 you familiar with that?

7 A. Yes.

8 Q. Have you reviewed it as part of formulating your
9 ultimate opinions?

10 A. Yes.

11 Q. Who created that model?

12 A. Hydrofocus.

13 Q. What type of model?

14 A. So that is a Transient Flow and Super Position
15 Model.

16 Q. When was it created or modified?

17 A. So that is the 2016 North Marina model.

18 Q. Did your review much that model and the outputs
19 bear on your ultimate opinions in this matter?

20 A. Yes.

21 Q. What did it show about seawater intrusion?

22 A. It showed that the seawater intrusion with the
23 Monterey Peninsula Water Supply Project slant wells would be
24 neutral to a beneficial impact.

25 Q. What did it show about water quality impacts?

1 A. It did not directly express that.

2 Q. What did it show about drawdown?

3 A. It showed -- it addressed drawdown and that the
4 impacts would be less than a foot at MCWD wells.

5 Q. Which was consistent with prior models to which
6 you referred?

7 A. Yes.

8 Q. Did that bear on your ultimate opinions in this
9 matter?

10 A. Yes.

11 Q. What did it show about OWP, if anything?

12 A. It did not speak directly to OWP.

13 Q. Model Seven otherwise known as CEMEX 2017.

14 First question is what kind of model is that?

15 A. Transient Flow and Super Position.

16 Q. Have you reviewed that model in formulating your
17 ultimate opinions in this case?

18 A. Yes.

19 Q. Have you relied upon some of those findings to
20 form your ultimate opinions?

21 A. Yes.

22 Q. Who created that model?

23 A. Again, that was HWG and Geoscience was the
24 hands-on model letter.

25 Q. How was it updated as it relates to the prior

1 model otherwise known as model five CEMEX model 2015?

2 A. So we had additional data that we collected by
3 that time, and, specifically, we had some drawdown data from
4 the test slant well pumping at the nearby monitoring wells.
5 So we calibrated the model to -- to that drawdown. I think
6 was the major update.

7 Q. What did that model show as it relates to
8 potential project impacts?

9 A. So that model speaks primarily to Ocean Water
10 Percentage.

11 Q. What does it tell us?

12 A. And again, the mid 90's.

13 Q. Which was consistent with prior models to which
14 you referred?

15 A. Yes.

16 Q. Anything else that model showed as it relates to
17 potential project impacts or anything that relates to your
18 ultimate opinions?

19 A. No.

20 Q. Turning to Model Eight, otherwise known as the
21 NMGWM 2016. Are you with me?

22 A. Yes.

23 Q. Who created that model?

24 A. So I believe you're referring to the Weiss
25 Model.

1 Q. Yes, sir. I think we called it the NMGWM 2016
2 Weiss 2020 Steady State Model. Does that help clarify the
3 question?

4 A. Yes.

5 Q. Who create it had?

6 A. Weiss Associates.

7 Q. Have you reviewed it?

8 A. I have.

9 Q. Extensively?

10 A. Yes.

11 Q. For what purpose?

12 A. To evaluate the -- their work and its bearing on
13 the questions we're -- and potential impact issues about OWP.

14 Q. Did your review of that model help inform your
15 ultimate opinions in this case?

16 A. Yes.

17 Q. What did that model show as it relates to
18 project impacts?

19 A. It actually primarily focused on Ocean Water
20 Percentage and it -- they, Weiss, created several different --
21 they made several different changes to the North Marina Model,
22 sort of like sensitivity runs on different parameters to see
23 what the output would be in terms of Ocean Water Percentage.

24 Q. What was the ultimate conclusion or -- strike
25 that.

1 What was the ultimate conclusion as it relates to OWP
2 as it relates to Model Eight?

3 A. So there was a wide range of outputs that they
4 obtained from that model. But just looking at the inputs that
5 they had of the ones that were, in my opinion, reasonable
6 inputs, the Ocean Water Percentage was of range in the 90's.

7 Q. Is that consistent with prior models?

8 A. Yes.

9 Q. Anything else that model tells us as it relates
10 to project impacts?

11 A. No. I think it was primarily Ocean Water
12 Percentage.

13 Q. And, to be clear, when I ask you about project
14 impacts, I'm referring to drawdown, seawater intrusion, water
15 quality or Ocean Water Percentage. Are you with me?

16 A. Yes.

17 Q. Turning to Model Nine, which we described as
18 NMGWM 2016 Geoscience 2022. Are you with me?

19 A. Yes.

20 Q. What kind of model is that?

21 A. So that is a Super Position Model.

22 Q. Who prepared it?

23 A. I should say it's sort of -- it's a modification
24 of a Super Position Model where you adjust the boundary
25 conditions to achieve certain gradients.

1 Q. So let me start with who prepared it?

2 A. That was prepared by again Hydrogeologic Working
3 Group with Geoscience.

4 Q. Including you?

5 A. Yes.

6 Q. What was changed that you just referred to?

7 A. So basically we're using the North Marina Model
8 and we made adjustments to the boundary conditions so that we
9 could achieve certain gradients.

10 Q. Why would you do that?

11 A. To -- we wanted to sort of similar to what Weiss
12 was planning to do. So we had the scope of work that Weiss
13 had put out for their work and so it was really based on the
14 Weiss scope of work and that involved simulating certain
15 gradients. And so we -- we wanted to look at those gradients.

16 Q. What did it show as it relates to project
17 impacts?

18 A. So again, there were a wide variety of many
19 different model runs with the inputs that Weiss had outlined.
20 So of the ones that in my opinion were reasonable inputs,
21 again, I think it was in the mid 90's, a range of Ocean Water
22 Percentage sort of spanned the mid 90's.

23 Q. Was that consistent with prior model findings?

24 A. Yes.

25 Q. You've once or twice said the conclusion

1 depended upon what you thought were reasonable inputs. What
2 do you mean by that?

3 A. So, for example, the recharge that we discussed
4 previously, if it's -- in my opinion, 10 or 15 inches of
5 recharge is not reasonable. So I did not include those when I
6 say what the Ocean Water Percentage is, I'm not including
7 those.

8 Q. We've looked at nine different models created
9 prior to the AHO. My question is do you know why there's so
10 many different models?

11 A. Well, they were -- there were different things
12 going on at the time like the regional project then the
13 Monterey Peninsula Water Supply Project and those CEQA
14 processes. And then the Coastal Commission involvement and
15 there expert who's Weiss Associates. So there were different
16 I guess purposes or under different you know stages of the
17 project where these models were completed. Then they would
18 you know, basically build on each other, you know, the North
19 Marina Model started in 2008. And so it evolved and improved
20 over time with each, you know, subsequent version.

21 Q. When you say "improved over time," what do you
22 mean by that? Updating information?

23 A. Yeah, updating information. We -- you know, we
24 collect groundwater level datas, you get more and more data
25 over time. So you have more data to calibrate to. There was

1 a lot of fieldwork that was conducted during that time span to
2 improve our understanding of the subsurface and the model
3 layering and the aquifer parameters. So a lot of additional
4 information gets collected over time.

