

0001

01 PUBLIC HEARING
02 STATE WATER RESOURCES CONTROL BOARD
03 DIVISION OF WATER RIGHTS
04 STATE OF CALIFORNIA

05
06 ---o0o---

07

08 SUBJECT: AMENDMENT OF CITY OF LOS ANGELES' WATER RIGHT
09 LICENSES FOR DIVERSION OF WATER FROM STREAMS THAT ARE
10 TRIBUTARY TO MONO LAKE

11

12 ---o0o---

13

14 Held in
15 Resources Building
16 Sacramento, California
17 Wednesday, December 15, 1993

18

19 VOLUME XXIII

20

21 ---o0o---

22

23

23 Reported by: Kelsey Davenport Anglin, RPR,
24 CM, CSR No. 8553

24

25

0002

01 BOARD MEMBERS

02

03 MARC DEL PIERO
04 JOHN CAFFREY
05 JAMES STUBCHAER
06 JOHN W. BROWN
07 MARY JANE FORSTER

08

09

10 STAFF MEMBERS

11

12 DAN FRINK, Counsel
13 JAMES CANADAY, Environmental Specialist
14 STEVE HERRERA, Environmental Specialist
15 RICHARD SATKOWSKI, Engineer
16 HUGH SMITH, Engineer

17

17

18

18

19

19

20

20

21

21

22

22

23

23

24

24
25
25
0003

COUNSEL AND OTHERS

01
01
02 For the U.S. Fish and Wildlife Service:
02
03 ERIKA NIEBAUER
03 Assistant Regular Solicitor
04 Office of Solicitor
04 Pacific Southwest Region
05 2800 Cottage Way
05 Sacramento, California 95825
06
06 For the Sierra Club:
07
07 LARRY SILVER:
08
08 For California Department of Fish and Game:
09
09 HAL THOMAS
10
10 VIRGINIA CAHILL
11 McDonough, Holland & Allen
11 555 Capitol Mall, Suite 950
12 Sacramento, California 95814
12
13 For the U.S. Forest Service:
13
14 JACK GIPSMAN
14 Office of General Counsel
15 U.S. Department of Agriculture
15
16 For the National Audubon Society and Mono Lake
16 Committee:
17
17 BRUCE DODGE
18 PATRICK FLINN
18 Attorneys at Law
19 755 Page Mill Road
19 Palo Alto, California 94304
20
20
21 For California Trout:
21
22 RICHARD ROOS-COLLINS
22 CYNTHIA KOEHLER
23 Attorneys at Law
23 114 Sansome Street, Suite 1200
24 San Francisco, California 94104
24
25
25

0004

COUNSEL AND OTHERS

01
01
02
02 For the City of LA and LA DWP:
03

03 THOMAS W. BIRMINGHAM
 04 JANET GOLDSMITH
 04 ADOLPH MOSKOVITZ
 05 Attorneys at Law
 05 Kronick, Moskovitz, Tiedemann & Girard
 06 400 Capitol Mall, 27th Floor
 06 Sacramento, California 95814
 07
 07 For State Lands Commission, Department of Parks and
 08 Recreation:
 08
 09 MARY SCOONOVER
 09 Assistant Attorney General
 10 1515 K Street
 10 Sacramento, California 95814
 11
 11 For Meter Water District of Southern California and
 12 LA MWD:
 12
 13 VICTOR GLEASON
 13 Attorney at Law
 14 1111 Sunset Boulevard
 14 Los Angeles, California 90050-0153
 15
 15 FRANK HASELTON
 16 Haselton Associates
 16
 17 JOHN ARCULARIUS
 17
 18
 18
 19
 19
 20
 20
 21
 21
 22
 22
 23
 23
 24
 24
 25
 25

0005

I N D E X

	PAGE
01	
01	
02	PAGE
02	
03	
03	
04	
04	6
05	41
05	61
06	91
06	94
07	99
07	

08	DR. HERBST, DR. STINE, MR. SHUFORD,	
08	DR. WINKLER	
09		
09	Direct Examination by Mr. Flinn	108
10	Direct Examination by Mr. Dodge	131
10	Cross-examination by Mr. Moskovitz	199
11	Cross-examination by Ms. Goldsmith	265
11	Cross-examination by Ms. Cahill	297
12	Cross-Examination by Mr. Valentine	299
12	Cross-examination by The Staff	315
13	Redirect Examination by Mr. Flinn	324
13	Redirect Examination by Mr. Dodge	347
14	Cross-examination by Mr. Moskovitz	364

E X H I B I T S

15		
16	L.A. DWP Exhibits Nos. 99, 100, 101,	
16	102	297
17		
17	NAS/MLC Exhibits Nos. 1-G, 49, 50, 52,	
18	52-A, 64, 65, 65-A, 66, 66-A, 66-B,	
18	201, 201-A, 202, 203	375
19		
19	NAS/MLC Exhibits Nos. 1-A-E, 231	
20	through 236, 1-U, 198, 200, 142-A,	
20	142-B, 1-P, 1-P-A, 1-P-B	376
21		
21	NAS/MLC Exhibits Nos. 235, 238	376
22		
22		
23		
23		
24		
24		
25		
25		

0006

SACRAMENTO, CALIFORNIA

WEDNESDAY, DECEMBER 15, 1993, 8:00 A.M.

---o0o---

HEARING OFFICER DEL PIERO: Ladies and Gentlemen,
this hearing will come to order. I'm sorry I'm ten
minutes late. If I hadn't driven around a wreck on
Garden Highway, I would have been even longer.

Where were we when last we left yesterday?

Mr. Smith, were you on?

MR. SMITH: Yes.

HEARING OFFICER DEL PIERO: This is a continuation
of the hearing regarding the City of Los Angeles' water
rights licenses on tributaries to Mono Lake.

Mr. Smith?

MR. SMITH: Yes. I have one question. I guess
these aren't working.

MR. CANADAY: You have to click the thing there.

HEARING OFFICER DEL PIERO: There you go,
Dr. Smith.

CROSS-EXAMINATION BY THE STAFF

Q Thank you. I have one question, but I'd like to
pose it in a series of questions about the exports at
the lower -- Upper Owens at the -- at the portal.

24 Now, if I'm not mistaken, you said that the THA,
25 total habitat available, would be greatest at
0007
01 approximately 250 cfs. Is that correct?
02 A BY DR. SITTS: Yes.
03 Q Okay. And for you, Mr. Smith, the department's
04 recommendation is for a cap of 200 cfs in the flow
05 coming out of the portal?
06 A BY MR. GARY SMITH: That's correct.
07 Q So would that combine with the natural amount
08 that's in the river?
09 A I think I need to clarify that. I may have
10 misunderstood or misspoke.
11 Q I'm asking the question for clarification.
12 A It is a maximum of 200 cfs in the Owens River
13 downstream, immediately downstream, if you will, of the
14 east portal, so that includes base flow in the Owen
15 River plus augmentation from the Mono Craters Tunnel.
16 Q Okay. So now to be precise about this, we're
17 talking approximately 50 natural spring flow in the
18 river and approximately 150 from the portal. Okay?
19 A Correct.
20 Q Okay. So that would be your recommendation as a
21 cap?
22 A Yes.
23 Q Would there be any circumstances where you would
24 like to have more as a stream augmentation, a stream
25 maintenance flow? I want -- this is very important to
0008
01 me because I'm running a computer model on this thing
02 and also considering some restoration stuff, so I need
03 to know whether you could consider at times of the year
04 higher flows?
05 A Under natural conditions, the flow in the Upper
06 Owens could go above 200 cfs. At that time -- that's a
07 natural condition, but at that time, I would say that
08 there should not be augmentation from the Mono Crater
09 Tunnel.
10 If there is a need, an opportunity for additional
11 water from the Mono Craters Tunnel, it should not cause
12 the Upper Owens flow to exceed 200 cfs. There are
13 opportunities, I believe, for some augmentation during
14 the irrigation periods to make up for stream flow
15 losses due to irrigation.
16 Q Okay. I'm not trying to belabor this point, but I
17 just want to make it very, very clear. We've been
18 talking a lot in terms of Rush Creek and also in terms
19 of Lee Vining, having stream maintenance flows that go
20 over the banks. Okay?
21 A Correct.
22 Q Okay. Now, you're saying, in other words, that
23 you don't want to have anything like that happen in the
24 Upper Owens?
25 A Artificially.
0009
01 Q Artificially.
02 A Artificially. What I'm saying is when those
03 higher flows, the flows that naturally occur in the
04 system and naturally overbank -- first off, we have no
05 control over that and, secondly, the department is

06 comfortable with that. What we want to avoid are
07 circumstances where we have artificial overbanking
08 particularly for long-term -- on a long-term basis.
09 There -- it might be a good idea for Mr. Wolff to
10 address the potential problems and the options, having
11 flows in excess of 200 cfs.

12 Now, if it occurs naturally, that's the most --
13 that's the thing that we really don't oppose.

14 Q You're answering my question, thank you.

15 Mr. Wolff, would you like to elaborate?

16 A BY MR. WOLFF: First of all, I think I should explain
17 a little bit about the -- people have been talking
18 about flushing flows or stream maintenance flows.

19 Q Yes.

20 A I think the issue on the Owens River is entirely
21 different than in the Mono Basin streams because the
22 Owens River is a river that has a lot flatter
23 gradient. The average channel slope is about, on an
24 order of magnitude, less than the streams that we
25 studied, that is Parker and Walker Creeks. And the bed

0010

01 of the channel has a lot finer sediment in the Owens
02 River than those channels. So in terms of flushing
03 flows, which people were talking about in the Mono
04 Basin streams, that really is not an issue on the Owens
05 River.

06 The flow -- the natural flows in the Owens River
07 are always sufficient all the time to mobilize the bed
08 sediments and to -- in a sense, then, keep the fine
09 sediment flushed from the bed. So you don't need to
10 release flow in order to achieve any kind of a flushing
11 flow effect from the Owens River. The river is,
12 because of the nature of the sediments and the bed of
13 the river, there is -- it just is an issue.

14 In terms of overbank flows in the Owens River, I'm
15 not -- I don't know much about the riparian vegetation
16 situation or anything like that, so in terms of needing
17 overbank flows for maintenance in that sense, I can't
18 address that. The concern I would have, though, in
19 terms of sustained overbank flows, it becomes, to me, a
20 channel stability problem because the Owens River,
21 historically, because of the flow augmentation from the
22 Mono Craters Tunnel -- and with significant overbank
23 flows, there has been a lot of channel evulsions. The
24 channel has changed courses, meander bends have been
25 cut off and whole new channels have formed. Part of

0011

01 that, I believe, is due to the significant overbank
02 flows.

03 So my recommendation in terms of overbank flows is
04 it's a natural process, and I don't think it's a
05 problem if the flow goes overbank occasionally. That's
06 just a natural process in a river. I think the concern
07 that I might have, and I believe this is the concern of
08 the department, is if the flows are -- if you have
09 sustained overbank flows, unnaturally, due to
10 augmentation, then there's a potential for channel
11 stability problems. And I think that should be
12 avoided, and I think that's what Gary Smith was saying
13 in terms of if the flows are -- if there's really a

14 high run-off year, if the flows are getting way up
15 above 200 cfs naturally, then the -- the flows from the
16 tunnel should be limited under those conditions.

17 Q Dr. Stine had suggested that we have something in
18 the way of perhaps an extended channel along the side,
19 or perhaps something like a pipe in order to, you know,
20 take these additional flows if they were available.

21 A Uh-huh.

22 Q Would you have anything inherently against
23 something like that?

24 A No, I wouldn't. If it's economically feasible to
25 build that, it would be a good solution from a

0012

01 technical standpoint. From a technical standpoint, the
02 degree that you could relieve high flows from the main
03 river, that's a good thing. And that was exactly what
04 was done with the north ditch on the Conley -- what was
05 it? The Nyo (phonetic) Ranch area there, and I guess
06 some of the work that a Basco (phonetic) did on the
07 meander bend cutoffs in that area show that that
08 channel was at least partially effective in limiting
09 changes on the main channel from the augmented flows.

10 So that one situation there might act as a model
11 for success of doing that over a greater length of the
12 river.

13 Q And you, Mr. Smith, in terms of Dr. Stine's
14 suggestion?

15 A BY MR. GARY SMITH: I think that that suggestion
16 deserves some examination. We haven't formed an
17 opinion on it, yet, the department, and therefore, I
18 can't -- I can't give you a clear response to your
19 question. I do believe it deserves evaluation. I
20 think it may have merit.

21 MR. SMITH: Thank you.

22 Q BY MR. HERRERA: Good morning, Gentlemen.

23 I'd kind of like to start with discussions about
24 the Upper Owens after L.A.'s diversions up to the time
25 that you began your studies, Dr. Sitts, a little bit.

0013

01 You did a little bit of a historic background of the
02 stream channel during that time frame, did you not?

03 A BY DR. SITTS: Yes.

04 Q Did the stream, itself, stream channel, react to
05 high flows? How did it react to those high flows? Did
06 it come to some sort of equilibrium with those higher
07 flows as they were diverted out of the Mono Basin?

08 A The theme in our report is that it did make some
09 adjustments, and we don't have evidence to conclude
10 that, you know, it was finally adjusted, but it
11 certainly did make a number of adjustments. It entered
12 in some areas and it appears to have widened, and we
13 base this on prior century comparisons of channel
14 widths to what we measured, as well as 1944 aerial
15 photographs. Whatever that exhibit is up there on the
16 board, 105 or 106, the 1944 series of photographs on
17 the Upper Owens indicated that there was some
18 straightening, obviously, a widening going on as well.

19 Q And that's occurred over quite a period of time;
20 is that correct?

21 A It's occurred over decades.

22 Q What was the kind of the magnitude of those
23 flows? The higher flows?
24 A The higher -- the higher flows, the combined flows
25 with east portal and the baseline flows were up in the
0014 neighborhood of about 380 on a continuous level, and
01 we're getting averages well over 200, 230 or so on a
02 monthly average.
03
04 Q So as a monthly average in the Upper Owens with
05 L.A.'s export operations, it's been over 200 cfs pretty
06 consistently?
07 A Yes. Yes. However, I'd add that some of the
08 figures, you can also tell that the fluctuations in
09 those flows during the course of a year or in the
10 course of a month change quite dramatically so that,
11 for instance, in Exhibit 62, Figure 9, you can indicate
12 there, you know, February might have had a flow
13 somewhere around 100 but, in fact, a portion of the
14 month was 200 and the other portion was 100. And it
15 changed in the course of one or two days. Same thing
16 happens in July where we see a change where it falls
17 from about 300 down to in the neighborhood of 120 or so
18 within the matter of a few days.
19 Q No matter what, those flows were all higher than
20 the natural flow of the Owens at east portal?
21 A By definition, yeah.
22 Q And that's in the magnitude of --
23 A On an annual average cfs basis, it's on the
24 magnitude of 92.
25 Q 92. Okay. So there's an additional 92 cfs at
0015 east portal?
01 A Yes. On the average.
02 Q Let me ask you this, if this Board was to reduce
03 those flows back to, let's say, an extreme condition of
04 no export of water, which has occurred for the last few
05 years, how do you expect the stream channel to react to
06 that below east portal?
07 A The stream channel?
08 Q Yes.
09 A I would expect that it would adjust to some
10 extent. It would probably narrow. There would be more
11 deposition. There would still be continuous flow all
12 the way to the river.
13 Q At what flows did you conduct your studies?
14 A Our studies were conducted at baseline conditions
15 and a little lower, I think somewhere in the
16 neighborhood of 50 cfs below east portal.
17 Q 50 cfs and --
18 A And that's an approximate. We didn't always
19 measure the flows when we were out there in the course
20 of our days, but it was an augmented condition well
21 into the drought.
22 Q And we heard testimony earlier that there was a
23 release of water primarily for the fishery study in the
24 Upper Owens, and that that was to provide a higher flow
0016 of some sort?
01 A Yes. The instream flow study was a short duration
02 in October of '91 where the flows were elevated to the
03

04 neighborhood of 200 cfs below east portal for a few
05 days for the purposes of taking measurements.

06 Q So for the purpose of your study, you essentially
07 did a low flow somewhere around -- if my memory serves
08 me correctly, around 55 cfs?

09 A On Page 100 in Table 38 of Exhibit 62, it
10 specifies the flows at which we measured our instream
11 flows at each of the locations.

12 Q The high flow was 210; is that correct, according
13 to that?

14 A In Table 38, the highest flow is below Benton
15 Crossing and that's 218.

16 Q And what was the high -- what was the high flow at
17 east portal?

18 A The high flow at east portal? Probably was around
19 178 or 175 and in Table 38, I'm using the highest
20 number of Hot Creek which, you know, was before the
21 major accretion.

22 Q During your studies, you did not actually observe
23 flows at east portal in excess of 200 and --

24 A Not to my knowledge.

25 Q Okay. So in making the recommendations you made
0017

01 for higher flows, the problems with higher flows above
02 200, is that an extrapolation of the data?

03 Two questions. I can see Mr. Wolff reaching for
04 the mike, but number one, is in effect to the fishery.
05 We talked the other day with Mr. Payne (phonetic)
06 regarding extrapolation of two and a half times upward
07 for various flushing flow scenarios and the effects of
08 that on various aspects of the IFIM. Is that
09 essentially how you got to your 270 cfs at Hot Creek
10 confluence? I'm still a little bit confused how you
11 got that 270.

12 A The 270. I'm going to take a crack at responding
13 to your question and Mr. Wolff may add some more detail
14 to clarify it. The 270 cfs was a recommendation for
15 below the confluence of Hot Creek. It was based not on
16 the IFIM, it was based on the computations of bank full
17 capacity in Table 9, which I went over with
18 Mr. Satkowski.

19 I took a look at the numbers in that table and
20 observed 280, 290, down in the neighborhood of the
21 confluence of Hot Creek. Those cross-sections were in
22 the vicinity of where the two streams come together.
23 The 270 was to stay below the 280, 290 numbers.
24 However, it appears that I was upstream a little bit
25 further than the model was estimating flows for, so you

0018
01 may want to loosen up on that 270 number at this
02 point. But it was derived from the estimates of bank
03 full capacity and recognizing that Hot Creek added more
04 water to the river, the channel was bigger there, and
05 it could accommodate more water. And the idea was to
06 try to stay within the natural fluctuations of extreme
07 conditions in the river.

08 Q Natural conditions prior to the export of water?

09 A Natural conditions being and extreme conditions
10 being without the augmentation. What would occur there
11 based on the in basin conditions.

12 Q Mr. Wolff, do you have something to add to that?
13 A BY MR. WOLFF: I guess what I would add in terms of
14 any kind of a recommendation that the Board might make
15 in terms of limiting flows, I think that probably the
16 best way to do that would be to manage the river based
17 on the flows just below the east portal. If you do
18 that, if you -- the flows at east portal are known.
19 Below hot creek, there is no gauge there on the river.
20 The flows we have our model -- which estimated the
21 flows there based on the flows at the east portal and
22 based on what we estimated coming from Hot Creek. But
23 there is no gauge there, and I think in terms of a
24 river management plan, I think it would be easiest to
25 base your management on the flows at the east portal

0019

01 and let the river below Hot Creek adjust naturally to
02 any inflow from Hot Creek.

03 Q Let's discuss that "react naturally". On Page 67
04 of the Upper Owens report DFG 62, it talks about
05 irrigation channels, and on that -- the first paragraph
06 below the -- the heading, Irrigation Channels, it
07 indicates 11 operational open irrigation channels were
08 identified with eight, three, and zero in the upper,
09 middle, and lower reaches respectively. And I believe
10 further on in the discussion in this report, it
11 identifies the rough guess of the amount of water being
12 utilized by these channels.

13 How would you react to the natural -- let the
14 stream come to natural conditions if we have 11 various
15 irrigation channels coming out of this reach of the
16 stream?

17 A I guess my conclusion based on the channel
18 stability analysis, now, this in -- has nothing to do
19 with the fisheries or anything like that at lower
20 flows, but when we're talking about channel stability
21 issues, we're talking about very high flows of 200 cfs
22 or more above the confluence with Hot Creek and
23 potentially substantially more due to the Hot Creek
24 inflows. And I think that the amount of flow in those
25 irrigation channels starts to become kind of in the

0020

01 gray area of the accuracy of the analysis. So I don't
02 feel like the -- in terms of channel stability, I don't
03 feel like those irrigation canals are a major issue.

04 If anything, during really high flows, there might
05 be excess water out there, and they're relieving some
06 of the pressure on the main channel. But in terms
07 of -- I don't think the -- I don't think they're a big
08 issue in terms of management in terms of channel
09 stability.

10 Q Do these irrigation structures have any control
11 structures on them for release of water from the main
12 channel out into these irrigation canals?

13 A BY DR. SITTS: Some have flash boards.

14 Q I think you had, Dr. Sitts, in your report, you
15 indicated that there is some problem with these
16 irrigation channels to the fishery. Could you
17 elaborate a bit on that?

18 A Sure. Two problems we can identify are the
19 entrainment effect, the fish actually go into the

20 irrigation channel. They go out to the pasture, and
21 they're stranded there. They die. The other aspect of
22 it is that if water is withdrawn from the main channel,
23 and downstream in the main channel the flow is less,
24 and from the habitat area, flow relationships, we see a
25 decline in the habitat area. And this would occur

0021

01 during, of course, the time that there's irrigation
02 diversion there.

03 Q You made some recommendations on how to correct
04 that problem.

05 A I -- yes. We made the recommendations to try to
06 minimize the effects of those either by some type of
07 screen or perhaps coalescing intakes and maybe taking a
08 careful look at the amount of flow that's actually
09 needed to divert, to cultivate, and irrigate the
10 pastures.

11 Q Mr. Smith, have you looked into that situation as
12 well, as a representative of the department, as to the
13 problem of stranding fish from these irrigation
14 canals?

15 A BY MR. GARY SMITH: Only from the perspective of
16 preparing it for the Board.

17 Q The department hadn't looked into this prior to
18 the preparation for the Board?

19 A I think Curtis Milliron should respond to that
20 question.

21 A BY MR. MILLIRON: As part of the Crowley management
22 plan, that issue has been looked at in the past and
23 will be addressed in the plan for all the tributaries
24 to Crowley including Connicki, McGee, and the other
25 tributaries that are not affected by portal flows. So

0022

01 that's been something that we've discussed with Los
02 Angeles for many many years, discussing fish screens
03 and recently getting into a dialogue of how we can
04 operate these diversions in such a manner that we might
05 reduce the impact of fish. Nothing substantial has
06 come out of that yet, but it's a section in the
07 management plan that we hope to work on in the future.

08 Q Are all of these canals on L.A. DWP lands, or are
09 they on other privately held lands?

10 A The irrigation canals that I'm referring to are on
11 Los Angeles property. But the private land holders do
12 irrigate.

13 Q And they have a similar situation on private land
14 as well?

15 A Irrigation canals are generally constructed the
16 same and generally, depending upon the function of that
17 particular canal, they're either left on for long
18 periods of time and take a lot of flow, or they can
19 take smaller amounts of flow, and be turned on and off
20 frequently.

21 A BY DR. SITTS: The locations of the irrigation canals
22 that we observed in our habitat mapping and walks up
23 the river are indicated on Page 68 of Exhibit DFG 62.

24 Q DFG 62. Thank you.

25 Mr. Milliron, let's discuss a little bit more

0023

01 about the restoration or the -- I guess it's

02 restoration of this problem or resolve to this problem
03 that is identified by Dr. Sitts in the report. Do you
04 agree with screening and those sorts of techniques that
05 would be required to alleviate that problem?

06 A BY DR. SITTS: Screening is an alternative that I've
07 explored. It can alleviate the problem. There's a
08 maintenance aspect, an initial cost aspect, and so it's
09 not a problem that easily goes away with a central
10 fix. Screens require annual maintenance as well as
11 perhaps weekly maintenance, and so there's -- it's a
12 real commitment if that is the method of -- to
13 alleviate the problem.

14 I think that one of the big problems, if I might,
15 is that there's really very minimal lack of
16 understanding and control over the turning on and off
17 of canals in regards to how that affects fisheries. We
18 know that many fish are entrained. We've
19 electroshocked diversion ditches and have caught many
20 fish, and we know that they die, many of them die, when
21 the canals are turned off.

22 Q Mr. Smith, these reports are Fish and Game
23 publications. Are these recommendations that have been
24 developed in here, one of which was screening to
25 alleviate that problem, is that the recommendation of

0024
01 the department?

02 A BY MR. GARY SMITH: We would like to see those
03 diversions screened or another mechanism put in place
04 to prevent or minimize the entrainment of fish in the
05 irrigation ditches.

06 Q Is it the department's recommendation that in this
07 decision the Board is attempting to do here that we
08 impose these types of restorations or recommendations
09 upon private land holders as well as L.A. DWP?

10 MS. CAHILL: Objection to the extent that that
11 calls for any kind of legal conclusion.

12 HEARING OFFICER DEL PIERO: You can go ahead and
13 answer the question.

14 MR. GARY SMITH: From a biological perspective, it
15 would be desirable to implement some mechanism, whether
16 that's screening or combining -- one's a diversion or
17 minimizing diversions, some mechanism to avoid
18 entrainment.

19 MR. MILLIRON: There are alternatives to
20 screening, and screening is effective. It's used
21 extensively for anadromous fisheries on the north
22 coast, and we have had screen shock personnel out to
23 the Crowley tributaries to look at the kind of
24 diversions we have and to look at the feasibility of
25 screening. The answer there is that it is feasible, it

0025
01 will work. But the maintenance problem, as I
02 discussed, is a real concern.

03 Also, looking into the potential of using electric
04 fencing to discourage the movement of fish into
05 diversion ditches. I think there are lots of
06 alternatives out there and the management plan is
07 looking to move into those in terms of all of the
08 tributaries to Crowley. Something needs to be done.
09 It's a significant issue.

10 Q I guess from the answer I got here that the
11 recommendations that are provided in DFG 62 are that
12 they are the recommendations of Fish and Game to this
13 Board?

14 MR. THOMAS: Objection. This was asked and
15 answered several times. We've been very clear that our
16 recommendations are contained in the report.

17 HEARING OFFICER DEL PIERO: I'm going to sustain
18 the objection. I need to caution you so we don't have
19 the problem for the rest of the day, Mr. Thomas,
20 Ms. Cahill needs to make the objections.

21 MR. THOMAS: As long as our staff can maintain
22 some kind of deference to what we've been concerned
23 about all along, I will maintain deference.

24 HEARING OFFICER DEL PIERO: That's fine.

25 MR. HERRERA: I guess the problem I'm trying to
0026

01 have here is I'm getting different answers,
02 Mr. Del Piero, as to what is the recommendations here,
03 and I'm just trying to determine what that is.

04 HEARING OFFICER DEL PIERO: It was indicated
05 earlier that if there are questions that are left
06 unanswered in regards to the position of the
07 department, those should be prepared in writing and
08 they can be addressed at the end. If that's posing a
09 problem for you, Mr. Herrera, that's one way of
10 addressing the situation. The balance of it is
11 basically what's in writing. There's some
12 representations that have been made by the
13 representation of the department, one can reasonably
14 assume that's the position of the department or that
15 representation would not been made unless they choose
16 to object.

17 If the department has mutually inconsistent
18 recommendations, it's up to the State Board to remedy
19 that problem.

20 MR. HERRERA: Okay. Thank you.

21 Q BY MR. HERRERA: Mr. Milliron, I would like to
22 discuss a little bit of Lake Crowley problems here that
23 you identified. That in 1989, 1990 there was a fish
24 kill that you attributed to a low lake level in
25 Crowley; is that correct?

0027
01 A BY MR. MILLIRON: I identified that there was a fish
02 kill. It wasn't that there was a low lake level.
03 We've had much lower lake levels without fish kills.
04 Rather, it was the management of the stores of water in
05 Crowley and the rapid drawdown of the reservoir through
06 lake bottom sediments that resulted in the fish kill.
07 I have a couple of slides that might better illustrate
08 that point, if you want to see them now.

09 Q I'd like to pursue this a little bit.

10 A Okay.

11 Q Since the '89-90 occurrence of this fish kill,
12 have there been any additional fish kills in Lake
13 Crowley?

14 A Nothing of substance, no.

15 Q And you would attribute this to more applicable
16 operations of lake Crowley by L.A. DWP?

17 A I attribute it to lake level management, water

18 storage management, if you will.

19 Q To your knowledge, during this time frame, was
20 there any export of water from Mono Basin to contribute
21 to Crowley Lake?

22 A It was the fall of '89 and spring of '90. Not
23 being intimately familiar with the tunnel flows, I
24 can't answer that.

25 Q Let us assume that since that time frame, that
0028

01 L.A. has not contributed any sizable amounts of water
02 to Crowley but yet they've operated the lake in a
03 fashion that has not caused a fish problem. Is that
04 true? Would you consider that to be true?

05 A Since that time, there has not been a fish kill
06 problem like that that we've experienced.

07 Q Early on, we heard discussion, I believe, during
08 L.A.'s presentation, that at one time, there was an
09 algae problem in Crowley Lake, and it was a single
10 occurrence situation where they treated it or someone
11 treated it with copper sulfate. Does that algae
12 problem exist, continually exist at Crowley?

13 A Algae in Crowley has been a problem since
14 Crowley's had water in it. The problem insofar as it
15 may not be as compatible as water skiers would like it
16 to be. It's certainly a component of the ecosystem
17 there, and it's kind of a two-edged sword. Anglers
18 might not like to have as much algae in the water and
19 yet if we remove the algae with some kind of a
20 treatment as has been done at one time, then the
21 resultant fish growth is impacted. And that is the
22 reason why -- I believe that's the reason why L.A. does
23 not treat the algae in Crowley at this time is because
24 it does have a direct impact on the growth of fish.
25 The loss of their food.

0029
01 Q In your opinion, would a reduced inflow and/or
02 lower lake levels in Crowley intensify this problem?

03 A That's a difficult question to answer. I don't
04 think I can do that. We've had -- this water year,
05 we've had a lot more water than we've had in the past,
06 and we've had some algae problems in some of the areas
07 of the lake that I wouldn't have expected, so I can't
08 really answer that.

09 We did have a fish kill that may have been due to
10 or exacerbated by algae in the seventies and when I
11 looked at the record, the lake level was quite high
12 during that period so it didn't seem to correlate with
13 lake level.

14 MR. HERRERA: I believe this concludes my
15 questions. Thank you, Gentlemen.

16 HEARING OFFICER DEL PIERO: Mr. Canaday?

17 Q BY MR. CANADAY: Mr. Milliron, I was doing other
18 things when you were testifying earlier yesterday, this
19 panel. When was this management plan, Crowley Lake
20 management plan due? I don't recall.

21 A BY MR. MILLIRON: Due?

22 Q When will it be available, rather than due? I
23 don't like deadlines, either.

24 A 1994? 1994.

25 Q 1994.

0030

01 A Shoot, it's being written down.

02 Q Sorry.

03 A Thanks.

04 Q Mr. Smith, on -- we've had discussions about
05 management of the Upper Owens River, and I want to get
06 clear in my mind of the best way to manage the flows in
07 the river or the management point. Would you agree
08 from a management perspective it's better to try to
09 make flow determinations or decisions with the existing
10 flow gauges that are below, immediately below the east
11 portal rather than relying on some additional flow
12 measurement below Hot Creek?

13 A BY MR. GARY SMITH: In general, yes. If
14 circumstances were to change, it might be appropriate
15 to install gauging devices downstream. I think
16 Mr. Wolff stated a moment ago that basing the Upper
17 Owens flows on flows immediately downstream of the east
18 portal is a logical start. And subsequent to the Board
19 making its decision and monitoring -- following up
20 evaluation, if it's determined that another gauge would
21 be appropriate, I think that should be considered. But
22 to begin with, I think right now, the one gauge is
23 probably sufficient.

24 Q So your advice to the Board in this decision is
25 that that would be the -- the point that they should

0031

01 consider with some sort of monitoring program?

02 A Yes.

03 Q Dr. Sitts, you were questioned yesterday about
04 your decision not to use Smith and Aceituno preference
05 curves in the Upper Owens. We've heard testimony
06 today that the Upper Owens is significantly different
07 in its -- Mr. Wolff described slope? Was it the --

08 A BY MR. WOLFF: Yeah. The channel slope.

09 Q The channel slope as compared to Lower Rush
10 Creek?

11 MR. BIRMINGHAM: Excuse me. I'm going to object
12 on the grounds that it misstates the evidence.

13 Mr. Wolff's testimony was restricted to his study on
14 Walker and Parker. He did not go into Rush.

15 Q BY MR. CANADAY: Walker and Parker; is that correct?

16 A BY MR. WOLFF: Yes, that's correct.

17 Q Mr. Smith, in your development of the Smith and
18 Aceituno studies and your studies of streams on the
19 east side of the Sierra, those were generally high
20 gradient streams issuing from the Sierra's themselves,
21 correct, from the escarpment?

22 A BY MR. GARY SMITH: Generally, as I explained to
23 Mr. Birmingham, there were areas of lower gradient.

24 Q Were there streams that, based on your experience
25 in the Upper Owens, that were very similar to the Upper

0032

01 Owens or dissimilar to the Upper Owens?

02 A We actually sampled the Upper Owens.

03 Q You did?

04 A Yes.

05 Q Dr. Sitts, your decision to not use Smith and
06 Aceituno, that was in consultation with Mr. Smith,
07 wasn't it?

08 A BY DR. SITTS: Yes.

09 Q So the department looked at that and decided in
10 consultation with you that you better use site specific
11 preference curves; is that right?

12 A Yeah. It was a mutual agreement to go forward as
13 we did.

14 Q You talk, Doctor -- Dr. Sitts, you talk about
15 grazing impacts and water quality on the Upper Owens.
16 Was your focus primarily on private lands, L.A. DWP
17 lands, or a combination?

18 A The livestock and water quality?

19 A Yes.

20 Q We didn't distinguish between ownerships. There
21 seemed to be cattle grazing from one end to the other.

22 Q But could you distinguish between the -- were
23 there places on the river that it was a greater problem
24 than others?

25 A Yes. In the lower reach, we did not get into the
0033

01 water to do criteria measurements because there were
02 concerns about the quality of the water, the health of
03 the water, and the health of people being in that
04 water, so we avoided that.

05 Q And the ownership of those lands were?

06 A That's below the electrical transmission, and
07 that's L.A.

08 Q I'd like to, now, move to Walker and Parker Creek
09 studies. I'm referring to, first of all, DFG Exhibit
10 56, which is the Walker Creek stream evaluation report
11 92-1, Volume One, and Page 118. And it's the last
12 paragraph.

13 A Okay.

14 Q Could you read that, please?

15 A You would like me to read it?

16 Q Yes, please.

17 A The entire paragraph?

18 Q Yes, Sir.

19 A "It was expected that the present flow regime
20 would continue to provide productive fish habitat until
21 an instream flow study could be conducted and optimal
22 flows were in place. Fish habitat from the conduit to
23 Rush Creek has been provided for under the present flow
24 regime. The Basco (phonetic) Environmental '91, 1992,
25 this regime has supported healthy trout and diversion
0034

01 populations of aquatic invertebrates. Further, water
02 temperatures have been within the optimum range for
03 trout and the channel location appeared stable,
04 period."

05 Q Thank you. Mr. Smith, is it the position of the
06 department that an additional instream flow study is
07 necessary to develop instream flow recommendations to
08 the Board?

09 A BY MR. GARY SMITH: Once the -- those channels, in
10 this case, the Walker Creek channel, begins to obtain
11 some state of dynamic equilibrium, we would recommend
12 that another study be conducted at that time, yes, for
13 refinement of our flow recommendations.

14 Q I refer you to DFG Exhibit 161, which is a letter
15 to Division Chief Ed Anton (phonetic) dated June 21st,

16 1993. The subject of the letter is Walker Creek, and
17 the stream evaluation report 92-1. I'll read the
18 middle paragraph. Stream evaluation report 92-1 was
19 prepared pursuant to Sections 10003 and 10004, stream
20 protection standards. Other Public Resources Code,
21 Assembly Bill 1580, Chapter 1241, statutes of 1989, and
22 Fish and Game Code Sections 5937 and 5946. The stream
23 flow requirements identified are stream flows necessary
24 to keep fish in good condition as required under Fish
25 and Game Code Sections 5937, 5946. So the

0035

01 recommendations in this report are adequate to meet
02 those conditions, but we need another instream flow
03 study?

04 A Excuse me. They're adequate to meet the
05 conditions for minimum flows in these conditions to
06 keep fish in good condition given the state of the
07 stream. Once that stream has evolved, there's a need
08 to refine those flows.

09 Q Do you have a time scale when that would occur?

10 A It would be speculation, but again, ten years --
11 five years, ten years. I would have to have the state
12 of the stream evaluated today to give you a more
13 refined estimate.

14 Q Dr. Sitts, I'd like to refer you to the Parker
15 Creek stream evaluation report 1992-2, Volume One,
16 which is DFG Exhibit 58, and specifically Page 119.

17 The second paragraph, would you please read that
18 into the record?

19 A BY DR. SITTS: Second from the top?

20 Q Yes, Sir.

21 A "Flow recommendations in the plan were designed to
22 facilitate optimization of fish habitat conditions by
23 refining the flow regime. The strategy was based on
24 the expectation that the recommended regime would
25 continue to maintain productive fish habitat in the

0036

01 stable channel from the conduit in Rush Creek until the
02 refined flow regime was in place."

03 Q Thank you. I guess my question to you, Mr. Smith,
04 is the same. We have a letter to Mr. Anton (phonetic)
05 dated June 21st, 1993, relative Parker Creek, and
06 instead of reading the whole paragraph, I'll read the
07 last paragraph or the last part of the middle paragraph
08 of that letter, and this is DFG Exhibit 160 relating to
09 Parker Creek.

10 "The stream flow requirements identified are
11 stream flows necessary to keep fish in good condition
12 as required under Fish and Game Code 5937 and 5946."
13 So my question to you, again, is essentially the same.
14 The department's recommendation is, as it stands today,
15 is to maintain 59 -- meet the fish in good condition
16 under 5937 or 5946. However, the department intends
17 to, at some later date, conduct an instream flow study
18 to optimize the flow conditions.

19 A BY MR. GARY SMITH: Well, that's not quite the same
20 question. The difference was the department intends to
21 conduct a stream flow assessment. That's the little
22 wording difference there. My response to your question
23 is roughly the same, and that is the stream flows

24 are -- would be the minimum given the state of the
25 stream, the minimum, and based on our judgment, they
0037
01 are needed to comply with 5937 and refinement of these
02 flows in the future is essential.
03 Q Dr. Sitts, I hate making you the straight person
04 on this, but these are your reports. I'll refer you to
05 DFG 60, which is the South Parker Creek stream
06 evaluation report 92-3, Volume One.
07 A BY DR. STITTS: Okay. Just a second. I can handle
08 it.
09 Q Page 47, Dr. Sitts.
10 A Sorry. 47. Okay.
11 Q And it's under the heading "Restoration and
12 Optimization," and it would be the last paragraph under
13 that section. Could you read that?
14 A Sure. "The development of a fishery in the study
15 area under optimized conditions is not recommended as
16 the habitat and fish production would be small and
17 intermittent. Optimization could increase the 1.6 cfs
18 average annual flow by an estimated .3 cfs at the
19 conduit crossing. Further, the estimated 50 percent
20 exceedence flow at the conduit and at the Rush Creek
21 confluence are 0.8 and 0.1 cfs and do not appear
22 significantly increased under optimized conditions.
23 Reference Figure 15 and 16."
24 Q Thank you. Dr. Sitts, did you find any fin fish
25 in South Parker?
0038
01 A No.
02 Q Mr. Smith, I'll refer you to Exhibit 162, which is
03 a letter to Ed Anton (phonetic), division chief --
04 MR. FRINK: Excuse me, Mr. Del Piero and
05 Mr. Canaday. I have a question regarding the relevancy
06 of questioning the stream flow recommendations on South
07 Parker Creek. It's my understanding, Mr. Birmingham,
08 that the Department of Water and Power has ceased
09 diversions from South Parker Creek and does not intend
10 to reinstitute them, is that correct, in that that
11 stream is not specified in your water right license?
12 MR. BIRMINGHAM: That's correct.
13 MR. FRINK: I think we can skip over this line of
14 questioning regarding minimum stream flow requirements
15 because their diversions have not been under their
16 license in the first place.
17 MR. CANADAY: The question I was leading to is
18 that there are no vertebrate fin fish and the Fish and
19 Game's recommendation pursuant to 5937 and 5946 refers
20 to non-vertebrate fin fish; is that correct?
21 MR. GARY SMITH: That is correct.
22 DR. SITTS: Non-vertebrate fin fish?
23 Q BY MR. CANADAY: You answered it. You knew what it
24 meant.
25 A BY MR. GARY SMITH: I think you and I are the only
0039
01 ones who know what that means. Non -- there are no fin
02 fish that I'm aware of in South Parker Creek downstream
03 of L.A.'s diversion facility or past diversion
04 facility.
05 Q Mr. Parmenter, you've been sitting patiently for

06 several days and to make your trip over here
07 worthwhile, I do have a question for you.
08 A BY MR. PARMENTER: Mr. Canaday.
09 Q I'm referring to your testimony, and your
10 testimony relates to what section of the Owens River?
11 A The Middle Owens, specifically the first 16 miles
12 where I've done my work.

13 Q And for the record, would you, so that we're
14 clear, where on the Owens River that is?

15 A The upstream point would be Pleasant Valley Dam
16 extending downstream to Five Bridges Road.

17 Q And what is the management objective of the
18 department on that section of the stream?

19 A Self-sustaining populations of wild trout. There
20 are more specific management objectives.

21 Q And I was interested in some of the electrofishing
22 reporting that you have in your testimony. And your
23 testimony describes brown trout density estimates range
24 from 1.2 to 3.7 adult fish per linear foot of stream?

25 A That's correct.

0040

01 Q Now, those were in the sections that you sampled.
02 Is that -- is that kind of density -- would one expect
03 to find that density in that -- along that whole
04 section of stream?

05 A In general, yes. The electrofishing has a
06 limitation in that you can only sample water that's,
07 say, less than an inch or two below the top of your
08 chest waders. So in deeper water, you might expect
09 either greater densities or greater sustained crop
10 rates.

11 Q And the year that this sampling took place?

12 A It's occurred in '74, '77, '79, '80, and '92.

13 Q And these -- well, but these kinds of densities
14 were identified --

15 A The densities reported from the 1992 sampling.

16 Q Was the -- the average monthly flow in the Owens
17 River during the months that you sampled in 1992
18 different than the long-term average for October? Do
19 you recall?

20 A Yes, it was. I don't know what the average for
21 the month of -- actually, the sampling occurred in
22 September. And I'm not sure what the average flows
23 were during September of 1992, but at the time of the
24 sampling, they were about 100 cfs and had been at a low
25 level for some period of time before that. That's

0041

01 quite a bit below the long-term average.

02 Q So the reduction in flow in the Middle Owens River
03 in your opinion is not -- since 1989, has not impacted
04 the fishery significantly?

05 A It hasn't, by any means, precluded the existence
06 of an outstanding fishery.

07 MR. CANADAY: Thank you. That's all I have.

08 There's your trout stream, Mr. Del Piero.

09 HEARING OFFICER DEL PIERO: Yeah, I know. I've
10 been taking notes. Good.

11 Redirect. Ms. Cahill, good morning.

12 MS. CAHILL: Good morning. Good morning to the
13 panel.

14 REDIRECT EXAMINATION BY MS. CAHILL
15 Q Dr. Sitts, let me try to ask you a series of
16 straightforward questions to perhaps dispel some of the
17 confusion there's been about the Walker and Parker
18 reports. If you would take either the Walker report or
19 the Parker report and turn to Page 1, please.
20 A BY DR. SITTS: Okay.
21 Q And both of those reports, in fact, provide, don't
22 they, that the purpose of the investigation was to
23 provide a plan to restore and optimize environmental
24 conditions of degraded portions of the respective
25 creeks?

0042

01 A That's correct.
02 Q And what did you mean by "restoration"?
03 A By "restoration," we meant replacing or recreating
04 habitat loss.
05 Q And what did you mean by "optimization"?
06 A "Optimization" referred to providing habitat
07 resources in addition to conditions that were restored.
08 Q And if you would turn, please, to Table 10 in the
09 Walker Creek report.
10 MR. BIRMINGHAM: Ms. Cahill, do you have a page
11 for that?
12 MS. CAHILL: Yes, it's Page 61.
13 DR. SITTS: Okay.
14 Q BY MS. CAHILL: And what does this table show?
15 A BY DR. SITTS: This table shows a list of restoration
16 and optimization measures recommended for Walker
17 Creek.
18 Q And is each measure clearly labeled as to whether
19 it is restoration or optimization?
20 A Yes.
21 Q And with regard to those that are listed for
22 restoration, in each case have you indicated the cause
23 of the impact that you are trying to overcome by
24 restoration?
25 A Yes.

0043

01 Q And what are those causes?
02 A Those causes are identified under the purpose
03 cause at the far right column and in the footnote, it
04 identifies the definition of the letter in the
05 parenthesis. The C stands for effects of the conduit.
06 I stands for irrigation diversion effects. L is for
07 livestock, and R is for road construction. And then N
08 refers to effects of the 1990 channel modifications.
09 Q And there is no suggestion, is there, that Los
10 Angeles Department of Water and Power is responsible
11 for all of those impacts?
12 A No.
13 Q But you would believe that they are responsible
14 for the effects of the conduit?
15 A That's right.
16 Q And to the extent that they are the landowner,
17 might they have some responsibility with regard to the
18 livestock grazing?
19 A They may.
20 Q And to the extent that they are the owner, might
21 they have some responsibility for the irrigation

22 diversions?
23 A Yes.
24 Q You have indicated that some of these measures you
25 would still recommend and with regard to others, you
0044
01 might -- you might wish to see what's happened in the
02 years since you did your study?
03 A That's correct. That's correct.
04 Q In your opening statement today one of the
05 measures you mentioned was constructing a bypass
06 channel around the conduit for continuity. Is that
07 something you would still recommend?
08 A Yes.
09 Q And you recommended removing fish migration
10 barriers. Is that something you would recommend?
11 A Yes.
12 Q And with regard to measures that might involve the
13 recovery of riparian habitat, are those the sorts of
14 measures that you believe there should be on-site
15 assessment before they're implemented?
16 A Yes.
17 Q And we've discussed a bit about the possibility of
18 putting the flow of Walker and Parker Creeks into the
19 historic distributary channels. Is there something on
20 Table 10 that indicated a recommendation to do that?
21 A Yes. The first item on Page 61.
22 Q Okay. And what were the measures included in that
23 item?
24 A The restoration/optimization measure column second
25 from the right had increase no distributaries
0045
01 downstream.
02 Q Among others?
03 A Among others, yes.
04 Q And that was considered a restoration; was it not?
05 A That's correct.
06 Q Thank you. And is there a similar Table 10 in the
07 Parker Creek report?
08 A Yes, there is.
09 Q And does it -- does it also list both restoration
10 and optimization measures?
11 A Yes, it does.
12 Q And does it attribute the causes of degradation in
13 the same manner that the Walker Creek report did?
14 A Exactly the same.
15 Q And there, too, did you make recommendations with
16 regards to rewatering distributary channels?
17 A Yes.
18 Q Actually, Dr. Sitts, I believe I may have been
19 misleading my own witness with my questions. Would you
20 turn to Table 10 of the Parker report?
21 A I am on Page 61 in the Parker Creek report at
22 Table 10, first page.
23 Q And the recommendation there, increase flow
24 distributaries downstream, what did you mean by that
25 recommendation?
0046
01 A The recommendation referred to the utilization of
02 historic channels that had been cut off by construction
03 of the conduit.

04 Q Thank you. And that's in -- that's the first
05 recommendation. It's one of the ones under restoration
06 measure in sort of the first set of recommendations?

07 A Yes. It's in the first item on Page 61 under
08 restoration measures. It's, I believe, the third
09 phrase in that list.

10 Q Thank you. With regard to the fact that the IFIM
11 on the Upper Owens River showed increasing total
12 habitat area at flows up to 200 or 250, Mr. Smith, it's
13 not your recommendation, is it, that flows in the Upper
14 Owens River go up to 250, if that would require water
15 that was needed in the Mono Basin either by Mono
16 tributaries by Mono Lake; is that correct?

17 A BY MR. GARY SMITH: That's correct.

18 Q Dr. Sitts, did you also agree that that would
19 be -- would you recommend taking the Upper Owens River
20 to 200 if it would deprive the Mono Basin of water that
21 was needed there?

22 A BY DR. SITTS: No.

23 Q But you did find that some incremental flows from
24 the Mono Basin could be beneficial in the Upper Owens
25 River if they were available?

0047

01 A That's correct.

02 Q With regard to the temperature conditions on Hot
03 Creek, Mr. Smith, if temperature conditions on Hot
04 Creek caused a limiting factor in the Owens River below
05 Hot Creek, would that be a limiting factor due to
06 natural causes or an artificially limiting factor?

07 A BY MR. GARY SMITH: Natural causes.

08 Q And similarly, with regard to arsenic. If arsenic
09 were a limiting factor in the Upper Owens River below
10 Hot Creek, would that be a naturally occurring limiting
11 factor or an artificially occurring limiting factor?

12 A It would be an artificially occurring limiting
13 factor.

14 Q Do you believe that arsenic is a limiting factor
15 below Hot Creek?

16 A I don't have any evidence available to me that
17 says indeed it is a limiting factor.

18 Q Mr. Milliron, has the department stocked any fish
19 into the Upper Owens River below the confluence with
20 Hot Creek?

21 A BY MR. MILLIRON: Catchable trout are stocked
22 commonly throughout the fish angling season at the
23 Benton Crossing Bridge in that area which is just below
24 Hot Creek.

25 Q And are you aware of any losses of these fish

0048

01 since 1989?

02 A Not in regards to an arsenic or -- problem other
03 than just the loss of fish -- I say this because there
04 was a single incident where fish were lost. There was
05 a fish plant that went sour, if you will, but it was
06 the result of too much ice in the water in the truck
07 coming over and a huge temperature change from the fish
08 that were in the truck to the fish that were planted,
09 so with that caveat, there's no indication that there's
10 ever been a problem with fish planted and crossing, to
11 my knowledge.

12 Q Is there a resident fish population downstream of
13 the confluence of Hot Creek?

14 A Yes, there are, both salmonid and non-salmonid.

15 Q And are you aware of any losses of these fish
16 since 1989?

17 A No.

18 Q Do spawning trout from Lake Crowley pass through
19 the entire study reach on the Upper Owens River?

20 A Yes, they certainly do.

21 Q Dr. Sitts, with regard to influences that Hot
22 Creek waters might have on Upper Owens, is there a --
23 is there a measure that you have considered that might
24 reduce the influence of Hot Creek's natural influences
25 on the Upper Owens River?

0049

01 A BY DR. SITTS: We have --

02 Q Actually, let me withdraw that statement, that
03 question, and restate it. Have you given consideration
04 to any measures to reduce the impacts of Hot Creek on
05 the Upper Owens River?

