PUBLIC HEARING

STATE WATER RESOURCES CONTROL BOARD

DIVISION OF WATER RIGHTS

STATE OF CALIFORNIA

---o0o---

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

---o0o---

Held in

Water Resources Building

901 P Street

Sacramento, California

Wednesday, February 9, 1994

VOLUME XXXIX

---o0o---

Reported by: Kimberley R. Mueller, RPR, CSR No. 10060

BOARD MEMBERS

MARC DEL PIERO
JOHN CAFFREY
JAMES STUBCHAER
JOHN W. BROWN
MARY JANE FORSTER

STAFF MEMBERS

DAN FRINK, Counsel
JAMES CANADAY, Environmental Specialist
STEVE HERRERA, Environmental Specialist
RICHARD SATKOWSKI, Engineer
HUGH SMITH, Engineer

COUNSEL AND OTHERS

For the U.S. Fish and Wildlife Service:

ERIKA NIEBAUER
Assistant Regular Solicitor
Office of Solicitor
Pacific Southwest Region
2800 Cottage Way
Sacramento, California 95825

For the Sierra Club:

LARRY SILVER:

For California Department of Fish and Game:

HAL THOMAS
VIRGINIA CAHILL
McDonough, Holland & Allen
555 Capitol Mall, Suite 950
Sacramento, California 95814

For the U.S. Forest Service:

JACK GIPSMAN
Office of General Counsel
U.S. Department of Agriculture

For the National Audubon Society and Mono Lake Committee:

BRUCE DODGE
PATRICK FLINN
Attorneys at Law
755 Page Mill Road
Palo Alto, California 94304

For California Trout:

RICHARD ROOS-COLLINS
CYNTHIA KOEHLER
Attorneys at Law
114 Sansome Street, Suite 1200
San Francisco, California 94104

For the City of L.A. and L.A. DWP:

THOMAS W. BIRMINGHAM
JANET GOLDSMITH
Attorneys at Law

Kronick, Moskovitz, Tiedemann & Girard
400 Capitol Mall, 27th Floor
Sacramento, California 95814

For State Lands Commission, Department of Parks and Recreation:

JOHN STEVENS
MARY SCOONOVER
Assistant Attorney General
1515 K Street
Sacramento, California 95814

For Meter Water District of Southern California and L.A. MWD:

VICTOR GLEASON
Attorney at Law
1111 Sunset Boulevard
Los Angeles, California 90050-0153

FRANK HASELTON
Haselton Associates

JOHN ARCULARIUS

For the California Air Resources Board:

OFFICER OF LEGAL AFFAIRS
2020 L Street
Sacramento, California 95814
BY: KIRK C. OLIVER, Senior Staff Counsel

For the Great Basin Unified Air Pollution Control District:

PAUL BRUCE, District Counsel

0005

I N D E X

E X H I B I T S

	ID	EV
NAS Exhibit No. 1-A-G		7
DFG Exhibit No. 170-A		125
DFG Exhibit No. 198		125
DFG Exhibit No. 199		125
DFG 170-A, 1/26/94 Letter included		126

SACRAMENTO, CALIFORNIA
FEBRUARY 9, 1994, 8:45 A.M.
---o0o---

HEARING OFFICER DEL PIERO: Ladies and gentlemen, this hearing will again come to order. Good morning, my name is Marc Del Piero. I'm the Chairman of the State Water Resources Control Board. This hearing is conducted by the Board regarding the amendment of the City of Los Angeles' water rights licenses on streams tributary to Mono Lake.

Good morning, Mr. Dodge, welcome back, sir.

MR. DODGE: Thank you.

HEARING OFFICER DEL PIERO: I understand that both Mr. Smith and Mr. Vorster are on this morning's panel; is that true?

MR. DODGE: That's not my panel, Mr. Del Piero, but I believe so.

HEARING OFFICER DEL PIERO: Okay.

MR. DODGE: I was driving back home after the session that ended at 7:00 o'clock with Mr. Vorster, and I realized I had forgotten to offer into evidence his rebuttal testimony, which is National Audubon Society Exhibit 1-A-G.

And I would offer that now.

HEARING OFFICER DEL PIERO: Any objection?

MR. BIRMINGHAM: (Counsel shakes head.)

HEARING OFFICER DEL PIERO: Hearing none, so ordered into the record. Thank you very much.

(NAS Exhibit Number 1-A-G was admitted into evidence.)

HEARING OFFICER DEL PIERO: Ms. Cahill?

MS. CAHILL: Good morning.
HEARING OFFICER DEL PIERO: Are you the responsible party for these two people?
MS. CAHILL: I am the responsible party. At this time, the California Department of Fish and Game would call Gary Smith, of the Department, and Peter Vorster as surrebuttal witnesses. Let me get organized.
I'd like to start with Mr. Smith this morning. He will be testifying, basically, on two subjects.
The first is the recommendations of the Department as shown on DFG Exhibit 170-A, and as the Department's recommendations relate to the necessity for releasing water from storage in Grant Lake to meet the fish flows on Rush Creek.
And the second discrete topic on which he will be testifying is in surrebuttal to Dr. Hardy's evaluation of the Department of Fish and Game's Lee Vining Creek final IFIM report.
HEARING OFFICER DEL PIERO: Okay.

0008

MS. CAHILL: Good morning, Mr. Smith.
MR. SMITH: Good morning.
DIRECT EXAMINATION BY MS. CAHILL
Q. BY MS. CAHILL: And you have been previously sworn in this action have you not?
A. BY MR. GEORGE SMITH: Yes, I have.
Q. Are you familiar with DFG Exhibit 170-A?
A. Yes, I am.
Q. And does it contain details and clarifications of the Department of Fish and Game's recommendations in this proceeding?
A. Yes, it does.
Q. And you are available to answer questions about that exhibit?
A. Yes, I am.
Q. Has the Department modified the position which you had stated previously in your oral testimony with regard to the circumstances under which it will require releases from storage when inflow is insufficient to meet the numerical flows recommended in the addendum to the Rush Creek report?
A. Yes, it has.
Q. Could you tell us what the recommendation is?
A. Essentially, the recommendation today is to release the numerical flows listed in the Rush Creek

0009

addendum for wet and normal water runoff years, until such time the inflow to Grant Lake drops below the recommended numerical values.
And at that time the inflow would equal the recommendation. Our recommendation is that inflow equal outflow.
Until the dry runoff year recommendations are reached, the inflow reaches the dry year runoff recommendations, at which time we would recommend that storage be released to maintain the dry year runoff flows, regardless of water year type -- or excuse me, runoff year type.
Q. In other words, on Lee Vining, for example, the recommendation is the numerical recommendation or

inflow, whichever is less --
A. That's correct.
Q. -- on Lee Vining. So on Rush, the recommendation now is the recommended number or inflow whichever is less, but never to drop below the dry year criteria; is that correct?
A. That's correct.
MS. CAHILL: Mr. Vorster, good morning to you.
DR. VORSTER: Good morning.
Q. BY MS. CAHILL: Have you analyzed the impact of the recommendation which Mr. Smith has just discussed?