5 Q. Did any of those models show harm --

6 A. No.

7 Q. -- as a result of the project?

8 A. No.

9 Q. Were they consistent in their findings as it
10 relates to drawdown?

11 A. Yes.

12 Q. Which is what, what were the findings that were
13 consistent?

14 A. Less than a foot at the MCWD wells.

15 Q. Were the findings consistent as it relates to
16 Ocean Water Percentage?

17 A. Yes.

18 Q. Which was?

19 A. Ocean water percentages in the 90's.

20 Q. Did those models address seawater intrusion?

21 A. To a limited extent, I think yes.

22 Q. What was the conclusion?

23 A. That it's neutral to beneficial impacts.

24 Q. Was that consistent with the models that
25 addressed that issue?

1 A. Yes.

2 Q. Did those models have findings about water
3 quality impacts?

4 A. I -- I don't recall if any of those models
5 specifically addressed water quality impacts at MCWD wells
6 directly.

7 Q. In general those models included not ohm models
8 that the HWG Group performed but other parties, correct?

9 A. Yes.

10 Q. And the findings were generally consistent?

11 A. Yes.

12 Q. I now wish to discuss modeling done during the
13 AHO proceedings. Okay?

14 A. Okay.

15 Q. Again, in our outline of testimony, we're under
16 modeling under subsection A, we talked about prior AHO models.
17 Now I want to talk about models during the AHO proceedings.

18 A. Okay.

19 Q. Can you give us a list of those models.
20 Chronologically, if possible.

21 A. Okay. So in 2022 we start with SV -- the
22 acronym is SVSM, which I believe is Salinas Valley Seaside
23 Model. That's a regional model. Then we have the North
24 Marina Groundwater Model.

25 Q. Let me go slow to hopefully make this all get

1 tied together well. Is the SVSM 2022, I'm going to call that
2 Model One for this stage. Okay?

3 A. Okay.

4 Q. The second is what?

5 A. The North Marina Groundwater Model 2022.

6 Q. We'll call that two. Next?

7 A. Then I believe the next one is the SVSM 2023.

8 Q. Okay. Not to throw you off, is there an NMGWM
9 2022, otherwise known as the Kincaid Steady State version?

10 A. Yes. That's correct.

11 Q. Can I throw that in there?

12 A. Sure. Yes.

13 Q. Actually, I'm going to take this from the top a
14 bit. As it relates to the second phase models done during the
15 AHO proceedings, you first identified SVSM 2022, correct?

16 A. Yes.

17 Q. I'm actually going to call that Model 10 keeping
18 it consistent. Next you identified NMGWM 2022. Can we call
19 that Model 11?

20 A. Yes.

21 Q. The next one is the NMGWM 2022. Can we call
22 that Model 12?

23 A. Yes. The Dr. Kincaid version?

24 Q. Yes.

25 A. Yes.

1 Q. Next would be you'd find SVSM 2023, can we call
2 that Model 13?

3 A. Yes.

4 Q. What is Model 14?

5 A. So that would be the North -- well, so there's
6 the Cal-Am WBSSM 2023.

7 Q. Do you know what WBSSM stands for?

8 A. Water Board Study State Model.

9 Q. What is Model 15?

10 A. Then there's the MCWD WBSSM.

11 Q. Lot of acronyms. What is Model 16?

12 A. Okay. Then I think we jump to the Seawater
13 Intrusion Model 2023.

14 Q. Which we've, from time to time, called the SWIM
15 Model?

16 A. Yes.

17 Q. And Model 17, if you recall?

18 A. So then we have the SWIM Model 2023 with the
19 slant wells added.

20 Q. And what is Model 18?

21 A. Then we have the SWIM Model 2023 with the slant
22 wells added and some other modifications that I made to it.

23 Q. Have you reviewed all these models in-depth as
24 it relates to your ultimate opinions?

25 A. Yes.

1 Q. And during the AHO proceedings did you testify
2 about all these models?

3 A. Yes.

4 Q. And you submitted technical memorandum related
5 to these models?

6 A. Yes.

7 THE COURT: Is this number 18 that was just referred
8 to SWIM Model 2023 with slant wells added and some other
9 modifications that Mr. Leffler made, is this the SWIM 2024
10 that was shown on the chart that was up on the screen a few
11 minutes ago?

12 MR. BETZ: May I ask Mr. Leffler to answer?

13 THE COURT: Sure.

14 THE WITNESS: No. They're not the same.

15 MR. BETZ: We'll get into that, Your Honor, there's a
16 another bevy of models created after the AHO proceedings that
17 were included.

18 THE COURT: So the SWIM 2024 you're representing was
19 created after the AHO proceedings?

20 MR. BETZ: Correct.

21 THE COURT: This is after completion of the AHO
22 proceedings?

23 MR. BETZ: Correct.

24 MR. OSIAS: Yes.

25 THE COURT: All right.

1 MR. BETZ: There are a lot of models that have been
2 done.

3 MR. BROCHARD: And for completeness, Your Honor, I
4 think Models 16 through 18 that were mentioned. I do not
5 believe they were considered in the AHO proceeding.

6 THE COURT: Well --

7 MR. BETZ: I was just answering your question of
8 when.

9 THE COURT: I'm assuming this is all going to get
10 sort out by some clarifying testimony. We can go about
11 another five minutes before a break.

12 MR. OSIAS: Let me give a quick response to
13 Mr. Brochard? No?

14 THE COURT: Yes.

15 MR. OSIAS: The AHO final report that you have and
16 it's in evidence relied on the WBSSM Models. If that's what
17 Mr. Brochard meant, that would be accurate. If he meant that
18 they weren't considered and not admitted into evidence, that
19 would be inaccurate.

20 THE COURT: So 14 was the Cal-Am WBSSM Model?

21 MR. BETZ: Yes.

22 THE COURT: And 15 was Marina Coast Water District
23 WBSSM Model?

24 MR. BETZ: Yes.

25 THE COURT: And both of those WBSSM models were

1 designated WB because they were before the AHO and the Water
2 Board proceeding and developed, if I recall correctly, from
3 the State Water Resources Control Board's final report, had
4 been prepared at the request of the AHO.

5 MR. BETZ: Yes.

6 MR. OSIAS: Your Honor, just for information, the AHO
7 designated what type of models those should be. That's why
8 they're labeled WB, Water Board, because the AHO wanted a
9 Steady State Model. So the WBSSM means Water Board directed
10 Steady State Model and then each side prepared one.

11 THE COURT: All right. And those models are not in
12 dispute, Mr. Brochard?

13 MR. BROCHARD: Those are the models that the AHO
14 directed to be created.

15 THE COURT: The AHO specifically requested Steady
16 State Models; is that right?

17 MR. BROCHARD: There were a number of hearings where
18 the AHO asked a number of questions back and forth about what
19 models given the time constraints and costs would be best to
20 evaluate the project and the determination by the AHO was to
21 rely on those Steady State Models.

22 THE COURT: Did the AHO make that ruling before the
23 models had been prepared? To give the parties some guidance
24 about what kind of models the AHO wanted?