06 A Yes. We discussed in the report the
07 augmentations, but there are others that we have
08 considered, and -- of more recent time, and it's not in
09 the report. But it is possible to isolate the northern
10 most tributary of Hot Creek from the Upper Owens River
11 for a few miles and have it flow into the river where
12 the southern most confluence comes in without too much
13 trouble. It will allow most of the tributary, the
14 north tributary, to flow and then just before it hits
15 the river a couple of small bypass channels.

16 Q I think maybe you do want to draw this. This will
17 be DFG 173.

18 A Okay. DFG 62, Figure 1, is a map of the -- DFG
19 62, Figure 1, is a map of the Upper Owens River. It
20 includes the Hot Creek tributaries. There are three of
21 them, the northern and southern. The northern one
22 comes in a couple miles -- two miles upstream from
23 Benton Crossing. The southern one may not get into
24 there until a few hundred yards upstream of Benton
25 Crossing, so there's a matter of about two miles

0050

01 between the northern most and where the southern most
02 comes in. If there were small connections, links,
03 between the northern and middle channel and the middle
04 and the southern one, this could isolate the warm water
05 from Hot Creek for a distance of two miles, and we
06 would expect that this section would be cooler during
07 the summer.

08 Q Thank you. Mr. Smith, with regard to the
09 questions that you were asked yesterday about -- by
10 Mr. Birmingham with regard to velocity adjustment
11 factors, I believe that you stated that a -- an
12 acceptable range of velocity adjustment factors, or
13 VAF's, might extend from .1 to 10; is that correct?

14 A BY MR. GARY SMITH: For the 112 IFG, .1 to 10 is a
15 general rule of them.

16 Q And with regard to a document that Mr. Birmingham
17 showed you that reflected -- that had an indication
18 that the majority of VAFs ought to occur within a range
19 of approximately .8 to 1.2, what type of analysis would

20 this range probably apply to?
21 A I believe that range applies to a free flow
22 regression IFG4.
23 Q And the Basco (phonetic) Owens River study, was it
24 a one-flow IFG4 or a three-flow regression IFG4?
25 A It was a three-flow IFG4 -- excuse me, I'm sorry.

0051

01 I misspoke. It was a one-flow IFG4.
02 Q So it was the type of IFIM for which the range of
03 .1 to 10 would be appropriate; is that correct?
04 A Correct.
05 Q Mr. Milliron, I believe you did want to give a
06 little bit further explanation with regard to the fish
07 kill that Mr. Birmingham first asked you about and then
08 you were asked about again by another party. First of
09 all, was that a kill of trout in Crowley Lake?
10 A BY MR. MILLIRON: There were very few trout that were
11 killed, at least very few dead trout that we found the
12 following spring in shoreline surveys. It was
13 primarily a Sacramento perch fish kill, and it was a
14 significant Sacramento perch fish kill.
15 Q Would you first try to describe verbally what it
16 was that happened, and then you can show your slides?
17 A Okay. In the fall of 1989, the lake was dropping
18 rapidly and there was some concern that fish passage
19 into the Upper Owens River would be impaired because
20 the river was flowing over a delta that had not yet
21 incised into a new channel. And so I went out and
22 stepped in -- rather over this four inches of water
23 that was skimming the surface and through several feet
24 of muck that, upon subsequent visits, I noticed that
25 the muck, this flat delta zone, had incised and that

0052

01 the muck was then liberated into the lake. It wasn't
02 really -- that was just before ice out that I had
03 observed that or ice up.
04 The next spring just at ice out, we had a report
05 that there were dead fish around Crowley. We did go
06 out to the shoreline of Crowley and collected some 1300
07 dead perch, and 50 or so trout in the course of a half
08 a mile or so of shoreline observations. And I was real
09 concerned about the trout population for the upcoming
10 season. As it turned out, the 1990 season was very
11 good, opening weekend catch rates were right up there,
12 and the season itself was also very good, so trout
13 seemed to have been less impacted.
14 I had gone back, and I requested water quality
15 data from the Department of Water and Power. They do
16 take water quality samples going into and out of
17 Crowley Dam -- going into Crowley from Benton Crossing
18 and coming out of the Dam. There were no indications
19 of elevated levels of chemical constituents such as
20 arsenic or Mercury that were at a level that would
21 indicate that there was a problem for fish toxicity.
22 Now, what I believe happened was that in the fall,
23 Sacramento perch being a warmer water species, if you
24 will, become less active and they segregate from trout
25 and they go down to the bottom of the reservoir, and

0053

01 they hang out in the bottom until the thaw in the

02 spring for the most part, whereas trout are still very
03 active right through October when anglers are out there
04 fishing. During that period of time when the reservoir
05 in the river was being cut or was cutting or sizing the
06 delta area, this sediment was sluicing into, I believe,
07 the bottom layers of Crowley and affecting the perch
08 population there.

09 That's also where water is withdrawn from the
10 reservoir, so the water quality samples that L.A. was
11 taking would have been from the same area of the lake
12 where perch presumably were impacted and again, the
13 levels of the constituent elements of Crowley through
14 the DWP's analysis indicated that there were not --
15 there were not significant levels of arsenic,
16 specifically, that would have caused a fish kill.

17 I believe that the fish died just because of the
18 overall degradation of water quality and probably the
19 development of anoxic or oxygen-depleting conditions.

20 Q And that would be due to the sediment?

21 A Due to the liberation of massive quantities of
22 delta sediments.

23 Q If the lake -- once the lake was down, would this
24 situation continue if the lake held at a stable level?

25 A This would be better illustrated at this point,
0054

01 then, if I might show a few slides.

02 MR. BIRMINGHAM: Mr. Del Piero, am I to understand
03 that we are to be provided copies of the slides?

04 MS. CAHILL: You will be. I, unfortunately, don't
05 have them today, but you will be provided as soon as we
06 can get them made.

07 HEARING OFFICER DEL PIERO: So will we?

08 MS. CAHILL: Yes, of course. That goes without
09 saying.

10 Let's name this slide DFG 173, since we didn't use
11 that number after all.

12 MR. MILLIRON: This is --

13 MR. HERRERA: Excuse me. Before you get started.
14 Your time is just about up. You have less than a
15 minute.

16 MS. CAHILL: Mr. Del Piero, I would petition for
17 no more than ten additional minutes.

18 HEARING OFFICER DEL PIERO: Granted. Go ahead.

19 MR. MILLIRON: This is a photograph, an aerial
20 photograph of the Upper Owens River as it enters the
21 Crowley Lake/Owens River arm and just to show, in this
22 area here, that the delta that exists there, and I'm
23 not going to get into a delta -- deltaic process
24 conversation, but this graph does show --

25 Q BY MS. CAHILL: This will be DFG 174.

0055

01 A BY MR. MILLIRON: This is the water storage in
02 Crowley Lake from the years 1979 to 1988, the ten-year
03 period prior to the fish kill event, and the top of the
04 orange indicates the maximum amount of water stored in
05 any given month during that ten-year period. The
06 bottom of the orange, the top of the green, indicates
07 the minimum amount of water storage, and then there's a
08 mean storage line. So you have the mean as well as the
09 of range of water storage in Crowley.

10 Q This would be DFG 175.

11 A And during the water year 1989-90, there was quite
12 a divergence from the -- that amount of water stored in
13 Crowley that the previous ten years had, and it started
14 in July where the reservoir dropped rapidly, not only
15 did it drop rapidly, but it also dropped well below the
16 previous ten years and that, then, therefore, exposed
17 ten years' worth of accumulated organic debris and so
18 forth, or muck is an okay term, believe it or not.

19 Q This would be DFG 176.

20 A And this just shows the period when there was the
21 rapid drawdown. You see a level roughly greater than
22 15 feet of reservoir drawdown during that period of
23 time. And so that's the -- the series of events that
24 resulted in the fish kill. A rapid drawdown cutting
25 through sediments that hadn't been exposed in years, so

0056

01 I believe that had the reservoir had been drawn down
02 over the course of a longer period of time, the
03 sediments could have been better assimilated by the
04 system and would have moved through the system and not
05 resulted in such a -- an overall degradation of water
06 quality that did result in a fish kill.

07 Q So in other words, Mr. Milliron, do you believe
08 that it was the fluctuation in water surface elevation
09 more than the absolute storage amount that was the
10 critical factor?

11 A The fluctuation as well as the exposure to lake
12 bottom sediments that had accumulated over a long
13 period of time, in this case ten years, that then were
14 subject to being cut through. Now that they've been
15 liberated, the reservoir could probably drop down maybe
16 even at that rate. I don't know. I'm not suggesting
17 this, certainly, but it would be less susceptible to
18 this kind of event.

19 Q And since 1989, there's not been a reoccurrence?

20 A That's correct.

21 Q To your knowledge, does DWP have a Crowley
22 operations plan?

23 A Not to my knowledge insofar as Mr. Hassencamp
24 (phonetic) testified in his direct that they want --
25 that they considered Crowley recreation in the

0057

01 management and the storage of Crowley, but I have --
02 when crossed, he was not able to provide what kind of
03 information has been used in order to incorporate -- or
04 that has been incorporated into that management plan.
05 So I -- I would say in terms of recreational fisheries,
06 that they do not.

07 Q Would you recommend that the department be
08 consulted if such a plan were to be drawn up?

09 A Yes.

10 Q Mr. Smith, let's make it absolutely clear what
11 kind of fish we have on South Parker Creek. We do not
12 have vertebrate fish on South Parker Creek below the
13 conduit; is that correct?

14 A BY MR. GARY SMITH: Not that I'm aware of.

15 Q But we do have invertebrates which are defined as
16 fish in the Fish and Game Code; is that correct?

17 A They can occur there, yes.

18 Q I think I have just one last set of questions and
19 I'll make sure my clients don't have any others.
20 Actually, I'm lying to you.

21 Mr. Milliron, to go back to the subject of Hot
22 Creek and various geothermal influences on the Upper
23 Owens River, are you familiar with any projects that
24 might reduce the amount of warm water that would flow
25 into the Upper Owens River?

0058

01 A BY MR. MILLIRON: Yes. One of my other functions
02 with the department is I act as the department's
03 representative on the Long Valley Hydrologic Advisory
04 Committee and, as such, I have been dealing with
05 geothermal development and the impact on aquatic
06 resources for about six years. Since the construction
07 and -- since the production of geothermal fluid or
08 energy and the construction of the NP-2 and PLES-1
09 projects at Casa Diablo, there has been a decrease in
10 the amount of geothermal fluid which reaches Mammoth
11 Creek, either directly by springs that were geothermal
12 springs that used to exist prior to the construction
13 and operation of these geothermal power plants, or
14 because of pressure changes within the system.

15 The long and the short of it is that geothermal
16 power production has resulted in an impact to surface
17 geothermal springs. They have -- some of them have
18 decreased in the amount of output of geothermal fluid.
19 Some of them have just simply dried up. So in Mammoth
20 Creek, there certainly has been a decline in the amount
21 of geothermal fluid which is the source of arsenic,
22 Mercury, and other chemicals that may be of concern
23 here into that system.

24 And Mammoth Creek is the major tributary to Hot
25 Creek and events to Owens River.

0059

01 Q Thank you. Dr. Sitts, one last question. I
02 didn't entirely hear your discussion with Mr. Herrera
03 about the flows at which the IFIM was conducted. I
04 would like to refer you to Page 100 of the Upper Owens
05 report and the last paragraph on that page. And it
06 indicates that there was a high flow of approximately
07 210 cfs below East Portal.

08 Is it your recommendation -- is it your
09 recollection that there were some high flows as high as
10 210 cfs below East Portal during your study period?

11 A BY DR. SITTS: Yes, I'd confirm that.

12 Q Oh, and one last question. There was some
13 discussion about screening irrigation diversions. Has
14 the department, over the past years, made some attempt
15 to handle some of the problems caused by irrigation in
16 the Upper Owens River?

17 A BY MR. MILLIRON: On the Crowley tributaries in
18 general, there has been an attempt by Phil Pister over
19 40 years ago, and myself, when we both came to the
20 area, the obvious problem of fish entrainment and the
21 diversions to -- that are off of the Crowley
22 tributaries is real obvious, and we both addressed the
23 issue. There has been an attempt. And to date,
24 nothing has been done.

25 MS. CAHILL: Thank you.

0060

01 HEARING OFFICER DEL PIERO: Thank you very much.

02 Mr. Birmingham?

03 MR. BIRMINGHAM: Mr. Del Piero, we've been at this
04 for an hour and a half. Can we just take a short
05 recess?

06 HEARING OFFICER DEL PIERO: Sure. You want to
07 take a recess? I was going break at ten. Ladies and
08 Gentlemen, we'll take a ten-minute break.

09 (Whereupon a short recess was taken.)

10 HEARING OFFICER DEL PIERO: Ladies and Gentlemen,
11 this hearing will again come to order. Prior to me
12 beginning, Mr. Birmingham, let me point out for those
13 of you that are doing what I've been doing for the last
14 half hour, sitting on my hands, a phone call is being
15 made as we speak to certain individuals to make sure
16 the heat comes back on in here, and I was assured by
17 the Chairman of the Board and also the Executive
18 Director on a conference call that I just had that they
19 would take care of the problem. It was not difficult
20 to motivate them because I told them if they didn't
21 turn the heat on, I was going to leave, and they were
22 going to have to come down and hold the hearing. It's
23 the first time I ever heard both of them say, "Yes,
24 Sir," at the same time. We'll see what we can do.

25 (Laughter.)

0061

01 HEARING OFFICER DEL PIERO: Mr. Birmingham, please
02 proceed.

03 MR. BIRMINGHAM: Thank you.

04 RE-CROSS EXAMINATION BY MR. BIRMINGHAM

05 Q Good morning, Gentlemen. Dr. Sitts, I'd like to
06 begin with you for a moment, if I can, and ask you some
07 questions about Table 10 in the Walker and Parker Creek
08 reports. First, let's talk about Table 10 in the
09 Department of Fish and Game Exhibit 56, which is Walker
10 Creek stream evaluation report 92-1, and I believe you
11 testified that Table 10 begins on Page 61; is that
12 correct?

13 A BY DR. SITTS: Yes.

14 Q Now, the right hand column of Table 10, which
15 extends for a number of pages, lists the purpose or the
16 cause of a particular restoration or optimization
17 measure; is that correct?

18 A Yes.

19 Q Now, the causes are listed at the bottom of each
20 page of Table 10, and it -- with an asterisk that
21 states, "Provides for restoration of effects of the
22 conduit C, irrigation diversions I, livestock grazing
23 or trampling L, road construction R, or 1990 channel
24 modifications M;" is that correct?

25 A Yes, it is.

0062

01 Q So from that do we take that it if there is a C
02 associated with a particular restoration or
03 optimization measure listed on Table 10, then that C
04 indicates that the restoration or optimization measure
05 is intended to ameliorate the effects of the conduit?

06 A The C relates to just restoration, and in the case
07 of C, it would be in relation to the conduit.

08 Q Well, let's go through Table 10, if we can. Is it
09 correct that only two of the restoration measures that
10 are listed in Table 10 are intended to deal with the
11 effects of the conduit?
12 A It appears so, yes. I find two only Cs after the
13 word "restoration."
14 Q Now, there are a number of restoration measures
15 that are intended to deal with the effects of
16 irrigation diversions; is that correct?
17 A Yes, that's right.
18 Q Now, isn't it correct that prior to the Department
19 of Water and Power diversions from Walker Creek,
20 irrigation was a -- irrigation water was diverted from
21 that stream for irrigation of Cane Ranch?
22 A From the aerial photographs that I've seen, yes,
23 that there was irrigation going on well before the
24 conduit.
25 Q And isn't it correct that there was livestock
0063
01 grazing that was going on along Walker Creek well
02 before the Department of Water and Power began its
03 diversions from Walker Creek?
04 A That's what I had surmised.
05 Q Now, there are a number of restoration measures
06 that are associated with restoring the effects of the
07 1990 channel modification; is that correct?
08 A Yes.
09 Q So as I understand it, these restoration measures
10 with the letter M after them in Table 10 are
11 restoration measures that are designed to restore
12 conditions that were damaged as a result of restoration
13 activities that were conducted in 1990?
14 A Yes.
15 Q Now, let's talk for a moment, if we can, about
16 Table 10 in Department of Fish and Game Exhibit 58,
17 which is the Parker Creek stream evaluation report.
18 A Okay.
19 Q That also begins at Page 61; is that correct?
20 A That's right.
21 Q Now, if we look through Table 10 in the Parker
22 Creek report, it's correct, in it, that only one of the
23 restoration measures identified is intended to correct
24 the effects of DWP's conduit?
25 A There is only one location at the conduit
0064
01 diversion facility, and there are a couple of things
02 that are recommended there, but that's the only item
03 which we associate with C.
04 Q And there are a number of items that are intended
05 to correct the effects or restore the effects resulting
06 from irrigation diversions; is that correct?
07 A Yes.
08 Q Now, with respect to Parker Creek, isn't it right
09 that prior to the Department of Water and Power's
10 diversions from the stream, irrigation water was being
11 diverted for irrigation of lands along Parker Creek?
12 A It appears so.
13 Q And with respect to livestock grazing, is it
14 correct that before the Department of Water and Power
15 began its diversions, livestock grazing had an impact

16 on Parker Creek?

17 A It appears so.

18 Q And again, with respect to Parker Creek, there are
19 a number of restoration measures that have the letter M
20 after them; is that correct?

21 A That's right.

22 Q And those restoration measures are intended to
23 correct the effects of the restoration work that was
24 done in 1990?

25 A Yes, that's right.

0065

01 Q Now, in terms of specific recommendations, let's
02 look at Page 3 of Exhibit 56, the Walker Creek report.
03 Page 3 of the Walker Creek report states, and I'm
04 looking at the second full paragraph on Page 3, last
05 sentence. It states, "Thus implementation of the
06 restoration plant provided here depends in part on the
07 extent of natural recovery over time." Is that
08 correct?

09 A Yes.

10 Q Now, Mr. Roos-Collins asked you some questions
11 yesterday about your proposed restoration measures,
12 and you said that you would still recommend
13 implementing those proposed restoration measures to the
14 extent that degraded conditions still exist in Walker
15 and Parker Creek. Is that correct?

16 A Yes.

17 Q But as you sit here today, you do not know to what
18 extent the degraded conditions still exist in those
19 streams; is that correct?

20 A That's partially correct. In regard to riparian
21 conditions, those are much more dynamic. In regard to
22 a number of other conditions, I'm pretty sure that
23 they're exactly as they were.

24 Q But as you sit here today, you can't tell us which
25 of those conditions are still exactly as they were and

0066

01 which of those have changed?

02 A I can do that for some.

03 Q Now, with respect to the Upper Owens River study,
04 Mr. Dodge asked you some questions that were followed
05 up about proposed aquatic habitat development
06 management plans for the Upper Owens River, and you
07 were -- you, based upon a review of 218, Page 218 of
08 Department of Fish and Game Exhibit 62, describe some
09 of the measures that might be implemented under an
10 aquatic habitat development management plan, and on
11 Page 218, the last measure is using a low-level intake
12 to Mono Craters Tunnel to keep the Upper Owens River
13 cool. Do you see that listed on Page 218?

14 A Yes.

15 Q Now, as I recall, you said that after this had
16 been drafted, you discovered that that problem had been
17 fixed. Is that right?

18 A I discovered that the indications were that the
19 intake was already low and fixed in the reservoir, and
20 there wasn't much you could do about it.

21 Q Now, let's talk for a moment about temperature
22 problems at Hot Creek, below the confluence of Hot
23 Creek. In response to questions by Ms. Cahill, you

24 referred to Department of Fish and Game Exhibit 52 --
25 I'm sorry, Figure 1. 62. Thank you, Mr. Milliron.

0067

01 Department of Fish and Game Exhibit 62, Figure 1. And
02 you testified that one of the ways of ameliorating the
03 temperature problem during certain months below the
04 confluence of Hot Creek with the Upper Owens River
05 would be to divert water out of two channels into a
06 third channel; is that correct?

07 A That's close.

08 Q What was it that you said? I want to make sure
09 that we have it correct.

10 A I indicated that a way to ameliorate these effects
11 would be to consider putting the lower portion --
12 diverting the water in the lower portions the lower and
13 middle trenches of Hot Creek into each other and then
14 finally into the lower branch and then into the Owens
15 River.

16 Q I'd like to show you a quadrangle map that has
17 been marked and introduced into evidence as L.A. DWP
18 Exhibit 79, and it is a -- a map that was prepared in
19 1914, and I'd ask you to take a moment and review it.
20 Particularly that portion of the quadrangle that
21 depicts the area of Hot Creek.

22 Have you had an opportunity to review L.A. DWP
23 Exhibit 79, Dr. Sitts?

24 A Yes.

25 Q Now, when you look at L.A. DWP Exhibit 79 and
0068

01 compare it with Figure 1 from Department of Fish and
02 Game Exhibit 62, it's correct, isn't it, that the three
03 channels of Hot Creek depicted on Figure 1 are apparent
04 on L.A. DWP Exhibit 79?

05 A Yes. This Exhibit 79 which was reprinted in 1950
06 shows three branches of Hot Creek.

07 Q And it's a map that's based upon 1914 data; is
08 that correct?

09 A It says, "Edition of 1914."

10 Q Thank you.

11 So the temperature problem that is associated with
12 the portion of the Upper Owens River between the north
13 branch of Hot Creek and the lower most branch of Hot
14 Creek would have existed in a state of nature; is that
15 correct? Maybe my question isn't clear. I'm
16 restricting my question to the portion of the Upper
17 Owens River between the northern channel of Hot Creek
18 and the southern most channel of Hot Creek.

19 A They would have existed in 1914. Whether they
20 were nature or not, I don't know. And that shows
21 obviously three, and they are similar in shape.

22 Q Thank you, Dr. Sitts.

23 Talking some more about the Upper Owens River,
24 there were questions concerning this proposed limit of
25 200 cfs in the upper portion of the Owens River. Now,
0069

01 I want to make sure I understand the position of this
02 panel with respect to this issue. As I understand your
03 statements in Department of Fish and Game Exhibit 62,
04 the channel of the Upper Owens River had adjusted to
05 the higher flows that existed in that portion of the

06 river because of diversions out of the Mono Basin by
07 the Department of Water and Power; is that correct?
08 A BY MR. WOLFF: We state in there that there has been
09 some adjustment, I don't know that there has been total
10 adjustment; that is, the river's in equilibrium.
11 Q Well, I asked you this question yesterday,
12 Mr. Wolff, and just so that the record is clear, Page
13 53 of the Department of Fish and Game Exhibit 62
14 states, doesn't it, that the present channel appears to
15 have adjusted to the larger flows?
16 A That statement is in the report.
17 Q I'd like to -- this is the follow-up on a question
18 that was asked of Mr. Dodge -- or by Mr. Dodge. Page
19 211 of Department of Fish and Game Exhibit 62, it
20 states that -- talks about the maximum THAs, and then
21 it states, "It is recognized that given the present
22 channel, widened by high augmented flows, a future
23 lower-flow regime may lead to a narrower channel and a
24 smaller optimal instream flow." Is that stated on Page
25 211?

0070

01 A Are you directing this to me?
02 Q To anybody on the panel. You can answer it if you
03 can, Mr. Wolff.
04 A Let me find the location. I didn't write this
05 section.
06 A BY DR. SITTS: That's toward the end of the second
07 paragraph?
08 Q In fact, it's the last sentence; is that correct?
09 A BY MR. WOLFF: That's correct.
10 Q Now, in other words, the present channel has
11 adjusted to the higher flows, but if we put flows
12 limited to 200 cfs in that portion of the river, it
13 will narrow and ultimately there will be smaller
14 optimal instream flows; is that right?
15 A I don't think that's quite right. You just said
16 limit the flow to 200? I think there's an issue of
17 duration here. If you ran the flow at 200 cfs
18 continuously, the channel would probably continue to
19 enlarge. So your question can't be quite answered just
20 by the limitations.
21 Q But the first part of my question is that the
22 channel has adjusted to the larger flows. You've said
23 that that's stated in the report.
24 A Yeah. And I state -- my opinion is that some
25 adjustment has occurred. I don't think that it can be

0071

01 clear that an equilibrium channel exists. In other
02 words, if L.A. continued to operate the way they have,
03 some additional adjustments could occur in the future.
04 Q Let me ask you an interesting question. That is a
05 theoretical question because it relates to Rush Creek,
06 and I know you haven't studied Rush Creek. You haven't
07 studied Rush Creek, have you, Mr. Wolff?
08 A That's correct.
09 Q Dr. Sitts, I'm going ask you the same question.
10 Have you studied Rush Creek?
11 A BY DR. SITTS: No.
12 Q I'm going to ask you to assume that the bottom
13 lands of Rush Creek and the bottom lands we've referred

14 to as that portion below The Narrows, I'm going ask you
15 to assume that as a result of flows in the stream, Rush
16 Creek has widened and Rush Creek has straightened. Do
17 you understand the assumptions that I'm asking you to
18 make?

19 A BY MR. WOLFF: Repeat them. I didn't get the first
20 part of them.

21 Q As a result of the flow pattern in the last 30
22 years in Rush Creek, the stream has widened, and it's
23 lost some of its sinuosity. In other words, the
24 channel has straightened somewhat. That's what's
25 happened on the Upper Owens River; is that correct?

0072

01 The higher flows have caused the stream to widen and to
02 straighten.

03 A BY DR. SITTS: There's too much going on in Rush
04 Creek to make a reasonable association with the Upper
05 Owens.

06 Q Is your response the same, Mr. Wolff? There's too
07 much going on in Rush Creek for you to be able to
08 answer it intelligently? Any question I would be able
09 to ask you about Rush Creek?

10 A BY MR. WOLFF: Probably so. The two channels are
11 very different dynamically. So I think any kind of
12 comparison could get into big trouble. So I wouldn't
13 be comfortable doing that.

14 Q What is the basis of the opinion that's expressed
15 here on Page 211 that it is recognized that given the
16 present channel widened by high augmented flows a
17 future flow regime may lead to a narrower channel and a
18 small optimal instream flow.

19 A Well, can I answer the first part of that. I
20 can't answer anything about the optimal instream flow,
21 but the basis of the channel narrowing would be an
22 adjustment of the channel to the lower flows through
23 deposition and growth.

24 Q Is that a general hydrologic principle?

25 A
0073

01 sediments are available and are mobilized, that's the
02 way an alluvial channel will adjust. That doesn't mean
03 all channels will do that, but in the case of the Upper
04 Owens River, I believe that would happen.

05 Q Mr. Milliron. You talked about some proposed
06 management for Crowley Lake, some proposed measures for
07 the management of Crowley Lake; is that right?

08 A BY MR. MILLIRON: Yes.

09 Q Those proposed measurements, management
10 measurements, aren't intended to -- let me back up for
11 a minute. It was your testimony, wasn't it, that
12 the -- the fishery in Crowley Lake has not suffered
13 because of lower flows into the lake?

14 A I don't know if I said that specifically, but I
15 think the fishery in Crowley Lake is in good shape.

16 Q Fishery in Crowley Lake is in good shape.

17 A Overall.

18 Q So the proposed management schemes that you
19 outlined in response to questions by Mr. Roos-Collins
20 last night are not intended to protect the fishery in
21 Crowley Lake; is that right?

22 A I'm sorry, Mr. Birmingham, would you repeat that
23 question?

24 Q Well, let me state it differently. The proposed
25 management measures you discussed in response to
0074

01 questions by Mr. Roos-Collins are intended to make the
02 big trophy trout more accessible to fishermen. Is that
03 right?

04 A That's correct. These are department management
05 recommendations which I believe should be incorporated
06 in the overall management scheme that DWP employs.

07 Q And the purpose of it is to make the fishery more
08 accessible to fisher people?

09 A Well, more specifically, to make the fish more
10 accessible to fisher people.

11 Q And the management proposals that you've outlined,
12 they're not required to keep fish in -- let's use the
13 term "good condition" biologically?

14 A The fish themselves are -- appear to be present in
15 the system, and so this is -- these recommendations are
16 based on the fishery, not so much the biological needs
17 of the fish. However -- however, the Sacramento perch
18 in the production, in the litoral zone of Crowley would
19 benefit biologically by having the -- that nursery
20 habitat maintained in appropriate condition, and the
21 large trout which forage on the Sacramento perch would
22 also benefit by having those available. And then, of
23 course, the final link there is that the fishery
24 benefits because the anglers now have their
25 accessibility to the large fish. So it's not that

0075
01 there's not a biological benefit to proper management
02 because clearly there is.

03 MR. HERRERA: Excuse me, Mr. Birmingham, your time
04 has elapsed.

05 MR. BIRMINGHAM: I make an application for an
06 additional 30 minutes.

07 MR. DODGE: I would --

08 HEARING OFFICER DEL PIERO: Mr. Dodge, let
09 me preface your comment by indicating we're not going
10 to break for lunch today because of the limitation in
11 terms of the availability of your witness. I have no
12 difficulty with people eating in this hearing room. We
13 broke early. I anticipate taking about a ten-minute
14 break, but the balance of that time is going to be
15 spent in terms of direct testimony. Now --

16 MR. DODGE: I really think in fairness we have a
17 certain number of days left to complete the direct and,
18 you know, a lot of those days are my case. And I think
19 these questions are, with all due respect, are at the
20 cutting edge of irrelevance to this proceeding. And so
21 normally, I would object to further questioning, but in
22 light of --

23 HEARING OFFICER DEL PIERO: And we won't take a
24 dinner break either if this continues because --

25 MR. DODGE: -- my respect to Mr. Birmingham, I
0076

01 would be happy to concede him 10 of my 20 minutes.

02 HEARING OFFICER DEL PIERO: It is now quarter
03 after ten. I had hoped to get done with this panel

04 last night. We didn't. We got here early this morning
05 in order to get this matter resolved. It's two and a
06 quarter hours into the day and so however long this
07 takes, Mr. Birmingham, if you want 20 minutes, you're
08 granted your 20 minutes, but not -- during the course
09 of this entire process, I've not told anybody they
10 can't have the additional time. I just want everybody
11 else to know, we're going to get this and the next
12 panel done today. We won't -- and if it necessitates
13 us not taking any breaks except for the Court Reporter,
14 I will do that, also. And if attorneys are upset about
15 the fact they have to get up during the course of
16 testimony to leave to take care of whatever they have
17 to take care of outside, that's just the way it's going
18 to be because we need to get moving.

19 Now, proceed, Mr. Birmingham.

20 MR. BIRMINGHAM: Thank you very much.

21 Q BY MR. BIRMINGHAM: Mr. Milliron, you mentioned in
22 response to my question a minute ago Sacramento
23 perch. Sacramento perch is a species of fish that was
24 introduced into Crowley Lake illegally; in that right?

25 A BY MR. MILLIRON: Yes.

0077

01 Q And the Sacramento perch are a species which feed
02 on juvenile trout; is that correct?

03 A I don't have evidence to support that, and I would
04 suspect that that's not a significant issue in Crowley
05 insofar as juvenile trout -- trout appear mostly in the
06 streams. I think the biggest predation on juvenile
07 trout occurs mostly in the irrigation canals.

08 Irregardless of how Sacramento perch got into
09 Crowley, they have established themselves as a
10 desirable sport fishery and they do benefit trout at
11 least in terms of large trout forage.

12 Q Do Sacramento trout -- I'm sorry, do Sacramento
13 perch -- Sacramento trout certainly don't, but let's
14 talk about the species Sacramento perch. Sacramento
15 perch compete with young trout for available planktonic
16 foods. Is that correct?

17 A I have no indication that that is, in fact,
18 occurring in Crowley. I think that Crowley's very
19 rich, and we put a tremendous number of fish into
20 Crowley and growth rates are very good, so there's no
21 indication that there's any growth-limiting problems in
22 Crowley.

23 Q Now, last night you told me that you had reviewed
24 the March 1989 fish management plan for Mammoth Lakes
25 basin and certain adjacent waters, Mono, Madera, and

0078

01 Fresno Counties, California, prepared by the Department
02 of Fish and Game. You have reviewed this document,
03 haven't you?

04 A In 1989.

05 Q I'm going to show you this document, and I'm going
06 to mark a portion of it.

07 MS. CAHILL: Mr. Del Piero, I object.

08 Mr. Birmingham did this all day yesterday where he has
09 one copy and he wanders over and hovers over the
10 witness. Last night there were no copy facilities
11 available, but between then and now he should have been

12 able to copy the pages to refer to.

13 HEARING OFFICER DEL PIERO: Do you have copies,
14 Mr. Birmingham?

15 MR. BIRMINGHAM: I don't, Mr. Del Piero, but
16 again, I'm not introducing this as an exhibit, I'm
17 simply using this document as a means to cross-examine
18 this witness on his opinions which I am entitled to
19 do. This is a Department of Fish and Game
20 publication. Ms. Cahill represents the Department of
21 Fish and Game. Their office is across the street.
22 They may have copies of it available. Ms. Cahill is
23 correct. I should show her the passage I'm going to
24 ask the witness to read before I show it to the
25 witness, and for that I apologize. But --

0079

01 HEARING OFFICER DEL PIERO: You should,
02 Mr. Birmingham.

03 Q BY MR. BIRMINGHAM: Okay. Mr. Milliron, I'm handing
04 you the 1989 Department of Fish and Game fisheries
05 management plan, and I have marked a paragraph which
06 appears on Page 20. And I would ask you to read the
07 paragraph that I've marked from Page 20 into the
08 record.

09 A BY MR. MILLIRON: Starting with "it has been
10 suggested"?

11 Q Yes.

12 A "It has been suggested that Crowley Lake no longer
13 supports the number of large trout that it has in the
14 past. It seems most likely that the illegally
15 introduced Sacramento perch now compete directly with
16 the young trout for available planktonic food with
17 subsequent adverse impacts on trout survival. While
18 perch do provide forage for large trout, the food chain
19 has been lengthened and an overall decline in the
20 production of top line predatory fish may have
21 occurred. Despite possible declines in the abundance
22 of large trout, Crowley Lake remains a fishery of
23 national importance."

24 Q Thank you.

25 Now, having reviewed, re-reviewed this portion of

0080

01 the 1989, March 1989, Department of Fish and Game
02 fisheries management plan, does that change your
03 opinion concerning the competition between young trout
04 and Sacramento perch for available planktonic food at
05 Crowley?

06 A Not in the least, especially given that we've had
07 a trout -- excuse me, a perch die off of major
08 magnitude since that document was written and that
09 perch have only recently reestablished themselves in
10 their former fishery position, if you will. And I have
11 no indication that there's been an impact either
12 positive or negative to trout growth during that period
13 of time.

14 Additionally, trout are spatially segregated.
15 Young trout, juvenile trout are reared in tributary
16 streams to Crowley. Sacramento perch are not in
17 tributary streams to Crowley.

18 I think a bigger issue in this regard would be
19 simply that providing habitat for young perch is

20 appropriate.

21 Q Mr. Milliron?

22 A Yes, Sir.

23 Q Again, my time is very limited, and I don't want
24 to cut you off, but a large portion of the answer that
25 you just gave was not responsive to my question. My
0081

01 question was limited to whether or not review of that
02 portion of the 1989 report changed your opinion. That
03 is a question that can be answered yes or no, and in
04 light of the very limited time that we have and a
05 unavailability of witnesses, I'm going to ask that you
06 just respond to my questions, if you will. All right?

07 A Yes.

08 Q Thank you.

09 Now, let's talk for a moment about that -- the
10 fish kill that we've had discussed here. That was a
11 fish kill that occurred in 1989?

12 A 19 -- during the period 1989, early 1990. 1990 is
13 when we noticed it, when the ice -- when Crowley became
14 ice free, and we found many dead Sacramento perch along
15 the shoreline in a decomposed state.

16 Q Now, you say "many." You found 25; is that right?

17 A No. I testified earlier, I believe, that I found
18 13 -- roughly, 1300 dead Sacramento perch and about 50
19 dead trout in about a half a mile of examined
20 shoreline.

21 Q You had some slides that you used in explaining
22 what you thought was the cause of this fish kill in
23 1989, 1990. Could we put those slides back up, please?

24 A In a moment. Is there any particular slide you
25 want me to show?

0082

01 Q Yes. You had a slide, Mr. Milliron, that showed
02 the levels of Crowley Lake between 1979 and 1988, and I
03 believe that that was marked as Department of Fish and
04 Game Exhibit 174.

05 A More specifically, it's not the levels but the
06 amount that's total storage in acre-feet.

07 Q Okay. Now, that represents the period, again,
08 1979 to 1988; is that correct?

09 A That's correct.

10 Q And generally during that period, the level of
11 storage is constant? Somewhat constant? How would you
12 characterize it?

13 A Well, what I have here is all the data represented
14 within that orange range. It's the range of storage,
15 so you have the maximum line for any given month during
16 that ten-year period at the top of the orange. The
17 minimum amount of storage at any given month at the
18 bottom of the orange, and then the mean of all ten
19 years is represented by the white line.

20 Q Now, you had a slide, I believe it was Department
21 of Fish and Game Exhibit No. 175.

22 A This one?

23 Q And that shows 1979 to '88 storage; is that
24 correct?

25 A Well, the only difference between this slide and
0083

01 the previous one is that the red line superimposed

02 represents the water year 1989-90 from April through
03 May represented by the red line.

04 Q Did you have an additional slide, Mr. Milliron,
05 which showed a drop in Crowley Lake storage in July?
06 Which exhibit is this?

07 A It would be the next one after the last one.

08 Q So this would be Exhibit 176; is that correct?

09 A I did not keep track of the numbers.

10 HEARING OFFICER DEL PIERO: I believe that's
11 correct, Mr. Birmingham.

12 Q BY MR. BIRMINGHAM: Now, let me ask you some
13 questions about this. This is storage for the calendar
14 year 1989; is that correct?

15 A Well, I believe -- yes. Yeah. That's what it
16 is. January, February, through December.

17 Q Now, as we go through January through June, there
18 is a -- there is a decline, then an increase, and then
19 a sharper increase in storage in Crowley Lake; is that
20 correct? January through June?

21 A Yes.

22 Q Now, in -- starting in June, there is a
23 substantial decline in the storage in Crowley Lake; in
24 that right?

25 A Yes.

0084

01 Q Now, Crowley Lake is -- we established yesterday
02 is a storage facility that was built in -- well, I'm
03 sorry. You were not aware of why it was built. So let
04 me state the question differently.

05 It's correct, isn't it, Mr. Milliron, that it was
06 in June of 1989 that the El Dorado County Superior
07 Court entered a temporary restraining order that
08 prohibited the Department of Water and Power from
09 exporting water out of the Mono Basin?

10 MR. VALENTINE: Objection, your Honor. These
11 questions have been asked and answered. This may have
12 been kind of a belated objection because I could've
13 been making it in the last ten minutes, he's been
14 through this with Mr. Birmingham and others yesterday.

15 HEARING OFFICER DEL PIERO: The answer is he
16 didn't know -- he's already indicated a couple of
17 times, Mr. Birmingham, he doesn't have direct knowledge
18 of the case in 1989, so why don't you proceed.

19 MR. BIRMINGHAM: Thank you. What I'd like to do,
20 if I may, is I'd like to try and refresh the witness'
21 recollection.

22 HEARING OFFICER DEL PIERO: Mr. Milliron? Were
23 you a participant in that litigation?

24 MR. MILLIRON: No, I was not.

25 HEARING OFFICER DEL PIERO: It's difficult for him
0085

01 to have his recollection refreshed, Mr. Birmingham, if
02 he wasn't a participant.

03 MR. BIRMINGHAM: I think I can establish a
04 foundation at least to be able to try and refresh his
05 recollection.

06 I'm done with this slide, Mr. Milliron, so you can
07 turn that off and resume your seat, if you will.

08 Q BY MR. BIRMINGHAM: Now, Mr. Milliron, you were
09 responsible for the management of Crowley Lake for the

10 Department of Fish and Game in 1989; is that correct?

11 A Yes.

12 Q And as part of your responsibilities, you would
13 have followed the Department of Water and Power's
14 operation of Crowley Lake; is that right?

15 A Not necessarily. There's -- this data was
16 acquired after we saw effects. I have a lot of other
17 responsibilities besides the management of Crowley Lake
18 and the department has never been afforded the
19 opportunity to have much of an impact at all on
20 management and storage in Crowley Lake.

21 Q After the fish kill that we've been talking about,
22 did you -- were you interviewed by a reporter for the
23 Los Angeles Times by the name of Richard Roberts?

24 A In all likelihood. I've been interviewed often by
25 reporters including Richard Roberts (phonetic) who

0086

01 don't always report exactly what I say.

02 Q I have that same problem.

03 HEARING OFFICER DEL PIERO: I won't say anything.

04 Q BY MR. BIRMINGHAM: I'm showing you an article from
05 the Los Angeles times, and I'll ask you if it refreshes
06 your recollection as to whether or not you were
07 interviewed by this reporter named Rich Roberts for the
08 Los Angeles Times regarding the fish kill that we've
09 been talking about?

10 A Now, do you want me to specifically read any part
11 of this?

12 Q Just take a look at it and see if it refreshes
13 your recollection as to whether or not you were
14 interviewed?

15 A Well, I certainly remember the photograph on the
16 front here and that's Owens Weir and I remember talking
17 to -- not Mr. Rich Roberts so much as an agent of his
18 in regards to the weir. How much of -- I don't
19 specifically remember what conversation we had on the
20 Upper Owens -- excuse me, the Crowley fish kill. If I
21 were to study the article it might help.

22 Q Why don't we take a minute and I'll just ask you
23 to study -- to study the article. There are a number
24 of paragraphs which are circled in green ink, and I'd
25 ask you just to take a moment, look at them, and see if

0087

01 it refreshes your recollection about about this fish
02 kill.

03 A You have a lot of paragraphs here. I'm not a
04 speed reader.

05 Q While you're doing that, I'll see if there are
06 some other questions I can ask of another witness so we
07 don't waste a lot of time.

08 HEARING OFFICER DEL PIERO: Mr. Dodge?

09 MR. DODGE: I object to this line of questioning.
10 It's repetitive and only marginally relevant. We're
11 just wasting our time here.

12 HEARING OFFICER DEL PIERO: Mr. Dodge, there's 11
13 minutes left on Mr. Birmingham's time.

14 MR. DODGE: Thank you.

15 Q BY MR. BIRMINGHAM: I'll just ask you one question
16 about that article, Mr. Milliron. On the extreme left
17 hand column -- Mr. Milliron?

18 A BY MR. MILLIRON: Yes.

19 Q On the extreme left-hand column, there's a
20 paragraph there, it's the last paragraph I pointed out
21 to you.

22 A This one?

23 Q Actually, I'm sorry. It's this paragraph right
24 here. Would you read the last paragraph that I'm
25 marking? Just read it into the record.

0088

01 A Out of context? He said -- I don't know who "he"
02 refers to. I guess me?

03 Q Well, if you look at the preceding paragraph it
04 quotes you.

05 A How far back do you want me to go?

06 Q Just the preceding paragraph.

07 A "Milliron said, I don't think we can really say
08 we've hurt the Crowley fishery. He said the DWP has
09 been concerned and cooperative in preserving fisheries
10 all along the eastern Sierras."

11 Q Did you tell the reporter or the agent for the
12 reporter that DWP has been cooperative in preserving
13 the fishery all along the eastern Sierras?

14 A I have no idea if I said that or not. I generally
15 try to give as much credit to the Department of Water
16 and Power as they -- yes. I may -- I'm generally quite
17 flattering. Let me make a note, if I might, I think
18 it's needed for clarification that that -- what was the
19 date of that article?

20 Q April 25, 1990.

21 A Yeah. There wasn't -- that was actually before
22 the angling season started, and so we really didn't
23 have a good indication as to the magnitude or the
24 impact of any fish kill. We certainly know a lot about
25 it now. Sacramento perch were impacted. The fishery

0089

01 for Sacramento perch essentially was gone for all of
02 two years and didn't return until the third year. The
03 last year was its first real come back or this season,
04 and the trout fishery was very good that season so --

05 Q Let me just ask you, in your experience, has the
06 Department of Water and Power been concerned and
07 cooperative in preserving fisheries all along the
08 eastern Sierra?

09 A I've had some good times and I've had some not so
10 good times with the Department of Water and Power
11 personnel, and I think that I would like to end it on a
12 more positive note than a less positive note in the
13 spirit of future cooperation which I hope will occur,
14 and I will say that water and power is interested in
15 fisheries in the eastern Sierras, and I think there's
16 lots of room to do good things.

17 MR. BIRMINGHAM: I don't have any further
18 questions

19 HEARING OFFICER DEL PIERO: Thank you very much,
20 Mr. Birmingham.

21 Mr. Dodge. Excuse me, Mr. Dodge, one question.
22 Mr. Milliron?

23 MR. MILLIRON: Yes.

24 HEARING OFFICER DEL PIERO: Does your information
25 upon which you do your analysis for the Department of

0090

01 Fish and Game come from the Los Angeles Department of
02 Water and Power?

03 MR. MILLIRON: Some of it does.

04 HEARING OFFICER DEL PIERO: How much of it?

05 MR. MILLIRON: Well, all the water storage
06 information that you have here is water and power data.

07 HEARING OFFICER DEL PIERO: Other than the
08 biological information, how much of the information do
09 you rely on that comes from the L.A. Department of
10 Water and Power?

11 MR. MILLIRON: Most.

12 HEARING OFFICER DEL PIERO: Is that --

13 MR. MILLIRON: I'm trying to separate out what
14 you're really asking me. I have a large amount of
15 information that I've requested and received from the
16 Department of Water and Power.

17 HEARING OFFICER DEL PIERO: Can you do your job
18 without it?

19 MR. MILLIRON: I certainly couldn't make the
20 graphs that you saw today without that information.

21 HEARING OFFICER DEL PIERO: Thank you.

22 Mr. Dodge?

23 RE-CROSS EXAMINATION BY MR. DODGE

24 Q BY MR. DODGE: Dr. Sitts, let me return to one of my
25 few areas of interest with this panel, the

0091

01 distributaries on Parker and Walker Creek, now dry.
02 They held water until 1940, correct?

03 A BY DR. SITTS: I would assume that there was some
04 water in those before 1940.

05 Q Okay. And, in fact, until 1940, they held water
06 and irrigation water came out of them; isn't that
07 right?

08 A I don't have firm data on that, but they seem to
09 distribute water to the pasture land.

10 Q Assuming they held water until 1940, and looking
11 at Table 10 on the Parker Creek study.

12 A Okay.

13 Q Now, as I understand it, the rewatering of the
14 distributaries on Parker Creek is not listed on Table
15 10, at least I couldn't find it, but my question to you
16 is hypothetically, assuming that the distributaries
17 held water until 1940 and then they were thereafter
18 dried up by the diversions, would you agree that if
19 rewatering the distributaries were listed on Table 10,
20 that it would have a capital C after it?

21 A Yes.

22 Q It would be conduit influence?

23 A Yes. And perhaps we can talk about that first
24 item in Table 10.

25 Q All right.

0092

01 A Under the column called "Restoration Measures,"
02 second from the right?

03 Q I see that.

04 A We go down to the third line, right under that
05 heading, and we see the increased flow distributaries
06 downstream.

07 Q It's already in the table, then.

08 A It is.
09 Q I misread that, Sir.
10 A And restore and CR in the next column on purpose.
11 Q Thank you.
12 Mr. Smith?
13 A BY MR. GARY SMITH: Mr. Dodge.
14 Q I had a question about the three Hot Creek
15 channels. Can you tell us whether or not, in fact, the
16 two northern most Hot Creek channels as they enter the
17 Owens River are, in fact, artificial?
18 A I have heard discussions on both sides of that
19 issue. I do not have the knowledge to answer that
20 question other than to say that others have informed me
21 that those are man-made channels. On the other hand,
22 others have informed me that they're naturally formed
23 channels. The issue has some controversy associated
24 with it.
25 Q Thank you.

0093

01 Does anyone else on this panel know the answer to
02 my question?
03 A BY MR. MILLIRON: What was the question, please?
04 Q Whether of the three Hot Creek channels now
05 entering the Owens River, the two northern most are, in
06 fact, artificial channels?
07 A I'll only relate the following comment that I
08 heard from Mr. Gary Giacomini (phonetic) who is
09 associated with the family who has run that operation
10 for many years, in a public meeting, and I don't even
11 recall which one it was, but he clearly stated that
12 their family, the one he married into, is responsible
13 for the diversion of Hot Creek into several
14 distributary channels which, in his context, a reason
15 to bring that up, benefited the Upper Owens River
16 because it helped facilitate additional cooling. And
17 he was therefore referring to that beneficial effect
18 that they have had by, in fact, diverting from one to
19 three channels. So that was a comment that they made.
20 I would also add that grazing in Long Valley has
21 gone on for be a exceptionally long time, well before
22 the 1911, I believe, map that was handed to Dr. Sitts.
23 Q Did Mr. Giacomini (phonetic), if that's the right
24 pronunciation of his name, did he indicate which of the
25 channels was the natural channel?

0094

01 A No, he did not.
02 Q So you have -- you have some evidence that they
03 are artificial channels, however persuasive it may be,
04 but you can't tell us which one is the natural channel?
05 A That's correct. He doesn't even claim that they
06 are -- that they are responsible for diversionary
07 channels.
08 MR. DODGE: Thank you. I have no further
09 questions
10 HEARING OFFICER DEL PIERO: Thank you very much,
11 Mr. Dodge.
12 Mr. Roos-Collins?
13 RECROSS EXAMINATION BY MR. ROOS-COLLINS
14 Q Good morning. Mr. Wolff, pursuant to water rights
15 held by the City of Los Angeles, is water diverted from

16 the Upper Owens River for irrigation?

17 A BY MR. WOLFF: I don't know anything about their
18 water rights, but I know that water is diverted out of
19 the Upper Owens River. Actually, let me clarify that.
20 I think I do know something about their water rights.
21 It's in our report here.

22 We had information from the State Water Resources
23 Control Board that -- it stated some quantities on a
24 particular water right. Let me just check that to make
25 sure that's one of Los Angeles'. It was for the Jacobs

0095

01 east and Jacobs west diversion, and if my recollection
02 is correct, that is a water right owned by Los Angeles.

03 Q I believe you're referring to Page 19, the final
04 paragraph of DFG Exhibit 62?

05 A Okay. Yes. Okay. There it is. It's the first
06 sentence says, "State Water Resources Control Board
07 records include L.A.DWP's statements of water diversion
08 used for two diversions, Jacobs east and Jacobs west."

09 Q Let me read a portion of the Draft Environmental
10 Impact Report, Volume One, Page 3-A-13, in the section
11 entitled Upper Owens River. Quote, Significant
12 diversions are made from the Owens River and Hot Creek
13 for irrigation of L.A.DWP and private grazing pasture
14 lands. L.A.DWP records indicate that an average of
15 20,000 acre-feet a year are diverted for irrigation of
16 its lands."

17 Do you concur with that statement?

18 A Well, I don't know enough about their records to
19 know about the total quantities, but I don't have any
20 information that would dispute it.

21 Q On a continuous basis, what does 20,000 acre-feet
22 per year equal in cubic-feet-per-second flow?

23 A Well, if you average 20,000 acre-feet out over an
24 entire year, that equals roughly 29 cfs.

25 Q And the base flow of the Upper Owens River not
0096

01 including augmentation, is what?

02 A Well, correct me if I'm wrong, Rick. It's 76
03 cfs?

04 A BY DR. SITTS: 76.

05 Q Let's return to the Mono Basin. Parker Creek.
06 Does the City of Los Angeles divert water from South
07 Parker Creek for irrigation?