A. BY DR. VORSTER: Yes, I have.
Q. And could you explain what analysis you've done.
A. Yes, I used the LAAMP model to look at how often the inflow to Grant was less than the Fish and Game dry year recommendation.
In fact, you don't need to use LAAMP, per se, you just need to make a comparison of the runoff record for the Rush Creek gauging station, which we refer to as the Rush Creek dam site located actually somewhat upstream of Grant Lake a half mile or so.
And one can compare that runoff record with the dry year Fish and Game recommendations. And this is not including any downstream gains or additions or subtractions from the flow below the gauge.
But making that comparison, you can see how often the inflow to Grant is less than the Fish and Game dry year recommendation.
Q. And have you prepared a table that does that?
A. Yes, I have.
Q. And is that DFG 198?
A. I didn't have a formal exhibit -- oh, yes, it is, yes. Yes, it's DFG Exhibit 198.
MS. CAHILL: We'll wait just a moment while that's passed out.
Q. BY MS. CAHILL: And can you explain what the

percentages are on this table?
A. BY DR. VORSTER: Yes, it's simply the percent of time, the number of months, which we give as a percentage of time in which the Rush Creek runoff at the dam site gauging station, what's called the dam site gauging station, is less than the DFG dry year recommendation.
And it doesn't matter how small or how much the deficit is. In other words, even if it was a tenth of a cfs, it still would show up as a deficit. So quite a few of the deficits are fairly small.
And so looking at April, as an example, 20 percent of the 50 months, the 50 Aprils, that were analyzed had a deficit, and most of them were one to five cfs range.
Q. In the case of some of the larger deficits, were there some unusual event in the historical hydrology that would account for those?
A. Yes, for example, in 1954, in August and September, it appears that the predecessor to Edison was not releasing very much, if any, flow out of the power plant for Rush Creek power house.
So the only inflow to Grant was what was being

Reverse Creek (phonetic) and Alder Creek. And so the flow into Grant was on the order of seven to eight cfs, and the dry year requirement was on the order of 35 to

40. And so that it shows up as a fairly large deficit. That's an unusual situation, I think, that's reflected in the historical record that may not occur in the future.

Q. And if it didn't, in fact, the number of deficits might be less than shown on the table?

A. Yes. And as I said, I didn't include any downstream gains or any downstream losses that might have occurred either due to gains from inflow stream flow or due to the losses from evaporation.

Q. I believe you've testified previously that you ran LAAMP both with no release from storage to meet fish flow and with release from storage to meet the originally recommended flows.

And what was the difference between those runs?

A. The difference between those runs, and those runs are, one, you take the Fish and Game recommendations for the three year types, and assume you can use Grant storage to meet the deficits. And you do the same run where you assume you don't use Grant storage to meet the deficits.

And those results were actually reported on Table 2A in Audubon MLC Exhibit 1-A-G. And the difference was on average about 2,000 acre-feet.

Now, you can do the same type of analysis using

just the dry year flows. And see what the difference would be using Grant storage and not using Grant storage. And the difference is on the average of five to 600 acre-feet.

And what actually happens there are months in which Grant is at a minimum storage level. And the way LAAMP works, it does not release from storage if Grant is at a minimum. So there still would be, in the LAAMP run, some deficits that would occur even if you're -- in other months, you're allowing ground storage to be used to meet the deficits.

Q. In that sense, by deficits, you mean a month in which the fish flow recommendation would not be met?

A. That's right. And you bring up a very important point. These are all based on mean monthly flows. So it's the mean for the entire month.

Q. Are you familiar with any projects in which, during some months, releases are set equal to inflow?

A. I'm familiar with one right there in the Mono Basin, which is the Mill Creek project that Edison has, where they are required to pass through the inflow that comes into Lundy Lake, the outflow has to equal the inflow.

They aren't allowed to store any water until the inflow reaches -- is higher than I think

approximately 70 cfs, quite a large amount. And that's because of all the downstream water right holders. So that's an example.

Q. Thank you. We're going to proceed now to the

surrebuttal of Dr. Hardy's evaluation of the Department's Lee Vining study. And we'll go back to Mr. Smith on that.

Mr. Smith, Dr. Hardy proposes that this Board use the draft Lee Vining Creek report rather than the final report.

Does the draft Lee Vining Creek report leave out the results from Reach Three on Lee Vining when calculating stream-wide WUA?

A. BY MR. GARY SMITH: Yes, it does.

Q. Could you show us where Reach Three is? Is there an exhibit number on that?

A. I don't see one.

Q. If you would describe, verbally, where it is.

A. Reach three is located roughly from the intersection of Lee Vining Creek and Highway 120, downstream to the intersection of Lee Vining Creek, and Highway 360 -- excuse me, 395.

Q. And what percent of the total stream length of Lee Vining Creek does Reach Three constitute?

A. Roughly, 20 percent.

0015

Q. And what habitats are found in that reach?

A. There were runs, riffles, pools, and cascades in Reach Three. But it is primarily a cascade, plunge pool, habitat type.

Q. And did Dr. Lee subsequently, after doing the draft report, reconsider the decision to leave out Reach Three?

A. Yes, he did.

Q. And does he now believe it is better to include three?

A. Yes, he --

MR. BIRMINGHAM: Objection. Calls for speculation.

Q. BY MS. CAHILL: Have you talked to Dr. Lee?

A. BY MR. GARY SMITH: Yes, I have.

Q. And does he believe now it is better to include Reach Three?

A. Yes, he does.

Q. And, in fact, did he include Reach Three in the final report?

A. Yes, he did.

Q. What was the reason that Reach Three was originally omitted?

A. It was omitted because Dr. Lee felt that the entrained air affected the hydraulic model calibration

0016

and the use of the stream by trout.

Q. Did he do a calculation to determine whether WUA was effected by entrained air?

A. Yes, he did.

Q. And was that analysis flawed?

A. Yes, it was.

Q. And why?

A. Dr. Lee set the cover code to zero in the IFIM algorithm whenever entrained air was present in a cell. And by doing that, he eliminated any habitat that that particular cell may have to the stream. And --

Q. Mr. Smith, he ran it first with the ordinary --

A. Yes, he did.
Q. The ordinary program?
A. He ran the ordinary program, the PHABSIM analysis.
Q. And then he ran it again setting --
A. He ran it again setting the cells with entrained air, setting the cover code criteria to zero.
Q. And then what did he do?
A. And then he compared the two results, and that technique is flawed in two -- for two reasons.
One, one has to look at how fish are using the habitat, and if they do use the habitat.
And two, he's assuming, when he sets the cover code to zero, that indeed there is no habitat.

0017

Q. And, in fact, setting the cover code to zero in the second run, didn't he necessarily end up with a result showing less habitat?
A. His results were guaranteed to show that there was less habitat if he deleted the entrained cells.
Q. And he now realizes that?
A. Yes.
Q. And, in fact, by the time the final report was done, it had been decided that it was better to include the reach?
A. Yes, he re-evaluated the entire Reach Three hydraulic model and habitat use characteristics, and decided to include it in the final report.
Q. Do fish actually use areas of the stream that have entrained air?
A. Yes, they do.
Q. Have you prepared a videotape showing fish in streams segments with entrained air?
A. Yes, I have.
Q. Does this pass the interesting question test?
MR. BIRMINGHAM: Objection. Calls for a legal conclusion.
MS. CAHILL: I withdraw the question.
HEARING OFFICER DEL PIERO: Okay.
Q. BY MS. CAHILL: Did you take this video yourself,

0018

Mr. Smith?
A. BY MR. GARY SMITH: Yes, I did.
Q. Was it taken on Lee Vining Creek?
A. No, it was not.
Q. Where was it taken?
A. This video was a compilation of videos taken on three separate streams: Bailey Creek in Shasta County, Battle Creek in Tehama County, and the head waters of the Owens River in Mono County.
Q. When did you take these films?
A. I took the films in 1988 and 1989.
Q. And does the film demonstrate that fish use water in reaches with entrained air?
A. Yes, it does.
MS. CAHILL: Could we show the video, please? I think everyone is going to want to gather around it, and get rather close, because we're going to be looking for fish through bubbles.
HEARING OFFICER DEL PIERO: Does everyone have their soft arm ring on?

