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BEFORE THE
CALIFORNIA STATE WATER RESOURCES CONTROL BOARD

CALIFORNIA WATERFIX WATER)
RIGHT CHANGE PETITION)
HEARING)

JOE SERNA, JR. BUILDING
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
BYRON SHER AUDITORIUM
1001 I STREET
SECOND FLOOR
SACRAMENTO, CALIFORNIA

PART 1A

Wednesday, August 24, 2016
9:00 A.M.

Volume 14
Pages 1 - 299

Reported By: Candace Yount, CSR No. 2737, RMR, CCRR
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APPEARANCES

CALIFORNIA WATER RESOURCES BOARD

Division of Water Rights

Board Members Present:

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

Staff Present:

Diane Riddle, Environmental Program Manager
Dana Heinrich, Senior Staff Attorney
Kyle Ochendusko, Senior Water Resources Control Engineer

PART I

For Petitioners:

California Department of Water Resources:

James (Tripp) Mizell
Thomas M. Berliner

The U.S. Department of the Interior:

Amy L. Aufdemberge, Esq.

INTERESTED PARTIES:

For Glenn-Colusa Irrigation District (GCID):

Andrew M. Hitchings

For North Delta Water Agency:

Meredith Nikkel

For The Sacramento Valley Group:

David Aladjem

For Sacramento Regional County Sanitation District:

Kelley Taber

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APPEARANCES (Continued)

INTERESTED PARTIES (Continued):

For East Bay Municipal Utility District (EBMUD):

Jonathan Salmon

For Sacramento County Water Agency:

Aaron Ferguson

For Friant Water Authority & Friant Water Authority
Members:

Gregory Adams

For South Valley Water Association, et al.:

Nicolas Cardella

For San Joaquin Tributaries Authority, The (SJTA), Merced
Irrigation District, Modesto Irrigation District, Oakdale
Irrigation District, South San Joaquin Irrigation
District, Turlock Irrigation District, and City and
County of San Francisco:

Tim O'Laughlin

For The City of Stockton:

Kelley Taber

For County of Solano:

Peter Miljanich

For State Water Contractors:

Stefanie Morris

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APPEARANCES (Continued)

INTERESTED PARTIES (Continued):

For The Environmental Justice Coalition for Water, Islands, Inc., Local Agencies of the North Delta, Bogle Vineyards/Delta Watershed Landowner Coalition, Diablo Vineyards and Brad Lange/Delta Watershed Landowner Coalition, Stillwater Orchards/Delta Watershed Landowner Coalition, Brett G. Baker and Daniel Wilson:

Osha Meserve

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

John Herrick, Esq.

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E X H I B I T S

GLENN-COLUSA IRRIGATION DISTRICT:

EXHIBITS	DESCRIPTION	IDEN EVID
1	Coordinated Operations Agreement	2

EAST BAY MUNICIPAL UTILITIES DISTRICT EXHIBITS:

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X-1	Modeling of BDCP Impacts on FRWA's and East Bay MUD's Operations, Meeting Minutes	90
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I N D E X (Continued)

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EAST BAY MUNICIPAL UTILITIES DISTRICT EXHIBITS:

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CENTRAL DELTA WATER AGENCY

EXHIBITS	DESCRIPTION	IDEN EVID
27	E-mail from Reza Shahcheraghi to Tracy Pettit and others, dated Friday, July 15, 2016, 5:26 p.m., attaching graphs	263
35	Delta Water Quality Conditions, South Delta Stations	283

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1	A Strategic Review of CALSIM II and its Use for Water Planning	164

1 Wednesday, August 24, 2016 9:00 a.m.

2 PROCEEDINGS

3 ---000---

4 CO-HEARING OFFICER DODUC: (Banging gavel.)

5 Good morning, everyone. It is 9 o'clock.

6 Welcome back to the California WaterFix

7 Petition hearing.

8 I am Tam Doduc. To my right is Board Chair
9 Felicia Marcus. To the Chair's right will be Board
10 member Dee Dee D'Adamo, and to the far right is Diane
11 Riddle. To my left are Dana Heinrich and Kyle
12 Ochenduszko. We are also being assisted by other staff
13 here today.

14 Our usual quick announcements: Please take a
15 moment and identify the exits closest to you. If an
16 alarm goes off, we are evacuating down the stairs or into
17 a protected vestibule. For those exiting the building,
18 we will gather in the park.

19 Second announcement: The meeting is being
20 Webcasted and recorded, so please provide your comments
21 into the microphone and please begin by stating your name
22 and affiliation.

23 A court reporter is here -- thank you again for
24 joining us -- and a transcript will be made available
25 after Part IA. If you need to have it sooner, please

1 work with the court reporter.

2 Finally, please take a moment. You know how
3 annoyed I get when these things go off. Please put your
4 noise-making devices on silent, vibrate, sleep mode,
5 whatever that does not make a noise.

6 Please check.

7 THE REPORTER: Mine is off.

8 CO-HEARING OFFICER DODUC: Thank you.

9 (Laughter)

10 CO-HEARING OFFICER DODUC: With that, unless
11 there's any other procedural matters . . .

12 I'm looking around. No, I'm not seeing any.

13 We will resume with cross-examination by
14 Group 7, Mr. Hitchings.

15 MR. HITCHINGS: Good morning, Board Members,
16 Board staff and witness panel. Thank you for being here
17 for answering questions this morning.

18 (Glenn-Colusa Irrigation District's

19 Exhibit 1 marked for
20 identification)

21 MR. HITCHINGS: I do want to start with some
22 questions regarding -- that are going to pertain to GCID
23 Exhibit 1, and I believe I provided paper copies to the
24 prior panel as well as the Board, and I have copies for
25 at least two of the main witnesses.

1 CO-HEARING OFFICER DODUC: Okay.

2 Mr. Hitchings, just for my purposes, how much time do you
3 think you'll need?

4 MR. HITCHINGS: Yes, Hearing Chair. I think
5 probably 20 minutes, 20 to 30 minutes, and I'll try to
6 make it shorter than that if I can.

7 CO-HEARING OFFICER DODUC: All right. Thank
8 you.

9 MR. HITCHINGS: Thank you.

10 (Documents distributed.)

11 ERIK REYES, TARA SMITH, JAMIE ANDERSON.

12 GWEN BUCHHOLZ, MICHAEL BRYAN, and KRISTIN WHITE,
13 called as witnesses for the Petitioners, having been
14 first duly sworn, were examined and testified as follows:

15 CROSS-EXAMINATION BY

16 MR. HITCHINGS: So I'd like to direct most of
17 my questions to Mr. Munévar.

18 I just handed to you Exhibit 1 and that's the
19 Coordinated Operations Agreement. There was some
20 discussion about that yesterday.

21 Mr. Munévar, I -- I agree -- I -- I -- I recall
22 that yesterday you indicated that you're generally
23 familiar with the Coordination -- Coordinated Operations
24 Agreement; otherwise, referred to as the COA; is that
25 correct?

1 WITNESS MUNÉVAR: That is correct.

2 MR. HITCHINGS: And generally with its
3 implementation; is that correct?

4 WITNESS MUNÉVAR: With its implementation with
5 respect to modeling, yes.

6 MR. HITCHINGS: Okay. If I could refer you to
7 Article 6 of the COA agreement, and let's pull it up on
8 the screen. It starts on Page 8 of that agreement, and
9 it's entitled Coordination of Operations.

10 (Document displayed on screen.)

11 MR. HITCHINGS: And in particular -- Do you
12 have that in front of you there?

13 WITNESS MUNÉVAR: I do.

14 MR. HITCHINGS: In particular, Article 6(c) on
15 Pages 9 through 10 addresses the CVP and State Water
16 Projects sharing responsibility to meet Sacramento Valley
17 in-basin use with storage withdrawals during balanced
18 water conditions; is that correct?

19 WITNESS MUNÉVAR: Correct.

20 MR. HITCHINGS: And -- And under this
21 provision, the responsibility for storage withdrawals is
22 assigned 75 percent to the CVP and 25 percent to the SWP;
23 is that correct?

24 WITNESS MUNÉVAR: That's correct.

25 MR. HITCHINGS: And I recall you had provided

1 some testimony along the lines of your familiarity with
2 that -- that sharing approach; is that right?

3 WITNESS MUNÉVAR: Yes.

4 MR. HITCHINGS: And then under Article 6(d), on
5 Pages 10 and 11, that addresses the CVP and State Water
6 Project's sharing of responsibility during balanced water
7 conditions when unstored water is available for export;
8 is that correct?

9 WITNESS MUNÉVAR: Correct.

10 MR. HITCHINGS: And under that provision, the
11 sharing of available supply is assigned 55 percent to the
12 CVP and 45 percent to the SWP; is that correct?

13 WITNESS MUNÉVAR: That's correct.

14 MR. HITCHINGS: Okay. So, in -- in performing
15 the modeling for the Project, did DWR or Reclamation
16 provide any input to the Modelers regarding the COA in
17 order to assure that the modeling for the Project
18 accurately reflected both Reclamation's and DWR's sharing
19 obligations under the COA?

20 WITNESS MUNÉVAR: Both DWR and Reclamation
21 Modelers were part of the model development and reviewed
22 the model. I won't speak for them in terms of their
23 specific reviews.

24 MR. HITCHINGS: Yeah. The question was: Did
25 they put -- Did they provide input as to how the Modelers

1 were to treat COA and the sharing of responsibilities
2 under COA in the modeling assumptions?

3 WITNESS WHITE: Are you specifically asking
4 whether the Operations staff provided input or whether
5 Reclamation Modelers provided input?

6 MR. HITCHINGS: Let's say anyone from DWR or
7 Reclamation. Did they provide that type of input with
8 regard to assumptions that should be made as to the
9 sharing of responsibility under COA with the Project in
10 place?

11 WITNESS MUNÉVAR: I don't recall specific
12 assumptions that would be different than we assumed in
13 the No-Action.

14 MR. HITCHINGS: Did you make any assumptions
15 with regard to the sharing of responsibilities under COA
16 in the No-Action Alternative?

17 WITNESS MUNÉVAR: Per -- Per the COA, for
18 long-standing description of the modeling for the past
19 decade or so.

20 MR. HITCHINGS: And how did you provide --
21 What -- What were those assumptions regarding the sharing
22 of responsibility for the modeling inputs?

23 WITNESS MUNÉVAR: They're per the -- per the
24 COA, percentages that were just described in this
25 exhibit, in COA, the 75-25 under -- under balanced

1 conditions, under basin uses, releases under basin uses,
2 and the 45 -- 55-45 of unstored water for export.

3 MR. HITCHINGS: Okay. Well, in Alternative
4 4(a) modeling, limits are placed on total exports in
5 April and May to meet increased spring outflow; is that
6 correct?

7 WITNESS MUNÉVAR: 4(a) H4, there are export
8 restrictions to achieve the outflows, correct.

9 MR. HITCHINGS: And is the available export
10 capacity, the assumptions in that alternative, is it --
11 is the available exports capacity shared 50-50 between
12 the CVP and the SWP and the modeling assumptions?

13 WITNESS MUNÉVAR: I believe so. I do not
14 recall. Maybe Kristin can chime in on that one.

15 WITNESS WHITE: Yes, I think that's correct,
16 and that was based on input provided from both DWR and
17 Reclamation Operations staff, not specifically for this
18 Project. That's a longer-standing assumption that's been
19 in CalSim.

20 MR. HITCHINGS: Okay. So, then, that 50-50
21 sharing in the assumptions under that alternative, that
22 doesn't then track the 75-25 or the 55-45 that we just
23 talked that in Article 6(c) and 6(d); is that correct?

24 WITNESS MUNÉVAR: I think in -- in the COA, the
25 COA did not envision some of the export restrictions that

1 have occurred even recently and so there's been an
2 understanding between the Projects that export capacity
3 under these revised -- or additional export restrictions
4 would be shared 50-50.

5 WITNESS WHITE: Right. The 75-25 and the 55-45
6 aren't referring to export restrictions. They're
7 referring to obligations for meeting requirements.

8 MR. HITCHINGS: So what COA provision was
9 relied upon for the assumption of the 50-50 sharing in
10 the Alternative 4(a) modeling that was just described?

11 WITNESS MUNÉVAR: Go ahead.

12 WITNESS WHITE: As I think Mr. Munévar said,
13 that was a -- When COA was developed, export restrictions
14 were not envisioned so it wasn't specifically addressed.
15 So that was added to CalSim based on input from the
16 Reclamation-DWR Operators but not specifically for this
17 Project. That was added some time ago.

18 MR. HITCHINGS: So there's no COA provision
19 that -- an expressed COA provision that supports that
20 50-50 assumption.

21 WITNESS WHITE: I do not believe so, although
22 I'm not . . . an expert in the legal use of COA.

23 CO-HEARING OFFICER DODUC: Mr. Munévar, do you
24 have a different response?

25 WITNESS MUNÉVAR: No.

1 MR. HITCHINGS: Were the modelers that
2 performed the modeling for the different Project
3 alternatives have been -- Were they informed as to how
4 the CVP and the State Water Project are proposing to
5 share the new diversion facilities under the Project?

6 WITNESS MUNÉVAR: No, we were not. As far as I
7 understand, that is still uncertainty.

8 MR. HITCHINGS: Okay. I'd like to refer you to
9 DWR Exhibit 515. There was some discussion about that
10 yesterday and, in particular, Page 3, and specifically
11 the box for the H4 scenario Delta outflow requirements.

12 (Document displayed on screen.)

13 MR. HITCHINGS: And it's at the bottom of
14 Page -- Well, it's the bottom of the box on Page 3.

15 And there was a discussion yesterday. The last
16 sentence in that box referred to potential Oroville
17 releases to meet the outflow target.

18 Do you recall that discussion yesterday?

19 WITNESS MUNÉVAR: I do.

20 MR. HITCHINGS: And during your testimony
21 yesterday, I believe you testified that those described
22 releases from Oroville are inconsistent with your current
23 understanding of the COA's requirements; is that correct?

24 WITNESS MUNÉVAR: The releases from Oroville
25 alone to meet an outflow, if it was termed an in-basin

1 use, would be inconsistent with current COA applications.

2 MR. HITCHINGS: And I also believe you
3 testified that the modeling of the export curtailments to
4 meet the outflow target under this scenario complied with
5 the COA's requirements as the export restrictions; is
6 that correct?

7 WITNESS MUNÉVAR: They were in terms of the
8 total export capacity.

9 MR. HITCHINGS: And -- And what were those
10 requirements that you had in mind when you provided that
11 answer?

12 WITNESS MUNÉVAR: Well, in particular, we were
13 speaking of H4, I believe, and the amount of export
14 curtailments that would be required to -- to achieve the
15 outflow targets that are in H4.

16 MR. HITCHINGS: And -- And what would the --
17 What were the modeling assumptions as far as the sharing
18 percentages for that alternative analysis?

19 WITNESS MUNÉVAR: Again, I -- I may have to
20 seek some assistance here from my Panel Members,
21 but . . .

22 Kristin, you want to . . .

23 WITNESS WHITE: You're asking how the export
24 restrictions were shared between the State and Federal
25 Projects at the pumps?

1 MR. HITCHINGS: Yeah. There was a statement
2 that -- I believe, Mr. Munévar, your testimony was that
3 the modeling of the export curtailments to meet the
4 outflow target complied with COA's requirements as the
5 export restrictions, and -- and that's what I'm trying to
6 get clarification on.

7 What COA provisions did you have in mind when
8 you made that statement?

9 WITNESS MUNÉVAR: Yeah. So I -- I do not
10 recall whether the -- the total export capacity was
11 limited such that the outflow could be met without
12 dropping below the 1500 cfs. I cannot recall whether the
13 50-50 split on the export curtailment was implemented or
14 it was left to COA to apply the split between SWP and
15 CVP.

16 MR. HITCHINGS: So, you were referring to that
17 50-50 sharing that we just spoke about a few moments ago?

18 WITNESS MUNÉVAR: No. I was referring to -- to
19 the COA split.

20 What I don't recall is whether the split was
21 50-50 for that particular requirement or left to the
22 COA -- COA logic to provide.

23 WITNESS WHITE: I think we're mixing up terms a
24 little bit here.

25 The COA split of 75-25 or 55-45 refers to the

1 obligation to meet in-basin demands. So the Delta
2 outflow responsibility would be shared according to
3 whatever those rules were depending on the balanced or
4 whatever the conditions were in the basin.

5 The export restriction talks about, when we're
6 restricted on pumping, how do we share that restriction?

7 So I think when we say it applies for COA,
8 we're talking about how much is being released from each
9 Project in order to meet an overall obligation. When we
10 talk about export restrictions, it's a -- it's not that
11 it's inconsistent with how much we release.

12 I don't know if that makes sense.

13 MR. HITCHINGS: Well, what -- what percentage
14 was applied with regard to the sharing of export
15 restrictions?

16 WITNESS WHITE: I think that's the 50-50
17 sharing, although I think we heard from Mr. Leahigh and
18 Mr. Milligan that exact operations south of Delta has not
19 been determined as far as the sharing between Projects.

20 CO-HEARING OFFICER DODUC: Mr. Munévar, can you
21 point to any specific COA requirements that pertain to
22 sharing of export restrictions?

23 WITNESS MUNÉVAR: I think the -- the export
24 restrictions that were included in COA -- And I don't
25 have them -- I don't have them, per se. They were

1 included in terms of amount of export available for each
2 of the Projects under certain conditions. That's the
3 55-45.

4 Then additional restrictions have been applied
5 to the Projects post-COA, and that's the assumption that
6 Kristin's talking about. The operations assumptions have
7 been 50-50 for many of those requirements.

8 MR. HITCHINGS: Okay. Thank you.

9 I just have a couple more questions. And if we
10 could switch gears here and go to DWR-514. And this is
11 on Page 15 of that document, and it's the Figure 12
12 simulated end-of-September Shasta storage exceedance
13 spot.

14 (Document displayed on screen.)

15 MR. HITCHINGS: Page 15, Figure 12.

16 (Document displayed on screen.)

17 MR. HITCHINGS: And do you recall there was
18 some -- some questions and discussion regarding this
19 spot, I think from Mr. Lilly but also from Mr. Aladjem at
20 the end of the day yesterday?

21 Do you recall them?

22 WITNESS MUNÉVAR: Yes.

23 MR. HITCHINGS: And one of the lines of
24 questioning was the fact that several of the
25 alternatives, other than the No-Action Alternative,

1 provided for higher levels of upstream storage in -- in a
2 certain amount of the years, both in the H3, H4 and even
3 in the boundary analysis; is that correct?

4 WITNESS MUNÉVAR: Correct.

5 MR. HITCHINGS: And so my question is: Were
6 the modelers from the Project directed in the assumptions
7 that they provided in the modeling to achieve higher
8 end-of-September storage in Shasta under those other
9 Project alternatives?

10 WITNESS MUNÉVAR: No. The -- The desire in the
11 modeling, in terms of the way we set allocations and the
12 way we set the Rule Curve, is to achieve No-Action levels
13 or higher. Those were the -- the modeling protocol that
14 we developed.

15 The higher storage assumptions were an outcome
16 of that -- of that approach on a specific target we were
17 seeking to achieve.

18 MR. HITCHINGS: So it was more almost a
19 performance target?

20 WITNESS MUNÉVAR: No, not a performance target.
21 It's an outcome of -- of the modeling assumptions that
22 were -- and the alternative assumptions that are
23 included.

24 MR. HITCHINGS: Well, were assumptions made in
25 the withholding input so that that result would be

1 achieved, higher end-of-September storage?

2 WITNESS MUNÉVAR: No.

3 MR. HITCHINGS: Okay. I think that's all I
4 have.

5 Thank you very much.

6 CO-HEARING OFFICER DODUC: Thank you,
7 Mr. Hitchings.

8 And according to my calculation, that concludes
9 the cross-examination for Group 7, except for the
10 Sacramento County Water Agency, who will be conducting
11 their cross-examination with Group Number 15; is that
12 correct?

13 All right. We will move on to Group Number 8.

14 Is there anyone here from Group Number 8? Not
15 seeing anyone.

16 Group Number . . .

17 MS. NIKKEL: Nine.

18 CO-HEARING OFFICER DODUC: She's Group 9.

19 MS. NIKKEL: I'm here for nine.

20 CO-HEARING OFFICER DODUC: Don't confuse me.
21 Group Number 9.

22 MS. NIKKEL: Good morning. Meredith Nikkel on
23 behalf of North Delta Water Agency, not Tehama-Colusa
24 Canal Authority for which I'm also representing, but my
25 questions this morning are for the North Delta.

1 CO-HEARING OFFICER DODUC: Miss Nikkel, how
2 much time do you anticipate needing?

3 MS. NIKKEL: About 45 minutes.

4 CO-HEARING OFFICER DODUC: Okay. And to help
5 me out, can you just briefly go over the topics you'll be
6 covering.

7 MS. NIKKEL: Sure.

8 I've got a few just general questions that --
9 just a couple that are not repetitive, and then a couple
10 also on the boundary analysis framework that -- I think
11 from a different angle focusing more on the DSM-2 aspect
12 of the modeling work that's been done.

13 And then the 1981 contract between the
14 Department of Water Resources and North Delta Water
15 Agency.

16 And then specifically the modeling results
17 regarding water quality and water levels.

18 CO-HEARING OFFICER DODUC: Finally, water
19 quality. I'm happy.

20 MS. NIKKEL: There we go.

21 CO-HEARING OFFICER DODUC: Please proceed.

22 MS. NIKKEL: Thank you.

23 CROSS-EXAMINATION BY

24 MS. NIKKEL: So, most of my questions will be
25 directed to Mr. Nader-Tehrani, although I welcome the

1 input from other panelists as well, as appropriate.

2 So, Mr. Nader-Tehrani, I just want to make sure
3 I understand your role in developing the modeling results
4 that were presented.

5 And your written testimony explains that your
6 job duties include directing and reviewing the modeling
7 that was done by DWR and its consultants for the
8 California WaterFix Project; correct?

9 WITNESS NADER-TEHRANI: That's correct.

10 MS. NIKKEL: So are you the Department's most
11 knowledgeable witness on the water quality and water
12 level-related impacts associated with the operation of
13 the Proposed Project?

14 WITNESS NADER-TEHRANI: I would not necessarily
15 consider myself the most expert, but I have about 20
16 years of experience dealing with models in the Delta,
17 DSM-2 water quality, hydrodynamics, and so forth.

18 MS. NIKKEL: Okay. Is there somebody else with
19 the Department who would have more knowledge than you on
20 the impacts associated with the Project on water quality
21 and water levels in the Delta?

22 MR. BERLINER: Objection: Relevance.

23 CO-HEARING OFFICER DODUC: Miss Nikkel.

24 MS. NIKKEL: I think we're entitled to know, of
25 all the witnesses that the Petitioners are putting

1 forward, who the most knowledgeable person is on the key
2 question of impacts on water quality and water levels.

3 CO-HEARING OFFICER DODUC: You know,
4 Miss Nikkel, as long as the witness can answer your
5 question, we'll --

6 MS. NIKKEL: Of course.

7 CO-HEARING OFFICER DODUC: -- leave it at that.

8 MS. NIKKEL: If you --

9 CO-HEARING OFFICER DODUC: So go ahead with
10 your questions, your specific questions on water quality.

11 MS. NIKKEL: Water quality and water levels.

12 CO-HEARING OFFICER DODUC: And water levels.

13 MS. NIKKEL: Yes.

14 WITNESS NADER-TEHRANI: I think I -- I can
15 answer those questions.

16 MS. NIKKEL: Is there anybody else at DWR, to
17 your knowledge, that has more knowledge than you do?

18 CO-HEARING OFFICER DODUC: Miss Nikkel, I don't
19 think I made myself clear. I sustained the objection.

20 MS. NIKKEL: Oh, I'm sorry. I misunderstood
21 you.

22 CO-HEARING OFFICER DODUC: Please just ask him
23 the water quality questions you have.

24 MS. NIKKEL: Okay. I misunderstood. Thank
25 you.

1 So, also, I understand that your testimony and
2 your modeling work focused on water quality and water
3 levels.

4 Was DWR's analysis on any other -- Or was there
5 any analysis by DWR in any other aspects resulting from
6 the Project, such as flow or -- or velocity of flow in
7 the Delta?

8 WITNESS NADER-TEHRANI: We -- We've looked at
9 velocities and flows, but they're not specifically
10 included in the testimony that I provided.

11 MS. NIKKEL: And where would that information
12 be available?

13 WITNESS NADER-TEHRANI: All that information is
14 available in the model output that was provided back in
15 the end of May, or middle of May.

16 MS. NIKKEL: And that's the information you're
17 referring to that's on the State Board's website and the
18 FTP website?

19 WITNESS NADER-TEHRANI: That's correct.

20 MS. NIKKEL: Okay. Thank you.

21 I want to shift focus and ask a couple of
22 questions about the boundary analysis that we've talked a
23 lot about here.

24 Were you involved personally in the development
25 of the boundary analysis approach?

1 WITNESS NADER-TEHRANI: The boundary analysis
2 focus started with CalSim and assumptions in CalSim, so
3 in that aspect, I was not involved in the development of
4 the assumptions for the Boundary 1/Boundary 2.

5 What I was involving was, once the analysis was
6 done, then we ran DSM-2 to see the effects on water
7 quality and so forth. So that's -- From that portion on,
8 I was involved in making assessments about that.

9 MS. NIKKEL: Okay. Thank you for that
10 clarification.

11 So, did you hear yesterday, Mr. Munévar
12 testified that -- that these boundaries represent, you
13 know, a spectrum of options, but they're -- but one could
14 come up with or concoct, I think was the word he used,
15 additional scenarios that are not contained within the
16 boundary analysis?

17 Do you recall that testimony?

18 WITNESS NADER-TEHRANI: I recall that, yes,
19 um-hmm.

20 MS. NIKKEL: And do you agree with Mr. Munévar
21 that one could concoct additional scenarios that don't
22 fall within the boundary analysis?

23 WITNESS NADER-TEHRANI: I don't have any
24 comments on that. I would leave that to Mr. Munévar.

25 MS. NIKKEL: Okay. And in your professional

1 opinion, having reviewed and executed, I would say, the
2 boundary analysis approach, would you agree that the
3 boundary analysis is an appropriate tool for analyzing
4 the wide range of effects on hydrodynamics in the Delta?

5 WITNESS NADER-TEHRANI: I -- I would consider
6 that a proper approach.

7 MS. NIKKEL: All right. Switching gears again.

8 Let's have a look at the 1981 contract that I
9 mentioned.

10 So if staff could please pull up DWR-306.

11 (Document displayed on screen.)

12 MS. NIKKEL: Mr. Nader-Tehrani, are you
13 familiar with this document?

14 WITNESS NADER-TEHRANI: I have seen this
15 document, but not lately.

16 I have not reviewed all the detail. I do
17 recall looking at it and looking at some of the
18 requirements in the -- that was included in the contract.

19 MS. NIKKEL: Okay. Can you give us just a
20 generally understanding -- general description of what
21 your understanding of this document is?

22 WITNESS NADER-TEHRANI: It is -- It -- I
23 believe -- And I could be wrong, but I believe it's an
24 agreement that was signed between DWR and North Delta
25 Water Agency to provide a certain water quality with --

1 you know, that would be different depending on the flows
2 or the, you know, precipitation patterns of the River
3 Flow Index at different locations in the North Delta
4 area.

5 MS. NIKKEL: Okay. And so it's your general
6 understanding that it's DWR who's obligated to meet the
7 requirements of this contract; correct?

8 WITNESS NADER-TEHRANI: Based on what I recall,
9 yes, um-hmm.

10 MS. NIKKEL: And is it also -- Based on what
11 you recall, is it also your general understanding that
12 during certain times of the year, the water quality
13 requirements in this contract govern the State Water
14 Project operations rather than D-1641 requirements at
15 Emmaton?

16 MR. BERLINER: Objection: Calls for a legal
17 conclusion.

18 CO-HEARING OFFICER DODUC: I believe he can
19 answer to the best of his ability.

20 WITNESS NADER-TEHRANI: I don't know the answer
21 to that question.

22 MS. NIKKEL: Let's try it this way:

23 Do you know if -- in the modeling assumptions,
24 if there were periods when this governed -- this document
25 governs water quality? And by "govern," I mean, you

1 know, the model is designed to meet certain water quality
2 requirements of this document and this contract as
3 opposed to 1960 -- I'm sorry -- D-1641?

4 WITNESS NADER-TEHRANI: The water quality
5 provisions are implemented in CalSim.

6 So, for example, the D-1641 water quality
7 objectives, all of that is included in the assumptions in
8 CalSim. So CalSim determines the flows required to meet
9 specific water quality provisions.

10 DSM-2 is a tool that's used to -- to check
11 whether the -- the -- the desired response is achieved.

12 MS. NIKKEL: Okay. So maybe --

13 WITNESS NADER-TEHRANI: So DSM-2 is not the
14 tool to enforce certain water qualities. It's a tool to
15 just check the desired outcome based on the assumptions
16 that were made in CalSim.

17 MS. NIKKEL: Okay. So maybe the question is
18 better directed to Mr. Munévar.

19 But my -- my question goes to, either in DSM-2
20 or in CalSim, is there a modeling assumption that at some
21 times of the year this contract must be -- the water
22 quality requirements of this contract must be met and not
23 D-1641?

24 WITNESS NADER-TEHRANI: I'm not aware that
25 this -- This contract is part of the modeling, if that's

1 what you're referring, but -- but Mr. Munévar could --
2 could prove me wrong.

3 MS. NIKKEL: Mr. Munévar, do you have a
4 different answer?

5 WITNESS MUNÉVAR: No. In the CalSim modeling,
6 D-1641 water quality requirements are what drive the
7 operations.

8 MS. NIKKEL: Okay. Thank you.

9 WITNESS NADER-TEHRANI: I have something
10 further --

11 MS. NIKKEL: Yes.

12 WITNESS NADER-TEHRANI: -- I want to add.

13 I think Mr. Leahigh mentioned that, you know,
14 he uses in his day-to-day operations -- you know, he
15 considered only a handful of locations. And I think
16 he -- And I could be paraphrasing. He called them the
17 constraining, you know, locations, by -- and by meeting
18 the water quality objectives at those locations, that
19 the -- the other locations are met by -- by themselves.

20 And my understanding, based on what I recall
21 reading from the North Delta Water Agency contract, is a
22 similar idea that, when you meet the water quality at the
23 locations, specifically Emmaton, Jersey Point, and Contra
24 Costa, that you meet the requirements, at least most of
25 what's included -- what I recall -- the locations that

1 are included in the North Delta Water Agency contract.

2 MS. NIKKEL: Okay. And I have a similar
3 recollection of Mr. Leahigh's testimony.

4 I want to explore two different concepts,
5 though. There's two different things going on here.
6 There's one, a difference in the monitoring location, and
7 then the other is the time of year when requirements
8 apply.

9 So, is it your understanding that this contract
10 has water quality requirements at Emmaton?

11 WITNESS NADER-TEHRANI: My understanding is,
12 there -- there is a location included at Emmaton, and I
13 think the requirements are the same as the D-1641 during
14 April 1st to August 15.

15 But based on what I recall, outside that
16 period, the requirement moves to a different location,
17 and you know better, but that's what I recall.

18 MS. NIKKEL: That's what I'm asking for is your
19 understanding, so thank you.

20 WITNESS NADER-TEHRANI: I believe it moved to
21 Rio Vista based on what I -- not Rio Vista -- Sac --
22 3 miles from Sacramento River and Three Mile.

23 MS. NIKKEL: Thank you.

24 And can you tell me in geographic terms where
25 Three Mile Slough is located relative to Emmaton?

1 WITNESS NADER-TEHRANI: I believe it's a couple
2 miles upstream. I can't be specific.

3 MS. NIKKEL: Approximately a couple miles
4 upstream of Emmaton?

5 WITNESS NADER-TEHRANI: Upstream, yes.

6 MS. NIKKEL: Can we zoom down to Attachment A
7 of this contract? I'm sorry, I don't have the exact page
8 number. It's probably Page 5.

9 (Document displayed on screen.)

10 MS. NIKKEL: Go up one.

11 (Document displayed on screen.)

12 MS. NIKKEL: Thank you.

13 So Attachment A shows the -- the water quality
14 requirements.

15 Here in this version of the contract, it says
16 Sacramento at Emmaton. I will represent to you that that
17 was subject to a later amendment of the contract and it
18 moved to Three Mile Slough.

19 WITNESS NADER-TEHRANI: That's -- Yeah, I
20 recall something along those lines.

21 MS. NIKKEL: Okay. So looking at this -- this
22 water quality requirement, do you see where it says
23 August 23rd in the top left chart, August 23rd to 31st,
24 September, October, November?

25 WITNESS NADER-TEHRANI: I do see that.

1 MS. NIKKEL: And can you describe for us what
2 that -- if that -- what that means to you, if anything?

3 WITNESS NADER-TEHRANI: I believe that is
4 describing the starting goal for salinity during that
5 time period.

6 MS. NIKKEL: Okay. And the -- I think I also
7 heard from you that your understanding is that the D-1641
8 requirements are -- those end in August --

9 WITNESS NADER-TEHRANI: 15th.

10 MS. NIKKEL: -- on August 15th; correct?

11 WITNESS NADER-TEHRANI: Correct, at Emmaton,
12 yes.

13 MS. NIKKEL: So, is it fair to say that the
14 requirements of this contract extend beyond, in terms of
15 time, the water quality requirements of D-1641?

16 WITNESS NADER-TEHRANI: At Emmaton, yes, but
17 there are other water quality objectives at other
18 locations in the Delta that go year-round.

19 MS. NIKKEL: Thank you.

20 But at Emmaton.

21 WITNESS NADER-TEHRANI: Emmaton, yes.

22 MS. NIKKEL: So, can you explain to me how, if
23 at all, this water quality objective at Three Mile Slough
24 under the 1981 contract with the North Delta Water Agency
25 is accomplished in the modeling after August 15th?

1 WITNESS NADER-TEHRANI: I think, as it was
2 pointed out, not all the D-1641 -- So let's go back to
3 the D-1641.

4 Only four or five of the locations that are
5 specified in D-1641 are actually modeled. And we -- I
6 refer to them as constraining occasions, and they are --
7 they are such that, when you meet the water quality at
8 those locations, you meet at -- at remaining locations.

9 So, based on what I recall, looking at the --
10 When the provisions of North Delta Water Agency contract
11 is met, that because of the fact that it's moved to
12 Rio -- to Three Mile Slough, the salinity is lower at
13 Three Mile Slough.

14 And by meeting the D-16 -- other D-1641 water
15 quality objectives at other periods, and other
16 provisions, including minimum Rio Vista flows and so
17 forth, that you meet those same requirements most of the
18 time.

19 I don't have anything specific to this
20 particular testimony that -- that I can point to right
21 now that would say that.

22 MS. NIKKEL: Okay. And I think I understand
23 that explanation, but I just want to make sure I'm
24 understanding that there is nothing in the model that
25 requires a certain water quality level at Three Mile

1 Slough from August 30 -- sorry -- August 15th through
2 November.

3 WITNESS NADER-TEHRANI: Yeah. For the same
4 reason, I think I said that not all the 1641 water
5 quality objectives are modeled, I would categorize this
6 as the same way.

7 MS. NIKKEL: I'm not asking for the reason.
8 I'm just asking if that's correct, that there --

9 WITNESS NADER-TEHRANI: That is correct.

10 MS. NIKKEL: Okay. Thank you.

11 WITNESS NADER-TEHRANI: My understanding, it's
12 not part of the model. And as I explained that, that
13 kind of water quality objectives are -- they're all
14 modeled in CalSim, and DSM-2 is just the tool.

15 CO-HEARING OFFICER DODUC: So let me cut to the
16 chase.

17 It's not in the model, and sitting here today,
18 you cannot say whether these particular objectives are
19 met.

20 WITNESS NADER-TEHRANI: That is correct.

21 CO-HEARING OFFICER DODUC: All right. Was
22 there anything else on this, Ms. Nikkel?

23 MS. NIKKEL: No, thank you.

24 All right. I'm going to switch gears a little
25 bit and move to water quality modeling results more

1 generally.

2 So if staff could please pull up DWR-5.

3 And I assume this is the errata version.

4 That's the one I'm working on. So hopefully our page
5 numbers will correspond.

6 (Document displayed on screen.)

7 MS. NIKKEL: And if we could move to Page 54,
8 please.

9 (Document displayed on screen.)

10 MS. NIKKEL: So, I want to focus on this part
11 of your -- your presentation, Mr. Nader-Tehrani, on the
12 first bullet (reading):

13 "Monthly average EC at selected Delta
14 locations."

15 And I think you already answered some of my
16 questions as to how those select locations account for
17 exchanges in other parts of the Delta.

18 Can you -- Can you describe for me whether any
19 of these locations include locations along the sloughs
20 and channels -- and I'm going to be very specific here --
21 between the intakes and the -- Actually, I need to refer
22 to one other slide in your exhibit; just one moment --
23 and the Georgiana Slough.

24 WITNESS NADER-TEHRANI: And what is the
25 question? I'm sorry.

1 MS. NIKKEL: Do any of these select locations
2 for -- and I'm just thinking of EC compliance -- any --
3 any locations at -- in between the location of the
4 intakes and the Georgiana Slough.

5 WITNESS NADER-TEHRANI: They are not part of my
6 testimony, but I have looked at those results.

7 MS. NIKKEL: Okay. So those results, though,
8 would be available in the modeling trials that you
9 referenced.

10 WITNESS NADER-TEHRANI: That is correct.

11 MS. NIKKEL: Mr. Nader-Tehrani, can you tell
12 me:

13 Is DSM-2 a one-dimensional model?

14 WITNESS NADER-TEHRANI: That is correct.

15 MS. NIKKEL: And can you explain that for us
16 civilians? I think Mr. Lilly used that word as well
17 yesterday.

18 WITNESS NADER-TEHRANI: What a one-dimensional
19 model is?

20 MS. NIKKEL: Yes, as opposed a two-dimensional
21 model.

22 WITNESS NADER-TEHRANI: A one-dimensional model
23 assumes flow going in one direction -- I mean, in a
24 territory direction. It can go forward, backwards, but
25 not sideways, basically. So that's the short answer.

1 Do you need more detail?

2 MS. NIKKEL: No. I think that's helpful. I
3 think now we see there's one dimension forward and back
4 but not two dimensions up or down.

5 WITNESS NADER-TEHRANI: Up and down, sideways.

6 You could have a two-dimensional that -- that
7 goes forward, backwards and sideways. I mean,
8 technically you can have a model.

9 MS. NIKKEL: And water in the channel moves in
10 all those two-dimensional directions; correct?

11 WITNESS NADER-TEHRANI: That is correct, yes.

12 MS. NIKKEL: So, in your opinion, is a
13 one-dimensional model such as was used here sufficient to
14 capture the multifaceted hydrodynamics of how water moves
15 in the Delta and its channels?

16 WITNESS NADER-TEHRANI: I think the answer
17 depends on what questions you want to answer.

18 MS. NIKKEL: Fair enough. For --

19 WITNESS NADER-TEHRANI: If -- In terms of the
20 information I provided, I think the one-dimensional model
21 is more than adequate.

22 MS. NIKKEL: For water quality and for water
23 level analysis?

24 WITNESS NADER-TEHRANI: Yes.

25 MS. NIKKEL: And would that be the same for the

1 impact of the water velocity?

2 WITNESS NADER-TEHRANI: Yes.

3 MS. NIKKEL: I'm going to just go back to your
4 answer.

5 You said that, during your analysis, you did
6 review results of the model for salinity at locations
7 between the intakes and Georgiana Slough.

8 WITNESS NADER-TEHRANI: I have looked at them,
9 yes.

10 MS. NIKKEL: Do you recall which locations?

11 WITNESS NADER-TEHRANI: I haven't looked at
12 that location around -- near Sutter Slough, Sacramento
13 and Sutter and, moving on downstream, Sacramento and
14 Steamboat, upstream of Cross Channel, downstream of
15 Georgiana and -- Yeah, I've looked at all those, um-hmm.

16 MS. NIKKEL: Was -- Sorry. Was -- Was upstream
17 of Georgiana something different than --

18 WITNESS NADER-TEHRANI: No. Upstream of Cross
19 Channel.

20 MS. NIKKEL: Upstream of Cross Channel,
21 something different than Steamboat; correct?

22 WITNESS NADER-TEHRANI: That is right, um-hmm.

23 MS. NIKKEL: And do you recall generally what
24 the results of the models showed at those locations?

25 WITNESS NADER-TEHRANI: Very similar water

1 quality under No-Action, and all the boundaries, and
2 H2/H4.

3 MS. NIKKEL: And switching gears for a moment
4 while we're on it, do you recall looking at those
5 locations for the water -- water level results?

6 WITNESS NADER-TEHRANI: I have included
7 actually water level analysis at a location immediately
8 downstream of the three intakes and a location near
9 Georgiana Slough.

10 MS. NIKKEL: Did you also look for water level
11 results at these locations: Sutter Slough, Steamboat and
12 upstream of the Cross Channel?

13 WITNESS NADER-TEHRANI: They are not included
14 in my testimony but I have looked at them.

15 MS. NIKKEL: Okay. And do you recall what the
16 results were of those?

17 WITNESS NADER-TEHRANI: I think consistent with
18 the information that I shared. So somewhere -- In
19 general, the farther you get from the intakes, the lower
20 the reduction in water level.