08 A BY MR. GARY SMITH: I believe water is -- excuse me.
09 Water is diverted out of South Parker Creek upstream of
10 the Lee Vining conduit for irrigation purposes on
11 private lands, and I believe also Department of Water
12 and Power lands.

13 Q So notwithstanding the termination of export which
14 Mr. Birmingham discussed, it is your understanding that
15 L.A. continues to divert water from South Parker Creek
16 for irrigation?

17 A If they are the landowners, water is being
18 diverted on the property, yes.

19 Q What about Parker Creek, itself?

20 A The same situation, I believe.

21 Q What about Walker?

22 A I don't think so on Walker Creek. I'm not
23 positive on that one. When we get upstream of the

24 conduit, I get a little fuzzy.
25 Q Dr. Sitts, Mr. Birmingham asked you questions this
0097
01 morning about irrigation diversions and grazing prior
02 to 1941 on both Walker and Parker Creeks. Do you
03 recall those questions?
04 A BY DR. SITTS: Yes.
05 Q Do you have an opinion as to when the City of Los
06 Angeles acquired the water rights on Walker Creek that
07 had previously been used for irrigation?
08 MR. BIRMINGHAM: I'm going to object on the
09 grounds that this calls for knowledge of a percipient
10 witness, not an opinion by an expert.
11 HEARING OFFICER DEL PIERO: Overruled. Do you
12 know the answer to the question?
13 DR. SITTS: No. Is he asking for an opinion --
14 HEARING OFFICER DEL PIERO: He's asking you for a
15 date. Do you know when?
16 DR. SITTS: No.
17 HEARING OFFICER DEL PIERO: Proceed,
18 Mr. Roos-Collins.
19 Q BY MR. ROOS-COLLINS: Have you read chapter G --
20 excuse me, Chapter 3-G of the Draft Environmental
21 Impact Report?
22 A BY DR. SITTS: No.
23 MR. ROOS-COLLINS: Thank you.
24 Mr. Smith, what is Cal-Trout's next in order?
25 MR. SMITH: Next in order's 31.
0098
01 Q BY MR. ROOS-COLLINS: Dr. Sitts, I show you now
02 Cal-Trout 31, which is a record of the meeting of the
03 Board of Fish and Game Commissioners of the State of
04 California, August 10th, 1927, and I ask that you read
05 the first paragraph on the second page beginning,
06 "Resolved further that the Fish and Game Commission
07 does hereby order Cane Irrigation Company."
08 A BY DR. SITTS: You want me to read this into the
09 record?
10 Q Read it to yourself.
11 A Okay.
12 Q Other than what you just read, do you have any
13 knowledge about any order by the Fish and Game
14 Commission to the Cane Irrigation Company regarding
15 screening of its irrigation canals as described in
16 Cal-Trout Exhibit 31?
17 A No.
18 MR. ROOS-COLLINS: Thank you. No further
19 questions.
20 HEARING OFFICER DEL PIERO: Thank you very much,
21 Mr. Roos-Collins.
22 Mr. Valentine?
23 MR. VALENTINE: No questions. Thank you.
24 HEARING OFFICER DEL PIERO: Thank you very much,
25 Mr. Valentine.
0099
01 Mr. Haselton?
02 MR. HASELTON: Just a few.
03 RE-CROSS EXAMINATION BY MR. HASELTON
04 Q Mr. Parmenter, you had made reference to the wild
05 trout program of the Middle Owens River which, if I

06 recall, extends from Pleasant Valley, the dam, down to
07 Five Bridges.
08 A BY MR. PARMENTER: That's correct.
09 Q And what was the approximate length of that?
10 A 16 miles.
11 Q 16 river miles?
12 A Yes.
13 Q What when was that program implemented?
14 A On the Middle Owens, I think it was 1978.
15 Q Okay. Do you recall what were the components of
16 that program?
17 A There was a special angling regulation instituted,
18 a policy change whereby the department ceased stocking
19 of hatchery trout, and a monitoring program assumed.
20 Q To your knowledge, was there any physical
21 manipulation to that portion of the river?
22 A I'm aware that there has been attempts to
23 manipulate and control the river.
24 Q As a part of that wild trout program?
25 A Attempts to manage habitat. It's not necessarily
0100
01 the same thing as the management of the fish population
02 in the abstract.
03 Q Mr. Smith, I just want to take a few moments and
04 just revisit Page 218 of Exhibit 62, which have --
05 describes habitat development measures. We talked
06 about it a little bit last night.
07 A BY MR. GARY SMITH: All right.
08 Q Have you or your department ever completed a
09 similar program that included all of these measures in
10 this area in the Owens River watershed?
11 A I have not. And frankly, I'm not familiar with
12 the history of activities over the past decades, so I
13 really can't respond to that with respect to department
14 activities.
15 Q Mr. Parmenter, would you -- is it safe to say,
16 then, that probably a principal if not the principal
17 component of the wild trout program is the adjusted
18 regulations?
19 A BY MR. PARMENTER: No.
20 Q And then what are other -- what are the other
21 components?
22 A A primary focus is in habitat protection.
23 Q Okay.
24 A There -- as you questioned earlier, another focus
25 is in habitat restoration, when that's possible and
0101
01 appropriate.
02 Q Um-hum.
03 A That's been -- at least on the flow levels, that's
04 been -- because of course excess, that's been a very
05 minor component.
06 Q I'm sorry?
07 A There have been efforts to stabilize eroding banks
08 by rip-wrapping with local rock and efforts to
09 revegetate using artificial propagation of willows
10 which have failed. I'd say almost 100 percent failure,
11 and I'm currently in a project to restore native
12 cottonwood over storage along the stream, and it's
13 proceeding.

14 Q One last question for Mr. Smith, have you or the
15 department approached any of the private landowners
16 regarding this habitat development plan that's
17 described on Page 218?
18 A BY MR. GARY SMITH: Excuse me. I spoke briefly with
19 Mr. John Arcularius on this matter several weeks ago,
20 just briefly.
21 Q Could you characterize his response? In a civil
22 manner?
23 A His response was -- he was supportive -- I'll to
24 have paraphrase it. He was supportive of actions which
25 would reopen abandoned channels. He wasn't too
0102
01 supportive of heavy construction, I think would be the
02 best term. Heavy construction activities.
03 MR. HASELTON: That's it. Thanks a lot.
04 HEARING OFFICER DEL PIERO: Thank you very much,
05 Mr. Haselton.
06 Mr. Frink?
07 MR. FRINK: No questions.
08 HEARING OFFICER DEL PIERO: Mr. Satkowski?
09 Mr. Herrera? Mr. Canaday?
10 MR. CANADAY: No.
11 HEARING OFFICER DEL PIERO: Thank you very much.
12 Gentlemen, thank you for your time. We appreciate
13 your efforts.
14 MS. CAHILL: At this time, we would like to offer
15 exhibits into evidence and in order to facilitate it,
16 we have made up a list of the NAS/MLC exhibits as well
17 as the DFG ones. Let me first just on the record
18 clarify when we introduced Dr. Sitts' errata sheet
19 yesterday, we gave it Exhibit No. 17-A, but it should
20 be clear that those errata did not apply only to
21 Exhibit 17, they applied to Exhibits DFG 17, 25, 57,
22 58, 59, 60, and 62.
23 HEARING OFFICER DEL PIERO: As are indicated on
24 the documents.
25 MS. CAHILL: Right. DFG Exhibits 88 through 94
0103
01 were not identified by any witness. They were
02 photographs taken during the field investigation
03 primarily on the Lee Vining Creek. Exhibits 98 through
04 104 related to the duck testimony. We would offer into
05 evidence DFG Exhibit 1 through DFG 176, Cal-Trout
06 Exhibit 5 and Cal-Trout exhibits -- I'm sorry.
07 MR. SMITH: Got you so far.
08 HEARING OFFICER DEL PIERO: Mr. Smith is fast but
09 he's not that fast.
10 MS. CAHILL: Do you have the most current lists?
11 MR. SMITH: Yes
12 MS. CAHILL: All of the DFG Exhibits 1 through
13 176. Cal-Trout 5. Cal-Trout 5-A through 5-T. NAS/MLC
14 1-U, 1-W, 1-A, B, 141, and that's also SLC and DPR 1.
15 NAS/MLC 142, 159, 161, 162, 163, 164, 176, 177, 178,
16 179, 180, 81 --181, 182, 183, 184, 185, 188, 192, 205,
17 206, 207, 208, 209, 210, 211, 212, and 213.
18 MR. SMITH: Thank you very much.
19 HEARING OFFICER DEL PIERO: Any objections?
20 MR. BIRMINGHAM: Yes.
21 HEARING OFFICER DEL PIERO: Mr. Birmingham?

22 MR. BIRMINGHAM: With respect to those Department
23 of Fish and Game exhibits that were not identified
24 during the course of the proceeding --
25 HEARING OFFICER DEL PIERO: Which were not
0104
01 identified prior to the proceeding?
02 MR. BIRMINGHAM: During the proceeding. There
03 are -- DFG exhibits that involve -- that are the
04 written testimony of witnesses that have not appeared.
05 HEARING OFFICER DEL PIERO: Yes.
06 MR. BIRMINGHAM: And there are other Department of
07 Fish and Game exhibits that were not the subject of
08 testimony of witnesses who have appeared, and we do
09 object to the admission of those -- of those exhibits.
10 HEARING OFFICER DEL PIERO: Ms. Cahill?
11 MS. CAHILL: We can go through -- with regard --
12 HEARING OFFICER DEL PIERO: Excuse me,
13 Ms. Cahill.
14 Mr. Birmingham, you need to be more specific as to
15 that. Because at this point we're dealing with a whole
16 lot of exhibits here and -- you need to track this,
17 okay? Now, please articulate those exhibits to which
18 you have an objection.
19 MR. DODGE: May I suggest that this be done
20 tomorrow after people have had a chance to, you know,
21 make a complete list so we could proceed today?
22 HEARING OFFICER DEL PIERO: Are you prepared to
23 move forward with this now?
24 MR. BIRMINGHAM: No, Mr. Del Piero, I'm not
25 because I do not have a list of those exhibits that
0105
01 were -- that were identified during the course of the
02 proceeding. I'm going to have to go back through all
03 of my notes and check those that have been identified.
04 I can tell you the names of the witnesses who have not
05 appeared, and I think if I get together with
06 Ms. Cahill, it will only take a few minutes to
07 establish those that were not identified by any of the
08 witnesses.
09 MS. CAHILL: Let me ask just with regard to the
10 Basco (phonetic) witnesses, before Dr. Sitts leaves, I
11 had asked him whether he had solicited those resumes
12 and statements, testimony from subs and employees of
13 Basco (phonetic).
14 Dr. Sitts, let me ask you again. Did you review
15 both the testimony and the qualifications?
16 DR. SITTS: Yes.
17 MS. CAHILL: And did you receive those directly
18 from the persons named?
19 DR. SITTS: Yes.
20 MS. CAHILL: And do you have any reason to believe
21 they're not true?
22 DR. SITTS: No.
23 MS. CAHILL: Thank you. I'm laying that
24 groundwork for when we have that argument.
25 HEARING OFFICER DEL PIERO: 8:30 tomorrow morning
0106
01 we'll take up this issue.
02 Thank you very much, Gentlemen.
03 Ladies and Gentlemen, we're going to take -- who's

04 up next, Mr. Flinn and Mr. Dodge, you've got your
05 panel, or is it -- is it Dr. Stine only or --
06 MR. DODGE: No. It's a combined panel.
07 HEARING OFFICER DEL PIERO: It's a combined panel.
08 We're going to take -- we're going to take ten
09 minutes right now to allow you to seat your panel and
10 get prepared since we're transitioning from one party
11 to another, and then at about 12:15, about an hour from
12 now, actually an hour from when we start again, we'll
13 take a 15-minute lunch break between 12:15 and 12:30,
14 and then we'll be back on again. Okay? Ten minutes.
15 (Whereupon a short recess was taken.)
16 HEARING OFFICER DEL PIERO: Ladies and Gentlemen,
17 this hearing will again come to order.
18 MR. FLINN: Mr. Del Piero, perched briefly as I am
19 at the pinnacle of the food chain, I will yield this to
20 Mr. Dodge.
21 MR. DODGE: I just wanted to repeat what we agreed
22 a couple of days ago that we would have a panel of four
23 people, Dr. Herbst, Dr. Stine, Mr. Shuford,
24 Dr. Winkler, and we'll start with Dr. Herbst. All
25 questions relating to him whether on direct or cross
0107
01 will be dealt with by Mr. Flinn, and then I will deal
02 with questions to the other three members of the panel.
03 HEARING OFFICER DEL PIERO: Thank you very much.
04 MR. DODGE: We'll start with Dr. Herbst.
05 HEARING OFFICER DEL PIERO: Mr. Birmingham?
06 MR. BIRMINGHAM: And it's our understanding that
07 we have an agreement with Counsel that has not been
08 blessed yet by the Hearing Officer that the
09 cross-examination of this panel which was formed in
10 order to expedite this process would be conducted
11 jointly by Ms. Goldsmith, who will examine Dr. Winkler
12 and Mr. Shuford, and Mr. Moskovitz will cross-examine
13 Dr. Herbst.
14 HEARING OFFICER DEL PIERO: Very good. Any
15 objections to that process?
16 MR. FLINN: No. We stipulate to it.
17 HEARING OFFICER DEL PIERO: I see nodding heads.
18 MR. FLINN: We agree.
19 HEARING OFFICER DEL PIERO: Good. Mr. Flinn,
20 proceed.
21 MR. FLINN: First of all, we might just have the
22 panel members introduce yourselves briefly by stating
23 your names for us.
24 DR. HERBST: David Herbst.
25 DR. STINE: Scott Stine.
0108
01 MR. SHUFORD: David Shuford.
02 MR. WINKLER: David Winkler.
03 HEARING OFFICER DEL PIERO: Mr. Shuford, have we
04 met before?
05 MR. SHUFORD: I don't believe so. I attended one
06 date of hearing.
07 HEARING OFFICER DEL PIERO: You all -- please
08 stand up and raise your right hand. Do you promise to
09 tell the truth during the course of this proceeding?
10 (All say I do.)
11 HEARING OFFICER DEL PIERO: Please have a seat.

12
13
14
15
16
17
18
19
20
21
22
23
24
25
0109
01
02
03
04
05
06
07
08
09
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
0110
01
02
03
04
05
06
07
08
09
10
11
12
13
14
15
16
17
18
19

DIRECT EXAMINATION BY MR. FLINN

Q Now that you're under oath, what are your names?
Just kidding.

Dr. Herbst, could you identify National Audubon Society and Mono Lake Exhibit 1-G as your testimony in this proceeding?

A BY DR. HERBST: I can.

Q Could you tell us, Dr. Herbst -- actually, before you do, Mr. Herrera, I was hoping you could give me ten-minute and five-minute warnings.

MR. HERRERA: Will do.

Q BY MR. FLINN: Dr. Herbst, could you give a description of your background and professional qualifications, please?

A BY DR. HERBST: Yes, I can. I have a Ph.D. in zoology and entomology from Oregon State University. I'm currently a research biologist at the University of California Santa Barbara, and I'm stationed at the Sierra Nevada Aquatic Reserve Laboratory, which is in the eastern Sierra.

I've conducted research at Mono Lake I think for longer than anyone continuously dating from 1976. My work has dealt primarily with the physiology and ecology of the alkali fly and algae which inhabit the near shore lake bottom environment, but I've also done research on brine shrimp as well.

Q Now, Dr. Herbst, could you briefly summarize your testimony for us?

A Yes. What I would like to do is present data that's not in the record or I don't believe has been considered completely. I think that all the evidence in this hearing needs to be weighed in order that we can evaluate lake level changes in the broad historical sense; that is to say, in the sense of the kind of lake level changes -- the kind of lake level changes that have occurred since the time of diversions to present-day conditions, which span a range of salinity conditions from 50 to 100 grams per liter and about 40 to 50 feet in lake elevation. This should include not

only monitoring information but should also include information drive from modeling predictions and from experimental studies as well.

So what I'd like to do in the course of my testimony here is present some of this information to you, or a summary of most of this information. The results of my studies have typically shown that salinity is the environmental factor of primary importance in controlling growth and productivity of the aquatic ecosystem. Though there are other factors that are also important, they usually compound the impact of the salinity problem or only partially offset the problems caused by salinity.

The basic reason that salinity is such an important variable is derived from the fact that the organisms that live in Mono Lake have a need to maintain blood and cell salt concentrations at a constant level. It's a fundamental aspect of their physiology that they maintain this salt balance

20 otherwise they can't survive and grow and reproduce,
21 and there's no way to avoid the cost that's associated
22 with this osmole regulation, so any increase in
23 salinity that the organisms in Mono Lake experience
24 will always cause a stress. Salinity always will be a
25 stress factor in the physiology of these organisms, and

0111

01 the data I have collected by and large demonstrate that
02 salinity translates from being not only a physiological
03 stress factor, but it also inhibits population growth
04 and productivity of the aquatic organisms in the lake
05 as well.

06 So what I'd first like to consider is a model of
07 alkali fly production that was part of the
08 Environmental Impact Report.

09 Q If I could interrupt very briefly there. A
10 version of this was marked as one -- on one part of
11 Mono Lake Committee and National Audubon Society
12 Exhibit 66. We've made it a little clearer and bigger,
13 and this is the same exhibit, but we've identified this
14 as Exhibit 66-B, as in boy. I take it back. This is
15 66-A, as in alpha.

16 A All right. What's inside the box here is elements
17 that were included in the model, and they emphasize the
18 influence of habitat area on the abundance of flies.
19 And by "habitat area," I mean the amount of hard
20 substrate which is Tufa rock versus soft substrate
21 which is in the lake, fly larvae and pupae, the alkali
22 fly larvae and pupae have varied preferences for these
23 two kinds of substrate. So depending on the lake
24 elevation, there's varied amounts of these two types of
25 habitats in the lake, and that will influence overall

0112

01 abundance of larvae and pupae and either decrease or
02 increase the abundance of flies in the model.

03 As a secondary effect, salinity was incorporated
04 in terms of its effects on the growth of larvae, the
05 development time and size of larvae and pupae were
06 incorporated and that also has an influence on the
07 abundance of flies. However, there are important
08 elements of both habitat considerations and salinity
09 considerations that were not incorporated into the
10 model that's in the EIR that make the model in the EIR
11 really conservative in the sense that it under
12 estimates potential beneficial effects of high lake
13 levels and potential adverse effects of low lake
14 levels.

15 In terms of habitat, one of the most important
16 features that's not considered in the model is the
17 presence of lateral vegetation or near-shore vegetation
18 being submerged as lake levels come up. Not only do
19 fly larvae and pupae use Tufa and rock as a habitat for
20 attachment, they can also use lateral vegetation. At
21 this point, I'd like to use this -- let's see, NAS and
22 MLC 49 and NAS and MLC 50, photographs that show the
23 attachment of fly pupae and larvae to submerged
24 vegetation in the lake.

25 Now, these are attached pupae and larvae that

0113

01 occurred only in this last year when we had a very

02 small rise in lake level and relatively little
03 vegetation being inundated but nonetheless, the
04 vegetation that was inundated in this particular small
05 rise in lake level permitted a new habitat for fly
06 larvae and pupae to attach to. So I just wanted to
07 establish --

08 HEARING OFFICER DEL PIERO: Excuse me. Just for
09 clarification purposes, the latoral vegetation that
10 you're referring to is not vegetation that grows in the
11 lake, itself. It's vegetation that's been inundated
12 because of lake levels going up?

13 DR. HERBST: That's correct.

14 HEARING OFFICER DEL PIERO: And does it generally
15 die off?

16 DR. HERBST: It generally dies off. However,
17 there are certain kinds of vegetation, because of the
18 root system that they have, that appear to persist for
19 at least as long as ten years. During the lake rise
20 that occurred in the early and middle eighties, there
21 was a substantial amount of vegetation submerged that
22 is called the sticelous (phonetic) and the sticelous
23 (phonetic), the salt grass, has a root system that
24 actually goes below the surface. And so even though
25 the vegetation dies, substantial portions of it can

0114

01 remain embedded in the substrate and can still provide
02 a substrate for attachment. So though it dies, it and
03 still persist as an attachment site.

04 HEARING OFFICER DEL PIERO: Does it break down
05 frequently? Does it break down quickly?

06 DR. HERBST: It eventually does break down.

07 HEARING OFFICER DEL PIERO: How long?

08 DR. HERBST: Some of the mats of the sticelous
09 (phonetic) that I saw in the lake in the early
10 nineties, had to have been inundated from that early to
11 middle period of the early eighties. So it had to be a
12 period of years of at least some five to ten years and
13 could quite possibly be longer than that.

14 HEARING OFFICER DEL PIERO: Thank you.

15 DR. HERBST: So including this effect of latoral
16 vegetation, there's actually more habitat that could
17 become available to flies as the lake levels get higher
18 even though some of the rocky substrate that's in the
19 lake gets so deep in the water it's no longer
20 accessible.

0115

21 There's important salinity effects that were also
22 not incorporated into the model and those include the
23 influence of salinity on larval survival, growth of the
24 algal food resource to the flies, the effect of
25 salinity on the size of pupae, and the ability of

01 adults to emerge from those pupae, and the influence of
02 salinity on adult body size and the reproductive
03 ability of those adults. These were all effects that
04 were not incorporated into the model here and were they
05 to be incorporated, it would actually produce a model
06 that would show there are more beneficial effects for
07 higher lake level conditions and more adverse effects
08 for low lake level conditions. So I just want to
09 emphasize that that is conservative model.

10 Now, this is basically the same sort of model that
11 was used both in the Jones and Stokes version of the
12 alkali fly model, and the model I developed with
13 William Kimmerer. Jones and Stokes modified the model
14 that Kimmerer and I produced in such a way that
15 neither of us agreed with what they did, but the
16 outcome, the results of both of those models are
17 basically identical. They showed that the population
18 and abundance of the flies should be maximized based on
19 primarily on these habitat consideration that an
20 elevation range between about 6380 and 6390.

21 I'd like to move on to an experiment that was done
22 in 1991 as a part of the Environmental Impact Report
23 research work and these are microcosm experiments --

24 HEARING OFFICER DEL PIERO: Can I see it?

25 DR. HERBST: Should I turn these?

0116

01 These diagrams here show a series of tanks
02 between --

03 Q BY MR. FLINN: Let me interrupt real briefly again
04 just as a matter of procedure. This is a clarified
05 version of the chart that was Mono Lake Committee and
06 National Audubon Society Exhibit 52, and we mark this
07 clarified version as 52-A.

08 A BY DR. HERBST: These microcosm tank experiments were
09 specifically designed to simulate ecological conditions
10 in the near shore like environment which I'll sometimes
11 refer to as the benthic ecosystem, and it's the habitat
12 where the alkali fly develops, where the larvae and
13 pupae of the alkali fly live. And each of these tanks
14 from 50 to 75, 100 to 125 grams per liter, were set up
15 out of doors. These tanks are about a meter on a side
16 and contain about 200 gallons of water. They were set
17 up in the early part of the summer with water in them
18 that had been adjusted to each of these different
19 salinity levels. And then added to those salinities
20 were sediments from the lake which contained algae, the
21 eggs of the flies and the larval stage of the flies,
22 and a variety of other benthic micro-organisms and
23 invertebrates that came not only from Mono Lake but
24 from other habitats, both more saline and less saline
25 than Mono Lake. So we were introducing a varied

0117

01 community of organisms to the ecosystem.

02 HEARING OFFICER DEL PIERO: Excuse me. What was
03 your control?

04 DR. HERBST: The control? With reference to 100
05 grams per liter, which is what the salinity of the lake
06 was at that time, would be this tank right here.

07 HEARING OFFICER DEL PIERO: Okay.

08 DR. HERBST: So what these experiments -- what
09 these charts here depict is the productivity of these
10 tanks in terms of the emerging flies -- and you can see
11 we have our little fly icons on the graphs, and the
12 amount of benthic algae growing in the tanks is
13 depicted by the depth of this shaded area here at the
14 bottom of the tank, and then the body size of
15 individual flies is depicted by these pie diagrams.
16 And the slice out of each pie diagram indicates the
17 total percent fat in those individual flies. So as you

18 can see, as you go from these
19 high-lake-level-low-salinity conditions, there's a
20 dramatic loss of overall productivity of the
21 population, many fewer flies emerging as we go up to
22 the higher salinities and, in addition, there's also a
23 dramatic reduction in the amount of algae growing in
24 these tanks.

25 On a per-individual basis, the flies that emerge
0118
01 from these different experimental tanks also decreased
02 as we increased the salinity, and the proportion of fat
03 that makes up the body content of flies of decreasing
04 size also decreases as the salinity increases.

05 HEARING OFFICER DEL PIERO: Do you have specific
06 percentages on these pie charts?

07 DR. HERBST: Yes, I do.

08 HEARING OFFICER DEL PIERO: Where?

09 DR. HERBST: At -- at 6415, 18 percent fat, 15
10 percent fat at 75, and 10 each at the two higher
11 salinity levels.

12 HEARING OFFICER DEL PIERO: Thank you.

13 DR. HERBST: Yep.

14 MR. MOSKOVITZ: Excuse me, Mr. Hearing Officer.
15 Could those exhibits be labeled with their numbers when
16 they're up on the board so that we can identify them by
17 the numbers that --

18 HEARING OFFICER DEL PIERO: Sir. Mr. Flinn, if
19 you would be kind enough, do you have a marker there,
20 Sir?

21 DR. HERBST: The important thing I want to
22 emphasize about these experiments is they're sort of
23 halfway between being a laboratory experiment and an
24 actual change in the lake environment itself. It's
25 about the best experimental manipulation we can do to
0119

01 try and simulate what would happen realistically under
02 natural lake conditions, and we're not just seeing what
03 happens when we change salinity in terms of the effects
04 on individual organisms or on single populations or
05 species, we're looking at the composite effect of
06 salinity on the entire community. So these experiments
07 were -- only got very cursory mention in the
08 Environmental Impact Report, and I think it's really
09 important that we use this information that's available
10 to us.

11 In addition to these microcosm tanks experiments,
12 since 1991, I've also completed a set of experiments
13 having to do with the influence of salinity on the
14 nitrogen budget of the lake and on -- the effects on
15 the brine shrimp, Artemia, and I'd like to outline
16 those results right now.

17 Q BY MR. FLINN: Just before you do, Dr. Herbst, let me
18 interrupt and ask you if can you identify National
19 Audubon Society and Mono Lake Committee Exhibit 75 as a
20 copy of the paper you wrote or co-authored on salinity
21 and nitrogen fixation?

22 A BY DR. HERBST: That's right. That's my paper.

23 MR. FLINN: And while he's setting that up, for
24 record, this is a version, clarified version of what
25 appeared on National Audubon Society and Mono Lake

0120

01 Committee Exhibit 66, and we identified this as Exhibit
02 66-B, as in boy.

03 MR. HERRERA: Ten minutes, Mr. Flinn.

04 DR. HERBST: What I want to do is just set up my
05 discussion of the influence of nitrogen fixation by
06 talking about the nitrogen cycle in Mono Lake with
07 regard to the sources and losses of nitrogen. A lot of
08 discussions of the nitrogen budget in Mono Lake is
09 focused on internal cycling of nitrogen within the
10 system. That is to say, nitrogen that comes from
11 sediments that by decomposing organisms becomes
12 released as ammonia dissolved into the lake water, is
13 taken up by organisms, by algae living in the lake, and
14 then through death, goes back into the sediments.

15 In addition, shrimp that live in the water will
16 also excrete some nitrogen and this ammonia that they
17 excrete can also be available as a nutrient source. So
18 let me back up a bit and just say that nitrogen is the
19 limiting nutrient in the lake, so it's particularly
20 important for us to consider this.

21 But one of the things that's been largely glossed
22 over, I find, is that there are important losses of
23 nitrogen from the Mono Lake system. And one of the
24 ways nitrogen is lost from the system is that after
25 death, certain kinds of nitrogen compounds that are

0121

01 tied up in these dead organisms are refractory, or
02 non-reactive to decomposition by bacteria, and so
03 they're buried in the sediments where they're no longer
04 available for recycling back up into the lake. So
05 nitrogen is lost from this internal cycle by that.

06 In addition --

07 HEARING OFFICER DEL PIERO: Wait. Wait. Wait.
08 Wait. I need to understand that. Explain what you're
09 talking about in terms of refractory --

10 DR. HERBST: Refractory or non-reactive nitrogen
11 is --

12 HEARING OFFICER DEL PIERO: I understand that.
13 Tell me what --

14 DR. HERBST: There are particular kinds of
15 nitrogen molecules that are difficult to break down --

16 HEARING OFFICER DEL PIERO: What are -- where is
17 it coming from in terms of --

18 DR. HERBST: Well, for the most part, it's protein
19 compounds that contain nitrogen, and some of those
20 protein compounds are more difficult to break down than
21 others.

22 HEARING OFFICER DEL PIERO: Okay.

23 DR. HERBST: And so some of that material is
24 buried in the lake sediments and continues to be piled
25 up as the years go along and you can never get access

0122

01 to it again. So it disappears from this nitrogen
02 cycle.

03 In addition, nitrogen's also lost from the system
04 as ammonia gas from the lake water where it's dissolved
05 as ammonium, there are conditions of mixing and
06 solubility that alter whether or not the ammonia can
07 stay in the lake and that result in the expulsion of

08 ammonia gas from the lake. So we have a large amount
09 of nitrogen lost from the lake as well to the
10 atmosphere as well as we're having some loss from the
11 system here.

12 Now, Mono Lake's not a closed system. If it were,
13 and we had these losses going on, eventually this
14 internal nitrogen cycle would run itself down. There'd
15 be no way for new nitrogen to get into the system to
16 supply new nitrogen for the growth of the organism. So
17 there must be some external sources of nitrogen that
18 get into the system as well that allow this balance to
19 occur. A balance is necessary because we're losing
20 nitrogen sediments into the atmosphere.

21 One of the ways new nitrogen can get in is through
22 atmospheric precipitation. Another way might be
23 through stream flow, but by and large, the calculations
24 that have been done suggest that that's a relatively
25 minor contribution. There's not that much nitrogen

0123

01 that can get into the lake that way. And probably the
02 best way or the most abundant way that new nitrogen can
03 get into the lake from the outside and, in fact, the
04 way a lot of new nitrogen gets into ecosystems on a
05 global scale, is through a process known as nitrogen
06 fixation.

07 And nitrogen fixation is a process whereby
08 nitrogen gas from the atmosphere becoming dissolved in
09 the lake water is taken up by certain kinds of
10 bacterial organisms, cyanobacteria, which are often
11 called blue-green algae. These blue-green algae change
12 this nitrogen gas into a reduced form of nitrogen, our
13 old friend ammonium here. And so this process can
14 bring new nitrogen into the system, can bring nitrogen
15 from the external environment back into the lake system
16 and help replenish that which is lost by burial or by
17 the expulsion of nitrogen gas.

18 So one of the things that I've become particularly
19 interested in is the influence of salinity on this
20 process of bringing new nitrogen into the system, so
21 what I specifically did with colleagues at the United
22 States Geological Survey is to do experiments on
23 cultures of cyanobacteria taken from the near shore,
24 the Toro Lake environment where the conditions are just
25 right for nitrogen fixation, brought them into the

0124

01 laboratory and exposed them under several kinds of
02 experimental conditions to a series of salinities to
03 see how that would influence nitrogen fixation. And
04 what we found was that current salinities of about 100
05 grams per liter, the rate of nitrogen fixation at
06 current salinities is only about half that which we see
07 at lower salinities, at about 50 and 75 grams per
08 liter.

09 However, in addition to considering the effects of
10 salinity on the rates of nitrogen fixation, we also
11 need to take into account the area of the lake bottom
12 over which nitrogen fixation is occurring. So if we
13 look at both salinity and lake area affects on nitrogen
14 fixation, we see the following result.

15 MR. FLINN: Let me interrupt you right here. That

16 is graphic depiction of data in a table contained in
17 Exhibit 65. We would mark this as Exhibit 65-A.

18 MR. HERRERA: Five minutes, Mr. Flinn.

19 DR. HERBST: So over her on this axis, we have --

20 MR. MOSKOVITZ: May I make an inquiry to see
21 whether I want to object or not?

22 HEARING OFFICER DEL PIERO: Yes, Mr. Moskovitz.

23 MR. MOSKOVITZ: Is what you've marked as Exhibit
24 65-A a graphic representation of the same graph or
25 another representation of a graph, or is it simply a

0125

01 representation of data that appear in some other form?

02 MR. FLINN: If you look at the numbers on Page 11
03 of Exhibit 65, the elevation feet column on the
04 left-hand column of that is the X axis of this graph,
05 and if you look at the nitrogen fixation in millions of
06 moles, I guess, molecules of nitrogen -- is that
07 right? Moles?

08 DR. HERBST: Moles, it's not molecules.

09 MR. FLINN: -- of nitrogen. The last column on
10 the right represents the Y axis, and each one of those
11 data points are the numbers that appear on the column
12 under nitrogen fixation.

13 MR. MOSKOVITZ: Just one more inquiry, please.
14 Your Exhibit 64 on Page 5, lower right, has a -- a
15 graph that I believe purports to depict the same kind
16 of information that's shown on Exhibit 65-A, although
17 the orientation is reversed. Is -- is Exhibit 65-A the
18 same in terms of what is shown by the graph as is on
19 Page 5, lower right-hand graph in Exhibit 64?

20 DR. HERBST: Yeah, it is.

21 MR. MOSKOVITZ: It is?

22 DR. HERBST: It's a percentage -- rather than
23 absolute numbers, it's graphed as a percentage, though,
24 of the maximum value there. So here we have absolute
25 numbers of potential nitrogen fixation lake wide, and

0126

01 on the graph that you're looking at, it simply shows
02 where the maximum value is and takes that to be 100
03 percent and relates everything else to that 100 percent
04 value. So it's just a more simplified way of looking
05 at this relationship.

06 MR. MOSKOVITZ: With that explanation, I will not
07 object to a new exhibit being presented.

08 HEARING OFFICER DEL PIERO: Mr. Herbst, please
09 proceed.

10 DR. HERBST: Sure. So what these data show is
11 that at these low lake levels, we have a substantial
12 loss of potential nitrogen fixation lake wide, both
13 because there's less area available over which this
14 fixation can occur and because there's a substantial
15 inhibition of the process of fixation at these lower
16 lake levels and higher salinities. It's maximized at
17 an elevation of 6390 which corresponds approximately to
18 75 grams per liter, and declines at higher elevations
19 because of the fact that even though there is equal
20 rates of overall nitrogen fixation at these higher lake
21 levels and lower salinities, nonetheless, there's less
22 actual lateral benthic area around the lake as a whole,
23 and so less area over which fixation can occur. And so

24 you see a drop in the total amount of nitrogen that can
25 come into the system.

0127

01 Once again, though, along with this data, we need
02 to consider each of the different elements of these
03 experiments that allow us to be able to try and predict
04 what the overall in the case of these things should be
05 on productivity of the system. But let me just once
06 again emphasize that the maximization based on both
07 salinity and lake area affects would be an elevation of
08 6390.

09 HEARING OFFICER DEL PIERO: Please, Mr. Herrera,
10 make accommodations for this in terms of time. I want
11 to get this clarified.

12 Ziano bacterial nitrogen fixation. The source of
13 the bacteria?

14 DR. HERBST: They grow in the lake.

15 HEARING OFFICER DEL PIERO: Is it your
16 representation that this represents the only sources of
17 nitrogen?

18 DR. HERBST: Of external nitrogen? No, not at
19 all. There are other sources of nitrogen and other
20 sinks for nitrogen, but by and large, they appear to be
21 insignificant.

22 HEARING OFFICER DEL PIERO: Excrement from the
23 birds?

24 DR. HERBST: Well, excrement from the birds is
25 another possibility. But excrement from the birds by

0128

01 and large should also be internal to the system because
02 they're at the lake feeding on the organisms which are
03 taken nitrogen from the lake itself --

04 HEARING OFFICER DEL PIERO: That's assumed in the
05 biological update bubble that's reflected on the chart;
06 is that correct?

07 DR. HERBST: Yes.

08 HEARING OFFICER DEL PIERO: I just want to be sure
09 I understand what you're representing.

10 DR. HERBST: Sure. Let me finally go on to
11 experiments that I conducted with the brine shrimp,
12 Artemia, last year as well. Previous studies that have
13 been done on the effects of salinity on the growth of
14 brine shrimp have examined salinities as 75 grams per
15 liter and above, never below that particular salinity.
16 So if we want to address the concerns of how shrimp
17 might be able to grow and develop at salinities more
18 comparable to what they were historically, that is to
19 say, at 50 grams per liter, then we need to examine
20 that low salinity level. Once again, all we have right
21 now or previous to these data are data from 75 grams
22 per liter and above. So in order to address whether or
23 not they're doing any better or worse at 50 grams per
24 liter, these experiments needed to be conducted.

25 So I removed cysts from Artemia, which are dormant

0129

01 eggs that live in the sediments of the lake, incubated
02 them at different salinities, and then watched the
03 growth and development of the shrimp from those
04 experiments.

05 MR. FLINN: Again, briefly interrupting, this is a

06 combination of exhibits, Mono Lake and National Audubon
07 Society Exhibits 201, 202, and 203. We would mark this
08 combination as Exhibit 201-A.

09 DR. HERBST: I can't quite get it all on here.
10 Does this go down any more?

11 MR. CANADAY: It goes forward.

12 HEARING OFFICER DEL PIERO: You must be a Stanford
13 grad.

14 DR. HERBST: So from the experiments where I
15 hatched cysts in these different salinities in Mono
16 Lake water, the cyst hatch was approximately the same
17 across all the treatments and the survival to this
18 stage of the experiment was the same across all these
19 treatments. So no real difference in hatching success
20 or survivorship across these treatments.

21 What was significant, though, was that as we go
22 from the low-salinity condition to the high-salinity
23 conditions, you can see that there's a shift in the
24 body size and age distribution curves to the left.
25 What these bars show in these hatched areas are the

0130

01 number of individuals that were in the adult stage.
02 Then once again, left to right, we have increasing size
03 classes. So what we see at this lowest salinity at the
04 50-gram-per-liter level that had not previously been
05 examined is that there is both a higher proportion of
06 the shrimp that have developed into the adult stage and
07 moreover, they've developed into a larger body-sized
08 shrimp than we see at these lower salinity levels. So
09 there appears to be both delays in development and
10 smaller body size.

11 Q BY MR. FLINN: Briefly, can you just relate each one
12 of those salinities to lake levels for us?

13 A 50 grams per liter would be 6415. 75 grams per
14 liter would be 6389. 100 grams per liter would be
15 6373.

16 So finally, if we consider all this information
17 together and try to search for an optimization between
18 all these different factors, we can look at habitat
19 availability as being one factor that's maximized
20 between elevations of 6380 to 6400. That's where the
21 best rocky habitat is available on the lake for for the
22 flies.

23 In terms of the beneficial effects of low salinity
24 at 75 grams per liter or 50 grams per liter, the most
25 beneficial effects would be between elevations of 6390

0131

01 and 6415. So the range of overlap where we optimize
02 both good habitat and good salinity effects are between
03 6390 and 6400.

04 In addition, the nitrogen fixation data also
05 suggests that 6390 is the best condition in -- for
06 which new nitrogen can be introduced into the
07 ecosystem, new nutrients can come into the system.

08 I believe that's all I have.

09 MR. HERRERA: Mr. Flinn, that's time.

10 HEARING OFFICER DEL PIERO: Mr. Flinn?

11 MR. FLINN: I'll actually probably be revisiting
12 my questions on a redirect anyway, so I'll just hold
13 off.

14 Mr. Dodge.

15 HEARING OFFICER DEL PIERO: Mr. Dodge? Are we
16 going need the screen any further?

17 Mr. Dodge?

18 MR. DODGE: No, I don't think.

19 HEARING OFFICER DEL PIERO: We're ready to go.

20 DIRECT EXAMINATION BY MR. DODGE

21 Q Dr. Stine, I would like you to summarize briefly a
22 portion of National Audubon Society and Mono Lake
23 Committee 1-U. You've previously testified about
24 the -- if I may speak loosely, the duck oriented
25 aspects of Exhibit 1-U, and I don't want you to repeat

0132

01 that. And you've also talked a little bit about
02 wetlands at Crowley Lake, and I don't want you to
03 repeat that, but there is on Exhibit 1-U from Pages 7
04 to 9, certain testimony about the physical situation
05 with respect to certain islands at Mono Lake, and I'd
06 like you to summarize that testimony, please.

07 A BY DR. STINE: I'd be glad to and I will make
08 reference to something on the -- something on the
09 qualifications that comes in here. I have written an
10 auxiliary report, one of the five, Auxiliary Report
11 Number 22 that is called Lake Fluctuation Induced
12 Changes in the Size and Configuration of the Mono
13 Islands, and it's that report that a lot of what I will
14 be presenting here is based on.

15 I want to concentrate on the Mono islands, and
16 I'll be referring to NAS/MLC Exhibit 159, which has
17 been introduced previously, and to NAS/MLC Exhibit
18 142. And we'll start here on Exhibit 159. We can see
19 that in 1930, and indeed for sometime after 1930, into
20 the forties and fifties, we had two main islands in
21 Mono Lake, Paoha Island near the center of the lake,
22 which is an island composed primarily of lake bottom
23 sediments that have been unparched due to volcanisms,
24 and Negit Island, a smaller island here to the
25 northeast of Paoha that is composed of hardrock,

0133

01 volcanic rock due to volcanic activity on the lake
02 floor.

03 Perhaps not apparent to those of you far distant
04 from NAS 159 here are a constellation of small islets
05 just to the north of Negit Island, and we refer to
06 these indeed as the Negit Islets and there are some
07 rather clever names that have been tied to these things
08 over the years by my gull-studying colleagues, and
09 we'll be able to identify a few of those as we -- as we
10 go along.

11 The islands here are of interest to the Mono Lake
12 controversy for reasons that I don't have to dwell on.
13 It's a gull-nesting area, has been for a long time and
14 the gull colony here has, I don't think there's any
15 dispute about this, been disrupted by coyotes from time
16 to time. The purpose of the testimony here is to
17 provide background for Mr. Shuford and Dr. Winkler in
18 their discussion of the effect of coyotes and predation
19 on the birds of the Mono Island.

20 Going then to Exhibit 142, MLC -- or pardon me,
21 NAS/MLC 142, we can see the change in the islands that

22 have occurred, changes that have occurred as Mono Lake
23 has dropped between 1930 on the one -- shown on 159,
24 and 1982, shown on Exhibit 142. The islands have, in
25 all cases, gotten larger. That includes the Negit

0134

01 Islands as well as the major islands, Negit Island and
02 Paoha Island.

03 Also, another constellation of islets, the
04 so-called Paoha islets, have emerged just to the west
05 of Paoha Island. Those islets are composed of soft
06 sediments and are easily erodible. For the purposes of
07 this testimony, I'll be concentrating on Negit Island
08 and the Negit Islets, and we can see that by 1982,
09 Negit Island was connected to the main land by a land
10 bridge, a land bridge that is very well known, but to
11 which there is often tied a misconception. That
12 misconception lies in the idea, the incorrect idea,
13 that as the lake level drops, Negit Island enlarges
14 toward the mainland and the mainland enlarges toward
15 Negit Island. And at some point these two land masses
16 then coalesce into a land bridge or a causeway that can
17 be crossed by coyotes.

18 What I'd like to point out here by way of
19 slides -- Dave, if could you lower the -- by way of
20 slides, is that it's a little bit more complicated than
21 this. That, in fact, a third island, a third large
22 island emerges -- let's see. What do we have in
23 there? That's kind of interesting. Something hairy.

24 HEARING OFFICER DEL PIERO: One of those flies
25 left over.

0135

01 DR. STINE: Presumably this can be seen by
02 everyone. It's a photograph taken in 1972 of Mono
03 Lake. The lake elevation here would be about 6386,
04 roughly --

05 MR. HERRERA: Excuse me, Scott. Could you elevate
06 that so that the people in the back can see it?

07 DR. STINE: Sure. I'll tell you what. We can
08 pull this back somewhat.

09 MR. HERRERA: Maybe elevate the projector itself.

10 DR. STINE: How's that?

11 MR. HERRERA: Much better.

12 DR. STINE: This, by the way, is NAS/MLC Exhibit
13 193. Again, showing Mono Lake in 1972, approximate
14 elevation here is 6386 feet. Paoha Island near the
15 center of Mono Lake, Negit Island to the northwest, and
16 then this white blob here which is, in fact, not a
17 reflection but a new island that has risen from the
18 lake, emerged from the lake as the lake is falling.
19 That island, itself, which will become the land bridge
20 emerges first at an elevation of 6390 feet and luckily,
21 we have a photograph that shows that thing that has
22 come out within a few days or a few weeks, something
23 like that, prior to the snapping of the photograph. So
24 we know what elevation this comes out.

25
0136

01 both island ward and land ward. It's that island
02 growth that then becomes the causeway. As a result, we
03 have actually two straits through here, straits being

04 linear water bodies between -- that lie between two
05 land objects. We have what has been referred to by me
06 and others now as Damned Straits that lies between the
07 mainland and this island and Dire Straits which lies
08 between Negit Island and the mainland. And, of course,
09 as Mono Lake falls, then, these two straits become
10 narrower and narrower and eventually disappear at the
11 time the actual land bridge bridging event occurs
12 which, by the way, for Negit Island is at approximately
13 6375 feet.

14 Now, I have prepared cross-sections that show the
15 configuration of the straits here and the depth of the
16 straits and the width of the straits at various lake
17 levels coinciding with the -- some of the alternatives
18 discussed in the DEIR. I would like to point those out
19 in a second. For now, let me just show you where the
20 transect would be. It would be from Negit Island
21 across the land bridge and on to the mainland. I'll
22 show one exhibit along that transect, I'll then show a
23 second exhibit that goes from two of the islets out
24 here, particularly Twain Islet, which is the largest of
25 the Negit Islets that we can see on this map. From

0137

01 Twain Islet across the land bridge and on to the
02 mainland, and then I'll show a third transect that's
03 going to go from the tip, the northwestern tip of Negit
04 Island on to Java, which is the islet -- Negit Islet
05 closest to Negit Island. It will go from Negit Island
06 to Java then to Twain showing another possible route
07 for coyote crossing there and how that route changes in
08 terms of depth and width of the straits at the various
09 lake level alternatives.

10 But before I do that, let me just point out that
11 this ultimately is what occurs when the lake gets down
12 to about 6372 feet. Again, at 6375 feet, we complete
13 the land bridge between the mainland and Negit Island,
14 but at 6372 feet, in fact, this is at 6372.67, and is
15 part of, its simply one of the photographs that went
16 into the mosaic that composes Exhibit 142 --

17 MR. DODGE: We have labeled this Exhibit 142-A,
18 and I believe copies have been distributed, correct?
19 Thank you.

20 DR. STINE: This photograph is taken when the lake
21 is at 6372.67 feet. You can see that, of course, not
22 only is the Negit land bridge complete, but Twain, the
23 largest of the Negit Islets, and Java, another large
24 Negit Islet here, both of which are of importance to
25 gulls in ways that I won't go into, they are at this

0138

01 time, at this elevation, very, very close to being
02 themselves land bridged. And so with that background,
03 let's go to those transects that I threatened a moment
04 ago.

05 And I should point out that I believe,
06 Mr. Del Piero, you have been furnished with sort of a
07 packet there? Yes. Okay. The first of these that
08 we'd like to look at is called topographic profile
09 Number One, and it is NAS/MLC Exhibit No. 198. And on
10 this exhibit, what I have done here is to cross from
11 Negit Island -- cross from Negit Island, which is shown

12 at the right of the graph here, all the way over to the
13 mainland, and this hump-like feature, sort of
14 dromedary-like feature in the center here is the land
15 bridge, and you can see there's a low spot, a channel,
16 a straits to either side of that high point of the land
17 bridge.

18 Now, at an elevation of 6372 -- pardon me. 6372
19 feet, there is no water in either straits. So we can
20 walk from the mainland to Negit Island without getting
21 our feet wet. I haven't shown that here. The lowest
22 elevation I've shown is 6377 feet. At 6377 feet, Dire
23 Straits is, I've shown up here, approximately 662 feet
24 wide, and as we go then to higher lake levels, we can
25 see that not only does Dire Straits widen, for

0139

01 instance, in the second block diagram with a surface
02 elevation of 6383.5 feet, Dire Straits has now widened
03 to 2,280 feet, but Damned Straits all of a sudden has
04 water in it as well. So Damned Straits now contains a
05 straits that is 2260 feet approximately wide.

06 By the time we get up to an elevation of 6390
07 feet, that is a lake level 6390 feet, we've completely
08 submerged the land bridge, itself, the land bridge is
09 now no longer visible, and we have one water body that
10 covers the land bridge, and so 6390 feet, we show a
11 Dire Straits 4100 feet wide and a Damned Straits 1760
12 feet wide. Actually, there is a tiny, tiny island
13 sitting there at that time, but it is very small.
14 Nevertheless, it does provide a basis for constituting
15 two straits there. And by the time we get up to the
16 lake alternative, 6410 feet, we have a continuous
17 waterway that is about a mile and a half or so wide,
18 8630 feet wide.

19 Okay. Now, going to the second topographic
20 profile, topographic profile Number Two, we're now
21 moving from the mainland to Twain Island. Twain
22 Island, again, being the largest of the Negit Islets.
23 And I've essentially done the same thing here in block
24 Diagram Four. The first block diagram represents an
25 elevation of 6377 feet, a lake level of 6377 feet. The

0140

01 reason I don't show a block diagram for 6372 feet, of
02 course, is because Twain Island is actually land
03 bridged at that elevation. But by 6377 feet, we have a
04 little bit of water in Dire Straits. Indeed, at 6377
05 feet, we have a straits width there of 1663 feet, and
06 that can actually be measured on the ground. By the
07 time the lake rises to 6383.5 feet, the straits have
08 widened, and we now have a straits width of 6190 feet
09 and, of course, as we go higher and higher, then, the
10 water -- waterway gets -- we lose the two straits. We
11 get into one long straits, and we have a much, much
12 wider band there, 10,550 feet between Twain Island and
13 the mainland at that particular lake level, 6410.

14 Now, on topographic profile Number Three, as I
15 say, what we're really doing here is going from Negit
16 Island to Java and then to Twain. We're, in a sense,
17 island hoping there, and I've prepared this simply to
18 give an idea of how much water crossing there is
19 protecting these islets in a sense from one another.

20 At an elevation of 6372 feet, you can see that the one
21 straight here, which we've never named, we can come up
22 with some asinine names, I'm sure, but the one straight
23 between Java and Twain is very, very narrow, about 230
24 feet wide, and there's, in fact, no water between Negit
25 and Java. It's essentially zero where we drew the

0141

01 transect.

02 By the time we get up to a lake elevation of 6377
03 feet, we've filled these straits a little bit more and,
04 of course, we can see the numbers up here, 345 feet
05 width between Negit and Java and 680 feet width between
06 Java and Twain, and then in the final diagram here,
07 6383.5, we can see that it's a continuous waterway in
08 there, 6383.5 we have a width of about 2,200 feet
09 separating the -- separating the islands from one
10 another.