25 MR. BROCHARD: Yes, I think the discussion is in the

1 final report.

2 THE COURT: Okay. All right. You can resume.

3 MR. BETZ: Thank you.

4 Q. Turning to Model 10, the SVSM 2022 Durbin model.
5 Who prepared that?

6 A. Mr. Durbin.

7 Q. For what purpose?

8 A. To provide the input and boundary conditions for
9 the North Marina Groundwater Model of the same year.

10 Q. Why?

11 A. Because again, the North Marina Groundwater
12 Model domain is a smaller area within the Salinas Valley and
13 so it needed inputs from a larger regional model to inform
14 its boundary conditions.

15 Q. Did you rely upon the conclusions of that model
16 to formulate your ultimate opinions in this case?

17 A. Not directly. Again, it's input to the North
18 Marina model.

19 Q. What did that model show regarding -- strike
20 that. What did that model show as it relates to potential
21 project harm?

22 A. Again, that model itself doesn't directly do
23 that.

24 Q. Instead it just sets up conditions for future
25 models?

1 A. For the North Marina Groundwater Model.

2 Q. Update?

3 A. Yeah.

4 Q. You mean model 11?

5 A. Yes.

6 MR. BETZ: With that, it's a good breaking point if
7 Your Honor so chooses.

8 THE COURT: Yes. We'll take the second mid-morning
9 15-minute recess at this time. It's 10:45.

10 (Recess held.)

11 THE COURT: Okay. We are back on the record in City
12 of Marina versus RMC Lonestar. Mr. Leffler is still on the
13 stand and need not be resworn. Mr. Betz, you may resume.

14 MR. BETZ: Thank you.

15 Q. Turning to Model 11 NMGWM 2022. Have you
16 reviewed that?

17 A. Yes.

18 Q. You reviewed it as formulating part of your
19 opinions in this case.

20 A. Yes.

21 Q. I assume that was created in 2022?

22 A. Yes.

23 Q. What type of model is it?

24 A. Transient Flow and Solute Transport Model.

25 Q. Who prepared it?

1 A. It was prepared by the HWG and Geoscience.

2 Q. For what purpose?

3 A. The purpose was to help with evaluation of
4 potential project impacts.

5 Q. Was that used during the AHO proceedings?

6 A. Yes.

7 Q. What did it show as it relates to project
8 impacts?

9 A. So I believe that model focused primarily on
10 drawdown and Ocean Water Percentage.

11 Q. What did it show about drawdown?

12 A. Draw downs of less than a foot at MCWD wells.

13 Q. Which ones, just for clarification?

14 A. Yeah, I mean, I'm primarily focusing on his MCWD
15 29, 30 and 31 as those are the only ones that are partially
16 screened in the 180. The remaining wells would be, you know,
17 generally lower drawdowns than what we see there.

18 Q. Why do you say that?

19 A. Because they're either screened in deeper
20 aquifers or further away from the slant wells.

21 Q. Therefore, why would that create smaller
22 drawdown?

23 A. If they're further away generally, you know, all
24 other factors being equal you have less drawdown the further
25 away you get from a pumping well. And then the deeper

1 aquifers are separated from overlying aquifers by fine grained
2 aquitard layers when that's the communication, hydraulic
3 communication.

4 Q. What did that model, that being Model 11, tell
5 us about OWP?

6 A. So I think the OWP from that model was in the
7 mid to high 90's.

8 Q. Those findings were consistent with the prior
9 models we discussed, correct?

10 A. Yes.

11 Q. Anything else that model showed us as it relates
12 to potential project impacts or injury?

13 A. I mean, I think those were the main issues that
14 it focused on that we discussed.

15 Q. Turning to Model 12, otherwise known as NMGWM
16 2022, Kincaid Steady Study version. Are you aware of that
17 model?

18 A. Yes.

19 Q. Have you reviewed it?

20 A. Yes.

21 Q. Was it used during the AHO proceedings?

22 A. Yes.

23 Q. Did you consider that in forming your ultimate
24 opinions in this case?

25 A. Yes.

1 Q. Who prepared that model?

2 A. So Dr. Kincaid took the version we had prepared
3 and made some modifications.

4 Q. What modifications?

5 A. So the primary modification was he took a
6 Transient Model and made it a Steady State Model. And he --
7 so the period of time in the Transient Model which spans
8 several tense of years, he took a ten-year period from the
9 longer transient time period and used that to make a Steady
10 State Model.

11 Q. Did he tell you why?

12 A. You know, I don't recall offhand if he specified
13 what he said as to why.

14 Q. What did that model -- did that model show
15 anything as it relates to potential project impacts?

16 A. I think it may have addressed drawdown to some
17 extent.

18 Q. What did it tell us about drawdown?

19 A. I think again, that would be less than a foot.

20 Q. That was consistent with the prior models?

21 A. Yes.

22 Q. Anything else that model showed as it relates to
23 project impacts?

24 A. I don't believe so.

25 Q. Even with Dr. Kincaid's adjustments to Model 11,

1 it was still showing there would be drawdown of less than a
2 foot?

3 A. Yes.

4 Q. Turning to Model 13, SVSM 2023, are you aware of
5 that one?

6 A. Yes.

7 Q. Presumed prepared in 2023?

8 A. Yes.

9 Q. For what purpose was it done?

10 A. So the purpose was as part of the models that
11 the AHO had directed us to prepare the WBSSM models, they
12 needed a regional model to provide inputs to the boundary
13 conditions.

14 Q. Why?

15 A. Well similar to previous modeling efforts,
16 again, we're working with the North Marina model domain which
17 just covers a certain area of the Salinas Valley and you have
18 to have boundary condition inputs to that model and the best
19 way to do that is through use of a regional model.

20 Q. So what was change indeed that model versus
21 prior models?

22 A. So one of the biggest changes was it went from
23 being a Transient Model to a Steady State Model because the
24 AHO directed that these be Steady State models.

25 Q. What did that model show as it relates to

1 project impacts?

2 A. It doesn't speak directly to project impacts in
3 and of itself.

4 Q. It just sets up conditions for future models?

5 A. For the two WBSSM models.

6 Q. Next, turning to Model 14, otherwise known as
7 the WBSSM 2023 Cal-Am version. Did you help prepare that?

8 A. Yes.

9 Q. What type of model is that?

10 A. That's a Steady State flow model and it's also
11 Solute Transport Model.

12 Q. And I forgot if this was discussed as it relates
13 to colloquy with the Court or testimony. But, regardless,
14 tell us why you did that model, why the team did that model.

15 A. We did that model at the direction of the AHO.

16 Q. Why? I mean, not just to be compliant. What
17 was it trying to achieve?

18 A. To address the potential impacts as relates to
19 drawdowns, seawater intrusion front, water quality and Ocean
20 Water Percentage.

21 Q. And what changes or directions were made for
22 this model?

23 A. Well there were a number of changes. There were
24 more studies done associated with the AHO proceedings that fed
25 into the development or refinement of that model from the

1 previous North Marina Groundwater Model. So there were a
2 number of modifications and updates, as well as going to
3 making it Steady State.