MR. GARY SMITH: I don't think this demonstrates soft arm ring.
MS. CAHILL: Mr. Del Piero, you really are going to need to be closer to the screen.
HEARING OFFICER DEL PIERO: Oh, really?

MS. CAHILL: Yes.
MR. GARY SMITH: It's roughly a four-minute video. And what I'm going to do at certain points in the video, is put it into slow motion, so we can see the fish as they move about, because some of them are pretty difficult to see. If I can figure this out here.
The first stream you'll see is a plunge pool. It's Battle Creek in Inyo County. It's simply to demonstrate the occurrence of entrained air. And this is what it looks like underwater.
We'll show the same plunge pool from the side.
HEARING OFFICER DEL PIERO: And you filmed these?
MR. GARY SMITH: Yes, I did.
And as you move forward, you will notice down here in the lower left, just beginning to appear, young fish. These happen to be rainbow trout fry, nearly a year. They're a little larger than a fry.
This is typical of how fish use areas with entrained air. They're associated with it. They're down underneath. They're off to the sides.
Bailey Creek, showing another young salmonid. In addition a -- I'm not sure if this is a rainbow or brown. This is a little fuzzy. And I couldn't tell from the video whether this is a rainbow or brown

trout.
This stream is much shallower than Bailey Creek or -- excuse me, Battle Creek. You will notice the air bubbles moving past over the young fish. The water velocity here is pretty rapid.
Now, I'm going to slow it for a second. In Dr. Lee's analysis, this habitat as well as the other habitat would have, in his comparison, would have been calculated as zero fish habitat when he changed his cover code entry and then made the comparison. As you can see, there is a fair amount of white water going over these fish.
Now, we're moving into the upper -- the head waters of the Upper Owens. And if you look through the bubbles, the air bubbles on the far side, center bottom. Look right in here, you'll see several fish moving about. There's one right there.
But again, plenty of entrained air. The fish are associated with it, and they're moving about. They're feeding. They're making a living at it. And again, in Dr. Lee's analysis this would have constituted the zero habitat.
MS. CAHILL: In the original analysis?
MR. GARY SMITH: In the original analysis.
MS. CAHILL: In the draft report.

MR. GARY SMITH: See the face, right here? And there's one right there. There he is. And going over

towards him a little closer.
Okay. Now I stuck this in to show how fish exist in areas with high velocity. It's not really associated with entrained air at this point. If you notice the sediments are being picked up and moved and mobilized here through the current velocity.
And if you watch right in front, this rock here, and behind these rocks here, you'll see a fish moving back and forth. Go a little faster here. There. I'm sorry. This -- let me start this up. And it -- wrong button.
Okay. We're back to almost where we were.
MS. CAHILL: You've lost your sound, too.
MR. GARY SMITH: I have? Oh.
HEARING OFFICER DEL PIERO: Do fish talk?
MS. CAHILL: No, actually, the bubbles make a wonderful sound.
MR. GARY SMITH: Now, you can see the fish moving back and forth in front of this rock. This area he is in is very slow velocity compared to the area I'm in, and right behind the fish, there. This is an example of fish using entrained air.
If you look right in here, when I go back on to

0022

play, you will see there are actually three fish moving about: The stream margin here on the left, and the stream center, and white water on the right.
Typically, there are areas of slow velocity along the margins that provide excellent habitat for fish. And the center portion of fish is a food producing, production area -- not production, food transport zone.
And the fish, typically, move about like these two are doing here, right into the bubbles into the mainstream, capture a food item, and then back into the area of where they're in a resting or holding station.
What I'm doing here is going downstream, looking downstream, and trying to move downstream through the bubble curtain to the far side. There are several trout that are on the far side of the picture here. They are very difficult to see. One should be right in there, and one should be right up there.
And these fish are using this as overhead cover. See, if the bubbles weren't there, the fish would react to my presence.
There's one right here. If you'll look, you'll see the white part of his lower lip. See him right there?
Now we're downstream moving through the curtain, and watch how the fish react. They realize that they

0023

have this big massive hulk there. Ready? Boom, gone.
Another example of a fish making a living in an area with high water velocity. As you watch these fish move about, notice we have very small fish here. He's about three or four inches. This fish is about nine or ten inches. And there's another one that moved through here about four inches.
Entrained air bubbles move overhead and sometimes between me and the fish. And water velocity, again, is pretty rapid here at this moment here. Here's the

small one here. Pretty rapid.
The fish are associated with the bottom, the contours of the bottom, which provide areas of low velocity. But they're right there where the food items are being supplied.
And if you watch here in a moment, I have the larger fish isolated. He moves up very easily and slowly. Watch his fins. He's being moved about by the water that he's sitting in, but expending very little energy. Look at his fins, he's hardly swimming at all. The water is going by and above him and bringing food to him.
From a bionogenic prospective, this fish is making a pretty efficient living. See how the fins are nice and easy, not startled, not having a hard time

0024

maintaining this position.
Here's another example. The air bubbles at the top of the picture, this is a different type of habitat. This fish is using what we call overhead habitat, as well as object habitat. We'll go forward here a little faster.
This is a short sequence, so I want to do it in slow motion.
If you watch right in here, you'll see a fish coming into view right there. When I first start playing it, watch how easy he's swimming. And I move to him a little bit and startled him a little bit. And he pulled away from his cover and starting swimming harder.
Also watch. Up in here, you'll see air bubbles moving along the rock that he's hiding under. Watch his caudal fin as he starts to work harder. He's getting ready to escape. Shortly after I shut this off, he was gone.
Another example of fish using the entrained air. You'll notice the bubbles moving very rapidly between me and the fish and beyond the fish.
Another example, as you watch on the left, you will see three fish materialize as I move up slowly. They're hiding behind a rock under the white water,

0025

brown trout, rainbow trout, and I think the other one may be a brown trout. See the three right there?
Now, I'm going to raise up out of the water. This is not a plunge pool habitat. This is what we call a riffle or rapid. But to give you some sense of a water velocity, the appearance of the white water or entrained air. I will swing to the left. The water is moving quite rapidly.
HEARING OFFICER DEL PIERO: This is how you make your living?
MR. GARY SMITH: That's how I made my living. Today, I'm making my living here.
HEARING OFFICER DEL PIERO: Oh.
MR. GARY SMITH: In 1988 and 1989, it was wonderful.
MS. CAHILL: Thank you, Mr. Smith.
Q. BY MS. CAHILL: Mr. Smith, have you snorkeled in over 20 streams in Mono and Inyo counties?

A. BY MR. GARY SMITH: Yes, I have.
Q. And have you snorkeled in additional streams in the Eastern Sierra?
A. Yes, I have, if one considered the Tahoe Basin to be the Eastern Sierra. It drains to the east and it's beyond the crest, so I presume it's the Eastern Sierra.
Q. And that would be an additional how many streams?