11 I believe that concludes my testimony, which is,
12 as I say, in preparation really for Mr. Shuford and Dr.
13 Winkler. Thank you.

14 HEARING OFFICER DEL PIERO: Thank you very much.
15 You want to break?

16 MR. DODGE: Would now be a good time to take our
17 break?

18 HEARING OFFICER DEL PIERO: Ladies and Gentlemen,
19 we will return at 25 after the hour.

20 (Whereupon a short recess was taken.)

21 HEARING OFFICER DEL PIERO: Ladies and Gentlemen,
22 this hearing will again come to order. Since we've
23 returned from the lunch break, Mr. Dodge, do you wish
24 to proceed?

25 MR. DODGE: Yes, I do. I'd like to call back

0142

01 Dr. Stine for just a moment. It was pointed out to me
02 by Mr. Canaday that I was -- something I was unaware of
03 and I believe Dr. Stine was unaware of, and that is
04 that there are a couple of differences between the
05 exhibits we have offered in writing, if I can find
06 those, those being Exhibit 198 and 199, and the blowups
07 that were done last night.

08 And, Dr. Stine, can you confirm that?

09 DR. STINE: Yes, I can. Except that it was early
10 this morning or was it last night? It was after
11 midnight, which might be part of the problem, but in
12 any case, this was an early draft and we ran off and --
13 this was an August draft, I believe, and we ran off and
14 enlarged this one. So what would I like to do, if
15 possible, is just make a couple corrections on here.
16 What you have in your hands, those of you who have this
17 stapled packet of exhibits, is correct. It's the
18 enlargement up here that is incorrect. The straits
19 widths on profile Number One should read 0, 662 feet
20 approximately 2280 feet and approximately 3800 feet.
21 So I'll make that change here.

22 On Damned Straits, the column should read 00, 1760
23 feet and 2260 feet. The two numbers on this are
24 reversed. It's correct in the packet you have, so I'll
25 make that change. And then an even simpler change on

0143

01 profile Number Two, I believe it is, the straits'

02 widths for Dire Straits should read 0, 1663 feet, and
03 then 2700 feet instead of a blank line. That 2700 feet
04 then should be followed by two blank lines. Damned
05 Straits should read 00, 1200 feet, and then followed by
06 two blank lines. The bottom -- the middle column
07 there, as it were, should read 6190 feet -- I
08 apologize. Let's see. No, the rest of that is
09 correct.

10 Q BY MR. DODGE: The 6190 would be deleted.

11 A BY DR. STINE: 6190 is indeed deleted. That's
12 correct.

13 I suppose the bottom line here is pay attention to
14 what's in your hand rather than what's on the board or
15 what was on the board. It's now corrected.

16 Q In any event, Dr. Stine, the materials submitted
17 in your written testimony I believe in September of
18 this year is correct.

19 A That is indeed the case and I thank,
20 embarrassingly, I thank Mr. Canaday.

21 HEARING OFFICER DEL PIERO: Thank you very much.
22 Those corrections will be noted for the record. Please
23 proceed, Mr. Dodge.

24 MR. DODGE: Yes.

25 Q BY MR. DODGE: Mr. Shuford.
0144

01 A BY MR. SHUFORD: I'm here.

02 Q Can you identify for the record National Audubon
03 Society and Mono Lake Committee Exhibit 1-P as your
04 written testimony?

05 A Yes, I can.

06 Q And do you have any corrections to that testimony?

07 A No, I don't.

08 Q And is the testimony accurate?

09 A To the best of my knowledge, yes.

10 Q Could you summarize for us the information
11 presented on Exhibit 1-P?

12 A I have a Master's degree in ecology from UC Davis,
13 and I'm currently employed by Point Reyes Bird
14 Observatory, and for the last 11 years, from 1983
15 through the present, I've conducted or overseen
16 research on the ecology, population, size and
17 reproductive success of California gulls in Mono Lake.
18 Our work is focused on the Negit Islets, which during
19 the period, have contributed 70 -- approximately 70 to
20 85 percent of the total population of nesting gulls at
21 the lake.

22 And I also have extensive experience throughout
23 California surveying population sizes and habitat needs
24 of wetland dependent birds, particularly shore birds,
25 and also including snowy plovers. And from our

0145
01 research at Mono Lake, my colleagues and I have made 13
02 reports or papers that deal with California gulls, and
03 these have been used extensively by Jones and Stokes in
04 providing information for the DEIR process.

05 And I was also contracted because of my expertise
06 on California gulls at Mono Lake to comment on wildlife
07 sections of the Draft Environmental Impact Report.

08 Before I get into some of the real specifics, I'd
09 just like to set the stage for understanding, you know,

10 the importance of the California gull colony at Mono
11 Lake and the factors that have been identified as
12 influencing reproductive success of that colony.

13 As probably you heard many times, the Mono Lake
14 California gull colony is the second largest
15 concentration of California gulls in the world, the
16 first being at Great Salt Lake. Despite the large size
17 of it's colony, in 1978, the California Department of
18 Fish and Game identified this colony or the California
19 gull, in particular, in the State of California as a
20 species of special concern, and the reason for that
21 being the potential threats of water developments --
22 water diversions to that colony.

23 The current size of the California gull population
24 at Mono Lake is between 60 and 65,000 breeding adults,
25 and this colony dwarfs in size any other California

0146

01 gull colony within this state. The two next largest
02 colonies are one on the coast at Alviso (phonetic) on
03 San Francisco Bay, which is about 6800 birds, the most
04 recent count, and at Clear Lake in Modoc County in the
05 interior. That population has been somewhere between 5
06 and 10,000 adults.

07 In 1992, at the end of the recent six-year
08 drought, the Mono Lake colony represented about 85
09 percent of the total population of California gulls
10 breeding in California. And during that period because
11 of the, you know, lowering of lake levels and reservoir
12 levels, many of these other colonies were abandoned and
13 the populations of other interior colonies were reduced
14 by 65 percent, about 10,000 birds at those colonies.

15 And to give you a little more perspective of eight
16 other interior California gull colonies in the state,
17 during that period, 1992, five of these were not active
18 because of water levels had dropped where they breed.
19 The three remaining of those colonies, two of them only
20 supported in total 400 -- approximately 400 California
21 gulls. So what that means, if you look at the Great
22 Basin in general, Mono Lake and Great Salt Lake really
23 provide a refuge for California gulls to breed. These
24 two colonies consistently have supported a large
25 numbers of California gulls throughout most of their

0147

01 history and during these extensive drought periods.

02 Probably people have heard a lot about increases
03 in California gulls historically, both at Mono Lake and
04 also throughout the west. And I would just caution the
05 interpretation of this data. There really were no
06 systematic censuses of California gulls of the whole
07 colony until 1976 when Dr. Winkler started his work,
08 and throughout the west, because of these, you know,
09 changing climatic conditions and colonies appearing and
10 disappearing, it's really hard to go back to the
11 historical record and add up the number of California
12 gulls at any point in time. If you're adding up
13 numbers from one site during a drought period, adding
14 up numbers from a colony that's not enduring a drought
15 period, you may be sort of mixing apples and oranges
16 and not getting a really good estimate of the
17 population size.

18 There's never been a systematic censusing of the
19 California gull population in the west, and there's --
20 this has never happened over any period of time. So
21 there's really no solid trend data on these species,
22 and that's not to say California gulls haven't
23 increased, but you should be really cautious in using
24 that data to draw any major conclusions.

25 And getting on to the breeding biology and the
0148
01 basic factors that influence California gull at Mono
02 Lake, there have been six key factors that have been
03 identified. The lack of data on a lot of these factors
04 shouldn't be interpreted as they don't affect the
05 California gulls or they're not influenced by lake
06 level at the lake. I think Judge Finney hit it right
07 on the nail at the proceedings in South Lake Tahoe when
08 he said that it seems like there's more that we don't
09 know about the California gull than what we do, and if
10 that impression is -- there's still that impression
11 from the Draft Environmental Impact Report that this
12 report did not adequately explain all the interactive
13 effects of all these various factors that are affecting
14 the California gull.

15 I think in a large part that's due to the fact
16 that scientists, including me, have not been very
17 successful in identifying exactly what has influenced
18 the size of the colony or its reproductive success in
19 given years. So the six key factors that we're talking
20 about I'll just list and then give some brief comments
21 about them. The six factors are weather, habitat
22 quality, nesting density, food supply, disease and
23 parasites, and predation. Dr. Winkler will touch on
24 some of these topics, so I won't deal with all of these
25 in detail, but just some of the major events that have

0149
01 happened at the lake that were thought to be associated
02 with these various factors.

03 For weather, 1981 there was a major die off of
04 California gulls, virtually the whole cohort of young
05 gulls died at the lake, and it was thought that this
06 was a combination of heat wave and possibly food
07 supply.

08 The second factor is habitat quality. There's
09 been quite a controversy over whether habitat on Negit
10 Island, which has a lot of grease wood scrub, is
11 preferred or is better habitat than that on some of the
12 islands that they're currently nesting on where they're
13 mostly nesting on white rock habitat. In my opinion,
14 there are good reasons to believe that the habitat of
15 Negit could provide significant benefits to the gull,
16 but there have been no studies at the lake to compare
17 these habitats directly and compare reproductive
18 success. There's really no way currently to evaluate
19 that data, whether these habitats are preferred or are
20 not preferred.

21 Nesting density. There's been one paper published
22 by Dr. Jehl which suggests that the adult mortality is
23 higher at higher densities on the nesting island.

24 Regarding food supply, again, in 1981, Dr. Winkler
25 thought that the low food supply of brine shrimp was a

0150

01 contributing factor to the major die off of gulls in
02 that year.
03 Disease and parasites. The main parasite out at
04 Mono Lake is a tick which is endemic not only to Mono
05 Lake -- not only to California gulls but also to the
06 Mono Lake, California, gull population. Our studies
07 have shown a correlation between the amount of tick
08 infestation and mortality of chicks at the lake, but
09 we've not shown any major effect during any given year
10 which contributed to a significant amount of mortality
11 of the population. The one year at little Norway we
12 were convinced that adults abandoned that island
13 because the tick infestation was so high that year. So
14 there really wasn't any direct evidence of a
15 relationship between gull nesting densities and levels
16 of tick infestations on the islands.
17 Then we get down to the last factor and this is
18 predation, and there have been several predators on
19 California gulls at Mono Lake. Great horned owls and
20 golden eagles and prairie falcons have been shown to
21 prey on adults and young at the lake, but these have
22 contributed only minor amounts of mortality in any
23 given year colony wide. But I think the key factor of
24 all these is predation by coyotes on the California
25 gull. And it's the only one of these six major factors

0151

01 that I'm discussing that is demonstrated to have a
02 clear and major effect on reproductive success at the
03 lake, and it also has shown a consistent relationship
04 to lake level as well. That's not to say that other
05 factors aren't influenced by lake level, but this is
06 the one factor that's had a major effect on
07 reproductive success. It's clearly linked to lake
08 level. It's detailed in Exhibit A of my written
09 testimony.
10 Since 1979, there have been five major instances
11 where coyotes have crossed over to nesting islands and
12 have caused abandonment of those islands and total
13 reproductive failure of the colonies. The first of
14 those was -- Dr. Winkler is doing work at the lake in
15 1979 when the land bridge was formed and coyotes
16 crossed to Negit Island and displaced 33,000 California
17 gulls from that colony causing total reproductive
18 failure in that year.
19 The other really major event was in 1982 when
20 Twain and Job Islands were visited by coyotes and at
21 least 30 percent of the population was displaced and
22 abandoned that year and was thought to have further
23 effects beyond that on the reproductive success on Mono
24 Lake. The other instances of abandonment have not been
25 of this magnitude. They've been smaller populations.

0152

01 But I think the information that we could draw from
02 them is quite important towards viewing what kind of
03 security the California gulls need at Mono Lake and
04 which lake level should be identified to protect
05 California gull colonies.
06 And we've heard in testimony before the Board that
07 coyotes can swim. We all know that is true, and that

08 there's really no guarantee of security for these
09 nesting islands, and I think theoretically that's
10 true. These coyotes can reach all the islands if they
11 so desire, but I think what common sense and historical
12 record of the last 18 years show is that that is not
13 really the case. There's definitely a relationship of
14 lake level to the access of these coyotes to the
15 islands. In fact, every single instance where coyotes
16 have crossed to these islands and caused a reproductive
17 failure of the nesting birds has been when there's
18 either a direct physical land bridge to these islands
19 or very close to that situation where the coyotes can
20 cross over, wade or swim or walk through very narrow --
21 or very shallow water in a relatively narrow stretch to
22 get to these islands.

23 One island in particular, Java, I think, is most
24 instructive of the recent history. Back in '82, Java
25 and also Twain were abandoned with a lake level of 6372
0153

01 feet causing total failure of those islands. And hence
02 after that, predictions in the EIR were that at 6373
03 feet, a foot higher than that lake level, that these
04 islands would be protected. Well, in 1992, what
05 happened was at an elevation of 6374 the coyotes
06 crossed over to Java Island and caused reduction in
07 reproductive success there. And the following year,
08 the lake rose another foot, in 1993, to an elevation of
09 6374 and during that period, the coyotes crossed over
10 again. And at that lake level, they caused a total
11 reproductive failure of that colony.

12 So the bottom line is we don't really know what
13 level will protect these islands. If the lake were to
14 rise another foot next year, we don't know for sure
15 whether the coyotes will get across, you know, to Java.
16 The importance of Java is linked closely to Twain.
17 Twain Island, based on the 1982 information, is
18 susceptible to access by coyotes at roughly the same
19 elevation. And currently, Twain Island holds -- has
20 been for quite a while, holding half of the California
21 gulls breeding at Mono Lake. Hence, half of these
22 gulls are potentially susceptible to predation at the
23 exact same level at Java Island which, last year, was
24 at 6375. So, you know, you could argue that 6376 would
25 protect these islands, but it seems like the coyotes

0154
01 either haven't read the predictions or are blatantly
02 ignoring these predictions, so we don't really know
03 what's going to happen. So it doesn't give me really
04 high hopes that 6376 is for sure going to keep coyotes
05 off of these two nesting islands.

06 So we look at the lake level alternatives that
07 we've been discussing. The 6377 foot alternative, the
08 lake -- under this alternative, the lake would drop to
09 6373 feet, so all of these islands, Twain and Java and
10 Negit Island and Pancake Island are all susceptible to
11 predation that the level.

12 Twain and Java currently are holding over 50
13 percent of the population. Back in the mid 70s when
14 Dr. Winkler was doing his work, the islands that we're
15 discussing were holding about 70 percent or more of the

16 population of California gulls. So at that lake level
17 alternative, all those colonies were susceptible to
18 coyote predation.

19 If we move up to the next lake level alternative
20 of 6383.5, this should protect Twain and Java, but I
21 consider it really the absolute minimum that might
22 protect Negit Island and Pancake Island. There's
23 several factors that go into that. At 6383.5, the lake
24 could drop to about 6378 feet. The Draft EIR states
25 that at 6376, they're not convinced or not sure that

0155

01 the coyotes won't cross over that lake level, and then
02 we have the recent history at Java Island where, in
03 fact, the predictions were incorrect and at a minimum
04 of two feet higher than the predictions, the coyotes
05 could get across. So at that 6383.5 level, it's still
06 possible at the low end that coyotes could get across
07 to Negit Island.

08 And if we look at the Los Angeles Department of
09 Water and Power's plan for managing the lake level,
10 which as I understand the lake would vary between
11 6374.6 and 6385.3, it sort of has, I think has been
12 pointed out, sort of worst of both worlds for
13 California gulls, at the high end of this lake level
14 alternative. And we know that during long periods, the
15 lake will vary up and down through this range of lake
16 levels. At the high level, the Paoha Islands will be
17 lost to nesting for the California gulls, and if we go
18 down to the lower lake level, Negit Island will be
19 affected and probably the other two islands which are
20 currently holding half of the gull population. So it
21 seems if the lake were to be managed that the lake
22 level, the gulls would be concentrated on very, very
23 few islands and would undoubtedly not be able to
24 support anywhere near the population it's held
25 today.

0156

01 So given the above information, I think that
02 realistically, the 6390 foot alternative is the only
03 alternative that will provide the maximum amount of
04 both potential gull nesting habitat and secure nesting
05 habitat from predation. And if you go beyond the 6390
06 level, you're still going to have the security. You
07 would lose, you know, some more of Negit Island and
08 some of the Negit Islets, but you still have a huge
09 amount of habitat out there that could accommodate very
10 large numbers of gulls, anything that has been seen at
11 the lake in historical times.

12 Regarding these predation events, these things are
13 not just a one-time thing that just happens. It's not
14 like turning the faucet on and taking it off again. If
15 you look at this exhibit up here, this is Exhibit B
16 from my testimony. If you look at various islands and
17 what has happened to their population size, these are
18 various years across the top. These are the islands,
19 and these are columns going -- these rows going across
20 are the number of nests that were counted on each of
21 these islands. If we look at Negit Island, Negit
22 island was recolonized again in 1985, and here we are
23 '85, '86, '87, '88, '89 it was still increasing. At

24 this point, coyotes got across this island and it was
25 subsequently abandoned in this year, 1991.

0157

01 So if the lake were to vary back and forth near
02 level that the coyotes can get across to Negit Island,
03 you can have a period here five years where the
04 population is growing at a very small rate. This is
05 less than 20 percent of the historical numbers on the
06 island and then again, if it's land bridged again, it
07 is also recolonized again, you could have a period of
08 10 or 15 years where the gulls were really not using
09 that island. So the key point is that they're not --
10 it's not just the gulls abandoning. Immediately they
11 go back to the nesting island and can use these islands
12 again.

13 MR. HERRERA: Mr. Dodge, that's 20 minutes.

14 MR. DODGE: Mr. Del Piero, I believe that
15 Mr. Shuford can finish in about five minutes; is that
16 right?

17 MR. SHUFORD: I can try.

18 MR. DODGE: If we were to apply for ten minutes?

19 MR. SHUFORD: There's two other islands here that
20 similar effects have been shown. Pancake Island, which
21 is right here, and the numbers here when it was
22 recolonized again, increased over quite a period of
23 time, again coyotes got on the island this year.
24 Numbers were reduced the following year and abandoned
25 this year.

0158

01 Twain Island was visited by coyotes in '81-82,
02 abandoned in 82. It took it through, like, four years
03 to regain its size. And this was a very unusual event
04 in that Twain Island was connected one year and then we
05 had a huge rise in the lake level the following year
06 making it difficult for coyotes to get there. There's
07 been discussion that Paoha Island could provide
08 alternative habitat for the gulls if, in fact, these
09 other islands were lost. And I think the historical
10 record argues otherwise in this case.

11 Number One, the gulls have not nested successfully
12 on Paoha Island for approximately 60 years. After
13 humans left the island early in the century and that,
14 you know, possible disturbance was removed, the gulls
15 did not expand on Paoha, in fact, they abandoned Paoha.
16 And during the period of greatest expansion of the
17 colony, the birds were nesting and increasing in number
18 on Negit Island. And currently Paoha Island supports a
19 resident coyote population, and it's able to do this
20 for two factors. It has a base out there which coyotes
21 can subsist on year round. It also has a freshwater
22 source. None of the other islands have these two
23 factors in combination.

24 In 1985, a Forest Service trapper did extensive
25 efforts to remove coyotes from Paoha Island and to the

0159

01 best of his knowledge, he was successful. He killed
02 one coyote and found the remains of two others and felt
03 there were no other coyotes there. Coyotes have
04 subsequently returned to Paoha Island and remain there
05 today. And this is a major deterrent to nesting on

06 that island, and they would likely return again if the
07 coyotes were removed once more.

08 So basically, my judgment is that there's
09 extremely little likelihood that Paoha Island would
10 support any large number of nesting California gulls in
11 the foreseeable future in the lake level elevation
12 ranges we're talking about.

13 There's also been some talk that concentration --
14 at the higher lake levels that the gulls are
15 concentrated on Negit and a few of the smaller islands,
16 that this could be detrimental to the California
17 gulls. First of all, there will be quite -- at 6383.5
18 or 6390, there'll still be considerable nesting habitat
19 on the Negit Islands. Negit Island is a very large
20 nesting island which will be available at that lake
21 elevation.

22 And the point on Negit Island is the density of
23 California gulls on that island will not increase above
24 what are on these other islands. It's a huge island.
25 Actually, the density of California gulls per acre of
0160

01 nesting habitat throughout the lake would actually
02 decrease under that scenario. And these factors such
03 as disease and parasites are thought to be density
04 dependent. In other words, the -- as the density of
05 the population of gulls increases, there would be a
06 greater effect on the California gulls. As I've
07 stated, the density of the gulls would be spread out
08 over these islands and there would actually be a
09 decrease in density.

10 As far as predation and concentrating the birds on
11 these islands, I don't think that's a major factor
12 either. Currently, we have 50 percent of the colony on
13 one island, and it is very susceptible to predation at
14 current lake levels. And at much higher lake levels,
15 even at 50 percent or more of the colonies on Negit, I
16 think with a higher lake level, it would be very
17 unlikely that coyotes would get to that island.

18 So the summary on the gull issue, I think my
19 professional judgment is that 6390 feet or higher would
20 be the preferred alternative providing the most amount
21 of habitat for California gulls at Mono Lake and also
22 the most secure habitat for California gulls at Mono
23 Lake.

24 Q BY MR. DODGE: Mr. Shuford, could you go up to the
25 board there and -- you talked about the size of the
0161

01 various islands and you also talked about Negit, Java,
02 and Twain. Can you just point out those islands to the
03 Hearing Officer?

04 A BY MR. SHUFORD: Right here is Negit Island, the
05 largest island close to the mainland on north shore.
06 Twain Island is the largest of the smaller Negit
07 Islands, right here. And Java's right here, right
08 close to Negit. Those are the key islands I talked
09 about as well as Paoha, which is the largest island.

10 Q Did you mention there was a coyote invasion on
11 Java in the 1993?

12 A Yes, there was.

13 Q And I think you may have misspoke. What was the

14 lake elevation in 1993?

15 A It was 6375.

16 Q Thank you.

17 Next we'll call David Winkler. Good afternoon,
18 Professor Winkler.

19 A BY DR. WINKLER: Good afternoon.

20 Q Do you have a copy of National Audubon Society and
21 Mono Lake Committee Exhibit 1-A-E?

22 A I do not, but I just looked at your copy before
23 this hearing.

24 MR. HERRERA: Both those microphones work.

25 DR. WINKLER: So this is fine? Thanks very much.

0162

01 Q BY MR. DODGE: I should note that my copy of that
02 exhibit is labeled National Audubon Society and Mono
03 Lake Committee Exhibit A-E, so on some of them, there
04 may be a one missing. In any event, is that your
05 written testimony, Sir?

06 A Yes, it is.

07 Q And do you have any -- do you have any corrections
08 to make?

09 A No corrections, no.

10 Q Would you summarize your testimony, please?

11 A Yes. I'm a professional ornithologist and
12 ecologist presently serving as assistant professor and
13 curator of birds in section of ecology and systematics
14 in Cornell University. I received a Ph.D. in zoology
15 from the University of California at Berkeley in 1983,
16 and I conducted post-doctoral research at the
17 University of Gottenburg in Sweden, at Oxford
18 University in the UK, and at Cornell University with
19 support from the Fulbright Commission, the American
20 Scandinavian Foundation, NATO, and the National Science
21 Foundation. I joined the full-time faculty at Cornell
22 in 1988.

23 My current teaching duties include graduate
24 seminars as well as advances courses in ornithology and
25 population and evaluation and ecology, and I've also

0163

01 taught introductory courses in evolution and ecology.
02 In addition to my Cornell teaching and research
03 seminars presented throughout the U.S. and abroad, I've
04 also served as visiting professor for the first
05 international course in desert ecology at Ben Vareen
06 University of Madeb in Israel where I taught
07 theoretical ecology to an international group of
08 students.

09 I'm also on the advisory committees for the bird
10 populations studies and National Science experiment
11 panels at the Cornell laboratory of ornithology. I
12 have published or have impressed 25 research papers in
13 peer reviewed scientific journals as well as 20 other
14 reviews, reports, and book chapters, and I'm working on
15 a book on life histories of birds for Oxford University
16 Press. I've studied the ecology and behavior of birds
17 throughout North America, much of Central America,
18 northern Europe, southern Africa and Australia.

19 My research at Mono Lake began in 1976 when I
20 helped organize the first ecosystem-wide study of the
21 lake funded by the National Science Foundation on the

22 ecological effects of its changing lake levels. My
23 published papers in professional journals on the birds
24 of Mono Lake include ones on the history of the gull
25 colony there, on the determination of clutch sizes of

0164

01 gulls, on the thermal and osmo-regulatory physiology of
02 gull chicks, and on the breeding biology of plovers and
03 the foraging ecology of the breed.

04 As a result of my experience and expertise, I've
05 served as an information source to the Corey and NAS
06 studies of Mono Lake, offering a technical appendix for
07 the Corey report on populations of gulls and plovers at
08 the lake. At the request of staff at Jones and Stokes
09 Associates, I have reviewed and commented on previous
10 drafts of the wildlife section of the Draft EIR for
11 Mono Basin water rights, and I have reviewed the
12 written testimonies of Dr. Melack and Dr. Jehl, and
13 Dr. Jehl's oral testimonies to these hearings.

14 Having myself reviewed the work on bird
15 populations at Mono Lake, I know how controversial many
16 aspects of this topic are and, in general, I commend
17 the staff at Jones and Stokes for creating a Draft EIR
18 that distills the important biological conclusions from
19 often contradictory sources of information. Ecology
20 and history are both inexact disciplines where true
21 replication of conditions is rarely, if ever, possible,
22 and I would reinforce David Shuford's statement about
23 our understanding of the California gull population at
24 Mono Lake in that it is typical that the more we study
25 any bird population, the more questions we generate and

0165

01 that a proliferation of questions should not be taken
02 as a poor level of understanding relative to or bird
03 populations.

04 Critics using the language and standards all too
05 seldom uniformly applied of laboratory based science,
06 can always fault ecological and historical findings as
07 being, quote, anecdotal, end quote. However, the lack
08 of replication inherent in historical and ecological
09 data is unavoidable and often the only alternative to
10 making decisions based on such flawed data is to make
11 decisions based on no information at all.

12 In its most significant addition to our knowledge
13 of the bird populations of Mono Lake, the Draft EIR
14 synthesizes a considerable body of new historical
15 information on numbers of waterfowl visiting Mono Lake
16 during migration in historical times. I have been
17 impressed with the manner in which this material has
18 been gathered and presented, and I am convinced by it
19 that waterfowl populations supported by the lake were
20 much larger than previously suspected and that the lake
21 comprised a waterfowl stopover of broad regional
22 significance.

23 Despite the overall scholarship and judgment
24 displayed by the Draft EIR, however, there are several
25 points in the ecology of birds at Mono Lake that I

0166

01 think should be clarified and on which I will
02 concentrate the rest of my comments today. The first
03 point I'd like to address is that of historical numbers

04 of gulls. David Shuford and I did work on the history
05 of the gull population at Mono Lake as has Dr. Jehl and
06 some of his colleagues, and I have to emphasize from
07 the start that this historical record is extremely
08 imprecise and by any modern scientific standards, is
09 very suspect. But the one picture that does emerge
10 from that review of that historical record is that
11 there seemed to have been large gull populations at
12 Mono Lake in the late 19th century, that a decrease in
13 those gull populations appears to be associated in time
14 with large scale eggging operations, harvesting those
15 eggs for food supply in nearby mining towns, and that
16 the most parsimonious interpretation of what has
17 happened at the lake since then is that the gull
18 population has been engaged in a slow rebound from that
19 depression in population levels.

20 The reason I raise this at this point is that in
21 several points in previous testimony, it's been implied
22 that we could use the gull populations that were
23 interpreted to be present, say, in 1940 at the
24 beginning of diversions, as some indication of what the
25 normal lake or pristine lake would support. And I

0167

01 think if we look at the historical record, the pristine
02 lake, if you will, probably supported many more gulls
03 than were nesting here in 1940. So I don't think 1940
04 serves as a very good benchmark for comparison.

05 I'd also mention in passing that I was entertained
06 by Dr. Jehl's testimony that one graduate student's
07 opinion is as good as another when looking at gull
08 population size estimates. This arose in reference to
09 a presentation that Dr. Jehl made about Dr. David
10 Johnston's work at the lake in the early 1950s, and I
11 just want to point out that Dr. Johnston never
12 interpreted his results and never wished to have his
13 results interpreted as any kind of census of the
14 colony. David Shuford and I corresponded with
15 Dr. Johnston when we were preparing our article on the
16 history of gull population at Mono Lake, and he was
17 very loathe to have those estimates that he made be
18 used as a census in any way. In fact, I think he was a
19 bit perturbed with me that his estimates, which we took
20 from his field notes, actually appeared in our paper at
21 all because he didn't want them to be used in the way
22 that they were actually starting to be used here in
23 these hearings.

24 One other point I wanted to mention in passing is
25 the history of the Caspian tern colony at the lake. I

0168

01 just say, first of all, that it's a very small
02 population of birds. Dr. Jehl has given you the
03 numbers. I don't think we could interpret it as being
04 a very broad regional importance, but I just wanted to
05 clarify where they did nest in 1976 when we found them
06 during my first visits to the lake. I guess I can
07 point this out on some of the photos we have up here.
08 Unfortunately, they're pretty -- oh, good. There's a
09 larger one here. This is Twain Island -- I'm sorry.
10 What is this? I cannot see. I don't know what this
11 exhibit number is. This is blowup of this part of

12 Exhibit 142; is it not?

13 DR. STINE: Taken at slightly different times.

14 MR. DODGE: We'd better give it a new exhibit
15 number, and we'll try to make copies for everybody. It
16 will be National Audubon Society Exhibit 230.

17 DR. WINKLER: Okay. So here's Twain Island, and
18 Twain has a promontory here made of white rocky
19 substrate, but much of the central portion of the
20 island is gravelly substrate, and the terns were nesting
21 here to the north of that rocky outcrop on this gravel
22 plateau before the gravel area takes a steep drop off
23 to the north and east. So --

24 Q BY MR. DODGE: Now, we can all see where you're
25 pointing, but unfortunately, that won't necessarily

0169 appear in the record.

02 Can you describe it with as much specificity as
03 you can as to where on the island you found the terns?

04 A I would prefer to just say that if you took the
05 northeastern quadrant of the island and went out from
06 the center of the island, the rocky promontory in the
07 center, that the terns were nesting on a flat area.
08 Near the edge of the flat area, that is near the
09 northeastern edge of the flat area, before that flat
10 area definitely changes in slope and drops off to a
11 lower plateau area on the island, and I'm interpreting
12 that -- this photograph to indicate that that's
13 approximately halfway along a transect from the central
14 rocky promontory on the island going north northwest to
15 the island's edge.

16 Q All right. Thank you.

17 A Now, to return to the gulls. I led the first
18 systematic census of the birds at Mono Lake in 1976 and
19 that included California gulls, and in that summer of
20 1976, in excess of 33,000 gulls were nesting on Negit
21 Island. This was approximately 65 percent of the
22 lake's breeding gulls, and the majority of these Negit
23 nesting gulls were nesting on a grease wood vegetative
24 plateau on the island's eastern half.

25 To minimize disturbance to the nesting birds, we

0170 delayed the census of gulls until the 4th of July and
02 the numbers of chicks that we counted on Negit and the
03 Negit Islands during this July census yielded as
04 estimate of total nesting gulls for the lake of at
05 least 51,162 birds. This 1976 estimate is based on a
06 late season count of chicks and it does not include any
07 correction for the number of adults that had begun
08 nesting in the spring of 1976, but had ceased breeding;
09 that is, they had lost all their eggs and/or chicks by
10 the time of the 1976 census.

11 This point has not been adequately appreciated in
12 the Draft EIR. The population increases of gulls
13 censused at Mono Lake in the late 1980s have, at best,
14 likely returned their numbers to levels near where they
15 were in 1976.

16 Dr. Shof -- I mean, David Shuford has summarized
17 the events in 1979 with the land bridging of Negit
18 Island and interests of time, I won't go through those
19 in detail. I've talked about them in my written

20 testimony. But in 1981, approximately 96 percent of
21 the gull chicks on Negit Island perished before
22 fledgling. At the time, I attributed this extremely
23 high mortality to a combination of reduced food supply
24 and unusually high air temperatures for chicks being
25 raised on rocky islands with no substantial source of

0171

01 shade.

02 The Draft EIR fails to incorporate information on
03 food availability in 1981 that I presented in my
04 appendix to the Corey report. Specifically, although
05 total brine shrimp production for 1981 was not
06 depressed relative to earlier years, the timing of the
07 availability of shrimp was shifted approximately one
08 month later than in other years. Whereas gulls
09 normally begin feeding on shrimp in early June when
10 high shrimp densities appear in surface waters, these
11 high densities did not materialize in 1981 until early
12 July. Although the Draft EIR notes that brine shrimp
13 numbers were similarly delayed in 1982, it incorrectly
14 concludes that, quote, brine shrimp appeared to be
15 sufficiently abundant do sustain the nesting gulls, end
16 quote.

17 The 1982 season was the only year in the 13 years
18 that the gulls have been intensely studied that they
19 are known to have eaten large numbers of cicadas and
20 without knowing how the gulls would have fared without
21 the emergency of this unpredictable and uncommon food
22 source, it is impossible to conclude how delayed food
23 supplies as in 1982, can be expected to affect the
24 gulls. The low chick productivity of 1981 was followed
25 by another season of the nest side abandonment as

0172

01 coyotes reached Twain and Java Islands early in 1982
02 and caused the abandonment of nesting areas that, in
03 the previous year, had supported approximately 30
04 percent of the lake's total nesting population.

05 In addition to this loss of a large segment of the
06 breeding population, the productivity of those gull
07 pairs that persisted in nesting was further
08 depressed from expected levels. In my opinion, this
09 further depression in offspring productivity appears to
10 have been to a, quote, snowballing, unquote, effect
11 whereby adults from Twain and Java having been usurped
12 from their breeding areas by coyotes turned to eating
13 the eggs and chicks of nesting gulls on other islets.
14 Once adults on these other islets had their breeding
15 thus foiled, some of them in turn became predators on
16 other gull's eggs and chicks leading to a spreading of
17 the disruption of Twain and Java Islands throughout the
18 colonies on the Negit Islets.

19 Contrary to previous testimony describing this
20 effect as a Mono Lake, quote, fairy tale, end quote,
21 this effect has been described in detail in a published
22 paper based on a gull colony in Great Britain to which
23 I've referred when I've mentioned my hypothesized
24 implication of this effect at Mono Lake. The Draft EIR
25 acknowledges the possibility of this snowballing

0173

01 effect, but in its summary of the impacts of

02 intermittent land bridging of gull nesting areas that
03 would occur in the 6377 foot and lower alternatives, it
04 does not mention how this effect could magnify the
05 disturbance of land bridging spreading the reduction of
06 reproductive success to many gulls on still isolated
07 islets.

08 Next, I would like to turn to some comments on
09 previous testimony in which it's often been claimed on
10 the basis of numbers of adults nesting at the lake or
11 attempting to nest at the lake that there's every
12 indication that the Mono lake ecosystem is healthy. If
13 we consider a long-lived bird like the California
14 gull --

15 MS. GOLDSMITH: I have an objection at this point.
16 I don't believe this was in the witness' written
17 testimony.

18 HEARING OFFICER DEL PIERO: Mr. Dodge?

19 MR. DODGE: I think that, in a very technical
20 sense, that's a right, but we are trying to bring
21 Dr. Winkler out only once. It's expensive for us to do
22 this. I asked him to comment on certain of Dr. Jehl's
23 testimony. Certainly, we have ample precedent in this
24 proceeding for that in terms of expansion of the direct
25 examination. I know Mr. Kuebler did it. I know Dr.

0174
01 Beschta did it. I know Mr. Gewe did it for free, and
02 this will be a very minor expansion which hopefully
03 will obviate the need to bring Dr. Winkler back.

04 HEARING OFFICER DEL PIERO: Thank you very much.
05 I'm going to overrule objection. Proceed.

06 DR. WINKLER: If we consider a long-lived bird
07 like the California gull and we want to look at
08 year-to-year variations in the health of the Mono Lake
09 ecosystem, looking at total numbers of adults is a poor
10 indicator because by their long-lived nature, the
11 variation in the numbers in their population would be
12 damped out by the fact that adults live through more
13 than one year, and so that they will keep coming back
14 to the lake regardless of what ecological conditions
15 might have been in any given year. With this sort of
16 possibility in mind, I think a better indication of
17 ecological conditions of the lake is to look at
18 something like chick productivity. That is, how many
19 chicks' parents manage to fledge per pair in each given
20 year.

21 And when we start looking at data that way, the
22 next natural step is to calculate what the expected
23 population growth rates would be for any given level of
24 chick productivity, and Dr. Jehl in his previous
25 testimony referred to a graph which I haven't seen but

0175
01 in which he refers to a critical chick productivity of
02 0.6 chicks per pair as being a chick productivity that
03 would lead to a positive population growth rate; i.e.,
04 a very healthy Mono Lake ecosystem. That -- there's no
05 explicit justification in Dr. Jehl's testimony for
06 that, and I don't think such justification exists.
07 It's apparently based on work that I did in the Corey
08 report, and it's extremely unlikely that a production
09 of 0.6 offspring per pair would lead to a positive

10 growth rate. Even if we were to take it as production
11 of 0.6 offspring per individual, I think you'd have to
12 make very, very liberal assumptions about the
13 survivorship of birds at Mono Lake to produce a
14 population growth rate that's positive.

15 One last point I'd like to make on the so-called
16 life table analyses and the estimation of population
17 growth rates therefrom is that the variability that we
18 see in chick productivity at Mono Lake, if you look at
19 the record that Dr. Jehl has looked at and Mr. Shuford
20 has looked at from '83 forward or, even more
21 importantly, if you go back to 1979 when my data were
22 first collected, there's been a great deal of
23 variability in the chick productivity at Mono Lake, and
24 it's a well-known principle of population ecology that
25 when you have variability in fecundity, it has a very
0176

01 large effect on the population growth rates,
02 specifically small numbers in terms of small years of
03 fecundity have a very disproportional effect on
04 expected population growth rates.

05 And if we were to convert the data from Mono Lake
06 into an expected long-term population growth rate,
07 those years of low productivity would have a very large
08 effect and would result in a mean that's much lower
09 than a simple arithmetic average that you might draw
10 across the years.

11 Finally, it becomes important, given any kind of
12 projection of what population growth rate at Mono Lake
13 has been, it becomes important to try to justify or to
14 map those estimated population growth rates on what we
15 actually see in terms of numbers of adults breeding at
16 the lake. And I think that we have enough evidence now
17 from the demographic work that has been done to
18 indicate that the birds at Mono Lake are not a
19 self-contained population, that clearly there are
20 movements of birds to and from the Mono Lake colony,
21 and that it's also very likely that birds are changing
22 the probability in any given year that they will skip
23 breeding. There are probably birds out there that
24 are deciding not to breed or to breed based on
25 ecological conditions which may be varying from year to
0177

01 year and based on cues of which we have no direct
02 knowledge.

03 Okay. I wanted to move from that one little area
04 to yet another, the debate over the relative
05 suitability of different island habitats for gull
06 nesting. As most of you are aware, in 1981 and '82, I
07 engaged with some colleagues in some physiological
08 measurements in various nesting habitats, and we
09 discovered that gulls nesting in open areas faced
10 substantially higher risks overheating for their chicks
11 than gulls nesting in shaded habitats. Other
12 researchers have followed up this work and found that
13 proximity to water can be another important factor
14 ameliorating the risk of chick overheating. But these
15 authors seldom point out that nesting near water
16 carries risks of its own from flooding and wave
17 action.

18 Furthermore, it's been suggested in previous
19 testimony that chicks can cool themselves by swimming
20 in the lake, but those claims have neglected to mention
21 that getting to the lake is a very large challenge and
22 that chicks walking to the lake from their native
23 nests, face considerable risk of injury and mortality
24 if they must travel any considerable distance to reach
25 water.

0178

01 MR. HERRERA: Mr. Dodge, that's 20 minutes.

02 MR. DODGE: We would apply for an additional 20
03 minutes, Mr. Del Piero, and hopefully, we will not need
04 that much time.

05 HEARING OFFICER DEL PIERO: I hope that's true,
06 Mr. Dodge, because you will have gone well over an hour
07 by that time.

08 DR. WINKLER: I think I can wrap it up in ten
09 minutes.

10 MR. DODGE: Thank you. I would point out that we
11 put this panel together --

12 HEARING OFFICER DEL PIERO: I understand, and I'm
13 granting you the time.

14 MR. DODGE: Thank you.

15 DR. WINKLER: It has often been argued on the
16 basis of gull nesting on unvegetated islands elsewhere
17 in their range, that California gulls prefer not to
18 nest in scrub. But these inferences are invalidated
19 because they are based on observations from sites where
20 gulls do not have a choice between vegetative and
21 non-vegetative islands. When given the choice between
22 unvegetated islands and vegetated mainland areas with
23 predators, gulls will always chose islands, and rightly
24 so. High temperatures can be a real threat in certain
25 years, but terrestrial predators are always a threat.

0179

01 No number of slides of gulls on vegetated islands can
02 substitute for a scientific study with careful measures
03 of habitat availability, the history of that habitat
04 availability, and the gulls' usage of that habitat.

05 Now, to a specific habitat question, that having
06 to do with the habitat on Paoha Island, which at first
07 sight appears to offer large areas of available shaded
08 nesting habitat, but has not been used as a significant
09 site of gull nesting since the early 1900s. Even when
10 the island was used by gulls, it appears that their
11 occupation was limited to small areas of lava and the
12 northeast shore in the vicinity of the hot springs on
13 the south shore, and when he nested in those areas,
14 historical accounts indicate that they often nested in
15 and around shrubs. In fact, the historical accounts
16 indicate that they actually sought shrubbery as a
17 source of shade.

18 The island has been avoided, however, throughout
19 the large expansion of gull populations on the islets
20 just off its western shore during the 1980s. This
21 avoidance of Paoha could be due to many factors but the
22 most likely appear to be that the island has a
23 year-round source of fresh water and a coyote
24 population that is very difficult to eradicate once
25 established. And the second possibility is that away

0180

01 from the hot springs and lava areas referred to above,
02 the island soils are composed almost entirely of
03 extremely fine-grained lake bottom sediments that are
04 easily blown around and gulls may be loathe to nest
05 where their chicks would be covered periodically with
06 drifts of this lake bottom dust.

07 I mentioned that historically we have indications
08 that the gulls on Paoha used shrubbery. I wanted to
09 introduce into the record a few photographs of gulls
10 nesting on Negit Island. There will be four of these,
11 and I don't know how to proceed in terms of numbers.
12 The first of these will be along -- I should just say
13 these all taken by Frasier's (phonetic) photos in 1928
14 on Negit Island.

15 The first of these has been Xeroxed, and I have a
16 copy here, but this is an enlargement of the same
17 photograph. And this is a photograph taken from the
18 eastern side of Negit Island on the eastern slope of
19 the minor cone on the island looking to the south and
20 southwest toward the main spine of the Sierra and the
21 Mono Craters and Paoha Island in the background.

22 MR. DODGE: Did you identify the number of that?

23 DR. WINKLER: I don't have a number. I don't know
24 what number to give it.

25 MR. DODGE: It will be National Audubon Society

0181

01 Exhibit 231.

02 HEARING OFFICER DEL PIERO: I want to know how
03 Mr. Frasier (phonetic) got these birds to pose like
04 this.

05 (Laughter.)

06 DR. WINKLER: I would point out that there's
07 shrubbery scattered throughout this area. It's not
08 particularly dense shrubbery, but the gulls are
09 certainly standing amidst the shrubbery, and in some of
10 the other photographs, you'll see that they are
11 actually sitting and nesting beneath the shrubbery.

12 The next photograph is a detailed photograph taken
13 from the vicinity of this rock here. This is -- this
14 one has the notation on it Mono Craters and high
15 Sierras from Negit Island, Mono Lake, California. And
16 this is taken from this area here again looking south
17 and southwest.

18 MR. DODGE: This is Exhibit 232.

19 DR. WINKLER: Now, there are two other
20 photographs -- these both bear the legend nesting time
21 gulls on Negit Island, Mono Lake, California. The
22 first of these is still on the eastern side of the
23 lake -- pardon me, the eastern side of Negit Island
24 with a -- two large rocks on the left. This time we're
25 looking north and northeast toward the Bodie Hills that

0182

01 are barely visible in the background. Again, scattered
02 shrubbery, gulls in and around the shrubbery.

03 MR. DODGE: That will be Exhibit 233.

04 DR. WINKLER: And finally, we have a photograph
05 taken from the same general area again looking north
06 and northeast with the Bodie Hills in the background
07 and several small islets just visible in the lake

08 beyond Negit Island. I believe that that's Little
09 Norway on the right and just the tip of Little Tahiti
10 sticking up on the left.

11 And that's number --

12 MR. DODGE: 234, I believe.

13 DR. WINKLER: Now, I wanted to point out that
14 especially in 234 you can see several gulls sitting in
15 the shade of shrubbery, and I just wanted to make the
16 point that of all the people you will have heard from
17 in this testimony, I believe I'm the only ornithologist
18 that actually saw the Negit colony in 1976 when it was
19 actually nesting in grease wood, and I can tell you
20 that the density of shrubbery they were nesting in was
21 higher than this and, as several people have pointed
22 out, the shrubs were actually also higher, individual
23 shrubs. And I would be happy to provide some
24 photographs of the colony area at that time if the
25 committee is interested.

0183

01 The points I want to make about this is that
02 indeed there are indications that the gulls were
03 nesting in the vicinity of the rather deep shade cast
04 by these shrubs, and that previous testimony indicating
05 that they avoid shrubbery, I think, ignores not only
06 some of this historical evidence, but also evidence of
07 nesting in grease wood areas of similar density to
08 these photographs in Great Salt Lake where I did my
09 thesis. If you consider my thesis and look at a map I
10 provide in that thesis, there's a detailed map of the
11 Morton Salt Plant where I did much of my work on gulls
12 at Great Salt Lake, and those birds were nesting in and
13 around grease wood. And again, I could provide
14 photographs of birds raising young in the shade of
15 these grease wood shrubs.

16 The final point I want to make is that I agree
17 with Dr. Jehl's previous testimony that much of the
18 shrubbery that birds -- that gulls do nest in
19 association with elsewhere in their range is much
20 shorter and sparser than that present on the plateau at
21 Negit Island. But I would point out that the Mono Lake
22 colony is the southern most and one of the highest gull
23 colonies in this species range, and it may well be that
24 the heat loads imposed by this southern locality and
25 high altitude actually place a premium on shade

0184

01 requirements for these birds.

02 And I'd further point out that I don't see any
03 reason why the height of the shrub should matter to the
04 birds because even shrubs that are shin high, as
05 Dr. Jehl described them, are high enough that gulls
06 can't see over them. And once they can't see over
07 them, they can't see over them, and it doesn't seem to
08 me that it should matter very much how high they are.

09 To return to the specific issues of habitat and
10 habitat availability at Mono Lake, I think the Draft
11 EIR does not make sufficiently clear the fact that
12 Negit Island is the only historical nesting area on
13 Mono Lake that provides proven shaded habitat in areas
14 large enough to support a large segment of the lake's
15 gull population. Given the very large number of birds

16 known to nest there in 1976, Negit Island would appear
17 to be the single most important area of habitat to
18 preserve if the lake's gull population is ever to be
19 maintained in a stable manner at or above its previous
20 size.

21 Preservation of the quality and quantity of gull
22 habitat on Negit Island by maintaining a sufficient
23 water barrier around it urge strongly for at least the
24 6383.5 lake level or higher.

25 Finally, I'd like to close with a few comments on
0185

01 the food supply that Mono Lake provides to all the
02 birds that feed there. Studies of gull diet choice at
03 Great Salt Lake, Ebert (phonetic) Lake, and South San
04 Francisco Bay, all localities where several prey types
05 are available, indicate that brine shrimp are the least
06 preferred prey taken. Margaret Grubegas' (phonetic)
07 recent studies suggest that shrimp are poor prey for
08 phalaropes as well. Earlier testimony attempting to
09 dismiss Grubegas' (phonetic) work as a laboratory study
10 with little relevance to the real world field situation
11 is misunderstanding at best of her work. Chapter Three
12 of her thesis includes a considerable quantity of field
13 data on true densities and phalarope foraging behavior
14 and her work is a model of the integration of
15 laboratory studies with feed situations.

16 Many of the arguments -- pardon me. This recent
17 work underlines the importance of considering the
18 distinction between food abundance and food
19 profitability. There may be enormous amounts of food
20 available to birds in principle, but if the food is not
21 sufficiently nutritious and dense for the birds to
22 maintain themselves and fuel reproduction, moult, or
23 migration, then the food source must be seen as being
24 less than adequate.

25 My dissertation research suggested that the brine
0186

01 shrimp food supply for gulls in 1981 and 1982 was
02 considerably less than, quote, super abundant, end
03 quote, and the recent research by Grubegas (phonetic)
04 indicates that fly densities in the field at Mono Lake
05 are associated with foraging at less than 40 percent of
06 their potential foraging efficiency.

07 Now, many of the arguments in previous testimony
08 as to the health of the Mono Lake ecosystem have been
09 based on what I consider to be uncritical or incomplete
10 analysis, and I would like to just give two examples of
11 how these analyses could be improved if we are to get a
12 better indication of the health of the Mono Lake
13 ecosystem.

14 The first would be to talk briefly about some of
15 Dr. Melack's work on productivity and its relation to
16 years. And I think we're going to get a little piece
17 of paper here. So I want to emphasize here I'm not
18 going to be specific about details and the data, I just
19 want to get across a general point about the way the
20 data have been analyzed to date.

21 MR. HERRERA: Could you use the microphone,
22 please?

23 MR. WINKLER: Yes.

24 We could put on the vertical axis here any measure
25 of ecosystem health, but let's say it's productivity of
0187
01 some trophic level. And this is year here. And let's
02 say we just had data that produced a trend like this.
03 Now, you stand back there and clearly that indicates a
04 nice hump-shaped function, a very clean fit. But if we
05 do, as analyses so far have done, and fit these with a
06 simple correlation which assumes a straight line
07 relationship through the data, we would get a
08 correlation of zero. A flat horizontal line. Even
09 though, looking at it from standing back, there's a
10 very strong relationship.

11 And if we happen to have the same sorts of data
12 that show that lake level did this, again, we would see
13 a nice U-shaped function but, again, if we did a
14 correlation, we'd see no correlation. Now, my point is
15 that if you were an economist and asked to look at
16 inflation or -- pardon me, if you were asked to look at
17 some index of gross domestic product or whatever and
18 you started doing your analyses by just looking at the
19 year for gross domestic product, I think you probably
20 wouldn't have a job as an economist very long because
21 clearly there are -- we have theories about how
22 different things affect gross domestic product, things
23 like inflation rate or unemployment rate, what have
24 you. And you would probably want to try to draw
25 correlations between those predictive factors, not

0188
01 between year but predictive factors and the index of
02 the health of the economy.