4 Q. And it addressed project impacts?

5 A. Yes.

6 Q. What did it show as it relates to seawater
7 intrusion?

8 A. It showed that the project would have a net
9 benefit on seawater intrusion front.

10 Q. What do you mean by that?

11 A. That if you look at the overall change in the
12 seawater intrusion front, that it's beneficial to the basin
13 and MCWD wells.

14 Q. When you say net benefit, what are you implying?

15 A. That -- well, basically there's a small area
16 where it -- the project slant wells show a small additional
17 movement of the seawater intrusion front inland but that's in
18 a area that's undevelopable and you know, really cannot be
19 used and it created improvements in areas where the MCWD wells
20 are located.

21 Q. How did it improve areas where MCWD wells are
22 included?

23 A. It -- there's less -- the seawater intrusion
24 front isn't as far inland.

25 Q. For the reasons you've described last Friday or

1 last week?

2 A. Yes.

3 Q. What did it show about water quality, if
4 anything?

5 A. It showed that there would be either no change
6 or a decrease in salinity at MCWD wells.

7 Q. Scientifically, how would that happen?

8 A. Well it's related to, you know, the seawater
9 intrusion front, you know, not pushing as far inland and the
10 fact that the you know there's a net reduction in seawater
11 intrusion with the slant well pumping.

12 Q. What did it show about drawdown?

13 A. It showed drawdown I think on the order of half
14 a foot at MCWD wells.

15 Q. What did it show as it relates to Ocean Water
16 Percentage?

17 A. I think it showed a range of 90 to 94 percent.

18 Q. This model, to which we're referring to as Model
19 14, otherwise known as the WBSSM 2023 version, did that build
20 on prior models that we discussed today?

21 A. Yes.

22 Q. Just added more up-to-date scientific
23 information?

24 A. Yes.

25 Q. As directed by the AHO?

1 A. Yes.

2 Q. Turning to Model 15, otherwise known as WBSSM
3 2023 MCWD. You've reviewed that model?

4 A. Yes.

5 Q. Extensively, correct?

6 A. Yes.

7 Q. As part of the AHO proceedings?

8 A. Yes.

9 Q. I presume that was created for the same reasons
10 as the Cal-Am version, otherwise referred to as item 14?

11 A. Yes.

12 Q. Did that show project impacts -- strike that.
13 Did that model address project impacts?

14 A. Yes.

15 Q. What did Marina Coast WBSSM model show as it
16 relates to seawater intrusion?

17 A. It showed similar results to the Cal-Am model.

18 Q. Which are what? Please be specific.

19 A. That there would be a net benefit to the
20 seawater intrusion front from the proposed pumping of the
21 slant wells.

22 Q. Their model, meaning MCWD's wells, showed that?

23 A. Yes.

24 Q. What did it show as it relates to water quality?

25 A. So in their report they did not specifically

1 extract that information from the model and report it.

2 However, we did do that ourselves.

3 Q. Do you know why they chose not to report water
4 quality issues as it relates to there model?

5 A. No, I don't.

6 Q. When you dug into their model, what did it show
7 as it relates to water quality?

8 A. It showed either no change or a decrease in
9 salinity at the MCWD wells.

10 Q. Was that consistent with Model 14, the Cal-Am
11 version?

12 A. Yes.

13 Q. What did Model 15, being Marina Coast Model,
14 show as relates to drawdown?

15 A. So this is a -- so they did express the drawdown
16 but in my opinion, I don't think they did it correctly. So,
17 first of all, they showed a drawdown on the order of about a
18 foot in their report.

19 Q. What was incorrect?

20 A. So during the model calibration, the -- we were
21 both calibrating to the drawdown created by the test slant
22 well at the monitoring wells that were close by. And as part
23 of that calibration you have to assign a certain proportion of
24 the overall pumping that's coming from the dune sand aquifer
25 versus the 180-foot aquifer. And they assigned a certain

1 percentage distribution during the calibration, which you
2 know, has an impact on how well it calibrates because we're
3 talking about monitoring wells that are very close by. So
4 depending how much you assign to the dunes sand versus the
5 180, that affects how well your model matches the drawdown.
6 So, however you calibrate that, you should keep that the same
7 when you run your scenarios.

8 Q. Why?

9 A. Because you've calibrated to it. So that means
10 that's your best estimate of how that pumping is distributed.
11 And you've calibrated to it. So that should not change when
12 you run your scenarios.

13 Q. And what did MCWD that was wrong as it relates
14 to that issue?

15 A. They changed those percentages. And when they
16 ran there scenarios that's why they ended up with a little bit
17 more, a foot of drawdown instead of half a foot of drawdown.

18 Q. Is there anything else that MCWD WBSSM model
19 showed as it relates to drawdown?

20 A. No.

21 Q. Did you make any corrections to that model to
22 keep it consistent with the testimony you just provided?

23 A. Yes.

24 Q. And when you did so, what was the result?

25 A. It was similar to ours, about a half foot of

1 drawdown.

2 Q. And what did Marina Coast Water District model
3 show about Ocean Water Percentage?

4 A. So this is another similar situation there -- so
5 the actual what they reported in their report was in the high
6 80's for Ocean Water Percentage.

7 Q. Did you review that analysis?

8 A. Yes.

9 Q. Did you find anything wrong in the manner in
10 which they conducted that analysis?

11 A. Yes.

12 Q. What was wrong and why?

13 A. So it goes back to what I mentioned earlier on
14 the ocean boundary condition for salinity and we know that the
15 ocean salinity is 33,500. And in their model boundary
16 condition for the dune sand aquifer they assigned 29,800
17 milligrams per liter instead of 33,500.

18 Q. Why is that wrong?

19 A. Because it's not the ocean salinity, it's, you
20 know, west than the ocean salinity by about 4,000 milligrams
21 per liter. The result of which is the water that comes into
22 the slant well from that zone can't be more than that. And
23 then they plugged that result into the Ocean Water Percentage
24 equation which has the end member of 33,500, so it gives a
25 erroneous result.

1 Q. And what TDS did you use for that area?

2 A. Well, the ocean salinity is 33,500. So we used
3 that.

4 Q. Is there any scientific justification about
5 which you are aware to justify there use of lower salinity as
6 you described?

7 A. No. And we -- but we reran their model with the
8 appropriate ocean salinity.

9 Q. And what did it show?

10 A. It showed Ocean Water Percentage of I believe it
11 was 96 to 97 percent.

12 Q. Now turning to Model 16, otherwise known as the
13 SWIM, S-W-I-M, 2023. Just kidding, right before that I have
14 one question. Can you use the MCWD WBSSM model in any way to
15 help inform us or answer questions for this case?

16 MR. BROCHARD: Objection, vague.

17 THE COURT: Overruled.

18 MR. BETZ: I will withdraw that question. If I may
19 rephrase?

20 THE COURT: Sure.

21 BY MR. BETZ:

22 Q. You say you made some adjustments to MCWD WBSSM
23 2023 Model. Are you familiar with that?

24 A. Yes.

25 Q. How were you able to do so?

1 A. Well, so we had to exchange models with each
2 other. And so each side had both models. And so each side
3 was able to take their model and the opposing expert's model
4 and make changes and do model runs.