21 MS. NIKKEL: And all of these locations were
22 along the Sacramento River; correct?

23 WITNESS NADER-TEHRANI: The ones that are
24 included in my testimony, yes, the two locations I just
25 described.

1 MS. NIKKEL: Let me back up.

2 I'm focused on the ones that are not included
3 in the testimony because those are harder for me to -- to
4 know --

5 WITNESS NADER-TEHRANI: I looked at --

6 MS. NIKKEL: -- about.

7 WITNESS NADER-TEHRANI: I looked at Sutter
8 Slough; I looked at Steamboat Slough.

9 MS. NIKKEL: Those are on the sloughs
10 themselves.

11 WITNESS NADER-TEHRANI: Yes, yeah.

12 MS. NIKKEL: Okay. Okay. Let's move to
13 Page 55, please.

14 (Document displayed on screen.)

15 MS. NIKKEL: And you presented this during your
16 direct testimony yesterday.

17 And in your written testimony, you estimated
18 that there is an increase of about 18 to 19 percent EC at
19 Emmaton in July and August; correct?

20 WITNESS NADER-TEHRANI: Yeah, something along
21 those lines, yes, for --

22 MS. NIKKEL: Is it your understanding --

23 WITNESS MUNÉVAR: Let me be clear.

24 Yeah, that information relates to Boundary 1,
25 H3 and H4, and there is actually a reduction in EC for

1 Boundary 2 for the month of August.

2 MS. NIKKEL: Thank you for that clarification.

3 So, when I talk about the 18 to 19 percent
4 figure, we're just going to focus on Boundary 1, H3 and
5 H4.

6 WITNESS NADER-TEHRANI: Yes.

7 MS. NIKKEL: So, is it your understanding that
8 this 18 percent figure, it's an -- it's an average
9 monthly projected increase; correct?

10 WITNESS NADER-TEHRANI: That is correct.

11 MS. NIKKEL: So, in any particular month in the
12 model, the EC could be greater than the 18 to 19 percent
13 above the No-Action Alternative; correct?

14 WITNESS NADER-TEHRANI: And others would be
15 lower. This is the average number, yes.

16 MS. NIKKEL: And so, on a particular day, the
17 EC increase at Emmaton could be also much greater than 18
18 to 19 percent.

19 WITNESS NADER-TEHRANI: I wouldn't say much,
20 but that would not be the words I use.

21 MS. NIKKEL: Would it be -- Would there be
22 some --

23 WITNESS NADER-TEHRANI: Some could be higher;
24 some could be lower. That's how it is.

25 MS. NIKKEL: So some would be higher and some

1 would be lower. Thank you.

2 In -- In what types of scenarios would you
3 expect the EC to be greater than 18 or 19 percent?

4 WITNESS NADER-TEHRANI: I think this question
5 needs a little more clarification here.

6 This is a period where the D-1641 water quality
7 objectives apply.

8 And I think part of my testimony, I presented
9 information of the models -- what I refer to as modeling
10 artifact, the issues regarding the -- the discrepancy
11 between CalSim and DSM-2, the assumptions that are made,
12 and I believe part of the reason what -- for why you're
13 seeing this increase is related to -- to the fact that
14 the water quality objective that are implemented in
15 CalSim are implemented based on a monthly average scale,
16 whereas the standards actually apply to 14-day average.

17 And -- And for the examples that -- that I
18 showed, that there are exceedances that are reported by
19 DSM-2 that are directly related to those inconsistencies.

20 If we had a perfect tool that -- that -- you
21 know, consistent between CalSim and DSM-2, it is my
22 belief that you may not see the increases you're seeing
23 in the model.

24 MS. NIKKEL: And I want to get to that. I
25 appreciate that, and I want to get to that -- that

1 issue --

2 WITNESS NADER-TEHRANI: Yeah.

3 MS. NIKKEL: -- in a moment.

4 WITNESS NADER-TEHRANI: Yeah.

5 MS. NIKKEL: For now, I want to focus on
6 instances in the model where the EC on a particular month
7 or a particular day is higher than the 18 to 19 percent
8 increase and those instances that are not, in your
9 opinion, a result of those modeling anomalies that you
10 described.

11 Can you explain what such an instance would be
12 and why it would occur?

13 WITNESS NADER-TEHRANI: There . . . In CalSim,
14 you know, the flows are monthly average, and then there
15 are procedures that are used to -- to change the monthly
16 flows into daily based on historical patterns.

17 And so there could be a situation where,
18 because of the historical pattern that is applied,
19 certain days in a month, the flows happen to be lower in
20 the past, that you might -- that would reflect itself in
21 increasing in EC corresponding to those years.

22 This would be something that an Operator
23 would -- you know, seeing if there is an issue with the
24 D-1641, for example, for the water quality objective at
25 Emmaton would be easy to be able to detect ahead of time

1 and be able to respond accordingly.

2 MS. NIKKEL: But I think we can focus our --
3 our discussion now, just so I can understand the
4 modeling, on -- on the modeling.

5 WITNESS NADER-TEHRANI: Yeah.

6 MS. NIKKEL: So your testimony is that you
7 could see a -- an increase over the 18 to 19 percent in a
8 circumstance where there's a preceding dry condition.

9 WITNESS NADER-TEHRANI: Most of the -- the
10 differences we see in the model, you know, are -- One of
11 the issues, that when you run CalSim, there could be
12 month-to-month differences where the -- You know, there
13 are many years you can meet the water quality objectives,
14 and, therefore, you may see results in the model that,
15 you know, are somewhat -- from looking at it from day to
16 day or month to month, that are very different, just
17 because the different models that CalSim runs go about
18 meeting the objectives a different way that could show
19 itself up as an increase in salinity.

20 So -- But I don't know if --

21 MS. NIKKEL: But I think you've identified one
22 example is --

23 WITNESS NADER-TEHRANI: Right.

24 MS. NIKKEL: -- if there's a preceding period
25 of dry conditions.

1 WITNESS NADER-TEHRANI: Yeah.

2 MS. NIKKEL: Okay. And now I do want to ask
3 about the distinction you drew in July and August on this
4 chart, that the Boundary 2 shows a reduction over the
5 No-Action Alternative.

6 WITNESS NADER-TEHRANI: Yes, that's true.

7 MS. NIKKEL: Can you explain why that is?

8 WITNESS NADER-TEHRANI: The water quality at
9 this location is predominantly governed by outflow, so
10 higher outflow, lower -- lower salinity, lower EC.

11 So it is my understanding that H -- that
12 Boundary 2 has a higher outflow that shows itself up as a
13 reduction in this year, this location.

14 MS. NIKKEL: Okay. Can we turn now to Page 66,
15 please.

16 (Document displayed on screen.)

17 MS. NIKKEL: Mr. Nader-Tehrani, this is the dry
18 year example that you walked us all through yesterday in
19 your direct testimony.

20 And I just wanted to clarify: This is only
21 showing results through August of 1987; correct?

22 WITNESS NADER-TEHRANI: That's correct,
23 August 15.

24 MS. NIKKEL: And do you know what the results
25 show for September of this same dry year example?

1 WITNESS NADER-TEHRANI: I don't recall.

2 MS. NIKKEL: But those -- That result will be
3 available in the modeling trials.

4 WITNESS NADER-TEHRANI: That objective would be
5 available in the models.

6 MS. NIKKEL: Can you explain why you chose 1987
7 in the example here?

8 WITNESS NADER-TEHRANI: I was trying to
9 illustrate the issues regarding the -- the
10 inconsistencies between the modeling in terms of --

11 MS. NIKKEL: Maybe -- Let me try rephrasing my
12 question before you complete your answer.

13 WITNESS NADER-TEHRANI: I understand.

14 MS. NIKKEL: I'm trying to say -- I'm asking
15 why you chose 1987 as opposed to some other dry year.

16 WITNESS NADER-TEHRANI: I -- There was no
17 particular reason.

18 MS. NIKKEL: So is this an example of what we
19 can expect in all dry years?

20 WITNESS NADER-TEHRANI: I would not say that.
21 I would -- The point of this graph is to illustrate the
22 issues regarding a different set of assumptions that go
23 between the two models.

24 And June was an example in this case to
25 illustrate that the D-1641 model water quality examples

1 change in the middle of June, and the issue regarding
2 CalSim being a monthly time-step. So that was the whole
3 point of --

4 MS. NIKKEL: Okay. So --

5 WITNESS NADER-TEHRANI: There was no other
6 reason beyond that.

7 MS. NIKKEL: That's helpful.

8 So you weren't intending this to be an example
9 of how we can expect EC to behave in other years in the
10 modeling.

11 WITNESS NADER-TEHRANI: No.

12 MS. NIKKEL: Okay. Thank you.

13 So -- So we could expect other dry years to
14 behave differently depending on the conditions; correct?

15 WITNESS NADER-TEHRANI: Yes.

16 MS. NIKKEL: Thank you.

17 Okay. Moving to Page 67.

18 (Document displayed on screen.)

19 MS. NIKKEL: Okay. So now I do want to talk a
20 little bit about the modeling anomalies that you've done
21 a very good job of explaining in your testimony so far.

22 So, if those modeling anomalies that you
23 described were eliminated and the No-Action scenario in
24 the model reflected the 97.4 percent compliance that
25 Mr. Leahigh testified about, would you expect the -- the

1 increase in exceedances to be more or less than what is
2 shown in this figure?

3 WITNESS NADER-TEHRANI: The consistency -- or
4 the -- of the models were perfect?

5 MS. NIKKEL: If the models were perfect.

6 WITNESS NADER-TEHRANI: Perfect, yes. I would
7 expect that they will all achieve a similar . . . you
8 know, achievement in term of -- a similar achievement
9 that's done in operations are shown, yes, being the 97,
10 98 percent, achieving the water quality objective at
11 Emmaton, or Jersey Point, wherever.

12 MS. NIKKEL: I think we're focusing on
13 Emmaton --

14 WITNESS NADER-TEHRANI: Yes. So --

15 MS. NIKKEL: -- so --

16 WITNESS NADER-TEHRANI: -- similar, yes.

17 MS. NIKKEL: Yeah. Let's just focus on Emmaton
18 because this is a hard enough concept as it is, so --

19 WITNESS NADER-TEHRANI: Right.

20 So, if the compliance were not the 80 to
21 85 percent which was modeled but, rather, the compliance
22 in the No-Action Alternative where -- the 97.4 percent.

23 WITNESS NADER-TEHRANI: Right.

24 MS. NIKKEL: Would you expect the increase in
25 the Project scenarios to be more or less than what is

1 shown in this figure? And the --

2 WITNESS NADER-TEHRANI: I'm sorry.

3 MS. NIKKEL: And the change --

4 WITNESS NADER-TEHRANI: I'm sorry. Can you --

5 MS. NIKKEL: -- the change in the increase.

6 WITNESS NADER-TEHRANI: Sorry. Can you repeat?

7 I'm sorry. I lost the question.

8 MS. NIKKEL: Yeah. Sure. It's a tough one,

9 for me especially.

10 WITNESS NADER-TEHRANI: Okay. Go ahead.

11 MS. NIKKEL: So, the -- if the modeling were

12 corrected and the No-Action Alternative showed a

13 97.4 percent compliance with the Emmaton standard --

14 WITNESS NADER-TEHRANI: Yes.

15 MS. NIKKEL: -- would you expect the Project

16 scenarios -- so H3, H4, Boundary 1 and Boundary 2 -- to

17 show an increase over that No-Action Alternative which is

18 more or less than what is shown here?

19 WITNESS NADER-TEHRANI: If the models were

20 perfect, we would have seen 100 percent for all -- or

21 close to 100 percent for all operational scenarios, not

22 less for --

23 MS. NIKKEL: I'm talking about the change over

24 the No-Action Alternative.

25 WITNESS NADER-TEHRANI: I would expect the --

1 the -- the success to be similar for all operational
2 scenarios if the models were perfect.

3 MS. NIKKEL: So, let's assume -- and I don't --
4 I don't know exact numbers here, but let's assume that
5 the change between the No-Action Alternative, which is
6 the black line --

7 WITNESS NADER-TEHRANI: Yes.

8 MS. NIKKEL: -- and the blue line, which I
9 believe is H4?

10 WITNESS NADER-TEHRANI: Yes.

11 MS. NIKKEL: Let's assume that increase in
12 the . . .

13 Maybe I'm using the wrong word.

14 The difference between the black line and the
15 blue line --

16 WITNESS NADER-TEHRANI: Right.

17 MS. NIKKEL: -- is probably, what, 2 percent?

18 WITNESS NADER-TEHRANI: Something like that.

19 MS. NIKKEL: Something like that?

20 WITNESS NADER-TEHRANI: Yes.

21 MS. NIKKEL: Would you expect, if the model
22 were corrected, that 2 percent to go up or down?

23 WITNESS NADER-TEHRANI: I don't believe that
24 that -- In terms of meeting the -- the D-1641 objective,
25 I believe that that 2 percent would go away if the models

1 were corrected, if the models were perfect.

2 MS. NIKKEL: You believe it would go away?

3 WITNESS NADER-TEHRANI: Yes.

4 MS. NIKKEL: So it would be -- The change would
5 be less.

6 WITNESS NADER-TEHRANI: Yeah. And -- Yeah,
7 that's correct.

8 MS. NIKKEL: So I want to think about this from
9 a different angle.

10 WITNESS NADER-TEHRANI: Sure.

11 MS. NIKKEL: And thank you for bearing with me.
12 This is a tough concept.

13 So, in a -- in a year where a modeled
14 violation -- So let's kind of move away from the
15 Exceedance Plot --

16 WITNESS NADER-TEHRANI: Right.

17 MS. NIKKEL: -- concept and just think about a
18 year where there's -- a violation occurs.

19 But in reality, that was not --

20 WITNESS NADER-TEHRANI: A violation is not one
21 of them.

22 MS. NIKKEL: That's why I struggle. I've been
23 using the word "violation" because I'm trying to not
24 confuse it with the use of the word "exceedance" here.

25 Would you prefer that we use the word

1 "exceedance" as the objective?

2 WITNESS NADER-TEHRANI: I would prefer to use
3 "exceedance."

4 MS. NIKKEL: Okay. We're going to use the term
5 "exceedance" now to mean the exceedance of a water
6 quality objective.

7 WITNESS NADER-TEHRANI: That's right.

8 MS. NIKKEL: So, in a year where a modeled
9 exceedance was, in reality, in the actual operations that
10 year, just maybe a near miss -- you know, it came real
11 close to the objective but it didn't go over it --
12 wouldn't correcting the model to accurately depict that,
13 it would put the near miss -- the near miss compliance
14 under the Project scenarios; right? So it would be -- it
15 would be under the compliance.

16 In the Project scenarios here, if you took that
17 2 percent of H4, you would bump that near miss up over
18 the compliance and you would see an additional exceedance
19 that you don't see under the current modeling results; is
20 that right?

21 MR. BERLINER: I'm going to object. That's a
22 very ambiguous, unclear question.

23 WITNESS NADER-TEHRANI: I mean, the -- one
24 thing I want to say is Mr. Leahigh's presentation, the
25 way he explained why the times that were successful isn't

1 there was due to unusual circumstances, atmospheric
2 conditions and so forth, that -- that are really not
3 modeled.

4 So, the models know the tides, the -- you know,
5 all that information. So I believe, if the models were
6 perfect, you would have seen 100 percent.

7 CO-HEARING OFFICER DODUC: So, Miss Nikkel, let
8 me -- let me try --

9 MS. NIKKEL: Sure.

10 CO-HEARING OFFICER DODUC: -- because I think I
11 understand what he's -- he's saying.

12 If the model had the capacity to truly reflect
13 operational flexibility, then that operational
14 flexibility would be reflected in all the scenarios and
15 all the scenarios would be in compliance is a simple way
16 to explain it.

17 WITNESS NADER-TEHRANI: Absolutely.

18 CO-HEARING OFFICER DODUC: So, Miss Nikkel,
19 what he's saying is, the adjustment would not be the same
20 for each scenario. If operational flexibility were to be
21 truly captured, it would change with the different
22 scenarios and, therefore, all scenarios would be in
23 compliance.

24 MS. NIKKEL: So, you're saying that . . .

25 (Laughter.)

1 MS. NIKKEL: I think I understand that and that
2 was helpful.

3 WITNESS NADER-TEHRANI: I think that that was a
4 very good answer.

5 (Laughter.)

6 CO-HEARING OFFICER DODUC: Having an
7 engineering background does help sometimes.

8 WITNESS NADER-TEHRANI: I appreciate.

9 MS. NIKKEL: Thank you.

10 So -- So, in my very simplified example of the
11 near miss, you're saying, under the H4 scenario, it would
12 also be modeled in a perfect modeling world as a near
13 miss.

14 WITNESS NADER-TEHRANI: The near miss that
15 you're referring to in terms of real, is that what you're
16 after?

17 MS. NIKKEL: Well, now I'm comparing the -- the
18 No-Action Alternative in my -- my -- my perfect modeling
19 world.

20 WITNESS NADER-TEHRANI: Right.

21 MS. NIKKEL: I'm changing the -- the -- the
22 model com -- exceedance into a almost near miss.

23 WITNESS NADER-TEHRANI: Right.

24 MS. NIKKEL: And I'm asking you about what
25 would you expect the --

1 WITNESS NADER-TEHRANI: I'm sorry. The near
2 miss, you mean it actually goes above and --

3 MS. NIKKEL: No, it does not go above.

4 WITNESS NADER-TEHRANI: Okay.

5 MS. NIKKEL: And now I'm asking about your
6 testimony about what you would expect to occur to the H4
7 alternative.

8 Would it also stay within compliance or would
9 you expect it to increase by that 1 or 2 percent and
10 constitute an exceedance in the modeling?

11 WITNESS NADER-TEHRANI: I don't expect a
12 difference. I expect -- In a perfect model -- If the
13 models are perfect, I would -- I would guess a similar
14 pattern in terms of meeting, you know, 100 percent.

15 MS. NIKKEL: A similar pattern as what? The
16 No-Action Alternative?

17 WITNESS NADER-TEHRANI: Among all the
18 alternatives, um-hmm.

19 MS. NIKKEL: Or the similar pattern that you're
20 seeing --

21 WITNESS NADER-TEHRANI: If you're asking which
22 one comes closer to it? Is that your question? Which
23 ones come closer to the -- to the -- the objective?

24 MS. NIKKEL: No, that's not my question.

25 My question is whether the -- you would expect

1 the H4 scenario in a perfect modeling world --

2 WITNESS NADER-TEHRANI: Okay.

3 MS. NIKKEL: -- to exceed the compliance.

4 WITNESS NADER-TEHRANI: No.

5 CO-HEARING OFFICER DODUC: All right.

6 Miss Nikkel, you need to move on.

7 MS. NIKKEL: I'll move on.

8 All right. In your experience,

9 Mr. Nader-Tehrani, in analyzing models, would you agree
10 that once an exceedance of a water quality objective
11 occurs at Emmatton, it can require a lot of water in the
12 model to correct that exceedance?

13 WITNESS MUNÉVAR: I would not characterize it
14 as "a lot." It means -- If the model is showing an
15 exceedance, it means it's not using the right amount of
16 volume of water. That means you need to increase it. I
17 wouldn't characterize it as a lot.

18 MS. NIKKEL: What would you characterize it as?

19 WITNESS NADER-TEHRANI: Depends on the
20 circumstances and all that. But, often, it may not
21 require a lot of water to actually meet the water
22 requirements in the model.

23 MS. NIKKEL: Okay. Are you aware of any
24 analysis that's been done to analyze the impacts of the
25 modeled increase in exceedances of D-1641 on water users

1 in the North Delta?

2 WITNESS NADER-TEHRANI: I think it is my
3 testimony that those exceedances are not real to begin
4 with.

5 MS. NIKKEL: So you don't expect the Project to
6 result in any additional exceedances of the D-1641 --

7 WITNESS NADER-TEHRANI: Beyond --

8 MS. NIKKEL: -- objectives.

9 WITNESS NADER-TEHRANI: -- what they exists,
10 you are correct.

11 MS. NIKKEL: All right. Let's switch gears to
12 water levels, please.

13 If we could move to Page 75.

14 (Document displayed on screen.)

15 MS. NIKKEL: Oh, and I think we actually
16 covered my questions on this, so we can move right along
17 to Page 82.

18 (Document displayed on screen.)

19 MS. NIKKEL: Okay. I want to focus on this
20 slide on the third dash there, a (reading):

21 "Maximum water level reduction of about .5 feet
22 during low flow events near the North Delta
23 Intakes . . ."

24 Can you describe how a low-flow event is
25 defined?

1 WITNESS NADER-TEHRANI: I'm referring to, you
2 know, the flow in Sacramento River can range from, you
3 know, 5, 6, 7,000 cfs all the way up to 50, 60, 70,000
4 cfs during high-flow periods.

5 So I would -- I would say anything below, like,
6 10,000 cfs coming from Sacramento.

7 MS. NIKKEL: Okay. And how often and for how
8 long do these low-flow events usually occur?

9 WITNESS NADER-TEHRANI: They occur during
10 summer of dry and critical periods, but they're not
11 necessarily occurring just during those years.

12 MS. NIKKEL: Okay. That's helpful.

13 And -- And -- And is there a particular -- So
14 you said dry and critical and during the summer; correct?

15 WITNESS NADER-TEHRANI: Yeah, typically, but
16 it's not unique to those time periods.

17 MS. NIKKEL: Okay. And can you -- Can you
18 identify for us what the lowest water elevation was in
19 the No-Action Alternative?

20 WITNESS NADER-TEHRANI: You have to go back to
21 the . . .

22 Are you referring to this same location near
23 North Delta Diversion?

24 MS. NIKKEL: Yeah. Trying -- I'm trying to do
25 the math myself to how you got to the .5.

1 WITNESS NADER-TEHRANI: Yeah.

2 (Searching through document.)

3 Page 76.

4 (Document displayed on screen.)

5 MS. NIKKEL: Okay. And so it's -- Well, this
6 is just showing us change; right?

7 WITNESS NADER-TEHRANI: Yeah. Can you put that
8 slide, Page 76 of the same document.

9 (Document displayed on screen.)

10 WITNESS NADER-TEHRANI: Page 76.

11 (Document displayed on screen.)

12 WITNESS NADER-TEHRANI: Yeah. Okay. So the
13 way I was explaining it, the -- the points closer to the
14 left side of this figure correspond -- you know, the
15 bottom, you know, stage being high. Those correspond to
16 high-flow periods.

17 And then the points corresponding to the right
18 side of the diagram most likely correspond to the
19 low-flow period.

20 So the difference -- Half a foot is the
21 difference between the black line and the -- let's say
22 the gray line.

23 MS. NIKKEL: Yeah. That's covered all of them.

24 WITNESS NADER-TEHRANI: In fact, all four are
25 lined up together.

1 MS. NIKKEL: Um-hmm.

2 WITNESS NADER-TEHRANI: That distance is about
3 half a foot.

4 MS. NIKKEL: And what is that lowest point? Is
5 that zero feet above sea -- mean sea level?

6 WITNESS NADER-TEHRANI: Zero above mean sea
7 level, yeah. This is based on the NGVD~29 datum.

8 MS. NIKKEL: Can you describe what you just
9 said? Say that again.

10 WITNESS NADER-TEHRANI: Well, all the -- You
11 know, the stage, when it's reported, has to be in respect
12 to a certain datum.

13 MS. NIKKEL: Yeah.

14 WITNESS NADER-TEHRANI: And so, in this case,
15 it happens to be called NGVD 29. I don't know what
16 "NGVD" stands for.

17 MS. NIKKEL: NGVD.

18 WITNESS NADER-TEHRANI: Yes.

19 WITNESS ANDERSON: "NGVD" is National Geodetic
20 Vertical Datum.

21 WITNESS NADER-TEHRANI: Yes. Thank you, Jamie.

22 MS. NIKKEL: Thank you.

23 WITNESS NADER-TEHRANI: She's great.

24 MS. NIKKEL: I'm glad we got to speak.

25 (Laughter.)

1 MS. NIKKEL: Okay.

2 WITNESS NADER-TEHRANI: Wait. I just want to
3 make sure I make myself clear because I remember showing
4 this information to someone.

5 Zero-foot stage does not mean zero depth. I
6 just want to be sure we're all --

7 MS. NIKKEL: Sure.

8 WITNESS NADER-TEHRANI: -- clear.

9 MS. NIKKEL: That's compared to this datum
10 point.

11 WITNESS NADER-TEHRANI: That's correct.

12 And so the bottom of the river is many feet
13 below --

14 MS. NIKKEL: Yeah.

15 WITNESS NADER-TEHRANI: -- sea level.

16 MS. NIKKEL: I understand. Thank you.

17 Okay. In your written testimony, and I think
18 also yesterday, you explained that water levels drop
19 below this -- this minimum level in the No-Action
20 Alternative only 73 days out of the entire model period
21 which, on average, is five days per year; is that right?

22 WITNESS NADER-TEHRANI: That's correct. The
23 way I said it -- I want to make sure I'm clear -- that I
24 was referring to Boundary 1, but they're all similar.
25 But it happens to -- that I -- you know, that fact that I

1 was looking at Boundary 1 results.

2 And I was looking at the minimum water level
3 predicted under Boundary 1 and compared that to the
4 lowest water level that predicted under the No-Action.

5 This -- Each line here represents 5,000 --
6 about 5,500 points.

7 MS. NIKKEL: Yes.

8 WITNESS NADER-TEHRANI: And so of these 5,500
9 points that are represented here, only 73 days they go
10 below that black, the lowest number in the black.

11 MS. NIKKEL: And were those 73 days spread out
12 evenly across all 5,000 of those datapoints?

13 WITNESS NADER-TEHRANI: No.

14 MS. NIKKEL: And do you recall how many of
15 those 73 days occurred in -- in -- in the 16 years?

16 WITNESS NADER-TEHRANI: I did not specifically
17 look at that. There was one period I remember. It was
18 May of 1977. It happens to be a very dry -- dry year.

19 MS. NIKKEL: And you recall that it dropped
20 below that minimum water level . . .

21 WITNESS NADER-TEHRANI: Below the lowest
22 minimum level.

23 MS. NIKKEL: Would you say more than five days
24 in that year?

25 WITNESS NADER-TEHRANI: No, no.

1 MS. NIKKEL: How many --

2 WITNESS NADER-TEHRANI: Okay. Sorry. Five
3 days?

4 MS. NIKKEL: In that year, yeah.

5 WITNESS NADER-TEHRANI: In that year? I don't
6 know. I don't know the answer to that question. I
7 don't -- I don't recall. I can get that information.
8 I -- I just don't have that information.

9 MS. NIKKEL: Okay. Do you recall generally if
10 those 73 days occurred during a specific time of year?

11 WITNESS NADER-TEHRANI: They were spread.

12 MS. NIKKEL: So it was a variety of different
13 types of conditions throughout the year?

14 WITNESS NADER-TEHRANI: Um-hmm.

15 MS. NIKKEL: And do they occur in successive
16 days generally, or not?

17 WITNESS NADER-TEHRANI: Generally not.

18 MS. NIKKEL: Okay. In your written testimony,
19 Mr. Nader-Tehrani, you explained that it was your opinion
20 that there will not be negative effects to legal users of
21 water due to the results of these water level changes.

22 WITNESS NADER-TEHRANI: And I can explain why I
23 reached that conclusion.

24 MS. NIKKEL: Okay. Let me try asking some
25 questions and see if we can get to it.

1 WITNESS NADER-TEHRANI: Sure.

2 MS. NIKKEL: Is your opinion on that point
3 supported by an analysis of how the reduced water
4 levels -- these reduced water levels that we've just
5 talked about -- will affect individual Points of
6 Diversion in the North Delta Water Agencies?

7 WITNESS NADER-TEHRANI: I'm sorry. Can you
8 repeat?

9 MS. NIKKEL: Sure. I'll try to shorten it up,
10 too.

11 WITNESS NADER-TEHRANI: Sure.

12 MS. NIKKEL: Is your opinion supported by
13 analysis of how that reduction in water levels would
14 affect individual Points of Diversions at locations in
15 the North Delta Water Agency?

16 WITNESS NADER-TEHRANI: Yeah. That's not the
17 basis for my conclusion that I reached.

18 MS. NIKKEL: Okay. Did you or anybody at DWR,
19 to your knowledge, investigate all of the existing Points
20 of Diversion located between the existing Point of
21 Diversion and the proposed new intakes?

22 WITNESS NADER-TEHRANI: I don't know the answer
23 to that question.

24 MS. NIKKEL: Does anybody on the panel know if
25 anybody investigated all the Points of Diversion between

1 the points of the new -- on the existing Point of
2 Diversion?

3 CO-HEARING OFFICER DODUC: If they did, it
4 would be news, because I think other testimony has said
5 no.

6 MS. NIKKEL: I think I heard the testimony
7 yesterday on this point to refer to the Modeling Team,
8 which is why I'm asking, but I don't see any affirmative
9 answers, so I will -- I will move on.

10 So I have just a few remaining miscellaneous
11 types of questions.

12 Were you involved in the development of the
13 bypass flow criteria?

14 WITNESS NADER-TEHRANI: I was not.

15 MS. NIKKEL: Do you understand it?

16 WITNESS NADER-TEHRANI: I do understand it.

17 MS. NIKKEL: And so do you know if the bypass
18 flow criteria is designed or -- or will result in having
19 any effect on the water level and water quality impacts
20 we've discussed today?

21 WITNESS NADER-TEHRANI: The way I see bypass
22 flows, they're actually designed to protect water levels
23 and water quality, and fish, for that matter.

24 MS. NIKKEL: Okay. And I think this question
25 is probably for Mr. Munévar.

1 This is on Page 20 of DWR-5.

2 (Document displayed on screen.)

3 MS. NIKKEL: And yesterday I recall you
4 testifying, Mr. Munévar, that the No-Action Alternative
5 included more frequent inundation of the Yolo bypass of
6 the Fremont Weir.

7 Do you recall that testimony?

8 WITNESS MUNÉVAR: I do.

9 MS. NIKKEL: Has there been any analysis of how
10 that legal change affects legal users of water?

11 WITNESS MUNÉVAR: I don't know.

12 MS. NIKKEL: Does anybody on the panel know if
13 there's been any analysis of that?

14 WITNESS WHITE: That's an assumption that were
15 stated in all the alternatives, the No-Action and all the
16 alternatives, so it wouldn't have been something that
17 would have showed up in this process. But the
18 modification to the Fremont Weir notch is going --
19 undergoing a separate environmental analysis and an
20 impact analysis to determine what those impacts are.

21 MS. NIKKEL: Thank you.

22 And that's not part of this Project?

23 WITNESS WHITE: That's correct.

24 MS. NIKKEL: Okay. I have nothing further.

25 CO-HEARING OFFICER DODUC: Thank you,

1 Miss Nikkel.

2 Group Number 10.

3 11?

4 Oh, 10 is coming up? Okay. Mr. Aladjem, you
5 need to at least wave a hand or something.

6 Just to do a time check, Mr. Aladjem, how much
7 time do you believe you'll need?

8 MR. ALADJEM: Madam Chair, I think I could
9 probably do it in half hour, but I'm going to try to do
10 it in 20 minutes.

11 CO-HEARING OFFICER DODUC: Okay. In that case,
12 we will take a break after Mr. Aladjem is done.

13 And Mr. Aladjem, quick rundown for me of the
14 points that you'll be exploring.

15 MR. ALADJEM: Madam Chair, first, I'm going to
16 explore hopefully with Mr. Munévar and Dr. Nader-Tehrani
17 some of the modeling assumptions of both the water
18 quality and water levels.

19 Then I'd like to go in a little bit more detail
20 on those questions as it pertains to flood control in
21 the Delta.

22 CO-HEARING OFFICER DODUC: Okay. Thank you.

23 And I expect you will not be re-visiting any of
24 the modeling assumption aspects that have already been
25 explored.

1 MR. ALADJEM: That's not my intention.

2 CO-HEARING OFFICER DODUC: All right,

3 Mr. Aladjem.

4 CROSS-EXAMINATION BY

5 MR. ALADJEM: Good morning, Mr. Munévar,

6 Dr. Nader-Tehrani.

7 Thank you very much for being willing to talk
8 with us this morning.

9 Let me first address a question or two to
10 Mr. Munévar.

11 Mr. Munévar, are you familiar with DWR Exhibit
12 Number 305, which is an agreement between the Department
13 and East Contra Costa Irrigation District?

14 (Document displayed on screen.)

15 WITNESS MUNÉVAR: I'm not familiar with it.

16 MR. ALADJEM: Can you tell me whether the
17 com -- compliance with the terms of this contract was
18 included in the modeling effort?

19 WITNESS MUNÉVAR: I think I said I'm not
20 familiar with it, so I can't answer that.

21 MR. ALADJEM: Okay. No further questions about
22 that.

23 Dr. Nader-Tehrani, I'd like to direct your
24 attention to DWR Exhibit 212, Page 67.

25 (Document displayed on screen.)

1 MR. ALADJEM: Thank you, Mr. Baker (sic). I
2 appreciate you getting that up on the screen for us.

3 (Document displayed on screen.)

4 MR. ALADJEM: Yeah. Let's look at that.

5 Let me direct your attention,
6 Mr. Nader-Tehrani, to the very bottom of that page.

7 Do you see, sir, where it says (reading):

8 "The BDCP is expected to include long-range
9 operating rules for the Delta . . ."

10 THE WITNESS: I see that, um-hmm.

11 MR. ALADJEM: And can you read that sentence,
12 and it goes on to the next page.

13 WITNESS NADER-TEHRANI: How far down do you
14 want me --

15 MR. ALADJEM: Just the top, the first line.

16 WITNESS NADER-TEHRANI: Starting with "The BDCP
17 is expected"?

18 MR. ALADJEM: Yes.

19 WITNESS NADER-TEHRANI: You want me to read it
20 out loud or just --

21 MR. ALADJEM: Feel free to read it to yourself.
22 I just want to familiarize you with --

23 CO-HEARING OFFICER DODUC: Is it on your screen
24 that's right in front of you?

25 WITNESS NADER-TEHRANI: I see that better.

1 Thank you. These glasses don't work right.

2 Okay.

3 MR. ALADJEM: Dr. Nader-Tehrani, are you
4 familiar with DWR Exhibit 212?

5 WITNESS NADER-TEHRANI: I have not read it
6 recently, no.

7 MR. ALADJEM: But do you feel that this is part
8 of the information that you used in doing your modeling
9 analysis?

10 WITNESS NADER-TEHRANI: I -- You know, my
11 analysis was based on DSM-2 modeling results, so all --
12 and that's kind of a reflection of what was modeled in
13 CalSim.

14 So any choices that are made -- for example,
15 for parameters such as bypass flow rules -- are already
16 implemented in CalSim and, you know, the DSM-2 simply
17 takes that information and uses it in the modeling
18 results to simulate water levels, water quality and so
19 forth.

20 MR. ALADJEM: Okay. And perhaps my question is
21 better directed to Mr. Munévar.

22 Mr. Munévar --

23 If we could go to -- Mr. Baker (sic), if you
24 could scroll back up on Page 67.

25 (Scrolling up document.)

1 MR. ALADJEM: There we go.

2 Mr. Munévar, do you see where it says here the
3 factor --

4 Actually, Mr. Baker (sic), could you go a
5 little further up? It would be helpful.

6 It says (reading):

7 "Daily Operational Considerations for
8 Withdrawal from Sacramento River."

9 Do you see that heading?

10 WITNESS MUNÉVAR: Yes, I do.

11 MR. ALADJEM: I'd like to ask you a few
12 questions about the way in which these factors were
13 incorporated in the modeling, Mr. Munévar.

14 Where you -- Do you see that it says "Factor
15 Hydrological"?

16 WITNESS MUNÉVAR: Yes, I do.

17 MR. ALADJEM: Okay. And it says (reading):

18 "Limitations on volume available for export
19 based on flow rate . . ."

20 And can you tell us, sir, whether that is --
21 those limit -- what limitations were incorporated in the
22 CalSim modeling to effectuate this factor?

23 WITNESS MUNÉVAR: Yeah. I think this refers to
24 the Bypass Flow Diversion Table that was presented
25 yesterday, and multiple times before that, in terms of

1 how much flow would be required to bypass given a certain
2 amount of flow upstream of the intakes.

3 MR. ALADJEM: Okay. And would it be fair, sir,
4 if you look at the second item there, "Limitations on
5 permissible time . . ."

6 Again, this is a bypass flow requirement.

7 WITNESS MUNÉVAR: I think -- I think this is
8 very similar to what I described in different periods, so
9 there are different bypass flow requirements for
10 different periods of time.

11 MR. ALADJEM: Thank you.

12 And then in terms of high flood levels in the
13 Sacramento River, can you tell us how that was
14 incorporated in the modeling.

15 WITNESS MUNÉVAR: In -- I can speak to the
16 CalSim modeling and maybe Parviz can talk about the
17 DSM-2.

18 But in terms of the high-flow levels in the
19 CalSim modeling, they were -- they're treated the same
20 way through the bypass criteria as -- as described.

21 So if we had 50,000 cfs on the Sacramento
22 River, which would be a very high flow, it just limits
23 the amount of bypass that could -- or it limits the
24 amount of diversion that could occur.

25 MR. ALADJEM: So, now I want to see if I

1 understand correctly.

2 All these hydrologic considerations really go
3 to the question of how much bypass flow will be at the
4 intakes in order -- Well, let me just leave it there. At
5 the intakes.

6 Is that fair?

7 WITNESS MUNÉVAR: I believe at least the first
8 two points on hydrological, that is correct.

9 MR. ALADJEM: Thank you.

10 Mr. Baker (sic), could you scroll down a little
11 bit further?

12 (Scrolling down document.)

13 MR. ALADJEM: And, again, this is a question
14 either for Mr. Munévar or Dr. Nader-Tehrani.

15 Do the two of you see the factor Water Quality?

16 WITNESS MUNÉVAR: Yes.

17 MR. ALADJEM: And it says there on the first
18 line (reading):

19 "Water quality monitoring (turbidity,
20 chemicals) local to given intake."

21 And then the second line is (reading):

22 "Water quality concerns elsewhere in Delta
23 (such as salinity)."

24 Could you describe for us how those factors
25 were taken into account first in the CalSim modeling,

1 Mr. Munévar, and then in the DSM-2 modeling,
2 Dr. Nader-Tehrani.

3 WITNESS MUNÉVAR: I'm not sure. I think at
4 least for the first point there, the pulse protection
5 that's embedded in the bypass flows is, in particular,
6 targeting these protection of high flows early in the --
7 in the fall or in the winter, which often are the trigger
8 for high turbidity, which are related to fishery
9 presence.

10 The second bullet there is -- is if water is
11 required to bypass over and above the bypass flow
12 requirements in order to meet an Emmaton standard or a
13 Jersey Point standard, then water would not be diverted
14 from the North Delta Diversion facility.

15 MR. ALADJEM: And Dr. Nader-Tehrani, anything
16 to add?

17 WITNESS NADER-TEHRANI: No. I think Armin
18 characterized it well.

19 MR. ALADJEM: And is it your understanding,
20 both Dr. Nader-Tehrani and Mr. Munévar, that the
21 implementation of these factors here would be consistent
22 with D-1641?

23 WITNESS MUNÉVAR: Well, D-1641 doesn't control
24 the North Delta Diversion because it didn't envision --

25 MR. ALADJEM: Let me re-phrase the question.

1 That through -- The Project would be operated
2 applying these factors to meet the water quality
3 objectives contained in Decision 1641.

4 WITNESS MUNÉVAR: I think that's -- that's
5 correct.

6 MR. ALADJEM: Thank you.

7 Dr. Nader-Tehrani, in your testimony, which --
8 and your discussions with Miss Nikkel a few moments ago,
9 you talked about a reduction in water surface elevations
10 near the intakes of half a foot.

11 Do you recall that?

12 WITNESS NADER-TEHRANI: Yes.

13 MR. ALADJEM: And you also discussed with her
14 the use of a one-dimensional versus two-dimensional
15 modeling.

16 Do you recall that?

17 WITNESS NADER-TEHRANI: Yes.

18 MR. ALADJEM: Would it be correct to say that
19 the only analysis you did of water levels near the intake
20 was the DSM-2 modeling, which is a one-dimensional model?

21 WITNESS NADER-TEHRANI: That's correct.

22 MR. ALADJEM: Is it also correct to say that
23 DSM-2 would not address directional flows across the
24 channel?

25 WITNESS NADER-TEHRANI: You mean from one side

1 to the other?

2 MR. ALADJEM: From one side to the other.

3 WITNESS NADER-TEHRANI: That is correct.

4 MR. ALADJEM: Okay. In your analysis of water
5 levels near the intake, Dr. Nader-Tehrani, did you
6 incorporate the encroachment of the intake structures
7 into the channel as described by Mr. Bednarski in his
8 testimony?

9 WITNESS NADER-TEHRANI: That is not included in
10 the model.

11 MR. ALADJEM: Did you incorporate into your
12 analysis in DSM-2 the augmented shoreline with the coffer
13 dams that Mr. Bednarski included -- or discussed? Excuse
14 me.

15 WITNESS NADER-TEHRANI: That's not included.

16 MR. ALADJEM: Did your analysis in DSM-2
17 incorporate the channel margin habitat which
18 Mr. Bednarski described in his testimony?

19 WITNESS NADER-TEHRANI: That is not included.

20 MR. ALADJEM: Dr. Nader-Tehrani, in your
21 discussions of water level effects from the Project, you
22 said that the effects would be most pronounced near the
23 intakes.