0026

A. Ten or eleven streams, I think.
Q. Is it your experience that fish sometimes use entrained air as cover?
A. Yes, they do.
Q. And is it your experience that fish are frequently found in streams segments that have entrained air?
A. That's true.
Q. In your professional opinion, is it more accurate to include or to leave out Reach Three in doing a stream-wide weighted usable area calculation on Lee Vining Creek?
A. In my opinion, it is more accurate to include Reach Three in the analysis.
Q. Did Dr. Lee also conclude that stream-wide WUA would be more accurate if it were included?
A. Yes, he did.
Q. You said that Reach Three constituted about 20 percent of stream length?
A. That's correct.
Q. Does it provide habitat?
A. Reach Three does, yes.
Q. In your professional opinion, are the stream-wide weighted usable area curves in the draft or final Lee Vining Creek report more accurate?
A. I believe the curves in the final report are more

0027

accurate of, excuse me, of Lee Vining Creek.
Q. Do you believe that Dr. Hardy's suggestion that Reach Three data be excluded in calculating stream-wide weighted usable area is justified?
A. No, I do not.
Q. Cascade habitat often involves high velocities; doesn't it?
A. Yes, it does.
Q. If velocities got so high they were no longer suitable for trout, would the PHABSIM model show those cells as unsuitable?
A. It would eliminate those cells for the compilation of weighted usable area. So the answer to your question is yes.
Q. So would the model itself take into account any velocities that were too high in the cascades areas?
A. That's correct.
Q. Is there low velocity water along the margins of Reach Three?
A. Yes.
Q. Is there low velocities near the bottom?
A. Yes.
Q. Did the City of Los Angeles and Los Angeles Department of Water and Power have the opportunity to comment on the draft Lee Vining report?

0028

A. Yes, they did.
Q. Did they submit comments?
A. Not to my knowledge.
Q. Aquatic systems used the Smith and Acetuno curves on the Lee Vining Creek?
A. That is correct.
Q. At the time they did their research, was there enough fish in Lee Vining to collect the data necessary to validate the curves?
A. No.
Q. And in the absence of sufficient fish, what was the best approach?
A. The best approach was to use criteria that were developed within the region, and have been reviewed by professional researchers and agreed upon for use.
Q. Thank you very much.
MS. CAHILL: I believe that concludes our direct presentation.
HEARING OFFICER DEL PIERO: Thank you very much. Mr. Birmingham?
MR. BIRMINGHAM: May we ask for a five minute recess?
HEARING OFFICER DEL PIERO: Sure. Let's take a five minute recess.
(A recess was taken at this time.)

0029

HEARING OFFICER DEL PIERO: Ladies and gentlemen, this hearing will again come to order. Mr. Birmingham?
CROSS EXAMINATION BY MR. BIRMINGHAM
Q. BY MR. BIRMINGHAM: Mr. Vorster, I have just a few questions for you about the Department of Fish and Game Exhibit 198.
Exhibit 198 is based on a monthly average flow; is that correct?
A. BY DR. VORSTER: Yes, what we call mean monthly flows.
Q. Now, if we were to look at mean daily flows, do the same kind of analysis that you did in preparation for the Department of Fish and Game Exhibit 158, but instead of looking at mean monthly flows, we would look at mean daily flows, the percentages that are listed in the column on the right, they would go up, wouldn't they?
MS. CAHILL: Objection. Ambiguous.
HEARING OFFICER DEL PIERO: How so?
MS. CAHILL: It's not clear whether he means whether the numbers would go up if even one day in a month went up, or whether he's talking about the percentages of days over the total number of days versus --
MR. BIRMINGHAM: I think the question is clear.

0030

I'll stand by the question.
HEARING OFFICER DEL PIERO: I'm going to --
MR. BIRMINGHAM: May we ask the question be reread?
HEARING OFFICER DEL PIERO: Yeah.
(Whereupon the record was read as requested.)
HEARING OFFICER DEL PIERO: Overruled.
MR. BIRMINGHAM: I misspoke if I said Exhibit 158.

It's DFG 198.
MR. ROOS-COLLINS: Let me ask for clarification, rather than object. This exhibit is entitled "Months in which inflow is less than DFG dry year flow recommendation."
Mr. Birmingham's question appears to concern days in which the inflow is less than dry year flow recommendations.
I would just like him to clarify that that is his intention before Mr. Vorster answers the questions.
HEARING OFFICER DEL PIERO: Do you have a problem with that, Mr. Birmingham?
MR. BIRMINGHAM: No.
HEARING OFFICER DEL PIERO: Mr. Vorster, do you understand the question?
DR. VORSTER: Yes. I think that clarification is extremely helpful, because you want to know the number

0031

of months in which there were -- the inflow on a mean monthly basis is less in a dry year recommendation. That's what's reported here.
If you want to know the number of months in which there was one day or more, there was just one day in which the inflow was less than the DFG dry year recommendation, certainly these numbers would go up.
If you looked at the number of -- did the same analysis looking at the number of days in the whole period of record in which the inflow was less, then the numbers wouldn't change that much.
In fact, I'm looking at the records right now, and if you look at any particular month in which there is a deficit, you'll see that the mean monthly flow occurs -- these deficits occur when the flows are generally relatively constant, within a couple cfs of the mean.
So -- I'll just leave it at that.
Q. BY MR. BIRMINGHAM: Well, isn't it correct, Mr. Vorster, that in some months where the flows exceed -- or the monthly mean exceeds the Department of Fish and Game dry year recommendation, there are a number of days within the month where the daily mean is less than the Department of Fish and Game recommendation?

0032

A. BY DR. VORSTER: I'm sure that can occur. I was just going to look for an example of that. But there could be a month in which the mean is slightly higher than the DFG recommendation, but there may be a few days in that month which is less.
Q. And on those days when the mean daily flow was less than the Department of Fish and Game recommendation for dry year flows under the proposal by the Department of Fish and Game, DWP would be required to release water from storage to meet the minimum flow on those days; isn't that correct?
A. That's a policy question that I can't answer. And I'd like Mr. Smith to address that issue.
MR. GARY SMITH: If you would, Mr. Birmingham, would you restate your question.
Q. BY MR. BIRMINGHAM: Mr. Vorster has just agreed,

Mr. Smith, that in some months when the mean flow, the mean monthly flow is in excess of the Department of Fish and Game recommendation for dry year releases, there will be days on which the mean daily flow is less than the Department of Fish and Game recommendation.

And under the Department of Fish and Game proposal, on those days, the Department of Water and Power would be required to release water from storage to maintain the minimum flow; is that correct?

0033

A. Presumably that would be correct if DWP had the ability to monitor the flow daily and check the flow daily, and make a modification to it. I'm not familiar with DWP's operations, so I can't give you a definite answer to that question.

Q. Mr. Vorster, in 1977, did the mean monthly flow exceed the Department of Fish and Game recommendation for dry year releases during each month?

A. BY DR. VORSTER: I was just going to look at them. I'm looking at 1977 right now. And I will -- I'll go through the exercise step by step.

In April, the mean cfs was 33.8, flow was very, very constant, though, in that month. It varied just a couple cfs off that mean.

Q. Is that greater than or less than the Department of Fish and Game recommendation for dry year minimum?

A. That is 1.2 cfs less, but that, again, is not accounting for any gains downstream from that. In fact, in April you would probably have gains downstream that would probably actually exceed the 35 cfs release.