03 Likewise, here, if we actually, then, did the
04 correlation between lake level and productivity, we
05 would see a nice positive regression, with a very tight
06 fit, and we would have a very different conclusion
07 about the effects of -- sorry. This is lake level
08 now. And this is, let's say, productivity. So my
09 point is that this sort of analysis based on year is a
10 very uncritical analysis and not very likely to produce
11 any kind of indication of an impact of ecologic
12 conditions at the lake.

13 MR. DODGE: We would mark that as Exhibit 235.

14 MR. WINKLER: Okay. One other example is if we
15 look at Dr. Jehl's presentation of data on phalarope
16 masses as an indication of how well phalaropes are
17 doing at Mono Lake, in his Figure Five of his written
18 testimony, he has a bunch of data on phalarope masses
19 with regression lines through them.

20 MS. GOLDSMITH: Mr. Del Piero, I would like to
21 note for the record my objection. There is no way that
22 I can adequately prepare a cross-examination of this
23 material which is wholly new, has not been provided
24 before. I realize that it's desirable to have
25 Dr. Winkler come up once, but I think this is very

0189
01 unfair.

02 MR. DODGE: Well, it's the same issue we had
03 before, but I would -- she added this time that it's
04 wholly new. It's not wholly new. It relates to
05 Dr. Jehl's testimony which Ms. Goldsmith helped him

06 repair.

07 MS. GOLDSMITH: This is rebuttal testimony.

08 MR. DODGE: I believe Dr. Jehl is here somewhere.
09 There he is. She's able to prepare for this.

10 HEARING OFFICER DEL PIERO: The --

11 MS. GOLDSMITH: Mr. Del Piero, it's my
12 understanding that Dr. Winkler has to be gone this
13 evening which leaves me no time to prepare to
14 cross-examine him.

15 HEARING OFFICER DEL PIERO: During the course
16 of -- during the course of this process, a number of
17 witnesses have been available and some witnesses have
18 not been available in a timely fashion. Also during
19 the course this process, I granted those parties who
20 were presenting evidence tremendous amounts of
21 latitude, all parties that have presented evidence, a
22 tremendous amount of latitude in terms of introducing
23 as much information in evidence into this process as
24 possible in order to afford the State Board a maximum
25 opportunity and maximum information possible upon which

0190

01 to predicate and develop and ultimately adopt a
02 decision on this matter.

03 I pointed this out before, but it's probably
04 appropriate for me to point this out again. One of the
05 reasons the State Board is not bound by the rules of
06 evidence is expressly so that the State Board has
07 available to it as much information as possible. I'm
08 not particularly interested in seeing a disservice done
09 to your client. I would be particularly concerned in
10 the event that this matter were going to be concluded
11 by the 22nd of December, however, inasmuch as the
12 process has taken a tremendous amount of time, far
13 longer than I think it probably should have taken, even
14 though I've been as accommodating to all parties,
15 particularly the Los Angeles Department of Water and
16 Power in terms of presentation of their case and the
17 time they've taken to cross-examine witnesses, I'm
18 inclined to allow the testimony to be presented today.

19 In the event that you are not capable of
20 concluding your cross-examination of this witness
21 today, as I indicated yesterday, this hearing is going
22 to go on. I had hoped to be able to get all of the
23 direct testimony taken care of prior to Christmas. If
24 that is, in fact, not possible, then I will make
25 accommodations the second week January and I will

0191

01 attempt to do what I can to arrange to have Dr. Winkler
02 return for that purpose.

03 However, I have to point something out. This is
04 not unlike several situations that have presented
05 themselves during course of this proceeding in which
06 objections were made, both on the record as well as off
07 the record, to the character and nature of the evidence
08 being presented by the Los Angeles Department of Water
09 and Power. I've attempted to be as fair to all parties
10 as possible, and I will continue to do that. All of
11 the counsel for all of the parties have the obligation
12 of doing the very best they can to represent their
13 clients. This information, as well as the information

14 that is being responded to now that resulted from
15 direct testimony by L.A. Department of Water and Power
16 is not new. This is not a big surprise. I'm not
17 surprised at all that these issues are coming up. And
18 whether Mr. Dodge chooses to put this on as rebuttal or
19 whether he chooses to have it presented in this
20 fashion, at this point, it's up to him because the
21 stage was set during the course of the initial
22 presentation of the case by the Los Angeles Department
23 of Water and Power.

24 So with that, I'm going to overrule your
25 objection, and I want you to recognize that I'll make

0192

01 accommodations for you in terms of pursuing
02 cross-examination of this witness in the event that you
03 are not capable of concluding today.

04 Proceed.

05 MS. GOLDSMITH: Thank you.

06 DR. WINKLER: So if we look at Figure Five of
07 Dr. Jehl's written testimony, we see there are some --
08 what appear to be regression lines. The details on
09 those are not provided, but I assume they're linear
10 regressions fit through those data and what those are
11 is collections of data points from birds apparently
12 that were collected at the various sites and weighed.
13 And we see that the weights of the birds at all sites
14 appear to increase with date and that none of the
15 points seem to be wildly off range with others.

16 I would make just two general points, there,
17 however. One is that there's no statistical confidence
18 limit at all indicated for the regression line and
19 using my experience in dealing with statistics, I think
20 that many of these point probably do lie outside the
21 confidence limits of the regression line indicated.

22 Secondly, these points require some large
23 assumptions that are not substantiated in this work or
24 any other work that I know of by Dr. Jehl. Those
25 assumptions are one, that these relationships of weight

0193

01 to date would exist in individual birds followed over
02 time. The assumption when you collect a sample of
03 individuals is that all the individuals in the
04 population are following the same trajectory and weight
05 over time, and I would, especially in this case, like
06 to propose an alternative interpretation which needs to
07 be rejected before we can accept the interpretation
08 that's been offered.

09 That alternative interpretation is that birds are
10 arriving at Mono Lake and all of these other sites from
11 other sites north of there in the fall migration, and
12 that the differences that we see in the weights of
13 birds collected at different dates are due to
14 differences in the weights at which they left the
15 breeding grounds. And that the indications of actual
16 mass gain have to be substantiated by an indication
17 that the birds actually stayed at the lake at which the
18 birds were collected, that other birds in that
19 population stayed at the lake and increased weight at
20 that site. Without that information we can see that we
21 could interpret these as just indicating that birds in

22 the North American population from farther north in the
23 source areas are actually increasing weight over the
24 migration season, and they just happen to be arriving
25 at these sites at heavier weights and then leaving very
0194

01 soon thereafter.

02 This same kind of problem arises when we consider
03 some of the criticisms that have been made of Grubegas'
04 estimates of foraging profitability where it was
05 pointed out that if the birds were food stressed, they
06 wouldn't be sitting around resting on rocks but rather
07 they'd be out there feeding all the time.

08 What I would suggest as an alternative
09 interpretation, again, I don't say this is true, but it
10 needs to be rejected before we can adopt the
11 interpretation that's been presented. The alternative
12 interpretation is that these birds, as Grubegas
13 suggests, would indeed lose weight trying to forage on
14 the shrimp, especially at Mono Lake, and that they
15 would actually be better off resting, sitting down on a
16 rock and putting their head under their wing, if you
17 will, but resting until the following night when they
18 will leave the lake rather than to sit and try to
19 forage and actually burn up metabolic energy chasing
20 food that does not reward them with a net benefit in
21 terms of weight gain.

22 Okay. Finally, I would like to just close by
23 saying that I discussed with David Herbst his
24 extensive research on the alkali fly and brine shrimp
25 populations on Mono Lake. It appears very likely that
0195

01 historical alkali fly densities were higher than they
02 have been recently and that fly populations are very
03 likely to increase with increasing lake levels at least
04 up to 6400 feet. Herbst's work further indicates that
05 the productivity flies and shrimp as well as their
06 individual body sizes and at least for flies their fat
07 composition will all increase if lake levels are
08 increased and the lake salinity is decreased. Thus
09 increases in lake level are projected to increase the
10 profitability of avian foraging in Mono Lake by
11 increasing both the density and the food value per
12 individual of the bird's two major prey species.

13 I believe the Draft EIR should have made a
14 stronger case that invertebrate production appears to
15 have been reduced by past reductions in lake levels,
16 that this reduction could be reversed at least in part
17 by returning the lake to higher levels, and that the
18 foraging profitability for birds at Mono Lake would be
19 increased as a result.

20 Q BY MR. DODGE: Dr. Winkler, just a couple of cleanup
21 points. You may have testified to this, but these four
22 photos that you referred to, National Audubon Society
23 Exhibits 231 through 234, do you know when those were
24 taken?

25 A 1928.

0196

01 Q And in an effort to avoid making multiple and
02 expensive copies of National Audubon Society Exhibit
03 230, it's been pointed out to me that DFG Exhibit 101

04 also has a good picture of Twain Islet.

05 Can you -- referring to DFG Exhibit 101, can you
06 describe where you found the Caspian tern on Twain?

07 A Well, basically, I would describe it the same
08 way. I would orient the photograph so that it was
09 facing north/south and then once -- would you like me
10 to actually -- I can pencil it in on this one. I mean,
11 I would estimate that it's right here where I'm drawing
12 a circle.

13 Q All right. Well, hearing no objection from the
14 Department of Fish and Game, I will conform our copies
15 to DFG Exhibit 101.

16 Dr. Winkler has drawn in pencil his best estimate
17 as to where in 1976 he found the Caspian terns. And
18 that completes the direct examination, and I appreciate
19 your giving me the extra time.

20 HEARING OFFICER DEL PIERO: Thank you very much.
21 Mr. Dodge.

22 Ms. Goldsmith? I'm sorry.

23 MR. MOSKOVITZ: Mr. Hearing Officer, if this is
24 time for cross-examination on behalf of the Department
25 of Water and Power, I will lead off --

0197

01 HEARING OFFICER DEL PIERO: Please proceed.

02 MR. MOSKOVITZ: -- with Dr. Herbst. May I have a
03 moment to arrange some exhibits?

04 HEARING OFFICER DEL PIERO: Of course.

05 MR. MOSKOVITZ: During the course of my
06 cross-examination, I will be referring to some
07 additional documents that have not been put into
08 evidence or marked for identification.

09 HEARING OFFICER DEL PIERO: Do you intend to
10 introduce them as evidence, Sir?

11 MR. MOSKOVITZ: I may very well introduce them as
12 evidence, but I will be questioning Dr. Herbst with
13 respect to them. Would it be desirable to have them
14 marked before I commence?

15 HEARING OFFICER DEL PIERO: Actually, no. What
16 I'd prefer you to do, depending upon whether you intend
17 to do them or not, and I assume that's going to be a
18 decision you make during the course of the
19 presentation, depending on whether he's ever seen them
20 before, it would be appropriate during the course of
21 your presentation, we won't discount time from you to
22 ask they be identified individually.

23 MR. MOSKOVITZ: Yes. And I do have copies for all
24 concerns, so as I go forward, I'll be getting them.

25 HEARING OFFICER DEL PIERO: That's fine.

0198

01 Mr. Moskovitz, we're going to break, just so you
02 know, because I anticipate you going longer than 20
03 minutes. We're going to break right at 2:15 which
04 ought to be right at the end of your first 20 minute
05 increment just so you can plan. We'll take a
06 ten-minute break then.

07 MR. MOSKOVITZ: I've just been informed by
08 somebody who's been here throughout and this is my
09 first day up here, that I should be referring to you as
10 Mr. Del Piero rather than Mr. Hearing Officer, and I
11 apologize.

12 HEARING OFFICER DEL PIERO: You don't have to
13 apologize. That's fine.

14 MR. DODGE: With all due respect to Mr. Moskovitz,
15 I've been here for a lot longer than that, and I didn't
16 know that.

17 HEARING OFFICER DEL PIERO: You two graduated from
18 Stanford; is that not correct? Where is Flinn? Where
19 is he?

20 MR. DODGE: You know what my standard answer to
21 that question is?

22 HEARING OFFICER DEL PIERO: I know what your
23 standard answer is.

24 CROSS-EXAMINATION BY MR. MOSKOVITZ

25 Q Dr. Herbst, we've had some exchanges before in
0199
01 court, have we not?
02 A BY DR. HERBST: We have indeed.
03 Q It's nice to see you again.
04 A It's good to see you, too, Adolph.
05 Q Dr. Herbst, I first want to go briefly into your
06 relationship with the Mono Lake Committee.
07 A My relationship with the Mono Lake Committee.
08 Q And I have some specific questions that I want to
09 put to you about that. Is it true that you've been a
10 member of the Mono Lake Committee since about 1979?
11 A Yes.
12 Q And is it also true that you were at that time an
13 undergraduate student at UC Davis?
14 A No.
15 Q What were you then?
16 A I was a graduate student at Oregon State
17 University.
18 Q In 1979?
19 A (Witness nods head.)
20 Q In 1979? I see. Okay.
21 And have you been an advisor to the Mono Lake
22 Committee throughout the years since then?
23 A In certain capacities, yes.
24 Q And did you do research for the Mono Lake
25 Committee?
0200
01 A I've done research for the Mono Lake Committee.
02 Q And you've taught classes for the Mono Lake
03 Committee?
04 A For the Mono Lake Foundation.
05 Q And is that associated with the Mono Lake
06 Committee?
07 A Yes. It's the non-profit branch of the Mono Lake
08 Committee. That's right.
09 Q And you've written articles for the Mono Lake
10 Committee publications?
11 A That's true.
12 Q And when you were in Oregon, were you the southern
13 Oregon representative of the Mono Lake Committee?
14 A I don't believe that's the exact term. I was an
15 Oregon representative, but yes, that's true.
16 Q And you've done other work in helping the Mono
17 Lake Committee in its activities like filling mail
18 orders on various things; is that right?
19 A No.

20 Q You didn't fill mail orders for merchandise?
21 A Not that I remember.
22 Q You don't recall telling me that in court a couple
23 of years ago?
24 A No. You'll have to refresh my memory if I said
25 that.

0201

01 Q I won't take the time right now.
02 Is it true that you also have helped the Mono Lake
03 Committee in some work respecting facilities in their
04 office?
05 A That's true, yes.
06 Q And is it fair to characterize your relationship
07 with the Mono Lake Committee over the years as one of
08 close and continuing support?
09 A Yes.
10 Q I'm going to be using the written summary of
11 testimony of David B. Herbst which is marked as NAS and
12 MLC 1-G for purposes of getting into the various topics
13 that I want to question you about. Do you have a copy
14 available to you?
15 A Those are my testimony notes.
16 MR. FLINN: If I gave you my copy, Adolph would
17 have me at a disadvantage, and he already has enough.
18 HEARING OFFICER DEL PIERO: What are you looking
19 for?
20 MR. FLINN: His written testimony.
21 HEARING OFFICER DEL PIERO: Do we have an extra
22 copy of 1-G?
23 DR. HERBST: I got it.
24 HEARING OFFICER DEL PIERO: You have it available
25 to you now, Dr. Herbst?

0202

01 DR. HERBST: Yes, it is.
02 Q BY MR. MOSKOVITZ: On Page 2, Paragraph 4, you say,
03 and I'll read it to you directly, this is a portion of
04 Paragraph 4, "First, I believe that the Mono Lake
05 ecosystem has been significantly and measurably
06 degraded as a result of the drop of the lake level from
07 pre-diversion levels to current levels. My opinion is
08 based on the effect of the following lake level on
09 alkali flies, brine shrimp, and algae, all which of are
10 discussed in more detail below."
11 And on Page 3, Paragraph 5, you say, "Second, I
12 believe that any lake level below 6390 will result in
13 long-term degradation of the aquatic productivity of
14 Mono Lake as compared to pre-diversion levels of
15 productivity."
16 Now, do you agree that the direct effects of
17 changing lake levels from pre-diversion to current
18 conditions relative to alkali flies are the effects of,
19 in your opinion, increasing salinity and the effects of
20 the amount of physical habitat?
21 A Yes.
22 Q Now, I want to direct your attention to one of
23 your exhibits that goes along with your testimony and
24 that's Exhibit 64. And when I refer to an exhibit
25 number, unless I otherwise indicate, I mean an NAS/MLC

0203

01 exhibit.

02 A Okay. I don't know which one that is because I
03 don't have it with me.
04 Q It has the -- the heading of Mono Basin EIR
05 aquatic productivity evaluation of models experiments
06 and new data and has your name and address at the top.
07 MR. FLINN: For the record, those are Dr. Herbst's
08 Draft EIR comments. Do you have a copy?
09 DR. HERBST: Those are the Draft EIR comments?
10 That sounds to me like the auxiliary report.
11 HEARING OFFICER DEL PIERO: Dr. Herbst, it's got
12 an August 20th, 1993, date that again, considerable
13 time and effort have gone into completing the Mono
14 Basin EIR?
15 DR. HERBST: Okay. Got ya.
16 MR. FLINN: Do you have a copy?
17 DR. HERBST: Yeah.
18 MR. MOSKOVITZ: If you could get a copy that would
19 be helpful.
20 Q BY MR. MOSKOVITZ: You did identify that document on
21 Page 1 of your testimony Exhibit 1-G at the bottom of
22 the page?
23 A Okay.
24 Q Now, I want to refer to you Page 6 of that
25 exhibit.

0204

01 A Um-hum.
02 Q And that page shows a number of graphs, does it
03 not?
04 A That's true, yes.
05 Q Let's look at the two middle graphs.
06 A Okay.
07 Q Now, those two graphs, one is entitled
08 Kimmerer-Herbst model habitat area times salinity, and
09 the other Jones and Stokes model habitat area and
10 salinity. Now, those two graphs basically are bell
11 shaped; that is, the curves on those graphs are
12 basically bell shaped?
13 A That's correct.
14 Q And they reflect the direct effects of salinity
15 and habitat on flies according to the two models
16 identified; is that not so?
17 A According to the two models, that's correct.
18 Q According to the two models. Now, one of those
19 models is a model that you participated in preparing, I
20 gather, the left-hand one, and the right-hand one is
21 the Jones and Stokes revision of that model that they
22 used for the Draft EIR?
23 A That's also right.
24 Q Now, first, let's look at the left hand of those
25 two graphs, the one depicting the Kimmerer-Herbst

0205

01 model. And what I want to do is test out what you said
02 in the quotations from your direct testimony, the
03 summary of your testimony that I read to you earlier
04 about the comparison between pre-diversion conditions
05 and current conditions.
06 A Okay.
07 Q And would you agree that pre-diversion conditions
08 are characterized by the 6415 elevation in that
09 left-hand model?

10 A According to that model.
11 Q Yes. And that present conditions or current
12 conditions would be characterized roughly by the
13 6375 --
14 A That's correct.
15 Q -- elevation? Now, what does that curve show to
16 be the relationship between the 6415 condition, that is
17 the far left, and the condition with the elevation
18 6375?
19 A It shows that the percent of what you'd expect the
20 productivity to be would be lower at 6415 than at 6375.
21 Q Does that support what you said earlier about the
22 reduction from pre-diversion conditions to current?
23 A No, it doesn't. But --
24 Q All right.
25 A -- the conditions that I specified went into this

0206

01 model, as I explained earlier, I believe were
02 conservative in the sense that they underestimated the
03 beneficial effects that would occur at high lake levels
04 and the adverse effects that would occur at low lake
05 levels because of, Number One, the lack of
06 incorporation of submerged vegetation as alternative
07 lateral habitat for the attachment of their larval and
08 pupal stages and, Number Two, and most importantly, it
09 underestimates vastly the beneficial effects of low
10 salinity at high lake levels which were dramatically
11 demonstrated in the microcosm experiments that I also
12 discussed in my direct testimony.
13 Q We'll get to those qualifications in a while.
14 A Okay.
15 Q Now, looking at the right-hand model, the Jones
16 and Stokes model, does it show any deteriorating or
17 declining relationship or effect at current lake levels
18 as compared to pre-diversion lake levels?
19 A I'm sorry. Would you repeat that?
20 Q Does the right-hand graph, which --
21 A Um-hum.
22 Q -- depicts the Jones and Stokes model show that
23 there is a decline from pre-diversion levels to current
24 levels?
25 A It shows that they're about the same by that

0207

01 model.
02 Q I want to refer you to the two bottom graphs on
03 that same page, and those graphs, as I understand it,
04 depict the amount of total lateral zone habitat area in
05 the left-hand graph and lateral zone hard substrate
06 habitat area in the right-hand graph. Is that so?
07 A That's correct.
08 Q And what do -- what does the left-hand graph show
09 as the relationship between the total lateral zone
10 habitat area pre-diversion at elevation 6415 as
11 compared with 6375?
12 A There's a -- they're about the same. There's a
13 plateau that's between 6400 and 6380 where habitat is
14 at its maximum and it declines on either side, either
15 at higher lake elevations or lower lake elevations.
16 Q But comparing pre-diversion to current, there's no
17 decline, is there?

18 A That's right.
19 Q And that's also true, or is it true even more so
20 with respect to the total -- to the literal zone hard
21 substrate habitat area on the right-hand graph?
22 A That's correct.
23 Q That is, the conditions are better at current than
24 they were historically?
25 A That's correct.

0208
01 Q Now, you mentioned that an offsetting factor in
02 your opinion is that at higher lake levels, there would
03 be additional habitat area created by submerged
04 vegetation; is that correct?
05 A That's correct.
06 Q Now, I think that Mr. Del Piero asked you about
07 would vegetation tend to deteriorate after being
08 submerged with rising lake levels, and you said it
09 would last for a while, maybe up to ten years, was your
10 opinion. After that time, the vegetation would no
11 longer afford substrate for flies, would it?
12 A That's true.
13 Q So if you assume that the lake is going to
14 increase in elevation from its current elevation, for a
15 while there would be some vegetation that would be
16 available at substrate, but then in the longer term, it
17 would no longer be available, right?
18 A Only if you assume -- no, only if you assume that
19 the lake level remains constant. The lake level in any
20 given year is dynamic, even within a single year, the
21 lake level drops in the summer and rises in the spring
22 with fluctuations in the runoff cycle and the
23 evaporation cycle. So in any given year during a
24 period that's, quote unquote, called stable, you have
25 elevations going up and down. You have a dynamic lake

0209
01 level. And during that time, you also have cycles of
02 colonization and of recolonization and inundation of
03 vegetation right along the shoreline. This will
04 especially be true at high lake levels where there's
05 going to be much more fresh water seepage along that
06 shoreline zone and there's going to be much more
07 vegetation that's going to be growing along that
08 shoreline zone.
09 Q You began to get into a subject that I wanted to
10 inquire into. It is the fluctuation of the lake level
11 that you visualize as creating a continuing supply;
12 that is, as the lake level goes down, terrestrial
13 vegetation along the shore can grow.
14 A Um-hum.
15 Q And if the lake fluctuates up, that will be
16 submerged and be available as habitat.
17 A That's right.
18 Q Now, would that not been the case at any range --
19 at any lake level around which you have a range of
20 fluctuations?
21 A That's true.
22 Q Do you have any information, that is, any
23 measurements, any other hard data, to indicate how much
24 substrate from submerged vegetation you would have at
25 any lake level?

0210

01 A You mean in relative areas?

02 Q Yes. Areas.

03 A Yeah, I do, as a matter of fact. There's a paper
04 I published -- in fact, two papers. One which was
05 published in Hydrobiologia in 1988, and another which
06 was published in a symposium proceedings of -- a
07 symposium at White Mountain. I believe the publication
08 date for that would be last year. And in that, I
09 document the different densities of flies that occur on
10 vegetation in addition to rocky substrate and compare
11 those two. The rocky substrate densities are just
12 lightly higher than you would find on the vegetation,
13 but nonetheless, vegetation ranks second above all
14 other substrate. And in the first paper that I
15 mentioned, I describe in that the proportion of sites
16 sampled in which vegetation was present. For actual
17 areas of vegetation present, I haven't personally
18 published any of that data, but from what I understand
19 in discussions of this with some of the consultants
20 with Jones and Stokes, there is information on the
21 amount of vegetation that's in and around the lake,
22 both that could be inundated and that's around the
23 lake.

24 And in addition, one more source of information, I
25 believe, is data on the distribution of vegetation in

0211

01 studies that were done by Paul Little, Stewart Robert,
02 and Tim Bradley. I believe they also document the
03 distribution of vegetation on that paper.

04 One more thing. There's also a page in the
05 National Academy of Sciences' publication that
06 describes the presence of submerged mats of attached
07 pupae in Mono Lake and the distribution of them at a
08 couple of different locations and describes them as
09 being widespread high density mats of pupae attached to
10 the submerged vegetation. And that would have been at
11 a time when the lake level was at a maximum, so there
12 would have been a lot of submerged vegetation during
13 that period of time, but those were studies that were
14 done, the bathometric studies done by --

15 Q Paul Lagoes (phonetic)?

16 A Paul Lagoes (phonetic), yeah.

17 Q Now, is there any information to indicate that
18 there would be greater areas of submerged vegetation
19 due to fluctuation at pre-diversion lake levels as
20 compared to current lake levels?

21 A Not that I'm aware of, except that during this
22 period of time, as the lake levels -- or during the
23 past 50 years, as the lake levels have been going down,
24 there's been no vegetation to be inundated. So when
25 perfectly -- there's nothing to be submerged, whereas

0212

01 during rising lake phases, there is vegetation to be
02 submerged.

03 Q But the fact is that once you reach stability at
04 any lake level the fluctuation around that lake level
05 would have the same general effect of making substrate
06 available in vegetation as a lake rises after a fall,
07 and you don't have any information as to the fact that

08 there would be more of that vegetation available at a
09 higher lake level than at a lower lake level. Isn't
10 that right?

11 A I personally don't have that information.

12 Q All right. And you can't quote any such
13 information from any our source, can you?

14 A Not that I'm aware of.

15 Q All right.

16 MR. FLINN: I don't know what the rules are with
17 regard to our hybrid panel here, but I don't know if
18 the rules allow any other panel member who has
19 something to say can volunteer or not. I don't know.

20 HEARING OFFICER DEL PIERO: If there are other
21 individuals who can lend information in regards to
22 this, they're afforded the same opportunity as past
23 panels that were presented by the Los Angeles
24 Department of Water and Power and also the panels
25 presented in the last couple of days. If any of you
0213
01 have information that bears on the question being asked
02 and the person to who the question is directed is
03 incapable of answering because he or should does not
04 that have information and others of you do, you're
05 fully requested by me to respond so that we can get as
06 full an evidentiary record as possible.

07 DR. STINE: I would like to respond in that case,
08 if that's okay. A couple of points here. First of
09 all, there's 900-year-old vegetation out there in many
10 places around the lake and that 900-year-old vegetation
11 has been providing substrate as long as it's been under
12 water for almost a millenium now, so there's pretty
13 good evidence that at least in some cases, and I would
14 say that it's fairly widespread, old vegetation, very
15 old vegetation, continues to provide hard substrate.
16 And if I could refer for a second to Exhibit 142. On
17 142, it's obvious --

18 MR. BIRMINGHAM: Excuse me, Mr. Del Piero, I'm now
19 sitting in the back as a member of the audience, and I
20 wonder if Dr. Stine could be afforded leave of having
21 to carry the microphone --

22 HEARING OFFICER DEL PIERO: You know, I can't
23 satisfy any of you people. Half of you want him to
24 talk in the mike and half of you don't. I don't
25 understand.

0214
01 DR. STINE: On Exhibit 142 I think it's very clear
02 that until you get up to a lake level of approximately
03 6390 feet, you're doing very little inundation of
04 vegetation because at these lower lake levels like
05 this, you're encountering greater salinities and more
06 and more alkali around most of the lake. So as the
07 lake goes up and fluctuates within a high level, it's
08 going to tend to inundate far more vegetation per foot
09 rise than it will at the lower lake levels, and I think
10 it's quite apparent on here on the photographs as it is
11 on the ground when you're out there that there's
12 precious little vegetation around most of the lake at
13 these low lake levels.

14 Q BY MR. MOSKOVITZ: Dr. Herbst, a little while ago,
15 you cited some information as to what the -- what the

16 proportion of density of flies on vegetation substrate
17 was compared to hard substrate. You made some sort of
18 percentage. What did you say?
19 A BY DR. HERBST: I don't remember exactly that the
20 percentage is. It's something like -- it's between 50
21 to 75 percent. Something like that.
22 Q Isn't it just 50 percent?
23 A No.
24 Q It's more?
25 A Something like that. Yeah. 50 to 75 percent.

0215
01 Q Is it 50 to 75 or is it 50, which is it?
02 A Have you got some data you can show me?
03 MR. FLINN: Objection. Asked and answered.
04 DR. HERBST: I think it's between 50 to 75
05 percent.
06 Q BY MR. MOSKOVITZ: Do you have a copy of the
07 auxiliary report that you wrote for Jones and Stokes?
08 Number 8? I think it's referred to in your direct
09 testimony --
10 A BY DR. HERBST: Yep. Got it.
11 Q -- on Page 1.
12 MR. HERRERA: Mr. Moskovitz, your time has
13 elapsed.
14 MR. MOSKOVITZ: Mr. Del Piero, I'll requesting an
15 additional period of time.
16 HEARING OFFICER DEL PIERO: I'll be happy to grant
17 you an additional 20 minutes after we break.
18 MR. MOSKOVITZ: Thank you.
19 (Whereupon a short recess was taken.)
20 HEARING OFFICER DEL PIERO: Ladies and Gentlemen,
21 this hearing will again come to order.
22 Mr. Moskovitz, you can begin your second 20-minute
23 increment.
24 MR. MOSKOVITZ: Thank you.
25 Q BY MR. MOSKOVITZ: Dr. Stine, I want to follow up on

0216
01 the information you gave in aid of Dr. Herbst. You
02 mentioned that you had found very, very old trees that
03 were still intact and could be or were substrate for
04 flies. Is that what you were testifying to?
05 A BY DR. STINE: That's correct.
06 Q Did you see flies on them?
07 A Yes, I have seen flies on them. I've seen Tufa, I
08 think, forming on them as well immediately off shore in
09 1982, right off the Lee Vining Creek delta.
10 Q And what was the elevation of the lake at that
11 time?
12 A Very close to its low stand, approximately 6372
13 point -- perhaps four feet? Something like that.
14 Q And what was the elevation of the trees you found?
15 A It was in approximately one foot or so of water.
16 This is a rooted stump now, though. This in a tree
17 stump. That is shrub stump.
18 Q And so this was found at an elevation that would
19 be inundated at current lake levels?
20 A That's correct.
21 Q And so it would be available at current lake
22 levels?
23 A Yes. Although, many of them -- this is now one

24 stump. Most of the stumps that I've seen have been
25 above the lake and they lie between approximately 6372

0217

01 to 6371 feet on the low side up to about 6401 feet.

02 Q And do you have any information as to how
03 extensive those trees are?

04 A Well, I've found -- I thought I had found them
05 all, and then Dave Carl of the State Park system and I
06 were out the other day, and I found another one. But
07 there are probably, roughly, 100 stumps that I've now
08 found that are protruding above ground enough to be
09 conspicuous, enough to be obvious.

10 Q A very, very small area compared with the area of
11 hard substrate, right?

12 A That's true. And I was not -- I was not trying to
13 make the point that this constitutes some monumental
14 amount of hard substrate. The question arose as to how
15 long vegetation would persist, and I brought up these
16 stumps simply to speak to that point, that it is
17 something that simply lasts a short period of time,
18 which I believe was the implication that was perhaps
19 left, that this is something that can persist for a
20 much longer period of time.

21 Q And these are tree stumps, right?

22 A These are tree stumps, though I have found in the
23 record in stream cuts grass mats as well and things
24 that I've described in the literature where I've
25 described these things, as graminoid vegetation where

0218

01 we can still find the shoots of grass in the record as
02 well. And those likewise dated -- I forget if the date
03 was 600 years old or 900 years old, but in any case,
04 they were centuries old.

05 Q And are you saying that those are substrate for
06 flies?

07 A I wouldn't say that, but that wasn't the
08 question. The question was how long will vegetation
09 persist, and that's what I was -- was addressing.

10 Q I see. Dr. Herbst, the kind of vegetation that
11 you were referring to that could provide the substrate
12 for flies is basically grasses of some kind, salt
13 grass; in that so?

14 A Anything will work.

15 Q Anything will work?

16 A You could take some kind of artificial material as
17 well, something like fishing line or anything that is a
18 stringy kind of substance that plant tissue is made of,
19 let's say, and fly pupae would indeed attach to that.

20 Q And what you were referring to and what your
21 exhibits, those two pictures, depicted, Exhibits --

22 MR. SMITH: 49 and 50.

23 Q BY MR. MOSKOVITZ: -- 49 and 50 was basically salt
24 grass; in that right?

25 A BY DR. HERBST: Those are salt grass, that's right.

0219

01 However, in the sense that I've referring to inundation
02 of litoral -- inundation of terrestrial vegetation and
03 litoral as alternative habitat, it doesn't have to be
04 just grasses. And at these high lake elevations as you
05 get into more arbuscular vegetation, more of this

06 brushy vegetation along the shore, that would provide
07 more surface area and a better place for attachment.

08 In fact, to elaborate a bit on what Scott was
09 talking about, here is a phenomenon whereby much of the
10 wood substrate that's in the lake could become rock
11 substrate by a process that's in some ways akin to how
12 petrified wood forms. Are you familiar with the
13 phenomenon of Tufa formation from gaylussite?

14 Q I'm asking questions and you're answering them, so
15 don't ask me questions.

16 A Okay. Well, I was just going to elaborate on this
17 particular process. There is a mineral called
18 gaylussite that forms on any kind of substrate that are
19 in the lake, whether it be vegetation or rock substrate
20 or beer cans that are on the lake bottom, and as it
21 forms, it transforms into Tufa. And so a lot of that
22 vegetation that might otherwise decompose after being
23 submerged at those higher lake elevations, could well,
24 itself, be transformed into a rocky substrate. And
25 I've got many examples in my laboratory, of that very

0220

01 kind of that transformation of woody material into rock
02 substrate.

03 Q Do you have any information as to how much that is
04 and as to what extent it would actually be available?

05 A I don't have it, but Jones and Stokes Associates
06 have done extensive mapping of the upland vegetation.

07 Q I asked whether you knew about it?

08 A I do know about it, and I have it.

09 Q Do you have any information as to the quantity?

10 A Not the off top of my head.

11 Q Dr. Herbst, I show you a picture taken -- that is
12 in the Department of Fish and Game Exhibit 99 on Page
13 9. It's an article from Condor Magazine --

14 A It just so happens I have a copy of it right here.

15 Q Very good.

16 Mr. Del Piero, do you have one available?

17 HEARING OFFICER DEL PIERO: I've got several
18 copies of it. I think I have one autographed by the
19 original --

20 Q BY MR. MOSKOVITZ: Do you have idea what lake
21 elevation that was taken at?

22 A BY DR. HERBST: I think this was taken in 1908; is
23 that correct?

24 Q 1902.

25 A 1902? I believe it's somewhere in the vicinity of

0221

01 6410 to 20, although I can't put my finger exactly on
02 what it it would be.

03 Q Now, does this show the vegetation you had in
04 mind?

05 A No, it doesn't.

06 Q Doesn't show any vegetation?

07 A No.

08 Q Now, getting back to a question that was pending
09 for you, and that concerns the relationship between the
10 available habitat on submerged vegetation and on hard
11 substrate. Do you have a copy of your auxiliary report
12 available to you?

13 A Yes.

14 Q All right. Would you look at Page 13?
15 A Okay.
16 Q And would you -- let me read to you what I want to
17 call your attention to. In the second paragraph,
18 before the numbered items, it says, "The information
19 that is yet to be incorporated," and that's in the --
20 in the model, "includes," and then you go down to 2-B,
21 "addition to the area of the vegetation zones inundated
22 with rising lake level to account for new habitat that
23 becomes available as substrate or the attachment of
24 pupae and sediment stabilization," citing Jones and
25 Stokes Associates, and it says, "Densities on submerged
0222
01 vegetation habitat are about 50 percent of those on
02 rock substrate habitat," Herbst 1990.
03 A That's correct.
04 Q Does that refresh your recollection as to what the
05 proper percentage is?
06 A It does, but, you know, if you look at the actual
07 data, I think the numbers really are closer to 75
08 percent. I think I just used that as a way of being
09 conservative to try to evaluate some of these extra
10 factors. It's probably always best to err on the side
11 of being conservative, and so I think I used 50 percent
12 rather than 75.
13 Q You mean it was closer to 75 but you used 50
14 percent?
15 A That's right.
16 Q Is that what a scientist is supposed to do?
17 A Absolutely. If you're going to be doing things
18 where you're adding new elements to models and you have
19 the opportunity to err on the conservative side rather
20 than overestimate particular factors, that would be the
21 recommended procedure to follow.
22 Q Even if it's closer to 75 percent?
23 A That's right.
24 Q Would you look at Exhibit 64 again and --
25 A What was that?
0223
01 Q That is -- that's your comments on the Draft EIR.
02 A Okay.
03 Q And look at Page 5. I want to direct your
04 attention to the graph on the upper left.
05 A Okay.
06 Q It talks about alkali fly growth and development.
07 The horizontal axis talks about salinity, and that's, I
08 guess, in grams per liter; is that right?
09 A That's correct.
10 Q What is the lake elevation at which you'd find 50
11 grams per liter that is on the far left of that axis?
12 A 6415.
13 Q So that's pre-diversion conditions, essentially?
14 A That's correct.
15 Q And and what is the lake level at which you find
16 100?
17 A 6373.
18 Q So current conditions would be a little to the
19 left of the hundred mark?
20 A That's correct.
21 Q Now, what does that graph show as to the

22 relationship in pupa size between pre-diversion
23 conditions and present conditions?
24 A It shows that there is a decrease from about 40
25 percent of the body size.

0224

01 Q 40 percent. Now, what data is that graph based
02 upon?

03 A I think that particular graph is based on
04 laboratory studies.

05 Q So-called microcosm studies?

06 A No. The microcosm studies was a separate data
07 set.

08 Q What studies, then, is it based on?

09 A Laboratory studies.

10 Q That you did?

11 A That I did.

12 Q And are those studies reported anywhere?

13 A Yes. They're published in that White Mountain
14 Symposium volume I referred to earlier.

15 Q That's a journal of some kind?

16 A It's a referee publication put out by the White
17 Mountain Research Station every, I think it's two,
18 three years, and they hold a symposium there. And I
19 believe it was two years ago in the fall they held a
20 symposium there on the history of and ecology of water
21 issues in the eastern Sierra, and it was at that
22 symposium that I presented a paper. And they always
23 published the series of papers that result from that
24 symposium, and that's where it appears.

25 Q Do you have a copy of it here?

0225

01 A No.

02 Q And the information that is -- the numbers or the
03 description of the experiment, you don't have any place
04 in the material that you assembled for this hearing; is
05 that right?

06 A No, I didn't. The graphs that you see here that
07 you're referring to in my comments are, as it says on
08 the previous page, a way of summarizing basically
09 everything I've done, or nearly everything I've done to
10 date so that we have a way of looking at that all in
11 terms of percentage of the maximum response variable,
12 and that's why you see all these things in terms of
13 percent like we talked about with the nitrogen fixation
14 work, so that it would be easier to compare one value
15 to another in terms of the percent change.

16 So this particular experiment represents
17 laboratory work that I did that once again is published
18 in this other symposium volume.

19 Q Are you aware of any other laboratory experiments
20 on this subject; that is, the effect of salinity on the
21 size of alkali fly pupa?

22 A Yeah. There is data from the microcosm
23 experiments as well.

24 Q Was that subject covered in your Ph.D.
25 dissertation?

0226

01 A No. The microcosm experiments were only done in
02 1991.

03 Q No. Did you have some studies of the relationship

04 between salinity and pupa size?
05 A Yes.
06 Q And what did those studies show?
07 A Those studies showed basically the same results.
08 HEARING OFFICER DEL PIERO: While you're away from
09 the microphone, Mr. Moskovitz, Ladies and Gentlemen,
10 let me -- we're going to break about -- between 4:30
11 and five for about 15 minutes, and then we're going to
12 call it a day at seven o'clock because Mr. Dodge is
13 yawning. Okay?
14 MR. MOSKOVITZ: You said we're going to break at
15 about --
16 HEARING OFFICER DEL PIERO: We'll break between
17 4:30 and five for about 15 minutes, and then we'll call
18 it a day around seven o'clock.
19 MR. DODGE: With the understanding that
20 Dr. Winkler can be on his airplane.
21 HEARING OFFICER DEL PIERO: That's why I'm
22 breaking at seven o'clock because it doesn't behoove
23 you or me to be here if Dr. Winkler's gone and,
24 obviously, Mr. Moskovitz or his firm is interested in
25 cross-examining him, so he may have to come back at a
0227
01 later date if they aren't successful in completing the
02 process in the next four hours.
03 Additionally, today is the last day of Hanukkah.
04 There are some people that might want to go home and be
05 with their families.
06 MR. DODGE: We obviously have no objection to
07 Dr. Winkler testifying for as many days as the Hearing
08 Board wants to hear him. I just don't want to spend
09 the money to bring him back because we don't have it.
10 HEARING OFFICER DEL PIERO: Are you going to keep
11 him until tomorrow?
12 MR. DODGE: No. I just don't want him to make a
13 second trip. I'd like the examination of him to be
14 completed in this session. It's my fervent hope that I
15 don't have to bring him back in the rebuttal case.
16 HEARING OFFICER DEL PIERO: You indicated he's
17 leaving at seven o'clock; is that correct?
18 MR. DODGE: He can stay 'til eight.
19 HEARING OFFICER DEL PIERO: Let's see how it
20 goes.
21 MR. DODGE: If push comes to shove, we can ask all
22 parties to cross-examine Dr. Winkler and the others are
23 here.
24 HEARING OFFICER DEL PIERO: That might be -- let's
25 take a look at that around four-ish and see how it
0228
01 goes.
02 I'm sorry, Mr. Moskovitz. Proceed.
03 MR. HERRERA: You have five minutes remaining.
04 MR. MOSKOVITZ: I'm told there are five minutes
05 remaining and --
06 HEARING OFFICER DEL PIERO: You're welcome to
07 take -- if you wish additional time, you can make a
08 request at the time.
09 MR. MOSKOVITZ: I have an exhibit that I'd like to
10 have marked. Shall I give some copies to --
11 HEARING OFFICER DEL PIERO: A copy to the Staff

12 and a copy to the other attorneys.
13 Dr. Winkler, where does he not want to bring you
14 back from?
15 DR. WINKLER: It's Ithaca, New York.
16 MR. DODGE: It's not that I don't want to bring
17 Dr. Winkler back. It's that I don't want my clients to
18 have to spend the money to bring Mr. Winkler back.
19 HEARING OFFICER DEL PIERO: Dr. Winkler, have you
20 ever noticed that Mr. Dodge tends to take bait very
21 easily?
22 (Laughter.)
23 MR. MOSKOVITZ: Mr. Del Piero, I've had
24 distributed to the witness and to others and to you, I
25 gather, a one-sheet exhibit entitled Table 5.1 Salinity
0229 Effects on Size at Maturity of Athedrahine (phonetic),
02 and I don't have a number for it yet. I'm waiting for
03 it.
04 HEARING OFFICER DEL PIERO: Can we have an exhibit
05 number?
06 MR. SMITH: Momentarily. Actually, Tom has them.
07 He has my records. He's making notes on it. Proceed.
08 We'll get the number.
09 HEARING OFFICER DEL PIERO: Mr. Birmingham, we
10 need those numbers.
11 MR. MOSKOVITZ: Shall I proceed before we have the
12 number?
13 HEARING OFFICER DEL PIERO: Go ahead.
14 Q BY MR. MOSKOVITZ: Dr. Herbst, a moment ago you told
15 me that your Ph.D. dissertation study came to the same
16 conclusion that there would be a 40 percent drop in the
17 size between pre-diversion and current conditions; is
18 that right?
19 A BY DR. HERBST: That's right.
20 Q Would you please take a look that the Table 5-1
21 and tell me whether that comes from your -- from your
22 Ph.D. dissertation?
23 A It does come from my Ph.D. dissertation.
24 Q All right. Would you look at the lower part of
25 that graph headed -- I mean, that table headed Mono
0230 Lake Larvae?
01 Lake Larvae?
02 A Um-hum.
03 Q And would you read the size in millimeters, that's
04 the width, at 50 grams per liter?
05 A 1.81.
06 Q And would you read the size at 100?
07 A 1.82.
08 Q Does that show a 40 percent drop?
09 A No, it doesn't. And -- I recalled wrong. You're
10 right. You're right.
11 Q All right. And would you look -- would you look
12 at the next --
13 MR. FLINN: Mr. Del Piero, before we go on, I
14 don't know if the witness wanted to explain his
15 answer. I don't know whether the Hearing Officer wants
16 an explanation or not, but the witness clearly had
17 something more he wanted to say.
18 DR. HERBST: Yeah. Yeah.
19 MR. MOSKOVITZ: Go right ahead.

20 DR. HERBST: This particular kind of experiment is
21 one I have done many times over. I suppose, like many
22 graduate students, I shouldn't be ashamed to say that
23 there's certain experiments that I've done that I no
24 longer trust the results of and this happens to be one
25 of them. I don't know if we talked about this before

0231

01 when I testified in Judge Finney's court, but this
02 particular experiment was done with individuals reared
03 individually, and one of the things that happens when
04 you rear individuals of the alkali fly is that there is
05 fungal growth that occurs and culture stagnation that
06 occurs under low salinity conditions. And if you rear
07 animals together where they have a chance to graze
08 algae off each other and graze fungus off each other,
09 you don't get the kind of mortality and repeated
10 development that you see in these cultures right
11 here.

12 So any of the work that I've published subsequent
13 to the work that I did for my dissertation, I corrected
14 this experimental problem in, so I was really looking
15 at a salinity effect rather than a fungal contamination
16 effect, which is what this experiment reflects by this
17 absence of a body size effect.

18 HEARING OFFICER DEL PIERO: Mr. Moskovitz, excuse
19 me for one second.

20 Dr. Herbst, what year was your dissertation
21 completed?

22 DR. HERBST: 1986.

23 HEARING OFFICER DEL PIERO: Please proceed, Sir.

24 Q BY MR. MOSKOVITZ: Looking at the second -- the third
25 column headed Adult Mass, does that compare the sizes

0232

01 of adult flies as contrasted with pupa size in the
02 second column?

03 A BY DR. HERBST: That's correct.

04 Q And what does it show for Mono Lake larvae at 50
05 grams per liter?

06 A 1.023.

07 Q And what does it show at 100?

08 A 1.327.

09 Q And does that show a 40 percent decline?

10 A No, it does not.

11 Q It shows an increase in size, doesn't it?

12 A That's right.

13 Q And do you want to say something about that?

14 A Well, I account for it in the very same way.
15 These are all from the same experiment. When you have
16 that kind of a bias in an experiment, you can't really
17 trust if it's the salinity effect that you're looking
18 at. And, indeed, in experiments where these things are
19 reared in groups where you don't have that fungal
20 contamination problem, you don't see these results.

21 Q So this particular table, 5.1, is in error?

22 A That's correct.

23 Q Were you aware of it when it was published?

24 A It was not published.

25 Q When it was submitted?

0233

01 A Yeah.

02 Q And is there a note to that effect?
03 A I think there's somewhere in the text of my
04 dissertation where I do discuss that. That's right.
05 Q And identify this particular exhibit as being
06 questionable?
07 A I don't know if I identify this particular
08 exhibit, but I do discuss that effect.
09 Q There's another document I want to distribute.
10 MR. SMITH: Mr. Moskovitz, the first table, first
11 thing you distributed, that's L.A. DWP 99 and the next
12 one you are going distribute will be 100.
13 MR. MOSKOVITZ: Thank you.
14 May I proceed?
15 HEARING OFFICER DEL PIERO: Certainly, Sir.
16 Q BY MR. MOSKOVITZ: Dr. Herbst, do you have a copy of
17 L.A. DWP Exhibit 100?
18 A BY DR. HERBST: I guess if that's what this is,
19 salinity bioassays.
20 Q Yes.
21 A Yes.
22 Q Have you ever seen this document before?
23 A I think Dr. Bradley (phonetic) may have sent me a
24 copy of this before. I don't recall looking at this in
25 great detail.

0234

01 Q That exhibit, L.A. DWP 100, is referred to, in it,
02 in your report with Dr. Bradley (phonetic) called An
03 Analysis of the Growth and Survival of Larvae of the
04 Alkali Fly on Munal (phonetic) Algal Culture?
05 A Um-hum.
06 Q You cite it, don't you?
07 A Dr. Bradley (phonetic) is the first author on that
08 paper.
09 Q But you're familiar with it, you helped to write
10 it?
11 A Of course.
12 MR. FLINN: That question was ambiguous. The
13 "it," I don't know whether you're familiar with "it."
14 Whether the "it" was Exhibit 100 or the "it" was the
15 paper Dr. Bradley (phonetic) co-authored.
16 HEARING OFFICER DEL PIERO: Excuse me, Mr. Flinn.
17 If you want to object, I'll sustain your objection.
18 But it's Mr. Moskovitz' prerogative to rephrase the
19 question.
20 MR. FLINN: I'm sorry.
21 Q BY MR. MOSKOVITZ: Dr. Herbst, you're familiar with
22 L.A. DWP 100, aren't you?
23 A Yes, I am.
24 Q Would you look at Page 3?
25 A Okay.

0235

01 Q And the next to the last paragraph. The first
02 sentence reads, "All the parameters measured in life
03 stages after the larval-pupal mote were unaffected by
04 the salinity of the larva in the rearing medium." Do
05 you see that?
06 A Yes.
07 Q Now, does that summarize the results of
08 experiments by Dr. Bradley (phonetic) made very
09 recently regarding the relationship between salinity

10 and size of adults?

11 MR. FLINN: I'm going to object to that on the
12 grounds of lack of foundation. Obviously, the witness
13 is as capable as anyone of reading the document, but
14 unless Dr. Herbst was actually there doing the
15 experiments, all he could know is what Dr. Bradley
16 (phonetic) may not have told him.

17 HEARING OFFICER DEL PIERO: Mr. Moskovitz?

18 MR. MOSKOVITZ: He said he's familiar with the
19 paper, it seems to me that as a scientist, he could
20 answer the question.

21 MR. FLINN: I agree with the paper, but the
22 question didn't go what did the paper say? The
23 question was are these results of experiments concluded
24 at a particular time? And again, unless he was there
25 or had some knowledge of it, he would only be

0236

01 guessing.

02 HEARING OFFICER DEL PIERO: Ms. Anglin, would you
03 be kind enough to read the question back for me?

04 (Whereupon the record was read as requested.)

05 DR. HERBST: That summarizes --

06 HEARING OFFICER DEL PIERO: Wait. Wait. Wait.

07 DR. HERBST: I'm sorry.

08 HEARING OFFICER DEL PIERO: I'm going to sustain
09 the objection. You can get to where you want to go,
10 Mr. Moskovitz, just restate the question. Okay?

11 Q BY MR. MOSKOVITZ: Are you aware that Dr. Bradley
12 (phonetic) made studies or experiments regarding the
13 relationship between salinity and the size of adult
14 flies?

15 A BY DR. HERBST: I am.

16 Q And was not the result of those experiments that
17 he found no effect on the size of adult flies as a
18 result of increasing salinity?

19 A That would have been his conclusion, but I do
20 differ with Tim's opinion on this. If you'd like me
21 to, I can point out a couple of figures to you in the
22 text where the results are fairly ambiguous. Would you
23 like me to do that?