24 That's correct?

25 WITNESS NADER-TEHRANI: What I said was, you

1 expect the largest reduction in water level to occur near
2 the vicinity of the intakes and the reduction in water
3 level gets smaller as you get further away from the three
4 intakes.

5 MR. ALADJEM: I'll take that as a yes.

6 Did you -- Are you familiar with the
7 configuration of the Delta, Dr. Tehrani? Do you know
8 where the community of Discovery Bay is?

9 WITNESS NADER-TEHRANI: I know where Discovery
10 Bay is, yes.

11 MR. ALADJEM: If there is a reduction in water
12 level during low -- periods of low flow of a half foot at
13 the intakes, would you then be able to say what the
14 reduction in water level near the Discovery Bay area
15 would be?

16 WITNESS NADER-TEHRANI: I -- I don't have the
17 answer here, but I would -- My best guess would be very
18 small change.

19 MR. ALADJEM: But you did not model that
20 reduction in water surface elevations, sir?

21 WITNESS NADER-TEHRANI: I did model. I looked
22 at model levels throughout the Delta, and it's my opinion
23 that I expect very little change in Discovery Bay water
24 levels.

25 MR. ALADJEM: But you just said it would be

1 your guess.

2 Are you guessing, or did you actually do the
3 analysis? And if you did the analysis, can you tell us
4 what the answer would be?

5 WITNESS NADER-TEHRANI: I can look to make
6 sure, but it is my opinion that that is what I expect to
7 see when I look at the models.

8 MR. ALADJEM: Okay.

9 WITNESS NADER-TEHRANI: Very small change.

10 MR. ALADJEM: And did your analysis of water
11 levels address any of the questions of changes in
12 velocity in Old River near Discovery Bay?

13 WITNESS NADER-TEHRANI: We have looked at
14 velocity patterns, yes.

15 And I don't know, Mike, you want to talk?

16 WITNESS BRYAN: We looked at -- We looked at
17 peak daily velocity in the channels at a number of
18 different locations in the Delta as a part of our
19 analysis of microcystis and how microcystis may change or
20 not change.

21 And what we found was, when we did Exceedance
22 Plots and looked at the -- you know, the typical black
23 line from the Project and another line for the Proposed
24 Project, that the lines basically fell on top of each
25 other.

1 So, from a peak daily velocity perspective, and
2 looking at it in an Exceedance Plot type format, we just
3 didn't see much change at all in peak velocity in -- in
4 most of the locations that we looked at. Any changes
5 that we did see were very normal.

6 MR. ALADJEM: Mr. Bryan, thank you very much.
7 And good morning to you as well.

8 WITNESS BRYAN: Good morning.

9 MR. ALADJEM: Mr. Baker (sic), could we put up
10 DWR-5 errata, Page 61.

11 (Document displayed on screen.)

12 MS. RIDDLE: I'm just going to clarify: This
13 is Kevin Long assisting the Board today.

14 Kevin Long.

15 MR. ALADJEM: Pardon me?

16 MS. RIDDLE: Kevin Long is assisting the Board
17 today, not Jason Baker, just --

18 MR. ALADJEM: Oh, excuse me. I'm -- I'm sorry.

19 Okay. Mr. -- Dr. Nader-Tehrani, if you're --
20 If I direct your attention here to this exhibit.

21 The estimated chlorides for Boundary 1 during
22 the fall and winter, from October through February, are
23 substantially higher than the No-Action Alternative; is
24 that correct?

25 WITNESS NADER-TEHRANI: I think my explanation

1 was when I was showing that, is -- also maybe in a
2 previous slide, I mentioned that Boundary 1 does not
3 include the Fall X2 action, which has a -- quite a bit
4 of, you know effect on the water quality.

5 So it will -- To a large extent, the increases
6 you see -- in this case, October, November -- would be
7 due to -- due to the Fall X2 action not being included,
8 yes.

9 MR. ALADJEM: But, Dr. Nader-Tehrani, are you
10 saying that the Department would never operate the
11 boundary line?

12 WITNESS NADER-TEHRANI: That's not what I said.

13 MR. ALADJEM: Okay. So, Boundary 1 is part of
14 the Project, and this -- it may be that Fall X2 is the
15 reason that there's higher chloride there, but it is
16 within the opportunity of the Project to operate to
17 Boundary 1 and, therefore, there could be that effect.

18 WITNESS NADER-TEHRANI: Well, what I was
19 describing here is, we are comparing Boundary 1 that does
20 not include Fall X2 to a No-Action Alternative that
21 includes Fall X2, and so at least, to a large extent,
22 some of that difference is due to that.

23 Now, that's -- that's where I leave it, you
24 know. You know, that's the way I was trying to explain
25 those increases.

1 MR. ALADJEM: Thank you.

2 Let me ask you a question here about the
3 overall magnitude of the effects.

4 Would it be fair, Dr. Nader-Tehrani, to say
5 that, with the exception of a few months, and
6 particularly the Boundary 1 scenario we were just
7 discussing, that estimated chloride levels at Contra
8 Costa Canal would be less than 150 milligrams per liter?

9 WITNESS NADER-TEHRANI: Yeah, that's correct.

10 MR. ALADJEM: Sir, what do you think the
11 likelihood of chloride levels at Contra Costa Canal
12 exceeding 250 milligrams per liter would be?

13 WITNESS NADER-TEHRANI: You mean in real world
14 or in the model?

15 What is your question? Is it in the -- Are you
16 talking about in the model or in the real-world
17 operation.

18 MR. ALADJEM: First, in the model and then,
19 secondly, in the real-world.

20 Thank you for the clarification.

21 WITNESS NADER-TEHRANI: Yeah. In the model, I
22 think there is a slide that shows about the compliance,
23 the D-1641 compliance, to the 250-milligram per liter
24 chloride.

25 And the model shows that -- I believe it was

1 about a 5 percent chance that -- not Boundary 2, but the
2 other --

3 MR. ALADJEM: I believe in 1977; is that
4 correct?

5 WITNESS NADER-TEHRANI: Well, are you talking
6 about the number of days?

7 MR. ALADJEM: Yes.

8 WITNESS NADER-TEHRANI: Okay. That -- That
9 particular -- Yeah, it was 1977 that all except
10 Boundary 2, including the No-Action, did not reach the
11 required number of days for that 150.

12 But another time to say that in real-world,
13 there was some barriers that were installed to reduce the
14 ocean salinity intrusion, and those barriers were not
15 part of the model.

16 MR. ALADJEM: But, now, let me come back to my
17 original question.

18 WITNESS NADER-TEHRANI: Yes.

19 MR. ALADJEM: Would it be fair to say that,
20 under the modeling, it is unlikely that 5 percent --
21 unlikely -- that there would be a chloride level of
22 250 milligrams per liter or more?

23 WITNESS NADER-TEHRANI: It is in my belief that
24 the increase you see, that 5 percent, falls in line with
25 the same modeling artifact that I was referring to

1 earlier, which is the difference in the model assumptions
2 between CalSim and DSM.

3 MR. ALADJEM: So if the model were, as
4 Ms. Nikkel was saying, accurate, we didn't have those
5 inconsistencies, we would show that there would not be an
6 exceedance of the 250-milligram per liter standard --
7 again, chloride -- here at Contra Costa Canal.

8 WITNESS NADER-TEHRANI: Yeah. If the models
9 were perfect, I would not expect to see an exceedance of
10 the 250.

11 MR. ALADJEM: And now Mr. Munévar and yourself
12 have all -- have said a number of times, models are not
13 used for prediction purposes. They're comparative;
14 correct?

15 WITNESS NADER-TEHRANI: That would be the best
16 use of the model.

17 MR. ALADJEM: But given the fact that the
18 chloride levels here are generally less than
19 150 milligrams per liter, would it be fair to say that it
20 is unlikely in the real-world, given the operational
21 flexibility that the two Projects have, that you would
22 not exceed 250?

23 WITNESS NADER-TEHRANI: Well, the numbers you
24 see here are 16-year averages.

25 So, we are back to that some years will be

1 higher, some years will be lower.

2 MR. ALADJEM: That's a -- That's an interesting
3 question, Dr. Tehrani -- Nader-Tehrani.

4 Where would I find the data from your DSM-2
5 modeling here on chloride at Contra Costa Canal that
6 shows the maximum and minimum?

7 WITNESS NADER-TEHRANI: Well, if you look at
8 the slide that has the D-1641 compliance. You are not
9 limited to just the D-1641 -- the period that the D-16 --
10 Well, that's year-round.

11 So, there's a slide --

12 WITNESS MUNÉVAR: Slide 71.

13 WITNESS NADER-TEHRANI: Slide 71?

14 That's correct, Slide 71.

15 If you -- Yeah. If you see that, the red line
16 represent the standard. So, ideally, all lines should
17 go -- be below that.

18 So, at best, you see on the left side where the
19 values are, you know, with crosses at the line, I would
20 say about 230, 240. That means 230 milligrams per liter
21 below the threshold of 250.

22 So that means all operational scenarios in the
23 best of times are reporting about 20 milligrams per
24 liter.

25 The way I arrived at 20 was, I subtracted 250

1 by the 230 that are shown on the graph at the
2 intersection of those lines and the Y-Axis.

3 And, then, at the times where it goes above
4 zero, that's toward the right end of the graph, somewhere
5 around 93, 94, you see that those are the ones going
6 above the 250 in the model world.

7 MR. ALADJEM: And, Dr. Nader-Tehrani, this is
8 very helpful. Let me summarize what I think I heard you
9 say.

10 Approximately, for the No-Action Alternative,
11 93, 94 percent of the time, the 250 part per million
12 standard -- chloride standard would be met with the
13 remaining 6 percent of the time, it would not.

14 WITNESS NADER-TEHRANI: Once again, I would
15 characterize this as a modeling artifact. In a perfect
16 model, that exceedance would not occur.

17 MR. ALADJEM: So let me -- let me try to
18 understand here.

19 If we had a perfect model, there would be no
20 exceedance of the 250-milligram per liter standard for
21 chloride at Contra Costa canal.

22 WITNESS NADER-TEHRANI: That is my opinion,
23 yes.

24 MR. ALADJEM: Thank you.

25 Turning back to water levels for just a second.

1 I'm not sure whether this is a question for you,
2 Dr. Nader-Tehrani, or Mr. Munévar.

3 WITNESS NADER-TEHRANI: I think I'd be able to
4 answer. I prefer the water level.

5 (Laughter.)

6 MR. ALADJEM: If there is a half -- a 6-inch or
7 a .05-foot reduction in water levels.

8 Was there an analysis, by the Department or by
9 Reclamation, of the effects of that reduction in water
10 levels on levee stability?

11 WITNESS MUNÉVAR: I -- I don't know.

12 MR. ALADJEM: Mr. Munévar?

13 WITNESS MUNÉVAR: Yeah, I also don't know.

14 MR. ALADJEM: Would it be fair to say that
15 there was no modeling analysis of levee stability
16 undertaken by the Project?

17 WITNESS NADER-TEHRANI: I'm not aware of it.

18 MR. ALADJEM: Madam Chair, if I could have a
19 moment or two to check my notes.

20 CO-HEARING OFFICER DODUC: Okay.

21 MR. ALADJEM: One last question for Mr. Munévar
22 and Dr. Nader-Tehrani.

23 Yesterday, Mr. Mizell stipulated -- I believe
24 it was with Mr. Lilly -- that the Department and
25 Reclamation had not proposed any Permit terms or

1 conditions to address some of Mr. Lilly's concerns, his
2 questions about upstream storage.

3 Do you recall that discussion?

4 WITNESS NADER-TEHRANI: I do.

5 WITNESS MUNÉVAR: Yes.

6 MR. ALADJEM: Would it be fair to say,
7 gentlemen, that the Department of Reclamation have not
8 proposed any Permit terms or conditions to deal with
9 water level effects or water quality effects of the
10 Proposed Project?

11 WITNESS NADER-TEHRANI: That is my
12 understanding.

13 MR. ALADJEM: Mr. Munévar?

14 WITNESS MUNÉVAR: That's, I think, the same
15 point that was made yesterday.

16 MR. ALADJEM: Madam Chair, no further
17 questions.

18 CO-HEARING OFFICER DODUC: Thank you. Thank
19 you, Mr. Aladjem.

20 Mr. Mizell, perhaps we should clarify your
21 stipulation.

22 My understanding of the stipulation yesterday
23 was that it applied to all -- that the Department does
24 not propose criteria for any aspect, and not just the
25 north storage that Mr. Lilly was interested in, and also

1 for the question that Aladjem just asked.

2 So a clarification: Was your stipulation, does
3 it apply to all aspects?

4 MR. MIZELL: Yes, Hearing Officer Doduc, you
5 understood my stipulation correctly. It applies to all.

6 The Department has not yet presented any
7 conditions for this Permit at this time.

8 CO-HEARING OFFICER DODUC: All right.

9 MR. ALADJEM: Thank you, Madam Chair.
10 My understanding was, it applied only to the
11 reservoir operations. That's very helpful.

12 CO-HEARING OFFICER DODUC: All right. Thank
13 you, Mr. Aladjem.

14 Before we take our break, let me do a check-in.

15 Group Number 11 has not shown, so I don't
16 expect them and they're not here.

17 Group Number 12?

18 13? Okay. I see a hand.

19 So we will take a 15-minute break according to
20 that one (indicating). We'll go -- resume at 10:55
21 and -- with Sacramento Regional County Sanitation
22 District conducting its cross-examination.

23 (Recess taken at 10:36 a.m.)

24 (Proceedings resumed at 10:55 a.m.:)

25 CO-HEARING OFFICER DODUC: Welcome back to the

1 session.

2 Miss Taber, what topics will you be exploring
3 this morning?

4 MS. TABER: I anticipate to needing five to 10
5 minutes.

6 CO-HEARING OFFICER DODUC: Okay.

7 MS. TABER: And at most, my topics will be
8 related to the modeling inputs as they concern the
9 discharge from the Sacramento Regional Wastewater
10 Treatment Plant.

11 CO-HEARING OFFICER DODUC: Thank you.

12 Please proceed.

13 CROSS-EXAMINATION BY

14 MS. TABER: Good morning, panel. My name is
15 Kelley Taber. I represent the Sacramento Regional County
16 Water Irrigation District.

17 I have just a few questions about the input
18 into your modeling work, and I do not know who the best
19 person on the panel would be to answer my questions, so
20 I'll direct them to the panel and just ask that whoever
21 feels they can address the questions, feel free to speak
22 up.

23 And I would ask if the staff could please put
24 up Exhibit SWRCB-21, just to orient ourselves. I don't
25 intend to rely on this.

1 (Document displayed on screen.)

2 MS. TABER: And go to Page 190, please.

3 (Document displayed on screen.)

4 MS. TABER: Thank you.

5 So this, as you can see, is from District 1641,
6 and it includes a formula for calculating the Net Delta
7 Outflow, and it also has as part of that the formula for
8 calculating Delta inflow.

9 And you'll see that, if I understand this
10 correctly, the formula includes the average daily
11 discharge from the Sacramento Regional Wastewater
12 Treatment Plant for the previous week.

13 And my question is: Did the modeling of the
14 No-Action Alternative include an assumption as to a
15 specific volume of discharge from the Sacramento Regional
16 Wastewater Treatment Plant?

17 WITNESS MUNÉVAR: It does. We're looking for
18 the value in the documents here, so . . .

19 MS. TABER: Okay. So, while you're looking,
20 because I -- I am curious about the value. We can wait
21 while you look, or I have some questions for --

22 WITNESS MUNÉVAR: Well, they're described in
23 Appendix 5A, so maybe if we can -- we can look for it,
24 but they're also in the documents of evidence submitted.

25 MS. TABER: Okay. I'm -- Just -- And I

1 apologize, because I haven't been able to be present for
2 all of the cross-examination.

3 When you refer to Appendix 5A, what is --
4 that's Appendix 5A to -- to which document?

5 WITNESS MUNÉVAR: I think it's the 5A that's
6 included in the -- in the Draft and the Recirculated
7 Draft. I believe it's also in the Biological Assessment.
8 They're all called Appendix 5A that outline model
9 assumptions.

10 MS. TABER: Okay. So that assumption is
11 included in the modeling of the No-Action Alternative --
12 An assumption is included in there, but -- And is anyone
13 here on the panel today able to address the specific
14 volume that was assumed or answer questions as to what
15 that volume was?

16 WITNESS MUNÉVAR: I don't recall the volume.

17 MS. TABER: Okay. And do -- If you recall, was
18 it a constant volume? Did it vary over time?

19 WITNESS MUNÉVAR: I do not recall.

20 MS. TABER: Okay. And this may wrap up my
21 questioning very quickly.

22 But did the modeling of any of the alternatives
23 include an assumption as to a specific volume of
24 discharge from the treatment plant?

25 WITNESS MUNÉVAR: Any of the alternatives would

1 have the exact same assumption as the No-Action.

2 MS. TABER: Okay. So the -- Based on your
3 understanding, there wouldn't have been an adjustment for
4 growth over time in the discharge, or a fluctuation in
5 discharge volume?

6 WITNESS MUNÉVAR: I don't believe so. The
7 No-Action also represents a future condition, so it
8 would -- it would be the same as the -- as the Project
9 alternatives.

10 MS. TABER: Okay. So would it be likely to be
11 a constant volume?

12 WITNESS MUNÉVAR: Yeah. Again, I --

13 MS. TABER: Okay.

14 WITNESS MUNÉVAR: I don't know at this point.

15 MS. TABER: If you can, can you point to any --
16 be any more specific as to where we would look in
17 Appendix 5A to find that information?

18 WITNESS MUNÉVAR: At this point, I can't, but
19 if we were able to locate the location, we'll point that
20 out to you.

21 MS. TABER: Okay. Great.

22 Thank you. Those are all my questions.

23 CO-HEARING OFFICER DODUC: Thank you,
24 Miss Taber.

25 Number 14. Is there someone here from the

1 County of Yolo?

2 All right. 15, EBMUD and Sacramento County
3 Water Agency.

4 MR. SALMON: Good morning.

5 CO-HEARING OFFICER DODUC: Your microphone is
6 not on.

7 And, Mr. Salmon, how much time do you
8 anticipate needing, and what subject matters will you be
9 covering?

10 MR. SALMON: I'm Jonathan Salmon from East Bay
11 MUD. I'll try to keep it under an hour.

12 I'm going to be asking mostly questions of
13 Mr. Nader-Tehrani. And generally my questions pertain to
14 the issue of reverse flows at Freeport. So I'll be
15 asking him about his knowledge of the Freeport Project
16 and the reverse flow issue, and the extent to which
17 reverse flows were analyzed in the modeling.

18 I'll also ask about the decision to use DSM-2
19 and the 16-year modeling period, and some questions
20 related to the adequacy and boundaries of that period.

21 Finally, I have a few additional questions
22 about the North Delta bypass flow criteria which was
23 touched on earlier this morning.

24 So, Mr. Ferguson of Sacramento County Water
25 Agency, I understand, has some questions following that

1 about groundwater impacts --

2 CO-HEARING OFFICER DODUC: All right.

3 MR. SALMON: -- that relate to his agency.

4 CO-HEARING OFFICER DODUC: Thank you.

5 Please --

6 MR. SALMON: And he'll --

7 CO-HEARING OFFICER DODUC: -- proceed.

8 MR. SALMON: -- appear after.

9 CROSS-EXAMINATION BY

10 MR. SALMON: Mr. Nader-Tehrani, are you aware
11 of the Freeport Regional Water Project?

12 WITNESS NADER-TEHRANI: I am somewhat familiar
13 with it.

14 MR. SALMON: Are you aware that reverse flows
15 that exceed a certain threshold will result in a shutdown
16 of the Freeport Project intake?

17 WITNESS NADER-TEHRANI: I'm somewhat familiar
18 with that, yes.

19 MR. SALMON: Do you have an understanding of
20 why those shutdowns occur?

21 WITNESS NADER-TEHRANI: Yes, I -- I believe I
22 do.

23 It has to do with the Sacramento Regional, you
24 know, discharges that are occurring downstream from the
25 Freeport facility. If there are reverse flows that are

1 strong enough, it could affect the operations of Freeport
2 facility.

3 MR. SALMON: I'd like to ask about a couple of
4 meetings that took place several years ago. These
5 meetings discussed the predecessor project to WaterFix,
6 the BDCP, but bear with me.

7 Would staff please display Document 2 from our
8 flash drive?

9 (Document displayed on screen.)

10 MR. SALMON: I'd like to identify this as
11 Exhibit East Bay MUD. Can I do X-1 to signify Cross-X?

12 (East Bay Municipal Utilities
13 District Exhibit X-1 marked for
14 identification)

15 MR. SALMON: So this is a document titled,
16 "Meeting Minutes, Modeling of BDCP Impacts on FRWA's and
17 East Bay MUD's Operations."

18 And the document refers to a meeting that took
19 place on May 26, 2009, and indicates that the witness,
20 Mr. Nader-Tehrani, attended along with representatives
21 from DWR, East Bay MUD, and Sacramento County Water
22 Agency.

23 Mr. Nader-Tehrani, do you recall if you
24 attended this meeting?

25 WITNESS NADER-TEHRANI: I -- I recall, but I've

1 forgotten the details.

2 MR. SALMON: Can you look at the third bullet
3 point. I think we have to scroll down. Under --

4 (Scrolling down document.)

5 MR. SALMON: There, the highlighted, under
6 Roman Numeral II.

7 It reads, quote (reading):

8 "Parviz said that DWR will consider using a
9 'fingerprint' analysis using the DSM-2 model to
10 examine the reverse flow issue. The 'fingerprint'
11 analysis could determine the percent volume of the
12 wastewater effluent at any specific location."

13 Do you recall --

14 WITNESS NADER-TEHRANI: That is --

15 MR. SALMON: -- if that fingerprint --

16 WITNESS NADER-TEHRANI: That is -- That is a
17 way to look at the -- the effects of the discharges.
18 That is a way of describing that, yes.

19 MR. SALMON: Do you recall if that analysis was
20 performed after that meeting?

21 WITNESS NADER-TEHRANI: We did not use the
22 fingerprint approach, if that's what you're asking, to --
23 to look at the effects of the discharges on Freeport
24 facility.

25 MR. SALMON: Thank you.

1 Can staff please display document three from
2 the flash drive.

3 (Document displayed on screen.)

4 MR. SALMON: I'll identify that as East Bay MUD
5 X-2.

6 MR. OCHENDUSZKO: Mr. Salmon?

7 MR. SALMON: Yes.

8 MR. OCHENDUSZKO: Just for point of
9 clarification, you didn't submit an exhibit
10 identification index for these exhibits; did you?

11 MR. SALMON: I did not. My understanding was,
12 that was required for the case in chief.

13 MR. OCHENDUSZKO: All right. We'd like to work
14 with you during lunch to make sure that we properly
15 identify these and can post them online for everybody's
16 use.

17 MR. SALMON: Sure. Be glad to work with you.
18 Thank you.

19 CO-HEARING OFFICER DODUC: For Mr. Salmon and
20 anybody that might be confused about that, an e-mail was
21 sent out last week, and also emphasized during the
22 hearing, that we would want a similar thing for the
23 cross-examination exhibits.

24 MR. SALMON: Okay. My apologies.

25 MS. McCUE: Just one more thing.

1 Since there's no labels on them, can you just,
2 like, read the title just for the record so that we can
3 make sure we have the right one.

4 MR. SALMON: I will.

5 CO-HEARING OFFICER DODUC: And that is --

6 MR. SALMON: I believe I did.

7 CO-HEARING OFFICER DODUC: And that is why we
8 wanted that information in the Exhibit List ahead of
9 time.

10 MR. SALMON: Understood. My apologies again.

11 So this document, which I would like to
12 identify as East Bay MUD X-2, is a document titled, "BDCP
13 Modeling-for-Modelers Meeting," and refers to a meeting
14 that took place June 18th, 2010, at CH2M Hill's
15 Sacramento office.

16 (East Bay Municipal Utilities
17 District Exhibit X-2 marked for
18 identification)

19 MR. SALMON: Mr. Nader-Tehrani, do you recall
20 this meeting?

21 WITNESS NADER-TEHRANI: Very vaguely.

22 MR. SALMON: Can you please look at the first
23 two bullets under Roman Numeral V on Pages 2 and 3 of
24 this document.

25 (Document displayed on screen.)

1 MR. SALMON: The bottom of Page 2, it starts --
2 Perhaps we could display the pages.

3 (Document displayed on screen.)

4 MR. SALMON: There we go.

5 So that portion of the document appears to
6 summarize modeling results regarding flow reversals; is
7 that right?

8 WITNESS NADER-TEHRANI: Let me read it. Sorry.

9 MR. SALMON: Okay.

10 WITNESS NADER-TEHRANI: I do see that, yes,
11 um-hmm.

12 MR. SALMON: Okay. Does that appear to you to
13 summarize modeling results regarding flow reversals?

14 MR. MIZELL: Objection: Vague and ambiguous.

15 This document's referring -- well, was created
16 at a point in time when we were dealing with a different
17 Project than what's before the Board today. So if he
18 could refer to what modeling results he's referring to,
19 we could have clarity in the record.

20 CO-HEARING OFFICER DODUC: Mr. Salmon.

21 MR. SALMON: I actually don't know what
22 modeling results. That's what I'm asking about is
23 whether modeling was performed of reverse flow impacts at
24 Freeport.

25 CO-HEARING OFFICER DODUC: Then let's just get

1 to that question.

2 WITNESS NADER-TEHRANI: Right.

3 So, at the time they proposed -- The Projects
4 that we were looking at included restoration areas, and
5 they're not part of the -- the Project that is presented
6 to the Board today.

7 CO-HEARING OFFICER DODUC: So, is your answer
8 that reverse flows were not modeled and considered?

9 WITNESS NADER-TEHRANI: No, they -- they -- I
10 have looked at those, if that's the question.

11 CO-HEARING OFFICER DODUC: Okay.

12 WITNESS NADER-TEHRANI: But -- But with respect
13 to, you know, the statement I see up there, it talks
14 about the tidal marsh restoration, and what I'm seeing
15 is, those are not included in the current Project.

16 CO-HEARING OFFICER DODUC: So, Mr. Salmon,
17 perhaps instead of referring to previous meetings and
18 documents, please just ask directly what is it that you
19 want to get from Mr. -- Dr. Nader-Tehrani in terms of the
20 analysis that he conducted --

21 MR. SALMON: Sure.

22 CO-HEARING OFFICER DODUC: -- for this Project.

23 MR. SALMON: Sure. Well, I'm -- At this point,
24 I'm asking about analysis that was done at that time.

25 My question is whether there was analysis --

1 whether you recall an analysis -- I can see what the
2 document says, but do you recall performing an analysis
3 of reverse flow impacts at Freeport of the BDCP Project
4 without tidal marsh restoration?

5 CO-HEARING OFFICER DODUC: And how does that
6 project relate to the project that's before us right now?
7 Why does -- Why are you pursuing that analysis instead of
8 the analysis that was done for this Project? Help me
9 understand that.

10 MR. SALMON: Yes. There's a similarity between
11 the Projects, acknowledging that there are differences.
12 There's a similarity between the BDCP without tidal marsh
13 restoration and the Project currently being proposed in
14 that both had North Delta Intakes.

15 And so where I'm going with this is, if reverse
16 flow impacts were analyzed for North Delta Intakes back
17 then, I'm -- what I want to know is whether now anything
18 has changed.

19 CO-HEARING OFFICER DODUC: Let's just ask that
20 question.

21 WITNESS NADER-TEHRANI: Right. I mean, I can
22 describe the effects of reverse flow with the -- with
23 respect to the Project as presented in the testimony, if
24 that's what you're after.

25 MR. SALMON: Okay.

1 CO-HEARING OFFICER DODUC: Yes, please do that.

2 MR. SALMON: Yes.

3 WITNESS NADER-TEHRANI: Okay. So what is
4 specifically -- You -- You're asking what kind of
5 analysis has been done?

6 MR. SALMON: Okay. So I --

7 WITNESS NADER-TEHRANI: For reverse flows on
8 East Bay MUD operations.

9 MR. SALMON: Yes. I -- Well, on the Freeport
10 Regional Water Project intake.

11 WITNESS NADER-TEHRANI: Correct.

12 So, my understanding -- and correct me if I'm
13 wrong -- when I read the documents with regards to the
14 Freeport operation, and the way it's described is, if
15 the -- if the reverse flows that are occurring in
16 Sacramento River have an effective distance of .9-mile or
17 greater from -- measured from the Sac Regional, you know,
18 discharge location upstream towards Freeport facility, if
19 the reverse flow distance is greater than .9 miles, then
20 the Freeport facilities have to shut down their
21 operations, because they don't want to see the effect of
22 that discharge.

23 So I -- I have looked at the reverse flows. It
24 is now part of the testimony that I presented. But I
25 have looked at it and compared the reverse flow distances

1 that are -- with respect to H3 scenario and compared it
2 to the No-Action.

3 And what I found is, there -- yes, there is
4 a -- an increase in the frequency of those reverse flows,
5 but those reverse flows are of the short duration and the
6 short distance, meaning up to about a .2-mile reversal
7 distance. That's the frequency of the reverse flows that
8 are increased with the H3 scenario.

9 The reason for those increased flows are the
10 reduction of flow in the river because of the taking of
11 water. Those occur -- The reverse flows typically occur
12 during low flows. At high flows, we don't see reverse
13 flows in Sacramento River, nor at Freeport facility.

14 And during low flows, the Project as described
15 does not take a large volume of water. And that's why we
16 are seeing the results that we're seeing, is that during
17 low flows, the volume of water that's going to be taken
18 from the three intakes is nowhere close to the capacity
19 of 3,000 cfs, and because of that, we are not seeing any
20 increase in frequency of the reverse flows that grow
21 larger than -- longer than .2 miles.

22 And for that reason, it is my belief that the
23 Projects are not going to affect the East Bay MUD
24 operation.

25 MR. SALMON: Thank you.

1 You mentioned an increase of .2 miles?

2 WITNESS NADER-TEHRANI: No, I did not say an
3 increase of .2 miles.

4 What I said -- Because the -- You know, the
5 shorter duration of reverse flows and -- as opposed to a
6 longer duration, higher distance.

7 What we are seeing is a small increase in the
8 events that go upstream between zero and 2.2 miles. It's
9 not an additional .2 miles. It is just within the zero
10 to .2-mile category of the reverse flows, we are seeing
11 an increase of those events.

12 So I want to be clear, it's not an additional
13 .2 miles.

14 MR. SALMON: You mentioned earlier the criteria
15 for shutdown, the point --

16 WITNESS NADER-TEHRANI: .9 miles.

17 MR. SALMON: .9 miles at mega transport.

18 WITNESS NADER-TEHRANI: That's correct.

19 MR. SALMON: So that when you were looking at
20 the reverse flow issue, did you compare the modeled
21 results to those criteria to determine whether there
22 would be a shutdown in that?

23 WITNESS NADER-TEHRANI: I did not see any
24 increase in the frequency of the reverse flows that go
25 beyond .9 miles. In fact, I didn't see an increase that

1 go beyond .2-mile.

2 MR. SALMON: Are you aware of whether there are
3 already shutdowns at the -- in Freeport intake that are
4 caused by reverse flows?

5 WITNESS NADER-TEHRANI: Yes, I think I heard
6 there are four events that happened since 19 -- 2014.

7 MR. SALMON: So --

8 WITNESS NADER-TEHRANI: And those happened
9 naturally because of the low flows in the river,
10 especially occurring during the drought that we had, the
11 extreme low flows that we had.

12 MR. SALMON: So, do I understand you correctly
13 to -- that you're saying that there will -- there are no
14 increases in the number of reverse flow shutdown events
15 at Freeport and that you have analyzed that?

16 WITNESS NADER-TEHRANI: And I have looked at
17 it, and the answer is, we are -- the Projects do not
18 increase the frequency of events even close to .9 miles.
19 It does not include a frequency of the events that cause
20 a shutdown, lead to the shutdown.

21 MR. SALMON: The frequency. So there --

22 WITNESS NADER-TEHRANI: Meaning the number --
23 If you look at the number of events that are modeled,
24 yes, you do see some events that go .9 miles.

25 But when you compare the No-Action to, in this

1 case, H3, you see a similar number. It's not there is no
2 increase in the number of events.

3 MR. SALMON: Did you examine the velocity
4 output of DSM-2 to reach this conclusion?

5 WITNESS NADER-TEHRANI: Yes.

6 MR. SALMON: And would you say that there is no
7 increase in reverse flow velocities . . . at Freeport?
8 Or downstream of Freeport?

9 WITNESS NADER-TEHRANI: Only a very small low
10 duration -- in the low duration between -- that cause an
11 upstream effective distance of 0.2 miles. That's it.

12 MR. SALMON: Based on your review of the
13 velocity output from DSM-2 --

14 WITNESS NADER-TEHRANI: Yes.

15 MR. SALMON: -- is it -- is there a possibility
16 that the length of a shutdown event, based on those
17 criteria for shutdown that you mentioned before, could be
18 increased due to the change that you just mentioned?

19 WITNESS NADER-TEHRANI: No.

20 MR. SALMON: Why -- why is that your opinion.

21 WITNESS NADER-TEHRANI: Because, as I said, my
22 understanding of the shutdown procedure is, whenever the
23 effective distance caused by the reverse flow above
24 .9-mile, that that would lead to a shutdown.

25 And based on what I see, we are not seeing any

1 increase in the frequency of such events.

2 MR. SALMON: Okay.

3 WITNESS NADER-TEHRANI: Therefore, I don't
4 expect the Projects will lead to higher frequency of
5 those shutdowns.

6 MR. SALMON: Okay.

7 CO-HEARING OFFICER DODUC: Mr. Salmon, before
8 you move on.

9 I understood his question to not only be
10 frequency but the duration of the occurrences.

11 WITNESS NADER-TEHRANI: No.

12 CO-HEARING OFFICER DODUC: Okay.

13 MR. SALMON: Thank you.

14 So, you mentioned your testimony focused on
15 possible changes to water quality in the lower levels; is
16 that correct?

17 WITNESS NADER-TEHRANI: That's correct.

18 MR. SALMON: And which outputs of the DSM-2
19 model did you rely on to analyze water quality and water
20 level changes?

21 WITNESS NADER-TEHRANI: For water level, we
22 used a module called the DSM-2 Hydro. And for water
23 quality, we used EC -- electrical conductivity -- output
24 from DSM-2 Qual.

25 MR. SALMON: Okay. And did you use Stage EC?

1 WITNESS NADER-TEHRANI: Stage from DSM-2 Hydro,
2 and EC from DSM-2 Qual. Chloride, we used the
3 EC-to-chloride conversion.

4 MR. SALMON: And when you were analyzing
5 reverse flows, which of those outputs did you look at?
6 You mentioned velocity --

7 WITNESS NADER-TEHRANI: Velocity.

8 MR. SALMON: Are there any others?

9 WITNESS NADER-TEHRANI: That's all you need to
10 compute the effective distance, you need the velocity
11 output, which is generated for every 15 minutes. And
12 based on that, it's just a formula velocity times
13 distance accumulated when it's negative to compute the --
14 the effective distance in the reverse direction.

15 MR. SALMON: So the velocity is what you use to
16 analyze the --

17 WITNESS NADER-TEHRANI: That's correct.

18 MR. SALMON: -- frequency and duration of
19 shutdowns?

20 WITNESS NADER-TEHRANI: That's correct.

21 MR. SALMON: Okay. Are you aware of whether
22 any other hydrodynamic modeling has been performed using
23 any model to analyze whether the Delta tunnels may change
24 flow or velocity in the Sacramento River between
25 Steamboat Slough and Freeport?

1 WITNESS NADER-TEHRANI: I know there was some
2 modeling but I was not involved in that activity.

3 MR. SALMON: Do you -- Can you describe at all
4 the nature of the additional modeling that you're aware
5 of?

6 WITNESS NADER-TEHRANI: I'm sorry. I was not
7 included in that activity, so I don't know. I don't want
8 to speculate what it was.

9 MR. SALMON: Okay. So, returning to the DSM-2
10 model, how was that model modified to represent the new
11 North Delta Intakes, if at all?

12 WITNESS NADER-TEHRANI: Well, the input for the
13 volume of water that's going to be taken from each of the
14 three proposed intakes come from CalSim model. And so we
15 have nodes in DSM-2, and those volumes are assigned to
16 the nodes that correspond to physical location along
17 Sacramento River and the timing.

18 And then DSM takes into account other
19 concentrations that are not included in CalSim, including
20 the -- the fish passage velocity that was described by
21 Mr. Munévar, you know, making sure that water is diverted
22 only at times when you need the certain velocity required
23 by the fish passage, of course.

24 MR. SALMON: Were there any new coefficients
25 introduced in the model to represent the new intakes?

1 WITNESS NADER-TEHRANI: I -- I don't recall
2 changing any coefficients.

3 MR. SALMON: And you mentioned changes to the
4 nodes?

5 WITNESS NADER-TEHRANI: The nodal -- The
6 physical locations of nodes may have been adjusted to
7 better reflect the physical location of the intakes.

8 MR. SALMON: I'd like to ask some questions
9 about the simulation period chosen for DSM-2.

10 WITNESS NADER-TEHRANI: Correct.

11 MR. SALMON: Basically, I want to determine
12 when were the start and stop dates for the modeling that
13 was done.

14 Can we bring up the witness' written testimony?

15 WITNESS NADER-TEHRANI: That's DWR-66.

16 MR. SALMON: Thank you.

17 (Document displayed on screen.)

18 MR. SALMON: So on Page 4, Lines 2 and 3, it
19 states -- you stated (reading):

20 "All DSM-2 model runs (hydrodynamics and water
21 quality) were based on 16 years of record (1976 to
22 1991)."

23 Does that mean that your testimony, as it
24 relates to the DSM-2 modeling, is based on model data
25 starting with Water Year 1976 that began in October of

1 '75?

2 WITNESS NADER-TEHRANI: That's correct.

3 MR. SALMON: Thanks.

4 Can we look at DWR-513, please.

5 (Document displayed on screen.)

6 MR. SALMON: So we can just look at this slide
7 for the moment.

8 Actually, the first five pages contain similar
9 bar graphs to this that contain monthly averages; is
10 that --

11 WITNESS NADER-TEHRANI: That's --

12 MR. SALMON: -- correct?

13 WITNESS NADER-TEHRANI: -- correct, yes,
14 um-hmm.

15 MR. SALMON: So there aren't any labels on this
16 exhibit -- this chart to tell us which time period is
17 being averaged.

18 Do these graphs show averages for October 1975
19 through September 1991?

20 WITNESS NADER-TEHRANI: That's correct.

21 MR. SALMON: Okay. Thank you.

22 Can we look at Document 4 from the flash drive,
23 please.

24 (Document displayed on screen.)

25 MR. SALMON: Thanks. I'll identify this as

1 East Bay MUD X-3.

2 (East Bay Municipal Utilities
3 District Exhibit X-3 marked for
4 identification)

5 CO-HEARING OFFICER DODUC: And what is it for
6 the record?

7 MR. SALMON: So, this is a screenshot of DSSVue
8 software showing DSM-2 model output.

9 Do you, Mr. Nader-Tehrani, recognize that as
10 such?

11 WITNESS NADER-TEHRANI: Yes.

12 MR. SALMON: Do you see in the filing box near
13 the top of the letter that appears in the lower half
14 where it says it's a DSM-2 model file prepared for the
15 CWF hearing?

16 WITNESS NADER-TEHRANI: Yes, um-hmm.

17 MR. SALMON: And in the column where the red
18 box is, "Part D/range" --

19 WITNESS NADER-TEHRANI: Yes.

20 MR. SALMON: -- do you see that?

21 WITNESS NADER-TEHRANI: Yes.

22 MR. SALMON: I just want to -- And I'm asking
23 this just so that we -- for informational purposes. I
24 want to make sure we understand what data is included in
25 the model output.

1 So that data there says October 1st, 1974
2 through September 1st, 1991; right?

3 WITNESS NADER-TEHRANI: That's correct.

4 MR. SALMON: Okay. Is -- Why do you -- Do you
5 know why it says October 1974 instead of 1975?

6 WITNESS NADER-TEHRANI: Yes, I can explain
7 that.

8 MR. SALMON: Okay.

9 WITNESS NADER-TEHRANI: We routinely use
10 actually simulator models for 17 years, and so there's an
11 extra year in the beginning. We call that the warmup
12 period because we don't -- in order to run the model, we
13 need what's called an initial condition, which is --
14 means that they -- what is the Delta flows and -- and
15 water quality throughout the Delta?

16 Because we don't have a good information on
17 that, we actually run the model for a year, and then at
18 the end of the year, now we have a much better estimate
19 of what the flows and water levels and water quality is.

20 So we basically ignore that first year. We
21 call that the warmup period, and only report the 16
22 years' followup after that.

23 MR. SALMON: Okay. So the Water Year 1975
24 data, which began in October 1974, is not included within
25 any of the results presented in your testimony --

1 WITNESS NADER-TEHRANI: That's correct.

2 MR. SALMON: -- is that correct?

3 WITNESS NADER-TEHRANI: That's correct.

4 MR. SALMON: All right. Thanks. That is
5 helpful.

6 The time period modeled with DSM-2 concluded in
7 September 1991 with the end of Water Year '91; is that
8 right?

9 WITNESS NADER-TEHRANI: That's correct.

10 MR. SALMON: Why wasn't the full '87 to '92
11 drought period simulated? And by -- What I'm referring
12 to as the Water Year 1992, why was that not included?