May, the recommendation is 75, and the mean was 34.

In June the recommendation is 72, the mean is 53.6.

So, so far, we're always under.

0034

July is 40.5. The recommendation is 45 cfs.

And I'm just looking down the rest of the months, and I think in November -- November, it's -- 31.0 is the mean, and the recommendation is 30.0. So that would be an example where it wasn't.

We have to remember that 1977 was the driest year on record by far. It was an extremely low runoff year.

Q. Now, when you were doing the analysis in preparation of DFG 198, did you include the DFG proposed flushing flows?

A. It wasn't necessary, because there is no flushing flows in dry years. Or it wasn't relevant. I guess, that's a better answer.

Q. This is maybe a policy question for Mr. Smith, but under the proposal, is there a minimum Grant Lake storage.

A. BY MR. GARY SMITH: The minimum Grant Lake storage, I believe that Mr. Vorster used in his analysis, was 11,500 acre-feet.

DR. VORSTER: That was agreed upon for LAAMP modeling purposes. I don't think there was any --

Q. BY MR. BIRMINGHAM: I'm asking you specifically about the proposal of the Department of Fish and Game.

So in other words, Mr. Smith, what you're telling

us is, that if storage in Grant Lake falls below 11,500
0035
acre-feet, it would no longer be necessary for the Department of Water and Power to release water from storage to meet the minimum flows recommended by the Department of Fish and Game?
A. BY MR. GARY SMITH: No, that's not what I'm saying.
DR. VORSTER: I did it because the LAAMP model -- we agreed that we would use eleven and a half thousand as a minimum reservoir storage.
So the way LAAMP works is that if it's at the minimum, it no longer requires release from storage.
Q. BY MR. BIRMINGHAM: So Mr. Smith, if Grant falls below 11,500 acre-feet, what would be the Department of Fish and Game's position on the release of stored water to meet minimum flows?
A. BY MR. GARY SMITH: If that situation were to occur in the future, we would address that, given the circumstances existing at that time.
Q. Would it not be necessary for the Board to include, at this time, in the modification of the Department's licenses, what's to occur in that event?
A. I don't think I'm qualified to dictate what the Board should or should not do.
Q. So the Department of Fish and Game is not making any recommendation with respect to what would happen in
0036
the event that Grant Lake storage falls below 11,500 acre-feet?
A. Our recommendation is that we will address that issue if it were to occur. I have no idea if it would even occur. At that time we would make a decision.
Q. Mr. Vorster, I'd like to go back to a question I asked a few moments ago. I asked if you had included in your analysis of the Department of Fish and Game flushing flows.
And you responded it wasn't necessary, because there are no flushing flows in dry years; is that correct?
A. BY DR. VORSTER: That's correct.
Q. The analysis that was used to prepare DFG 198 it's not restricted to dry years is it?
A. Absolutely. As I explained in my testimony, I did something very straight forward, simple. I looked at what the Rush Creek runoff was at that dam site gauging station. That's input that we use the actual runoff. And compared it to the dry year recommendation of the Department of Fish and Game.
That would be the release requirement, and the inflow.
So since there's no flushing flow requirement in dry years, I'm not quite sure why it would be relevant.
Q. Well, the analysis you did in preparing Department
0037
of Fish and Game Exhibit 198, you looked at all years, is that correct, years that would fall into the dry, normal, and wet category developed by the Department of Fish and Game?
A. That's correct. But again, it's not -- since there is no dry year flushing flow requirement, the

analysis that went into Exhibit 198 just -- it's not relevant.
Q. Is there a normal year flushing flow?
A. There is a flushing flow recommendation for -- the Department of Fish and Game's recommendation, I think, is given in Exhibit 170-A. It's a recommendation --
Q. All we need to establish, Mr. Vorster, is that the Department of Fish and Game does recommend a flushing flow for normal years; isn't that correct?
A. The reason why I can't give you a straight yes answer is because there is more than one definition --
Q. You used to work for Mr. Huchison, right?
A. Right. There's a normal year definition that we use in the LAAMP model, and there's a normal year definition that the Department of Fish and Game uses in Exhibit 170-A. So I just want to be very clear that there's a difference.
Q. Well, I'm looking at 170-A on Rush Creek, and there is a proposed flushing flow for normal years;

0038

isn't there, Mr. Vorster?
A. That's correct. But it's not the same as the flushing flow normal year that we use in the LAAMP model. And that was the only purpose for my clarifying that.
Q. Let's get back to my question about DFG 198. Now, in some normal years, there will be days when the mean annual -- I mean, the mean daily flow, is less than the Department of Fish and Game's recommended flow for dry years; isn't that correct?
A. In some normal years, there might be days in which the inflow to Grant Lake is less than the dry year recommendation. It's possible. It's easy enough to check the record.
Q. Would you check the record?
A. Sure. In fact, I think -- yeah. For example, I think 1989, which we consider one of the drought years, is actually under the classification that's considered -- I think it's considered a normal year.
And so May of 1989, there were -- the flows ranged from 70 to a hundred and three cfs. So there was -- and the dry year recommendation for May is 75 cfs. And there was a couple days in which --
Q. What's the normal year recommendation, Mr. Vorster?

0039

A. Oh, I'm sorry. The normal year recommendation would be 100 cfs.
Q. So in May 1989, which would have been considered a normal year under the Department of Fish and Game's recommendation --
A. Right.
Q. -- there were days in which the daily mean inflow into Grant Lake was less than the Department of Fish and Game recommendation?
A. Right. Well, no, that's no longer true, because the recommendation, now, is that in a case like that, that the release be equal to the inflow, as long as the inflow is at or above the dry year recommendation.
So in 1989 the actual recommendation would be

whatever the inflow is, except on three days when the inflow was less than 75 cfs, there would have to be a slight release from storage, a couple acre-feet from storage.
Q. So in May 1989 a normal year --
A. A very dry normal year.
Q. Maybe I could finish my question, Mr. Vorster, before you -- I'll try to not interrupt your answers, if you won't interrupt my questions.
How does that sound?
A. I apologize.

Q. In May 1989, a normal year, there were days in which the inflow into Grant Lake was less than the proposed minimum release for dry years?
A. That's correct. The record would indicate three days.
Q. And in May -- excuse me. In 1989, a normal year, the Department Fish and Game recommendation, there would have been a flushing flow during that year; isn't that correct?
A. Absolutely not. That's why I --
HEARING OFFICER DEL PIERO: I'm sorry. The answer was absolutely not?
DR. VORSTER: Not. And the reason why is because if you look on Exhibit 170-A, in dry normal years, there's no requirement for flushing.
And 1989 is exactly the type of year that I call dry normal. So that's why I wanted to make sure we were always -- it's important we deal with the Department of Fish and Game's recommendations in the way they define normal years.
Q. Mr. Smith, I'd like to go back to your testimony regarding the Reach Three data that were excluded from the Lee Vining draft report, but included in the final report.
It was Dr. Hardy's testimony that he thought there

were good reasons to exclude the Reach Three data in the -- in calculating weighted usable area, and that there was inadequate explanation as to why the Reach Three data were included in the final report.
Is that your understanding of Dr. Hardy's testimony?
A. BY MR. GARY SMITH: Yes, that's essentially my understanding.
Q. Now, you explained why Dr. Lee excluded the data from the draft report, and then decided to include the data.
Is there any reason why Dr. Lee didn't come in and testify?
A. No particular reason.
Q. Now, you explained the decision to include the Reach Three data in the final report.
Did Dr. Lee reach that conclusion after consultation with you?
A. Dr. Lee reached that conclusion after reviewing the comments he received on the draft report. And he and I worked together, yes.
Q. And the reason that Dr. Lee decided to include the

draft report was because -- excuse me, the Reach Three data in the final report, was because it was concluded that fish actually do use habitat where there's