24 Q You agree that Dr. Bradley (phonetic) did come to
25 the conclusion that there was no difference?

0237

01 A That's right.

02 Q And you disagree with him?

03 A I disagree with that.

04 Q You worked extensively with Dr. Bradley
05 (phonetic); is that so?

06 A I do.

07 Q And you respect him as a scientist?

08 A Absolutely.

09 Q I want to turn now to what you said in your
10 summary regarding your microcosm experiments. Looking
11 at Page 8, the bottom of Page 8, the top of Page 9,
12 you refer to Exhibit 52, that's Paragraph 20. And then
13 you say, "These data illustrate the above points by
14 showing that the overall number and individual size and
15 fat content of flies are vastly greater at lower
16 salinities." The bottom of Page 8, top of Page 9; is
17 that right?

18 Q Um-hum.
19 A Yes.
20 Q Now, the data mentioned here, do they include the
21 microcosm experiments?
22 A They are the microcosm.
23 Q They are the microcosm. Very good. Now, are the
24 results of the microcosm experiments shown in your
25 Exhibit 52?
0238
01 MR. FLINN: To revisit the record, Exhibit 52-A is
02 a compendium and a clear version of Exhibit 52.
03 DR. HERBST: That's correct.
04 Q BY MR. MOSKOVITZ: And are the results also shown in
05 Exhibit 64? That, again, is the comments you made on
06 the Draft EIR? Page 5? In the middle of the page?
07 Right-hand graph? The one that's entitled Adult Fly
08 Body Size, Field Microcosms?
09 A That's right.
10 Q Now, on what data do you base that graph on Page 5
11 of Exhibit 64?
12 A If you look in auxiliary report Number Eight, I'm
13 not sure if that has an exhibit number attached to it.
14 Q It does not, but you did refer to it in your
15 testimony.
16 A If you look at the graph on Figure 33?
17 Q Figure 33. All right. Let's take a look at
18 Figure 33 of your auxiliary report.
19 Do you have a copy, Mr. Del Piero?
20 HEARING OFFICER DEL PIERO: No, I don't.
21 MR. MOSKOVITZ: I did not make copies of that
22 because I felt it was in the records, in the Board's
23 exhibits, is it not?
24 HEARING OFFICER DEL PIERO: The auxiliary --
25 MR. CANADAY: It's a Staff exhibit.
0239
01 HEARING OFFICER DEL PIERO: It's a Staff exhibit.
02 MR. FRINK: Yes, it is a Staff exhibit. We don't
03 have all the exhibits here right now, but we can get
04 one momentarily.
05 MR. MOSKOVITZ: I think it would be helpful if --
06 MR. FRINK: I will give the number of it in a
07 minute, too, when we get it down here.
08 MR. MOSKOVITZ: Perhaps I can continue with the
09 question --
10 HEARING OFFICER DEL PIERO: Why don't you go ahead
11 with the question, Mr. Moskovitz, and we'll try and
12 catch up when Mr. Canaday returns?
13 Were we able to get a number for that additional
14 exhibit?
15 MR. FRINK: We will have a number in a minute.
16 The auxiliary report?
17 HEARING OFFICER DEL PIERO: Yes. No. Not the
18 auxiliary report.
19 MR. SMITH: The two submittals? They are 99 and
20 100.
21 HEARING OFFICER DEL PIERO: Okay. Fine.
22 Q BY MR. MOSKOVITZ: Dr. Herbst, looking at Figure 33
23 in that auxiliary report, it's entitled Adult Body Size
24 and Salinity, Microcosm Experiments, right?
25 A BY DR. HERBST: That's right.

0240

01 Q And in the vertical axis it shows body length in
02 millimeters, right?

03 A Yes.

04 Q And in the horizontal axis it shows salinity
05 level, and it shows 50, 75, 100, and 125 grams per
06 liter, right?

07 A That's right.

08 Q Now, looking at that -- at that graph, what does
09 it show to be the body length at 50 grams per liter?

10 A 4.73 approximately.

11 Q I would say 4.72 if you scale it out. Now, what
12 does it show the body length to be at 100 grams per
13 liter?

14 A Oh, I guess I'd eyeball that at about 4.41.

15 Q And what would it be at the current salinity?

16 A The current salinity conditions?

17 Q Yes.

18 A Body size is -- it varies seasonally.

19 Q On the graph, where would it fall?

20 A 4.41.

21 Q That's for 100?

22 A That's right.

23 Q And the current salinity is not 100, is it?

24 A Well, close to it.

25 Q Close to it. For purposes of our discussion.

0241

01 A Yes.

02 Q What is the difference in percentage?

03 A It's 40 percent because it's scaled to the minimum
04 body size of flies in the field. For example, if you
05 were to take this data and just on an absolute scale,
06 calculate what the percent of reduction is, you could
07 say that a fly that has 100 percent reduction body size
08 would be zero, and obviously, a fly that measures zero
09 millimeters in length doesn't exist. So what you need
10 to do is scale any kind of estimates to changes in body
11 size to that minimum body size observed in nature or in
12 laboratory experiments below which it's impossible for
13 a fly to emerge and survive and live. So it's scaled
14 to the minimum body size observed in nature in the
15 field, which is 3.75 millimeters.

16 Q Looking at this graph, don't you compare the size
17 4.73 at 50 grams per liter with 4. -- approximately
18 four at 100? Don't you compare those two sizes?

19 A Scaled to --

20 MR. FLINN: I do have to object. "This graph" is
21 ambiguous whether you're talking about this graph in
22 the auxiliary report.

23 MR. MOSKOVITZ: It's the one I've been examining
24 on, Figure 33.

25 MR. FLINN: With that statement, I withdraw the

0242

01 objection.

02 HEARING OFFICER DEL PIERO: Please answer the
03 question.

04 DR. HERBST: Yes. You do compare those two
05 values, but rather than using zero as a baseline,
06 because a fly that measures zero millimeters doesn't
07 exist, you scale it to that minimum body size that

08 exists in nature. You scale it to the minimum body
09 size that is possible for a fly to achieve before it
10 can no longer get any smaller, it's effectively dead.
11 So you use that as your baseline value for comparison.
12 Q BY MR. MOSKOVITZ: So you're saying that the
13 difference between 4.72 and 4.4 is 40 percent?
14 A About a 40 percent reduction.
15 Q That's not what I get when I make the
16 calculations.
17 A Do you understand what I told you, though?
18 HEARING OFFICER DEL PIERO: Wait. Wait. Wait.
19 Wait. Wait. Wait. Wait. That's not acceptable.
20 DR. HERBST: Okay.
21 HEARING OFFICER DEL PIERO: That's not an
22 acceptable response. Mr. Moskovitz -- do you have an
23 objection?
24 MR. FLINN: No, I'm sorry.
25 HEARING OFFICER DEL PIERO: Mr. Moskovitz, you
0243
01 want to restate your question, Sir?
02 MR. MOSKOVITZ: Yes. I'll restate the question.
03 Q BY MR. MOSKOVITZ: If you take the difference between
04 4.4 and 4.72, what do you come up with?
05 A .32 or so.
06 Q .32. And what is the percent that that is -- that
07 difference of the 4.72?
08 A When scaled to the minimum body size achievable in
09 nature by a fly that's about a 40 percent reduction.
10 MR. FRINK: In order that our record's clear, we
11 do have an identification number for that exhibit.
12 It's Staff Exhibit 13-H, Herbst 1992, Mono Lake benthic
13 ecosystem research.
14 HEARING OFFICER DEL PIERO: Dr. Herbst, what page
15 are you on in that report?
16 DR. HERBST: It doesn't even have a page. It's
17 Figure 33.
18 HEARING OFFICER DEL PIERO: 33? Thank you. How
19 much more time does Mr. Moskovitz have?
20 MR. HERRERA: He has a little over four minutes.
21 MR. MOSKOVITZ: I will be asking for more time.
22 HEARING OFFICER DEL PIERO: I assume you will. I
23 point out we sort of have an unwritten rule here that
24 the longest amount of time granted was to
25 Mr. Birmingham, it was an hour and ten minutes, for the
0244
01 cross-examination of any given panel. As I recall,
02 we're working on 40 now for you, so I'm making you
03 aware of that.
04 MR. MOSKOVITZ: And I'll do my best to finish
05 within --
06 HEARING OFFICER DEL PIERO: Thank you.
07 MR. MOSKOVITZ: -- that outside limit, if not --
08 MR. DODGE: In all fairness on the ground rules,
09 that was stated to be the outside limit for the panel.
10 HEARING OFFICER DEL PIERO: Yes, I understand
11 that, Mr. Dodge.
12 MR. DODGE: And Mr. Moskovitz may have understood
13 that was his outside limit.
14 MR. MOSKOVITZ: I certainly don't want to use up
15 the time that Mrs. Goldsmith may need.

16 HEARING OFFICER DEL PIERO: Is Ms. Goldsmith
17 here?
18 MR. MOSKOVITZ: She's in the building, and she'll
19 be coming back when it's time to cross-examine the
20 people on the birds.
21 HEARING OFFICER DEL PIERO: If you can move along
22 in terms of your cross-examination, Mr. Moskovitz,
23 we'll try and get this this matter done before everyone
24 turns into a pumpkin tonight at seven or eight o'clock.
25 MR. HERRERA: Is then -- excuse me, is that a

0245

01 granting for an additional 20?
02 HEARING OFFICER DEL PIERO: Let's wait until his
03 time is up, and we'll see where he is.
04 MR. MOSKOVITZ: I have another sheet that I want
05 to distribute for an exhibit. By the way, may I have
06 the first two exhibits received in evidence? That
07 is --
08 HEARING OFFICER DEL PIERO: Usually, what we do is
09 we hold off on that, Mr. Moskovitz, until --
10 MR. MOSKOVITZ: Until the end?
11 MR. SMITH: Mr. Moskovitz, that will be L.A. DWP
12 101.
13 Q BY MR. MOSKOVITZ: Dr. Herbst, you have a copy of
14 L.A. DWP Exhibit 101?
15 A BY DR. HERBST: I do.
16 Q What is it?
17 A It's a graph of seasonal changes in body size of
18 adult alkali flies.
19 Q And it covers what period of time?
20 A June 1982 to October 1984.
21 Q Is this from your Ph.D. dissertation?
22 A That's correct.
23 Q And are the body sizes shown here sizes that you
24 yourself measured?
25 A Yes.

0246

01 Q And this was -- it starts in July 1982
02 approximately?
03 A That's right.
04 Q And goes through September 1984 approximately?
05 A That's right.
06 Q And what was the salinity in July 1992?
07 A 1992?
08 Q Excuse me. 1982.
09 A In July of 1982, let me be sure. Let's see, the
10 elevation was 6374, so the salinity was probably right
11 around 95.
12 Q Right around 95. What does it show to be the
13 average size of adult flies?
14 A 4.7.
15 Q 4.7. How does that compare with the body size
16 that your microcosm exhibits showed you'd achieved at
17 50 grams per liter?
18 A About the same, a little bit over 4.7.
19 Q So in nature, you had body size at a salinity of
20 95 grams per liter. The same as your microcosm
21 exhibits showed for 50.
22 A That's right. But you really can't compare those
23 two particular ways of evaluating body size because one

24 is flies that were collected in the field and the other
25 is flies that were exposed to a completely different

0247

01 kind of environmental regime in these microcosm
02 experiment tanks. So the only way you can really
03 evaluate any kind of experiment is with reference to
04 the different treatments to which the experimental
05 groups were exposed. So in that kind of a context, you
06 can't compare the body sizes of flies that come from
07 those experimental microcosms to flies that are in the
08 field because they experience completely different
09 kinds of environments.

10 Q Well, then the microcosms really don't reflect
11 reality, do they?

12 A They reflect reality better than laboratory
13 experiments.

14 Q But not as good as reality in the field?

15 A That's right. That's true.

16 Q And in the field, you've got flies of the same
17 size, you actually measured out in the lake?

18 A Um-hum.

19 Q As your experiments showed you would get at 50
20 grams per liter?

21 A That's right.

22 Q Now, taking a look at that -- a further look at
23 that graph, L.A. DWP Exhibit 101, what does it show to
24 be the average size of flies in July of 1983, the year
25 after the one we just talked about?

0248

01 A Pretty close to the same.

02 Q Pretty close to the same. And was there a change
03 in lake elevation between 1982 and 1983?

04 A There was.

05 Q And what happened?

06 A The lake elevation rose.

07 Q Would you expect that there would be a larger fly
08 with the increasing lake elevation and decreasing
09 salinity?

10 A I'm sorry. Can you repeat that question?

11 Q Yes. Would you expect that there would be an
12 increase in the size of the flies with increasing lake
13 elevation and therefore decreasing salinity?

14 A Indeed you would, and there is evidence of that if
15 you look over a long-term historical record. In fact,
16 the only way of really doing that, since I don't have
17 data that dates back myself, in my own collection, is
18 earlier than about 1980, is to look at historical
19 records of flies that have been collected in museums.
20 And, in fact, I have gone back and done that, looked in
21 several museums where entomologists have deposited
22 collections of flies from years past, in fact, from as
23 long as as 1911 when Mono Lake was first visited and
24 the flies were first described from the habitat.

25 There's number of intervening years that I was able to

0249

01 collect information on those flies and, in fact, what
02 we see is that there's a decrease in the body size of
03 flies to -- at current elevations, current salinities,
04 compared to those earlier records of flies from museum
05 collections that were collected under high lake level,

06 low salinity conditions. And indeed those historical
07 records suggest that there is indeed a decline in body
08 size with increasing salinity.

09 MR. BIRMINGHAM: Excuse me, Mr. Del Piero. I hate
10 to interrupt. Mr. Moskovitz hasn't been here, and he's
11 not aware of the problem that we have had with
12 witnesses who have gone well beyond the question in the
13 response. In listening to many of the answers that
14 Dr. Herbst has given to Mr. Moskovitz' questions, he
15 has gone well beyond the scope of the question, and
16 Mr. Moskovitz has been very polite with allowing him to
17 do that.

18 Mr. Dodge, I know, is very concerned about getting
19 this panel out of here, and I wonder if we could have
20 an instruction to the witnesses to respond only to the
21 questions as opposed to going beyond the scope of the
22 questions.

23 HEARING OFFICER DEL PIERO: I'll be happy to give
24 that instruction to the witnesses.

25 MR. HERRERA: Also, Mr. Moskovitz, your time has
0250 expired.

01 expired.
02 HEARING OFFICER DEL PIERO: How much more time do
03 you think you'll need, Mr. Moskovitz? And
04 Mr. Birmingham, you may want to get Ms. Goldsmith in
05 here.

06 MR. MOSKOVITZ: I would say I would need about
07 another 20 minutes. But I don't want to deprive
08 Ms. Goldsmith of her time, but I believe that what I'm
09 inquiring into is quite relevant with respect to the
10 credibility of this witness' testimony.

11 HEARING OFFICER DEL PIERO: Mr. Moskovitz, that
12 will have put you -- that will have put Los Angeles
13 Department of Water and Power -- how much time would
14 that --

15 MR. HERRERA: 40 minutes so far plus an additional
16 20 would be an hour.

17 HEARING OFFICER DEL PIERO: Do you have an
18 appreciation for the amount of time Ms. Goldsmith is
19 going need for her cross-examination?

20 MR. MOSKOVITZ: She told me she felt it would be
21 considerably less than what I expect.

22 HEARING OFFICER DEL PIERO: Fine. I'll grant you
23 the additional 20 minutes and -- recognizing -- perhaps
24 Mr. Pollack can inform them as to how much time is left
25 so they're aware of it. Thank you very much.

0251
01 Please proceed, Sir.

02 Q BY MR. MOSKOVITZ: What I want to have is a direct
03 answer to my question as to whether -- this is perhaps
04 a question I hadn't yet put. Does your exhibit or your
05 Table 4-4, which is L.A. DWP Exhibit 101, show any
06 increase in size between 1982 and 1984 during a time
07 when lake elevation rose from the low 1982 to
08 considerably higher?

09 A BY DR. HERBST: No.

10 Q I want to turn now to the subject of food for
11 flies, and in your summary of your testimony on Page
12 11 -- excuse me, Page 5, Paragraph 11.

13 HEARING OFFICER DEL PIERO: Mr. Dodge, I don't

14 mind. I don't think he has a hat for you, though, so
15 why don't you go take your seat? You're interrupting
16 Mr. Moskovitz' cross-examination.

17 Please proceed, Sir.

18 Q BY MR. MOSKOVITZ: On Paragraph 11, Page 5, you say
19 in part that the increasing salinity of the water
20 generally reduces the algal food supply available to
21 the flies.

22 A BY DR. HERBST: Yes.

23 Q Looking at Exhibit 64, Page 5 again, that's your
24 comments on the EIR. Looking at the upper right-hand
25 graph on that page.

0252

01 A Okay.

02 Q Looking at mixed algae. Does that support your
03 statement?

04 A That does not support my statement. However, that
05 particular experiment --

06 Q That's all I'm asking.

07 MR. FLINN: Madam Reporter, would you mark that
08 part of the tape, please?

09 Q BY MR. MOSKOVITZ: Now, looking at that same graph,
10 the next line shown purports to be what happened to
11 algae called Tintoclatus (phonetic).

12 A That's correct.

13 Q Is that right?

14 A Yes.

15 Q And it shows it to drop?

16 A That's right.

17 Q With increasing salinity?

18 A That's right.

19 Q And I believe you talked about Tintoclatus in your
20 summary of your testimony in Paragraph 23 on Page 10,
21 right? That's in your section called the effect of
22 decreasing lake level on nutrient supply and algae?

23 A Yep.

24 Q As a matter of fact, that's only the algae you
25 really address in your summary, right?

0253

01 A I don't think that's actually correct. I think
02 that there are references to the fact that there's
03 lower algal production in the microcosm tanks as well.
04 I don't refer to a particular species in there because
05 it's a study of all the algae that occurs in the tanks.

06 Q The only species that you identify and talk about
07 specifically is Tintoclatus, right?

08 A That's right.

09 Q Now, isn't it true that Tintoclatus was shown in
10 your own studies to be an inferior food for flies?

11 A That's true.

12 Q What is the significance of talking about the fact
13 that Tintoclatus volume or numbers declines with
14 increasing salinity when it's an inferior food?

15 A Because even though it's an inferior food, it
16 tends to be in many habitats the only food available,
17 and so because it's the only food available and it's
18 what you typically find in the guts of flies, one has
19 to consider it an important food source.

20 Q Is it the only food available on Mono Lake?

21 A No.

22 Q In fact, didn't your research with Dr. Bradley
23 (phonetic) show that other foods were the ones that
24 were more important?
25 A Correct.

0254
01 Q And was there any discussion about that in your
02 summary?
03 A Yes. The --
04 Q No. The fact that other foods, other kinds of
05 algae foods were better foods?
06 MR. FLINN: Objection. It was asked and answered.
07 HEARING OFFICER DEL PIERO: Sustained. It was
08 asked and answered. He said yes.
09 Q BY MR. MOSKOVITZ: And your answer was no.
10 MR. FLINN: I believe the answer was yes.
11 HEARING OFFICER DEL PIERO: The answer was yes.
12 Wait, Mr. Moskovitz, so we can with clarify,
13 Mrs. Anglin, would you read the answer back?
14 THE REPORTER: It was yes.
15 Q BY MR. MOSKOVITZ: Can you point out to me where you
16 discuss the fact that other foods are referred to?
17 Other algae?
18 A In Page 8, Paragraph 20, on the top of Page 9, I
19 say that both reduced salt stress and enhanced food
20 availability of 50 grams per liter combine to increase
21 fly production to levels at approximately 100 grams per
22 liter. And that, I believe, addresses your question
23 about the stimulation of food sources by low salinity.
24 Q Could you direct me to the page again, please?
25 A Page 9, top of Page 9.

0255
01 Q Does that say that there are other algae than
02 Tintoclatus which are the better food sources for
03 flies?
04 A I didn't understand that to be your question.
05 Q That was the question I asked. Where in your
06 summary did you point out Tintoclatus is not a good
07 food source and other algae are?
08 A I didn't point that out. I didn't understand that
09 question.
10 Q Now, looking at that same graph in Exhibit 64, you
11 graph -- your microcosm -- the results of your
12 microcosm experiments with algal growth, right?
13 A That's right.
14 Q It shows a drastic reduction in the production of
15 algae, right?
16 A That's right.
17 Q With increasing salinity.
18 A That's right.
19 Q Now, is that a reflection of the standing crop of
20 algae?
21 A Yes.
22 Q And does that not include the reduction in
23 Tintoclatus in large measure?
24 A It includes all algae that are in the benthic part
25 of the ecosystem because I didn't measure specifically

0256
01 those different algae. I can't say that it was due
02 mainly to Tintoclatus. It reflects the total abundance
03 of algae in the benthic community.

04 Q Now, is net photosynthesis a direct measure of
05 algal growth?
06 A Yes.
07 Q Did you make any measurements of direct
08 photosyn -- net photosynthesis in your work?
09 A I did, in the microcosms.
10 Q Is that in the auxiliary report?
11 A I believe it is.
12 Q Figure 36.
13 A Yes.
14 MR. MOSKOVITZ: I'm distributing, Mr. Del Piero,
15 Figure 36 from that auxiliary report which I'd like to
16 have marked called Microcosms Metabiology.
17 HEARING OFFICER DEL PIERO: Next number,
18 Mr. Smith?
19 MR. SMITH: L.A. DWP 102.
20 MR. FLINN: Although, this is already in the
21 record, I assume, as part of auxiliary report Number
22 Eight?
23 HEARING OFFICER DEL PIERO: You want it numbered
24 by a separate number?
25 MR. MOSKOVITZ: I would like to have it numbered
0257
01 because I passed it out as a separate sheet, and I want
02 to ask questions about it.
03 HEARING OFFICER DEL PIERO: Okay.
04 Q BY MR. MOSKOVITZ: Now, Dr. Herbst, do you have a
05 copy of that?
06 A BY DR. HERBST: Yes.
07 Q And are you familiar with it?
08 A Yes.
09 Q And does it relate photosynthesis to salinity?
10 A Yes.
11 Q And what does it show with respect to the effect
12 on photosynthesis, which direction a measure of algal
13 growth is relative to changes in salinity?
14 A There's a step-wise decrease in net photosynthesis
15 from 50 grams per liter to 100 grams per liter after
16 which it pretty much stabilizes.
17 Q All right. Let me ask you what percentage
18 decrease is there between 50 and 75?
19 A Probably around 30, 25. 25 percent.
20 Q About 25 percent?
21 A Yeah.
22 Q And what would be the lake elevation at 75
23 percent, 75 grams per liter, excuse me?
24 A 6389.
25 Q Approximately 6390. And is there any
0258
01 statistically significant change from 75 grams per
02 liter going on all the way up?
03 A To 100 grams per liter? Probably not a
04 statistically significant effect there, but measured by
05 the absolute difference between the two, maybe
06 something on the order of 10 to 15 percent reduction.
07 Q That's 10 to 15 percent reduction?
08 A Something like that, yeah.
09 Q But not statistically significant?
10 A Probably not.
11 Q And similarly, when you go above 100?

12 A That's right. No change.

13 Q So that shows that from elevation 6389 to current
14 elevations, to even higher elevations, the
15 photosynthesis which is a measure of the algal growth,
16 does not decline with increasing salinity; isn't that
17 right?

18 A That's right. This can't be related directly to
19 those algal standing crops.

20 Q Algal standing crops are related to the amount of
21 grazing; isn't that right?

22 A No. It's the total amount of growth that has
23 occurred over a period of time, and you're looking at
24 the -- at the abundance of algae at a particular
25 instant in time so that the total biomass of algae at
0259

01 that particular instant in time, and in the context of
02 these experiments here, the biomass of algae that we
03 see in these tanks is after they've been growing for a
04 two-month period of time whereas the photosynthesis
05 studies that you're referring to right here refers to
06 only a single 24-hour period. And it's the
07 accumulation of those 24-hour periods of photosynthesis
08 that will eventually result in the kind of biomass that
09 you get after a two-month period of growth which is
10 what you see in these chlorophyll standing crop
11 measurements.

12 Q What is the significance of the photosynthesis
13 relationship, then?

14 A It's to give us an idea of the relative amount of
15 photosynthesis and respiration that goes on in a tank
16 in a single day. So it's another way of our evaluating
17 the relative production of the different tanks.

18 Q And it shows that the relative production between
19 75 grams per liter and 100 is about the same, right?

20 A Yeah.

21 Q I want to briefly touch on nitrogen fixation, and
22 I want to look at your summary again on Page 11,
23 Paragraph 25. And the third sentence says, "The data
24 show that nitrogen fixation rates at current salinities
25 are only one-half those at pre-diversion salinities."
0260

01 I'd like you to look at your Exhibit 65. Do you have a
02 copy of it?

03 A Can you tell me what exhibit it is?

04 Q Exhibit 65 is a document entitled Salinity Limits
05 Nitrogen Fixation and sediments from Mono Lake,
06 California, by you, Mr. Culbertson (phonetic) and
07 Mr. Armenlin (phonetic).

08 A Okay.

09 Q I want you to look at Table 1 and compare nitrogen
10 fixation at 6415, which is pre-diversion. That's the
11 last column, and at 6375, current conditions.

12 A 10.9 at 6415.

13 Q Yes.

14 A And 8.1 at 6375.

15 Q And what is the difference between those two? In
16 percentage?

17 A About 20 percent.

18 Q It's not double between -- or to put it another
19 way, at 63 -- 6375, it's not half of what it was

20 pre-diversion, 6415?

21 A This in the rate function, though. The rate
22 function -- if you look back in that same document, or
23 look ahead in that same document, rather, on Figure 1
24 or Figure 2, whenever you please, Figure 1, is
25 unacclimated sediments. Figure 2 is acclimated

0261

01 sediments, so that we're looking at both kinds of
02 conditions of exposure to the algal mass community, and
03 what you see is at 50 grams per liter, that light or
04 total activity is indeed twice what it is at 100 grams
05 per liter. And if you look ahead to Figure 2, the rate
06 function for 50 grams per liter, which is the
07 circles --

08 Q I don't know what you're referring to?

09 A Same document.

10 HEARING OFFICER DEL PIERO: You want to give a
11 page reference? You're talking off of --

12 DR. HERBST: These are figures on that same
13 figure.

14 HEARING OFFICER DEL PIERO: They're immediately
15 behind your Table 1? One's entitled Nitrogen Fixation
16 in Mono Lake and Effective Salinities, the first one,
17 and the second one is Cultured Sediments?

18 DR. HERBST: That's right.

19 HEARING OFFICER DEL PIERO: Last two pages,
20 Mr. Moskovitz.

21 Q BY MR. MOSKOVITZ: All right. And what you repeat
22 again?

23 A Those are the rate functions. If you're just
24 looking at this effect of salinity per se, the
25 activity of the nitrogenous enzyme, which is what fixes

0262

01 the nitrogen, then you can see that at 50 grams per
02 liter in the first figure, we'll be looking at the
03 unacclimated sediments, this is just straight sediments
04 from the lake, you see that the activity at 50 grams
05 per liter is twice as high as 100 grams per liter,
06 that's the white bars. That's the total activity,
07 light activity.

08 If you look at the next figure, which is --

09 Q I see two bars for each of the salinities. Which
10 are you talking about, the left-hand bar?

11 A Left-hand bar, the white bar, which is total
12 activity.

13 Q So you're comparing the bar that says -- that is
14 opposite the number 30 vertical axis?

15 A That's right.

16 Q With the bar that's opposite approximately 17 or
17 so?

18 A Yeah. Yeah.

19 And then on the next figure, with the acclimated
20 sediments, You can see that both 50 and 75 do about
21 equally well in terms of how rapid the fixation rate of
22 the enzyme is. Whereas you go down to the squares,
23 which is the rate at 100 grams per liter, you can see
24 it's about half that of the rates that you find at 50
25 or 75 grams per liter. So the rates indeed are half.

0263

01 The thing that affects the table that you're

02 referring to earlier is the smaller lateral area at
03 high lake elevations. So it's not related to the rate,
04 itself.
05 Q So the lateral area is very important in the total
06 amount of nitrogen fixation. It's not just the rate,
07 but how much --
08 A Sure.
09 Q -- bottom you have?
10 A Sure.
11 Q And 6415 you have much less bottom area than at
12 6375, so in it important to take that into account in
13 the conclusion as to what the difference is between
14 those two lake elevations as far as nitrogen fixation
15 is concerned?
16 A It is, and I do.
17 Q And when you take that into account, then you
18 don't have a halving or only a 50 percent of 6415 when
19 you go down to 6375.
20 A No, you don't. But you do at 75 grams per liter,
21 6390, where I showed you earlier.
22 Q But comparing pre-diversion to today.
23 A That's right.
24 Q You can't say it's only half?
25 A That's right.

0264

01 MR. HERRERA: Excuse me, Mr. Moskovitz --
02 DR. HERBST: But that's not a rate function.
03 MR. HERRERA: Excuse me. Your time has expired.
04 MR. MOSKOVITZ: I think at this point I'll just
05 withdraw so there'll be sufficient time for
06 Ms. Goldsmith. Thank you very much.
07 HEARING OFFICER DEL PIERO: Ms. Goldsmith?
08 Ms. Goldsmith? Good afternoon.
09 MS. GOLDSMITH: Good afternoon.
10 HEARING OFFICER DEL PIERO: Ms. Niebauer -- I'm
11 sorry, Ms. Goldsmith. Did you have questions?
12 MS. NIEBAUER: I don't have any.
13 HEARING OFFICER DEL PIERO: Did I miss anybody
14 else? Mr. Haselton? You guys?
15 MR. FRINK: Mr. Gipsman is also here.
16 MR. VALENTINE: I should point out that
17 Mr. Gipsman is here representing the United States
18 Forest Service.
19 HEARING OFFICER DEL PIERO: Do you have any
20 questions?
21 MR. GIPSMAN: No.
22 HEARING OFFICER DEL PIERO: Well, I'll ask you
23 again after we get done here. It's nice of you all to
24 join us today.
25 CROSS-EXAMINATION BY MS. GOLDSMITH

0265

01 Q Mr. Shuford, I believe you testified that coyotes
02 can swim, that there's no guarantee of security, and we
03 don't know what level will protect the nesting island.
04 Is that right?
05 A BY MR. SHUFORD: I testified there was no absolute
06 security, but I did list some lake levels that I
07 thought would provide reasonable security for the
08 nesting islands.
09 Q I believe I got your quote to be pretty accurate,

10 actually. Given the fact that there is no guarantee
11 that coyotes can be kept off any island of the lake,
12 isn't it a better strategy to disburse, to have the
13 nesting gulls disbursed among the number of islands
14 rather than concentrated on a single island or a couple
15 of islands?

16 A Well, if that were the case. As I said, I don't
17 believe -- I think there's a high degree of security at
18 higher lake levels.

19 Q Well, then, let's turn to -- to where coyotes can
20 get to. You testified that you thought there was a
21 relationship between coyote access and lake levels; is
22 that right?

23 A Yes, that's right.

24 Q You also testified that there have been coyotes on
25 Paoha Island; is that right?

0266

01 A That's correct.

02 Q And that there are currently coyotes on Paoha
03 Island; is that right?

04 A That's right.

05 Q How far the Paoha from the nearest land?

06 A From the Negit Channel, I couldn't tell you
07 exactly. I think the easiest way to get across there
08 is perhaps a half mile, quarter mile. Dr. Stine could
09 probably address that a little more accurately.

10 A BY DR. STINE: That's close to correct.

11 Q In 1985 would that have been correct, Dr. Stine?

12 A Yes. There's not much change in the width of
13 straits with changing elevation.

14 Q Mr. Shuford, you've testified that a trapper would
15 move the coyotes in 1985 and they returned the
16 following year; is that right?

17 A BY MR. SHUFORD: I don't know about the following
18 year, but they have returned.

19 Q Concerning the effect of predation on these
20 islands, you testified that there were a number of
21 predation events, and I probably won't get them all
22 right, but putting together your testimony and
23 Dr. Winkler's testimony, there was predation in 1979
24 and about 65 percent of the gulls were ousted from
25 Negit Island; is that right?

0267

01 A All of the gulls from Negit Island were ousted.

02 Q And how much of the population did that amount to
03 at that time?

04 A That's approximately right, about two-thirds of
05 the population.

06 Q And then in 1982 about 30 percent of the
07 population was dislocated from Twain; is that right?

08 A That's correct.

09 Q And then there have been three other population
10 events, one, again, involving Negit with about 2 or
11 3,000 nests or -- I don't know if it's nests or birds?

12 A It's nests.

13 Q About 4 to 5,000 birds, I guess. And a couple of
14 other incidents involving Java; is that right?

15 A That's correct, as well as Pancake.

16 Q And that pretty much sums up, as far as I gathered
17 from your testimony, the history of predation in the

18 last, say, 14 years at Mono Lake?
19 A That's correct.
20 Q And during that -- during that time period, the
21 adult gull population has remained relatively stable or
22 increased; isn't that right?
23 A Yes, that is correct.
24 Q Now, the Corey report concluded that land bridging
25 of islands for brief periods of time would not unduly
0268
01 affect the nesting colony; isn't that right?
02 A It depends on which islets you're talking about.
03 Q I believe in the Corey report, it was talking
04 about Negit and Twain.
05 A That would be correct. I don't remember the
06 exact -- the wording of the Corey report, but I know
07 that they did consider Negit occasionally was land
08 bridged, that would be a problem. That's what their
09 conclusion was.
10 Q Wouldn't you say that's consistent with the
11 history that we've seen in the last 14 years?
12 A Consistent with what?
13 Q The stable population over the last 14 years
14 despite predation?
15 A The population has remained stable. Whether that
16 has been totally a reflection of the predation is
17 another thing. Population increased dramatically in
18 1990 and that, as far as I can tell from looking at
19 evidence from the Great Salt Lake in particular, that
20 seems not to have had a direct effect -- have been a
21 direct effect of what was going on at Mono Lake. So
22 there's many compounding factors that could influence
23 size of the population at Mono Lake.
24 Q Are you testifying that there was a substantial
25 immigration from the Great Salt Lake in 1990?
0269
01 A No, I'm not. What I'm saying is in 1990, the Mono
02 Lake population went in the previous year from less
03 than 50,000 to over 60,000 one year. In the exact same
04 year, the Great Salt Lake went from the high 70,000 in
05 its population to over 130,000 which indicates, to my
06 mind, that there was probably some broad regional
07 inputs going on perhaps related to the drought.
08 Q Let's move on. Now, you testified that you
09 believe that there's a marauding effect when the gulls
10 are displaced by a terrestrial predator from the
11 nesting island; is that right?
12 A I testified to the effect that that had been
13 reported at Mono Lake, and Dr. Winkler could expand
14 more about that. But I do believe that that can happen
15 at Mono Lake.
16 Q And you weren't there in 1979 or in 1982 to
17 observe that, right?
18 A No, I wasn't. So Dr. Winkler would be the best
19 one to address that question.
20 Q Now, Dr. Winkler, you weren't at Mono Lake when
21 Twain was invaded by predators, were you?
22 A BY DR. WINKLER: Not in 1982, no. Maybe I should add
23 that I have seen predators on Twain. It was late in
24 the summer of 1981.
25 Q But when the gulls were dislocated in 1982, you

0270

01 weren't there to observe any marauding effects?

02 A That's correct. I was in Great Salt Lake and one
03 of my senior field assistants was managing the Mono
04 Lake operation.

05 Q Isn't it true that your senior field assistant was
06 Virginia Norris (phonetic) at the time?

07 A That's correct.

08 Q And she went out to Twain Island with Dr. Jehl to
09 investigate; is that right?

10 A I think they made a trip out there at some point.
11 I don't remember the timing of the trip.

12 Q Do you remember the results of the trip?

13 A I can't remember -- I would have review my notes
14 and her notes. I remember they discovered that there
15 were no -- or very few gulls nesting there and that
16 that surprised them.

17 Q That's not consistent with your marauding
18 scenario, is it?

19 A Could you tell me why?

20 Q Well, if there aren't any gulls nesting there,
21 then there's no gulls marauding shifts and --

22 A Oh, the very reason that surprised Virginia is
23 that there were gulls standing there, but they weren't
24 nesting. So those gulls had been disturbed apparently,
25 and those would be the very same birds that would have

0271

01 started this whole snowballing marauding effect going.

02 Q And they were just standing there?

03 A Well, they were roosting there and that's where
04 they were resting. So that from Krakatoa (phonetic)
05 without having visited the island before, that it
06 looked like there were gulls on Twain.

07 Q Gulls stand all around Mono Lake on the shore
08 lines, don't they, when they aren't nesting?

09 A Yes.

10 Q Now, Mr. Shuford, you testified that you found a
11 correlation between the degree of particular
12 infestation and chick mortality at the lake; is that
13 right?

14 A BY MR. SHUFORD: That's correct.

15 Q And I have it here if you'd like to see it, but
16 I'd like to read you from the Corey appendix which is
17 written by you, Dr. Winkler.

18 A BY DR. WINKLER: That's correct.

19 Q "The substrate type of newly exposed island can be
20 important to the gulls in that the ticks appear reliant
21 on bits of loose stone and debris beneath which they
22 spend the winter months and daylight hours. The lack
23 of such shelters on such islands like bottom sediments
24 will probably insure low or negligible tick
25 infestations there."

0272

01 The ticks that we have been talking about, the
02 ticks that infest the Mono Lake gulls are ticks that
03 are found on the rocky islands; is that right?

04 A BY MR. SHUFORD: That's where I've observe them on
05 the Negit Islands where I've done my studies.

06 Q Are you aware of any reports of tick infestation
07 on the Paoha Islands?

08 A I think there have been some observations of ticks
09 there. I don't think there's any major activity
10 there. I also understand there's been some
11 observations of ticks on Negit.
12 Q On Negit Island?
13 A That's correct.
14 Q And Negit Island's a rocky island?
15 A Parts of it are rocky and parts of it are sandy as
16 well.
17 Q All other things being equal, wouldn't you agree
18 with me that it's not a good idea to concentrate gulls
19 on an island which is conducive to tick infestations?
20 A If you were to concentrate them -- are you just
21 talking about one island?
22 Q On any island. One island, primarily.
23 A Well, theoretically --
24 Q We've been testifying about gulls on Negit and the
25 EIR process has identified Negit as a primary site of
0273
01 gull expansion, I guess. And so that's the context in
02 which I'm asking the question.
03 A In my earlier testimony, what I testified to is
04 generally diseases of parasites. Parasites are density
05 dependent factor and what I mean by that is as the
06 population increases and the density of the gulls
07 increase on an island, they would be more likely to be
08 affected by disease and easier for transmission and so
09 forth. If birds are on Negit Island, the density of
10 gulls would actually be lower because the size of the
11 island is so great and they could expand over more
12 area. In that respect, they'd probably be less likely
13 to be affected by ticks.
14 Q So gulls don't distribute themselves evenly over
15 island, do they?
16 A Not necessarily evenly, but there's a huge amount
17 of area that's in the map in the Corey report and on
18 the Draft EIR that show where the gulls are nesting.
19 Q And they concentrate themselves in little sites on
20 the island?
21 A I think Dr. Winkler could better answer that
22 question. I've never actually observed, you know,
23 large-scale nesting on Negit Island.
24 Q Let me ask you about the Paoha Islands. Isn't it
25 true that in the densest colony on the Paoha Islands,
0274
01 the gulls occupy only a portion of the islands?
02 A They do on that island. On the islets I've
03 observed, the Paoha Islets, I've made a number of trips
04 around those islands. They do concentrate on what's
05 been termed rugose or rough substrate.
06 Q So just by knowing that Negit is a large island
07 doesn't allow us to predict gull density on that
08 island, does it?
09 A No, it doesn't. But we have a historical record
10 of mapping where these birds were and the approximate
11 size and populations in the various areas that
12 Dr. Winkler has mapped.
13 Q Is there any guarantee they'd go back to those
14 particular areas?
15 A There's no guarantee. I think there's high

16 likelihood that they would, you know, choose areas of
17 habitat that they preferred in the past.
18 Q When they recolonized Negit after being dislocated
19 from Negit, they didn't go back, did they?
20 A Some of the birds did.
21 Q A large proportion or a small proportion?
22 A A small proportion.
23 Q And, of course, the predation effect on an island
24 is independent of the density on that island, in it?
25 A I don't think you could say that. When Negit was

0275

01 reinvaded by coyotes, I believe in '89, it took quite
02 awhile for the gulls to abandon that island. And I --
03 my suspicion, the reason for that, is that at that
04 time, there were several small colonies that were
05 widely separated on Negit Island so that they would be
06 infrequently exposed to coyotes compared to if the
07 coyotes had gone to a small island or an island was
08 continuously occupied across the whole range of that
09 island.
10 Q I'd like to turn to the history of the Mono Basin
11 colony. In your written testimony, Mr. Shuford, as I
12 understand it, you argued that there is a need to
13 protect Negit Island because it was so important to the
14 gulls historically and because it was, quote, the
15 island of choice during the period of greatest
16 population increase in the 20th century. Those are
17 historical reasons for protecting Negit; is that right?
18 A That's correct.
19 Q But in it more reasonable to base your decisions
20 about the gull colony and its future and its protection
21 on actual needs rather than historical accidents?
22 MR. DODGE: Objection, unintelligible.
23 HEARING OFFICER DEL PIERO: Did you understand the
24 question?
25 MR. SHUFORD: I'm not sure exactly what the

0276

01 question was.
02 HEARING OFFICER DEL PIERO: Why don't you restate
03 the question, Ms. Goldsmith?
04 Q BY MS. GOLDSMITH: The question was premised by my
05 understanding of your statement in your testimony that
06 the reason to protect Negit is because it was important
07 historically and the gulls chose it during the 20th
08 century. My question to you is isn't it more
09 reasonable to select -- to base management decisions on
10 what the gulls need now and in the future rather than
11 on historical precedent?
12 A BY MR. SHUFORD: Well, I guess you should take all
13 factors into consideration and if you do, the lake is
14 raised to 6385, 6383.5 feet or above, Negit Island will
15 provide the largest amount of gull habitat, suitable
16 gull habitat to the gulls.
17 Q If it were possible to protect the island so that
18 you had a broad panoply of habitat types and numbers of
19 islands, wouldn't that been the most ideal situation?
20 A Did you say the Paoha Islets or the Paoha Islands?
21 Q Paoha Islets, and I'm asking you to assume that
22 they could be protected.
23 A Well, it still would not provide the maximum

24 amount of habitat even if they could be protected from
25 erosion. Negit Island is by far much greater in size

0277

01 than those islets combined.

02 Q Do the islands that currently exist at the lake
03 provide an adequate amount of habitat for the gulls
04 that are there now?

05 MR. DODGE: Objection. Calls for a conclusion,
06 ambiguous as to, quote, adequate, end quote.

07 MS. GOLDSMITH: Mr. Shuford is holding himself out
08 as an expert. There are gulls at Mono Lake now, and I
09 believe he's qualified to render an opinion as to
10 whether or not he thinks the existing habitat is
11 adequate --

12 HEARING OFFICER DEL PIERO: I'm going to overrule
13 the objection. Go ahead and answer the question.

14 MR. SHUFORD: I'm still a little unclear on what
15 adequate is. The birds that are there are nesting
16 there so in that term, it is adequate. It provides an
17 excellent amount of habitat which I would say is
18 adequate for supporting the gulls as the gulls would
19 like to do, I would say the higher amount of habitat.
20 And currently, we were right at a lake level right now
21 where a large part of the population is threatened.

22 Q BY MS. GOLDSMITH: Focusing on the existing gull
23 population rather than some potential expansion of the
24 gull population and assuming that Twain and Java were
25 adequately protected, wouldn't it be better to provide

0278

01 a natural number of islands than to raise the lake and
02 limit the habitat that's available to them?

03 A BY MR. SHUFORD: Raising the lake would not limit the
04 habitat, it would increase the habitat if Negit becomes
05 an island again.

06 Q It would limit the habitat choices.

07 A Well, habitat -- it would actually increase their
08 choices. They would have the choices of grease wood
09 scrub where two-thirds of birds were nesting back in
10 1976.

11 Q Would they have the choice of the Paoha Islets?

12 A If we were at the upper levels, the 6385
13 alternative, the Paoha Islets would be lost.

14 Q Part of your testimony included the notion that
15 Negit was the island of choice during the period of
16 greatest population increase, the 20th century. But
17 the Paoha Islets weren't available at all during that
18 time, were they?

19 A No. They weren't, to my knowledge.

20 Q And Paoha Island had a goat farm on it, didn't it?

21 A It did for a short period and then it was
22 abandoned.

23 Q Leaving predators aside, do you think it's
24 reasonable to suppose that the gulls left Paoha Island
25 for reasons related to habitat?

0279

01 A I really can't speak to that issue with any
02 knowledge. All I know is, you know, what the
03 historical record shows and during that period after
04 the goat farm was no longer in operation, that the
05 gulls increased dramatically at Mono Lake and they

06 increased largely on Negit Island. Exactly why they
07 left Paoha Island is unclear, but it would suggest that
08 other factors being equal, that Negit was preferred
09 over Paoha.

10 Q Now, you have written, together with Dr. Winkler,
11 a historical paper on the gull colony at Mono Lake;
12 isn't that right?

13 A That's correct.

14 Q And I believe that you relied in part on J. Ross
15 Brown and described him as a highly respected observer;
16 is that right?

17 A That's what was reported in another reference.

18 Q And J. Ross Brown (phonetic) reported, "In some
19 parts of the main island, the open spaces between the
20 rocks are so thickly covered with eggs that the
21 pedestrian is at a loss to find a vacant spot." He was
22 talking about Paoha Island, wasn't he?

23 A I believe so.

24 Q And this was in the 1860s; is that right?

25 A That's correct.

0280

01 Q And Dr. Jehl has written the initial -- in the
02 earliest report colonization by California gulls at
03 Mono Lake was on Paoha Island, wasn't it?

04 A I can take a second and refer to his table. I
05 can't remember the exact thing there.

06 MR. HERRERA: Ms. Goldsmith, excuse me, your time
07 has elapsed.

08 MS. GOLDSMITH: I would ask for another 20
09 minutes.

10 HEARING OFFICER DEL PIERO: Has anyone advised you
11 of how much time Mr. Moskovitz had?

12 MS. GOLDSMITH: No. I was in there awhile. I
13 think in light --

14 HEARING OFFICER DEL PIERO: I'm inclined -- before
15 you -- I'm inclined to grant you an additional 20
16 minutes. Let me point out that at the end of that 20
17 minutes, however, the total amount of time elapsed in
18 terms of examination of this panel will be what?

19 MR. HERRERA: One hour and 40 minutes.

20 HEARING OFFICER DEL PIERO: One hour and 40
21 minutes. Which is the longest amount of time with any
22 panel by any single party. Proceed.

23 Ladies and Gentlemen, let me point out that at the
24 end of this 20 minutes, we're going take a break.

25 Q BY MS. GOLDSMITH: Have you refreshed your

0281

01 recollection?

02 A BY DR. HERBST: I have refreshed my recollection.

03 This paper I'm referring to is called the History
04 of the California Gull, Mono Lake, California, by
05 Joseph R. Jehl, Jr., David E. Badd (phonetic), Dennis
06 M. Power and was published in Colonial Water Birds in
07 1984, and the table I'm referring to is Table One. And
08 what it says in Table One, there really -- there is a
09 location identified for the Brown sightings. In 1880,
10 the next one, there's no doubt Paoha Island -- there's
11 a large colony on Negit Island.

12 Q I'm going to hand you an excerpt from the Brown
13 article so that you can perhaps refresh your

14 recollection.

15 A I've read this passage.

16 Q Would you agree with me that it describes the gull
17 colony that I read citation about on Paoha Island?

18 A It's talking about these paragraphs at the bottom
19 of Column One and going on Column Two. I don't see any
20 reference to the particular island except for it
21 mentions -- it says these smaller islands and evidently
22 an extinct crater which I assume refers to Negit
23 Island.

24 Q Negit Island is smaller than Paoha.

25 A Yes. Considerably.

0282

01 Q And it has a crater on it?

02 A That's correct. Nowhere in here does it identify
03 where these gulls were actually observed.

04 Q It says they were on the larger island, doesn't
05 it?

06 A No. I don't see that here.

07 Q It refers to the main island?

08 A In what context?

09 Q Does it refer to the main island?

10 A It does say on some parts of the main island the
11 open spaces were covered with eggs, et cetera.

12 Q Assuming that it does refer to Paoha Island --

13 A Well, the previous paragraph says -- the first
14 part it says in some parts of the main island, the open
15 spaces between the rocks are so thickly covered with
16 eggs, et cetera. And in -- the paragraph at the end of
17 the first page, of this page, the first column it says.
18 immense swarms of gulls visit these islands, which I
19 assume means more than one island.

20 Q Isn't it entirely possible that Paoha Island was
21 the island of choice for the gulls originally?

22 A I don't see anywhere in the historical record that
23 that's implied or stated.

24 MS. GOLDSMITH: I'd like to have this marked and
25 I'd like to offer it as L.A. DWP next in order, and

0283

01 I'll provide copies tomorrow.

02 HEARING OFFICER DEL PIERO: Fine. 10 --

03 MR. SMITH: 103.

04 HEARING OFFICER DEL PIERO: 103.

05 MR. HERRERA: Mrs. Goldsmith, could you give us a
06 reference on that?

07 MS. GOLDSMITH: Sure.

08 Q BY MS. GOLDSMITH: Dr. Winkler, you criticized
09 Dr. Jehl's slide show concerning habitat preferences of
10 the gulls. And you offered your opinion that his
11 conclusions were based on observations where gulls
12 don't have a choice between nesting on islands and
13 nesting on the mainland; is that right?