13 WITNESS NADER-TEHRANI: There -- I think there
14 was a -- This decision goes back several years ago as
15 part of the choice for the -- the years that are
16 simulated. This goes back to, probably, late 1990s.

17 DWR has an exhibit -- and I can point to that
18 exhibit -- that kind of discusses the rationale for
19 choosing the 16-year period.

20 The goal was to have a similar spectrum of
21 Water Year types in the 16-year period as opposed to the
22 larger -- the longer time period included in CalSim.

23 MR. SALMON: Is it your understanding that
24 Water Year '92 was excluded based on the similar spectrum
25 rationale?

1 WITNESS NADER-TEHRANI: I don't remember
2 specifically what, you know -- There was no special
3 reason to exclude '92 -- 1992 water year. It's just --
4 They're -- Within the 16-year period, we have a number of
5 wet years and dry years '76-77, very extreme dry year,
6 and the drought that extends from '87 to '91.

7 MR. SALMON: Is -- So, to the best of your
8 knowledge --

9 WITNESS NADER-TEHRANI: One second.

10 MR. SALMON: Sorry.

11 WITNESS BRYAN: That memo that he referred to
12 is in Appendix 5A, Section D12 of the Draft EIR/EIS.

13 MR. SALMON: And that explains the rationale
14 for why the specific years were chosen?

15 WITNESS BRYAN: It explains -- It compares why
16 the 16 years were chosen as opposed to an 82-year period
17 in those 16 years, yes.

18 MR. SALMON: I don't have that in front of me.
19 Was that the memorandum to Cathy Crothers or was that a
20 different document?

21 WITNESS BRYAN: It's also DWR Exhibit 511.

22 MR. SALMON: So it is that document that
23 you're --

24 WITNESS BRYAN: Yes.

25 MR. SALMON: -- referring to?

1 Thank you.

2 To the best of your knowledge,

3 Mr. Nader-Tehrani, was there any data quality reason why
4 Water Year '92 is not included?

5 WITNESS NADER-TEHRANI: No.

6 MR. SALMON: What about the years after '92,
7 from '92 up to 2015? Is it the same -- Well, let me just
8 ask:

9 Is there any reason that you're aware of why
10 that -- those water years were not included in the model?

11 WITNESS NADER-TEHRANI: Well, CalSim only goes
12 up to 2003, if I'm not mistaken, so the hydrology
13 information required to do DSM-2 modeling beyond 2003 is
14 not even available.

15 MR. SALMON: So how about for between '92 and
16 2003? Is there a reason why that was not included?

17 WITNESS NADER-TEHRANI: No. Again, the goal
18 behind the choice of the 16 years was, we wanted a period
19 that represent the kind of conditions that are
20 encountered in the entire spectrum of water years. And
21 we feel the 16 years that were chosen is an appropriate
22 indication of what you would see under the longer period.

23 MR. SALMON: Okay. I'd like to ask you about
24 that.

25 Yeah. You mentioned a similar spectrum in your

1 testimony.

2 WITNESS NADER-TEHRANI: Yes.

3 MR. SALMON: And I think you've explained what
4 you meant by "similar spectrum," but let me make sure I
5 understand.

6 You mean a similar distribution of Water Year
7 types?

8 WITNESS NADER-TEHRANI: Not exactly the same,
9 but similar.

10 MR. SALMON: Can we look at DWR-511.

11 (Document displayed on screen.)

12 MR. SALMON: And Page -- The page numbering is
13 a little different but it's 5A-D212. Looks like about
14 five pages down.

15 (Scrolling down document.)

16 MR. SALMON: There's a table on the page. You
17 should be able to spot it.

18 (Scrolling down document.)

19 MR. SALMON: That's it. Thanks.

20 So do you -- You can take a moment to look at
21 it, but do you know what this table is showing?

22 WITNESS NADER-TEHRANI: Yes. Regarding this
23 document, I would -- I would like for Miss Tara Smith
24 to -- because she's better familiar with this document.

25 MR. SALMON: That's fine.

1 WITNESS SMITH: I -- I generally remember what
2 this table is in regard to, yes.

3 MR. SALMON: Can you describe what the table is
4 showing?

5 WITNESS SMITH: We're looking at -- You have
6 the different year types on the left, wet, above normal,
7 below normal, dry and critical. On the top, you have the
8 82-year, 16-year percentage types, and then number of
9 years in type, and years in type. And then you can see
10 the percentage number of years.

11 So, in a wet year, the '82-year percentage is
12 32 and the 16-year is about 25, above normal is 15 and
13 16-year percentage is 13, below normal 17 and 6, dry
14 22 percent, 25 percent, and critical 15-year versus
15 31 percent.

16 MR. SALMON: Okay. So the table is comparing
17 the distribution of water years in the CalSim water
18 period to the DSM-2 model period; is that correct?

19 WITNESS SMITH: That is correct.

20 MR. SALMON: Okay. And what . . .

21 Okay. Would -- Is it fair to say that the dry
22 and critically dry years receive greater representation
23 in the 16-year period on a proportionate basis than they
24 did in the CalSim 82-year period?

25 WITNESS SMITH: Yes. On a percentage basis,

1 the dry and critical year, there was a higher percentage
2 in the 16-year.

3 MR. SALMON: Okay. And I would ask this to
4 anyone on the panel.

5 Why is a 16-year period that gives a greater
6 representation to drier year types than the longer term
7 average used for -- or longer term data set used for
8 CalSim appropriate to model the WaterFix Projects'
9 impacts?

10 WITNESS NADER-TEHRANI: I think I can make a
11 comment about that.

12 I have -- Regarding the suitability of the
13 16-year period, I have specifically looked at the water
14 quality hydrodynamic results at different locations in
15 the Delta. We've -- I've -- We've looked at the 82-year
16 DSM-2 runs and compared them to the 16-year.

17 And, like I said and was said earlier, the
18 proper use of the model is looking at the incremental
19 changes between a base and a project.

20 And what I looked at was, looking at the
21 incremental changes that are shown in the 16-year
22 simulation and compare that with the 82 years of
23 simulation, the question is, do we reach a similar
24 conclusion when you we that?

25 And -- And -- And, consistently, what I saw was

1 that I would -- I would reach the same conclusion with
2 respect to water quality, flows, in terms of incremental
3 changes of a project, in this case the California
4 WaterFix, to the No-Action Alternative.

5 And so that would make me feel that the 16-year
6 would be an adequate representation of what you would
7 expect to see under the 82 years.

8 MR. SALMON: Are you saying that, after the
9 model runs were complete, you compared -- you did a
10 comparison to see whether the DSM-2 matched the CalSim?

11 WITNESS NADER-TEHRANI: No.

12 MR. SALMON: Okay. I'm --

13 WITNESS NADER-TEHRANI: Let me -- So take an
14 example, Emmaton, water quality at Emmaton. You saw the
15 bar graphs that describe the changes in water quality at
16 Emmaton comparing base versus the alternative.

17 Now, imagine we repeat the same analysis but
18 this time based on 82 years. And what I saw is that you
19 would see a similar pattern in terms of changes in water
20 quality when you look at the 16-year and compare it to
21 what you would expect to see under 82-year. And for that
22 reason, I believe the 16-year would be an adequate
23 representation of the effects of the Project.

24 MR. SALMON: Is it possible that a different
25 mix of Water Year types in the 16-year sample could

1 affect the patterns that show up in that analysis that
2 you just described?

3 WITNESS NADER-TEHRANI: I think the analysis
4 that -- that I just described proved to me the adequacy
5 of the 16-year.

6 MR. SALMON: Is it possible that a different
7 mix of water types would change what you see when you do
8 that analysis?

9 WITNESS NADER-TEHRANI: Of course. If I choose
10 a different 16-year period, I may reach a different
11 conclusion.

12 MR. SALMON: So your conclusion about the
13 adequacy of the 16-year period is limited to the specific
14 16 years that were chosen?

15 WITNESS NADER-TEHRANI: That is correct.

16 MR. SALMON: The WaterFix modeling shows that
17 North Delta Diversions would tend to occur primarily in
18 winter and spring, especially in wetter years.

19 Do you agree with that?

20 WITNESS NADER-TEHRANI: I would say the
21 higher -- I mean, perhaps Armin should . . .

22 WITNESS MUNÉVAR: Yeah. I think that's
23 generally correct, although not exclusively in winter and
24 spring.

25 MR. SALMON: Okay. So given that the DSM-2

1 model period overweights drier years compared with the
2 82-year period, and given that the WaterFix -- the new
3 North Delta Intakes will tend to be used more often in
4 wetter conditions, why are you not -- why are you not
5 concerned about the adequacy of the representation of the
6 effects of WaterFix?

7 WITNESS NADER-TEHRANI: Well, if -- If there
8 was an issue with respect to the choices that were made
9 in terms of a -- a bias towards the Water Year types, I
10 would have been able to detect it with the analysis I
11 made when I compared the 16-year results versus the 82,
12 and because of the fact that I didn't see, you know, a
13 difference that would lead me to a different conclusion,
14 I -- I feel that the -- that the choice of the period was
15 appropriate.

16 MR. SALMON: Okay. Maybe Ms. White could
17 answer this because it's -- I have a question about the
18 Draft BA analysis.

19 Is it true that 82 years were simulated under
20 DSM-2 for purposes of the Draft BA analysis?

21 WITNESS WHITE: I'm going to refer to more
22 people familiar with the water quality analysis in
23 the Draft BA.

24 In my experience, it's the CalSim modeling of
25 the Draft BA.

1 WITNESS BUCCHOLZ: Yes, the Draft BA analysis
2 included the 82 years.

3 MR. SALMON: Do you know why a decision was
4 made to model 82 years for purposes of the Draft BA under
5 DSM-2 but not for the WaterFix hearing analysis?

6 WITNESS MUNÉVAR: My understanding is that was
7 at the request of the fishery agencies, to conduct the
8 82-year DSM-2 simulation.

9 MR. SALMON: Okay. Did you review those
10 results, Mr. Nader-Tehrani, the 82 years?

11 WITNESS NADER-TEHRANI: Not specifically for
12 BA.

13 MR. SALMON: Okay. So you're not aware whether
14 there are different patterns displayed in the 82-year
15 data set?

16 WITNESS NADER-TEHRANI: Not for the BA. The
17 analysis I made was actually based on the California
18 WaterFix alternatives.

19 MR. SALMON: Okay. Okay. One more clarifying
20 question that's related.

21 Exhibit DWR-513.

22 (Document displayed on screen.)

23 MR. SALMON: On Page 10 of that document.

24 (Document displayed on screen.)

25 MR. SALMON: So the -- This again relates to

1 the period that was modeled.

2 This graph on the X-Axis goes from 1975 through
3 1990.

4 Why does that differ from the '76 to '91 period
5 that's described in your testimony?

6 WITNESS NADER-TEHRANI: Yeah. This particular
7 graph refers to meeting the 150-milligram per liter
8 chloride concentration for a certain number of days in a
9 Calendar Year, and the simulations ended in September of
10 1991. There were not enough days in the simulation to
11 show the results for 1991.

12 MR. SALMON: And, similarly, 1975 was included?

13 WITNESS NADER-TEHRANI: Well, that's because
14 we -- we actually had the simulations for 1975.

15 MR. SALMON: So this is one place where the
16 1975 data from Calendar Year '75 was --

17 WITNESS NADER-TEHRANI: Yeah. Because that
18 was, again, nine months into the simulation. So, as far
19 as the adequacy of the warm water period I was referring
20 to, that there is -- there is adequate information that
21 we can rely on the first two months of 1975.

22 MR. SALMON: So at least for purposes of this
23 analysis shown on this graph, there was a different --
24 different data -- data set period used than for --

25 WITNESS NADER-TEHRANI: Yes. Those three

1 months for this purpose.

2 MR. SALMON: Okay. I'd like to ask a few
3 additional questions about the North Delta bypass flows
4 and how they were modeled.

5 So, Mr. Nader-Tehrani, can you explain
6 physically where the bypass flow requirement would apply?

7 Or any of the panel?

8 WITNESS MUNÉVAR: Well, physically, it would --
9 it would apply at the downstream of the most downstream
10 intake.

11 MR. SALMON: And were the specific criteria
12 developed using the DSM-2 model?

13 WITNESS NADER-TEHRANI: No.

14 MR. SALMON: Were they developed using any
15 model?

16 WITNESS MUNÉVAR: Criteria were largely based
17 on -- on fishery agency input on the adequacy of flows in
18 the river at certain time conditions.

19 There -- There was also a consideration for the
20 flows in the river that might provide substantial
21 unidirection or downstream flow and to protect those
22 periods in which there could be some possibility of
23 reverse flows. That was the basis for the -- for the
24 tables that I presented.

25 MR. SALMON: Do you recall which stretch of the

1 river the reverse flows factored into that analysis?

2 Reverse flows where?

3 WITNESS MUNÉVAR: It was a broad consideration
4 along the Sacramento River, primarily for looking at
5 fishery impacts.

6 MR. SALMON: Okay. So, north of -- Or upstream
7 of Georgiana Slough up to Freeport, were reverse flows
8 taken into account, to your knowledge, in the development
9 of the bypass flow criteria?

10 WITNESS MUNÉVAR: There was a consideration
11 of -- of net flows in the Sacramento River in which
12 unidirectional flows might occur on an hourly basis.
13 There was a broad consideration over 2007 through 2010.

14 MR. SALMON: What do you mean by
15 "unidirectional"?

16 WITNESS MUNÉVAR: The flows in the Sac -- If
17 you look at a daily Sacramento River flow, at which flows
18 might you not see any single 15-minute or hourly reversal
19 on the tidal cycle.

20 MR. SALMON: Okay.

21 WITNESS MUNÉVAR: So on very high flows, you
22 don't get -- there is no reversal; at low flows, there
23 are reversals over some time period; and at moderate
24 flows, there's a chance there may be a few 15-minute or
25 hourly intervals in which you have reverse flows.

1 MR. SALMON: Okay.

2 WITNESS MUNÉVAR: These are reverse flows not
3 caused by the Project; it's tidal action in the system.

4 MR. SALMON: Understood.

5 So those -- The reverse flows were taken into
6 account in the development of the North Delta flow
7 criteria but with an eye towards fisheries' concerns; is
8 that accurate?

9 WITNESS MUNÉVAR: I think that's accurate, yes.

10 MR. SALMON: Okay. Were the DSM-2 model
11 simulations for the two boundary scenarios checked for
12 compliance with the North Delta bypass flow criteria?

13 WITNESS NADER-TEHRANI: Yes, and to basically
14 use the information from CalSim. And, yes, so if CalSim
15 enforced a certain bypass flow, that would be naturally
16 met.

17 MR. SALMON: So there's no additional check
18 that you perform.

19 WITNESS NADER-TEHRANI: That's not, either.

20 MR. SALMON: Okay. And did CalSim -- What --
21 What CalSim checking was done to assess compliance of the
22 boundary scenarios with the North Delta bypass flow
23 criteria?

24 WITNESS MUNÉVAR: The boundary scenarios and
25 the WaterFix scenarios have an identical implementation

1 of the North Delta bypass flows, so those are -- are
2 simulated -- or input parameters into the CalSim II
3 model, and -- and the output has confirmed that the
4 operations are per the input, per the required inputs.

5 MR. SALMON: Okay. I'd like to look at DWR-5,
6 or 5e, let's make it.

7 (Document displayed on screen.)

8 MR. SALMON: Page 26.

9 (Document displayed on screen.)

10 MR. SALMON: That's a slide from the Modeling
11 presentation that's titled "NDD bypass Flow Requirements
12 Example - Dry year (1987)."

13 So, I'd like a little help interpreting the
14 slide, so the questions are for whichever Panel Members
15 are most knowledgeable about this chart.

16 Does this chart show model results?

17 WITNESS MUNÉVAR: This chart shows model
18 results but it's an example, so I -- it's not necessarily
19 from one of the -- the operations that are -- that were
20 shown for the WaterFix. It's an example.

21 MR. SALMON: The model -- There was a model run
22 that was done to generate this output; is that correct?

23 WITNESS MUNÉVAR: Correct. But this -- This
24 model run was -- is meant to be an illustration but not
25 necessarily a 1987 output of one of the alternatives. I

1 believe this might have been -- might have been the
2 alternative in the BA H3+.

3 MR. SALMON: Okay. Thanks.

4 WITNESS MUNÉVAR: The graphic is meant to be
5 illustrative of the -- of the operation criteria under a
6 particular dry-year technology.

7 MR. SALMON: Okay. And is that a daily
8 time-step in that output data that's plotted on this
9 chart?

10 WITNESS MUNÉVAR: That's correct.

11 MR. SALMON: Was -- So this example was not
12 included within the DSM-2 or the CalSim modeling? Is
13 this a separate -- Well, just the first question:

14 Was this included within the modeling analysis
15 that's presented in the testimony?

16 WITNESS MUNÉVAR: This operation is -- is from
17 a CalSim modeling that applies specifically for the North
18 Delta Diversion as a sub-monthly time-step, a daily
19 analysis that enables it to operate the North Delta
20 Diversion more adequately than a monthly analysis.

21 MR. SALMON: Did -- Did you perform the
22 analysis, Mr. Munévar?

23 WITNESS MUNÉVAR: I did.

24 MR. SALMON: Did you analyze October 1986
25 hydrodynamics? That's the first month there.

1 WITNESS MUNÉVAR: Well, hydrodynamics would be
2 related to the DSM-2 modeling, not the CalSim modeling --

3 MR. SALMON: Okay.

4 WITNESS MUNÉVAR: -- and I did not perform
5 that.

6 MR. SALMON: Did any member of the panel
7 analyze the hydrodynamics during that period?

8 WITNESS NADER-TEHRANI: I believe these are
9 also based on CalSim flows; aren't they?

10 WITNESS MUNÉVAR: These are CalSim flows.

11 MR. SALMON: Okay. So were reverse flows above
12 or below the intakes analyzed in the development of this
13 chart?

14 WITNESS MUNÉVAR: No. Again, this chart is
15 illustrative of the North Delta requirement. I think
16 Dr. Nader-Tehrani talked about the reverse flows that
17 have been analyzed for the whole 16-year period.

18 MR. SALMON: Yeah. We're just trying to figure
19 out how that would -- how that would operate, how
20 operations -- modeled operations would interact with
21 those criteria, how the criteria would affect the
22 operations.

23 WITNESS MUNÉVAR: I understand.

24 MR. SALMON: So, in November 1986, just using
25 that as an example -- it's the second monitor -- is there

1 any reason why that green line, which I understand --
2 It's labeled "ND Diversion."

3 So the green line I understand to represent
4 use -- water diverted through the North Delta facilities.

5 Is there any reason, during that month of
6 November '86, why that green line could not be higher?
7 Why more -- In other words, why more water could not be
8 taken through the North Delta Intakes during that model?

9 WITNESS MUNÉVAR: My understanding would be
10 that we may be having a constant low-level pumping
11 criteria applied to this period.

12 MR. SALMON: Would that be a limiting factor on
13 these new North Delta intake?

14 WITNESS MUNÉVAR: No. I'm not -- There could
15 be other factors that are driving the operation this
16 particular November, so this has a -- This operation
17 considers many other things that are occurring in
18 the Delta, so it could be a salinity control that's
19 limiting the amount of diversion, or it could be an
20 outflow, it could be a Fall X2 condition.

21 MR. SALMON: So --

22 WITNESS MUNÉVAR: I don't know, per se.

23 MR. SALMON: So the D-1641 requirements and the
24 RPAs and requirements along those lines are incorporated
25 into the assumed level of North Delta Diversions in this

1 chart?

2 WITNESS MUNÉVAR: Yes.

3 MR. SALMON: Okay. But you don't know sitting
4 here which -- which limiting factor might be limiting the
5 use of the North Delta Diversion in this example?

6 WITNESS MUNÉVAR: Not for that particular
7 November.

8 MR. SALMON: Okay. How about the summer months
9 of 1987, July, August, September 1987? That's the last
10 three months on this chart, I believe.

11 So it appears there's constant low-level
12 pumping going on at the North Delta intake during that
13 period; is that right?

14 WITNESS MUNÉVAR: Correct. But I think what
15 you're seeing here, and may be similar to the November,
16 is that there are other controlling requirements that are
17 limiting the amount that could be diverted from the North
18 Delta Diversion, not necessarily the bypass flows
19 themselves.

20 MR. SALMON: Okay. So, do you -- Could there
21 have been North Delta Diversions above the level of
22 diversion shown for those three months during that
23 period, to the best of your knowledge?

24 WITNESS MUNÉVAR: To the best of my knowledge,
25 it would be highly unlikely. These are low Sacramento

1 River flows. Generally, we find flows between 10 and
2 12,000 cfs in the summer are likely required to meet
3 Emmaton's salinity standard.

4 So it would be highly unlikely that the other
5 controlling requirements would enable North Delta
6 Diversions to occur.

7 MR. SALMON: So it's, in your view, likely an
8 in-Delta salinity standard that's limiting the level of
9 diversion at the new intake there?

10 WITNESS MUNÉVAR: Correct.

11 And then we also have a criteria in the North
12 Delta Diversion which says, in the summer, we would
13 prefer to take the first 3,000 cfs of diversion from the
14 South Delta intakes as opposed to the north.

15 I don't know what the specific South Delta
16 diversions are, but they would be preferred over the
17 North Delta in July, August and September.

18 MR. SALMON: Is that an assumption incorporated
19 into the model, that preference?

20 WITNESS MUNÉVAR: It is.

21 MR. SALMON: Is there any operational
22 requirement that's been proposed to require that, or is
23 it an assumption of Operator flexibility, or something
24 else?

25 WITNESS MUNÉVAR: It's an assumption in the

1 modeling. I believe it's described in the modeling
2 details of Appendix 5A. And it was -- it was developed
3 largely for operational discretion for water quality in
4 South Delta.

5 MR. SALMON: Are you aware of whether it's a
6 requirement of operation that you were asked to model or
7 is it --

8 WITNESS MUNÉVAR: It's not an existing
9 requirement, and I'm not aware of it being applied as a
10 requirement on this Project.

11 MR. SALMON: Okay. So were you trying to
12 simulate Operator judgment in incorporating that 3,000
13 assumption?

14 WITNESS MUNÉVAR: Well, I think both Operator
15 judgment and it's been written into the assumptions for
16 the Proposed Project that, during those conditions, July,
17 August and September, preferential pumping would occur
18 from the South Delta in order to facilitate movement of
19 fresher water into the South Delta as opposed to
20 diverting from the North Delta.

21 MR. SALMON: Okay. You said there were
22 assumptions. You're referring to the modeling
23 assumptions?

24 WITNESS MUNÉVAR: Modeling assumptions. And I
25 don't recall if it's written in the Proposed Project

1 description. It may be.

2 WITNESS BUCHHOLZ: It's also in the alternative
3 assumptions in Chapter 3 in the EIR/EIS, and also in 5 of
4 the Biological Assessment.

5 MR. SALMON: Okay. Thank you.

6 I have no further questions for the panel.

7 My colleague, I believe, has some questions for
8 Sacramento County Water Agency.

9 CO-HEARING OFFICER DODUC: Thank you.

10 Mr. Ferguson?

11 MR. FERGUSON: Yes.

12 CO-HEARING OFFICER DODUC: How much time do you
13 expect needing for your groundwater-related questions?

14 MR. FERGUSON: Maybe 10 minutes.

15 CO-HEARING OFFICER DODUC: Okay.

16 MR. FERGUSON: Yeah.

17 CO-HEARING OFFICER DODUC: Proceed.

18 And we will take our lunch break after that.

19 MR. FERGUSON: Good morning. My name's Aaron
20 Ferguson. I'm here on behalf of the Sacramento County
21 Water Agency.

22 CROSS-EXAMINATION BY

23 MR. FERGUSON: I just have a few questions
24 related to groundwater levels and the potential
25 groundwater service water interaction and -- and

1 groundwater impacts.

2 So, I'll direct my questions initially at
3 Mr. Tehrani.

4 You testified that there will not be negative
5 effects to legal users of water due to water level
6 changes; is that correct?

7 WITNESS NADER-TEHRANI: That is correct.

8 MR. FERGUSON: Okay. How did you reach the
9 conclusion that there wouldn't be negative effects based
10 on the model changes in water levels?

11 WITNESS NADER-TEHRANI: The graphs I showed,
12 and perhaps we should put that on the . . .

13 MR. MIZELL: Mr. Long, if we could put DWR-5e
14 up for Mr. Tehrani.

15 WITNESS NADER-TEHRANI: Page 76.

16 (Document displayed on screen.)

17 MR. MIZELL: Page 76?

18 WITNESS NADER-TEHRANI: Page 76.

19 (Document displayed on screen.)

20 WITNESS NADER-TEHRANI: Four more down.

21 (Document displayed on screen.)

22 WITNESS NADER-TEHRANI: So, this is the plot I
23 showed. This is the water level output corresponding to
24 the location along Sacramento River downstream from the
25 three proposed intakes.

1 This represents the -- the largest change cause
2 in water surface elevation. And in order to look at the
3 changes in water level, I'm comparing the results for the
4 No-Action represented by the black line to all other ones
5 that kind of line up.

6 And looking at the changes in water level,
7 again, to reiterate, the points that are towards the
8 right end -- the left end of the graph represent the high
9 flows, and I -- and I explained that's about a foot, and
10 toward the low flows, about half a foot.

11 But I further explained that the water level
12 corresponding to the -- the four operational scenarios go
13 below the No-Action Alternative. Only three days in the
14 entire 16 years. That's five days in a year.

15 And also the fact that those low events only
16 occurred during a short duration of time. There is a
17 tidal influence at this location and the low flows. The
18 tidal amplitude, the difference between low and high, is
19 between 2 to 4 feet, so -- And during the rest of the
20 time, the water levels are going to be much higher than
21 the low waters that are reflected here.

22 And for those reasons, I made the -- reached
23 the conclusion that there would not be a -- an impact to
24 the legal users of water based on water level.

25 All other locations showed a lower change.

1 MR. FERGUSON: So it appears you're focused on
2 changes in minimum water levels in the river; is that
3 correct?

4 WITNESS NADER-TEHRANI: That is correct.

5 MR. FERGUSON: Okay. Were -- Were you -- Were
6 you directed to conduct such an analysis of minimum water
7 levels to assess injury to legal users of water?

8 WITNESS NADER-TEHRANI: That -- That was a
9 choice I made, but I consulted with the attorneys. I was
10 trying to figure out. I -- You know, I assume there are
11 farmers they're diverting water from -- from within that
12 area. And in order to assess whether WaterFix would
13 affect their ability, I assumed that the biggest concern
14 would be the lowest water levels, so that's the choice I
15 made at that point.

16 MR. FERGUSON: So it sounds like the concern
17 was a -- potential effects on surface water diversions;
18 is that correct?

19 WITNESS NADER-TEHRANI: That is correct.

20 MR. FERGUSON: Okay.

21 WITNESS NADER-TEHRANI: I must add that I have
22 looked at the -- the maximum daily stage plots, and they
23 look very similar, with similar changes.

24 MR. FERGUSON: Okay. Thank you.

25 So, did you run any other types of water level

1 comparisons between the No-Action Alternative and the
2 Project alternatives?

3 For example, did you assess long-term changes
4 in water -- in average water levels?

5 WITNESS NADER-TEHRANI: What -- What you see
6 here is the long-term effects on water levels. This
7 line -- This graph represents a 16-year simulation, so
8 the entire spectrum from the very wet years to the very
9 dry years.

10 MR. FERGUSON: But it's only with respect to
11 minimum water levels; correct?

12 WITNESS NADER-TEHRANI: As I -- As I described
13 earlier, I have looked at the similar chart represented
14 by the daily maximum water levels, and I saw a similar
15 shape and similar change.

16 But I chose this one because that was my
17 assumption, that I'm looking at how it's going to affect
18 anybody who's diverting surface water from that area.
19 That was the choice I made.

20 Now, in hindsight, I perhaps should have
21 included the higher one, but I have looked at it, the
22 maximum daily water levels. And I saw it's very similar
23 shape and a similar change, you know, indicated by
24 those -- those levels.

25 MR. FERGUSON: So if you'd shown the high side,

1 as you indicated, what -- what -- what sort of
2 information would that give you with respect to -- to
3 water levels? Why did you suggest that?

4 WITNESS NADER-TEHRANI: Why -- What is your
5 question?

6 MR. FERGUSON: Sorry.

7 What sort of information would that give you
8 with respect to change in water levels comparing the
9 No-Action Alternative to the various Project alternatives
10 if you were to include the -- the maximum?

11 WITNESS NADER-TEHRANI: Well, that chart, if I
12 chose the maximum stage, it would show the effect or the
13 reduction in water level based on maximum water level at
14 a given location. So that's really the basic different
15 between that and the plot that you see in front of you.

16 MR. FERGUSON: Did you or anyone else on the
17 Modeling Team assess stream or groundwater interactions
18 in the area of the North Delta Diversions?

19 WITNESS NADER-TEHRANI: I did not. I don't
20 know.

21 MR. FERGUSON: Do you know if changes in water
22 levels are relevant in assessing stream water
23 interactions in the area of the North Delta Diversions?
24 Would there be?

25 WITNESS NADER-TEHRANI: That's not an area of

1 my expertise.

2 MR. FERGUSON: Does anybody else on the
3 Modeling Panel?

4 WITNESS BUCHHOLZ: What we did is, we used the
5 outputs -- We have a groundwater -- regional groundwater
6 model called Central Valley Hydrologic Model. It's
7 prepared by the United States Geological Survey.

8 And so that model, coming from the U.S.
9 Geological Survey, they provided all of the -- the
10 hydrogeological characteristics of the Delta -- well,
11 actually the entire Central Valley.

12 Based upon those characteristic assumptions, we
13 inputted the CalSim flows and ran a long-term basis to
14 see whether or not we'd see any changes along the rivers
15 because of the groundwater surface water relationship due
16 to changes in flows when the river's coming out of CalSim
17 output.

18 MR. FERGUSON: When you say changes along the
19 rivers, what do you mean?

20 WITNESS BUCHHOLZ: So, CalSim changed the --
21 the frequency and the flow patterns along the Sacramento
22 River as compared to the different alternatives as
23 compared to No-Action. And also with respect to
24 Sacramento River, American River, the changes in
25 Steamboat/Sutter Slough, the different parts of the -- if

1 we would see anyplace that we would have in CalSim
2 output.

3 MR. FERGUSON: Okay. So you're saying as part
4 of that, that analysis, you did assess stream water
5 interactions in the area in or around the North Delta
6 Diversion?

7 WITNESS BUCHHOLZ: Right.

8 And then we looked, based upon using -- well --
9 and I'll just the vernacular instead of saying it out --
10 CVHM, which is the acronym.

11 We used that to determine whether or not we
12 would see higher or lower groundwater levels along those
13 rivers due to the change in -- for operations.

14 MR. FERGUSON: Where -- Where are those -- Are
15 those modeling results contained in the modeling package
16 that's been presented somewhere? Where would I find
17 those?

18 WITNESS BUCHHOLZ: So the -- the results that
19 we show for a peak -- for the maximum incremental
20 difference between No-Action and alternatives are in
21 figures for Chapter 7 of the Draft EIR/EIS. And there is
22 a -- I don't believe that the CVHM model runs are up on
23 the State Water Resources Control Board website, but I
24 know that State Water Resources has made them available
25 to whoever's asked for them.

1 MR. FERGUSON: Okay. So did those modeling
2 results should -- And maybe you said this. You said it
3 for a bit there.

4 Did those modeling results show a change in
5 groundwater recharge in what's called the South American
6 Subbasin adjacent to the intakes?

7 WITNESS BUCHHOLZ: Along the intakes, it's
8 actually interesting, because this set of model runs had
9 a -- another set of assumptions that's been subsequently
10 changed for the Project that we have in front of the
11 Board right now.

12 And -- And that was the change I spoke to in a
13 previous panel, the Engineering Panel, about the use of
14 slurry walls.

15 So we actually had a fair amount of additional
16 groundwater recharge occurring because of the
17 Intermediate Forebay.

18 And now that we have the slurry walls around
19 the Intermediate Forebay, that seepage has an adverse
20 impact that was occurring to groundwater because it was
21 raising the groundwater way high, and so that recharge
22 doesn't occur.

23 However, just based upon the river changes, we
24 showed there's a slight increase in -- of -- let me get
25 my colors correct here -- of 1 to 5 feet around the

1 Freeport area. However, it could also go down -- down,
2 and then also along the Rio Vista area.

3 We also show that we could have a change of --
4 of a -- of a reduction in groundwater levels along the
5 American River area.

6 MR. FERGUSON: So, I think you -- you mentioned
7 that change. Did you say 1 to 5 feet?

8 WITNESS BUCHHOLZ: 1 to 5 feet increase, or 1
9 to 5 -- along the Sacramento River and a 1- to 5-foot
10 decrease along the Sacramento River.

11 MR. FERGUSON: And what sort of time period is
12 that over in terms of that change?

13 WITNESS BUCHHOLZ: So -- I knew you were going
14 to ask me that and I can't remember the years. It's not
15 the full 82 years on that. I -- Let me check Chapter 7
16 on the -- on the -- the period of time we did it.

17 What it's done is, the analysis is run as a GIS
18 model output animation. And so what we did was, we
19 looked for the peak incremental differences during the
20 time frame that we -- the 42-year timeframe that we ran
21 the model runs.

22 MR. FERGUSON: So you mentioned levels. Was
23 there any attempt to assess overall impacts on volume in
24 the basin --

25 WITNESS BUCHHOLZ: No.

1 MR. FERGUSON: -- volume of water in the basin?

2 WITNESS BUCHHOLZ: We did not analyze it in a
3 volumetric manner.

4 MR. FERGUSON: Okay. Do you -- Was that an
5 intentional decision not to analyze it in a volumetric
6 manner?

7 WITNESS BUCHHOLZ: We were focused in the
8 EIR/EIS on looking at where we anticipated -- how -- In
9 the EIR/EIS, we talk about in each of our chapters, and
10 including in Chapter 7 for groundwater, what would be the
11 best way to describe any changes that would occur under
12 the alternatives versus -- that would be meaningful as
13 compared to the No-Action and existing conditions.

14 We made a decision that water -- groundwater
15 elevations would be the most appropriate one to focus on.

16 MR. FERGUSON: Well, in -- in your opinion,
17 would a -- would a change in volumetric level be an
18 appropriate component for assessment of injuries to legal
19 users of water?

20 WITNESS BUCHHOLZ: The change in volumetric
21 level would be related to the change in groundwater
22 elevations, so --

23 MR. FERGUSON: So you -- In your opinion, you
24 felt comfortable that -- with the assessment in the
25 change in levels that served as a -- That's a surrogate

1 for -- or not surrogate?

2 WITNESS BUCHHOLZ: I think it's indicative of
3 the change in models --

4 MR. FERGUSON: Okay.

5 WITNESS BUCHHOLZ: -- you know.

6 MR. FERGUSON: And, so, is it your opinion with
7 the -- with the modeling indicating those changes in
8 levels, that there would not be injury to groundwater
9 users in the South American Subbasin?

10 WITNESS BUCHHOLZ: What we recommended in
11 the -- We -- We acknowledged that there potentially could
12 be, and we had mitigation measures within Chapter 7 of
13 the Draft EIR/EIS.

14 We recognized that this is a regional
15 groundwater model, and so during design phase, there
16 would have to be very specific geotechnical surveys to
17 determine the types of hydrologic characteristics that
18 occur in the aquifer near the rivers as well as in
19 the intakes that could be affected by this, and that
20 would -- especially near the intakes because that's where
21 we're going to see the maximum change in elevations in
22 most cases.

23 And so we would also be looking at any specific
24 locations of water wells in that area at that time, as
25 I -- as I previously testified.

1 MR. FERGUSON: Right. I think we had a
2 conversation about some of these items.

3 I'm just trying to look a little more broadly
4 beyond the immediate impacts associated with the
5 construction, which is what I think we discussed
6 previously in talking --

7 WITNESS BUCHHOLZ: And those monitoring,
8 according to the mitigation measures, would be continuing
9 in post as -- as operations start up, yes.

10 MR. FERGUSON: I'm trying to get you to answer
11 a little more broadly with respect to the area -- the
12 Reaches, you know, up and downstream of the intakes and
13 in the surface water/groundwater interaction there, and
14 what we're seeing overall if there are any potential
15 impacts to the basin --

16 WITNESS BUCHHOLZ: And we don't see that --

17 MR. FERGUSON: -- water levels or water
18 volumes.

19 WITNESS BUCHHOLZ: We don't see that in the
20 results of CVHM or CVHMD. The results in the -- in
21 Appendix 7A, as I said, or -- Actually, we show
22 increases, but that's because of the sea beach that would
23 have occurred at the Intermediate Forebay.

24 And we also show increases in groundwater
25 elevations down by Suisun Marsh in Rio Vista area, but

1 that was because of the tidal habitat restoration.

2 We did not redo these sets of models for any of
3 the other subsequent documents.

4 MR. FERGUSON: Okay. Thank you.

5 Was . . . I'm going to come back to some of
6 your testimony, Mr. Tehrani.

7 Your testimony states that, with respect to the
8 water quality impacts, that except for Boundary 2 in the
9 months of July and August, there's an increase in EC at
10 Emmaton about 18 or 19 percent when compared to the
11 No-Action Alternative; is that correct?

12 WITNESS NADER-TEHRANI: July and August, yes,
13 um-hmm.

14 MR. FERGUSON: Okay. So, in your opinion,
15 under these scenarios where EC is 18 or 19 percent higher
16 as compared to the No-Action Alternative, would you
17 expect to see a change in EC near the North Delta
18 Diversion?

19 WITNESS NADER-TEHRANI: Not near the North
20 Delta Diversion, no.

21 MR. FERGUSON: And why is that?

22 WITNESS NADER-TEHRANI: Because it -- My -- My
23 understanding how Delta works, and I've actually looked
24 at the water quality data -- water quality output from
25 the model, and there's -- there's -- there is not a

1 salinity intrusion that go that far upstream.

2 MR. FERGUSON: So, in your opinion, it's the
3 salinity intrusion coming from the Bay which would --
4 which causes the salinity issues and the levels to go up
5 and down Emmaton. Is that what you're saying?

6 So you'd expect that same relationship, if you
7 will, or that same sort of . . . scenario, I guess, near
8 the North Delta Diversions; is that correct?

9 WITNESS NADER-TEHRANI: Well, as I said, I have
10 looked at the water quality results, and I see no trace
11 of ocean salinity intrusion anywhere near the intakes.

12 MR. FERGUSON: Okay. Thank you.

13 That concludes my questions. Thanks.

14 CO-HEARING OFFICER DODUC: Thank you,
15 Mr. Ferguson.

16 Let's do a quick check-in. Group Number 16?

17 Okay. We will resume at 1:15 with
18 cross-examination by the South Valley Water Association
19 and Friant and et al., Group 16.

20 (Luncheon recess was taken at 12:14 p.m.)

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23

24

25

1 Wednesday, August 24, 2016 1:15 p.m.

2 PROCEEDINGS

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4 CO-HEARING OFFICER DODUC: (Banging gavel.)

5 Good afternoon, everyone. It is 1:15. We are
6 back in session with cross-examination by Group 16.

7 Before we begin, Mr. Adams, let me do a -- Just
8 for planning purposes, let's just run a quick rundown.

9 Mr. Adams, how long do you expect Group 16 will
10 take?

11 MR. ADAMS: I anticipate having about 15
12 minutes worth of questions.

13 Mr. Cardella will also have a few questions.
14 I'm not sure how much time he anticipates having.

15 MR. CARDELLA: Nicolas Cardella for South
16 Valley Water Association.

17 I think maybe between 15 and 30 minutes.

18 CO-HEARING OFFICER DODUC: Okay. Group 17, are
19 you here?

20 Okay. 18, Mr. O'Laughlin.

21 How much time? An hour?

22 MR. O'LAUGHIN: An hour.

23 CO-HEARING OFFICER DODUC: Okay. So that
24 should take us to about 2:30.

25 Group 19.

1 I don't see Miss Meserve here.

2 Group 20?

3 21? Well, hopefully, they'll show later or
4 not.

5 22?

6 MS. TABER: Good afternoon. City of Stockton
7 anticipates 20 minutes.

8 CO-HEARING OFFICER DODUC: Okay. So that
9 should get us to about -- Okay. One more.

10 Stockton East, 23?

11 Group 24 has requested to go out of order.

12 25?

13 MR. MILJANICH: Peter Miljanich, Solano County.
14 I'm expecting about 40 to 45 minutes.

15 CO-HEARING OFFICER DODUC: Okay. That should
16 get us to about 4 o'clock.

17 26?

18 27?

19 28?

20 Mr. O'Laughlin?

21 MR. O'LAUGHIN: Yeah. Just, you keep saying
22 that you're going to get to 4 o'clock.

23 There's, as you know, a lot of people,
24 Mr. Herrick and so forth and so on, that we've been
25 having e-mail communications and text messaging, and I

1 think some of the people you're skipping over are going
2 to be showing up after lunch, so you can well expect that
3 there are -- some of the people that aren't here right
4 now, they know that they're coming up and they're --
5 they're going to be here.

6 CO-HEARING OFFICER DODUC: Yes. I'm --

7 MR. O'LAUGHIN: That's --

8 CO-HEARING OFFICER DODUC: -- doing this so
9 they will get the message to get here.

10 So, if they don't get here, hint hint.

11 28?

12 29?