0042

entrained air?
A. That's part of the reason.
Q. What were the other reasons?
A. The other reason is that his analysis was flawed when they demonstrated that habitat decreased. And he reviewed the model calibration details, and discovered that the margin of error would be much greater if one were to eliminate Reach Three from the compilation of WUA than if one were to include it.
From a biological ecosystem perspective, Reach Three is part of Lee Vining Creek. Fish do occur there. And from an ecosystem prospective, Reach Three should be addressed.
Q. Do you have a copy of the draft report here with you?
A. No, I do not.
MR. BIRMINGHAM: May I ask Mr. Frink a question, Mr. Del Piero?
HEARING OFFICER DEL PIERO: Certainly.
MR. BIRMINGHAM: Mr. Frink, the draft report of Department of Fish and Game is part of the State Board's staff file; is that correct?
MR. FRINK: Yes, it is. I believe it would be part of Exhibit 2.
MR. BIRMINGHAM: Thank you.

0043

Q. BY MR. BIRMINGHAM: I'm referring to --
HEARING OFFICER DEL PIERO: Do we have an extra copy handy? Maybe that will facilitate Mr. Birmingham's examination.
MR. BIRMINGHAM: Thank you.
HEARING OFFICER DEL PIERO: Mr. Herrera takes fingers back if he doesn't get his copy back.
MR. HERRERA: You bet.
Q. BY MR. BIRMINGHAM: Mr. Smith, I'm giving you a copy of the Department of Fish and Game's Stream Evaluation Report, 92 dash 4, Volume one; Instream Flow Requirements for Brown Trout in Lee Vining Creek, Mono County, California; 13, July 1992.
Are you familiar with that report?
A. BY MR. GARY SMITH: Yeah. It has been some time since I've reviewed it in total, but I have reviewed it.
Q. When was the last time you reviewed this report in toto?
A. When I provided comments to Aquatic Systems Research on the -- during the review. That was several years ago.
Q. That was several years ago since you reviewed the report?
A. In total.

0044

Q. Now, you were called to respond to rebuttal testimony of Dr. Hardy; is that correct?
A. That's correct.
Q. Now, do you have a copy of Dr. Hardy's written

rebuttal testimony with you?
A. Somewhere, yes, I have it.
Q. If you could take a moment and pull that out, I'd like to go through it for a moment if we can. The first page of Thomas Hardy, Ph.D.
HEARING OFFICER DEL PIERO: Mr. Smith?
Mr. Smith, you need to speak more directly into the microphone.
MR. GARY SMITH: Let's try this one. It might be okay. Which one would be better?
HEARING OFFICER DEL PIERO: We just need to make sure we get a good clean record.
Q. BY MR. BIRMINGHAM: Now, on page one of Dr. Hardy's rebuttal testimony, there's a section that states, "Reach Three Weighted Usable Area Results," and the paragraph reads, and I'll read it into the record, slowly.

> "I also have significant concerns regarding the use in the final Lee Vining Creek report of the Reach Three weighted usable area, paren, WUA, end paren, data which was excluded from the analysis in the draft report.
>
> I cannot concur with the inclusion of Reach Three data in the total weighted usable area relationship for Brown trout used in the final Lee Vining Creek report. This is based on a review of the material presented in the draft Lee Vining instream flow report, cited in my direct testimony, beginning with the second full paragraph from the bottom of page 28, and continuing through the end of the paragraph on page 35.
>
> The draft report clearly articulates sound reasons for the exclusion of this data in the computation of total weighted usable area for use in the final analysis of the recommended instream flows.
>
> No defensible justifications have been provided for the inclusion of these data in the final report."

Now, you were called to respond to this part of Dr. Hardy's testimony; is that right?
A. That's correct.
Q. And Dr. Hardy says here that there are, "sound reasons for the exclusion of the data in the computation of total weighted usable area set out on pages 28 through 35 of the draft report." Is that correct?
A. That's correct.
Q. And you didn't go back and look at pages 28 through 35 of the report to determine what those sound reasons were?
A. If that's your question, yes, I did. You asked me if I had reviewed the report in total. No, I had not

reviewed it in total.
Q. But you went back and looked at 28 through 35?
A. I did not look at the graphs within pages 28 through 35. I looked at the text itself.
Q. Did you compare, as Dr. Hardy suggested, the Figure 18 on page 39 of the draft report with Figure 16 on page 37 of the final report?
A. I have compared those, yes.
Q. When --
A. If I'm -- I'm going to have to ask, because I do not have the draft report in front of -- well, let met take a look. Which -- that's figure?
Q. You do have a copy of the draft report.

A. That's right. Figure -- which in the draft report?
Q. Dr. Hardy recommended that to see the bias, that -- what he perceived as bias, you could look at Figure 18 on page 39 of the draft report, and compare it to Figure 16 on page 37 of the final report.
And my question, Mr. Smith, is that when you were preparing your surrebuttal testimony, did you compare those two charts or graphs that Dr. Hardy mentioned?
A. I have looked at these two figures and compared them. But the comparison is a moot point.
Q. Let's go through the draft report, if we can.
On the bottom of page 28 of the draft report, which is part of State Water Resources Control Board Staff Exhibit 2, it states, "However, this habitat model of Reach Three is unrealistic, based upon our experience, delineating habitat on the creek and collecting physical data for PHABSIM," spelled, P-H-A-B-S-I-M.
"Further evidence for this is supported by the fact that Reach Three weighted usable area flow relationship peak at higher flows than Reach Two, a reach with a flatter gradient."
Now, Dr. Lee apparently thought that the Reach Three data should be excluded from the final analysis

because, in Reach Three, the weighted usable area went up with higher flows than in Reach Two, which has a flatter gradient.
And apparently that was inconsistent with Dr. Lee's understanding of the way the model works; is that right, Mr. Smith?
A. Your question confused me a little bit right there at the end. Would you ask it again, please?
Q. Sure. I'm looking at this sentence. It says, "Further evidence for this, the fact that the Reach Three are unrealistic --
A. All right.
Q. "Further evidence of this is supported by the fact that Reach Three weighted usable area flow relationships peak at higher flows than Reach Two, a reach with a flatter gradient."
Now apparently, Dr. Lee was stating that the data seems a little unrealistic, because Reach Three as flows increase, weighted usable area increases at rates greater than in Reach Two, a reach with a flatter

gradient.
And apparently that is inconsistent with his understanding of the way the model works; is that your understanding of what I just read?
A. That is what's stated in the draft.

Q. Now, you've shown us this video about entrained air. That video of entrained -- fish using habitat with entrained air, that doesn't relate to this part of Dr. Lee's testimony or report, excuse me, where he says, "This increase in habitat in Reach Three with increased flows just doesn't make any sense," to him, based on his understanding of the model; does it, Mr. Smith?
A. Dr. Lee was making a subjective assessment. He had no data upon which to make that assessment. He was questioned in response to questions he received on the draft report.
He re-evaluated the model, the model calibration details, and discovered that his decision to eliminate Reach Three from the analysis was unfounded.
Also, he determined that leaving Reach Three out would introduce a greater margin of error than including it.
Q. Mr. Smith, I'm not sure you understood my question. And if you've finished your answer, I'll see if I can answer it again, and make sure I get an answer to my question.
A. Right.
Q. You've presented this video showing fish using habitat with entrained air.