5 Q. Do you know if the MCWD experts made any changes
6 to Cal-Am's WBSSM models?

7 A. I don't believe they made changes that I recall.

8 Q. That you know about? Nothing --

9 A. I just -- I don't recall -- I don't think so.
10 At least not that I recall.

11 Q. Now turning to Model 16, known as the SWIM 2023
12 Model. Who prepared that?

13 A. So the original SWIM 2023 Model was prepared by
14 Montgomery & Associates.

15 Q. Have you reviewed it?

16 A. Yes.

17 Q. Have you reviewed the output?

18 A. Yes.

19 Q. Have you analyzed it for of the purposes of
20 formulating your opinions in this case?

21 A. Yes.

22 Q. What type of model is it?

23 A. It's a Transient Flow. And -- a Transient Flow
24 Solute transport and variable density model.

25 Q. Do you know the purpose for which that model was

1 created?

2 A. Yes.

3 Q. What was the purpose?

4 A. The purpose was for the 180, 400-aquifer subbase
5 and GSP to evaluate potential projects and management actions.

6 Q. When you say potential projects, including this
7 project, meaning the Monterey Peninsula water supply project?

8 A. No.

9 Q. How do you know that?

10 A. I know that from my review of the model and the
11 report that they prepared.

12 Q. Okay. So if I was to ask you the same litany of
13 questions of what did that model show as it relates to project
14 impacts, the answer would be nothing because that wasn't the
15 focus?

16 A. That's correct.

17 Q. Let's turn to Model 17, otherwise known as the
18 SWIM 2023 with slant wells. Are you with me?

19 A. Yes.

20 Q. Who created that model?

21 A. So I created that model starting with the
22 Montgomery & Associates model.

23 Q. What changes did you make from the Montgomery
24 model, otherwise known as Model 16?

25 A. I added the slant wells.

1 Q. For what purpose was it created?

2 A. To utilize that model to -- well actually, a
3 couple purposes. So, first of all, was the issue of variable
4 density had been raised by the opposing experts as an issue of
5 concern because of many of the previous models were not
6 variable density models. So they expressed concern that that
7 could affect project impact analyses.

8 Q. So --

9 A. And -- one purpose.

10 Q. I apologize. Tell me any other purpose that you
11 created that model.

12 A. To evaluate potential project impacts.

13 Q. And what changes did you make in Model 17 as it
14 relates to Model 16?

15 A. Just adding the slant wells.

16 Q. Did you conduct any sensitivity runs?

17 A. I did.

18 Q. Which ones?

19 A. I made some adjustments to hydraulic
20 conductivity storage coefficient and effective porosity.

21 Q. Let's break that down. List those again. What
22 was the first one?

23 A. Hydraulic conductivity.

24 Q. Hold on. Next?

25 A. Storage coefficient.

1 Q. Third?

2 A. And effective porosity.

3 Q. Will you spell that porosity?

4 A. P-o-r-o-s-i-t-y.

5 Q. Why did you make adjustments for Hydraulic
6 conductivity and what were they?

7 A. So the overall goal of those adjustments was to
8 see if there could be some improvement to the model
9 calibration. I wouldn't say it was like a full you know,
10 detailed model calibration but it was sort of doing some
11 sensitivity analyses to see how the calibration could be
12 improved.

13 Q. What changes did you make regarding storage
14 capacity and why?

15 A. Storage coefficient. It was just -- I'd have to
16 go back to the TM to see exactly what the changes were but
17 there were some adjustments in the parameters, some of those
18 parameters in the model.

19 Q. And what changes did you make as it relates to
20 effective important ones? And why?

21 A. Yeah. Similarly, just to see if the model
22 calibration could be improved.

23 Q. Did your revisions determine any project
24 impacts?

25 A. Well, I utilized the two different versions to

1 evaluate project impacts.

2 Q. What do you mean two different versions?

3 A. So the version with the slant wells added, and
4 no other changes, and the version with the slant wells added
5 and those changes to those parameters we've just been
6 discussing.

7 Q. Is that otherwise known as Model 18?

8 A. Yes.

9 Q. Let's stick with Model 17.

10 A. Okay.

11 Q. Have you told us the changes you made and the
12 purposes?

13 A. Yeah, that was just adding the slant wells.

14 Q. And you did run -- you did sensitivity runs,
15 correct?

16 A. Not on that version.

17 Q. Okay. As it relates to Model 17, what did it
18 show as it relates to project impacts?

19 A. It showed less than a foot of drawdown, neutral
20 to beneficial impacts on the seawater intrusion front. Ocean
21 Water Percentage in the mid 90's. And I did -- I think -- so
22 drawdown, less than a foot, oh, TDS at the -- sorry, that
23 model addresses chloride as opposed to TDS as the constituent
24 for Solute Transport. So the change in chloride at the MCWD
25 wells was neutral to beneficial, meaning either the same or

1 decreased.

2 Q. That's consistent with all the prior models we
3 discussed today?

4 A. Yes.

5 Q. What did the SWIM 2023 with slant wells show
6 regarding variable density?

7 A. It showed that basically it didn't make a
8 difference in terms of the net result of those impact issues.
9 In terms of whether, you know, it stayed the same or got
10 worse, the relative change was the same.

11 Q. Now turning to the last model in this segment
12 known as Model 18, the SWIM 2023 with slant wells and
13 adjustments. I have some questions about that. Did you
14 create that?

15 A. Yes.

16 Q. For what purpose?

17 A. Again, just to have a somewhat better calibrated
18 version to evaluate project impacts.

19 Q. Why? Why do you keep updating these models?

20 A. Just to try to make them better and more
21 representative.

22 Q. Are they also update today reflect additional
23 scientific information as it's learned?

24 A. Well yes, I mean in this case, in addition to
25 not having the slant wells in the original model, Montgomery &

1 Associates did not include the monitoring well data from the
2 Cal-Am monitoring wells or the Monterey Peninsula Water Supply
3 Project monitoring wells in there calibration data set. So I
4 was looking at a comparison of the model predictions or output
5 to those wells also.

6 Q. So in Model 18, the SWIM 2023 with slant well
7 and adjustments, please describe what adjustments you made.

8 A. Well, yeah, so, as I was talking about earlier,
9 I made adjustments to hydraulic conductivity, storage and
10 effective porosity.

11 Q. The same adjustments that we just discussed --

12 A. Yeah, sorry, I was talking about this model when
13 I was talk being that earlier.

14 Q. So Model 18 is where you made the three
15 adjustments that you just discussed?

16 A. Yes.

17 Q. And you included information about monitoring
18 wells?

19 A. I -- I utilized that in guiding how to make
20 those adjustments.

21 Q. What do you mean by that?

22 A. Comparing the model output to the observed data.

23 Q. As a result of the SWIM 2023 with slant wells
24 and adjustments did you reach any conclusions about seawater
25 intrusion, quality drawdown or Ocean Water Percentage?