13 I don't see Mr. Brodsky here.

14 Okay. Let -- Well, we'll just end it there for
15 now.

16 Okay. But that should have the afternoon
17 planned out nicely.

18 Mr. Adams, please begin.

19 MR. ADAMS: Thank you.

20 CROSS-EXAMINATION BY

21 MR. ADAMS: Good afternoon. My name is Greg
22 Adams. I represent -- I'm appearing here on behalf of
23 Friant Water Authority.

24 Most of my questions -- Most of my questions
25 will be directed to Mr. Munévar.

1 So, Mr. Long, could you please pull up DWR-5e.
2 It's Slide 36.

3 CO-HEARING OFFICER DODUC: Oh, Mr. Adams, I'm
4 sorry, another quick question.

5 Topics you're covering.

6 MR. ADAMS: The topics I have are assumptions
7 relating to deliveries to the Exchange Contractors.

8 CO-HEARING OFFICER DODUC: Okay.

9 MR. ADAMS: And that's actually the only topic
10 I'll be covering.

11 CO-HEARING OFFICER DODUC: Okay. Thank you.

12 MR. ADAMS: Modeling assumptions.

13 (Document displayed on screen.)

14 MR. ADAMS: So, as you can see from the title
15 of this document -- So DWR-5e, Slide 36, is Annual CVP
16 Exchange Contractors Deliveries.

17 And in an effort to follow the Chair's request
18 not to go over foundation issues for a long time, I
19 assume that, since you prepared this slide -- Actually, I
20 guess I should first ask:

21 Did you prepare this slide?

22 WITNESS MUNÉVAR: Yes, I did.

23 MR. ADAMS: And so can I assume you're familiar
24 with the general water delivery requirements of the
25 Exchange Contract?

1 WITNESS MUNÉVAR: Generally. And I'll ask
2 Kristin White to engage where she needs to be.

3 MR. ADAMS: Okay. Perfect.

4 So the first question is: What is the source
5 of water that the model assumes will be used to meet
6 deliveries to the Exchange Contractors?

7 WITNESS MUNÉVAR: All of the deliveries assumed
8 in the model and presented here are from Delta -- Delta
9 supplies.

10 MR. ADAMS: And --

11 WITNESS WHITE: And --

12 MR. ADAMS: -- so --

13 WITNESS WHITE: I was just going to add a point
14 of clarification.

15 This slide is a tad misleading. This is not
16 just the Exchange Contractors, but it includes the
17 San Joaquin Settlement Contractors, which have an
18 additional, I want to say it's 35,000 acre-feet,
19 something like that. So it's both in mind.

20 MR. ADAMS: So both -- both -- Given the total
21 quantities down below, it's both the change contractors.

22 WITNESS WHITE: (Nodding head.)

23 MR. ADAMS: Okay. Perfect. Thank you.

24 So, to follow up on that last question:

25 Does the model assume that any deliveries will

1 be made to the Exchange Contractors from the San Joaquin
2 River?

3 WITNESS WHITE: Our CalSim modeling does not
4 show any conditions where the Exchange Contractors are
5 being met with releases from Friant.

6 MR. ADAMS: Okay. Thank you.

7 Mr. Milligan testified last week that -- He
8 testified that one of the model assumptions is to try to
9 meet the terms of the Exchange Contract.

10 Would you agree with that characterization?

11 WITNESS WHITE: Yes.

12 MR. ADAMS: Okay. Perfect.

13 He also -- He also called it a first priority
14 of the model to meet the Exchange Contract.

15 Would you agree with that as well?

16 WITNESS WHITE: I'm not aware if it's the
17 absolute first, but it's definitely one of the highest.

18 MR. ADAMS: And I think he used the article
19 "a," so a first priority is to the Exchange Contract.

20 So you'd agree with that?

21 WITNESS WHITE: Yes.

22 MR. ADAMS: So, what do the model simulations
23 show -- Excuse me.

24 What do the model simulations show is the
25 impact on upstream reservoir storage levels from this

1 assumption to meet the Exchange Contract from Delta water
2 supplies? And in particular, I'm thinking about dry --
3 dry-year periods.

4 WITNESS MUNÉVAR: I think the model results
5 show the effect on upstream storage of many conditions,
6 not isolated just for the -- for the Exchange Contractor
7 deliveries. So it includes water quality control
8 planning stream flows, other senior water right users.

9 MR. ADAMS: Okay. So . . .

10 I mean, is that -- is that relating to all of
11 those other priorities under the model?

12 WITNESS WHITE: That's correct.

13 MR. ADAMS: That's correct.

14 So, as a result of those priority uses, what --
15 what . . .

16 During -- During dry years, do those priority
17 uses cause the reservoir levels to be drawn down to lower
18 levels than perhaps would be -- than you typically see in
19 general operations?

20 MR. BERLINER: Objection: Vague and ambiguous.

21 CO-HEARING OFFICER DODUC: Mr. Adams, could you
22 try --

23 MR. ADAMS: Yeah, I can try and clarify that.

24 CO-HEARING OFFICER DODUC: Yes.

25 MR. ADAMS: I would say -- So, using the model

1 simulations to meet these demands of these higher
2 priority uses, does -- do those simulations show, during
3 dry years, reservoir levels being drawn down to lower
4 levels than under similar conditions . . .

5 Excuse me. Let me phrase it this way.

6 The first No-Action Alternative versus your
7 Project, so your Boundary 1/2 analysis.

8 In the No-Action Alternative, are -- are
9 reservoir levels shown to be drawn down to a lower level
10 than they are with -- with -- with the Project?

11 MR. BERLINER: Objection: Asked and answered.

12 We've spent a lot of time on end-of-season
13 storage for reservoirs.

14 CO-HEARING OFFICER DODUC: What -- What
15 specifically are you looking for, Mr. Adams?

16 MR. ADAMS: Well, I'm -- I'm -- I guess maybe I
17 didn't -- Can we hear it yesterday?

18 I'm trying to understand, as -- that whether
19 meeting these priority -- whether meeting these demands
20 causes reservoirs to be drawn down to a . . .

21 I guess I'm getting to the -- the question of
22 the -- the -- the realistic nature of the assumption,
23 whether the assumption is realistic given what happens
24 in -- in -- in actual practice.

25 CO-HEARING OFFICER DODUC: Ask that.

1 MR. ADAMS: So, given what happens in actual
2 practice, is the modeling assumption realistic compared
3 to what has happened? So the drawing down of the
4 reservoir, is that comparable to what has happened in the
5 past?

6 WITNESS WHITE: I don't think any of these
7 models, you can really compare to what happened in the
8 past because they include climate change, so they include
9 the sea-level rise and the effects of climate change
10 on -- as the reservoir flows. So because of that, it's
11 really an unfair comparison to compare to the past two or
12 three years.

13 But they are drawn down low. And I think it's
14 relatively the same frequency from No-Action with the
15 alternatives.

16 MR. ADAMS: I guess the question is, we're here
17 to determine impacts to legal water users; right? And
18 this model is being brought forward to show that there
19 are no -- the Protestants, however -- excuse me -- the
20 Petitioners' allegation that there are no impacts so we
21 went to -- excuse me, let me slow down -- that there are
22 no impacts to legal users of water.

23 So you're saying that we can't use it for
24 comparative purposes against what's happened in the past?

25 WITNESS WHITE: I said it's not fair to look at

1 those results and compare it to recent hydrology because
2 it includes climate change assumptions.

3 MR. ADAMS: The -- The No-Action Alternative
4 and Boundary 1 through 4, H2, H4?

5 WITNESS WHITE: All of those.

6 So the comparison is appropriate between the
7 No-Action and the alternatives, but then I think the
8 frequency of low storage is relatively similar.

9 MR. ADAMS: But I -- I believe you did mention
10 it does show that reservoirs are being drawn down over
11 the course of this time; is that correct?

12 WITNESS WHITE: Can you be more specific what
13 you mean "over the course of this time"?

14 MR. ADAMS: Well, so the reservoirs are being
15 drawn down . . .

16 In order to meet these demands, one of the way
17 the model forces the -- the deliveries to the Exchange
18 Contractors is to draw down reservoir levels; is that
19 correct?

20 WITNESS WHITE: That would be --

21 MR. ADAMS: Reservoir -- Excuse me.

22 WITNESS WHITE: That would be one of the -- of
23 the many demands that the -- the model's trying to meet.
24 So it could be that it's actually meeting another water
25 quality requirement or in-stream flow requirement and

1 then the exchange -- the water is pumped up the Delta to
2 meet the Exchange Contractor -- Contract amounts.

3 MR. ADAMS: All right.

4 WITNESS MUNÉVAR: Our experience in the -- in
5 the modeling is, the low -- the low storage levels,
6 particularly in Shasta, are -- are not significantly a
7 result of -- of Exchange Contractor demands. They are
8 primarily a result of -- of upstream operational
9 criteria.

10 MR. ADAMS: Okay. Thank you for that.

11 Are you aware that releases of San Joaquin
12 River water from Millerton Lake were made to meet the
13 water demands of the Exchange Contractors during 2014 and
14 2015?

15 MR. BERLINER: Objection: Relevancy.

16 We've already established that San Joaquin's
17 not in the models.

18 CO-HEARING OFFICER DODUC: Mr. Adams.

19 MR. ADAMS: Well, I guess the relevancy is, the
20 the Friant Division are legal users of water and we're
21 here to determine whether this Project will impact legal
22 users of water.

23 So I guess that goes directly to the question:
24 Although the Friant -- Friant users use water from
25 Millerton Lake, that is correct, but the -- the nature of

1 them, obviously, is, they intertie with the Exchange
2 Contractors, and the water that's actually delivered to
3 the Exchange Contractors has a significant impact on what
4 water the Friant Division contractors are able to
5 receive.

6 So I think it's directly relevant to whether
7 Friant Division contractors will be injured as a result
8 of this project.

9 CO-HEARING OFFICER DODUC: Answer to the best
10 of your ability, please.

11 WITNESS WHITE: I'm generally aware, but not on
12 the details, though.

13 MR. ADAMS: And that's fine.

14 So given -- given what has happened in
15 2013-2015, do you think the assumption of the model that
16 none -- no water will be delivered to the Exchange
17 Contractors from the San Joaquin River is consistent with
18 how the Project would be operated?

19 WITNESS WHITE: I think Mr. Munévar has already
20 addressed that the short-term emergency actions that were
21 taken in 2014 and 2015 are not included in CalSim, and so
22 I think we have gone over, during those drought
23 operations, CalSim's not -- not reflecting all the
24 short-term actions in real-time operational changes that
25 might happen.

1 MR. ADAMS: Has there been any model --
2 modeling presented for this proceeding analyzing . . .
3 well, that simulates what will occur? And maybe you've
4 answered this.

5 Has there been any modeling prepared for this
6 proceeding that would simulate what would occur if the
7 source of water used to meet the Exchange Contract is
8 San Joaquin River water?

9 WITNESS MUNÉVAR: I think we've answered that
10 multiple times.

11 Right now, the water that's being delivered is
12 Delta water, not San Joaquin water.

13 MR. ADAMS: And so there's been -- Okay. I'll
14 leave it at that.

15 And I guess my final question here:

16 Has there been any modeling prepared for this
17 proceeding analyzing the impacts of the Cal WaterFix
18 scenarios on water deliveries to Friant Division
19 contractors?

20 WITNESS WHITE: As I understand it, there is no
21 change to Friant or any other operations on the
22 San Joaquin as a result of this Project, on upper --
23 upstream of Vernalis.

24 MR. ADAMS: So -- But has there been any
25 modeling presented in this proceeding to support that,

1 that statement that you just made?

2 WITNESS WHITE: Is there a model to show that
3 Friant deliveries haven't changed between the No-Action
4 and the alternatives?

5 MR. ADAMS: Correct.

6 Has there been any modeling to show --
7 analyzing the impacts on Cal WaterFix scenarios, so
8 Boundary 1 through Boundary 4 on water deliveries to
9 Friant contractors?

10 WITNESS MUNÉVAR: The modeling includes -- as a
11 part of its outputs, includes deliveries to all water
12 users and including San Joaquin and Friant water users,
13 and that was provided in the early May/late May in terms
14 of all the modeling outputs.

15 WITNESS WHITE: Friant deliveries are a
16 component of CalSim --

17 MR. ADAMS: Okay.

18 WITNESS WHITE: -- if we weren't clear with
19 that.

20 So -- So they don't change. And those would be
21 in all the model outputs. I don't know that we actually
22 have a graph showing that in this proceeding, though.

23 MR. ADAMS: But -- So that would be, again --
24 Okay. I guess that answers my question.

25 So it would be inside the modeling inputs that

1 were disclosed in May.

2 WITNESS WHITE: Yes.

3 WITNESS MUNÉVAR: Just to reiterate what
4 Kristin said: We are seeing no changes on the
5 San Joaquin system upstream of Vernalis as part of the
6 California WaterFix compared to the No-Action.

7 MR. ADAMS: Okay. And that's all the questions
8 I have.

9 Thank you.

10 CO-HEARING OFFICER DODUC: Thank you.

11 Mr. Cardella.

12 CROSS-EXAMINATION BY

13 MR. CARDELLA: Good afternoon, everybody.
14 Nicolas Cardella for South Valley Water Association.

15 I just have a few followup questions regarding
16 the assumptions made for Exchange Contractor deliveries.
17 That's going to be primarily for Mr. Munévar.

18 And after that, I have a few questions
19 regarding the 2003 peer review of CalSim.

20 So, given what was mentioned in the prior
21 testimony regarding Exchange Contractor deliveries, in
22 your opinion, is the modeling submitted for this
23 proceeding an appropriate tool for determining whether
24 California WaterFix's implementation might increase the
25 likelihood that Exchange Contractors and Managers are

1 satisfied from sources other than Delta?

2 WITNESS MUNÉVAR: I think the modeling that's
3 prepared is adequate for evaluating impacts of California
4 WaterFix on -- on operations of SWP and CVP, including
5 the frequency of impacts to water users.

6 MR. CARDELLA: Well, that wasn't quite my
7 question.

8 At least assume for me that they are . . .
9 Strike that.

10 I believe you testified just now that there's
11 no modeling submitted for this proceeding that shows
12 water use to satisfy Exchange Contractor demands from
13 sources other than the Delta; is that correct?

14 WITNESS MUNÉVAR: That's correct. And that's
15 the same in the No-Action as well as all of the Water --
16 WaterFix layers.

17 MR. CARDELLA: Okay. So, given that fact, do
18 you think the model would be an appropriate tool for
19 determining whether implementation of the WaterFix might
20 increase the likelihood of water being used from sources
21 other than the Delta to satisfy Exchange Contractor
22 demands?

23 WITNESS MUNÉVAR: I think the modeling is
24 indicative of the solutions that might lead to those in
25 terms of --

1 MR. CARDELLA: That's not my question.

2 WITNESS MUNÉVAR: I'm trying to answer your
3 question.

4 MR. CARDELLA: My question is whether the
5 model's an appropriate tool.

6 WITNESS MUNÉVAR: Yes. I'm getting there.

7 MR. CARDELLA: Okay.

8 WITNESS MUNÉVAR: Just a moment.

9 If the modeling is an appropriate tool for
10 indicating the conditions, as Kristin mentioned, in
11 recent years there have been operation decisions that are
12 different than what the modeling has indicated.

13 But the modeling indicates that there's no
14 change in that condition between the WaterFix and the
15 No-Action.

16 So it is an appropriate tool for evaluating the
17 change of the effects of the WaterFix as compared to
18 No-Action.

19 MR. CARDELLA: Is it possible for the modeling
20 submitted for this proceeding to produce an outcome where
21 Exchange Contractor demands are satisfied from a source
22 in the Delta?

23 WITNESS MUNÉVAR: No, we've not prepared that
24 modeling.

25 MR. CARDELLA: Okay. So is the modeling

1 submitted for this proceeding an appropriate tool for
2 determining whether that would likely -- the likelihood
3 of that would increase as a result of implementation of
4 the WaterFix?

5 CO-HEARING OFFICER DODUC: Mr. Cardella, now
6 you're starting to confuse me.

7 The testimony received to date, Operations,
8 Project Description, Modeling, have all been focused on
9 Delta as a source of water.

10 MR. CARDELLA: Um-hmm.

11 CO-HEARING OFFICER DODUC: You are
12 hypothesizing something that is not part of the Project
13 Description in asking whether it was modeled -- whether
14 or not the current model is appropriate for that
15 scenario.

16 I am not making the connection.

17 MR. CARDELLA: Let me see if I can make it for
18 you.

19 We know that this has happened in the past two
20 years, in 2014 and 2015. And what my clients are
21 interested in knowing is whether that practice might
22 increase in frequency under the California WaterFix.

23 CO-HEARING OFFICER DODUC: Understood.

24 My -- Well, you're free to answer otherwise,
25 but my understanding was that that scenario was not

1 modeled and that the model is not capable currently of
2 making that analysis. Therefore, these folks wouldn't be
3 able to answer a question based on that scenario.

4 MR. CARDELLA: Well, I think they could answer
5 whether, based on those facts, using the model that we do
6 have, would be appropriate for answering that question.

7 CO-HEARING OFFICER DODUC: And I think they
8 have tried to answer that.

9 But, Mr. Munévar, one more time:

10 Is your CalSim model capable of analyzing the
11 impact if the source of the water was not Delta water?

12 WITNESS MUNÉVAR: I'll try one more time here.

13 The model itself is not capable of
14 transferring -- of having water delivered from the
15 San Joaquin for -- for the Exchange Contractors.

16 But, as I indicated, the results indicate that
17 there are no greater frequency of conditions as compared
18 to the No-Action that would indicate that that would be a
19 more likely result with the WaterFix as compared to
20 No-Action.

21 MR. CARDELLA: Okay. That's helpful. Thank
22 you.

23 Go ahead. I'd like to have the staff please
24 bring up SVA -- SVWA-1 at Page 9.

25 ///

1 (South Valley Water Association
2 Exhibit 1 marked for
3 identification)

4 (Document displayed on screen.)

5 MR. CARDELLA: Mr. Munévar, if you could go
6 ahead and read that first paragraph highlighted there and
7 let me know when you've finished.

8 WITNESS MUNÉVAR: Okay.

9 MR. BERLINER: Could we get some information
10 about what this document is?

11 MR. CARDELLA: Yeah. This is the peer review
12 conducted in 2003 for the CalSim. This is by the -- I
13 believe, the Independent Science Panel. I'm not sure if
14 that's their official name. It should be labeled in the
15 document.

16 MR. BERLINER: Maybe we could scroll to that.

17 CO-HEARING OFFICER DODUC: Can you re-scroll to
18 the cover sheet?

19 (Document displayed on screen.)

20 MS. RIDDLE: Are you planning to have this as
21 an exhibit?

22 MR. CARDELLA: Yes.

23 MS. RIDDLE: Have you numbered it so it --

24 MR. CARDELLA: (Nodding head.)

25 MS. RIDDLE: Okay.

1 MR. CARDELLA: Are you familiar with this
2 document?

3 WITNESS MUNÉVAR: I am. If you could go back
4 to the highlighted section, though.

5 (Document displayed on screen.)

6 MR. CARDELLA: Ready?

7 WITNESS MUNÉVAR: Yes.

8 MR. CARDELLA: So are real-time operations one
9 of the reasons why the model's unreliable when used in
10 predictive mode?

11 WITNESS MUNÉVAR: I would not use the term
12 "unreliable." I think they're -- When they're used in
13 predictive mode, they're likely being misused unless the
14 assumptions and the inputs are also in a predictive
15 manner.

16 MR. CARDELLA: Okay. And is one of the
17 purposes of the California WaterFix to increase
18 operational flexibility?

19 WITNESS MUNÉVAR: Well, I think others have
20 spoken to the specific purposes of the WaterFix but that
21 is one of the outcomes is increased operational
22 flexibility.

23 MR. CARDELLA: Would that include flexibility
24 for real-time operations?

25 WITNESS MUNÉVAR: I think that certainly would,

1 but that's not my area of expertise.

2 MR. CARDELLA: So if real-time operations
3 create problems for the model when used in the predictive
4 mode, and the WaterFix would add flexibility to the
5 Projects, including flexibility to real-time operations,
6 then would the errors associated with modeling real-time
7 operations for predictive purposes similarly affect the
8 models used for comparative analysis?

9 WITNESS MUNÉVAR: But we've not applied the
10 model in the predictive sense.

11 I'm not certain of the question.

12 MR. CARDELLA: Well, I believe there's been
13 testimony to the effect that the model isn't appropriate
14 to be used in the predictive sense and one of the reasons
15 for that is because of real-time operations; is that
16 correct?

17 WITNESS MUNÉVAR: That's one of the reasons,
18 but we're doing a long-term planning model. We're not
19 trying to predict the specific future. We're looking at
20 the range of hydrologic conditions and how the Project
21 will respond to those conditions.

22 MR. CARDELLA: What I'm trying to understand
23 is, if there are certain factors that render the model
24 unfit for use in the predictive mode, might those factors
25 also render the model unfit in the comparative mode?

1 WITNESS MUNÉVAR: I think the Operator
2 discretion that occurs, that is not included in the
3 modeling, in response to real-time conditions are likely
4 the same things that would occur in the No-Action and any
5 of the WaterFix scenarios such that the comparability of
6 them are likely to be very similar.

7 WITNESS WHITE: I'd also like to add that the
8 document where some of these quotes are coming from is
9 2003, which is prior to our 2008-2009 Biological
10 Opinions, which added a significant amount of demand on
11 the system. And they're also prior to this recent
12 drought, which we learned quite a bit about.

13 So I think it's good to keep that in context of
14 when -- when these comments were made on CalSim.

15 MR. CARDELLA: Do you think the time that this
16 report was published has any relevance to whether that
17 statement is accurate?

18 WITNESS WHITE: I do. I think these statements
19 seem to point to . . . perfect fore -- perfect foresight
20 as a problem in the model and being used in a predictive
21 manner, which is still true.

22 But -- But they don't -- I think what we would
23 refer to now as some other issues would be things that
24 Mr. Munévar already addressed, such as the drought
25 operations, situations where the system is overtaxed,

1 basically, and difficult decisions have to be made.

2 I don't know that those were in their minds
3 when they wrote this in 2003.

4 MR. CARDELLA: Okay. So I think what you said
5 earlier is that the impacts that are resulting from the
6 problems that the model has with real-time -- real-time
7 operations, they would be the same in both the No-Action
8 Alternative and in the various scenarios; is that
9 correct?

10 WITNESS MUNÉVAR: I would not call them
11 problems. They are -- They are areas that are not
12 specifically not included in the modeling.

13 MR. CARDELLA: But they're the same in both the
14 No-Action Alternative and the other alternative
15 scenarios.

16 WITNESS MUNÉVAR: The real-time operational
17 flexibility is not included in either -- in any of the
18 scenarios, No-Action and California WaterFix.

19 MR. CARDELLA: Okay. So if you wanted to
20 determine the impacts associated with any changes to
21 real-time operations, where would you look to find the
22 answer to that?

23 WITNESS MUNÉVAR: I think we need to be careful
24 on the use of modelings.

25 A modeling is to reflect the long term and

1 frequency of changes. The Operators, I think, presented
2 at great detail the operational discretion that occurs.
3 And that -- that Operations Panel is probably likely the
4 best one to respond to where the operations could change
5 and how they would change under what conditions. I
6 believe they explained that in some detail last week.

7 MR. CARDELLA: Thank you.

8 But my question is: Does the model address
9 that issue?

10 WITNESS MUNÉVAR: And I think my response is
11 no.

12 MR. CARDELLA: Thank you.

13 WITNESS MUNÉVAR: It has been.

14 MR. CARDELLA: That's all I have. Thank you.

15 CO-HEARING OFFICER DODUC: All right. Group
16 Number 17?

17 Seeing no one, Group Number 18?

18 Mr. O'Laughlin.

19 Mr. O'Laughlin, could you --

20 MR. O'LAUGHLIN: Yes, ma'am.

21 CO-HEARING OFFICER DODUC: -- walk us through
22 the topic areas you'll be exploring.

23 MR. O'LAUGHLIN: Yeah. I'm kind of myopic and
24 provincial, so basically we will be focused on the
25 San Joaquin River, Stanislaus, Vernalis, Old and Middle

1 River flows.

2 Let's see, what else do I have?

3 Oh. Appropriate Delta flow criteria again.

4 CO-HEARING OFFICER DODUC: And will you be
5 exploring that in terms of modeling assumption, modeling
6 output, all the above?

7 MR. O'LAUGHLIN: Pretty much all of the above.

8 I think it's going to be, if -- I listened to
9 the testimony yesterday and if I kind of understand what
10 they did, I think it shouldn't take too long. Probably
11 about an hour.

12 CO-HEARING OFFICER DODUC: All right.

13 MR. O'LAUGHLIN: It's going to be -- But it's
14 mainly going to be San Joaquin River at Vernalis and
15 south.

16 CO-HEARING OFFICER DODUC: All right.

17 MR. O'LAUGHLIN: Thank you.

18 CO-HEARING OFFICER DODUC: By the way, just so
19 everyone knows: It is helpful for us to have an idea of
20 where you're going, the topics you're exploring.

21 MR. O'LAUGHLIN: Yeah.

22 CO-HEARING OFFICER DODUC: It helps us to
23 follow along.

24 MR. O'LAUGHLIN: Yeah, I agree. And to give
25 you a little more context really is, we've heard from the

1 Operation Panel about what they were looking for from
2 San Joaquin, so basically since Mr. Milligan and company
3 deferred to the Modeling Panel on some of what was in the
4 model, I will be asking questions to modelers about
5 exactly what we can expect to see from the San Joaquin
6 River and how that lines up with the modeling that was
7 done and if there is any impact to legal users of water
8 on the San Joaquin River system.

9 So -- I don't know -- I have to plead the fifth
10 to some degree yesterday. I didn't listen to the scope
11 and extent of all the testimony yesterday.

12 And if the Chair would bear with me, I can blow
13 through a lot of the questions pretty quickly, but I may
14 be repetitive to some degree. So be with me.

15 CO-HEARING OFFICER DODUC: Just don't bore me,
16 Mr. O'Laughlin.

17 MR. O'LAUGHLIN: I hope I don't do that.

18 (Laughter)

19 CROSS-EXAMINATION BY

20 MR. O'LAUGHLIN: So, can somebody on the panel
21 describe for me generally how the San Joaquin River was
22 modeled for the modeling work that was done for the
23 presentation?

24 WITNESS WHITE: Can you be just a tad more
25 specific?

1 MR. O'LAUGHLIN: Yeah. I want the -- So, did
2 you -- Well, let me ask it a different way.

3 Did you model the entire San Joaquin River
4 Basin and then add a node at Vernalis, or did you start
5 at Vernalis and work back upstream? Which way did you do
6 it?

7 WITNESS WHITE: I think there's a number of
8 criteria and operating rules that are in there and they
9 work both ways.

10 MR. O'LAUGHLIN: Okay. So, can you -- And were
11 you the person in charge with coming up with the modeling
12 for the San Joaquin River portion side of the
13 presentation?

14 WITNESS WHITE: Well, because the San Joaquin
15 portion didn't change in this modeling, none of the
16 assumptions changed, and none of the criteria changed
17 from Vernalis and upstream, it -- we took the general
18 assumptions from the previous model that we put together.

19 MR. O'LAUGHLIN: Okay. And when you say
20 "we" --

21 WITNESS WHITE: The Reclamation--

22 MR. O'LAUGHIN: "We" being Reclamation;
23 correct?

24 WITNESS WHITE: Correct.

25 MR. O'LAUGHLIN: Can you give us a little bit

1 of background on how -- Have you run CalSim II before?

2 WITNESS WHITE: Yes.

3 MR. O'LAUGHLIN: Okay. How long have you been
4 working with CalSim II?

5 WITNESS WHITE: Well, I started working with
6 the operating system eWRIMS in 2010 and I -- in the
7 Klamath Basin and I moved into the CalSim, I'm going to
8 say, end of 2012, 2011, something like that.

9 MR. O'LAUGHLIN: And so you're familiar with
10 San Joaquin River operations and using CalSim II.

11 WITNESS WHITE: Somewhat. As a Reclamation
12 employee, we typically focus on the Stanislaus and -- and
13 the Restoration Program as it applies.

14 MR. O'LAUGHLIN: And Vernalis. In meeting the
15 criteria at Vernalis?

16 WITNESS WHITE: Correct.

17 MR. O'LAUGHLIN: Okay. In regards to the
18 modeling work that was done, did -- how were the flows
19 from Buchanan modeled in the presentation? The model,
20 PKM.

21 WITNESS WHITE: So, can you be more specific on
22 the presentation?

23 MR. O'LAUGHLIN: Yeah. Were water releases
24 made from Buchanan as part of the modeling work that was
25 done for CalSim II? If you know.

1 WITNESS WHITE: I am not familiar with Buchanan
2 releases.

3 MR. O'LAUGHLIN: Okay.

4 WITNESS WHITE: But they did not change between
5 any of the actions and alternatives.

6 MR. O'LAUGHLIN: What about hidden reservoir?

7 WITNESS WHITE: Same thing; same answer.

8 MR. O'LAUGHLIN: Okay. There's been some
9 discussion about the San Joaquin River Restoration
10 program. So how were San Joaquin River Restoration
11 Program flows modeled.

12 WITNESS WHITE: For the purpose of this
13 modeling, we did not include their release from Friant.

14 MR. O'LAUGHLIN: Okay. So if there were no --
15 I'm going to go to the next step which seems like an
16 obvious question.

17 If there were no releases from Friant under the
18 San Joaquin River Restoration Program, I'm assuming there
19 was no modeling work done at looking at picking up
20 restoration flows in the Delta; is that correct?

21 WITNESS WHITE: There was no recapture
22 re-circulation program modeled in this -- for this
23 Project --

24 MR. O'LAUGHLIN: Okay.

25 WITNESS WHITE: -- because it has not been

1 completed.

2 MR. O'LAUGHLIN: How -- What flows were used
3 for the Merced River as part of the modeling?

4 WITNESS WHITE: I think both the Merced and the
5 Tuolumne use the minimum FERC flows.

6 MR. O'LAUGHLIN: When you say you think, are
7 you the person more knowledgeable on this panel about
8 what flows were used on those river systems?

9 WITNESS WHITE: To be more specific, we --
10 between 2010 and 2015, we, Reclamation, along with -- in
11 coordination with DWR removed the VAMP flows and the VAMP
12 contributions from -- from the previous versions of the
13 model, and I believe what's left is the -- the minimum
14 FERC requirements.

15 MR. O'LAUGHLIN: In the testimony by
16 Mr. Munévar, it says that, on Page 71, that reservoir
17 operations at New Melones were adjusted to meet D-1641
18 flows at Vernalis.

19 Can you explain what -- how the modeling works
20 at Vernalis -- I mean, not at Vernalis -- at New Melones
21 in regards to the priority of water release?

22 WITNESS WHITE: Because you're basing this on
23 testimony, can I see where you're talking about?

24 MR. O'LAUGHLIN: Sure. It's DWR-71, Page 5,
25 Lines -- I believe it's 14 to 15.

1 MR. BERLINER: Page 5.

2 MR. O'LAUGHLIN: Yeah, Page 5.

3 (Document displayed on screen.)

4 MR. O'LAUGHIN: Yeah. Right there. It says,
5 Table 1 CalSim also adjusted operations in the New
6 Melones Reservoir D-1641 at San Joaquin/Vernalis for
7 those locations.

8 Do you see that?

9 WITNESS WHITE: Yes. Can you scroll to see
10 what topic -- what title?

11 MR. O'LAUGHLIN: Sure.

12 I'm just trying to see the category -- or the
13 title of this section.

14 (Scrolling up document.)

15 WITNESS WHITE: I think this -- Oop, that's it
16 right there. Sorry. Line 28.

17 So, this section's describing how CalSim in
18 general models the D-1641 standards, so it's -- when it
19 says "adjusted," it's not saying between alternatives.
20 It's the same between the No-Action and all the
21 alternatives.

22 But, yes, I see this section.

23 MR. O'LAUGHLIN: Okay. So, is it your
24 understanding that when the model is working in this
25 regards to meet D-1641 at Vernalis, that water is

1 released up to the amount necessary from New Melones to
2 meet the requirement at Vernalis?

3 WITNESS WHITE: Can you be more specific on
4 which requirement?

5 MR. O'LAUGHLIN: Sure. The February through
6 June outflow requirement, or base flow requirement.

7 WITNESS WHITE: Yes. The February to June base
8 flow requirement in D-1641 is assumed to be met from New
9 Melones to the Stanislaus River from what hasn't been met
10 through the rest of the upper San Joaquin.

11 MR. O'LAUGHLIN: And that would be under all --
12 all conditions and all hydrology?

13 WITNESS WHITE: I believe so. I know there's a
14 couple instances where New Melones goes to dead pool. I
15 cannot remember off the top of my head what Vernalis is
16 like at this point.

17 MR. O'LAUGHLIN: All right. So then the next
18 one, is there -- is it your understanding that there's an
19 April-May pulse flow and that it impeded within D-1641?

20 WITNESS WHITE: It's my understanding there was
21 an April-May pulse flow that was originally in Table 3
22 that was overwritten by VAMP for a -- for a temporary
23 period of time, which is not undue.

24 MR. O'LAUGHLIN: So maybe an easier way to ask
25 the question is: What modeling assumption did you use to

1 meet the April-May pulse flow requirement from New
2 Melones at Vernalis?

3 WITNESS WHITE: So, at the time we were putting
4 these model assumptions together, we conferred as Ron
5 Milligan testified with our operations and with other
6 Managers to determine what the most appropriate pulse
7 flow response should be in CalSim, not just for this
8 Project but for -- for any Project in the absence of
9 VAMP.

10 At that time, it was unclear where the
11 responsibility was going to lie for those Table 3 pulse
12 flows, and so the assumption was made that, for the
13 purposes of the Stanislaus and New Melones operations,
14 the pulse flow contribution will be the 2009 Biological
15 Opinion in Table 2B -- or, sorry -- Appendix 2B flows,
16 along with the contribution from the minimum FERC
17 compliance within the Tuolumne and any flood releases
18 from Friant.

19 MR. O'LAUGHLIN: Have you quantified anywhere
20 the difference between Table 2e Biological Opinion,
21 April-May pulse flows, and the deficit at Vernalis to
22 meet the objectives?

23 WITNESS WHITE: Well, it's a little bit of an
24 unfair comparison, because Vernalis has contributions
25 from all the other tributaries as well -- as well as any

1 flood flows or anything coming down out of the
2 San Joaquin.

3 So, as far as just straight the Table 2e
4 compared to Vernalis, I'm -- I'm sure I have looked at
5 those at some point but I don't know off the top of my
6 head.

7 MR. O'LAUGHLIN: Well, one of the things I'm
8 interested in, and maybe you can help me and the Board I
9 understand:

10 I understand, based on the modeling, that TUCPS
11 will be sought. But what I'm asking is, in regards to
12 the reading the current by -- the current April to May
13 pulse flow requirement, do you know how often that is
14 being met by Table 2e flows?

15 WITNESS WHITE: Are you talking about in recent
16 operations?

17 MR. O'LAUGHLIN: Now, in the past, going
18 forward, whenever you have an idea.

19 WITNESS WHITE: Well, when -- when we were
20 under VAMP, the Table 2 -- the Table 3 pulse flows were
21 not -- were not in effect. The VAMP flows were in
22 effect.

23 MR. O'LAUGHLIN: Right.

24 WITNESS WHITE: And since the Table 3 pulse
25 flows have been in effect, we've been in a drought.

1 MR. O'LAUGHLIN: Okay. And the Table 2e flows
2 being the only amount of water being released, how
3 short -- how short is Reclamation from meeting the flow
4 requirements at Vernalis during the April-May period?

5 WITNESS WHITE: If you're referring to recent
6 operations, I would have to defer to Ron Milligan. I
7 don't -- I'm not aware of the exact quantity of
8 differences were the drought period and real-time
9 operations.

10 MR. O'LAUGHLIN: Okay. So did you do any
11 modeling analysis of the -- Let me put it a different
12 way.

13 So, when you ran the D-1641 modeling at New
14 Melones, did you put the Table 2es as a priority release
15 or did you put D-1641 releases as a priority release?

16 WITNESS WHITE: Can you define "priority
17 release"?

18 MR. O'LAUGHLIN: Yeah, sure.

19 Did you -- When you were running -- setting up
20 the model, did you make sure the model met D-1641 flow
21 obligations first or did you make it Table 2e operations
22 first?

23 MS. AUFDEMBERGE: I'm going to have to object
24 to that question. It calls for a legal conclusion.

25 CO-HEARING OFFICER DODUC: He's asking from a

1 modeling perspective.

2 MR. O'LAUGHLIN: Yes.

3 CO-HEARING OFFICER DODUC: Please answer if you
4 can.

5 WITNESS WHITE: From the modeling perspective,
6 the way the CalSim works on the Stanislaus in specific
7 because it sets a minimum flow at Goodwin. And that
8 minimum flow at Goodwin is determined based on whatever
9 is going to drive that flow.

10 So that minimum flow at Goodwin could be as
11 a -- as an absolute base, the -- the NBS Biological
12 Opinion. It could also be the dissolved oxygen
13 requirement at Ripon; it could also be driven by a
14 Vernalis salinity requirement or a Vernalis base flow
15 requirement. And I'm probably missing some. I think
16 that there's others.

17 MR. O'LAUGHLIN: That's close enough.

18 Okay. So, moving on then.

19 So did you -- When you were doing the modeling
20 for New Melones and using CalSim, what was the
21 requirements for the senior water right holders that was
22 embedded within your model?

23 WITNESS WHITE: Out of New Melones --

24 MR. O'LAUGHIN: Yeah.

25 WITNESS WHITE: -- you referred to?

1 MR. O'LAUGHLIN: Yes.

2 WITNESS WHITE: We modeled the 1980 stipulation
3 agreement with Oakdale Irrigation District and South
4 San Joaquin Irrigation District, consistent with how
5 we've done CalSim modeling for the past . . . I'm not
6 sure the last time we changed that. Ever since I've been
7 involved in CalSim.

8 MR. O'LAUGHLIN: Yeah. Actually, CalSim II as
9 a land use requirement and an ET requirement that the
10 model puts out on an yearly basis; is that correct?

11 WITNESS WHITE: Well, CalSim itself doesn't
12 calculate a land user ET. CalSim just assumes a certain
13 demand.

14 But, yeah, it's my understanding that land use
15 went into that demand assumption that was used as an
16 input value to CalSim.

17 MR. O'LAUGHLIN: So, in actuality, the model
18 doesn't actually give the two districts their full
19 entitlements each and every year; is that correct?

20 MS. AUFDEMBERGE: Objection: Calls for a legal
21 conclusion.

22 MR. O'LAUGHLIN: If you know. You know, it's
23 just a model.

24 How is it a legal conclusion when it's the
25 model?

1 CO-HEARING OFFICER DODUC: Mr. O'Laughlin,
2 that's fine.

3 Miss White, again, based on your --

4 MS. AUFDEMBERGE: The question is based on
5 entitlements, which is a legal conclusion.

6 Thank you.

7 MR. O'LAUGHLIN: Well, based on the '88
8 agreement, is it your understanding that, based on the
9 model used in CalSim II, that the Districts get the full
10 amount under the contract each and every year in the
11 model?

12 WITNESS WHITE: I think we made a huge jump
13 from talking about the -- in generality, the '88
14 agreement as modeled versus what the Districts are
15 actually delivering. It might be worth clarifying in the
16 record what is needed in the agreement versus what's in
17 the model.

18 Is that fair?

19 MR. O'LAUGHLIN: Sure. Go right ahead. I
20 think that would be helpful.

21 WITNESS WHITE: So, in the '88 agreement, it's
22 my understanding -- I'm clearly not a lawyer.

23 It's my understanding that the Districts are
24 allowed their demand up to the inflow or a maximum amount
25 of 600,000 acre-feet plus one-third the difference of 600

1 in the inflow. So, the amount that -- that they need up
2 to that limitation.

3 In CalSim, we have an input value that says --
4 that uses land use and then estimated land use
5 assumptions to predict what that demand will actually be.
6 I think it comes to an average of about 535,000
7 acre-feet. So it's still limited by the formula, but --
8 but it's also limited by land use in the model.

9 MR. O'LAUGHLIN: Thank you for that
10 explanation.

11 I looked at the DWR Exhibit 514, and there's
12 Figure 12 which is Shasta end-of-month storage September.
13 Oroville is figured 13, Folsom's 14, Trinity's 15.

14 Why isn't there an end-of-month storage
15 September for New Melones?

16 WITNESS WHITE: Because it's the exact same --

17 MR. O'LAUGHIN: Okay. Now --

18 WITNESS WHITE: -- in the No-Action.

19 MR. O'LAUGHLIN: -- you said earlier in the
20 modeling that was done for New Melones Reservoir, when
21 you were modeling meeting Table 2e flows and D-1641, were
22 you able to get through an entire 82 years of simulation
23 in every drought period?

24 WITNESS WHITE: Can you define "get through"?

25 MR. O'LAUGHLIN: Yeah. In other words, New

1 Melones didn't crash and burn and go to dead pool.

2 WITNESS WHITE: New -- There were instances
3 when New Melones went to dead pool throughout that
4 simulation.

5 MR. O'LAUGHLIN: Okay. Did you -- Did you put
6 that in a memo someplace, or is that readily assessable
7 so the Board Members and the staff can see when New
8 Melones Reservoir went to dead pool and wasn't able to
9 meet water downstream needs?