A. That's right.
Q. My question is: Does the evidence that fish use habitat with entrained air address the statement made by Dr. Lee in the paragraph in the sentence that states, "Further evidence is supported by the fact that Reach Three weighted usable area flow relationships peak at higher flows than Reach Two, a reach with a flatter gradient."
Now Dr. Lee's statement is not addressed by your video that shows fish using habitat with entrained air?
A. Oh, indeed it is.
Q. I'd like to go on to page 32. Page 32, Dr. Lee, in his draft report states that, "We believe the overestimation of habitat," and here he's still talking about Reach Three; is that right, Mr. Smith?
A. I believe so.
Q. Then, "We believe the overestimation of habitat is due to the inability of the IFG4 HABTAT model to recognize turbulent super critical flow. And air entrainment is not suitable for trout habitat."
Now, that's what you addressed through the showing of your video; is that right?
A. In part.
Q. The next sentence goes on to say, "Another factor which may have affected habitat estimation, was the

location of transects within cascades."
Now, Dr. Lee is there talking about how the actual

IFIM study was conducted on Lee Vining Creek; isn't that right, Mr. Smith?
A. I believe so.
Q. Now, that's not addressed by -- Dr. Lee's concern about the placement of transects is not addressed by any of the evidence you've presented here today, is it?
A. I believe that sentence refers to Dr. Lee's understanding at that time of the hydraulic modeling capabilities of IFG4. He has since learned that he had a misunderstanding of the IFG4 capabilities.
Q. Let's go to the next paragraph. It says, "Data on habitat suitability of air entrained water are scant. However, Smith, 1986, notes from data that are the basis for the Eastern Sierra Nevada habitat suitability criteria, that all trout fry actively avoid air entrained turbulence, although, juvenile and adult trout are indifferent to it.
Now the 1986 Smith report, that's the Smith and Acetuno report; is that correct?
A. No. That's another Smith report. I am the sole author of that. That deals with observation of fish using various cover components in the stream systems.
Q. Did Dr. Lee accurately interpret the data that you

0052

collected?
A. Partially.
Q. Why do you say partially?
A. I believe if you review the Smith and Acetuno -- excuse me, the Smith '86, it also concludes that rather than active avoidance of entrained air, fry, now we're talking about fish up to approximately two inches in length, fry are more apt to be avoiding water velocities that exceed or are in the upper ranges of their preferred values.
And as the video demonstrated, high water velocities and entrained air are often associated. As a matter of fact, it's seldom you will have entrained air without high water velocity.
So therefore, that's why I said partially interpreted Smith '86.
MR. HERRERA: Mr. Birmingham, your 20 minutes has elapsed.
MR. BIRMINGHAM: May I take a moment, Mr. Del Piero?
HEARING OFFICER DEL PIERO: Certainly, Mr. Birmingham.
MR. BIRMINGHAM: May I ask Mr. Dodge a question?
HEARING OFFICER DEL PIERO: Certainly.
MR. BIRMINGHAM: You've designated Dr. Lee as a

0053

surrebuttal witness. Do you plan on calling Dr. Lee?
MR. DODGE: Yes.
MR. BIRMINGHAM: I have no further questions.
HEARING OFFICER DEL PIERO: Thank you very much, Mr. Birmingham. Mr. Dodge, nice to see you back, sir.
MR. DODGE: Thank you. Glad to be back.
MR. BIRMINGHAM: That's not what you told me this morning, Bruce.
CROSS EXAMINATION BY MR. DODGE
Q. BY MR. DODGE: Mr. Vorster --

HEARING OFFICER DEL PIERO: Is that an accusation of his being a tad disingenuous this morning? There's only three more days, Bruce.

Q. BY MR. DODGE: DFG Exhibit 198, now what is the capacity of Grant Lake?

A. BY DR. VORSTER: 47,500 acre-feet.

Q. And Exhibit 198, if I'm reading it correctly, tells us the percentage of time where you might, under the revised DFG recommendation, you would use Grant Lake storage to make up for a -- an inflow that was insufficient; is that right?

A. That's correct, on a mean monthly basis.

Q. Now, my question to you is in terms of thousand acre-feet, can you give us any estimate for a year as to how much, if you will, make up, would be required?

0054

A. It would be on the order of magnitude of a thousand acre-feet as opposed -- going by orders of magnitude, a thousand acre-feet as opposed to 10,000 acre-feet. It would be anywhere from a hundred acre-feet to two thousand acre-feet.

I haven't done the calculations -- or I don't have the results right in front of me. I think somewhere in my files I do. I think I would be able to give you a more precise answer.

But I know that it would be -- obviously, depending on the year. Many of the years would be around a thousand acre-feet. I mean, I'll try to give you a more precise answer after the break.

Q. Let me change subjects. Under the revised DFG recommendation for Rush Creek, you would not use Grant Lake storage in wet and normal years, correct, to make up a deficit?

A. Using the mean monthly flows as your guideline, I think Mr. Smith testified that if there was an inflow in a normal or wet year, which was less than the dry year recommendation, you would use Grant storage. That would be a pretty rare event. But in theory, as Mr. Smith said, on a daily basis, you might have to use the Grant storage on a normal or wet year.

Q. With that exception, under the revised DFG

0055

recommendation, you would not use Grant Lake storage; is that correct?

A. That's correct.

Q. And it follows from that, doesn't it, that under the revised recommendation, there would be less water sent down Rush Creek from Grant Lake?

A. Absolutely. More water would be available for export.

Q. Can you quantify that amount for us?

A. Well, yes. I think I earlier talked about the difference between using Grant storage and not using Grant storage, of being about 2,000 acre-feet.

And since LAAMP doesn't have the capability right now to evaluate Fish and Game's proposal directly, I can indirectly say that it would allow, not the full 2,000 acre-feet, but about 14 to 15 hundred acre-feet additional water for export.

In other words, the requirement that Fish and Game

has that the flows are, inflows are less than the dry year flows, requires that some water be release from storage, but allows that about 15 hundred acre-feet still to be available for export.
Q. And that is on a yearly basis, correct?
A. On an average annual basis, correct.
Q. Now, last question. In terms of this revised DFG

0056

recommendation, and relating specifically to the use of Grant Lake storage, did you consider the revised DFG recommendation in the two management plans that you've testified to in your rebuttal testimony?
A. Yes. I think I testified that the assumption I made in my management -- in the MLC/NAS management plan, was that Grant storage was not used, and that's because I -- as I explained, LAAMP didn't have the capability to exactly model the recommendation, but the results indicated that it would be closer to that assumption of not using Grant storage. It would be closer in terms of average annual export.
So in the runs I did, I -- that's how I did it.
Q. So this testimony today is not new to you? You anticipated this?
A. Absolutely. Absolutely. And I want to make further comment to clarify this issue of, that on the daily basis, you may have inflows that are less than the requirement, and therefore might need to use Grant storage in normal wet years or in dry years.
Of course, there will be days in which the inflow is greater, and therefore you can build up storage in Grant, which you will be able to use later in the month, later in the year, for export or to make up the deficits. So that's the converse of the issue.