1 A. Yes.

2 Q. What was the conclusion about seawater
3 intrusion?

4 A. Well basically all the conclusions were very
5 similar to what I described for the previous version without
6 the modifications.

7 Q. Which is?

8 A. Which there would be no harm from the project
9 pumping.

10 Q. What about quality?

11 A. That there would be no change or a decrease in
12 chloride at MCWD wells.

13 Q. What about drawdown?

14 A. Less than a foot.

15 Q. What about Ocean Water Percentage?

16 A. In the mid 90's.

17 Q. Did any of the models that we just discussed in
18 this phase two prepared by Cal-Am, Marina Coast Water
19 District, Montgomery & Associates with changes show any type
20 of harm to MCWD water supply or wells?

21 A. No.

22 Q. I'm going to talk about briefly what you may
23 describe the difference between the parties models,
24 particularly the WBSSM's. Are you with me so far?

25 A. Yes.

1 Q. There was differences between Cal-Am's and
2 Marina Coast; is that correct?

3 A. Yes.

4 Q. You touched on this briefly but I want to make
5 sure we understand. What were those differences?

6 A. Well, so -- well so overall there were a number
7 of differences. So the -- so for example, the model -- we
8 talked about the number of model layers was different but the
9 model layers themselves, so say for example, the model layer
10 that represents the dune sand aquifer, there were differences
11 in the elevation of those layers. Say the top and the bottom.
12 There were -- and then if we're talking about say a certain
13 aquitard like the 180, 400-foot aquitard, there were
14 differences in not only the elevations and, therefore, the
15 thickness of the aquitard but its extent and where it was
16 present and where it wasn't present. So there were, you know,
17 many differences in the just the model layering. There -- I
18 think we already discussed there was a difference in how the
19 ocean boundary was represented. There were differences, as
20 we've already discussed, over how the models were calibrated
21 to the test slant well drawdown pumping in terms of a
22 assigning the proportion of pumping from each aquifer. There
23 were other differences, like I believe the MCWD model made
24 extensive use of the so-called ET package or the Evapor
25 transportation package because they were having trouble with

1 groundwater levels becoming above groundwater surface. So
2 yeah, there were a number of differences R.

3 Q. Did you take into consideration any of the
4 differences that Marina Coast used in their models and
5 implement them in your model?

6 A. So basically the way the process worked was the
7 AHO directed us to try to work together as much as possible.
8 So we started with the North Marina model, the last version
9 that we had, and MCWD and Marina experts asked for certain
10 changes. So, for example, they wanted to move the southern
11 boundary further south. So we agreed to that change. And so
12 that was the same in both models.

13 Q. What other changes did you agree to as requested
14 by MCWD?

15 A. So another change was to add model layers to
16 break up the 180-foot aquifer into three layers.

17 Q. You accepted that requested change?

18 A. Yes.

19 Q. What other changes did you make at MCWD is
20 request?

21 A. Yeah, I -- I mean those are the two major ones I
22 recall right now.

23 Q. When you reran the model with those requested
24 changes did it change the outcome?

25 A. No.

1 Q. Same findings of no harm regarding seawater
2 intrusion, drawdown, water quality and Ocean Water Percentage?

3 A. Yes. I mean, there's always sort of small
4 differences, but you know, the end result of whether it's no
5 change or improvement or detrimental is the same.

6 Q. Were there any differences in vertical and
7 horizontal hydraulic conductivity?

8 A. Yes.

9 Q. What were those differences?

10 A. Well, again, it's sort of like the model
11 layering. There were differences in well, I guess maybe to
12 back up. So the way that typically happens is let's say you
13 have 200 foot by 200 foot grid cells, you would typically
14 create zones within each layer that would you would assign the
15 same hydraulic conductivity to. And so there were differences
16 in how we designated the zones. There were differences in
17 what the hydraulic conductivity values were that were
18 assigned. There were a lot of differences. You'd have to
19 look at maps to see really how they differed.

20 Q. Were there differences in recharge?

21 A. Yes.

22 Q. Which were what?

23 A. Generally speaking, they had more recharge in
24 there models than we did.

25 Q. And did you -- we started talking about what

1 changes you made at their request. Were there some changes
2 did you not agree to?

3 A. Well, yes.

4 Q. Can you tell us the two or three highlights.

5 A. Yeah, we disagreed on recharge was one. I mean,
6 kind of as I described earlier, there were changes that were
7 made you know that we didn't find out about until there final
8 models came out that we disagreed with, but we didn't discuss
9 them previously to have the chance to tell them we disagreed
10 with them until after they came out.

11 Q. Did MCWD make any changes to there load else at
12 the request of Cal-Am?

13 A. I mean, not that I recall. We basically we
14 started with the North Marina Groundwater Model and you know,
15 I guess you could say they accepted some aspects of it, like
16 the -- well not even the domain actually because we moved the
17 southern boundary. But you know, the -- we started with the
18 North Marina model as sort of common ground but -- so I don't
19 recall that we asked them for certain changes.

20 Q. I now wish to discuss models created after the
21 AHO proceedings that you relied upon to formulate your
22 opinions, okay?

23 A. Yes.

24 Q. Give us the names of those models.

25 A. So there was an update to the WBSSM 2023 model.

1 Q. One moment. And I'll call that model 19.
2 That's WBSSM. Can I call it 2023 update?
3 A. Yes.
4 Q. Is there a model 20?
5 A. So then we have the seawater intrusion model
6 2024 or SWIM 2024.
7 Q. We'll call that Model 20. Is there a model --
8 THE COURT: All right. Model 19 is WBSSM 2023
9 update?
10 MR. BETZ: Yes.
11 THE COURT: And Model Number 20 is the previously
12 mentioned SWIM 2024.
13 MR. BETZ: Yes.
14 THE COURT: Okay.
15 MR. BETZ: When Your Honor says "previously
16 mentioned," you mean when we had our colloquy before?
17 THE COURT: Yes.
18 MR. BETZ: Okay. Thank you.
19 Q. Is there --
20 THE COURT: Did you so understand it?
21 MR. BETZ: Yes. Thank you for indulging me, Your
22 Honor.
23 Q. Is there a Model 21?
24 A. So then there's the SWIM Model 2024 with the
25 slant wells added.

1 Q. We'll call that Model 21. Is there a Model 22?

2 A. And then there's the SWIM Model 2024 with the
3 slant wells added and an additional modification.

4 MR. OSIAS: Your Honor, I think it's the last three
5 combined that is the reference on that sheet. The Montgomery
6 version and then the two changes that Mr. Leffler just talked
7 about. You'll see that is in the comment column on that
8 Exhibit 844, rather than in the label.

9 THE COURT: The Montgomery version that you just
10 referred to being designated as which in this long list that
11 we've been discussing? Is it in that list at all?