10 WITNESS WHITE: I don't know that I would agree
11 that it wasn't able to meet downstream needs. I think we
12 actually still met the -- some -- some very minimal flows
13 during the period that it went to dead pool.

14 But the New Melones storage, as well as
15 downstream flow requirements -- or assumptions in
16 modeling results, are included in the modeling that was
17 made available in May.

18 MR. O'LAUGHLIN: Okay. So in regards to New
19 Melones Reservoir when you were modeling it, and you were
20 heading down and you knew the reservoir was going to hit
21 dead pool, did you cut the river first or did you cut the
22 senior contractors first, the senior water right holders?

23 WITNESS WHITE: I'm not sure.

24 MR. O'LAUGHLIN: That's a perfectly fine
25 answer, if you don't know.

1 WITNESS WHITE: In the summer, we've got
2 priority water right deliveries. I think during those
3 periods, the CDP contract deliveries were zero, so that
4 wasn't available to be cut.

5 And then we also had dissolved oxygen, minimum
6 in-stream flows from the Trinity and Vernalis. And I'm
7 not aware of what -- what exactly was controlling the
8 inflow reduction at Goodwin or any . . .

9 MR. O'LAUGHLIN: So, in order to make the model
10 work, though, and you're running out of water, how is it
11 that you're allowing flow to go down? Do you cut Oakdale
12 and South San Joaquin's deliveries in order to make the
13 model work?

14 WITNESS WHITE: Again, I do not remember the
15 specifics of what got cut at what priority. At the time
16 the -- I think there were three or four months in the
17 82-year period of record when it was at dead pool.

18 MR. O'LAUGHLIN: All right.

19 When the modeling was done, did our -- the
20 operations that were occurring on the San Joaquin, were
21 those operations changed to meet any Delta inflow
22 requirements that weren't being met from other systems as
23 part of the Cal -- Cal -- California WaterFix Petition?

24 WITNESS WHITE: There were no changes upstream
25 of Vernalis for the No-Action or any of these

1 alternatives.

2 I'm a little bit unclear what "Delta inflow"
3 means, so I hope that answers your question.

4 MR. O'LAUGHLIN: And Vernalis. I used
5 Vernalis, too.

6 WITNESS WHITE: So, were there changes as
7 Vernalis?

8 MR. O'LAUGHLIN: Right.

9 WITNESS WHITE: No.

10 MR. O'LAUGHLIN: Do you know -- The same
11 question in regards -- Sorry, just covering my bases.

12 Were there any changes at Vernalis due to Delta
13 outflow requirements?

14 WITNESS WHITE: There were no changes to
15 Vernalis, period, regardless of the reason.

16 MR. O'LAUGHLIN: In the modeling that was done,
17 what hydrology was used by Reclamation in regards to
18 depicting the hydrology in the San Joaquin River Basin?
19 Did you use historical hydrology, or did you use
20 projected climate change hydrology?

21 WITNESS WHITE: We used historical hydrology as
22 adjusted for climate change.

23 And I'm going to defer to some of my other
24 colleagues up here if you have further questions on
25 exactly how we made those assumptions.

1 MR. O'LAUGHLIN: Sure.

2 So, I have one kind of beginning question.

3 So, in regards to the climate change in the
4 San Joaquin River Basin, did the runoff increase or
5 decrease at Vernalis under the climate change
6 alternative?

7 WITNESS MUNÉVAR: I believe that, under the
8 climate changes considered here at the 2025-2030 time
9 horizon, there was on an annual basis a slight decrease
10 in the San Joaquin River flows into the Delta.

11 MR. O'LAUGHLIN: And to follow up on that, my
12 understanding is, even with the decrease in the runoff
13 from the San Joaquin River Basin, that the -- under the
14 Petition that's been made, the outflow requirements could
15 still be met by the Projects as proposed in their
16 alternatives?

17 WITNESS MUNÉVAR: When you're speaking of
18 outflow requirements, you're talking about Delta outflow
19 or --

20 MR. O'LAUGHLIN: Delta outflow.

21 WITNESS MUNÉVAR: -- San Joaquin outflow?

22 MR. O'LAUGHLIN: No, Delta outflow.

23 WITNESS MUNÉVAR: Yes, as D-1641 or the
24 alternative outflow -- outflow components that are in the
25 other alternatives.

1 MR. O'LAUGHLIN: Okay. And I had the same
2 question in regards to the amount of water that the
3 Projects are able to divert in the Delta.

4 That didn't change one bit based on the
5 decrease in the climate change alternative; is that
6 correct?

7 WITNESS MUNÉVAR: So that -- No, that is not
8 correct.

9 MR. O'LAUGHLIN: Okay. How did it change?

10 WITNESS MUNÉVAR: So, just to be clear, the
11 No-Action has the effects of climate change embedded as
12 part of it. All of the WaterFix have the identical
13 climate change assumptions as part of it. So what we're
14 doing is a comparison of it.

15 The -- Looking at just the effects of climate
16 change, though, we actually see a slight increase in
17 Sacramento River inflows to the Delta as an annual basis,
18 but we see a seasonal shift that has an impact on -- on
19 exports, Delta exports.

20 Again, the climate change assumptions are
21 identical in all of the alternatives, so they're -- when
22 comparing the WaterFix, we're also comparing WaterFix
23 with climate change to the No-Action with climate change.

24 MR. O'LAUGHLIN: Thank you.

25 Can you pull up State Water Resources Control

1 Board -- It's Number 25, please.

2 (Document displayed on screen.)

3 MR. O'LAUGHLIN: So, State Board Exhibit
4 Number 25 is entitled, "Development of Flow Criteria for
5 the Sacramento-San Joaquin Delta Ecosystem."

6 Is anyone on the panel familiar with that
7 document?

8 WITNESS MUNÉVAR: Generally familiar.

9 MR. O'LAUGHLIN: Okay. Great. Well, so,
10 unfortunately, you answered yes so --

11 WITNESS LEAHIGH: I can take it back.

12 MR. O'LAUGHLIN: -- you get the questions.

13 WITNESS WHITE: Can you scroll down. What year
14 is this from?

15 MR. O'LAUGHLIN: 2009 -- '10. Sorry. 2010.

16 Okay. In the course of performing your
17 modeling for California WaterFix, did DWR ever look at
18 this document or discuss this document?

19 WITNESS MUNÉVAR: I believe this was discussed
20 in the Steering Committee -- so now you're going through
21 the cobwebs of my brain -- the Steering Committee in 2010
22 as part of the Bay-Delta Conservation Plan. I believe
23 there was a presentation to the Steering Committee by --
24 by State Board staff.

25 MR. O'LAUGHLIN: Okay. Are you familiar with

1 Water Code Section 85086 in setting the appropriate Delta
2 flow criteria? Are you familiar with that Code section?

3 WITNESS MUNÉVAR: I'm not.

4 MR. O'LAUGHLIN: Okay. Has anybody on your
5 Team ever discussed setting the -- or coming up with an
6 appropriate Delta flow criteria in modeling it as part of
7 the presentation for the -- this Petition?

8 WITNESS MUNÉVAR: No.

9 MR. O'LAUGHLIN: In the scope of the work --
10 And these questions will get redundant. Just bear with
11 me, but we'll get through.

12 In this report, it sets outflow criteria for
13 the Sacramento -- for the San Joaquin River.

14 Are you familiar with what those flow criteria
15 were?

16 WITNESS MUNÉVAR: I'm not, without going back
17 to the document.

18 MR. O'LAUGHLIN: Okay. Do you know if anyone
19 in your shop modeled this -- the flow criteria from this
20 report as part of your Petition?

21 WITNESS MUNÉVAR: I'm not aware of these
22 specific criteria. I know, in Alternative 8, there were
23 higher flows considered, but I --

24 MR. O'LAUGHLIN: But you wouldn't know if they
25 matched these; is that correct?

1 WITNESS MUNÉVAR: That is correct.

2 WITNESS BUCHHOLZ: If I may add something,
3 please.

4 MR. O'LAUGHLIN: Yeah, go right ahead.

5 WITNESS BUCHHOLZ: We did -- In the development
6 of the alternatives to be considered in the EIR/EIS, we
7 actually reviewed this document in detail, and we also
8 reviewed the CalSim output that was published with it for
9 the draft document at the time.

10 And when we looked at the assumptions to be
11 able to meet the way that CalSim runs when published with
12 the draft document, we needed to make some changes on the
13 upstream in the Sacramento Valley water rights holders'
14 deliveries. And for this Project, we felt within our
15 purpose and need and our project objectives that we did
16 not have the capability of making those changes to
17 upstream water -- senior water rights holders to make
18 these total flow criteria.

19 We did recognize in Appendix 3A of the Draft
20 EIR/EIS that if -- as said in this -- and I don't want
21 to -- the State Water Resource -- State Water Control
22 Board's report -- I'm probably going to mess up the words
23 a bit.

24 But, in essence, it said that it will be taken
25 under advisement as you do your Bay-Delta Water Quality

1 Control Plans and all of that.

2 We acknowledge in Appendix 3A that, as those
3 changes occur, they -- the State Water Project and the
4 Central Valley Water Project project operations would
5 have to be reviewed if these criteria changed.

6 But at this point in time, it would be
7 speculative of us to make an assumption exactly how and
8 what we could do.

9 So we considered these in Alternative 8 and in
10 other alternatives to help meet the aquatic resource
11 conditions, but we cannot fully meet the full
12 recommendations in this report without affecting senior
13 water right holders.

14 And that's explained in Appendix 3A.

15 MR. O'LAUGHLIN: Thank you.

16 So, that was an excellent explanation. I
17 appreciate that. So I have another followup on that one.

18 So, is anybody on the panel aware of the State
19 Water Resources Control Board Water Quality Control Plan
20 that is currently underway, Phase -- Parts 1 through 3?

21 WITNESS BUCHHOLZ: And you're referring to
22 potential changes within San Joaquin River salinity?

23 MR. O'LAUGHLIN: San Joaquin River and the
24 Delta outflow.

25 WITNESS BUCHHOLZ: Delta outflow, right.

1 And, again, it would be speculative for us to
2 jump ahead. If you're talking about the one that the
3 draft was published several years ago? Is that the one
4 you're talking about?

5 MR. O'LAUGHLIN: Yes. The draft was published
6 three years ago.

7 WITNESS BUCHHOLZ: Right. And it's still
8 underway at this point in time. We don't have a final
9 one.

10 MR. O'LAUGHLIN: Yeah. In fact, my
11 understanding is that there was no cumulative impact
12 analysis done in the EIR/EIS for the proposed Part 1 of
13 the Water Quality Control Plan; is that correct?

14 WITNESS BUCHHOLZ: That's not quite correct.
15 It's handled differently in each of the resource
16 chapters.

17 So some of the resource chapters aren't as
18 specific in the Draft EIR/EIS, the Recirculated, and that
19 we'll have more detail in the Final EIR/EIS.

20 MR. O'LAUGHLIN: Okay. And when's that coming
21 out again?

22 WITNESS BUCHHOLZ: Soon.

23 I really don't know.

24 MR. O'LAUGHLIN: Ah. That's a better answer.

25 WITNESS BUCHHOLZ: I'm not the person that has

1 that information.

2 MR. O'LAUGHLIN: Okay. So, based on that,
3 Kristin, I'm going to come back to you, then.

4 So at New Melones, did you -- when you were
5 doing the modeling for CWF, were you -- Did you include
6 an unimpaired flow regime for New Melones Reservoir as
7 part of your analysis.

8 WITNESS WHITE: No. And just to be clear, the
9 New Melones remodeling for the California WaterFix is the
10 same as the previously-developed Reclamation model.
11 There was no New Melones-specific modeling done for the
12 California WaterFix.

13 MR. O'LAUGHLIN: Okay. So did -- When you were
14 looking at presenting a No-Action Alternative and an
15 action alternative or cumulative analysis at New Melones,
16 did you include a merge of unimpaired flow analysis based
17 on the draft report that was issued in 2012 by the State
18 Water Resources Control Board?

19 WITNESS WHITE: No.

20 MR. O'LAUGHLIN: As you sit here today, if I
21 were to tell you that the -- Do you know -- Do you know
22 what the proposed -- preferred alternative flow regime
23 was in the 2012 draft report?

24 WITNESS WHITE: Are you referring to the draft
25 SED --

1 MR. O'LAUGHLIN: Yes.

2 WITNESS WHITE: -- or Supplemental Environment
3 Document?

4 MR. O'LAUGHLIN: Yes.

5 WITNESS WHITE: I think it was 35 percent.

6 MR. O'LAUGHLIN: Do you have, as you sit here
7 today, any opinion as to how the operations at New
8 Melones would change if the State Board adopted
9 35 percent unincurred flow February to June and put that
10 requirement on the operations at New Melones Reservoir?

11 WITNESS WHITE: I think it's a tad bit of a
12 challenge to have an opinion on a partial -- partial-year
13 operation, so I would hesitate to give any opinion on any
14 operation.

15 I'm not sure my personal opinion is appropriate
16 in this hearing.

17 But that draft SED was only on February through
18 June flows, and it was silent. It did make general
19 assumptions on the rest of the year, but it didn't
20 specify any minimum flow regime for the rest of the year,
21 which would certainly make a big difference.

22 MR. O'LAUGHLIN: So, let's assume for purposes
23 of my question that it was 35 percent February through
24 June as a minimum flow requirement below Goodwin, and
25 Table 2e flows from the OCAP -- current OCAP BO RPAs.

1 Do you have an opinion as to how New Melones
2 would look?

3 MR. MIZELL: I'm going to --

4 CO-HEARING OFFICER DODUC: Mr. Mizell.

5 MR. MIZELL: I'm going to object for relevance
6 purposes.

7 We're getting into specifics of the Water
8 Quality Control Plan and the update that's underway, what
9 might speculatively be in it in the future, and we're
10 putting together hypotheticals that the witness has
11 already indicated are beyond her -- beyond her scope and
12 expertise in this particular matter.

13 CO-HEARING OFFICER DODUC: Mr. O'Laughlin.

14 MR. O'LAUGHLIN: Well --

15 CO-HEARING OFFICER DODUC: She did say she was
16 uncomfortable.

17 MR. O'LAUGHLIN: Well, she was uncomfortable
18 about the parameters because I only mentioned February
19 through June. I can give her more parameters if she
20 likes and make it a more robust type of hypothetical.

21 But I think she clearly understands the -- what
22 New Melones -- how it currently operates and how it will
23 operate in the future.

24 Well, maybe I'll ask it in a different way:

25 Have you done modeling for Reclamation in

1 regards to what the percentage of unimpaired flow looked
2 like on its impacts on New Melones Reservoir?

3 WITNESS WHITE: I think we ran some very
4 preliminary truncated modeling right about when the SED
5 came out. And by "truncated," I mean it wasn't a full
6 CalSim run. We looked at San Joaquin just to look at the
7 specific New Melones operation.

8 MR. O'LAUGHLIN: Okay. So did end-of-storage
9 September at New Melones get better or worse with
10 35 percent unimpaired flow?

11 WITNESS WHITE: I'm struggling to remember what
12 I compared it against to say better or worse.

13 But I know there were definitely years,
14 particularly the mid-range on the drier years, where it
15 was a challenge to maintain storage and maintain
16 35 percent flow. If I remember correctly. It's been a
17 number of years since I looked at that.

18 CO-HEARING OFFICER DODUC: Miss Morris, I see
19 you trying to control yourself.

20 MR. O'LAUGHLIN: Oh, she will.

21 CO-HEARING OFFICER DODUC: Come on up.

22 MR. O'LAUGHIN: She's not going to come up.

23 MS. MORRIS: No. I'll give -- I'll give him
24 one more. If there's one more, I'm objecting.

25 (Laughter)

1 CO-HEARING OFFICER DODUC: You're on notice,
2 Mr. O'Laughlin.

3 MR. O'LAUGHLIN: My only question is, is that a
4 threat or a promise?

5 MS. MORRIS: It's a promise.

6 CO-HEARING OFFICER DODUC: You can consider it
7 a threat from me.

8 MR. O'LAUGHLIN: Well, you do have the gavel.
9 She doesn't.

10 CO-HEARING OFFICER DODUC: Move on, please,
11 Mr. O'Laughlin.

12 And we'll save Miss Morris some steps.

13 MR. O'LAUGHLIN: Moving on to H4 and the spring
14 outflow. I realize there was some testimony about this
15 yesterday.

16 I just want to confirm with the Modeling Group
17 that the spring outflow was modeled from Oroville
18 Reservoir; is that correct?

19 WITNESS MUNÉVAR: In H4, it's modeled first
20 through export reductions.

21 MR. O'LAUGHLIN: Yes, sorry.

22 WITNESS MUNÉVAR: Only in the wettest half of
23 years, if Oroville storage is projected to be above
24 2 million acre-feet, then Oroville release would be made.

25 MR. O'LAUGHLIN: Is there a place in a document

1 where I can look to find out how many times the 200,000
2 acre-foot spring outflow is not satisfied based on the
3 controlling criteria of reducing export first and then
4 having the carryover storage number at Lake Oroville?

5 WITNESS MUNÉVAR: All of the modeling output is
6 provided, including Delta outflow.

7 MR. O'LAUGHLIN: Yeah. But my -- my specific
8 question is more.

9 In the modeling that was done specifically for
10 the 200,000, how would I tease out in the documents that
11 have been provided not only when it wasn't met but to
12 what degree it wasn't met?

13 WITNESS MUNÉVAR: What are you referring to in
14 the 200,000?

15 MR. O'LAUGHLIN: The spring outflow that's put
16 forth in the EIR/EIS.

17 WITNESS MUNÉVAR: Page 4? Is that --

18 MR. O'LAUGHLIN: Yes.

19 WITNESS MUNÉVAR: -- what you're referring to?

20 MR. O'LAUGHLIN: Yes.

21 WITNESS MUNÉVAR: I don't know where 200,000
22 necessarily comes from, but the . . .

23 The modeling demonstrates outflow and I believe
24 it also demonstrates the targeted outflow which is part
25 of H4.

1 I don't have the results handy that suggests
2 how many times it did not meet that. And the criteria
3 that are in H4 are achieved to the best extent possible.
4 It was not meant to achieve fully unless those conditions
5 were met.

6 MR. O'LAUGHLIN: So if -- If you're -- If --
7 So, if I understood that answer correctly, so, then, it's
8 not an operating criteria, it's a goal to get to spring
9 outflow.

10 WITNESS MUNÉVAR: For the additional spring
11 outflow in H4.

12 MR. O'LAUGHLIN: Right.

13 WITNESS MUNÉVAR: It is a goal if -- if it can
14 be achieved through export curtailments, and it's a
15 wetter half of years, and/Oroville can -- can provide
16 releases, that it can be achieved, but it's going to --
17 if Oroville cannot, or export curtailments are not
18 sufficient to meet the outflow target or goals.

19 MR. O'LAUGHLIN: Agreed.

20 Now, when you did the modeling, did you model
21 that spring outflow coming from any sources on the
22 San Joaquin River above Vernalis?

23 WITNESS MUNÉVAR: So, the outflow was -- No.
24 The outflow was -- was the outflow that occurred in the
25 absence of that additional outflow goal. And we checked

1 that resulting outflow compared to the goal and
2 determined how much export curtailments for upstream
3 storage from Oroville would have to be released.

4 MR. O'LAUGHLIN: Okay. Can we have the
5 PowerPoint in Slide 23, please. I think it has to do
6 with OMR if I wrote my numbers correctly.

7 MS. McCUE: Which PowerPoint are you referring
8 to?

9 MR. O'LAUGHLIN: I think it's 5e.

10 MS. McCUE: 5e?

11 MR. O'LAUGHLIN: And I believe it's Slide 23.

12 (Document displayed on screen.)

13 MR. O'LAUGHLIN: Ah, okay.

14 So, these are new -- I want to focus on OMR
15 flows.

16 So, earlier in your testimony, it was stated
17 that these were more strict -- I think it says more --
18 new OMR restrictions, and it says that they're more
19 restricted in the South Delta.

20 So, when you're talking restrictive, is that
21 restrictive in the context of -- of ability to divert
22 water from the South Delta facilities?

23 WITNESS MUNÉVAR: Yes. It's in terms of more
24 restrictive on the SWP and CVP . . . in the South Delta.

25 MR. O'LAUGHLIN: Was -- Were these specific OMR

1 restrictions part of the Biological Assessment that has
2 been given to National Marine Fisheries and U.S. Fish and
3 Wildlife Service?

4 WITNESS MUNÉVAR: Which -- Which Biological
5 Assessment are you referring to?

6 MR. O'LAUGHLIN: The salmon one. The
7 steelhead.

8 WITNESS MUNÉVAR: California WaterFix?

9 MR. O'LAUGHLIN: I'm sorry. I'm sorry. Delta
10 smelt.

11 Delta smelt, yes, for -- for California
12 WaterFix.

13 WITNESS MUNÉVAR: Yes. In the Biological
14 Assessment, the OMR flows, I believe, are consistent with
15 scenario H3, which is shown on Slide 29 of this same
16 PowerPoint presentation.

17 MR. O'LAUGHLIN: Yeah.

18 So, in particular, the one I'm most interested
19 in is the April through June OMR based on Vernalis flows.

20 And I think you have a chart -- table. I think
21 it's Slide 29 -- we'll get to that in a bit -- which is
22 the hydrology.

23 Did DWR get concurrent -- have concurrence
24 already from NBS to make that change, or is that part of
25 the ongoing consultation with NBS for Section 7, if you

1 know?

2 WITNESS MUNÉVAR: I believe it's ongoing, but
3 the -- the development of these flows were
4 collaboratively with the fish agencies. I don't know
5 what the concurrence would be.

6 MR. O'LAUGHLIN: Okay. Can we turn to -- I
7 think it's Slide 29.

8 (Document displayed on screen.)

9 MR. O'LAUGHLIN: So, are these -- are these
10 based on -- These scenarios are based on the hydrology,
11 as we've talked about before, on the San Joaquin River,
12 or is this a different hydrology that was modeled?

13 WITNESS MUNÉVAR: I'm not sure what you mean by
14 "hydrology" here.

15 MR. O'LAUGHLIN: Well, maybe I'll ask it a
16 different way.

17 So, we've talked previously that the No-Action
18 Alternative and the other alternatives basically maintain
19 the same San Joaquin River flows at Vernalis, and I want
20 to know if, in regards to the OMR restrictions and the
21 analysis that was done, that's predicated on that same
22 modeling at Vernalis with no exchanges for San Joaquin
23 River hydrology?

24 WITNESS MUNÉVAR: That's a little bit of a
25 confusing question. I'll try to respond --

1 MR. O'LAUGHLIN: Sure.

2 WITNESS MUNÉVAR: -- as best I can.

3 As Kristin indicated, it's the hydrology
4 adjusted for climate change on the San Joaquin.

5 MR. O'LAUGHLIN: Yeah.

6 WITNESS MUNÉVAR: The same flows that are in
7 the No-Action are the same as the WaterFix, and Old and
8 Middle River requirements are based on the simulated
9 occurrence of flow at Vernalis.

10 MR. O'LAUGHLIN: You did way better than I
11 asked the question. Thank you.

12 Just a few seconds while I check some questions
13 off. Thanks.

14 So, since I've been around so long, I just have
15 one curious question.

16 Did the modeling that was done by -- by you
17 all, did it look at how water could be circulated from
18 the DMC back into the San Joaquin River at all?

19 WITNESS MUNÉVAR: No.

20 MR. BERLINER: Objection: Relevance.

21 CO-HEARING OFFICER DODUC: Well, I think the
22 answer's on record as no.

23 MR. O'LAUGHLIN: That's it. Thank you very
24 much.

25 Thank you, panel. Appreciate it.

1 CO-HEARING OFFICER DODUC: Thank you,
2 Mr. O'Laughlin.

3 Group Number 19?

4 20?

5 Okay. 21. I see Mr. Herrick. Do you have
6 cross-examination?

7 MR. HERRICK: Yes, I do. I understand that
8 Osha's on her way. That's all I know.

9 CO-HEARING OFFICER DODUC: Okay. We haven't
10 heard from her.

11 You know what, actually, it's now a good time
12 to take our 15-minute break, anyway.

13 So we will resume at 2:45 and hopefully she'll
14 be here. If not, she'd better send an e-mail requesting
15 a deferment. Otherwise, we'll assume that she doesn't
16 have cross and we'll begin with you, Mr. Herrick.

17 MR. HERRICK: Okay.

18 (Recess taken at 2:27 p.m.)

19 (Proceedings resumed at 2:45 p.m.)

20 CO-HEARING OFFICER DODUC: (Banging gavel.)

21 All right. It is 2:45. We are back in session
22 and we have been joined by Miss Meserve.

23 MS. MESERVE: Good afternoon.

24 CO-HEARING OFFICER DODUC: Good afternoon.

25 How much time do you believe you'll need? And

1 if you could give me just a quick list of the areas you
2 will be exploring.

3 MS. MESERVE: Certainly. And I'm here on
4 behalf of several of the Group 19 entities.

5 I have questions that relate to the five
6 Protestants -- four protests that I filed directly.

7 I also have a list of questions from
8 Mr. Van Zandt that relates to Islands, Inc. So I'll try
9 to integrate those into questions I have but they may
10 sort of stand out at the end.

11 So, I'm going to be touching on water surface
12 elevation issues, sea-level rise, extreme drought, water
13 quality, exceedances, upstream releases . . . groundwater
14 modeling, those kinds of things.

15 CO-HEARING OFFICER DODUC: Okay.

16 MS. MESERVE: And I would expect that I would
17 take 45 minutes to an a hour, and I will try to move
18 things along.

19 I have been listening from my office so,
20 hopefully, I've eliminated some of it but I don't mind if
21 someone points out -- and I'm sure someone will -- if I'm
22 asking duplicate questions.

23 CO-HEARING OFFICER DODUC: Thank you,
24 Miss Meserve.

25 Please begin.

1 CROSS-EXAMINATION BY

2 MS. MESERVE: To begin with, I would like to
3 start with Mr. Nader-Tehrani, and just touching on the
4 water surface elevations.

5 And if possible, I would like to see the DWR-5
6 errata, Slide 75, please.

7 The written testimony estimates that increases
8 in surface water elevations would be between .5 feet
9 during low -- lower flows and 1.2 feet during high flows.

10 These -- And I believe we established
11 earlier -- correct me if I'm wrong -- that the modeling
12 doesn't address the issue of velocity; is that correct?

13 WITNESS NADER-TEHRANI: That's not what I said.
14 You asked me about water surface elevation and yes, that
15 is included in the testimony.

16 MS. MESERVE: Yes.

17 WITNESS NADER-TEHRANI: And velocities, they're
18 all on the model output, but none of that information is
19 included in the testimony.

20 If you have any questions about that, I can do
21 my best to provide it.

22 MS. MESERVE: Okay. Well -- And just to cover
23 that point of what's in the modeling.

24 When you refer to the modeling, are you
25 referring to modeling that's available upon request from

1 DWR or --

2 WITNESS NADER-TEHRANI: I'm referring to the
3 modeling that is already submitted around middle of May
4 through the Board's website. It's available for
5 everybody to download.

6 MS. MESERVE: And is that modeling an exhibit
7 as part of DWR's case in chief?

8 WITNESS NADER-TEHRANI: I don't know if it's an
9 actual exhibit.

10 The modeling output, input, everything, DSM-2,
11 CalSim, was submitted to the Board, and my understanding
12 is it's available for everybody to -- to download and use
13 as they please.

14 MS. MESERVE: Okay. And so -- But -- And that
15 modeling output, just to clarify, is a different modeling
16 output than what was generated in the production of the
17 2015 draft environmental document?

18 WITNESS NADER-TEHRANI: If you're referring to
19 CalSim -- Are you referring to CalSim or DSM-2? It's not
20 clear.

21 MS. MESERVE: Well, we can address them
22 separately. First CalSim.

23 WITNESS NADER-TEHRANI: If it's CalSim, I would
24 ask Armin Munévar to respond.

25 WITNESS MUNÉVAR: The modeling inputs and

1 outputs are specifically presented to this Board and
2 would be discussed here. So the Boundary 1, Boundary 2,
3 H3, H4 and No-Action.

4 MS. MESERVE: And then with respect to DSM-2?

5 WITNESS NADER-TEHRANI: We basically used the
6 same output in DSM-2, corresponding to the same, you
7 know, operational scenarios.

8 MS. MESERVE: Correct.

9 I heard earlier today, though, there was some
10 discussion about whether we were talking about, you know,
11 a prior version of the modeling, and I'm just trying to
12 clarify what your testimony is based on.

13 Is it based on --

14 WITNESS NADER-TEHRANI: Are you talking to
15 me --

16 MS. MESERVE: Yes.

17 WITNESS NADER-TEHRANI: -- or Armin?

18 MS. MESERVE: You, please.

19 WITNESS NADER-TEHRANI: I don't know what
20 context. Can you remind me what context when I said
21 previous version of the model?

22 MS. MESERVE: The specific context had to do, I
23 believe -- and correct me if I'm wrong -- that it had to
24 do with the modeling that was completed for BDCP and
25 there was some question back and forth, with the Hearing

1 Officer included, about whether those things would still
2 be relevant here.

3 And so I'm just trying to get a sense of
4 what -- what modeling your current testimony is relying
5 on but . . .

6 WITNESS NADER-TEHRANI: I'm trying to remember.

7 CO-HEARING OFFICER DODUC: I don't recall that,
8 either, Miss Meserve.

9 I do recall we had a discussion regarding the
10 peer review of CalSim -- CalSim, and Miss White, I think,
11 provided clarification that that peer review was
12 conducted on a previous model of CalSim.

13 MS. MESERVE: Yes, I recall that.

14 We -- We can move on. It's not worth going on
15 at this point.

16 CO-HEARING OFFICER DODUC: If it's an important
17 point that needs to be clarified . . .

18 MS. MESERVE: Well, I mean, sitting here today,
19 I am not clear on what modeling the testimony is based
20 on, and I'm also not clear that it's all been submitted
21 as evidence as part of DWR's case in chief.

22 CO-HEARING OFFICER DODUC: All right. Let's
23 stop there.

24 MS. MESERVE: Yeah.

25 CO-HEARING OFFICER DODUC: The -- The modeling

1 results that were submitted in May, some of which are
2 covered in your testimony --

3 WITNESS NADER-TEHRANI: Yes.

4 CO-HEARING OFFICER DODUC: -- but all of which
5 are available for people to examine and analyze, as
6 Mr. Lilly and others have, is that the same modeling
7 results that are being -- that have been submitted as --
8 to support the Project and the petitions?

9 WITNESS NADER-TEHRANI: Yes, that would be
10 correct.

11 WITNESS MUNÉVAR: Correct.

12 MS. MESERVE: Okay. All right. So, looking
13 back at this DWR-5 errata, Slide 75, the clients that I'm
14 working with are mostly surrounding the actual intakes
15 themselves, and some -- the land group is, obviously, you
16 know, everywhere in the Northern Delta.

17 But just thinking about intakes right across
18 from Intake No. 3, for instance, shown on this slide,
19 would you expect that the water level looking at the low
20 level would be lower than the .5 feet that you predicted,
21 I think, for the yellow dot that's farthest north, or
22 what -- how would you describe the water level changes in
23 that location?

24 WITNESS NADER-TEHRANI: So, your -- I -- From
25 what I understand your question, you're asking about the

1 water level change somewhere in between Intake No. 3 and
2 5; is that correct?

3 MS. MESERVE: Yes.

4 WITNESS NADER-TEHRANI: Okay. I would expect
5 that reduction in water level to be less than half a
6 foot. The reason for that is, if flow in that Reach
7 between Intake No. 3 and 5 is -- is higher than the flow
8 downstream of Reach 5, because by the time flow reaches
9 south of that Intake No. 5, that additional intake takes
10 some of that water out.

11 So due to WaterFix, I expect water level change
12 between 3 and 5 to be lower than half a foot in reduction
13 in water level.

14 MS. MESERVE: So, to summarize, your testimony
15 is it would not be as severe a change right across from
16 the middle intake as downstream from it.

17 WITNESS NADER-TEHRANI: That's right.

18 The choice I made for that first dot represents
19 where I think the worst case, you know, scenario for the
20 largest reduction in water level to be. That was the
21 choice I made, starting from that point and then moving
22 on downstream from it.

23 MS. MESERVE: And does the modeling that led to
24 this Page 75, does that include operation of the intakes
25 when the -- the proposed intakes during any reverse flow

1 periods?

2 WITNESS NADER-TEHRANI: Okay. I mean, I guess
3 I need to clarify, you know, that.

4 So, the question about reverse flows. The
5 reverse flows do occur throughout the Delta in two type.

6 When people talk about flows, they sometime
7 talk about average flow, they talk about instantaneous.
8 So I just to make sure we're talking about tidal flows,
9 and those tidal flows do not occur.

10 And in my earlier testimony, I did mention that
11 there is, corresponding to the Freeport facility, in that
12 area, there is a small increase in frequencies of reverse
13 flows. Those -- You know, for the low duration and the
14 low effective distance of up to .2 miles.

15 Beyond that, there is -- I did not see any
16 increase in frequency of these reverse flows.

17 Those reverse flows are analyzed as part of
18 DSM-2 when you run it. And the way you would analyze it,
19 you would use the velocity output from DSM-2 to -- to
20 assess those -- you know, the intensity of those reverse
21 flows.

22 MS. MESERVE: Okay. And with respect to the --
23 the .5 feet and the 1.2 feet that's on Page 3 of your
24 testimony, I believe, in what time period does that
25 relate to? How many years after a Project begins

1 operation does that relate to?

2 WITNESS NADER-TEHRANI: All the studies that
3 are shown here is based on climate change around 2025,
4 2030, so keep in mind that there is actually some
5 sea-level rise associated with that.

6 So, while we're talking about half a foot
7 reduction, keep in mind there's actually half a foot
8 increase due to sea-level rise. So there is that part of
9 it there.

10 So the assessment of all of these -- of --
11 of -- of changes are done at the 2025-2030 level, but
12 based on that assumption.

13 MS. MESERVE: I believe I heard testimony
14 stating that 15 inches of sea-level rise was -- was used;
15 is that correct?

16 WITNESS NADER-TEHRANI: 15-centimeter,
17 6 inches, at Martinez.

18 MS. MESERVE: And so does the -- The 6 inches
19 that you just referred to is due to attenuation as you go
20 to the interior of the Delta; is that --

21 WITNESS NADER-TEHRANI: The 6 inches is roughly
22 the same as the expected sea-level rise at ocean. And if
23 you have more specific questions about the choices we
24 made for that, perhaps Mrs. Anderson can cover those
25 issues.

1 WITNESS ANDERSON: Well, what --

2 MS. MESERVE: Yeah. What I'm trying to clarify
3 is, I heard 15 inches --

4 WITNESS NADER-TEHRANI: 15-centimeter.

5 MS. MESERVE: Oh, okay. I wrote down "inches."
6 I'm sorry.

7 WITNESS NADER-TEHRANI: Yeah, 15, that's --
8 that's roughly about 6 inches.

9 MS. MESERVE: And so are you using a different
10 number of assumptions for sea-level rise at Intake No. 2,
11 let's say, than what you would assume would be occurring
12 at the Golden Gate?

13 WITNESS NADER-TEHRANI: No. The -- The
14 assumption for the sea-level rise is only implemented at
15 Martinez.

16 The model itself calculates what -- the effect
17 of the sea-level rise, along with everything else. So,
18 what you're calculating has the effects of the sea-level
19 rise in it.

20 MS. MESERVE: Does the model calculate a --
21 less -- fewer inches or centimeters of sea-level rise at
22 a location like Proposed Intake No. 2 than at Martinez,
23 or does it get the same number?

24 WITNESS NADER-TEHRANI: One would expect a -- a
25 lower sea-level rise as you go upstream, especially

1 during high flows. You know, the water levels are more
2 dictated by the flows upstream and less by the -- by the
3 sea-level rise.

4 MS. MESERVE: Does the model include that or
5 does it not?

6 WITNESS NADER-TEHRANI: Yes. The model
7 calculates, computes the flow velocity and stage at every
8 location within the model that goes up to Sacramento and
9 even farther up.

10 MS. MESERVE: Okay. So -- So your testimony is
11 that the model accounts for some variation in sea-level
12 rise and -- according to the geographic location?

13 WITNESS NADER-TEHRANI: The mod -- The model --
14 So, the -- the sea-level rise at Martinez is assumed to
15 be the same in all, you know, modeling that's done,
16 including the baseline, No-Action, and all the
17 operational scenarios.

18 The model itself calculates the water levels,
19 and obviously those would take into account the sea-level
20 rise assumptions from Martinez.

21 MS. MESERVE: I thought it was a yes-or-no
22 question.

23 WITNESS NADER-TEHRANI: Well, I -- I think that
24 a more complete answer -- I -- is to be more helpful to
25 you. If you'd like to -- This is also to inform the

1 Board.

2 MS. MESERVE: Yes. Okay.

3 Okay. I'm going to talk about -- I want to go
4 to the 82-year period of analysis that was used for some
5 of the modeling.

6 There was conversation earlier today, I
7 believe, about whether -- or maybe it was yesterday --
8 about whether there's sufficient dry years shown in these
9 models.

10 Given the length of the fifth year of drought,
11 according to the Governor, and the paleoclimatic history,
12 is this method that you have used, do you believe it's
13 conservative enough?

14 WITNESS NADER-TEHRANI: Again -- Once again,
15 I'd like to ask you:

16 Are you talking about CalSim or DSM-2? There's
17 a difference. CalSim used the entire 82 years of
18 simulation.

19 MS. MESERVE: Which ended in what year?

20 WITNESS NADER-TEHRANI: 2003.

21 MS. MESERVE: Okay. So just going to CalSim,
22 then.

23 WITNESS NADER-TEHRANI: Yeah. Armin?

24 MS. MESERVE: And so that would be an Armin
25 question. Okay. Thank you.

1 So the --

2 WITNESS MUNÉVAR: And you're asking whether
3 it's representative enough, or maybe re-state the
4 question.

5 MS. MESERVE: Yeah. Yes. I'm asking whether
6 you believe, in your expertise here, that this -- that
7 the dry years are adequately represented given that we're
8 seeing a longer drought period now than maybe would have
9 been reflected in 2003.

10 MR. BERLINER: Objection: Asked and answered.
11 We went through this in great length this morning.

12 CO-HEARING OFFICER DODUC: Yes, it has been
13 asked and answered, but let's do it one final time for
14 the record, and I trust that everyone is listening
15 carefully.

16 WITNESS MUNÉVAR: Okay. I'll try to be concise
17 with it.

18 The 82 years that's included in CalSim has a
19 range of wet and dry years, significant dry years in the
20 '28 to '32 period, '87 to '92 -- '28 to '34, '82 to '92,
21 1976-'77.

22 And then imposed on that is an additional
23 amount of warming and change in precipitation associated
24 with climate change.

25 So, given those assumptions, there are

1 sufficient wet and dry years on droughts of duration that
2 are long enough and as intense that they allow us to make
3 a conclusion in terms of the impacts of the California
4 WaterFix as compared to the No-Action.

5 And just one last point and then I'll wrap up.

6 The same droughts and sequences that are used
7 in the No-Action are the same as the WaterFix.

8 So, if we anticipate more severe, more wet,
9 greater variability, it would occur in both the No-Action
10 and the WaterFix.

11 MS. MESERVE: Okay. Are you aware of
12 statistical tools such as forward-looking indicators that
13 allow you to project out if the climate is indeed
14 changing that would be different than than the process
15 you've just described?

16 WITNESS MUNÉVAR: I do quite a bit of work in
17 climate, and climate change modeling, and projections,
18 and that's what went into the approaches that were
19 utilized for -- for the hydrology adjustments and the
20 sea-level rise adjustments that were part of -- part of
21 the assumptions in the No-Action and the California
22 WaterFix.

23 We included a range of climate model
24 projections that look out through the next century, and
25 an indication of their changes in precipitation or

1 temperature in sea-level rise to make the assessments
2 that we used here for this -- for this presentation to
3 the Board and in all of the WaterFix years.

4 MS. MESERVE: So, would the -- those
5 projections be looking -- include increased duration in
6 frequency of droughts more so than we saw in the 82-year
7 period?

8 WITNESS MUNÉVAR: I think Mr. Anderson
9 presented on the Operations Panel as well that -- that
10 the -- particularly in the Central Valley, the increase
11 in duration and severity of drought is still an area of
12 ongoing research.

13 In other areas of the country, that may not be
14 as uncertain, but certainly here, it's an area of ongoing
15 research.

16 I think the droughts that we do have
17 represented in the '22 to 2003 period are sufficiently
18 severe and of different types of drought mechanisms that
19 allow us to compare the Project to the No-Action under a
20 range of hydrologic conditions.

21 MS. MESERVE: I'm sorry. May I have -- Would
22 you read back to me my question, please? I believe it
23 was a yes-or-no question.

24 CO-HEARING OFFICER DODUC: Don't try to be so
25 helpful.

1 MS. MESERVE: I appreciate the explanation.

2 I'm just trying to make sure --

3 WITNESS MUNÉVAR: Trying to provide some
4 context around the question. I'm assuming the Board
5 wants to understand further. Is that a "yes" or "no"?

6 CO-HEARING OFFICER DODUC: Yes. But we've also
7 heard it several times.

8 MS. MESERVE: Okay. Because I think the answer
9 to my question was no, that you believe -- I want to stop
10 talking so that she -- I want to get my statement so I
11 can read it again.