14 A BY DR. WINKLER: Yes. I don't think I criticized it
15 as a slide show, though.

16 Q A matter of interpretation, perhaps.

17 I'd like to show you L.A. DWP Exhibit 81.

18 A Great, you have the pictures?

19 Q I have the pictures.

20 A Oh, good, I'd like to see them.

21 Q These are the pictures we made from the slides.

22 HEARING OFFICER DEL PIERO: Mr. Pollack advised me
23 there's no trout habitat here.
24 MS. GOLDSMITH: Oh, I don't know.
25 HEARING OFFICER DEL PIERO: What are these good
0284
01 for?
02 MS. GOLDSMITH: Would you pull out 81-A?
03 DR. WINKLER: Where are they labeled, please?
04 Q BY MS. GOLDSMITH: On the back. 81-O, which looks
05 like this. 81-P, which is the next one. Actually, if
06 I could have some assistance -- Dr. Jehl, could you
07 come help me here?
08 HEARING OFFICER DEL PIERO: Ms. Goldsmith, who was
09 the photographer of these?
10 MS. GOLDSMITH: I believe it was Dr. Jehl. They
11 aren't fuzzy, are they?
12 HEARING OFFICER DEL PIERO: No. They're actually
13 very nice. I was going to compliment whoever did it.
14 MR. DODGE: I invited Dr. Jehl to join the panel
15 this afternoon despite Mr. Frink's admonition that they
16 didn't want to go issue by issue.
17 HEARING OFFICER DEL PIERO: What else,
18 Ms. Goldsmith? Is that it?
19 MS. GOLDSMITH: I'm working on it.
20 HEARING OFFICER DEL PIERO: I'm sorry. I don't
21 mean to rush you. 81-Y, 81-JJ.
22 HEARING OFFICER DEL PIERO: Mt. St. Helens was
23 going off when this was taken; is that right?
24 MS. GOLDSMITH: I guess so.
25 HEARING OFFICER DEL PIERO: These are the same
0285
01 photos that were presented during the course of your
02 direct?
03 MS. GOLDSMITH: Yes. And 81-C.
04 Q BY MS. GOLDSMITH: And if you'll pull out NAS 233.
05 Now, I'm going to ask you to assume that these are
06 all islands, which is what Dr. Jehl testified to
07 earlier. 81-Q is labeled Gunnison Island, Great Salt
08 Lake, and the legend says, "The large spots are
09 pelicans, the small spots are gulls." Do you see the
10 small spots?
11 A BY DR. WINKLER: Yes, I do.
12 Q Are they nesting in scrub?
13 A Well, I'd have to be convinced, first of all, that
14 they're nesting, and if they are nesting there, they're
15 not nesting in very dense scrub, no.
16 Q And there is vegetation available on that island,
17 in there?
18 A Yes. And when I was on Gunnison Island, they were
19 nesting in that vegetation.
20 Q Okay. I would like you to look at L.A. DWP 81-W,
21 which is Honey Lake, California?
22 A I'm sorry. I didn't hear the letter.
23 Q W.
24 A W. That one we didn't pull. Okay.
25 Q Where are the bulk of the birds? Are they in the
0286
01 vegetation or out on the sand bar?
02 A Well, certainly the pelicans are out on the sand
03 bar. I don't know exactly what you mean by the -- by

04 the sand bar, you mean the --
05 Q Okay. Look at it in conjunction with 81-A, which
06 shows Brushy Island.
07 A And you're representing these are the same place?
08 Q I believe so.
09 A They don't look like the same place.
10 Q Well, they're different parts of the same island.
11 One part is brushy and the other part in, and where are
12 the gulls?
13 A BY MR. SHUFORD: Can I answer this question?
14 My experience at Honey Lake -- and the one that is
15 really scrubby which the marked A is the traditional
16 site of the black ground and snowy egret colony. And
17 this island is the one that is most frequently
18 connected to the land. I've been on this island in the
19 mid eighties and saw the -- there were dead chicks all
20 over -- there was coyote -- not all the nests, but
21 quite a few of the nests. So that might be a reason
22 why the gulls wouldn't want to nest on that island.
23 A BY DR. WINKLER: I'd also like to add that -- let's
24 see. This is W. The vegetation in W -- I'm not sure
25 what it is, but it looks like the plant salsola
0287
01 (phonetic) to me, which is tumbleweed, which I've
02 never seen gulls nesting in because if I were a gull, I
03 wouldn't nest in it because it grows throughout the
04 summer, and by the time the chicks fledge, it would
05 choke them out. So I don't think that's the kind of
06 habitat I have in mind when I'm talking about scrubby
07 habitat.
08 Q Let's look at 81-JJ. Pyramid Lake, Nevada.
09 Again, assuming that's an island.
10 A Which, if this is Anapo (phonetic), it has not
11 always been.
12 MR. DODGE: I'm sorry, Counsel. What number?
13 MS. GOLDSMITH: JJ.
14 HEARING OFFICER DEL PIERO: I didn't hear the last
15 response.
16 DR. WINKLER: I said if this is Anapo Island, it
17 has not always been an island.
18 Q BY MS. GOLDSMITH: And there are gulls on it?
19 A BY DR. WINKLER: Yes, they are.
20 Q And they're not in the scrub.
21 A Yeah. I'm not even sure they're nesting. I would
22 point out if they were in the scrub, you wouldn't see
23 them in this picture.
24 Q Although, we have seen them in other pictures
25 where they've been nesting in scrub, at least according
0288
01 to the exhibits that were offered earlier.
02 A Yeah. But those pictures were much closer and
03 taken from a different angle. This is taken from up
04 above. If we'd been down below, I mean, at the level
05 of the gulls, I think the likelihood -- and looking up
06 into the scrub, the likelihood of seeing any birds that
07 were in the scrub were much higher. I don't mean to
08 say that if Jehl was there and looking at this, I don't
09 question it if they weren't in this scrub. I'm just
10 saying from this photograph, I can't tell.
11 Q Lastly -- let's skip P and O. Lastly, I'd like

12 you to compare NAS 233. Do you have that Mr. Del Piero?
13 HEARING OFFICER DEL PIERO: Which one is NAS --
14 turn around and show it to me. Is that one of ones
15 that was submitted earlier?
16 MS. GOLDSMITH: Yes.
17 MR. DODGE: Earlier today.
18 HEARING OFFICER DEL PIERO: I've got it.
19 MS. GOLDSMITH: And 81-C.
20 DR. WINKLER: Yes. I'm comparing these two.
21 Q BY MS. GOLDSMITH: Now, in 1928 the scrub was much
22 lower, wasn't it?
23 MR. DODGE: Objection, unintelligible.
24 HEARING OFFICER DEL PIERO: Wait. Wait. Wait.
25 It can't be unintelligible unless I know what she's
0289 asking about.
02 MR. DODGE: I don't agree with that.
03 HEARING OFFICER DEL PIERO: Somehow, Mr. Dodge, I
04 don't find that difficult to believe that you wouldn't
05 agree with that. Hold on for one second. 81-C? Is
06 that where you are now?
07 MS. GOLDSMITH: 81-C and NAS 233.
08 HEARING OFFICER DEL PIERO: 81-C.
09 MR. SHUFORD: It's possible --
10 HEARING OFFICER DEL PIERO: What was the
11 unintelligible thing that Mr. Dodge had difficulty
12 understanding?
13 MS. GOLDSMITH: I asked the witness whether or not
14 in the 1928 photo -- perhaps the comparison is what you
15 missed. Compared to the 81-C photo --
16 MR. DODGE: The reason I missed it is it wasn't in
17 the question.
18 Q BY MS. GOLDSMITH: Wasn't the scrub in 81-C much
19 denser, higher than in 1928?
20 A BY DR. WINKLER: You know, I'm getting a whole big
21 deja vu all over again. We went through this in
22 Finney's court, and the trouble here is you're giving
23 me two pictures with the same rocks in it, much to your
24 credit, but the picture's taken from a different spot
25 on the island. Look at 233 -- is that what that is?
0290
01 So look up slope from those big two rocks that are the
02 good landmark and can you see that there's an area of
03 sparse vegetation in front of the rocks and as you move
04 up slope, it gets denser. And we don't know what's
05 going on as we go downslope from there.
06 I would maintain that from the angle that the
07 picture's taken in C, we're closer to the lake by
08 evidence of being able to see the islets in the
09 background, and we're looking at those rocks from a
10 different angle. So I can't take this as any kind of
11 evidence of the relative density of shrubs now as
12 opposed to 1928. And if you look up slope in this
13 Exhibit C, you'll see we actually get an area of lower
14 density there, so you could show me all kinds of
15 pictures and have any kind of impression of changes in
16 density and shrubbery, unless you show me two pictures
17 that are absolutely taken from the same place, I can't
18 take it as evidence either way.
19 I'd be very interested to know whether the density

20 is different, but I just don't think this is evidence
21 one way or the other.

22 Q They do show different heights in density of
23 vegetation?

24 A From different angles and different places of
25 taking the photograph, that's right.

0291

01 Q And seagulls are site faithful in their nesting;
02 isn't that right?

03 A Most gulls are site faithful.

04 Q California gulls. Sorry. They're not seagulls.

05 A I'm trying get my two-year-old daughter to start
06 saying gulls, not seagulls, it's one of my pet peeves.

07 Q I'm delighted to hear that.

08 Didn't you testify, Dr. Winkler, in South Lake
09 Tahoe, speaking of *deja vu*, in 1990 that the advantage
10 of scrub is fairly minor in most of these?

11 A Yeah. It's likely to be as long as the
12 temperatures are not really high and other things being
13 equal, I think relative to something like predation, it
14 is a minor thing.

15 Q Are you aware of any year at Mono Lake where heat
16 was the cause of chick mortality?

17 A To use the word "cause" is pretty strong and we
18 try to avoid that, "we" being scientists, but I can
19 tell you that there's a very strong correlation between
20 air temperatures and daily mortality rates for chicks
21 in 1981.

22 Q Well, was the cause of death in 1981 the heat or
23 was it the low food supply?

24 A I can't say that. I think it's actually a
25 combination of the two, is the most likely explanation.

0292

01 Q Other than 1981, is there any other year in which
02 you are aware that heat has caused chick mortality?

03 A I know of no other year in which the evidence is
04 so strong.

05 Q In the past 13 years, the gulls at Mono Lake have
06 not nested in scrub, have they?

07 A The past 13 years. I think some have nested on
08 Negit, some have nested in scrub.

09 A BY MR. SHUFORD: I'll jump in here. There's also
10 been birds nesting on Twain Island and Tahiti Island
11 that were nesting in small patches of scrub that have
12 grown up on those islands.

13 Q Is that scrub similar to the type that's found on
14 the lake?

15 A Yes, it is, it's grease wood scrub.

16 Q Now, just a couple of minor -- minor points.

17 Dr. Winkler, I believe you testified that
18 Johnston's 1940 population numbers should not be used
19 in considering baseline or pre-diversion figures for
20 Mono Lake; is that right?

21 A BY DR. WINKLER: They weren't 1940 numbers. They
22 were numbers from the early fifties, and I think
23 Dr. Jehl corrected that in his testimony. I -- it was
24 our impression from talking to Dr. Johnson he'd rather
25 not see them used in that way.

0293

01 Q What numbers were they?

02 A I can't remember. All I remember is that when you
03 look at his field notes and when we talked to him, they
04 were numbers that differed by -- he bracketed them by a
05 factor of two, and I believe the number was 5 to
06 10,000, but it may have been 2500 or 5,000. I could
07 look in the notes.

08 Q You yourself wrote that the gull population was as
09 few as 1500 nesting adults as late as 1951 in a paper
10 you published in 1993 with Dr. Zink (phonetic); is that
11 right?

12 A I said that I think I cited the work of Young at
13 that time, and those are the numbers he reported.

14 Q And you accepted those numbers?

15 A I accepted those numbers -- well, I used those
16 numbers -- I cited those numbers. So I guess you could
17 say --

18 Q Didn't you use that number as the basis for your
19 conclusion there's a genetic bottleneck at Mono Lake?

20 A If you'll remember, we were looking for a genetic
21 bottleneck and found precious little evidence for it.

22 I used those numbers as an indication that the
23 population had been much smaller in the past.

24 MR. HERRERA: Ms. Goldsmith, your time has
25 elapsed.

0294

01 MS. GOLDSMITH: All right.

02 MR. MOSKOVITZ: Mr. Del Piero, I forgot to offer
03 again exhibits that we marked during my
04 cross-examination in evidence. Could I do that now to
05 get it out of the way?

06 HEARING OFFICER DEL PIERO: Mr. Flinn, you bounced
07 up very quickly, why?

08 MR. FLINN: Because I have an objection to one of
09 them.

10 HEARING OFFICER DEL PIERO: Let's hear about it.

11 MR. FLINN: It's the Bradley report Exhibit 100,
12 and my objection basically turns on the Water Board's
13 view of out-of-court hearsay opinions by scientists.
14 Dr. Bradley (phonetic) has, from time to time, been
15 funded by the Department of Water and Power to do work
16 and to give testimony, but for some reason they didn't
17 see fit to bring him here and have him testified and be
18 cross-examined on this report, so I don't think it
19 ought to come into evidence. The only thing it was
20 used for was this witness had seen it and disagreed
21 with it.

22 HEARING OFFICER DEL PIERO: Mr. Moskovitz?

23 MR. MOSKOVITZ: Mr. Del Piero, this is a report
24 that is cited in a report that Mr. -- Dr. Herbst
25 co-authored with Dr. Bradley (phonetic), and he cited

0295

01 it, and he mentioned that particular point in his own
02 report. It seems to me that that makes it appropriate
03 to have it received. As an expert, he cited it.

04 MR. FLINN: If I could --

05 HEARING OFFICER DEL PIERO: Mr. Flinn?

06 MR. FLINN: just a brief response to that. The
07 paper itself that was cited has not been introduced
08 into evidence. The paper itself is not something that
09 has -- was used for any purpose in this proceeding

10 other than to bootstrap this Bradley (phonetic) paper.
11 The fundamental point to this is we will be deprived of
12 the right to cross-examine this witness, which there's
13 absolutely no reason why, if they wanted to call him,
14 they could have, to testify here, if they wanted the
15 actual truth of the matter to be asserted. I have no
16 problem with what's already been in the record, that he
17 disagrees with Dr. Bradley (phonetic) on this point,
18 that he disagrees with one of the scientists in one of
19 the thousands of articles he cited in his history as a
20 scientist. That's already in. We don't need the
21 report itself.

22 MR. FRINK: Mr. Del Piero?

23 HEARING OFFICER DEL PIERO: Mr. Frink? Come up
24 here.

25 I'm inclined to allow the document to be admitted
0296

01 into the record, recognizing that the witness disagreed
02 with the assertion that was made by Counsel for Los
03 Angeles Department of Water and Power in terms of its
04 proposal. I'm not particularly motivated by the
05 justification, however, that because Dr. Herbst
06 participated in the preparation of the report, that
07 somehow that constitutes justification for the
08 incorporation of this into the record.

09 I am motivated, as I have been regularly
10 motivated, by affording all of the parties the maximum
11 opportunity to introduce as much evidence, albeit
12 hearsay evidence into this record so that the five
13 members of the State Water Resources Control Board are
14 afforded the absolute maximum amount of information
15 regardless of its condition so that we can fully
16 deliberate and ultimately decide this issue that is of
17 tremendous importance, not only to the parties here,
18 but obviously, to all of the citizens of the State of
19 California.

20 So I'm going to allow it into the record,
21 recognizing that its hearsay, and I think, if everyone
22 checks back over the course of the record to date, that
23 that is not a change in position for this Hearing
24 Officer nor do I intend to change that position in the
25 future.

0297
01 We will be on break for about ten minutes and then
02 we will come back and try to move through this as
03 quickly as possible.

04 (L.A. DWP Exhibits Nos. 99,
05 100, 101, 102, were admitted
06 into evidence.)

07 (Whereupon a short recess was taken.)

08 HEARING OFFICER DEL PIERO: Ladies and Gentlemen,
09 if you take your seats, we can start anew.

10 Ms. Cahill?

11 CROSS-EXAMINATION BY MS. CAHILL

12 Q Good afternoon. I'm Virginia Cahill. I'm
13 attorney for the California Department of Fish and
14 Game, and I have just a few questions for Dr. Herbst.
15 I'll let you catch your breath and get the microphone.

16 Do you believe that the Mono Lake ecosystem is in
17 a degraded state with regard to biological diversity

18 as compared to its pre-diversion condition?

19 A BY DR. HERBST: Yes. If you define "degraded" as a
20 loss of species compared to that earlier condition.

21 Q And what do you base your conclusion on?

22 A The fact that there are organisms that were
23 collected in the past at Mono Lake that apparently were
24 fairly common, a couple of species of rotifers, and
25 there were apparently others as we begin to examine

0298

01 more of the fossil evidence that may make it clear that
02 there were more species in the lake at higher lake
03 levels than we find under current conditions.

04 Q Given a sufficient reduction in Mono Lake
05 salinity, do you believe it's physically feasible that
06 some of those extirpated species might reestablish
07 themselves in Mono Lake?

08 A Certainly.

09 Q And what would be the mechanism for them to
10 rearrive at the lake?

11 A Well, there's several mechanisms of recolonization
12 that organisms like the rotifers have or that certain
13 kinds of algae have that may, in fact, be an important
14 and rich contributor to Mono Lake, and that is through
15 resting stages that can be deposited in the old lake
16 sediments that are up on higher lake shores that can be
17 reactivated, much like seeds when they get watered.
18 They regerminate once they're exposed to water and
19 favorable conditions for growth.

20 Moreover, there are other habitats that are around
21 the lake basin that still support waters at lower
22 salinities where these organisms still occur, and they
23 could, by the action of wind, also be removed from
24 those kinds of basins, either in this resting stage
25 form or in living forms in water spray and be carried

0299

01 into the lake. We're talking about micro organisms
02 here.

03 Q Yes. And do you have a recommended Mono Lake
04 level which might allow the restoration of biodiversity
05 at Mono Lake?

06 A Not specifically that's a recommendation for
07 biodiversity, but my recommendation for the
08 optimization of productivity at the lake would be
09 elevations between 6390 and 6400. At those conditions,
10 it should permit restoration of conditions that would
11 allow the growth of many of these organisms that no
12 longer exist in the lake.

13 MS. GOLDSMITH: Thank you very much, Dr. Herbst.
14 I have no questions of the rest of the panel.

15 HEARING OFFICER DEL PIERO: Thank you very much.
16 Mr. Roos-Collins is gone. We have no one here on his
17 behalf.

18 Mr. Valentine?

19 MR. VALENTINE: Thank you. I take it
20 Mr. Roos-Collins is taking my example that I tried to
21 set last night.

22 HEARING OFFICER DEL PIERO: I think so.

23 CROSS-EXAMINATION BY MR. VALENTINE

24 Q Thank you, Gentlemen. My name's Mike Valentine,
25 and I'm the Staff Counsel of the State Lands

0300

01 Commission. I have a series of questions which I
02 believe still will be under 20 minutes.

03 Dr. Winkler, you were asked by Ms. Goldsmith a
04 series of questions on historic suitability -- maybe
05 it was Mr. Shuford who was asked, historic suitability
06 of Paoha Island and whether or not at some point in the
07 past that was the main colony. I don't want to get
08 into that. I don't care about it.

09 My question is at the present time is Paoha
10 suitable or not as a significant site for a gull
11 colony?

12 A BY DR. WINKLER: All I can do is use the gulls as an
13 indication of that and basically restate what
14 Mr. Shuford said earlier and that is, if you look at
15 the record in the 20th century, the big expansion of
16 the Mono Lake colonies happened on the Negit Island
17 and not on Paoha where at least for a large part of
18 that time, it's been available in what would appear to
19 be very similar to its present state.

20 Q And there are significant potential benefits, I
21 take it, for the gulls for Negit Island over Paoha? If
22 you agree with that question, I think you do, could you
23 summarize them for us, please?

24 A I do think Negit is preferable habitat and as --
25 trying to interpret what the gulls see in that island

0301

01 that they may not see in Paoha, the biggest difference
02 that I can see has been the presence on Paoha of
03 coyotes over the years off and on and maybe more
04 importantly or at least more constantly the fact that
05 the substrate there is much lighter and much more
06 easily moved around by wind than it is on Negit Island.

07 Q I believe you were also asked, Dr. Winkler,
08 wouldn't it -- by Ms. Goldsmith, wouldn't it be better
09 to provide gull habitat to manage the lake for gull
10 habitat according to what the gulls need? Do you
11 recall that series of questions?

12 A I think those were questions directed to
13 Mr. Shuford, but I remember those questions, yes.

14 Q From what I interpret your last response to mean,
15 rather than managing the lake according to what the
16 gulls need, we should let them tell us; is that
17 correct?

18 A Well, I think in the absence of anything else, the
19 gulls are certainly the best judge.

20 Q Would either you, Dr. Winkler or Mr. Shuford,
21 describe to the Hearing Officer the behavior of a
22 coyote when it invades a colony to eat? What I'm
23 getting at, does it go seize a prey, take it somewhere
24 and eat it, or is there something more destructive that
25 happens?

0302

01 A I guess -- I don't know if David's seen coyotes
02 enter the colonies. I've seen them enter colonies at
03 Mono Lake and Great Salt Lake. The typical behavior is
04 that they come into the colony and if there are chicks
05 about, they'll start grabbing and killing chicks and
06 running about in the colony creating a great deal of
07 disturbance around where they are. And basically,

08 then, eventually carrying a chick off, but oftentimes
09 leaving other dead chicks behind.

10 Q Could you explain for us -- I think you have in
11 several different points in your testimony, but could
12 you -- and in one breath or two, explain to us the
13 potential benefits that you believe scrub habitat has
14 over other habitats at Mono Lake?

15 A I think that the scrub habitat in hot years
16 provides the birds with shade and the developing chicks
17 with shade, thus freeing up some of the adult's time to
18 be out foraging. I should add that it's probably good
19 for the adults as well to have a source of shade.

20 Q Mr. Shuford, you were asked questions about ticks
21 and tick infestations. Is it true that some habitats
22 at Mono Lake are more infested with ticks than others?

23 A BY MR. SHUFORD: Yes, that's correct.

24 Q Do you know where these are?

25 A Well, it can vary from year to year. There are
0303 01 certain islands on the Negit Island where we do our
02 studies that traditionally have higher ticks, tick
03 levels than other islands, Norway in particular is one.

04 Q And it has higher tick counts, I take it, than
05 Negit?

06 A I couldn't answer that directly because I haven't
07 measured the ticks loadings on chicks on Negit.

08 Q Ms. Goldsmith began her series of questions of
09 you, Mr. Shuford, by asking about the relative security
10 which can be afforded gulls or nesting gulls from
11 coyotes. Do you recall those series of questions?

12 A Yes, I do.

13 Q I think your answer was while there was no
14 absolute security, there's relative levels of
15 security. Is that fairly reasonably accurate?

16 A I think that's correct. You can liken it to a
17 castle. You pull up the drawbridge and build a big
18 moot around it, and you're going to be a lot safer from
19 attack than if you don't do that.

20 Q And the deeper and/or wider the moot is, the more
21 security is provided?

22 A I think that's correct.

23 Q At some point, even though it's not physically
24 impossible for coyotes to go there, the cost benefit
25 analysis for them doesn't pencil out?

0304 01 A I think that is a driving factor. In other words,
02 if the coyotes are going to go to an island, presumably
03 they're going to do it for a good reason. And it is
04 energy, you know, expensive to be swimming long
05 distances in a lake and then getting back, particularly
06 if that island can't support you for a long time.

07 Q In other words, if there's no fresh water on
08 there, they can't stay?

09 A That's right. Most of the islands except for
10 Paoha do not have a fresh water source.

11 Q So in that respect Paoha Island at the present
12 time is not comparable to the other islands, is it?

13 A No. It's not and for that reason the coyote
14 population has been able to maintain itself there.

15 Q Dr. Herbst, I have only a couple of short

16 questions for you. With regard to the Bradley
17 (phonetic) report that was just recently admitted into
18 evidence, as I understand that, based -- admittedly,
19 and I think I understand on the most cursory readings
20 of the summary, as I understand it, there is a
21 difference between you and Dr. Bradley (phonetic) as
22 expressed in that paper on the effects of salinity on
23 body size. Did I get the gist of this right?
24 A BY DR. HERBST: That's right.
25 Q Despite that difference -- I direct to you Pages
0305
01 13 and 14 of the Bradley (phonetic) report. Do you
02 have that there? If not, I have it.
03 A Yeah, I do. Okay.
04 Q Even though there is this difference to which I've
05 alluded, Dr. Bradley (phonetic) obviously denotes that
06 salinity has seriously negative effects on the life
07 stages of the fly; is that correct?
08 A That's correct.
09 Q Back to you, I think, Mr. Shuford. It's been
10 established, I think, that until 1982, the Caspian
11 terns population at the lake at Mono Lake lived at
12 Twain Island; is that accurate?
13 A BY MR. SHUFORD: I believe it is. Dr. Winkler can
14 speak to that question better than I can.
15 Q Thank you. Please, Dr. Winkler.
16 A BY DR. WINKLER: Could you repeat the question just
17 about the dates?
18 Q In 1982 where the Caspian terns nesting at Twain
19 Island?
20 A If they were nesting anywhere, they were nesting
21 on Twain. I just can't remember precisely where they
22 nested.
23 Q Actually, I think I misspoke. They actually
24 nested up to 1982. My belief is that they nested there
25 until 1981.
0306
01 A I would have guessed that they would have left the
02 island when the gulls did in 1982.
03 Q And the gulls left in 1982 because of?
04 A Well, the presumption is because the island had
05 already been visited by coyotes late in the breeding
06 season of 1981, and we think it was visited again by
07 coyotes in the spring of '82.
08 Q I realize I'm hopping around here inexcusably. I
09 apologize for it, but here I go. As to the heat
10 loading for chicks, there were some questions about in
11 certain years, scrub habitat would be important to
12 gulls, especially hot years. Is that your testimony?
13 A That's correct.
14 Q Is it also true that during particular seasons of
15 years, there would be more need for scrub habitat than
16 in early seasons?
17 A Basically, before the eggs hatch, there's one bird
18 incubating the eggs and that bird basically takes care
19 of all the thermal regulatory needs of the developing
20 embryos. Once the chicks hatch, that's when they begin
21 to get out in the open world a little bit, and that's
22 when shade starts to get important.
23 Q And the gulls don't all breed and nest and lay

24 their eggs and hatch their eggs in unison, do they?

25 A No. Mr. Shuford could probably comment more

0307

01 directly on what the span of egg laying is. My
02 recollection is a lot cloudier than his, if you want
03 those numbers.

04 Q Could you briefly -- I don't think we need hours
05 and days, but --

06 A BY MR. SHUFORD: Well, I mean, the total period of
07 egg laying is rather extended because some birds lay
08 their eggs and then lose them. But most of the eggs in
09 the colony are laid within a relatively short period of
10 two to three weeks, and they usually start laying at
11 the latter part of April. And then, you know, we would
12 do nest counts during the later part of incubation,
13 which would be in late May, so at that point, there are
14 sort of more eggs being lost to predation and so forth
15 than are being laid.

16 Q Would either or both of you agree with me that the
17 importance of scrub habitat within an individual year
18 would be more important for late breeders than it would
19 be for early breeders?

20 A BY DR. WINKLER: I would say that's true if it is
21 true that temperatures continue to increase from, say,
22 late June up through late July. At Mono Lake, most of
23 the birds are fledging around mid to late July, so it's
24 only the late birds that would experience temperatures
25 much later than late July.

0308

01 Q Thank you. Again, I jump back to coyotes. I
02 apologize again. If -- Mr. Shuford, if a water barrier
03 to islands is maintained and -- for a substantial
04 period; that is, a period of years, would the number of
05 coyotes attempting to visit that island tend to drop
06 off?

07 A BY MR. SHUFORD: That's a hard question to answer.
08 I've never really studied coyotes, per se. But I
09 think, you know, it's a wide barrier in a long -- I
10 think there's not a lot of likelihood they'll get to
11 these islands. The record has really shown that the
12 islands were close to shore and close to the land
13 bridge, were the ones that the coyotes have visited.

14 Q The last question, even though it was a poor one,
15 had in its background two assumptions which I would
16 like you to agree or disagree with. And one is as
17 distances -- water distances go up that the coyotes
18 must travel, so does energy expended?

19 A That's definitely true. The longer distance you
20 have to travel, the more energy you have to spend,
21 muscle power and so forth.

22 Q And a second assumption. And even if a coyote had
23 learned to travel to those islands at low lake levels,
24 eventually it or its descendants would stop visiting
25 the island at higher lake levels. Do you agree or

0309

01 disagree that?

02 A I think that would be very, very likely.

03 Q If we were going to compare brushy and white rock
04 habitat, Dr. Winkler, wouldn't it be necessary for
05 the -- both types of habitats to appear at the same

06 distance from the surface of the water?

07 A BY DR. WINKLER: Yes. That's certainly one of the
08 variables that you'd want to control for.

09 Q So the slide show, Ms. Goldsmith's term, not mine,
10 is not necessarily relevant to an actual comparison of
11 what kind of habitat particular gull colonies would
12 choose if given the choice and all other things were
13 equal?

14 A That's exactly right and that's what I was trying
15 to say in my first statement today is really to
16 evaluate habitat choice, we need a very controlled set
17 of comparisons where we look not only at distance from
18 water, but also recency of the land bridge.

19 Q And also I believe you mentioned earlier that you
20 had some photographs taken in 1976 of nesting gulls?

21 A Yes, I do.

22 Q At the risk of incurring the rath of Mr. Dodge,
23 would you care to share those with us at this time?

24 A I don't have them with me. It wasn't until I was
25 on the airplane yesterday that I realized that slides

0310

01 were being shown, so I could provide those through
02 mail, if you'd like. I must say in anticipation of
03 doing that, that I don't think I have any pictures of
04 gulls on the ground at nests that are similar to what
05 we've seen. What I do have is actual shots of the
06 habitat area with gulls flying over it, and you'll just
07 have to take my word for it that that's where they were
08 nesting.

09 Q All right. Thank you.

10 Dr. Stine, I have one question for you. It was
11 mention earlier that at certain lake levels, including
12 one of the ranges we're studying here, the 6383.5
13 level, the Paoha Islets would disappear, would be under
14 water and perhaps lower?

15 A BY DR. STINE: As the lake rises, the Paoha Islets,
16 unlike the Negit Islets, will not only be submerged,
17 but they'll be beveled back. So this is due to the
18 fact that they are of a very soft easily erodible
19 nature and so a rise in lake level not only submerges
20 them, but more to the point, bevels them off. That is
21 correct.

22 At the 6383.5 foot alternative, they would be
23 completely lost. Indeed, as Dr. Jehl pointed out, at
24 the DWP offered alternative, they would also be beveled
25 off. It looks like we should probably not count on

0311

01 them in the long-term.

02 Q Can you tell me --

03 HEARING OFFICER DEL PIERO: Wait a second. I need
04 to ask Dr. Stine a question that keeps coming to mind
05 every time the Paoha Islets comes up. Is there a
06 substrate in the area of either the Negit Islets or the
07 Paoha Islets that provides habitat for brine fly?

08 DR. STINE: Yes. And Dr. Herbst and I have talked
09 about this. The brine fly larvae and pupae, and he may
10 want to -- may want to correct me there, but I believe
11 it's both the larvae and the pupae, attach themselves
12 to hardrock, including Tufa surfaces. Tufa forms and
13 indeed rings the hardrock of Negit Island. Most of

14 Negit Island is indeed hardrock, so most of it is Tufa
15 covered, and so we do have a fairly large amount of
16 hard substrate there on Negit Island.

17 The substrate that we find on most of Paoha Island
18 and indeed on the Paoha Islets, is more properly
19 characterized as mud stone, and in the report that I
20 did for the DEIR on substrate types, I conferred with
21 Dr. Herbst and his sense was, therefore it shows up in
22 the report, that mud stone is better than shifting sand
23 substrate like sand that would move around in waves,
24 but --

25 HEARING OFFICER DEL PIERO: But --

0312

01 DR. STINE: -- not as good as the hardrock
02 substrate or hard substrate as we've chosen to call
03 them.

04 DR. HERBST: Can I add something?

05 HEARING OFFICER DEL PIERO: Sure.

06 DR. HERBST: In the same sense that other
07 submerged objects in the lake, like dead vegetation,
08 particularly branches and woody material, can collect
09 this mineral gaylussite and that will become
10 transformed into calcium carbonate Tufa, in addition
11 that there also happen to a certain extent on mud
12 stone. I've seen some of the products around the
13 shores of -- where you have this kind of crust, if you
14 will, of tufaceous deposits that have obviously formed
15 over some of these relatively solid, quote unquote, mud
16 stone deposits. So they may also serve as a site for
17 the formation of this mineral.

18 HEARING OFFICER DEL PIERO: Last question. The
19 island, Dr. Stine, the unnamed island that you
20 characterized as being exposed as part of the bridge in
21 between Negit and the mainland, what's the material
22 that that island is made of?

23 DR. STINE: That, too, is composed of up-arched
24 lake sediments, but that has been beveled numerous
25 times by previous, by natural fluctuations of the

0313

01 lake. Paoha Island is very young and therefore it
02 hasn't undergone as much beveling, but that has been
03 beveled down. It's the same sort of material, and it
04 has some pumpice blocks on it. These pumpice blocks
05 that floated to place about 1700 years ago, there's
06 Tufa on the pumpice blocks but not on the substrate
07 surface, itself.

08 HEARING OFFICER DEL PIERO: Does this exposure,
09 because of the lower lake level, reduce the amount of
10 habitat available for brine flies in that area?

11 DR. STINE: Yes, although --

12 HEARING OFFICER DEL PIERO: Okay. The answer is
13 yes. Is it significant?

14 DR. STINE: It would -- it is not significant in
15 that there are a number of other things happening
16 around the lake as the lake drops, so it would be --
17 what's going on right there on the land bridge, itself,
18 would not be significant.

19 HEARING OFFICER DEL PIERO: I'm sorry,
20 Mr. Valentine. Please proceed.

21 MR. VALENTINE: No problem.

22 Q BY MR. VALENTINE: Dr. Stine, you mentioned that the
23 Paoha Islets are fairly new. Can you give me a feeling
24 for how long the Paoha Islets have been in existence
25 this time?

0314

01 A BY DR. STINE: Well, this is, indeed, the only time
02 they have been in existence. The island formed
03 approximately 300 years ago --

04 Q The main Paoha Island, the big island.

05 A That's the big island, and the islets themselves
06 are sort of a chaos of material that slid off the flank
07 of the island as the main island was coming in and
08 not -- I guess it was approximately 1960 is when the
09 Paoha Islets began to emerge from the falling lake. So
10 they -- the Paoha Islets have been in existence since
11 1960, though the sediment has been there for about 300
12 years.

13 MR. VALENTINE: That's all the questions I have.

14 HEARING OFFICER DEL PIERO: Thank you very much.
15 Mr. Valentine.

16 Mr. Gipsman, are you still here? Ms. Niebauer's
17 gone. She indicated she had no questions.

18 Mr. Haselton's gone.

19 Redirect?

20 MR. DODGE: Staff?

21 HEARING OFFICER DEL PIERO: I'm sorry. Mr. Frink,
22 forgive me.

23 MR. FRINK: I've got a thick skin. Don't worry.

24 HEARING OFFICER DEL PIERO: I know. You have to
25 around here.

0315

01 MR. FRINK: I really just have a couple of
02 questions.

03 CROSS-EXAMINATION BY THE STAFF

04 Q Mr. Shuford, you testified that it is likely the
05 coyotes would return to Paoha Island if they were
06 completely removed; is that correct?

07 A BY MR. SHUFORD: That's correct. That's based on
08 the evidence in 1985. They were removed and they have
09 returned.

10 Q Are you certain -- thank you. Are you certain
11 that they were removed in 1985, or is it possible that
12 some stragglers survived?

13 A I guess that's possible. The trapper that was out
14 there made multiple visits to that island in 1985, told
15 me they were gone.

16 Q Assuming that they could be --

17 HEARING OFFICER DEL PIERO: Was he paid?

18 MR. SHUFORD: He was employed by the U.S. Forest
19 Service in Lee Vining.

20 Q BY MR. FRINK: Assuming that the coyotes could be
21 completely removed and that the land bridging was not a
22 problem, because it has not been any land bridging with
23 Paoha Island, wouldn't it be less likely to have the
24 coyotes return to Paoha Island than to Negit or one of
25 the other islands that's near shore?

0316

01 A BY MR. SHUFORD: It would be less likely in terms of
02 getting there and how far it is to swim, but as far as
03 getting there and staying there, they'd be much more

04 likely to stay on Paoha because of a combination of a
05 prey sources other than gulls to keep them there year
06 round, plus the water source.

07 Q And what's the first record of coyotes on Paoha
08 Island?

09 A I really don't know the answer to that question.

10 HEARING OFFICER DEL PIERO: Does anybody?

11 DR. WINKLER: I remember a coyote seen on one of
12 the early -- what do you call those? Multiple agency
13 censuses. Might have been 1980, and I believe that was
14 the first that people had recorded.

15 Q BY MR. FRINK: In view of the gull nesting that
16 occurred on Paoha Island, would you assume that
17 historically, prior to that time, that coyotes were not
18 a problem?

19 A BY MR. SHUFORD: I think --

20 MR. DODGE: Objection. Vague as to time.

21 Q BY MR. FRINK: Prior to 1980 or prior to the first
22 sighting of the coyotes when the gulls were on the
23 island.

24 A BY DR. WINKLER: I think that it's pretty safe to say
25 that when the McPhersons (phonetic) were on the island,

0317

01 that is the goat ranch, that if there'd been coyotes
02 there then, they would have known about it. In between
03 that time, I don't think we have any -- in between when
04 the McPhersons (phonetic) left and when -- if I'm
05 correct in thinking that 1980 or so was the first
06 sighting, I don't think we had much information at all
07 about what was on the island. But I think if there
08 were -- if we take it as face value and it looks like
09 -- if, indeed, in 1980 those were the first coyotes on
10 the island, then, yes, if the coyotes were the problem,
11 I would have expected them to have nested on Paoha in
12 the interim.

13 MR. FRINK: That's all the questions I have.

14 Thank you.

15 HEARING OFFICER DEL PIERO: Mr. Smith?

16 Q BY MR. SMITH: Thank you. I have a couple of
17 questions about -- I don't want to beat this poor
18 coyote to death like in the cartoons, but just a
19 question of reference. Were there any times when Paoha
20 and the Negit were both islands and you had coyotes on
21 both?

22 A BY DR. WINKLER: Certainly not in my recollection.

23 Q No? Okay. This is a very simple question. This
24 Board is charged with certain lake levels and certain
25 restoration measures, if any, and are trying to balance

0318

01 some of the uses. At a level of 83.5 as you --

02 A Mr. Smith, I just want to clarify my last answer.

03 In that answer, I assume that when you say when they
04 were both islands, that they had a water barrier
05 around them, that we would all accept as a sufficient
06 water barrier to dissuade coyotes.

07 Q That was my assumption, too, thank you.

08 At levels of 83.5 or 6390 or 6400, would you
09 expect the avocets to return? We heard some anecdotal
10 testimony that there were avocets back in 1964
11 approximately.

12 A Well, there were avocets in the mid seventies as
13 well, though their nesting status, my recollection is
14 pretty fuzzy on that. But the only -- I'd have to look
15 at what the shorelines were at those lake levels.

16 A BY MR. SHUFORD: The avocets do breed around the lake
17 currently. Around the lake shore, itself.

18 Q Okay. But -- that answers that question, but
19 there was a question and no one knew the answer to it
20 at that meeting.

21 We've heard some testimony about formation of
22 lagoons, I can't see -- I can't see Scott back over
23 there, but I take it you still stand by that testimony,
24 formation of lagoons at approximately 6400, 6405.
25 These would be important for migration. We've also

0319

01 heard testimony that the higher lake levels would
02 reduce the nesting habitat for snowy plovers.

03 Do any of you have an opinion in your pro -- a
04 professional opinion about is this an even trade off?

05 A BY MR. SHUFORD: Well, I think it is correct that the
06 amount of habitat for the snowy plover would be
07 decreased at higher lake levels but at the levels were
08 you talking about, 6383.5 and 6390, I don't think
09 there'd be any decrease in the size of the snowy plover
10 population. I've discussed this with Gary Page, who
11 is, I believe, an expert on snowy plovers. I've also
12 surveyed snowy plovers at Mono Lake, so I don't think
13 at those lake levels there would be a reduction.

14 Q I'm sorry to break in, but I wasn't referring to
15 those particular levels. That question was about 6400,
16 6405. We're assuming that we got to that level and
17 assuming that the lagoons, important lagoons we've
18 heard for migration were formed, but you lost a lot of,
19 quote, a lot of snowy plover habitat. Would that be an
20 even trade off, do you think, in your professional
21 opinion?

22 A I think it would in terms of I think there would
23 be a loss of habitat, but I think up until you really
24 get to the no-diversion alternative, there would be
25 enough habitat to support the current size of the snowy

0320

01 plover population.

02 A BY DR. WINKLER: To my mind, there's no trade off.
03 But I'd like to be clarified. NAS 159, what lake level
04 is that?

05 MR. STINE: That's 6419, 6420.

06 MR. WINKLER: If it got up that high, in my
07 judgment, you'd probably have a diminution of habitat,
08 but there's lots of habitat even at that level.
09 There's still the basaltic ridges to the northeast.
10 They're not the alkali flats, but they'll nest there.
11 It's hard to say even at that level that we'd be out of
12 habitat for the birds.

13 Q BY MR. SMITH: So your testimony is that you would
14 have both excellent migratory habitat and we could
15 still retain some --

16 A BY DR. WINKLER: A good chunk of habitat.

17 Q BY MR. SMITH: Habitat for the snowy plover. Thank
18 you very much.

19 A By the way, I think -- I won't speak for him. But

20 Dr. Jehl said in his testimony, that pre-diversion
21 levels there's plenty of habitat for snowy plover as
22 well. So I don't think there's much debate on that.

23 HEARING OFFICER DEL PIERO: Mr. Herrera?
24 Mr. Canaday?

25 Q BY MR. CANADAY: First for Dr. Stine. National
0321

01 Audubon Society/Mono Lake Committee Exhibit 200, which
02 is the topographic profile Number Three entitled Negit,
03 Java, and Twain,

04 A BY DR. STINE: Yes.

05 Q At what lake level does Java -- is Java covered by
06 water? At 6377 it's not and at 6383.5 it is. Do you
07 know approximately what lake level it does go under?

08 A It's a little bit more complicated than that
09 because this, Mr. Canaday, would simply be the level at
10 which Java is inundated along this transect. And in
11 fact, Java Islet, if I may put up this exhibit NAS/MLC
12 230, Java Islet has a considerable range of
13 elevations. On its western side, as I'm pointing to it
14 on the exhibit here, we have a relatively low -- I do
15 this.

16 Q Now, you can use that one so I can see it.

17 A Okay. That might be better. On Java Islet here,
18 we have a fairly low protuberance over here so that
19 this area of Java is under water -- in fact, the
20 whitish portion that you see under here would all be
21 under water at about 6383 feet, something like that.
22 And then, of course, the higher portion of Java goes up
23 to an elevation that I don't remember but I can get for
24 you, if you're interested.

25 Q Yes, I am.

0322

01 A If you'll bear with me for one second.

02 Q While you're looking for that number, Mr. Shuford,
03 what percentage of the gulls, at least in the past,
04 have nested on Java Island? Do you have any records on
05 that?

06 A BY MR. SHUFORD: Yeah. We definitely have records of
07 what's nested on each island each year. The percentage
08 in most years is not great. I couldn't give you an
09 exact percentage.

10 Q Well, ballpark.

11 A The total population for the lake?

12 Q Yes, please.

13 A Well, the last time when there was a high count
14 there, there were about a thousand nests, so that's
15 2,000 birds relative to the 60,000.

16 Q Okay. Dr. Stine?

17 A BY DR. STINE: Approximately, the high point there
18 would be somewhat over 6420 feet. With the roughly a
19 quarter of the island area shown on Exhibit 230,
20 roughly a quarter of the island being over 6410 feet.

21 Q Thank you.

22 Dr. Winkler, as I understand your testimony
23 earlier today, you were, in fact, the -- one of the
24 researchers who discovered terns nesting in the Mono
25 Basin?

0323

01 A BY DR. WINKLER: Yes. I can't remember if it was I

02 who actually saw them first. Certainly, somebody in my
03 crew.

04 Q And that was in what year?

05 A 1976.

06 Q '76? And they were nesting on which island?

07 A May I just back up? I think Dr. Jehl introduced a
08 citation of an account in 1963. I'm not sure where
09 that came from, and I think he referred to terns in
10 that, so that may be the earliest. But as far as we've
11 known, traditionally '76 was when he found them.

12 Q And they were nesting where, Sir?

13 A On Twain Island. The place I indicated.

14 Q And it's your opinion that the lake levels that
15 this Board is considering that the -- the terns will
16 not be impacted, or if they're nesting habitat is, that
17 there are other places in the basin that they will have
18 available to nest?

19 A I don't think there are other places in the basin,
20 the Mono Basin, that they could nest, other than island
21 in the lake. My impression is that as long as there is
22 gull nesting habitat on Twain, there will still be
23 habitat -- yeah.

24 A BY DR. STINE: A point that might clarify that,
25 Mr. Canaday, is that where Dr. Winkler pointed out

0324

01 terns nesting, stands at an elevation of about 6415
02 feet. So they're always up there and presumably that's
03 tern habitat.

04 MR. CANADAY: That's all.

05 HEARING OFFICER DEL PIERO: Thank you. Redirect?
06 Will you keep him under control?

07 MR. FLINN: I do my best, but I think we left his
08 medication at home.

09 REDIRECT EXAMINATION BY MR. FLINN

10 Q Dr. Herbst, Mr. Moskovitz asked you questions
11 about the membership of the Mono Lake Committee and are
12 you now or have you ever been one. Which came first,
13 your scientific study of Mono Lake or the Mono Lake
14 Committee as an institution?

15 A BY DR. HERBST: My scientific studies.

16 Q And did the things that you observed in the field
17 influence you with respect to whether or not you would
18 provide information to the Mono Lake Committee?

19 A Yes.

20 Q Could you explain why?

21 A The fact that I had been collecting information at
22 the lake and it was clear to me at the time that there
23 were things that were relevant in terms of my desire to
24 have them be public knowledge and my desire for that
25 information to be shared with people who were

0325

01 interested in Mono Lake; that is, I would say the main
02 thing that influenced me to interact with the Mono Lake
03 Committee and provide information to them when they
04 were interested in a particular natural phenomenon that
05 they were observing at the lake, whether it had
06 something to do with lower lake level or higher lake
07 level or the ecology of insects or what have you, and I
08 was only to happy to be able to provide that kind of
09 information to them.

10 Q Now, at the time you began your study in the
11 1970s, was DWP funding scientific research in Mono Lake
12 at the levels they did in the 1980s; to your knowledge?
13 A No.
14 Q In fact, wasn't it correct that during this time,
15 all of the research done at Mono Lake was done by
16 independent non-funded scientists like yourself?
17 A That's right.
18 Q Now --
19 A BY DR. WINKLER: Could I just -- we were funded by
20 NSF, but it was independent of L.A.
21 A BY DR. HERBST: But after that, Dave --
22 Q In fact, didn't there come a time that you
23 yourself were funded by somebody else in this room
24 besides the Mono Lake Committee?
25 A That's right. There were several years the

0326

01 Department of Water and Power funded me.
02 Q And you did those studies under your contract with
03 the Department of Water and Power?
04 A That's correct.
05 Q Did there come a time at which that funding
06 stopped?
07 A Yep.
08 Q Approximately, when was that?
09 A Well, I last conducted research for the Department
10 of Water and Power in 1991 through the auspices of the
11 work that was done for State Water Board.
12 Q Apart from the Water Board process --
13 A For the EIR.
14 Q Leaving that aside --
15 A I believe it was 1989 or '90. Possibly '90.
16 Q And when did you first testify in court as a
17 witness called by the National Audubon Society and the
18 Mono Lake Committee?
19 A That was the fall of 1990.
20 Q Now, Mr. Moskovitz showed you, and it was
21 introduced into the record, L.A. DWP Exhibit 100, a
22 Bradley (phonetic) report. I noticed in there that the
23 most recent study cited in terms of the references is
24 like a 1988 or 1989 study. Is it your recollection
25 that this document dates from the 1989-1990 era?

0327

01 A That sounds about right, yeah.
02 Q Now, at the time, Dr. Bradley (phonetic) was one
03 of the scientists DWP was funding; is that right?
04 A That's right.
05 Q Is Dr. Bradley (phonetic) -- has he ever told you
06 whether or not he still gets funded by the Department
07 of Water and Power?
08 A From what he has told me, he no longer gets funded
09 from the Department of Water and Power.
10 Q Now, Mr. Valentine pointed out a couple of things,
11 but if you could just follow along with me on Page 10
12 on this 19 -- Exhibit 100, do you have that? The
13 Bradley (phonetic) report?
14 A Okay. Page 10.
15 Q And what may well have been one of Dr. Bradley's
16 (phonetic) last works for the Department of Water and
17 Power, does he not conclude that there was a

18 significant negative effect of salinity on hatching
19 success? Starting at Page 10, results?
20 A That's right.
21 Q The same thing for larval growth?
22 A That's correct.
23 Q The same thing for pupation success?
24 A That's correct.
25 Q The same thing for pupal weight?
0328
01 A That's correct.
02 Q The same thing for survival to the adult stage?
03 Looking at Page 11?
04 A That's correct.
05 Q Now, I want to turn, briefly, to the subject of
06 vegetation, and this is perhaps both to Dr. Stine and
07 Dr. Herbst. Mr. Moskovitz, at some length and with
08 some degree of interest, seemed to wonder whether or
09 not, Dr. Herbst, you sitting here had at your
10 fingertips data available on vegetation levels at
11 various lake levels. Do you recall that, Sir?
12 A I recall that.
13 Q Now, do either of you have any information as to
14 whether or not that data is, in fact, available to the
15 Water Board?
16 A BY DR. STINE: Yes. I helped doctor, I believe,
17 Dr. Joquerst (phonetic), James Joquerst (phonetic) of
18 Jones and Stokes prepare maps of the shore land
19 vegetation that surrounds Mono Lake as part of the
20 DEIR, and my auxiliary report was then the basis for a
21 comparison that he did between previously existing
22 vegetation and present day vegetation surrounding the
23 lake. So it is in there. I believe he not only
24 includes that information in the DEIR, but I believe
25 he, if I remember correctly, he wrote an additional
0329
01 auxiliary report on that question of modern day
02 distribution of vegetation around the lake.
03 Q And from this data, can one provide the specific
04 quantification, the facts and the figures that
05 Mr. Moskovitz was interested in?
06 A I think one could. I have not done that. I don't
07 have it at my fingertips either. But it is in the
08 DEIR, in any case.
09 I do have at my fingertips, a map that was
10 produced and is actually included in the Corey report,
11 but it was produced by the State of California, State
12 Lands Commission, and State Attorney General's office
13 as part of the State of California versus U.S. Federal
14 Government over ownership of land surrounding Mono Lake
15 back in 19 -- I think it was '83, '84, and that, too,
16 was looked at by -- by Mr. Joquerst (phonetic) and that
17 provides me with some basis for estimating, in a
18 general way, where the vegetation is and in and
19 approximate densities as they existed in 1982.
20 MR. FLINN: What we would like to do, Mr. Del
21 Piero, is that's our only copy right now. If it would
22 be agreeable to the present parties, is to mark that an
23 our exhibit next in order, but we will make copies and
24 have them distributed tomorrow.
25 HEARING OFFICER DEL PIERO: That's fine. What

0330

01 number?

02 MR. SMITH: Should be 231.

03 HEARING OFFICER DEL PIERO: Sounds right?

04 MR. FLINN: Yes, that does.

05 MR. HERRERA: Would you identify that specifically
06 for our records?

07 DR. STINE: That is map with the title Vegetation
08 of the Exposed Lake Bed --

09 MR. DODGE: Excuse me. The 231 is already
10 marked. I have marked my own -- for my own purposes,
11 something as 236, so I would --

12 MR. SMITH: 236. Excuse me. You're right.

13 MR. FLINN: We'll give that 237 because Mr. Dodge
14 has a 236.

15 MR. SMITH: 237.

16 HEARING OFFICER DEL PIERO: The map will be 237.
17 Please identify it, Dr. Stine.

18 DR. STINE: The map is titled Vegetation of the
19 Exposed Lake Bed and Adjacent Lands of Mono Lake. I
20 included it as Page 98 of my report to the Corey panel,
21 Community Organization and Research Institute panel,
22 and the name of this thing is Geomorphic and
23 Geohydrographic Aspects of the Mono Lake Committee.
24 I'm the author, and it's dated August 1987.