12 MR. OSIAS: Yes, the Montgomery version unchanged is
13 20.

14 THE COURT: Okay. SWIM 2024 is the Montgomery
15 unchanged?

16 MR. OSIAS: Yes. Then with the slant wells added to
17 it was 21.

18 THE COURT: All right.

19 MR. OSIAS: And then with the slant wells and some
20 other changes was 2022. Not 2022. Sorry. Just 22.

21 THE COURT: Okay.

22 BY MR. BETZ:

23 Q. To complete our list, there is a Model 23, which
24 is the SWIM 2025, correct?

25 A. Yes.

1 Q. Let's turn back --

2 THE COURT: Wait a second. So 22 on this list is
3 what again?

4 MR. BETZ: The SWIM 2024 with slant wells and other
5 adjustments.

6 THE COURT: All right. So now 2023.

7 BY MR. BETZ:

8 Q. Number 23, which we won't need too much ink on
9 would be the SWIM 2025, correct?

10 A. Yes.

11 Q. And to shorten our discussion here, the SWIM
12 2025, otherwise known as Model 23, is irrelevant to this
13 discussion because it crashed when you tried to implement the
14 model or the project, correct?

15 A. I think -- did you say SWIM 2023?

16 Q. No, SWIM 2025. I'm sorry, I'm going out of
17 order.

18 A. Yeah. Okay.

19 Q. So working backwards, the Model 23, otherwise
20 known as SWIM 2025, is irrelevant for our discussion today
21 because it crashed when you tried to include the project,
22 correct?

23 A. Yes.

24 Q. Turning back to Model 19, otherwise known as the
25 WBSSM 2023 updated. First question, who created it?

1 A. That was created by the HWG and Geoscience.

2 Q. For what purpose?

3 A. To evaluate potential project impacts.

4 Q. How is it different than the prior WBSSM is that
5 we discussed?

6 A. The main -- well, the difference is in the
7 recharge, because in the Cal-Am WBSSM 2023 version, we had
8 inadvertently put in too much recharge and so this is the
9 version that has that corrected amount of recharge.

10 Q. Any other changes made?

11 A. No. Sorry, then it was recalibrated based on
12 that change.

13 Q. What did it show as it relates to project
14 impacts?

15 A. So it generally showed less than a foot of --
16 well it showed similar results to the previous Cal-Am WBSSM.
17 Meaning things like less than a foot of drawdown at MCWD
18 wells, neutral to decreasing salinity at MCWD wells. Mid I
19 think mid 90's Ocean Water Percentages. And that benefits the
20 seawater intrusion front.

21 Q. Turning to Model 20, otherwise known as the SWIM
22 2024 done by Montgomery. I think we discussed this before.
23 Did this show any project impacts?

24 A. No.

25 Q. Why not?

1 A. Because they didn't have the slant wells in
2 there. And just to be clear, the Montgomery made updates to
3 seawater intrusion model 2023 that we discussed before and
4 that became there seawater intrusion model 2024.

5 Q. Sorry, what did the SWIM 2024 include that was
6 not in prior models?

7 A. So when the SWIM 2023 came out, it was reviewed
8 by the GTAC, which I think we discussed previously, the
9 Groundwater Technical Advisory Committee. And some up dates
10 were recommended and changes and so Montgomery went back and
11 addressed some of those items and created an updated version.

12 Q. And did that rely upon information from prior
13 models?

14 A. It -- well, it relied on -- well, they developed
15 the SWIM 2023 with all the information that went into that and
16 then they made modification is and updates to improve the
17 model which became SWIM 2024.

18 Q. Now turning to Model 21, the SWIM 2024 with
19 slant wells. My question is, who created that?

20 A. So I created that by taking the Montgomery model
21 and adding the slant wells.

22 Q. Why did you do that?

23 A. So that I could evaluate potential project
24 impacts with that model.

25 Q. What other changes did you make to do your

1 analysis?

2 A. Well, that was the only change in that
3 particular version.

4 Q. You added the project?

5 A. Yes.

6 Q. And after you added the project to the SWIM
7 Model, what did the SWIM 2024, otherwise known as Model 21,
8 show as it relates to project impacts?

9 A. So it generally -- again, similar -- similar
10 results as I've described previously.

11 Q. Let's break it down. What did it show about
12 seawater intrusion?

13 A. There would be a neutral or net benefit.

14 Q. What did it show about water quality?

15 A. That there would be a neutral or decreasing
16 chloride at MCWD wells.

17 Q. What did it show about drawdown?

18 A. Less than a foot of drawdown at MCWD wells.

19 Q. What did it show about Ocean Water Percentage?

20 A. In the mid 90's.

21 Q. Turning to our last model that bears on your
22 opinions here. Was Model 22, known as the SWIM 2024 with
23 slant wells, plus other adjustments. Are you with me?

24 A. Yes.

25 Q. We understand that when you say SWIM 2024 with

1 slant wells what you mean is you added the project, correct?

2 A. Yes.

3 Q. What other additions were made to this model?

4 A. There was actually only one modification which
5 was in the extent of the FO-SVA.

6 Q. What changes made?

7 A. So the change that was made was to the western
8 extent of the FO-SVA in the original Montgomery Model 2024, SW
9 Model 2024, it extended all the way to the shoreline in the
10 project area. And the change was to move it back a little bit
11 from the shoreline. And that outline of where it was moved to
12 was based on the seawater intrusion model 2025 where that
13 modification was made by Montgomery working with EKI.

14 Q. Why did you make that change?

15 A. Yeah, I made that change because although it --
16 I don't agree with exactly where it is placed, it is closer or
17 a better representation of where the edge of the FO-SVA is
18 than the original Montgomery model.

19 Q. Did you conduct any sensitivity runs?

20 A. Yes.

21 Q. Which ones?

22 A. So I looked at recharge, differences in
23 recharge. I -- again, I looked at what Montgomery had in
24 their model, original model, and then I looked at what -- in
25 the 2025 SWI model, again, Montgomery working with EKI had

1 increased the recharge in the dunes sand complex. So I did a
2 sensitivity run with different recharge.

3 Q. Did you make any sensitivity runs as it
4 consequence concerns to variability density turning it off and
5 on?

6 A. Yes.

7 Q. What changes did you make, and please explain
8 those.

9 A. So this of course, is a variable density model.
10 So it normally runs accounting for variable density. But you
11 can also turn it off, so to speak, so that it runs without
12 accounting for variable density.

13 Q. Why would -- sorry. I apologize, go ahead.

14 A. I ran it both with and without variable density.

15 Q. Why?

16 A. Again, going back to that had previously been
17 expressed as a potential concern by the opposing experts that
18 some of the previous models that we've been discussing did not
19 account for variable density. And so I wanted to basically
20 see what difference it made in you know, relative to the
21 impact issues that we're trying to address here.

22 Q. As it relates to Model 22, the SWIM 2024 with
23 slant wells and other adjustments, did you reach any
24 conclusions about project impacts?