12 (Record read.)

13 MS. MESERVE: So what I believe is a yes-or-no
14 question is whether the modeling that was conducted
15 included increased and -- increased frequency and
16 increased duration droughts for this Project.

17 WITNESS MUNÉVAR: Modeling takes the historic
18 record and makes an adjustment to it, so, therefore, the
19 historic droughts are made more severe in this modeling
20 than historically have occurred because of the climate
21 changes.

22 MS. MESERVE: Okay. All right.

23 WITNESS MUNÉVAR: That's about as short as I
24 can respond.

25 MS. MESERVE: Okay. I apologize.

1 Okay. I want to -- We heard earlier about --
2 Let's see.

3 Well, you said that you're aware of these tools
4 that have forward-looking indicators.

5 Have -- Did -- In your preparation of the
6 materials for this Petition, did you discuss applying
7 more forward-looking indicators than you decided to do
8 here with what you just described?

9 WITNESS MUNÉVAR: There's an appendix, I --
10 maybe Gwen knows where it is -- an appendix to 5A that
11 discusses the climate change projections that were
12 included in this assessment, and this is a -- of a
13 consensus or a median set of climate projections that are
14 included in this assessment.

15 MS. MESERVE: And do you expect that the
16 information in Appendix 5A will be modified in any way in
17 the future, like, for instance, in the Final EIR, or may
18 we rely on what's in 5A?

19 WITNESS MUNÉVAR: I'm not aware of adjustments
20 that would occur in the final.

21 It's Appendix D2 of 5A if you want the
22 reference.

23 MS. MESERVE: Thank you.

24 We heard earlier -- and I believe it may have
25 been Mr. Munévar -- about how the model -- models used

1 are comparative.

2 Can you tell me why DWR didn't attempt to use a
3 predictive model?

4 WITNESS MUNÉVAR: This one has certainly been
5 asked and answered.

6 But we feel the appropriate use of the models
7 is through a comparative fashion because the models are
8 not predicting specific operations.

9 They don't have all of the details that
10 Operators make in real-time; they don't have barometric
11 pressure changes; they don't have storm patterns.
12 They're looking at a long-term basis and a comparative
13 use of the models and that goes for both the CalSim II
14 and DSM-2 models.

15 MS. MESERVE: Okay.

16 CO-HEARING OFFICER DODUC: Actually, I don't
17 think that was her question. Her question was --
18 Actually, let me interpret that.

19 Is there such a thing as a predictive model
20 that could have been used?

21 WITNESS MUNÉVAR: And that was different from
22 the question I heard, but I'll respond to that one.

23 I think Mr. Leahigh and Mr. Milligan, in their
24 forecast base, they're essentially using predictive tools
25 and spreadsheets and Operator knowledge to make those

1 assessments of what might be in the short-term --
2 short-term conditions in order to inform their
3 operations.

4 MS. MESERVE: Okay.

5 WITNESS ANDERSON: I'm just going to add: The
6 key component there for predictive or forecasting model
7 is that short time period.

8 It's kind of when you look at a weather
9 forecast. They only go out 10 days in the future. The
10 water forecast models maybe go out a couple of months but
11 they're not the multiyear analysis that we needed to
12 assess the impacts of WaterFix.

13 CO-HEARING OFFICER DODUC: Thank you.

14 MS. MESERVE: If we could show my Land-8.

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1 (Local Agencies of the North Delta;
2 The Environmental Justice Coalition
3 for Water; Islands, Inc.; Bogle
4 Vineyards/Delta Watershed Landowner
5 Coalition; Diablo Vineyards and
6 Brad Lange/Delta Watershed
7 Landowner Coalition; Stillwater
8 Orchards/Delta Watershed Landowner
9 Coalition; Daniel Wilson; Brett G.
10 Baker; SAVE OUR SANDHILL CRANES;
11 and Friends of Stone Lakes National
12 Wildlife Refuge Exhibit 8 marked
13 for identification)

14 (Document displayed on screen.)

15 MS. MESERVE: This has to do with the ability
16 to predict water quality during extreme drought.

17 And if we could go to Slide 15.

18 (Document displayed on screen.)

19 MS. MESERVE: Well, first of all -- and this
20 is -- I believe the testimony of Miss Tara Smith was the
21 basis for some of the testimony that we read here.

22 Miss Smith, do you remember this PowerPoint?

23 WITNESS SMITH: Yes, I'm familiar with the
24 PowerPoint.

25 MS. MESERVE: And did you -- Did you prepare

1 this PowerPoint?

2 WITNESS SMITH: I did.

3 CO-HEARING OFFICER DODUC: And for the record,
4 can we identify this PowerPoint?

5 MS. MESERVE: It's marked as Land-8.

6 It's -- They're -- It's their Number 15.

7 Sorry.

8 What was the purpose of this slide show
9 PowerPoint?

10 WITNESS SMITH: I think -- Is this the
11 PowerPoint that was given to the Science --

12 MS. MESERVE: We can go back to --

13 WITNESS SMITH: -- Bay-Delta Science
14 Conference?

15 MS. MESERVE: -- Page 1.

16 CO-HEARING OFFICER DODUC: Hold on.

17 MS. MESERVE: I'm sorry.

18 CO-HEARING OFFICER DODUC: One at a time.

19 Miss Morris.

20 MS. MORRIS: Again, for the record, when we put
21 up Page 22 of a document, could we identify the title and
22 the face page so the witness at least knows what they're
23 talking about so the record is clear?

24 MS. MESERVE: Can we go to --

25 CO-HEARING OFFICER DODUC: One at a time.

1 Okay.

2 I believe Miss Meserve has provided an exhibit
3 table for these documents, but just for ease of -- for
4 convenience of people who are attending here today, just
5 go ahead and identify it, Miss Meserve.

6 MS. MESERVE: Thank you. I'm sorry. I skipped
7 to the other part too quickly.

8 This is a --

9 CO-HEARING OFFICER DODUC: Nothing wrong with
10 that, Miss Meserve.

11 MS. MESERVE: I was trying to move along.

12 So this says "Top Seven Insights from the . . .
13 Drought." It's from, looks like, Water Quality
14 Investigations Annual Meeting --

15 WITNESS SMITH: Okay. I had --

16 MS. MESERVE: -- and

17 WITNESS SMITH: Sorry.

18 I had two that were very similar so that's why
19 I wanted to make sure which one it was. Thank you.

20 MS. MESERVE: Certainly. And this one is from
21 2014.

22 Is there a more recent PowerPoint that you've
23 done for this particular group?

24 WITNESS SMITH: It was -- Not for this group,
25 but there was a similar presentation done for the Science

1 Conference that contained similar information, so . . .

2 MS. MESERVE: So going on to -- And this is
3 actually not a complete version of it. I need to find
4 that, which I have somewhere.

5 But if you go to Slide Number 15 as marked on
6 the bottom of the slide.

7 (Document displayed on screen.)

8 MS. MESERVE: It says, "Models not calibrated
9 for extreme drought."

10 Do you agree with this statement, Ms. Smith?

11 WITNESS SMITH: Yes, in the sense of that we
12 had it outside the historical record, so it was a bit of
13 a challenge to -- to do the -- the calibration or the
14 modeling run during 2014 and 2015.

15 So we -- As we went through the historical
16 period, we were -- we were continually checking how well
17 the model did, the DSM-2 model did, within that period
18 and -- and both for DSM-2 SELFE and RMA, and determined
19 whether or not it was input-related or it was actually
20 the model being calibrated or other issues associated
21 with it, so . . .

22 MS. MESERVE: In -- In your opinion, are the
23 models that you were discussing here -- including, for
24 instance, DSM-2 shown on the left yoga model --

25 (Laughter)

1 MS. MESERVE: -- similar or the same as the
2 ones that we are discussing here today that were used to
3 analyze the effects of the WaterFix?

4 WITNESS SMITH: DSM-2 is a model that was used
5 for the California WaterFix. SELFE, which is now SCHISM,
6 is a multidimensional model we have in our office, and
7 RMA is a 12d model of the Delta.

8 And each had issues, which most of the issues
9 were associated with our ability in terms of the
10 appropriate input, historical input into the model.
11 There were some uncertainties with some of the input.

12 MS. MESERVE: Okay. And so those same
13 uncertainties would be -- could be limiting factors on
14 our ability to model under WaterFix what that might look
15 like?

16 WITNESS SMITH: I think -- I don't -- I'm not
17 sure if "limiting" is right. I think you have to take
18 them into consideration definitely. And then that's what
19 happens when you look at a calibration or you look at --
20 like when we ran this for 2014/2015. You -- You look at
21 that and understand -- you know, because models aren't
22 perfect -- what areas where the model maybe isn't
23 matching quite as well, and then you consider that when
24 you look at the results of the model.

25 And . . . And, so, in -- in my opinion, the --

1 the modeling wouldn't affect the conclusions of the
2 California WaterFix study.

3 MS. MESERVE: Okay. Thank you.

4 Okay. So I'm going to go back to the DWR-5
5 exhibit, if we could, Slide 26.

6 (Document displayed on screen.)

7 MS. MESERVE: And this is talking about the
8 operational rules.

9 MR. OCHENDUSZKO: I'm sorry, Ms. Meserve. Can
10 you very quickly clarify. Is this DWR-5 or 5 errata?

11 MS. MESERVE: Sorry. 5 errata. Thank you. I
12 think.

13 MR. OCHENDUSZKO: Mr. Long?

14 MR. LONG: Showing on the screen? Excuse me,
15 5 errata is on the screen.

16 MS. MESERVE: Yes. So -- And I believe this
17 question would be for Mr. Nader-Tehrani, although I could
18 be wrong.

19 WITNESS NADER-TEHRANI: No. It would be Mr. --

20 MS. MESERVE: Okay. This would be a question
21 for Mr. Munévar.

22 It appears from this -- this slide that the
23 Project takes a substantial portion of the water in the
24 fall months, October and November, looking at the green
25 line down on the left-hand corner; is that correct?

1 WITNESS MUNÉVAR: Without getting in
2 substantial, in October, there are large diversions and,
3 in November, the diversions are very small. That's the
4 green line at the bottom of the graph.

5 MS. MESERVE: Okay. So October.

6 WITNESS MUNÉVAR: Only -- It looks like only
7 first half of October for this particular scenario.

8 MS. MESERVE: Um-hmm.

9 Do you have any indication in the modeling
10 about how this would impact salinity at, for instance, a
11 place like Ryer Island?

12 The reason I'm asking this is, I asked during
13 Operations and they said ask the Modelers.

14 WITNESS MUNÉVAR: That was nice of them.

15 WITNESS NADER-TEHRANI: Can you remind of the
16 location that you're referring to?

17 MS. MESERVE: Yes. I'm trying to think if
18 there's a good map that shows that. It might be --

19 WITNESS NADER-TEHRANI: If we have a map of the
20 Delta, that may be -- that same slide of water level.

21 MS. MESERVE: Yes. To the west and the south.
22 And I don't have . . .

23 MS. RIDDLE: Then would you give us a page
24 number?

25 WITNESS NADER-TEHRANI: It's Slide 75.

1 (Document displayed on screen.)

2 WITNESS NADER-TEHRANI: Can you describe the
3 location you have in mind based on this map?

4 MS. MESERVE: I believe there's words over the
5 top of it, but it's -- it's going to be where it says
6 Georgiana Slough.

7 WITNESS NADER-TEHRANI: Okay.

8 MS. MESERVE: It's underneath that.

9 WITNESS NADER-TEHRANI: Okay. So are you
10 asking the water quality effects at this location?

11 MS. MESERVE: Yes.

12 WITNESS NADER-TEHRANI: Yeah. So, no, I
13 don't -- I know -- I have looked at the water quality in
14 that area from a model output and I -- I don't see any
15 difference between what we expect to see under -- between
16 no change between baseline and the No-Action and other
17 operational scenarios we've looked at before.

18 MS. MESERVE: So, what I heard earlier this
19 morning, we were talking about the exceedances of the
20 Emmaton standard and the increases, so I won't go over
21 that.

22 WITNESS NADER-TEHRANI: Emmaton is much
23 further, you know, downstream, you know.

24 MS. MESERVE: Well --

25 WITNESS NADER-TEHRANI: Yeah. You would reach

1 a different conclusion when you get to Emmaton.

2 MS. MESERVE: Okay. But in the testimony we
3 have here in the PowerPoints, there -- there is no output
4 for, for instance, the southern tip of Ryer Island if
5 someone is curious about that.

6 WITNESS NADER-TEHRANI: That is correct.

7 And -- But, you know, what I explained earlier,
8 the model output is available and it does include water
9 quality, water levels and flow throughout the Delta for
10 anyone who wishes to see.

11 In my presentation -- In my testimony, I
12 included a number of locations. And you just asked me a
13 location and you showed me on the map, and I gave you the
14 answer based on -- based on that, that that's what I
15 expect.

16 MS. MESERVE: Do you think a regular person
17 could find that output? Or would you need to have a
18 modeling expert find it?

19 WITNESS NADER-TEHRANI: I don't know.

20 MS. MESERVE: Okay.

21 WITNESS NADER-TEHRANI: It depends on what you
22 define "regular."

23 MS. MESERVE: Well, I guess my definition would
24 be someone who's not trained as a Modeler. I mean, we've
25 been told go look in the modeling, but --

1 WITNESS NADER-TEHRANI: Right.

2 MS. MESERVE: Okay.

3 WITNESS NADER-TEHRANI: What I -- What I tried
4 to -- Again, I tried to be helpful and choose locations
5 that I thought would be of interest to people, most --
6 most folks, and that's the rationale I chose for choosing
7 the locations and -- and any other location, if I don't
8 know, I'll tell you I don't know.

9 But the location you just pointed out, I can
10 say with a great deal of certainty that I don't expect
11 the water quality to change at the location you just
12 mentioned.

13 MS. MESERVE: Were you asked, in preparing the
14 modeling, to consider any other water quality effects
15 other than compliance with D-1641?

16 WITNESS NADER-TEHRANI: I'm sorry. One more
17 time?

18 MS. MESERVE: Were you asked, or did you
19 consider -- Well, let me start again.

20 Did you consider any other water quality
21 effects in the modeling besides compliance with D-1641 in
22 terms of water quality?

23 WITNESS NADER-TEHRANI: My understanding -- and
24 I talked to the attorneys -- that this testimony is about
25 legal users of water, both ag and urban, and -- and my

1 best representation of what those locations represent is
2 what's inside D-1641.

3 MS. MESERVE: So, did you consider whether
4 there could be an effect or an injury on users of water
5 from anything other than violation of D-1641?

6 WITNESS NADER-TEHRANI: I have looked at -- in
7 the water quality changes at other locations, if that's
8 what you're asking.

9 MS. MESERVE: But that's not reflected in your
10 testimony or in the PowerPoints. That would be buried in
11 the modeling itself?

12 MR. MIZELL: Objection: Misstates the witness'
13 testimony.

14 CO-HEARING OFFICER DODUC: Well, if the witness
15 could repeat his answer.

16 WITNESS NADER-TEHRANI: What I said is, in
17 consulting with our attorney, you know, considering the
18 focus of this testimony, Part I, is on legal users of
19 water, agriculture, you know, and M&I.

20 The -- So I -- In order to best answer that
21 question, as far as whether there will be any water
22 quality effects, we felt that the D-1641 locations, that
23 that -- that D-1641 is there to protect, would be the
24 best representation of, you know, making an assessment on
25 whether there is a -- an impact to water quality for

1 legal users of water.

2 CO-HEARING OFFICER DODUC: Did you conduct any
3 other analysis besides those from D-1641?

4 WITNESS NADER-TEHRANI: I -- I looked at water
5 quality, you know, results everywhere pretty -- you know,
6 throughout the Delta. Yes, I have looked at. And I
7 showed the representative locations that would be
8 geographically in the Delta.

9 CO-HEARING OFFICER DODUC: And that information
10 is in the modeling result, but not necessarily in your
11 testimony.

12 WITNESS NADER-TEHRANI: It's not in the
13 testimony, no.

14 MS. MESERVE: Did -- Did -- And forgive me if
15 this was asked. I know there was a reference to an
16 update of the Water Quality Control Plan.

17 But did the modeling that you undertook
18 incorporate any future perspective requirements that
19 might change in the updated Water Quality Control Plan?

20 WITNESS MUNÉVAR: No. I'll be brief.

21 MS. MESERVE: Okay.

22 WITNESS NADER-TEHRANI: That was a easy yes/no.

23 MS. MESERVE: Okay. Do any of the model
24 scenarios assume that there would be any purchases of
25 water from upstream sellers to meet the bypass flow

1 requirements for water quality standards or other
2 requirements?

3 WITNESS MUNÉVAR: No.

4 MS. MESERVE: Are you aware of -- in the 2015
5 RDIR (sic), I believe there was an exhibit of the EIR
6 that discusses purchase of -- of water from willing
7 sellers to make up needed flows.

8 Is that something that's no longer part of the
9 Project?

10 WITNESS MUNÉVAR: It was not incorporated in
11 the modeling.

12 MS. MESERVE: Miss Buchholz, since you're an
13 expert on everything in the EIR, can you explain to me
14 whether that's something that would be corrected or
15 changed in the Final EIR to be different than what we've
16 been provided thus far?

17 WITNESS BUCHHOLZ: Do you -- Can you tell me
18 which appendix you're talking about? Because there's two
19 different ones for purchasing. One was on transfers and
20 one was on purchasing to help meet the spring outflow.

21 MS. MESERVE: Let's just ask about both. I'm
22 not sure. I mean, I think both relate to my question.

23 So, yeah, I'm wondering whether this is
24 something that's changed and . . .

25 WITNESS BUCHHOLZ: So, in transfers, we

1 acknowledge that transfers outside of the continuation of
2 purchases under the Laurie River Accord, none of the
3 other transfers are included in the modeling and,
4 although we've acknowledged the transfers could continue
5 in the future as they have historically, and they -- they
6 would all have their separate engineering and
7 environmental studies, so they weren't part of the
8 Project or quantitatively analyzed in the No-Action
9 Alternative or the other alternatives.

10 With respect to purchases, on spring outflow,
11 as we moved forward in the Biological Assessment
12 alternative, we did not include this as part of the
13 description of that, and we're -- I'm not quite sure how
14 that's going to be included in the final Chapter 3
15 Project Description of the Final EIR/EIS.

16 MS. MESERVE: Okay. But it's still expected to
17 be released in September?

18 WITNESS BUCHHOLZ: I did not say that. I
19 really don't know what the date is.

20 MS. MESERVE: Okay. Thank you.

21 Let's see. And I'm not sure who the right
22 person on the panel is.

23 I'll just ask the question:

24 Did the modeling analyze how the hydrodynamics
25 of the river would be altered by the discharges during

1 dewatering activities? Is that something that the model
2 looked at? This would be a construction impact?

3 WITNESS BUCHHOLZ: The modeling was not changed
4 for that discharge.

5 And as we've talked about during the
6 Engineering Panel, the volumetric quantitative analysis
7 of dewatering that was in the Draft EIR/EIS is going to
8 be substantially reduced because of the use of slurry
9 walls around all the intakes, tunnel shafts and forebays.
10 And we don't have a quantitative number at this time but
11 it will be substantially reduced.

12 MS. MESERVE: Okay. Continuing on the cutoff
13 walls issue, which is addressed in DWR-218, although I
14 don't think it's necessary to put it up.

15 Has there been any modeling -- We heard some
16 questions earlier about what modeling of groundwater
17 effects occurred.

18 Has there been any modeling to try to show what
19 would be different with the cutoff walls in place?

20 WITNESS BUCHHOLZ: We did not re-do the
21 CVHM/CVHMD modeling for the slurry wall installations.
22 It would be based upon our experience with slurry walls
23 at other similar locations with poor soils, clay soils,
24 that we have a gamut of range of -- for these conduction
25 areas. We would not anticipate that deep groundwater

1 elevation would change.

2 And so, right now, in Appendix 7A in Chapter 7,
3 we actually show adverse impacts to groundwater, but with
4 the installation of slurry walls at those construction
5 sites, we don't anticipate those changes.

6 MS. MESERVE: In your opinion, could the
7 permanent cutoff walls interfere with subsurface water
8 flows that might be feeding local groundwater wells for
9 ag or domestic water users?

10 MR. MIZELL: I'm going to object to this. We
11 went over this exact question in the Engineering Panel
12 with this exact same witness.

13 CO-HEARING OFFICER DODUC: We did. Let's go
14 ahead and answer it one last time.

15 MS. MESERVE: I don't think I actually asked
16 this question.

17 WITNESS BUCHHOLZ: I did respond to this
18 question.

19 And because of the -- One of the things we
20 looked at was the percentage of -- So, first of all, with
21 respect to the area along the riverbank that would be
22 included within the slurry wall, which would be
23 consistent with the length of the intake on the
24 construction, which would have happened with or without
25 the slurry walls, there's no -- no increased length of --

1 of that.

2 We -- It was a very small portion of the
3 Reaches of the river in that area going from Clarksburg
4 down towards Walnut Grove.

5 I personally reviewed a similar analysis that
6 was done for the Natomas portion of Upper Sacramento --
7 in the Sacramento River where they do an analysis more
8 quantitative. This would be less than 20 percent of that
9 length of the Reach of the river.

10 We also believe that that area, looking at the
11 way the groundwater moves from the east and from other
12 water bodies adjacent to that on the eastern side of the
13 construction sites, we don't believe that the re-charge
14 would be affected.

15 MS. MESERVE: Let's see. I want to look
16 briefly at DWR-515, and this is just to follow up on the
17 low-level pumping which was addressed somewhat. So this
18 is a modeling question.

19 (Document displayed on screen.)

20 MS. MESERVE: With respect, I think it's on
21 Page 3.

22 (Document displayed on screen.)

23 MS. MESERVE: It's one page up from that, I
24 believe.

25 It's the one that talks about the constant

1 low-level pumping of 300 cfs. And the way I understood
2 the rules, it's -- the question is, would there -- does
3 the model ever assume low-level pumping when the bypass
4 flows past the intakes are less than 5,000 cfs?

5 WITNESS MUNÉVAR: No. I think you're looking
6 for the table on Page 4 of this testimony, which
7 indicates that --

8 MS. MESERVE: Right there.

9 WITNESS MUNÉVAR: -- the bypass flow, even from
10 a level pumping, there would not be diversions if the
11 bypass flow would fall below 5,000 cfs.

12 MS. MESERVE: Okay. Yeah. And the reason I
13 was trying to clarify that is because, thinking back to
14 the other slide, which was DWR Errata -- I'm not sure
15 which one, but it's the graphical representation. It
16 shows the rules for August -- It says November through
17 May, so I'm just checking to make sure that, in all runs,
18 it wouldn't be more than that.

19 WITNESS MUNÉVAR: I believe it was December
20 through April in the graphic, but -- if I'm referring to
21 the right one.

22 MS. MESERVE: Yes.

23 WITNESS MUNÉVAR: But outside of the -- This is
24 describing low-level pumping. And outside of that
25 pumping, there are much more restrictive bypass flow

1 requirements that have -- on the order of 12 to 20,000
2 cfs bypass.

3 MS. MESERVE: Does the model ever require
4 shutting down at the low-level pumping for reasons other
5 than not meeting the bypass flow requirement of 5,000?

6 WITNESS MUNÉVAR: In the modeling, if there's
7 not a need to divert, it could show lower than -- it
8 could show lower than the low -- the low-level pumping.

9 We don't necessarily have maintenance
10 requirements built in, which could also have diversions
11 that would be lower than the low-level pumping.

12 MS. MESERVE: Okay. Okay. Okay. I'm going to
13 move on to some questions that were provided to me by
14 Islands, Inc.

15 For the in-Delta consumptive use for downstream
16 riparian and 314 rights, what does the model assume for
17 that demand?

18 WITNESS SMITH: You're speaking of DSM-2 or
19 just in general? I think both use the same total net
20 channel depletions within the model.

21 And what we use is the Delta Island consumptive
22 use, and that's based on crop type and, you know, soil
23 moisture and, you know -- you know, calculated through
24 that.

25 And so we don't really look at the water

1 rights. We look at what the individual crops need and,
2 based on that, that's the -- the water that we estimate
3 that's diverted.

4 MS. MESERVE: Do you consider that approach to
5 be best-available science?

6 WITNESS SMITH: At this point in time, yes.
7 Until we get additional information, yes.

8 MS. MESERVE: And that approach would also
9 account for seepage and other means by which water is
10 getting on to the islands?

11 WITNESS SMITH: Yes, that's true. We're
12 continually working on it but at this time that's the
13 best available.

14 MS. MESERVE: And does that approach account
15 for the timing of the in-Delta water demands?

16 WITNESS SMITH: The timing? Yes, each month
17 has a different demand. There's an irrigation season so,
18 yes, that's all accounted for.

19 MS. MESERVE: Let's see. This may have been
20 answered. I apologize.

21 On the water quality, does the model analyze
22 the impacts on what time-step period? Daily? Weekly?
23 Monthly? Or yearly?

24 WITNESS NADER-TEHRANI: The model computes
25 water quality, whether -- it's usually EC -- every 15

1 minutes, and then we do an analysis based on the
2 15-minute output. Typically, they're daily or monthly
3 numbers are what we look at.

4 MS. MESERVE: Okay. That's useful.

5 When the model simulates the scenarios where
6 the salinity standards, say, at Emmaton are exceeded,
7 does it assume any particular action to address those
8 exceedances in operations?

9 WITNESS NADER-TEHRANI: I think, as I explained
10 earlier, the water quality -- D-1641 water quality
11 objectives are all modeled in CalSim.

12 And as far as CalSim is concerned, it thinks
13 it's done the job well at most times and the D-1641 water
14 quality objectives are met.

15 But given all the different issues that I went
16 over early, when we actually check against DSM-2, which
17 is a more accurate model, we actually see exceedances.
18 And -- And I gave over -- you know, went over the reasons
19 why those -- those issues are there and the fact that I
20 do not consider them actual exceedances.

21 But -- And the exceedances that are shown in
22 the model are mostly related to the different set of
23 assumptions between CalSim and DSM-2.

24 MS. MESERVE: Yeah. The question is actually:
25 Does the model assume that any response occurs if there

1 is an exceedance, setting aside whether you believe it's
2 an exceedance or not?

3 WITNESS NADER-TEHRANI: Then perhaps, Armin,
4 you can --

5 WITNESS ANDERSON: I will go ahead and say:
6 For the DSM-2 model, it does not make any adjustments.
7 The flows that come into the DSM-2 model come straight
8 out of CalSim and are not further adjusted in the DSM-2
9 model.

10 WITNESS NADER-TEHRANI: Right.

11 And maybe you, Armin, can then explain what
12 would happen in the model if there is D-1641 water
13 quality objective.

14 WITNESS MUNÉVAR: Yeah.

15 As Parviz mentioned, CalSim believes it's
16 providing sufficient volumes of flow or export reductions
17 in order to achieve the water quality results.

18 And through the -- the course of translating
19 CalSim to DSM-2, and daily time-stepping, those
20 exceedances are what Parviz has shown.

21 So there is no op -- There is no operational
22 response to a non-achievement in CalSim because it
23 believes it has achieved.

24 MS. MESERVE: Okay. Does the model look at --
25 Does it consider whether there would be any impacts on

1 levee stability due to the fluctuations in water level we
2 discussed earlier? Does it provide any information, I
3 guess I should say.

4 WITNESS NADER-TEHRANI: No.

5 MS. MESERVE: What steps are being taken now to
6 try to validate the model against real-time conditions in
7 the Delta that we've seen recently?

8 MR. BERLINER: Objection: Asked and answered.

9 CO-HEARING OFFICER DODUC: Remind me, please.
10 Please answer.

11 WITNESS SMITH: So, with DSM-2, we periodically
12 update the calibration of the model given new
13 information, new data, whether that's new telemetry data,
14 or we make changes to the model, we'll update the
15 calibration, when there is significant enough change to
16 where we think that that's going to make a change in the
17 modeling studies.

18 So we continually work on that, including
19 consumptive use-related and drought-related activities.

20 MS. MESERVE: Okay. So it sounds like -- Is
21 your response that it's ongoing or . . .

22 WITNESS SMITH: Yes. Calibration is ongoing.

23 What we have currently for the California
24 WaterFix is the -- I would say there is no major changes
25 to significantly change what the calibration is. There's

1 been an updated calibration, but it's not significant
2 enough to -- to really affect the results of the
3 California WaterFix.

4 MS. MESERVE: Let's see. I believe I already
5 asked that one.

6 Do the models try to include any assumptions
7 regarding seepage out of the channels as the water is
8 traveling, say, from a release from the storage into the
9 system?

10 WITNESS SMITH: Within the Delta Island
11 Consumptive Use Model, there is seepage included, so --
12 but . . . you're talking about seepage out of the islands
13 or seepage --

14 MS. MESERVE: Yeah. Actually, just to clarify,
15 I -- I believe the question refers to seepage upstream of
16 the Delta, if that's being taken into account somehow in
17 your model.

18 WITNESS MUNÉVAR: That's a different -- Yeah,
19 that's included in the CalSim model. There's a stream
20 groundwater interaction which incorporates the -- the
21 loss or the gain of water from groundwater into the
22 stream.

23 MS. MESERVE: Okay. Does the model try to --
24 Is there any assessment in the modeling to try to look at
25 the possible formation of the harmful algal blooms in the

1 Delta?

2 WITNESS BRYAN: Yeah. The -- So, in the EIR,
3 we looked at harmful algal blooms, microcystis in
4 particular. And one of the things that we can do is use
5 DSM-2 and its Particle Tracking Model to look at
6 residence times.

7 And the other aspect of hydrology that's very
8 important in microcystis is channel velocity, and we
9 talked about that earlier today, I think.

10 And so we looked at both residence time and how
11 that would differ between the Proposed Project and the
12 No-Action, as well as channel velocities.

13 MS. MESERVE: Did you use any specific models
14 that were designed for assessment of harmful algal
15 blooms, or were you just looking at those two factors?

16 WITNESS BRYAN: The way we did our assessment,
17 in a nutshell, is that if you look at microcystis, we
18 looked at its life history and how it accomplishes blooms
19 in the Delta, what it needs in order to bloom in the
20 Delta.

21 It needs adequate nutrients, adequate light,
22 adequate temperature and typically doesn't bloom until
23 mid-to-late summer, and then adequate hydrology.

24 And so when you look at how the California
25 WaterFix alternatives can affect microcystis, they're not

1 going to affect those first three requirements very much
2 at all. So, really, the only way that the Proposed
3 Project can really affect microcystis is through the
4 hydrodynamic aspects, the hydrology aside.

5 So, we had tools available through DSM-2 to
6 look at what's important here, both residence time and
7 velocities.

8 MS. MESERVE: Are there other models that
9 you're aware of that you didn't use for harmful algal
10 blooms?

11 WITNESS BRYAN: None that I'm aware of.

12 MS. MESERVE: Let's see. So you mentioned
13 about the late summer.

14 We've seen in the operational rules that --
15 that there would be a preference -- I believe it's a
16 preference for pumping out of the South Delta in the
17 summer.

18 How is that preference expressed in the
19 operational assumptions?

20 WITNESS MUNÉVAR: Yeah. During July, August
21 and September, if water can be ex -- diverted from either
22 the North or the South Delta facilities, then the
23 preference is to divert from the South Delta up to 3,000
24 cfs before utilizing the North Delta Diversions.

25 MS. MESERVE: Is that part of the -- what would

1 be the proposed operational rules under, say, H3 or H4,
2 or is -- Well, I'll just leave it at that.

3 WITNESS MUNÉVAR: Yes.

4 MS. MESERVE: Okay. So -- Because when -- What
5 I heard was that it was a preference, and I didn't -- and
6 I guess I'm wondering, is there anything that would make
7 that preference a requirement that we're seeing in this
8 proposal that we're discussing today?

9 MR. BERLINER: We have the same continuing.

10 CO-HEARING OFFICER DODUC: (Nodding head.)

11 MR. BERLINER: Thank you.

12 WITNESS MUNÉVAR: So whether it's a requirement
13 or not, I don't -- I cannot say.

14 But I believe the operational preference will
15 be the same as that was modeled, because during summer
16 and lower flow conditions, there may be a preference to
17 meet water quality considerations in the South Delta by
18 diverting from the south; therefore, bringing more
19 Sacramento water into the interior part of the Delta.

20 MS. MESERVE: But in any case, if other
21 standards weren't being violated, we would still be
22 diverting the 900 cfs so-called low-flow -- low-flow
23 pumping in the north; is that correct?

24 WITNESS MUNÉVAR: As long as that water were
25 not required for any other downstream Delta requirement.

1 MS. MESERVE: Would another reason why that
2 low-level pumping could still occur would be if there was
3 a TUCP in place?

4 WITNESS MUNÉVAR: I -- I can't say. I don't
5 know.

6 MS. MESERVE: All right. That concludes my
7 questions.

8 Thank you.

9 CO-HEARING OFFICER DODUC: Thank you,
10 Miss Meserve.

11 Group 20?

12 Group 21, Mr. Herrick.

13 Uh-oh. He has an entire box.

14 MR. HERRICK: This is my lunch.

15 (Laughter.)

16 CO-HEARING OFFICER DODUC: Just quickly to
17 check in with the witnesses.

18 How are you doing? You need a five-minute
19 break or are you good?

20 WITNESS ANDERSON: Five minutes?

21 CO-HEARING OFFICER DODUC: Okay. Five-minute
22 break? Let's take a five-minute break.

23 You should have been faster, Mr. Herrick.

24 We will resume at 3:50, a six-minute break.

25 I'm so generous.

1 (Recess taken at 3:44 p.m.)

2 (Proceedings resumed at 3:50 p.m.)

3 CO-HEARING OFFICER DODUC: (Banging gavel.)

4 All right. Welcome back. It's 3:50 and you
5 can all thank Miss Anderson for that break. If it wasn't
6 for her, we would have just rushed through.

7 Mr. Herrick, a time estimate?

8 MR. HERRICK: I think it will take upwards of
9 two hours.

10 CO-HEARING OFFICER DODUC: All right. And not
11 that I'm agreeing to give you those two hours, but on
12 that, I just wanted to let -- I believe Miss Taber was up
13 next -- that we will not get to you until the morning.

14 Okay. The topics that you'll be exploring,
15 Mr. Herrick?

16 MR. HERRICK: Yes. I have some background on
17 modeling assumptions and outputs that have not been
18 covered.

19 Then I move into the specifics of the models
20 with regard to South Delta water quality, how averaging
21 and daily amounts may compare, the problems with the
22 reliance on the modeling outputs, Head of Old River
23 Barrier operations and impaction, water level impacts,
24 affects of increased exports on river salts, a couple
25 issues on the prior modeling, just for context, and then

1 I have things like -- small things like Term 91 and there
2 may be one or two others, if that's a good enough summary
3 for now.

4 CO-HEARING OFFICER DODUC: Okay. We will start
5 you with an hour and see where that leaves us at close to
6 5 o'clock.

7 MR. HERRICK: I appreciate that. I believe
8 none of my questions deal with topics covered yet but I
9 certainly don't want to take too much time.

10 CROSS-EXAMINATION BY

11 MR. HERRICK: Thank you, Hearing Officers,
12 Board Members. My name is John Herrick. I represent the
13 Central Delta Water Agency and some other parties.

14 I know a couple members of the panel so I hope
15 nobody is offended if I refer to Parviz as "Parviz" or
16 Tara as "Tara," but the other members I'm not familiar so
17 I won't be disrespectful if I don't use your name.

18 I'd like to start with Mr. Munévar.

19 There's still some confusion, I think, as to
20 how the model treats the conditions under which it
21 predicts dead pool conditions.

22 In the CalSim modeling that you performed, are
23 there instances in the 82-year timeframe where the model
24 shows dead pool being reached?

25 WITNESS MUNÉVAR: Yeah. As I indicated in my

1 exhibits, there are periods of time in both No-Action and
2 WaterFix in which dead pool is released, in Shasta and
3 Folsom in particular.

4 MR. HERRICK: And in normal day-to-day -- not
5 day-to-day.

6 In normal operations, though, actions are taken
7 well before dead pool is reached to avoid dead pool; is
8 that correct?

9 MR. BERLINER: Objection: Asked and answered.
10 We covered this with Mr. Lilly at some length.

11 CO-HEARING OFFICER DODUC: I assume you're
12 asking a few preliminary questions to get to your main
13 point.

14 MR. HERRICK: Yes.

15 CO-HEARING OFFICER DODUC: Yes. Just a few.

16 WITNESS MUNÉVAR: In actual operations, I think
17 they have more flexibility and improved forecasts to
18 understand when those conditions would occur.

19 MR. HERRICK: So would you say that the
20 modeling for -- produced by CalSim II, then, doesn't
21 accurately represent what actions would be taken in those
22 years when dead pool would be a threat?

23 WITNESS MUNÉVAR: I think the -- the CalSim II
24 modeling does not anticipate or include the dynamic
25 actions that might include -- be incorporated under

1 extreme dry conditions.

2 MR. HERRICK: And those dramatic (sic) actions,
3 would they or would they not affect the next year's, say,
4 carryover operations?

5 WITNESS MUNÉVAR: They could. To the extent
6 that they would increase storage or reduced deliveries,
7 it could impact next year's operations.

8 MR. HERRICK: Thank you.

9 Parviz, there have been some questions on this
10 but I just -- dealing with DSM-2.

11 We've discussed the -- The prior people have
12 discussed the 16-year period that was used.

13 Is there a reason why we -- why we didn't model
14 any years that included D-16 -- D-1641 obligations being
15 in effect? And by that, I mean the years after the plan
16 was -- or the -- excuse me -- the decision was adopted in
17 2000.

18 WITNESS NADER-TEHRANI: Again, these are the
19 historical simulations. These are planning simulations,
20 so they're not meant to replicate a condition that
21 occurred in the past.

22 The same 16-year -- You know, it's been a
23 standard practice for the last 17, 18 years, ever since
24 the DSM was brought in, the same 16 years for reasons,
25 you know, that was expressed earlier.

1 There is no rationale beyond what I have
2 already described.

3 MR. HERRICK: If we did model years that
4 included the timeframe D-1641 was in effect and then
5 compared them to actual data, wouldn't you think that
6 would allow people to get a better idea of what the
7 potential effects might be?

8 WITNESS NADER-TEHRANI: I'm --

9 MR. BERLINER: Objection: Argumentative.

10 CO-HEARING OFFICER DODUC: Well, I believe you
11 can answer whether you agreed or not.

12 WITNESS NADER-TEHRANI: Would you mind
13 repeating the question? I want to make sure . . .

14 MR. HERRICK: Yes.

15 Since the models are just comparative between
16 each run --

17 WITNESS NADER-TEHRANI: Yes.

18 MR. HERRICK: -- would you think it would be
19 more -- I forget the word I used -- more beneficial to
20 examine model years with actual data so that we could get
21 a better feel of how the model might really affect the --
22 any legal user?

23 WITNESS NADER-TEHRANI: In this particular mode
24 of operation, I think, as it was explained, the
25 conditions we're looking at include climate change and

1 sea-level rise.

2 These are not conditions that have occurred in
3 the past and, therefore, it does not make it very easy
4 to, you know, compare results with anything that really
5 occurred in the past.

6 MR. HERRICK: And if we could pull up DWR-513,
7 please, Page 3.

8 (Document displayed on screen.)

9 MR. HERRICK: Parviz, I believe this is the
10 exhibit referred to in much of your testimony.

11 Do you see the figure EC5 at the top of that
12 page?

13 WITNESS NADER-TEHRANI: Yes.

14 MR. HERRICK: And that shows the modeling
15 results from DSM-2 for all months over the timeframe that
16 you -- the averaging over the timeframe that you did;
17 correct?

18 WITNESS NADER-TEHRANI: That's correct.

19 MR. HERRICK: Okay. And so each bar is a -- an
20 average of all of the monthly results for that scenario.

21 WITNESS NADER-TEHRANI: That's correct.

22 MR. HERRICK: So when you average monthly
23 scenarios over numerous years, one would expect that the
24 average would consist of both numbers above that and
25 numbers below that; correct?

1 WITNESS NADER-TEHRANI: That's correct.

2 MR. HERRICK: Have you broken out anywhere what
3 those -- what any of the increases are and -- for
4 presentation to the Board?

5 WITNESS NADER-TEHRANI: I -- I have not. It's
6 not part of my testimony, no.

7 MR. HERRICK: In your opinion as a Modeler,
8 would that be helpful in evaluating whether or not a
9 project has adverse effects on certain parties to be able
10 to see when and how often increases in salt occur? Or
11 EC. Excuse me.

12 WITNESS NADER-TEHRANI: Well, with respect to
13 this particular place, position, I believe I explained
14 the -- the only factor that seems to be causing a change
15 in EC at this location has to do with the Head of Old
16 River Gate operation. That's the only thing that's
17 different.

18 All the assumptions with respect to San Joaquin
19 flows and salinity that really affects the salinity at
20 this location are identical among No-Action and other
21 operational scenarios.

22 What this picture illustrates to me is that the
23 fact that it was assumed Head of Old River Gate was
24 completely closed, and that that was the assumption for
25 Boundary 2 for the months of March, April and May, are

1 the -- is the cause for the increase that you're looking
2 at.

3 And that was kind of the main reason -- You
4 Know, I think that's the main message, I think, be -- you
5 know, behind this graph here that you're looking at.

6 MR. HERRICK: Did you check through the daily
7 average EC data to see if there were increases in EC that
8 you didn't attribute to the Head of Old River Gate?