25 Q BY MR. FLINN: Thank you.

0331

01 A BY DR. STINE: I said of the Mono Lake Committee?

02 Q What does it really say? Does conspiracy reach
03 higher and farther than we all can possibly imagine?

04 A I can say proudly that I've never been a member.

05 Geomorphic and geohydrographic of the Mono Lake
06 controversy, excuse me.

07 HEARING OFFICER DEL PIERO: Same here.

08 DR. STINE: We're both non-joiners, I suspect.

09 Q BY MR. FLINN: Also on the subject of vegetation, is
10 there photographic evidence, I think either you,
11 Dr. Herbst, or Dr. Stine, that you've got relating to
12 the existence of the kind of vegetation that could be
13 inundated as the lake fluctuates at higher levels?

14 A BY DR. HERBST: Yes, I do have a photograph that
15 would bear on that.

16 A BY DR. STINE: I have many, and they're not along.

17 Q You've got the one there in front of you. If you
18 don't, we'll move on. All right. We'll move on.

19 Let me ask you, Dr. Stine, Dr. Herbst was shown
20 exhibit, I think Fish and Game, 99 that picture from
21 the Condor article. Dr. Herbst was asked if he saw any
22 vegetation in that particular article. Could you give
23 me an estimate, Dr. Stine, from what you can actually
24 see in that what percentage of the total Mono Lake
25 shoreline is depicted in that one single photograph?

0332

01 Would it be fair to characterize it as a fairly small
02 percentage?

03 A BY DR. STINE: I would say order of magnitude a 10th
04 of a percent, perhaps.

05 Q Would it be particularly reasonable to draw
06 conclusions about the availability of the vegetation
07 lake wide from the tiny bit of Mono Lake shore shown in

08 that photograph?

09 A No. Not only because of the small amount of lake
10 shore shown, but very clearly, in this photograph, the
11 lake is rising and it's cutting a cliff, so it's
12 undercutting whatever vegetation is there as the lake
13 rises. So this would not be a good place to find --
14 it's not a place where you would expect to find any
15 vegetation being preserved on the lake.

16 Q One final question on the subject of vegetation,
17 Dr. Herbst, is what makes it tough for these plants to
18 live in Mono Lake the salinity?

19 A BY DR. HERBST: That's correct.

20 Q And at salinities of approximately 50 grams per
21 liter, are there plants that will survive at that
22 level?

23 A There are some macrophytes that could survive.
24 *Ruppia maritima* is an aquatic macrophyte that I found
25 growing in Big Soda Lake out in Nevada which has a very

0333

01 similar chemistry as an alkaline water lake to Mono
02 Lake, and under those kinds of salinity conditions,
03 *Ruppia* grows quite well and, in fact, serves as a
04 substrate for the attachment of alkali flies at that
05 lake.

06 Q Dr. Herbst, could you spell that for the record?

07 A Capital R-U-P-P-I-A and *specia maritima*, M-A --
08 small M-A-R-T-I-M-A.

09 Q Now, Dr. Herbst, I want to turn the subject to
10 Exhibit -- L.A. DWP Exhibit 101, which is this chart
11 from your Ph.D. thesis, and I want to put back up
12 Exhibit 52-A because Mr. Moskovitz drew some
13 comparisons between microcosm studies and this and then
14 some internal comparisons.

15 Let's talk about the validity of drawing
16 comparisons from the microcosm studies and the sampling
17 data. First of all, are the microcosm studies. Was
18 what you were interested in the microcosm studies the
19 absolute body size figures or the relative changes in
20 body size figures depending upon salinity?

21 A Certainly, the relative body size figures is what
22 I was most interested in. The only valid way really of
23 comparing experimental effects in this kind of a
24 situation is one to another, not conditions in the
25 experiment to conditions someplace else in nature or in

0334

01 other experiments. Really, it's the relative effects
02 within the context of the treatments in that particular
03 experiment that tells you how things respond.

04 Q Now, some of your predecessors sitting at this
05 table have drawn -- with some emphasis the importance
06 of research scientists as opposed to other kinds of
07 scientists. I want to focus on the methodology of
08 science briefly.

09 Is the concept of control -- controlling for
10 variables something that is involved in the scientific
11 method?

12 A I'm sorry. Can you run that past me one more
13 time?

14 Q Is the concept of controlling for variations, if
15 you're trying to study salinity effects, for example,

16 you want to control for everything else so that you
17 know what you're observing is the effect of salinity?

18 A That's right.

19 Q And does the need to control for all these other
20 effects involved in why you would not, as a matter of
21 fundamental scientific methodology, not compare field
22 data subject to all kinds of variations with the
23 microcosm data?

24 A That's correct. Although, if you did want to make
25 that comparison, if you do want to make a comparison

0335

01 that Mr. Moskovitz was trying to get at here, looking
02 at this field data for the flies, really what you need
03 to do to make a valid comparison is to make a valid
04 seasonal comparison. As you can see, the main thing
05 that's going on in this graph here -- I'm not sure
06 everybody's got it at hand here.

07 HEARING OFFICER DEL PIERO: We've all got it.

08 DR. HERBST: -- shows that there is a very
09 significant variation in body size from being at a
10 maximum during spring months to being about at a
11 moderate level during the mid summer months, and then
12 towards the late summer and the -- into the late summer
13 period, the body size decreases to a minimum size and,
14 in fact, the flies that emerged from the microcosm
15 tanks emerged from flies that were developing during
16 month of all August. So if we want to compare flies
17 that are emerging from the microcosm tanks during month
18 of August, we should go to the field and look at flies
19 that are emerging from the field conditions that
20 developed during the month of August as well.

21 When we do that, what we ought to be looking at in
22 that particular graph is those flies that emerged
23 during the month of September, and when we do that, we
24 see that the data for Mono Lake shows that in September
25 of 1983 and September of 1984, the body size of those

0336

01 flies was 4.4 millimeters which, at the field
02 conditions of 100 grams per liter, is identical to the
03 4.4 millimeters we observed in the flies emerging from
04 the tanks at 100 grams per liter. The only exception
05 to there being a minimum body size in that particular
06 month for both lakes was the one observation of flies
07 from Mono Lake in September of 1982, and I can only
08 chalk that up to the fact that sometimes data is
09 variable, but the rest of the data are very consistent
10 with regard to the body size being minimum in that
11 month.

12 Q BY MR. FLINN: Now, the other thing Mr. Moskovitz I
13 understood was asking you about was the apparent
14 absence of a trend from 1982 to 1984 as the lake level
15 rose and salinity decreased. Do you recall that
16 testimony?

17 A BY DR. HERBST: Um-hum.

18 Q Now, a predecessor of yours sitting at this table,
19 a research scientist, I understand, testified on
20 November 9th, 1993, at Page 22, quote, he testified as
21 to, quote, a very strong warning to any management
22 decision that you can't make a decision based on short
23 time series. You can be very easily misled. You have

24 to look at at least five years and preferably longer to
25 evaluate whether or not a system's changing." The

0337

01 scientist, research scientist,, who gave this opinion
02 who is Dr. Melack. Would you agree with Dr. Melack
03 that one should not draw any kind of trend conclusions
04 from your 1982 to 1984 data?

05 A Not a year-to-year comparison. Some of it is --
06 but not for yearly comparisons, correct.

07 Q Now, finally, if you could get out exhibit -- I
08 hope this is too confusing, 64, your comments on the
09 Draft EIR on Page 5 had your graphs.

10 A Which page?

11 Q Page 5.

12 A Okay.

13 Q And I believe Mr. Moskovitz asked you about the
14 upper right-hand graph that had algal growth and there
15 are three bars, three sets of data, mixed Tintoclatus
16 and the microcosm data?

17 A Yes.

18 Q And then he asked you very briefly something about
19 the mixed algae conference -- mixed algae data, and
20 there was

21 that I had the Reporter mark and would could find it.

22 But I got the impression you wanted to say something
23 more about that. Do you recall that particular line of
24 questioning?

25 A Yes, I do.

0338

01 Q And did you want say something more about that?

02 A I did want to elaborate a bit.

03 Q Please do.

04 A Is there anything I can draw on here?

05 Q There is, and Dr. Winkler trod the path for you.
06 In fact, we'll even steal his blue pen.

07 HEARING OFFICER DEL PIERO: We have a green one
08 there. It's more seasonal.

09 DR. HERBST: This is perhaps a little lesson in
10 how to do experiments with algae. When I did the
11 experiments that are documented in that upper -- upper
12 right-hand figure that shows --

13 MR. MOSKOVITZ: Excuse me. Could that be marked,
14 please, as an exhibit?

15 MR. FLINN: Let's mark this as 238?

16 MR. SMITH: Yes. I'm on the right page now.
17 238.

18 DR. HERBST: When you're doing experiments with
19 algae, what's really desirable to do is get an idea of
20 what the full growth curve is. So if this is the total
21 amount of algae that's in any particular culture and
22 this is the time over which it's growing and these are
23 different treatments, in this situation, my suspicion
24 is that the curves on this end are lower salinity and
25 the curves on this end of graph are higher salinity,

0339

01 that, in fact, what you need to do is have data from
02 the early part of this time series to ascertain whether
03 or not there are differences in growth rates that are
04 affected by these different low or high salinity
05 treatments.

06 In fact, what I did in these experiments is
07 harvest algae after a prolonged period of growth,
08 after things had reached a stationary growth period.
09 And I don't want to discount the fact that the algae
10 did eventually achieve the same level of growth. They
11 did achieve the same biomass. Nonetheless, when you
12 have a natural system, rather than a laboratory system
13 where things become limited because they they deplete
14 nutrients, which does in the necessarily happen in
15 nature, that what, in fact, you want to know about the
16 intrinsic growth rate of the algae relates to these
17 parts of the growth rate functions, and that's data
18 that I didn't collect in those particular experiments
19 and which I am in the process of collecting right now
20 in further experiments with benthic algae from Mono
21 Lake.

22 So I just want to clarify that my interpretation
23 of those results being fairly flat over the salinities
24 has to do more with when I harvested the algae than it
25 being true differences between the intrinsic rates of

0340
01 growth under different salinities.

02 Q In that experiment, which is depicted on Exhibit
03 238, did you, in fact, include the effects on the algae
04 of the grazing by other organisms and a larger
05 ecosystem?

06 A These experiments?

07 Q Yes.

08 A No.

09 Q Did you do that in the microcosm experiments
10 depicted on 52-A?

11 A Yes.

12 Q And could you tell us that once you included the
13 effects of the other organisms, what did that do, then,
14 when you included the effects of algae?

15 A The overall community effects show that with
16 increasing salinity, there is a dramatic decline in the
17 overall biomass of algae, which includes a variety of
18 different species as you increase the salinity, and
19 that occurs despite the fact that no doubt there's much
20 higher rates of grazing going on in these low salinity
21 tanks because you can see there's a legion of flies
22 emerging from this particular treatment. There's no
23 question about the fact that the larvae have to be
24 grazing a lot harder at this salinity than they were in
25 these other tanks where there's very much reduced

0341
01 survival and very fewer flies were able to emerge.

02 MR. HERRERA: Mr. Flinn, your time has expired.

03 MR. FLINN: If you could have five more minutes?

04 HEARING OFFICER DEL PIERO: Go ahead. Fine.

05 Q BY MR. FLINN: Finally, I wanted to ask some
06 questions about nitrogen fixation and the
07 interrelationship between that and what might happen at
08 the higher lake levels. Now, Dr. Stine, as I recall,
09 you've already testified, I believe, about marsh lands
10 and brackish waters that might exist at the higher lake
11 levels above 64 -- 6405?

12 A BY DR. STINE: I wouldn't say "might." I'm quite
13 confident that they will. The topography is there, and

14 there's going to be water in it.

15 Q Now, Dr. Herbst, assuming the existence of the
16 ponds and marshes and lagoons that Dr. Stine is sure
17 will be there, could you tell us how that might affect
18 nitrogen fixation?

19 A BY DR. HERBST: Yes. Recent reviews done of the
20 ecology of the nitrogen fixation in aquatic ecosystems,
21 one in particular done by a scientist named Hans Pearl
22 (phonetic) suggest that the most important habitats for
23 nitrogen fixation really worldwide are in these kinds
24 of lateral edge marine, lateral edge lake situations
25 where there's extensive marshland, where there is a

0342

01 great deal of decomposition of vegetation, stagnant
02 water situations, anoxic sediment buildup, and under
03 those conditions, you have the perfect set up for these
04 anoxic requiring nitrogen fixing organisms to grow and,
05 in fact, that's where you find a great deal of nitrogen
06 fixation occurring. And it's from these coastal, if
07 you will, whether it's on a lake or on an ocean,
08 sources that there's a huge contribution of external
09 nitrogen to those kinds of aquatic ecosystems. Very
10 true in estuarian situations and certainly true in
11 fresh water lakes that have marshland borders.

12 Q We don't have to -- I don't want to go to the
13 trouble of putting up the overhead again. You recall
14 Exhibit 65-A which is your graph of nitrogen fixation
15 of salinity and area effects?

16 A Yes.

17 Q I notice that there's no data point between 6390
18 and 6420 but there is a decline drawn on that chart.
19 I'll give you another one.

20 A I've got it.

21 Q Is that solely due to an area effect as opposed to
22 a salinity effect?

23 A Primarily.

24 Q Okay. And is that because you have -- a change in
25 the slope of the lake affects the lateral area; is that

0343

01 right?

02 A The break-in slope in the lake occurs above 6400.
03 I'm sure Scott --

04 Q You're two steps ahead of me. All I'm saying is
05 the reason for this decline, this area effect, is as
06 you get to higher lake levels, there is a change in
07 lake slope that gives you less lateral area?

08 A That's right.

09 Q You don't have any data points between 6390 and
10 6420. If you did, where would this graph peak?

11 A The reason I didn't do that was I had experiments
12 running at 75 and 50, so I simply graphed those. But
13 yes, if you assume that the rates of nitrogen fixation
14 are equal between 50 and 75, and they are equal at 50
15 and 75, so I think that's a fairly safe assumption,
16 then you can redraw the curve as follows. I'll just
17 flip this up here quickly.

18 If you redraw the curve, it would look something
19 more like this where because of the fact that you don't
20 get that inflection to stabler lake shores until you
21 get to about 6400. In fact, this maximization of the

22 potential for nitrogen fixation lake wide should, in
23 fact, be more or less a plateau between 6390 and 6400.
24 Q If you could take your seat again, you can leave
25 that up there.

0344

01 One final set of questions and this is really
02 addressed, perhaps, to the panel as a whole because it
03 crosses disciplines. But it starts with this
04 vegetation and assuming that these -- at higher lake
05 elevations, you have the cycle of inundation and
06 exposure of vegetated areas and the vegetation used as
07 a substrate.

08 First of all, Dr. Herbst, am I right that the
09 pupae fare more likely to be dislodged from this
10 waiving vegetation substrate as opposed to the
11 hardrock?

12 A That's correct. The drag forces associated with
13 that are such that there's a much higher likelihood
14 that it would be dislodged.

15 Q What would you expect to happen to these pupae if
16 they're dislodged?

17 A Well, typically what happens is that they float up
18 to the water surface once they're off their point of
19 attachment, and they typically then form large floating
20 rafts and then move in towards the lake shore with any
21 kind of wave activity. And once they're cast up on the
22 shore, there's a high probability of mortality, but in
23 addition of that effect on the pupae, themselves, those
24 large floating rafts of pupae are an important food
25 source to birds, from my understanding from talking

0345

01 with Dr. Vega (phonetic).

02 Q Now, let me move on to the bird folks briefly.
03 Assuming that instead of these fly pupae with their
04 arms firmly wrapped around the rock substrates, instead
05 floating around in these wind droves and these large
06 mats, do either of you have an opinion as whether the
07 food source would be more accessible to birds at these
08 higher lake levels?

09 A BY MR. SHUFORD: I think it definitely would. I've
10 spent numerous days around the lake and observed gulls
11 on really windy days concentrating on the shoreline
12 right where the waves are washing in -- given these
13 higher lake levels, there's less at attachment of these
14 pupae that would be washed in and birds would
15 definitely take advantage of a situation like that.

16 Q The final question to Dr. Herbst. Is there
17 historical evidence that there were larger masses of
18 these flies and wind droves that are no longer present
19 today?

20 A BY DR. HERBST: I have recently seen a photograph
21 that I believe indicates that.

22 Q Is that in your stack in front of you?

23 A It is indeed.

24 Q Would you identify it, please?

25 A This is NAS and MLC 39, Nellie Carter on the north
0346

01 shore of Mono Lake collecting alkali fly pupae. Lake
02 elevation 6398.4. And this color photograph shows
03 Jessie Durant (phonetic) along the shore apparently in

04 an area where there's a lot of Tufa formations and
05 right down next to the shore are very large black
06 masses. And in her basket, she has a pile of these
07 black masses.

08 One thought that crossed my mind is well, those
09 black masses could be adult flies and frankly, this
10 Seahart Miriam (phonetic) photograph that has been
11 passed around so frequently here, I'm not very
12 impressed by because we don't know if those are pupae
13 or adults. There are places along the lake shore where
14 today you could photograph adults with those kind of
15 densities, and so I find it unimpressive.

16 However, the pupa wind droves, I find very
17 convincing, very compelling. She could not be holding
18 a basket full of live flies like that. They'd
19 obviously fly away.

20 HEARING OFFICER DEL PIERO: It depends on what
21 else is in the basket.

22 DR. HERBST : Looks like pupae to me.

23 Q BY MR. FLINN: The conditions depicted on that
24 Exhibit No. 39.

25 HEARING OFFICER DEL PIERO: She is Mr. August

0347

01 Hess' grandmother, I understand.

02 Q BY MR. FLINN: Yes, and that document was admitted
03 into evidence at her testimony. Do those exist
04 currently at the lake today?

05 A BY DR. HERBST: I've never never seen pupa wind
06 droves at Mono Lake like that.

07 MR. FLINN: Thank you, Sir.

08 MR. DODGE: I'll try to go through this as quickly
09 as I can. I'm basically going to follow
10 Ms. Goldsmith's questions.

11 RE DIRECT EXAMINATION BY MR. DODGE

12 Q Doctor -- excuse me. Mr. Shuford, you told us
13 that in 1979, Negit Island was basically abandoned by
14 gulls due to coyotes, correct?

15 A BY MR. SHUFORD: That's correct.

16 Q And that represented approximately two-thirds of
17 the population at that time, correct?

18 A That's right, two-thirds of the entire population
19 of gulls at Mono Lake.

20 Q Then you gave what I thought was a little bit --
21 at least you responded to what I thought was an
22 ambiguous question, but it didn't occur to me until a
23 couple of questions later. You said that in 1982, 30
24 percent of the gulls were dislocated to Twain. What
25 did you mean by that?

0348

01 A Well, 30 percent of the entire lake's population
02 was displaced when coyotes got across to Twain and
03 Java.

04 Q But 100 percent of gulls left Twain, correct?

05 A Correct.

06 Q Now, Dr. Winkler, you gave some testimony about
07 the marauding aspects of that abandonment of Twain.
08 Can you -- and you were asked questions about the gulls
09 just standing there on Twain. Can you expand on how
10 that relates to marauding?

11 A BY DR. WINKLER: Well, the reason I didn't see why it

12 related directly to marauding is that under this
13 marauding hypothesis, the gulls may well roost or stand
14 around on an island that doesn't have nesting gulls on
15 it. All the marauding hypothesis requires is that when
16 they are foraging, they're foraging in other parts of
17 the colony on eggs and chicks, and we did see chicks
18 being eaten by gulls in other parts of the colony
19 during that year. And that's consistent with this
20 hypothesis of this snowballing effect.

21 Q So the marauding doesn't take place on the island
22 that's been evacuated, correct?

23 A That's the source of the marauders that start this
24 whole thing going.

25 Q They maraud on other island where gulls are
0349

01 attempting to nest but there are no coyotes.

02 A Right. I mean, if you put yourself in the webs of
03 one of those gulls standing on Twain Island, going to
04 get the eggs and chicks of another gull is not an
05 activity without risk and so they can't just roost in
06 the middle of colony. So if they're not actively
07 foraging, one wouldn't expect them to be roosting
08 actually in the active colony.

09 Q Back to you, Mr. Shuford. Ms. Goldsmith next
10 asked you a question which elicited from you an opinion
11 that in 1990, there was a large increase in the gull
12 population at Mono Lake. But you said, and I believe
13 I'm pretty close to quoting you, it was not an effect
14 of what happened at Mono Lake. Can you expand on
15 that?

16 A BY MR. SHUFORD: Well, since we've started our
17 studies of really accurate counts of nests at Mono Lake
18 in 1983, population was quite stable varying from about
19 45,000 to 49,000 adults from '83 to '89. And all of a
20 sudden in 1990, the population in one year shot up to
21 over 60,000 birds. And there is no clear reason at
22 Mono Lake why that would have happened in that year,
23 and the corresponding increase in the Great Salt Lake
24 in that exact same year from a population of
25 approximately like 78,000 to over 130,000 in that year

0350
01 indicates to me that there's something going on, you
02 know, in a broader region that might have affected the
03 gulls and the increase in the population.

04 And this was during this six-year drought, some of
05 these birds could have been moving from other colonies
06 to these sites. So I think there are other factors.

07 There's always other factors going on that affect
08 these populations at this particular site. I see no
09 reason to explain that increase by any phenomenon that
10 happened at Mono Lake.

11 Q Dr. Shuford was asked questions about ticks, and
12 there was some testimony about Negit Island being large
13 and therefore densities being potentially lower. Let
14 me ask you, first, Dr. Winkler, in terms of Negit
15 Island as you observed it in 1976, how broadly
16 disbursed were the gulls?

17 A BY DR. WINKLER: Well, it's certainly clear that the
18 densities were much lower than they have been on some
19 of the Negit Islets recently, especially Twain. And

20 so, you know, it's clear that it was much lower density
21 than we've seen in recent years.

22 Q Can you characterize where you found the birds on
23 Negit Island in 1976?

24 A Yes. I believe there are some maps somewhere that
25 have to be somewhere in the testimony of other

0351

01 witnesses having to -- or sorry. It's in the Draft
02 EIR. The birds were basically in two habitats. They
03 were up on the grease wood, in the grease wood, or in
04 what we call white rock, the Tufa cemented rocks and
05 gravel along the shore that had recently been exposed.
06 The great bulk of the birds was up in this grease wood
07 habitat.

08 Q Assuming just on an order of magnitude, I'm not
09 asking you to assume unless you know it, that Negit
10 Island in 1976 consisted of 250 plus acres, can you
11 give the Hearing Board any estimate as to how many
12 acres contained nesting gulls?

13 A Somewhere between 20 -- somewhere around 30
14 percent, probably 30 to 40 percent. That's just a
15 guess. Scott probably has --

16 A BY DR. STINE: You don't remember this, but I asked
17 you that question, and you sent me a map. And so I
18 plotted it out and planimetered, and it was about 50
19 percent of the island.

20 Q Let me ask you that, Dr. Stine, we've had some
21 questions about the comparative size of Negit Island
22 versus the Paoha Islets. Let me ask you, let's take a
23 lake elevation because I understand the sizes change
24 with different elevations. Let's take 6380.
25 Approximately how large is Negit Island?

0352

01 A Negit Island would be about 250 acres at that
02 point.

03 Q And at that same elevation, how many acres do the
04 Paoha Islets consist of?

05 A I think it's about 30, but I'd like to check that,
06 if I could. Give me a second here. I'm sorry. I'm
07 off. It's about 12 acres. About 12 acres total. So
08 12 versus 250.

09 Q At elevation is 6380?

10 A Yes.

11 Q And then the Paoha Islets disappear at
12 approximately what elevation?

13 A The Paoha --

14 Q Islets.

15 A Disappear. Well, at what level would they be
16 completely beveled off? I believe it's at about 6388
17 feet they would be completely beveled at that point.
18 The lake would -- if the lake did drop then, these now
19 flattened beveled features would re-emerge, but I think
20 that Dr. Jehl even made it quite clear that they would
21 not be reoccupied. I think he used the word either
22 irrelevant recoverable or irreparable changes or
23 something like that.

24 Q Now, going back to you, Dr. Winkler, in focusing
25 in on 1976 and Negit Island was still an island then,

0353

01 correct?

02 A BY DR. WINKLER: Yes.
03 Q And there were a lot of birds there?
04 A Yes. A very impressive sight.
05 Q You counted approximately 33,000 nesting birds?
06 A At the time of the census, yes, that's what we
07 estimated.
08 Q And can you tell us approximately what percentage
09 of those were in the scrub habitat as opposed to the
10 rock habitat?
11 A I could double-check, but I think it was
12 something -- well, certainly over half were in the
13 scrub. To be any more accurate than that, I'd have
14 to -- I'd like to double-check the estimates.
15 Actually, I could probably get it from -- is it in
16 here? It's about two-thirds.
17 Q And did you also look at the Negit Islets in 1976?
18 A Yes, we did.
19 Q Now, let me ask you to assume that Negit Island
20 becomes a secure island on a long-term basis. Do you
21 have an opinion as to whether large populations of
22 California gulls would return to Negit Island for
23 nesting?
24 A Yes. I think they would return there and
25 eventually build up to numbers that rivaled their
0354 previous numbers.
01 Q You mentioned that there was a heat problem in
02 1981 that basically killed the -- almost all of the
03 chicks. Was Negit Island an island used by gulls in
04 1981?
05 1981?
06 A No, it was not.
07 Q It had been land bridged at that time?
08 A Yes, it was land bridged in '79.
09 Q Now, you gave testimony in response to
10 Ms. Goldsmith. She was asking you about brushy versus
11 white rock habitat -- and it might have been
12 Mr. Valentine. I'm not sure which. It was
13 Mr. Valentine according to my notes -- and how you
14 would make an assessment, and he asked you about
15 distance from water, and you mentioned also the recency
16 of land bridging was important. Can you expand on
17 that?
18 A Right. I'm glad you asked that because it didn't
19 come out when we were looking at Joe's pictures
20 earlier, but I would be surprised if you showed me an
21 island where -- which had been land bridged and had
22 scrub on it where the birds immediately recolonized the
23 scrub once the island had been reisolated.
24 I certainly agree with Joe and with David that
25 these birds feel insecure when they can't see around
0355 themselves, and they're in a new habitat. And I
01 think -- my own opinion, and I think we probably have
02 disagreement right here at the table, but my own
03 opinion and interpretation of what I've seen says that
04 these birds need to gradually feel secure in these
05 habitats in order to start colonizing habitats in which
06 there's limited visibility around them.
07 My point is once they come to occupy those
08 habitats, that they will then be better off if they
09

10 encounter one of these years of high temperatures and
11 they may well be better off in all years.

12 The frustration in all of this discussion of
13 habitat quality for all these years is that we've never
14 been able to make a comparison between how well birds
15 do in scrub habitat at Mono Lake and how well they do
16 in open habitats at Mono Lake, and not until Negit
17 island is reisolated and isolated for quite some time
18 do I think -- will we ever be able to make that
19 comparison.

20 Q And, in fact, during the four or five years in the
21 1980s where Negit Island provided some breeding habitat
22 for gulls, as you said, relatively few returned to the
23 scrub habitat, correct?

24 A That's right, and it does not surprise me.

25 Q And the reason for that is?

0356

01 A Again, I think that in order for them to occupy
02 those habitats, they would have to be -- put in it
03 anthropomorphic terms, they would have to feel secure
04 enough, having nested there in past years, that there
05 wasn't going to be a predator coming around the corner
06 to interrupt their nesting or endanger them, for that
07 matter.

08 Q Just a couple more questions. In response to a
09 question by Dr. Smith, there was some questions about
10 Paoha and coyotes first spotted there in 1980? Do you
11 recall that Dr. Winkler?

12 A Yes, I recall those questions yes.

13 Q I have just a simple question. According to your
14 historical research, when did California gulls last
15 nest on Paoha?

16 A Well, they've nested a nest or two intermittently
17 while we've been studying the birds intensively, but in
18 terms of successful nesting of any numbers of birds, I
19 believe the last was in 1919.

20 Q 1919?

21 A I believe that's correct.

22 Q And do you have an approximation as to when the --
23 when the goat farm was taken off the island?

24 A I've only the vaguest recollection, maybe David
25 can help me out, but I thought it was in the late

0357

01 twenties.

02 A BY MR. SHUFORD: I don't know the exact date. The
03 McPhersons (phonetic) were only out there a very short
04 period of time. I would think it was in the early
05 twenties.

06 Q And there was a period of time from the time the
07 McPhersons (phonetic) left until 1980 where no
08 substantial nesting took place on Paoha. Do you have
09 an opinion as to why that is so?

10 A BY DR. WINKLER: Again, my personal opinion, and
11 again it may not even be the unanimous opinion at the
12 table, but it seems to me that the different substrate
13 types have a big effect. Let me just say that if you
14 live out on Krakatoa for long periods of time in the
15 summer, which I've done and David's done, whenever the
16 wind comes up, you see a big dust cloud coming off of
17 Paoha and you see no dust coming off of Negit. They

18 definitely are different substrates and the wind
19 definitely affects them differently. And I can't
20 imagine that gull parents are enthusiastic about having
21 their chicks buried in dust.

22 Q Is there a difference of opinion at the table?

23 A BY MR. SHUFORD: Not regarding that factor, no. I
24 think that would definitely influence the suitability
25 of Paoha for nesting.

0358

01 Q Is it also possible that were coyotes out there
02 from the 1920s to 1980?

03 A The historical record is so limited I don't think
04 we really know for sure. I mean, surely it's possible,
05 but the McPhersons (phonetic) did not observe coyotes
06 out there while they were there.

07 Q Okay. Now, with all due apologies to everyone and
08 particularly you, Dr. Winkler, I previously
09 identified -- misidentified DFG Exhibit 101, so I have
10 now marked what I thought was DFG Exhibit 101 as
11 National Audubon Society and Mono Lake Committee
12 Exhibit 236, which has your pencil marking as to where
13 you found Caspian terns in 1976. Does everyone have a
14 copy of Exhibit 236? Mr. Cane is handing those out.
15 It is the same as what I previously misidentified as
16 DFG Exhibit 101.

17 Dr. Stine, you've seen this pencil mark and you
18 stand by the proposition that Dr. Winkler found the
19 Caspian tern in 1976 at approximately 6415 feet?

20 A BY DR. STINE: That's correct, yes. And I say
21 approximately 6415 plus or minus two or three feet.
22 Sure.

23 A BY DR. WINKLER: Can I clarify one thing?

24 Q Sure.

25 A I have to emphasize that 1976 is a lot of field
0359

01 seasons ago for me, and as I said earlier I wasn't
02 even -- I can't even recollect whether it was I or one
03 of my crew who actually found the terns nesting there.
04 What I based that circle on is most vividly based on
05 recollection of the 1979 field season, so I am
06 extrapolating because at the time I didn't think that
07 the birds had moved. So that's all that I wanted to do
08 to clarify.

09 Q So let me ask you hypothetically, Dr. Winkler,
10 assuming that Dr. Stine is right, that the Caspian
11 terns in 1976 were found at an elevation in excess of
12 6400 feet, let's just take that, in excess of 6400
13 feet, Dr. Jehl has testified that at elevations in
14 excess of 6386, the Paoha Islets will be inundated and
15 the Caspian tern will no longer have any habitat at
16 Mono Lake in excess of -- that is, at elevations in
17 excess of 6386. Do you agree with that?

18 A I can't agree with that. No.

19 Q Would you expect the Caspian tern to simply return
20 to Twain?

21 A I would. I certainly agree with Dr. Jehl that the
22 gulls give the terns a hard time and that if gull
23 densities were sufficiently high, that terns may not
24 nest there. But certainly the physical habitat is
25 there, and I would expect them to at least try nesting

0360

01 there.

02 Q Okay. Final question to either of the
03 ornithologists. Assume that -- assume that Dr. Herbst
04 is correct, that higher -- as I understand his
05 testimony, it's very much a layman's understanding, but
06 as I understood Dr. Herbst's testimony, that higher
07 lake levels, you're going to have lower salinities and
08 bigger, fatter alkali flies, although I go back far
09 enough so that I always call them brine flies, and I
10 get chided for that. But assuming that they're bigger
11 and fatter, can you -- at higher lake elevations and
12 lower salinities, can you tell us how that would affect
13 them as food for birds?

14 A I think there's little question that if they were
15 bigger and fatter, they would be better prey and that
16 the birds would have a higher rate of return per unit
17 of investment in foraging.

18 Q Mr. Shuford?

19 A BY MR. SHUFORD: I would agree with that
20 characterization. The more -- the better food out
21 there, the more it's going to benefit all the birds
22 that depend on those food supplies.

23 MR. DODGE: No further questions. Thank you.

24 HEARING OFFICER DEL PIERO: Thank you very much,
25 Mr. Dodge. Mr. Moskovitz?

0361

01 MR. MOSKOVITZ: Are we going to be taking a break
02 so we can remove our cars from the garage and not have
03 them kept there overnight?

04 HEARING OFFICER DEL PIERO: Yes. The garage
05 closes at seven, and I had anticipated breaking right
06 around ten to seven. Frankly, it's going to depend on
07 the nature of your recross and you, Ms. Goldsmith. Do
08 you have an idea as to how much time you all are going
09 to take?

10 MR. MOSKOVITZ: I would be finished before ten to
11 seven.

12 MR. DODGE: Could I ask that any party having
13 questions for Dr. Winkler pose them so that he can make
14 his departure?

15 HEARING OFFICER DEL PIERO: Is there anyone else
16 besides Ms. Goldsmith who has questions for
17 Dr. Winkler?

18 MR. MOSKOVITZ: Mrs. Goldsmith tells me she will
19 not have any.

20 HEARING OFFICER DEL PIERO: You have no questions
21 for Dr. Winkler and Mr. Moskovitz has none for him.

22 MR. MOSKOVITZ: Not for Dr. Winkler.

23 HEARING OFFICER DEL PIERO: Anyone else have
24 questions for Dr. Winkler? Mr. Canaday?

25 MR. CANADAY: All it is is a clarification. This

0362

01 Exhibit 236 that Mr. Dodge willingly took the blame for
02 misrepresenting was, in fact, my fault. I
03 misrepresented it to him as DFG 101.

04 MR. SMITH: And I did it to Mr. Canaday.

05 HEARING OFFICER DEL PIERO: We've all confessed.

06 MR. DODGE: I wasn't aware of any of that. All I
07 know is Mr. Cane gave it to me, and it was wrong.

08 HEARING OFFICER DEL PIERO: We've all confessed
09 now, except for Mr. Cane.

10 Okay. Well, Dr. Winkler, why don't you just sit
11 tight until you have to leave? In the meantime,
12 Mr. Moskovitz, why don't you begin, Sir?

13 MR. MOSKOVITZ: I wonder whether it would be
14 permissible to have the short break that you had in
15 mind for ten minutes to seven and take it right now,
16 and then we'll return and we can get our cars out and
17 so forth.

18 HEARING OFFICER DEL PIERO: That's fine. That's
19 more than adequate. So we'll take a break for ten
20 minutes then.

21 (Whereupon a short recess was taken.)

22 HEARING OFFICER DEL PIERO: This hearing will
23 again come to order. Mr. Moskovitz, if you'd be kind
24 enough to indulge me for just a moment, I have to tell
25 you all a story because this story was related to me

0363

01 this afternoon during the course of the proceeding.

02 Mrs. Forster who, as a number of you noted, was
03 here this afternoon, and she came in, One, to
04 participate to the hearing to the extent that she had
05 time available today, and Two, to pass some information
06 on to me. As a number of you know, I called about the
07 temperature in the room here this morning and the
08 people I called were actual -- I actually called the
09 Executive Director of the State Water Resources Control
10 Board and happened to get the Chairman of the Board and
11 the exec in the same office at the same time and told
12 them about the problem with the temperature in the room
13 over the speaker phone.

14 So the Chairman of the Board, who is a career
15 state employee and who handles state employees better
16 than anybody on the face of the planet, apparently
17 called the Assistant Director of General Services for
18 State of California and advised him that there was a
19 room full of very cold attorneys in a hearing room all
20 of who were going to sue the state for not providing
21 them with an appropriate hearing room in which to
22 conduct business, and as a result they were going to
23 allege that their cases had been compromised, and that
24 the primary witness on their behalf was going to be the
25 Hearing Officer.

0364

01 Witness three different repairmen who have come
02 through here during the course of the last five or six
03 hours in order to make sure that the Department of
04 General Services didn't get sued. So some things work
05 in strange and mysterious ways.

06 Mr. Moskovitz, I don't think we'll be cold anymore
07 in this room.

08 RE-CROSS EXAMINATION BY MR. MOSKOVITZ

09 Q Dr. Herbst, I wanted to ask you some questions
10 about your relationship with the Department of Water
11 and Power, the funding of studies. First of all, your
12 funding was for short-term projects. Is that not so?

13 A BY DR. HERBST: That's correct. It was not for
14 longer than a single year, I don't believe.

15 Q And you completed those projects, did you not?

16 A That's correct.
17 Q Now, did DWP ever put any limitations on you as to
18 how you could use the results?
19 A No.
20 Q Are you familiar with the work that Dr. Melack's
21 team did regarding shrimp bioassays?
22 A Yes.
23 Q And did that work not show that there were some
24 salinity effects on shrimp?
25 A Yes, they did.

0365

01 Q And was there any limitation, as far as you're
02 aware, put on Dr. Melack and his team from using the
03 results of those studies?
04 A Certainly not.
05 Q And Dr. Melack's funding continues for his
06 long-term project; is that not so?
07 A At the present time, as far as I know.
08 Q Do you know whether any limits were placed upon
09 Dr. Bradley (phonetic) for the results that he had?
10 A I'm sure they were not.
11 Q Now, with respect to Exhibit 64, that's the
12 comments on the -- comments on the Draft EIR that you
13 prepared, and turning again to Page 5 where we have
14 these graphs.
15 A Okay.
16 Q And in particular, the one about algal growth.
17 A Okay.
18 Q Upper right-hand corner.
19 A Okay.
20 Q Now, the mixed algae portion of that graph shows
21 in effect that between 50 and 150 there was no change.
22 A That's correct.
23 Q Now, I think you said that -- on redirect, if I'm
24 correct, you correct me if I'm wrong, that yes, at the
25 conclusion, there was no change because eventually,

0366

01 this algae all was able to grow but the growth rate was
02 different.
03 A That's correct.
04 Q Now, do you have any information about what the
05 growth rate is after a certain period of time with
06 respect to algal growth at different salinities?
07 A Yes, I have done some experiments. In fact, the
08 experiments from which this particular result is
09 derived did have some studies done with it in which I
10 did try to do harvests at earlier time intervals than
11 the point at which they achieved that stationary growth
12 phase.
13 Q And didn't those studies show that after -- after
14 three days, the growth rate for algae at 50 grams per
15 liter was faster than the growth rate for algae at 100
16 grams per liter?
17 A Yeah. They do show that. Although, those
18 results, I think, are fairly difficult to interpret
19 because of sample size.
20 Q But they did show that for a short period of
21 time --
22 A Yeah.
23 Q -- the growth rate as 50 was more rapid than at

24 100?

25 A That's correct.

0367

01 Q But didn't that work also show that after five
02 days, the growth rate at 100 caught up and exceeded the
03 growth rate at 50?

04 A Um-hum. That's also true.

05 Q So both in terms of growth rate and in terms of
06 the eventual biomass, the algae at 100 did as well
07 except for the first three days or better than the
08 algae at 50?

09 A That's true.

10 Q Now, looking at the curves on Page 6 of that same
11 exhibit, I think you said a number of times that
12 salinity is the most important factor in affecting what
13 happens to alkali flies.

14 A That's correct.

15 Q Now, if salinity is the most important factor, how
16 is it that, for example, looking at the -- at the
17 result of the two models in the middle of Page 6, that
18 you have a decline as you get to higher elevations
19 where the salinity goes down?

20 A Um-hum. Well, as I stated in my direct testimony,
21 I think what is the case for those particular models,
22 those central models you're pointing out, the
23 Kimmerer-Herbst model and the Jones and Stokes model,
24 is that they're conservative with regards to their
25 estimating the impact of salinity at those high lake

0368

01 level, low salinity conditions because of a number of
02 important different factors which were not incorporated
03 into the model.

04 Q One of the factors you mentioned was vegetation
05 you thought would provide more habitat.

06 A That was physical habitat. I'm speaking
07 specifically with regard to the effect of salinity on
08 growth rates and life history characteristics. The
09 beneficial effect or stimulatory effect, if you will,
10 of low salinity conditions on the growth rates of the
11 larvae, their size of maturity at pupae and adults, and
12 their reproductive success. That information was not
13 incorporated in the fashion that I think it needs to be
14 incorporated into this kind of a model, thereby I think
15 this model errs on the conservative side in terms of
16 underestimating the potential stimulation at high lake
17 levels and low salinities, the physiological effects of
18 salinity.

19 Q Are you saying that if those were plugged in, you
20 would no longer have this bell-shaped curve, and it
21 would no longer show the bell shape and -- well, no
22 longer show the fact that at higher lake elevations,
23 you approached the same kind of effect as at the low
24 elevations that you presently have?

25 A Well, since we don't really have that data to

0369

01 generate such a model, we don't -- we haven't done that
02 kind of a simulation. I don't know if that would be
03 the case, but I suspect that it would be case. You'd
04 no longer see the bell-shaped distribution.

05 Q This is just something that you have speculated on

06 and don't have anything to pin it to in terms of
07 specifics?

08 A Sure. I can pin it to the results that come out
09 of those microcosm experiments. I think those are very
10 compelling results which suggest that the effect of
11 salinity can override just about any other factor.

12 Q Now, turning to your microcosm of experiments that
13 you just referred to, did they not show in terms of
14 size of flies at 50 grams per liter, flies that were
15 certainly no larger than the flies in nature that you
16 found when you gathered flies in the 1980s?

17 A That's right.

18 Q Does that cause you -- should that not cause you
19 some concern about the design of and the reliability of
20 those microcosm studies? Why should they not reflect
21 nature?

22 A Can I take a moment to look at the results of the
23 studies?

24 Q All right.

25 A What I was doing here was just trying to check and
0370

01 see whether or not, in fact, the predictions from the
02 microcosm tanks indeed show that there is a larger body
03 size in the experiments at 50 grams per liter compared
04 to those at a hundred grams per liter from the field.
05 And indeed, there's really no direct trend here. It's
06 difficult to say, although if we look at the August
07 development times for the flies that are emerging from
08 the tanks, once again, compared to the August
09 development times for flies that are emerging from the
10 field conditions, indeed, the flies from the tanks are
11 quite a bit larger, 4.75 compared to 4.4. So indeed
12 they match the prediction that we would expect there.

13 Once again, I'd really still like to emphasize
14 that the interpretation of these microcosm experiments
15 as with the interpretation of any experiments really
16 needs to be done in the relative context of the
17 influence within those sets of treatments. Because we
18 have no way of making the absolute comparison between
19 tanks and nature.

20 So indeed, we don't know that we're getting an
21 exact replication there, but I would add that this is
22 about the most realistic kind of experimental
23 manipulation you can get for ecological systems, and
24 it's a very widely used technique now for trying to
25 simulate conditions in nature without going out and

0371

01 actually experimental manipulating with the environment
02 itself.

03 Q Were there some confounding effects that came out
04 of the microcosm exhibits --

05 A Indeed there were.

06 Q -- experiments?

07 A Indeed there were. Would you like me to explain?

08 Q If there are confounding effects, don't they
09 indicate that there may be something questionable about
10 the reliability or the usefulness?

11 A Not at all. In fact, the factors that were
12 confounding and the microcosm experiments were indeed
13 that there were higher concentrations of nutrients at

14 the higher salinities. And as a confounding factor, it
15 makes it difficult to say whether or not -- well, was
16 it high salinity or high nutrients that had the impact
17 in terms of reduced productivity which you see in terms
18 of flies and algae over here. I suspect there would
19 not be very many people, very many ecologists that
20 would be willing to say that it was higher nutrient
21 concentration, and by "higher," we're talking about
22 micromolar concentrations of ammonia, that could have
23 had that sort of toxic effect.

24 What instead, I think, these confounding effects
25 do is reinforce the conclusion that indeed there are

0372

01 stimulatory effects by low salinities and adverse
02 effects at high salinities because if those nutrients,
03 which were confounding, having high concentration, had
04 been able to offset things by stimulating productivity,
05 they would have done so. Instead they didn't. So
06 instead of the confounding nutrients being a problem,
07 they, in fact, reinforce our conclusion that even with
08 higher nutrient concentration at the higher salinities,
09 they still have a very debilitating effect on
10 productivity of the flies and algae.

11 Q Let me look at L.A. DWP Exhibit 101. That's the
12 one you referred to that was produced in your Ph.D.
13 dissertation?

14 A That's right.

15 Q That showed what you collected during the early
16 1980s?

17 A Right.

18 Q Shows the sizes. Are you saying that the field
19 collected flies were about 4.7?

20 A Field collected flies for the same --

21 Q 4.4? Excuse me? 4.4?

22 A For the same period of time that flies are
23 emerging from the experimental microcosm tanks and you
24 have to take into consideration that seasonal
25 correction because you can see here there's pronounced

0373

01 variation seasonally. You have to look at those flies
02 that are emerging in the month of September. If you
03 look across the bottom of the chart, you see the two
04 30s, the one that's sort of on the middle, the ones
05 that's sort of on the right, the lowest down on the
06 chart? Do you see those?

07 Q Yes.

08 A Those are the bottom ends of the ranges of the two
09 groups of field-emerging flies that would be emerging
10 at the same period of time, the same month that flies
11 would be emerging from the microcosm tanks. So what
12 I'm telling you is that the microcosm tanks at 50 grams
13 per liter have the salinity that we see under these
14 circumstances here. Those flies emerging at the same
15 period of time were 4.73, 75 millimeters in length, so
16 substantially larger than those flies that are emerging
17 from the field under conditions of 100 grams per liter.

18 Q And then don't you have to ignore the size that
19 you collected in September of 1900 and '82 to come to
20 that conclusion?

21 A I must agree with that. That's an anomalous

22 point.
23 Q Well, is it anomalous or are the others anomalous?
24 A I believe that's the anomalous point because if
25 you look at the Aberglec (phonetic) data, just above it
0374
01 you can see that the minimum body size also coincides
02 in each year with the month of September. So I can
03 only conclude that in those five out of six data points
04 in which I have that information, that one data point
05 there is an anomalous bit of information.
06 MR. MOSKOVITZ: I have no further questions.
07 HEARING OFFICER DEL PIERO: Thank you very much,
08 Mr. Moskovitz. Ms. Cahill?
09 MS. CAHILL: No questions.
10 HEARING OFFICER DEL PIERO: No kidding.
11 Mr. Valentine --
12 MR. VALENTINE: Should we express our
13 appreciation, Mr. Del Piero?
14 HEARING OFFICER DEL PIERO: Don't express it yet.
15 You have no questions, Mr. Valentine?
16 MR. VALENTINE: It depends on what I hear in
17 response to the questions Mrs. Goldsmith asks.
18 HEARING OFFICER DEL PIERO: Mrs. Goldsmith's
19 done.
20 MR. VALENTINE: I'm done, too, then.
21 HEARING OFFICER DEL PIERO: Mr. Frink?
22 MR. FRINK: No questions.
23 HEARING OFFICER DEL PIERO: Mr. Smith?
24 Mr. Herrera, we aren't going to wait until Canaday gets
25 back.
0375
01 You Gentlemen are excused with my greatest
02 appreciation. Thank you very much.
03 Any cleanup?
04 MR. FLINN: Yes, we have some exhibits. I don't
05 know about Mr. Dodge, but I'm ready to offer my
06 exhibits. We would offer Exhibit 1-G, the summary
07 testimony of Dr. Herbst or his written testimony. We
08 would offer 49 and 50, 52, 52-A, 64, 65, 65-A, 66, 66-A
09 and 66-B, 201, 201-A, 202, and 203.
10 HEARING OFFICER DEL PIERO: Okay. Do I hear any
11 objections to the introduction of those exhibits?
12 None? So ordered. Mr. Dodge?
13 (NAS/MLC Exhibits Nos. 1-G,
14 49, 50, 52, 52-A, 64, 65,
15 65-A, 66, 66-A, 66-B, 201,
16 201-A, 202, 203, were
17 admitted into evidence.)
18 MR. DODGE: I have an offer also which I can state
19 faster than Mr. Flinn's.
20 MR. SMITH: Please don't.
21 MR. DODGE: Through Dr. Winkler, I offer our
22 exhibits and these are all our Exhibits 1-A-E, 231
23 through 236. Through Dr. Stine, 1-U, 198 to 200.
24 142-A and B. Through Mr. Shuford, 1-P and Exhibits A
25 and B thereto.
0376
01 HEARING OFFICER DEL PIERO: Any objections to
02 those? Mr. Flinn, you aren't allowed to object.
03 MR. FLINN: I wasn't going to object.

04 HEARING OFFICER DEL PIERO: Hearing none, those
05 will be ordered into the record. What do you have
06 there, Sir?
07 (NAS/MLC Exhibits Nos. 1-A-E,
08 231 through 236, 1-U, 198,
09 200, 142-A, 142-B, 1-P, 1-P-A,
10 1-P-B, were admitted into
11 evidence.)
12 MR. FLINN: Exhibit 238 from Dr. Herbst we will
13 provide eight and a half by 11 copies for record for
14 every one of the exhibits that were drawn on. 235 and
15 238.
16 HEARING OFFICER DEL PIERO: Any objections to
17 those? Those are ordered into the record.
18 (NAS/MLC Exhibits Nos. 235,
19 238 were admitted into
20 evidence.)
21 HEARING OFFICER DEL PIERO: I already admitted
22 into the record all of those submissions by
23 Mr. Moskovitz, right? I didn't miss any, right? Did
24 we get them all, Andy? Mr. Frink?
25 MR. FRINK: Yes. I have a little bit of

0377
01 scheduling information that everyone may be interested
02 in. Assuming that they arrive, the first witness
03 tomorrow will be Dr. Quinn of MWD. And then, we were
04 also planning on having a panel on Tufa issues and
05 state land issues. Mr. Dodge and
06 Ms. Scoonover are jointly working on it, I believe, in
07 the afternoon.
08 MR. DODGE: And I believe the Forest Service is
09 planning to join that panel.
10 HEARING OFFICER DEL PIERO: And I think that you
11 may -- I can't be positive of this now because of the
12 things going on with the Sacramento/San
13 Joaquin/Bay/Delta issue and the listing of the winter
14 run salmon as endangered as of today as opposed to
15 threatened, but it was my understanding, with the
16 exception of Mr. Brown, who's been very ill, that all
17 of the other Board members were to be here tomorrow to
18 listen to the testimony in regards to Tufa, also. So
19 it's going to be a full house here tomorrow afternoon,
20 I think. Although, that remains to be seen given the
21 fact that EPA has now listed winter run as endangered.
22 8:30 in the morning. Anything else?
23 Have a nice evening, Ladies and Gentlemen. This
24 hearing is recessed until tomorrow morning at 8:30.
25 (Whereupon the proceedings were adjourned.)

0378
01 ---o0o---
02
03
04
05
06
07
08
09
10
11