25 A. Yes.

1 Q. What did it show as it relates to seawater
2 intrusion?

3 A. So, again, neutral to beneficial impact on
4 seawater intrusion.

5 Q. Same findings as all the predecessor models we
6 discussed?

7 A. Yes.

8 Q. What did it show as it relates to water quality?

9 A. It showed neutral to decreasing concentrations
10 of chloride at MCWD wells.

11 Q. Same conclusion as the predecessor models we
12 discussed?

13 A. Yes.

14 Q. What did it show as it relates to drawdown?

15 A. Less than a foot at MCWD wells.

16 Q. And what did it show as it relates to Ocean
17 Water Percentage?

18 A. Mid 90's.

19 Q. So as it relates to these two sensitivity runs
20 did they make any differences as it relates to project
21 impacts?

22 A. No. I mean, not in the overall picture of again
23 whether it's neutral, beneficial or detrimental. They're very
24 small differences and I believe in the case of recharge
25 primarily the Ocean Water Percentage was slightly different.

1 Q. How?

2 A. I think with the additional recharge it may have
3 decreased by like two percentage point, something on that
4 order.

5 Q. Did you run any additional scenarios?

6 A. Yes.

7 Q. What were those?

8 A. We ran it with the project -- the slant wells
9 operating for a certain number of years, and then turning it
10 off. We ran it with the basically turning off all the pumping
11 in the basin, not the -- you know, operating the slant wells
12 but turning off all the pumping in the basin.

13 Q. When you say it, what are you referring to?

14 A. The seawater intrusion model 2024 with -- with
15 the modifications.

16 Q. When you said you had to turn the project off,
17 over what two time frames?

18 A. So I believe as sort of as a function of the
19 data set that was in the SWIM model, we ran it for 18 years of
20 pumping, and then turned it off I -- originally we turned it
21 off for 18 years but then we wanted to extend that time period
22 to look at it a little longer. So we ended up turning it off
23 for 54 years.

24 Q. Why did you do that?

25 A. Because there was concern expressed by the

1 opposing experts that if the project operated for a number of
2 years and then turned off that it would create impacts in the
3 basin.

4 Q. As a result of these two scenarios, meaning
5 turning the project off after 18 years and turning the project
6 off after 54 years, what was the result as it relates to
7 project impacts?

8 A. So that -- that scenario focused on the seawater
9 intrusion front. And how the seawater intrusion front would
10 change with -- you know, doing -- turning the project on and
11 then off. And so basically what it showed was that while the
12 project was operating, you had some beneficial impact on the
13 seawater intrusion front, that that over time that beneficial
14 impact dissipated and it ended up being in basically in the
15 same place as it would be without the slant wells pumping the
16 entire time.

17 Q. Anything else it showed?

18 A. No. I mean, that's what was focused on in that.
19 That analysis.

20 Q. Once again, dealing with this third tranch of
21 models, post AHO. Having run all those models and variations
22 they, once again, showed no project impacts?

23 A. Correct.

24 Q. Which is consistent with the prior models that
25 we discussed today?

1 A. Yes.

2 Q. And that include models not only that you and
3 your team had run, but models others had created?

4 A. Yes.

5 Q. What's the overall significance of all these
6 models showing consistently no harm?

7 A. Well, to me one of the most important take-aways
8 is it greatly reduces uncertainty and, you know, your
9 evaluation of potential project impacts because it's been
10 looked at in so many different ways with different models and
11 different consultants running these models and different sets
12 of aquifer parameters and boundary conditions and all
13 producing very similar results.

14 THE COURT: I do have a question going back a couple
15 of questions, Mr. Leffler. I think you said that while the
16 project was operating there was some beneficial impact on the
17 seawater intrusion front that over time dissipated with the
18 salinity or seawater content returning to what it had been
19 previously before the slant wells pumped. If you mentioned
20 what happened in this model when the pumping was shut off, I
21 missed it. So can you explain that.

22 THE WITNESS: Yes. So --

23 THE COURT: Assuming you've got initial beneficial
24 impact that your model showed and then a return to prior state
25 and then what may or may not happen afterward. Thank you.

1 THE WITNESS: Yes, Your Honor. So in the years when
2 the slant wells are running, you start to see a difference in
3 the seawater intrusion front. And so while the slant wells
4 are running there's -- it's not as far -- it's a slight
5 difference, it's not quite as far inland. You can see sort of
6 a gap between the two --

7 THE COURT: The capture concept that you mentioned
8 previously.

9 THE WITNESS: Yes.

10 THE COURT: All right.

11 THE WITNESS: But when you turn it off -- and it
12 takes awhile, so that's why we sort of ran it even longer, is
13 it -- and all this time the seawater intrusion front is
14 migrating inland due to existing conditions. What we were
15 looking at is the difference, you know, in this with the slant
16 wells having operated or not. So over time that the
17 difference between the two lines begins to decrease until
18 they're virtually identical.

19 THE COURT: While the plant is still in operation?

20 THE WITNESS: Well, no, actually after it turns off.

21 THE COURT: Okay.

22 THE WITNESS: So it operated for a number of years,
23 created a difference in the line, then the slant wells turned
24 off, and that difference in the seawater intrusion front line
25 sort of decreased until they were virtually identical.

1 THE COURT: Had you finished?

2 THE WITNESS: Yes.

3 THE COURT: So, if I understand correctly, so long as
4 the plant was running, the -- under this model, the seawater
5 intrusion front receded somewhat, if you will, seaward, and
6 then remained in this receded state, to some degree, until it
7 was -- the pumps were shut off, and at that time it would
8 gradually be a return of the seawater intrusion front to where
9 it had been previously, all other things being the same?

10 THE WITNESS: Not exactly, Your Honor. So, let's
11 see. Let's say at the time that -- maybe we can just focus on
12 say appoint on the seawater intrusion front. So let's say at
13 the time that the slant wells start. So right before they
14 start. So let's say at that particular point the seawater
15 intrusion front is two miles inland. And so you operate the
16 slant wells for a period of time and after that time period
17 the -- you know, we've run the model with and without the
18 slant wells pumping. So we know if we had operated it for
19 those 18 years without the slant well pumping, maybe the
20 seawater intrusion line instead of two miles inland it's 2.5
21 miles inland now. So it went inland .5 miles. Bud with the
22 slant wells pumping, it would maybe have gone inland 2.4
23 miles. So it still went inland but not as far. And so now we
24 have a gap of say .1 miles between the two lines. And then
25 you turn it off and that seawater intrusion front continues

1 migrating inland. And so let's say after 54 years it's now,
2 you know, 3.5 miles inland in the run where you never operated
3 slant wells at all. And then in a run where you operated for
4 a number of years and then turned it off, it would be, you
5 know, virtually at that same point, 3.5 miles or maybe it's
6 3.49 but that gap of .1 reduced until it was either, you know,
7 very small or there was essentially no gap.

8 THE COURT: So it -- the operation of the slant wells
9 reduces the rate of intrusion.

10 THE WITNESS: Yes.

11 THE COURT: Okay. Thank you. I apologize for going
12 into the noon hour, Madam Reporter, but it's 12:02 and we will
13 take the noon hour recess at this time.

14 (WHEREUPON, THE LUNCH RECESS WAS HELD.)
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