9 WITNESS NADER-TEHRANI: There -- There's
10 nothing else that lead me to believe that anything be --
11 besides the Head of Old River Gate operation is causing
12 the increases that you see here.

13 MR. HERRICK: Did you check the daily data to
14 see if there were indications that something other than
15 Head of Old River Barrier was causing an increase in EC?

16 WITNESS NADER-TEHRANI: I did not necessarily
17 include each and every day in the 16-day -- you know,
18 years of simulation, if that's what you're asking.

19 MR. HERRICK: No. I'm talking about --

20 WITNESS NADER-TEHRANI: But having looked at
21 water quality results and -- you know, and especially in
22 the South Delta, and the familiarity I have with the
23 model, I -- I can convincingly say, you know, with a
24 great deal of confidence, that that's what I think the
25 result of that is.

1 MR. HERRICK: Well, hypothetically, then, if
2 the data showed a daily jump for a day, or three days, or
3 five days, or a month, which is not associated with a
4 change in Head of Old Barrier (sic) operations, would
5 that indicate to you that it was something other than
6 Head of Old River Barrier?

7 WITNESS NADER-TEHRANI: If I had seen something
8 other than those three months, you know, all other
9 months, everything else is the same, why would those
10 three months be any different than the other months?

11 MR. HERRICK: Okay.

12 WITNESS NADER-TEHRANI: And the only difference
13 in those three months is the Head of Old River Gate
14 assumption. With that -- With that, I think I don't have
15 to look anything further beyond that.

16 MR. HERRICK: That's why I asked you about
17 checking the daily data.

18 WITNESS NADER-TEHRANI: No, I did not check
19 every day, no.

20 MR. HERRICK: So, my understanding, you're
21 looking at the average day.

22 WITNESS NADER-TEHRANI: That's correct. That's
23 correct.

24 MR. HERRICK: (Distributing documents.)

25 Parviz, I've handed you what is labeled

1 SDWA-27, and for speed, I'll just identify it as an
2 e-mail, the cover page of an update on the Department of
3 Water Resources and the Bureau of Reclamation's Notice to
4 people about ongoing transfer pumping.

5 (Central Delta Water Agency, South
6 Delta Water Agency (Delta
7 Agencies), Lafayette Ranch,
8 Heritage Lands Inc., Mark Bachetti
9 Farms and Rudy Mussi Investments
10 L.P. Exhibit 27 marked for
11 identification)

12 MR. HERRICK: Do you -- Do you recognize that
13 document?

14 WITNESS NADER-TEHRANI: I have not seen it
15 before.

16 MR. HERRICK: Okay. Are you not on the mailing
17 list of these?

18 WITNESS NADER-TEHRANI: I do not get -- If I
19 do, you know, I might -- I've been super busy with other
20 things, actually.

21 MR. HERRICK: That, I can understand.

22 WITNESS NADER-TEHRANI: Yeah. So I'm not being
23 connected to South Delta issues for a while. So I may be
24 on that e-mail list but it's not -- it's not something
25 I've looked at.

1 MR. HERRICK: No, I'm not trying to trick you.
2 I didn't see your name on these. I just wanted to know
3 if you were familiar.

4 Are you familiar with the fact that updates for
5 transfers are sent out and those updates include both
6 water quality and water level predictions, I'll say?

7 WITNESS NADER-TEHRANI: I only can take your
8 word on it.

9 MR. HERRICK: Okay. The document talks about,
10 in the -- in the very first sentence of the text, that
11 (reading):

12 ". . . Transfers which began on July 1st, and
13 will continue through September. The daily rate of
14 planned transfer is currently at 350 cfs during
15 July."

16 Can you see that?

17 WITNESS NADER-TEHRANI: Can you help me? When
18 you talk about "transfer," can you explain more what --
19 what -- the transfer?

20 MR. HERRICK: Well, apparently the Department
21 or the Bureau are pumping transfer water at this time,
22 and there's certain limitations on that, as I understand
23 it. And so they're notifying the public pursuant to --

24 WITNESS NADER-TEHRANI: That's additional --
25 additional export.

1 MR. HERRICK: That's my understanding.

2 WITNESS NADER-TEHRANI: Okay.

3 MR. HERRICK: So assuming that's correct for
4 now, if you'll turn the page and maybe go to the third
5 page, which is titled, "Forecasted Daily EC @ Old River
6 near Middle River."

7 (Document displayed on screen.)

8 MR. HERRICK: Do you see that?

9 WITNESS NADER-TEHRANI: Yes, I see that.

10 MR. HERRICK: And do you know whether or not
11 the simulation done on this to produce this chart --
12 Because it goes beyond the current date it predicts.

13 Do you know whether the simulation is a result
14 of DSM-2 or some other model?

15 WITNESS NADER-TEHRANI: I did not do it, but I
16 can imagine the tool that was used to get that answer --
17 I mean, to get this. It would have had to have been
18 DSM-2.

19 MR. HERRICK: Okay. And so you see that there
20 are three lines indicated. One of them is -- You'll have
21 to bear with me on the color.

22 I believe one of them is bluish and it says
23 "Historic EC," and the second one says "Base Case" and
24 it's dark -- sorry -- and the third one says "Without
25 Transfer" and a dashed line.

1 Do you see that?

2 WITNESS NADER-TEHRANI: Yes, I see that.

3 MR. HERRICK: And you see that, when we get
4 over to, say, beginning on August 22nd of 2016, that the
5 Without Transfer in the Base Case but With Transfer start
6 separating.

7 Do you see that?

8 MR. BERLINER: Point of clarification: July
9 and August?

10 MR. HERRICK: It says -- Oh, did I say that
11 wrong? It says July 7. I'm starting at 7/21/2016 which
12 is about, what, three-quarters of the way through there.

13 Do you see that, Parviz?

14 WITNESS NADER-TEHRANI: I see that, um-hmm.

15 MR. HERRICK: And the two lines start diverging
16 for a while; is that correct?

17 WITNESS NADER-TEHRANI: Now, can you remind me
18 when you say "Old River near Middle River" with respect
19 to Old River, Tracy Road?

20 MR. HERRICK: Old River near Middle River would
21 be one of the South Delta compliance stations --

22 WITNESS NADER-TEHRANI: Yeah.

23 MR. HERRICK: -- and it's basically the Head of
24 Old River, not the Middle.

25 WITNESS NADER-TEHRANI: Okay. In this

1 assumption, may I ask:

2 Was the Vernalis flow or EC changed between the
3 Base Case and Without Transfer?

4 MR. HERRICK: I don't know if the Board wants
5 you to testify, but this is not at a time when the
6 standard is changing back and forth. The standard is
7 from April through the end of August --

8 WITNESS NADER-TEHRANI: Right.

9 MR. HERRICK: -- and then September --

10 WITNESS NADER-TEHRANI: I'm --

11 MR. HERRICK: -- through --

12 WITNESS NADER-TEHRANI: I'm just asking whether
13 the assumptions that were used in the model --

14 MS. MORRIS: This is Stefanie Morris, State
15 Water Contractors.

16 I think it's unclear what we're looking at. I
17 understand the witness said he's familiar with it.

18 But what transfer are we talking about? Is
19 this a transfer on the San Joaquin River, or is this some
20 other transfer coming from Sacramento River that's being
21 analyzed with the -- with this table?

22 CO-HEARING OFFICER DODUC: Mr. Herrick?

23 MR. HERRICK: Well, I don't know if anybody
24 wants me to testify, but --

25 CO-HEARING OFFICER DODUC: Okay. Instead of

1 testifying, then, help me understand -- Make the
2 connection for me.

3 Why are you doing this?

4 MR. HERRICK: Well, I'm doing this -- and I'll
5 get to these questions in a minute -- because this
6 indicates how the -- two things.

7 I'll soon be comparing it to the actual ECs
8 which are significantly different than the DSM-2 ECs
9 presented here; and then I'll be asking questions about
10 if 350 cfs of change of diversions at the South Delta
11 Pumping Plants can cause a change of 100 EC, isn't that
12 relevant to this process?

13 CO-HEARING OFFICER DODUC: And what is it
14 that's being shown on this graph?

15 MR. HERRICK: Well, the graph shows the
16 projected changes in EC at Old River near Middle River
17 under a scenario with the 350 cfs transfer and under
18 scenario without the 350 cfs transfer.

19 And as everyone can see on the left part of the
20 graph, there's a historic EC number, which is some sort
21 of average or something. I don't know what that is.

22 CO-HEARING OFFICER DODUC: And how does that
23 relate to the modeling results that these witnesses are
24 testifying to, which includes adjustments for climate
25 change and other factors?

1 MR. HERRICK: Well, I --

2 CO-HEARING OFFICER DODUC: Because you're --

3 MR. HERRICK: -- didn't know I had --

4 CO-HEARING OFFICER DODUC: -- trying to compare
5 the two results --

6 MR. HERRICK: I know.

7 CO-HEARING OFFICER DODUC: -- and I'm trying to
8 understand.

9 MR. HERRICK: I appreciate that. You know, I
10 don't know how long you want me to talk about this, but I
11 guess it's an offer of non-proof.

12 The -- The proponents have provided us with
13 modeling that shows averages --

14 CO-HEARING OFFICER DODUC: Um-hmm.

15 MR. HERRICK: -- and it shows very little
16 differences between the scenarios for EC changes.

17 The averages they all give are -- add up to
18 well below the standards when, in fact, the actual ECs
19 are above the standards. The modeling doesn't accurately
20 predict that; they say it won't. That's fine.

21 CO-HEARING OFFICER DODUC: They say it won't.

22 MR. HERRICK: But then we see that small
23 changes in export pumping have big effects on EC.

24 So if the modeling is being presented on
25 averages that don't show violations, I think it's very

1 relevant to show that, during violations, small changes
2 in pumping can result in significant increases in EC.

3 CO-HEARING OFFICER DODUC: And why would this
4 not be your case in chief -- part of your case in chief?

5 MR. HERRICK: Because this is challenging the
6 Proponents' assertion with regard to the effects on EC.

7 CO-HEARING OFFICER DODUC: But did these
8 modelers -- Did -- Did you do this analysis and provide
9 this information?

10 WITNESS NADER-TEHRANI: I did not do this
11 analysis, no.

12 WITNESS SMITH: I believe this -- these
13 forecasts are done by John Leahigh's group, the modeling
14 forecasts --

15 MR. HERRICK: Let me start over.

16 WITNESS SMITH: -- for this particular thing.

17 MR. HERRICK: Because I -- I -- Just for the
18 record, no offense to the chairpersons --

19 CO-HEARING OFFICER DODUC: I won't take
20 offense. I'm just trying to understand --

21 MR. HERRICK: I understand.

22 CO-HEARING OFFICER DODUC: -- Mr. Herrick.

23 MR. HERRICK: The notion that I have to explain
24 where I'm going to go in my questioning seems rather odd,
25 but let me just lay it out.

1 If the model, the comparative results,
2 indicate, say, a 10 percent change in EC, the question
3 then falls from that:

4 If the modeling is not near what the actual EC
5 is, does that 10 percent then mean 10 percent of it is
6 real or does that percentage change under the real
7 conditions?

8 And it's the real conditions which will cause
9 injury, not the modeled conditions or the average
10 conditions.

11 So I think this is perfectly relevant to
12 question whether or not the data being presented
13 indicates there's no injury to third parties.

14 CO-HEARING OFFICER DODUC: No injury from a --
15 comparison purposes of the various alternatives with the
16 No-Action alternatives.

17 MR. HERRICK: But that -- But that's the
18 problem with the -- with the Petition. We have
19 statistical analysis of averaging -- of impacts. Nobody
20 has taken a, say, 10 percent change in EC at any
21 particular time and then compared that to a legal user.

22 So let's just hypothetically say there's a
23 10 percent change at the location I've -- I have on this
24 chart. Under real conditions -- Rather than the modeling
25 results, under real conditions, if the standard's already

1 being violated and there's a 10 percent increase, nobody
2 on this panel or any other panel has the background or
3 has offered an explanation as to why or why not that
4 doesn't constitute injury to anybody.

5 And so, of course, if the panel -- if the
6 Petitioners haven't presented the connection between data
7 and impacts -- which I think has clearly happened -- I
8 don't know why we would proceed.

9 CO-HEARING OFFICER DODUC: Thank you for the
10 commentary, Mr. Herrick.

11 Do you have anything to add, Mr. Mizell?

12 MR. MIZELL: Very briefly.

13 I would agree with your point that this seems
14 relevant to Mr. Herrick's case in chief, and to the
15 extent that the line of questioning relies upon facts
16 that have not yet been presented into evidence, it seems
17 disconnected from the purpose of cross, which would be to
18 ask the witnesses to provide information helpful to this
19 Board on the evidence that they presented and their
20 expertise as they've outlined it to you.

21 So I would agree with you: This is -- This is
22 relevant to his case in chief but not cross-examination.

23 MR. HERRICK: I -- I -- I don't think it's an
24 objection or a basis for a ruling that somebody thinks it
25 should be in a case in chief.

1 The cross-examination of the witnesses is not
2 limited to what they've said specifically.

3 CO-HEARING OFFICER DODUC: All right. I see
4 people starting to stand up.

5 Very quickly, please. Ms. Morris.

6 MS. MORRIS: If we're going to go into this
7 level of detail, Mr. Herrick hasn't laid a foundation for
8 this document.

9 He can't testify. He can't lay the foundation
10 he has no foundation. He has no witness to say where
11 this document came from, how it was prepared, what
12 assumptions were used, and, therefore, shouldn't be
13 allowed to ask questions about it.

14 CO-HEARING OFFICER DODUC: Thank you,
15 Miss Morris.

16 Mr. Jackson.

17 MR. JACKSON: Yeah. I think my question is
18 somewhat different.

19 We have a due process problem, as far as I'm
20 concerned, having listened to this.

21 Basically, all the testimony about legal injury
22 that we've heard so far is some models that do a limited
23 number of parameters in terms of injury.

24 If we can't show the weakness of the model
25 results, how are we ever going to be allowed to convince

1 you that modeling like this is simply predicting that
2 there's no injury? And yet they keep saying it's only
3 useful for comparative purposes.

4 This whole set of testimony seems to be a red
5 herring. And I think Mr. -- I -- I -- John Herrick can
6 speak for himself. I'm up sometime probably tomorrow
7 morning.

8 But we're going to go through it again tomorrow
9 morning because I can't cross-examine a model, so I have
10 to cross-examine the modelers. And that's what John's
11 doing here.

12 CO-HEARING OFFICER DODUC: All right. Thank
13 you, Mr. Herrick, with all of that back and forth.

14 I will allow the line of questioning,
15 acknowledging that the witnesses may be limited in terms
16 of their ability to answer. And if they do not know the
17 answer to something, they will say so.

18 Proceed, Mr. Herrick.

19 MR. HERRICK: Okay. Parviz, back to that third
20 page of SDWA-27. And, again, we're on the Forecasted
21 Daily EC at Old River near Middle River.

22 You said you did not produce this and you don't
23 necessarily know who did, but I'm going to ask you to
24 interpret it as best you can, if you will.

25 And back where we started: You see that

1 beginning on about August, or -- excuse me -- July 21st,
2 the Base Case and the Without Transfer start diverging;
3 is that correct?

4 WITNESS NADER-TEHRANI: Yeah, I see that.

5 MR. HERRICK: Okay.

6 WITNESS ANDERSON: Excuse --

7 MR. HERRICK: Now --

8 WITNESS ANDERSON: -- me.

9 Could you please clarify: Does the Base Case
10 have a transfer in there? This is the double line is
11 without transfer. Are we supposed to assume that?

12 MR. HERRICK: Well, just in time, I didn't read
13 the entire e-mail, but that's all covered in the e-mail.

14 WITNESS MUNÉVAR: I think it's important to
15 know where the transfer is occurring from as well --

16 MR. HERRICK: Well, it's not --

17 WITNESS MUNÉVAR: -- whether it's Sacramento
18 or --

19 MR. HERRICK: -- your time to cross-examine me.
20 All I can do is go over the document DWR gave me.

21 CO-HEARING OFFICER DODUC: You opened the
22 floodgates.

23 WITNESS SMITH: Well, and --

24 MR. HERRICK: If they want me to answer those
25 questions, I will. I don't know if the Board wants me

1 to.

2 WITNESS SMITH: I think that would be very
3 helpful. I think you already said, you know, where you
4 were trying to get at this.

5 I think the calibration of the model is online.
6 And for this BDCP process of the model that was used for
7 that process, and for California WaterFix, is online.
8 And the differences, the concerns that you have, are that
9 they be shown with observed data on there also.

10 And we'd probably be more comfortable, I think,
11 looking at that because we're more familiar with that.
12 We haven't reviewed this.

13 MR. HERRICK: Okay. Parviz.

14 WITNESS NADER-TEHRANI: Just by -- Just by
15 looking at this information, and if I don't -- I don't
16 know all the details, and I tried quickly to read the
17 e-mail to see if I can get some of the answers to the
18 questions I had.

19 But just by looking at this e-mail, my guess as
20 to why you're seeing this difference -- best guess, it's
21 a guess -- is that the assumptions that were used to
22 drive the models in the base case and without transfer
23 differ on the assumptions on Vernalis flow and EC, in
24 addition to the transfer.

25 That's my best guess.

1 But if I look at the results, you know, and the
2 assumptions -- and I'll talk to the person who did it --
3 then I'll get a better answer. But that's based on what
4 I see. That's the best answer I can give.

5 MR. HERRICK: Well, I appreciate that. I
6 wasn't asking you to explain the difference.

7 WITNESS NADER-TEHRANI: Yes. But you -- I
8 guess you were trying to -- I think the way you presented
9 this information, you were looking -- you know, showing
10 those two lines and -- and implied that those are the
11 only changes in transfer.

12 And I'm trying to explain what I think is
13 happening in the model is that there probably are other
14 changes in the model besides the changes in the export
15 level.

16 But I don't know. Until I ask the person that
17 did it, I can't say for sure. But that's the best most
18 likely answer I can give.

19 MR. HERRICK: Is it reasonable to conclude that
20 the DWR personnel who produced a forecast to measure or
21 indicate the difference between a transfer and a
22 non-transfer would change the criteria and the
23 assumptions and that would be responsible?

24 WITNESS NADER-TEHRANI: I don't know. I'm just
25 saying, based on past experience, a 350 cfs exchange in

1 export level, and the place that you're showing me should
2 not show in a -- an exchange in EC of the magnitude I'm
3 looking at.

4 MR. HERRICK: And, of course, that would depend
5 upon whether it's a Federal or State Project taking the
6 water in, whether the water rises, whether or not changes
7 in flow at Vernalis has occurred, or EC has occurred;
8 correct? All those things are factors.

9 WITNESS NADER-TEHRANI: All those things are
10 factors.

11 So if the only change that takes place is
12 in-basin without transfer, it's an additional 300 cfs.

13 And I'm assuming that 350 -- that extra 350 cfs
14 came from somewhere, either Sacramento or San Joaquin.
15 Then, yeah.

16 So I don't -- I don't anticipate a change of
17 that magnitude in the exports, CVP or SWP, would result
18 in the changes we're looking at.

19 CO-HEARING OFFICER DODUC: Miss Morris.

20 MS. MORRIS: I'm going to renew my objection of
21 where the transfer is coming from, because -- Not to
22 testify, but since everybody else seems to be, it seems
23 that whether or not this water transfer is coming from
24 the San Joaquin River and that's what's happening, it
25 could require waterfront -- it would allow more fresh

1 water to come in, and that may be showing, for instance,
2 in this pot.

3 But since Mr. Herrick hasn't identified that,
4 we have a long record where we don't really have any --
5 any meaningful testimony coming out of this.

6 CO-HEARING OFFICER DODUC: Thank you,
7 Miss Morris. So noted.

8 MR. HERRICK: I don't even know what that
9 means.

10 The -- The -- The whole idea of the questioning
11 is -- I just went through was to show that different
12 factors control and that makes differences in the
13 outputs.

14 So, the fact that I didn't --

15 CO-HEARING OFFICER DODUC: Just proceed with
16 your questions.

17 MR. HERRICK: Thank you.

18 (Distributing documents.)

19 MR. HERRICK: Okay. Parviz, as in our earlier
20 discourse with the Hearing Officers, I'd like to ask you
21 questions about the changes in modeling and how that
22 translates into real-world effects. And you may not
23 know, but let me just ask this string of questions.

24 Let's say that a modeling result shows a, you
25 know, 10 percent change, and whatever the reasons for

1 that, is there any way we know whether that 10 percent
2 would be a 10 percent change to the real or actual
3 numbers, or would it -- or how it might be less or more?
4 Is there any way we can determine that ahead of time?

5 WITNESS NADER-TEHRANI: I don't know if there
6 is a -- No. It's just -- What we can say is just
7 10 percent -- You know, if there's a 10 percent increase,
8 that's the best estimate in terms of the changes.

9 MR. HERRICK: Okay. And I'm not trying to beat
10 a dead horse, but it's possible that the 10 percent of
11 the modeling may be some different percentage change from
12 the actual data when the -- when that -- whatever
13 necessarily occurs.

14 So let me just put it into an example.

15 So, if the modeling shows a 10 percent change
16 from -- you know, during one week.

17 WITNESS NADER-TEHRANI: Right.

18 MR. HERRICK: If you took the actual data --
19 And you've predicted.

20 If you took the actual data from that week,
21 would we expect 10 percent of that to be from the Project
22 or would we not really know what the exact percentage
23 would be?

24 WITNESS NADER-TEHRANI: I -- It would be hard,
25 you know. This particular location is where sometimes

1 there is a deviation between model and, you know -- and I
2 think that's probably what you're getting at.

3 And this is a location that we've had issues
4 with before. And it is somewhat -- So I would say not
5 the same percentage but the same actual difference, you
6 know, would be closer to the -- You know, if you take the
7 absolute difference between the alternative and the model
8 and the baseline and say that that would -- that would be
9 the best estimate for the increase over the actual, if
10 that makes sense.

11 WITNESS ANDERSON: And I think the word
12 "modeling" is being used to represent two different
13 things here.

14 Sometimes modeling is talking about the
15 modeling that was done for this Project, which was a
16 future planning Project, and then -- But when you're
17 comparing model to data, you're talking historical
18 simulation of a historical period and observed data.

19 Because they're two different things. Because
20 comparing the future modeling to observed data would be
21 an incorrect kind of comparison, because they're kind of
22 apples and oranges.

23 So I don't know if you can be -- When you're
24 talking about just modeling, it's unclear to me if you're
25 asking us questions about historical modeling or if

1 you're asking us questions about modeling that was done
2 for WaterFix. That is a future scenario.

3 MR. HERRICK: Well, both of those questions are
4 before the Board here.

5 So let me ask Parviz again:

6 When we look at a model prediction, and say,
7 again, there's a 10 percent change from one scenario to
8 another, and then we look at the historical data from
9 that same timeframe, now that we can look back, would you
10 expect the actual data to be reflective of a different
11 change also or may it be a different change?

12 WITNESS NADER-TEHRANI: It may not be
13 10 percent.

14 I would say the best estimate for the change
15 would not be the percentage change but what would be the
16 actual change, you know, the absolute difference between
17 them.

18 MR. HERRICK: But the historical data doesn't
19 show two scenarios. It shows one.

20 WITNESS NADER-TEHRANI: No.

21 MR. HERRICK: There's nothing to compare.

22 WITNESS NADER-TEHRANI: If you're planning a
23 simulation, you run a case, and a base case, and an
24 alternative. And you -- You know, you subtract those two
25 and those give you an absolute change. And you can add

1 that to your -- whatever the historical simulation --
2 historical observed data would show later on.

3 That would be the best -- That would be the
4 best that I could say.

5 (Central Delta Water Agency, South
6 Delta Water Agency (Delta
7 Agencies), Lafayette Ranch,
8 Heritage Lands Inc., Mark Bachetti
9 Farms and Rudy Mussi Investments
10 L.P. Exhibit 35 marked for
11 identification)

12 MR. HERRICK: All right. So I've handed out
13 SDWA-35.

14 Do you have that in front of you?

15 WITNESS NADER-TEHRANI: Yes, um-hmm.

16 MR. HERRICK: And SDWA-35 is -- I'll represent
17 to the Board -- a printout from the Department of Water
18 Resources' Operations and Maintenance page -- web page --
19 excuse me -- and from there, you can get export flows,
20 water quality data.

21 And this, I guess, chart, I guess, includes the
22 days from July 4th, 2016, to August 2nd, 2016.

23 Do you see that, Parviz?

24 WITNESS NADER-TEHRANI: Yes.

25 MR. HERRICK: And then it's got the four South

1 Delta Stations with the measured EC and the 30-day
2 running average EC; correct?

3 WITNESS NADER-TEHRANI: I see that, yes.

4 MR. HERRICK: And the reason I've handed this
5 out is to compare what actually happened with what was
6 forecasted on SDWA-27 on Page 3 of that.

7 And so if we could just pick -- And we'll start
8 on, let's say, July 22nd. Let's go to July 21st, excuse
9 me.

10 And the forecasting shows approximately that
11 the water quality at that location, whether it's with or
12 without the transfer, is somewhere around 500 EC; is that
13 correct?

14 WITNESS NADER-TEHRANI: At what period again?

15 MR. HERRICK: On July 21st.

16 WITNESS NADER-TEHRANI: July 21st. Yes,
17 um-hmm.

18 MR. HERRICK: Yeah. And then if we go to the
19 actual data, we see that July 21st at Old River near
20 Middle River is .84 EC; correct? That's on SDWA-35.

21 WITNESS NADER-TEHRANI: I see that, yeah,
22 um-hmm.

23 MR. HERRICK: So when DSM-2 modeled the future
24 predictions under this transfer scenario, it thought that
25 the EC at this location would be 500 EC but, in

1 hindsight, it was actually 800 EC; is that -- 840 EC; is
2 that correct?

3 WITNESS NADER-TEHRANI: That's what I see here,
4 um-hmm.

5 MR. HERRICK: So, is -- As that -- As those two
6 lines on SDWA-27 diverge, we see a difference in
7 predictions of somewhere around, what, 100 EC at the max
8 or maybe a little more than that?

9 (Witnesses confer.)

10 WITNESS NADER-TEHRANI: Okay. So, I think what
11 it shows -- what it shows me, this deviation, is probably
12 an indication of, the estimates that are used in the
13 forecasting were significantly different from what
14 actually occurred.

15 MR. HERRICK: Correct. The way one would --

16 WITNESS NADER-TEHRANI: I'm talking --

17 MR. HERRICK: -- assume that --

18 WITNESS NADER-TEHRANI: -- about --

19 MR. HERRICK: -- there's --

20 WITNESS NADER-TEHRANI: I'm talking about the
21 assumptions that were used in deriving the model, not the
22 observed data at the interior locations.

23 MR. HERRICK: You keep giving excellent answers
24 to questions I haven't asked.

25 WITNESS NADER-TEHRANI: Okay.

1 MR. HERRICK: But, yes, the model is not
2 predicting, because it's not present to predict or not --
3 Let me start over.

4 The model is not predicting what they actually
5 see was; correct?

6 WITNESS NADER-TEHRANI: I'm --

7 MR. HERRICK: In hindsight.

8 WITNESS NADER-TEHRANI: -- just saying -- Well,
9 in order to get diagrams such as the one you put in front
10 of me, there was some assumptions to run the model. That
11 includes, for example -- as an example, flow at Vernalis
12 and EC at Vernalis. That's just one example of
13 information that's used.

14 What I'm trying to say is, when you get
15 deviations such as the one you're showing me, it is a
16 reflection -- it is possibly a reflection of the fact
17 that the information that was used to run these model --
18 not the model output -- the information that was used to
19 run the model were significantly different than what
20 actually occurred.

21 MR. ADAMS1: Again, thank you for that, but I'm
22 not asking you that.

23 WITNESS NADER-TEHRANI: Well, okay.

24 MR. HERRICK: The -- The -- The question is: A
25 short-term prediction in the model --

1 WITNESS NADER-TEHRANI: Yes.

2 MR. HERRICK: -- and that's all this is; right?
3 It's only, what, a month prediction.

4 WITNESS NADER-TEHRANI: Yes.

5 MR. HERRICK: A short-term prediction is
6 substantially off from what actually happened; correct?

7 WITNESS SMITH: I don't know if I'd agree with
8 "prediction."

9 So, I think John Leahigh -- and he may have
10 testified to this -- is that they -- they used the
11 forecasts to do comparisons, and sometimes they operate
12 to that forecast and sometimes they don't.

13 And within that forecast, there could be
14 issues. He did talk about issues in terms of operational
15 issues, not being able to see storms or -- or -- or
16 barometric effects.

17 But it doesn't -- These -- Either -- Looking at
18 differences, sometimes they'll shift it up based on, you
19 know, what happens three days later. They might change
20 how they're going to do the operations, which may be --
21 you know, you could consider a prediction, but I don't
22 think they've looked at it as a prediction.

23 It's a tool to look at what might happen given
24 two different alternatives in the future.

25 Now, if you hindcast it and see, okay, how we

1 did it, or if we did a historical case, that's a
2 different situation.

3 MR. HERRICK: Okay. Let me get back to my
4 questions instead of very good justifications as to why
5 things are wrong; okay?

6 I'm going to run out of time here real quickly.

7 Parviz, the model -- we assume it was DSM-2 --
8 that was trying to forecast water quality during the
9 month of July, in hindsight, did not accurately forecast
10 what the EC was; correct?

11 You've already given a long explanation as to
12 why it might not have, but I'm just trying to get you to
13 answer that question.

14 WITNESS NADER-TEHRANI: Yes. The observe --
15 The model output did not match the observed data.

16 MR. HERRICK: Okay. So does that give you any
17 pause when you make conclusions about this Petition's
18 modeling that might end up misleading the Board?

19 In other words, when you have model results
20 that show averages over 16 years that don't exceed the
21 standard, is that giving the Board a -- an incorrect
22 impression as to what the actual conditions may be?

23 MR. MIZELL: Objection: Argumentative; assumes
24 that the witness is trying to mislead the Board.

25 CO-HEARING OFFICER DODUC: I don't assume that,

1 so I will await the answer.

2 WITNESS NADER-TEHRANI: I guess so.

3 So, we -- we use DSM-2 in two modes of
4 operations. There's a planning mode, and that's --
5 that's the way we use the model when we presented the
6 information and use information from CalSim.

7 And then there is -- There are the challenges
8 that you see in front of you in trying to meet the
9 observed data.

10 And I think the Board has heard issues related
11 to the water quality issues in the South Delta before,
12 and -- and -- and the challenges in terms of figuring out
13 estimates that are used in the forecasting.

14 And I think the deviations that you're showing
15 me is a reflection of the -- the challenges in figuring
16 out what the assumptions should be, talking -- used in
17 forecasts, and not necessarily a model's weakness.

18 WITNESS ANDERSON: So, I'd like to clarify:

19 There's actually three ways we use the DSM-2
20 model. There's the future planning, there's forecasting,
21 and then there's historical simulations.

22 WITNESS NADER-TEHRANI: Yeah.

23 WITNESS ANDERSON: With the historical
24 simulations, that's where we have calibrated and
25 validated our model to observed data.

1 And those results would give more of a feel for
2 the comfort level that you would want to have in using
3 these models for planning studies, not looking at how
4 well it forecasts something, or the operations might very
5 well have changed.

6 Do you want to look at the historical
7 simulation where we use the actual operations and then
8 compare it to the observed data?

9 WITNESS NADER-TEHRANI: And whatever Jamie
10 said.

11 (Laughter.)

12 CO-HEARING OFFICER DODUC: Thank you,
13 Miss Anderson.

14 MR. HERRICK: I appreciate the witness' desire
15 to make this a workshop.

16 CO-HEARING OFFICER DODUC: Enough with the
17 commentary, Mr. Herrick. Let's --

18 MR. HERRICK: But I haven't --

19 CO-HEARING OFFICER DODUC: Ask your question.

20 MR. HERRICK: I do have limited time.

21 CO-HEARING OFFICER DODUC: Ask your question.

22 MR. HERRICK: I did, and I'm not sure it's been
23 answered yet.

24 Parviz, let me go back to DWR-513 and Page 3,
25 which are your charts -- your charts of the monthly

1 averages EC, and we were looking at EC at Old River at
2 Tracy Boulevard.

3 WITNESS NADER-TEHRANI: Can we put that up,
4 please?

5 MR. HERRICK: DWR-513, Page 3.

6 (Document displayed on screen.)

7 WITNESS MUNÉVAR: Yes, um-hmm.

8 MR. HERRICK: Now, there are only a few times
9 when the average of your bar charts go above 700 EC; is
10 that correct?

11 WITNESS NADER-TEHRANI: That's correct.

12 MR. HERRICK: And those are the months where
13 the standard is 1,000 EC; correct?

14 I'm not trying to test you.

15 WITNESS NADER-TEHRANI: Yes.

16 MR. HERRICK: Those months are December --

17 WITNESS NADER-TEHRANI: That's correct.

18 MR. HERRICK: -- January, and those are --
19 those are within the time period where the .1 EC or the
20 1,000 EC is.

21 WITNESS NADER-TEHRANI: Yes, that's correct.

22 MR. HERRICK: Okay. Now, if the State Board is
23 trying to analyze impacts to people and you show them a
24 chart that are always under the standard, isn't that
25 significantly different than presenting them with charts

1 which show times when the standards were being violated
2 what the effect of the Project might be?

3 WITNESS NADER-TEHRANI: To start off, I think
4 we -- we -- I think we made it clear that the assumptions
5 at San Joaquin River, whether it's flow or salinity, is
6 not changing. I think we made that clear.

7 And with that information, I think it's clear
8 that if you're not making the changes, then the only --
9 and I am clear -- the only parameter that's really going
10 to affect is salinities at Head of Old River. And, you
11 know -- And that's the reason for the exceedance at those
12 higher salinity that you see here.

13 There is nothing else to lead me to believe
14 that any portion of California WaterFix, whether it's the
15 North Delta Diversions or changes in the South Delta
16 exports, would cause any salinity changes at this
17 location.

18 MR. HERRICK: Okay. Should I repeat my
19 question?

20 WITNESS NADER-TEHRANI: I gave you the best
21 answer I could.

22 MR. HERRICK: Well --

23 CO-HEARING OFFICER DODUC: Perhaps if you can
24 ask your question without insinuating devious
25 machinations from the Department, Mr. Nader-Tehrani would

1 be best able to answer it, Mr. Herrick.

2 MR. HERRICK: Well, let me approach it this
3 way.

4 Under H3 scenario, aren't there additional
5 exports?

6 WITNESS NADER-TEHRANI: When you add both north
7 and south, yes.

8 MR. HERRICK: Okay. Has the -- Has any of your
9 modeling results -- Or maybe this is for Mr. Munévar.

10 Have -- Do any of the modeling results indicate
11 that there'll be an increase of salt delivered south of
12 the valley -- south end of the valley?

13 WITNESS NADER-TEHRANI: South of the valley.
14 Can you describe what geographic area?

15 MR. HERRICK: CVP service area south of Tracy.

16 WITNESS NADER-TEHRANI: We only looked at EC
17 results. And then if somebody wants to find mass of
18 salt, they can do that.

19 MR. HERRICK: I don't understand that.

20 Does the modeling show any incremental amount
21 of salts being delivered to the CVP service areas south
22 of Tracy under H3?

23 WITNESS NADER-TEHRANI: Can you -- The exports
24 come from either north or south. The exports that come
25 from north are usually better quality water, so if -- and

1 if you -- if you blend it altogether, the EIR would
2 contain, you know, the EC output that reflects that
3 blend.

4 So the overall blend results in better quality
5 of water. And so even with that additional volume of
6 water, but with the better quality water, so in terms of
7 mass purposes, we don't necessarily increase the mass of
8 salt.

9 But I think a better indicator would be the
10 actual concentration. And the answer is, no, we're not
11 increasing the concentration at the export locations.

12 MR. HERRICK: I'm going to need about 10 hours
13 apparently.

14 Parviz, buddy --

15 WITNESS NADER-TEHRANI: Yes, sir.

16 MR. HERRICK: -- the question was -- Let's --
17 Let's change it slightly.

18 Under any WaterFix scenario, is additional salt
19 delivered to the CVP service area south of Tracy?

20 WITNESS NADER-TEHRANI: By "additional salt,"
21 you're talking about mass flow times?

22 MR. HERRICK: Additional salt. I'm not talking
23 about concentrations.

24 WITNESS NADER-TEHRANI: Well, the only model
25 output that I continue to look at is the water quality

1 reflected in EC. I do not compute mass of salts.

2 MR. HERRICK: Is that a "yes" or a "no"?

3 WITNESS NADER-TEHRANI: I have not looked at
4 mass of salt, so I don't have the answer. I gave the
5 best answer in terms of what I expect to see. I have not
6 looked at it.

7 MR. HERRICK: Okay. So has anybody examined
8 through modeling the potential impacts of additional salt
9 being delivered to that service area making its way back
10 into the river? Has any of the modeling done that?

11 Please don't explain to me --

12 WITNESS NADER-TEHRANI: No.

13 MR. HERRICK: Okay.

14 WITNESS NADER-TEHRANI: I'm not aware.

15 MR. HERRICK: Thank you.

16 So if there were additional salt load coming
17 down the river, that would be one of the factors that
18 determines water quality from Vernalis north into the
19 Delta; correct?

20 WITNESS NADER-TEHRANI: I don't agree with
21 that.

22 MR. HERRICK: Additional salt would not --

23 WITNESS NADER-TEHRANI: No.

24 Well, when you say "salt," if you talk about
25 mass of salt, a greater mass of salt, if it comes with a

1 greater volume of water, that doesn't necessarily affect
2 the salinity at the South Delta.

3 MR. HERRICK: I didn't say it would. I asked
4 you if it could.

5 WITNESS NADER-TEHRANI: It can go either way.
6 And, so, to me, because the salinity -- combined salinity
7 at the south, when you add the north and south, is
8 expected to be less -- you know, going down -- in
9 concentration, I don't -- I don't expect that there will
10 be -- that would lead to an increase in the EC.

11 MR. HERRICK: This is very difficult for me to
12 be nice.

13 Thank you, Parviz.

14 WITNESS NADER-TEHRANI: I don't mean to give
15 you a hard time. I'm -- I'm just --

16 CO-HEARING OFFICER DODUC: I'm staying out of
17 this.

18 WITNESS NADER-TEHRANI: I'm giving the best
19 answer I can.

20 MR. HERRICK: I don't mean to give you a hard
21 time. Okay.

22 WITNESS NADER-TEHRANI: I've not been computing
23 mass of salt because, to me, that's not a driver in terms
24 of water quality at a record location.

25 MR. HERRICK: But just for the record, Parviz,

1 do you understand that the Regional Board criteria is in
2 massive amounts of loads, not even concentrations?

3 WITNESS NADER-TEHRANI: I don't know the
4 answer.

5 CO-HEARING OFFICER DODUC: I think, at this
6 point, I'm going to call a timeout. I think we need to
7 adjourn for the day, unless, Mr. Herrick, you'd like
8 further punishment this afternoon.

9 MR. HERRICK: I will agree to that.

10 And I will try to hone my questioning skills
11 to -- to expedite this process.

12 CO-HEARING OFFICER DODUC: I would appreciate
13 that, Mr. Herrick. I -- I firmly believe you have some
14 valid issues that you would like to cover, and I strongly
15 encourage you to reframe your question in a manner that
16 would facilitate the witness answering of those
17 questions.

18 MR. HERRICK: I will abide by your wisdom.

19 CO-HEARING OFFICER DODUC: Thank you,
20 Mr. Herrick.

21 And on that note, thank you all, and we will
22 reconvene at 9 o'clock tomorrow.

23 Hang on. Hold on.

24 Mr. Herrick, you need to talk to staff because
25 you apparently have not submitted a form for your

1 exhibits.

2 MR. HERRICK: He already told me that.

3 CO-HEARING OFFICER DODUC: And a reminder --
4 Okay. I guess perhaps as a reminder for everyone else.

5 Reminder: If you're using exhibits for
6 cross-examination, please fill out an exhibit I.D. Index
7 form, submit it to staff.

8 And with that, we will -- Mr. Jackson.

9 MR. JACKSON: If you're not -- If you haven't
10 used the State Board's exhibits and the exhibits that --

11 CO-HEARING OFFICER DODUC: Hang on. Hang on.

12 We're still on the record, so if you could
13 please come up so that the court reporter can hear you.

14 MR. JACKSON: If you're not planning on
15 introducing any new documents, you don't need to fill out
16 this form?

17 CO-HEARING OFFICER DODUC: That's correct.

18 MR. JACKSON: Thank you.

19 CO-HEARING OFFICER DODUC: All right. With
20 that -- we've given Mr. O'Laughlin enough amusement for
21 the day -- we'll adjourn and re-convene at 9 o'clock
22 tomorrow.

23 (Proceedings adjourned at 4:42 p.m.)

24

25

1 State of California)
2 County of Sacramento)

3

4 I, Candace L. Yount, Certified Shorthand Reporter
5 for the State of California, County of Sacramento, do
6 hereby certify:

7 That I was present at the time of the above
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9 That I took down in machine shorthand notes all
10 proceedings had and testimony given;

11 That I thereafter transcribed said shorthand notes
12 with the aid of a computer;

13 That the above and foregoing is a full, true, and
14 correct transcription of said shorthand notes, and a
15 full, true and correct transcript of all proceedings had
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17 That I am not a party to the action or related to a
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22 Dated: August 31, 2016

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