0057

MR. DODGE: That's all I have, thank you.
HEARING OFFICER DEL PIERO: Thank you very much, Mr. Dodge. Mr. Roos-Collins?
MR. ROOS-COLLINS: One moment, please.
HEARING OFFICER DEL PIERO: Certainly.
MR. ROOS-COLLINS: Good morning.
DR. VORSTER: Good morning.
CROSS EXAMINATION BY MR. ROOS-COLLINS
Q. BY MR. ROOS-COLLINS: Mr. Smith, under the Department of Fish and Game's revised recommendation, Exhibit 170-A, release will be made from Grant Lake storage whenever inflow was less than the dry year recommendation, correct?
A. BY MR. GARY SMITH: That is correct.
Q. Now, that extra release, that is, the release from storage, would provide a benefit to the fishery?
A. That is correct.
Q. It would also provide a benefit to the lake?
A. Presume --
MR. BIRMINGHAM: Objection. Lacks foundation.
HEARING OFFICER DEL PIERO: Sustained. You can lay some foundational questions before you proceed. Go ahead.
Q. BY MR. ROOS-COLLINS: Mr. Smith, are you familiar with the January 26th, 1994, letter from Virginia

0058

Cahill, Department of Fish and Game's counsel, to this Board voiding Exhibit 170-A?
A. BY MR. GARY SMITH: Yes.
Q. Do you have that letter in front of you?
A. No, I do not. Yes, I do. Mr. Vorster has a copy.
Q. Let me ask you to turn to footnote two, on page 2 of that letter, and read it.
A. All right.
Q. What does that mean?
A. Let's see. "In years in which additional releases --
DR. VORSTER: Read that more slowly.
MR. BIRMINGHAM: This also lacks foundation.
HEARING OFFICER DEL PIERO: Asking him to read the footnote?
MR. BIRMINGHAM: No, asking him what it means.
MR. ROOS-COLLINS: In the interest of moving this along, I'll withdraw the question.
HEARING OFFICER DEL PIERO: Okay.
Q. BY MR. ROOS-COLLINS: Mr. Smith, does footnote two comport with the Department of Fish and Game's policy for the operation of Grant Lake?
A. BY MR. GARY SMITH: Yes.
Q. What does footnote two mean to you?
A. It means if additional water is needed that

0059

exceeds -- water that exceeds the requirements of Department of Fish and Game dry year criteria stream flows, if water, in addition to those flows, is needed to maintain Mono Lake for whatever purpose, if that water is going to be released during those years -- now this would occur during normal and wet years, we're asking that such water be released during periods when the inflow during a normal and wet year type is less than the DFG recommended stream flow.
Q. Now, Mr. Vorster discussed with Mr. Dodge the amount of make up --
DR. VORSTER: I'm sorry. Would you repeat your question?
Q. BY MR. ROOS-COLLINS: Mr. Vorster discussed with Mr. Dodge the amount of make up from storage that might be needed to comply with the dry year minimum requirement.
Do you recall that discussion?
DR. VORSTER: Yes.
Q. BY MR. ROOS-COLLINS: Mr. Smith?
A. MR. GARY SMITH: Yes.
Q. I believe Mr. Vorster estimated that that make up might range from 100 to 2,000 acre-feet per year.
Is that your understanding of his testimony?
A. Given -- if I'm understanding your question

0060

correctly, given storage -- release of stored water for stream flows during all year types, that the amount of water would average up to 2,000 acre-feet per year.
Given the criteria described in DFG 170-A, that amount of water would amount to up to 600 acre-feet per year.
MS. CAHILL: Perhaps Mr. Vorster ought to answer the question.

MR. GARY SMITH: I may have misinterpreted either Mr. Vorster's answer or your question. And that would probably be better addressed by Mr. Vorster.
Q. BY MR. ROOS-COLLINS: Mr. Smith, let me then ask the question of Mr. Vorster, and I'll return to you.
Mr. Vorster, when you were discussing make up with Mr. Dodge, were you describing the quantity of water to be released from storage in order to meet the dry year requirements set forth in Exhibit 170-A?
A. BY DR. VORSTER: That's correct.
Q. And did you estimate that that amount might vary from 100 to 2,000 acre-feet a year?
A. As I said, it was just an estimate. And obviously in some years, it would be less; some years, more. And the average would result in about five or 600 acre-feet over the long term, and would not -- that would not be available for export.

0061

Q. BY MR. ROOS-COLLINS: Mr. Smith, in footnote two on page 2 of Miss Cahill's letter, where it is stated that, "releases shall be made preferentially in months in which the releases would otherwise be less than those specified in the addendum to DFG 52."
A. BY MR. GARY SMITH: Yes.
Q. Does that concern the release from storage, which we just discussed -- which I just discussed with Mr. Vorster -- let me withdraw that question. That's unclear.
Mr. Smith, does footnote two, in your understanding, concern the release from storage necessary to meet the dry year requirement?
A. No. Footnote two, in my understanding, addresses primarily normal and wet year types. Under our flow recommendations in 170-A, the dry year criteria would not be violated.
And storage would be -- if the inflow were less than the dry year criteria, storage would be required to be released under all year types.
Q. So in normal and wet year types, if inflow to Grant Lake is less than the dry year requirement, release would be made from storage, correct?
A. If the -- yes.
Q. And you are recommending according to footnote

0062

two, that release be made from storage in months where those releases would also serve Mono Lake level of maintenance; is that correct.
MR. BIRMINGHAM: Objection. Ambiguous.
HEARING OFFICER DEL PIERO: Ms. Mueller, would you read that question back, please.
(Whereupon the record was read as requested.)
MR. BIRMINGHAM: The reason I say it's ambiguous is that the question immediately preceding the question related to dry year releases.
And Mr. Smith has testified that footnote two does not relate to dry years, but instead relates to wet and normal years. And therefore without some clarification as to what kind of year Mr. Roos-Collins is talking about in his question, the question is ambiguous.
HEARING OFFICER DEL PIERO: I'm going to overrule

the objection. I think the question is clear.
Mr. Smith, do you understand the question?
MR. GARY SMITH: I'm a little bit confused. Maybe I --
HEARING OFFICER DEL PIERO: Mr. Roos-Collins --
MR. ROOS-COLLINS: I withdraw the question.
MR. GARY SMITH: I think Mr. Vorster has a better understanding of the question.
DR. VORSTER: I do. And I would just like to run

0063

through --
HEARING OFFICER DEL PIERO: Wait. Wait. Wait. Whatever you would like to do, Mr. Vorster, Mr. Roos-Collins has withdrawn the question, and we don't have a question to answer.
As far as I can tell, the objection was overruled. Mr. Roos-Collins chose to withdraw the question. You don't have anything else to talk about, because he has not put another question on the record.
MS. CAHILL: Mr. Birmingham and I were going to propose a stipulation for clarity sake, so instead of floundering, we would all know what footnote two meant.
HEARING OFFICER DEL PIERO: Okay.
MS. CAHILL: Footnote two applies to the situation -- I will propose this, and then everyone can agree.
Footnote two applies to the situation in wet and normal years where inflow is less than the number in the addendum, so the recommendation drops to inflow, but that the fish flows in that year are exceeded by additional flows required for Mono Lake maintenance.
In which case, we would prefer that the lake releases be made at times in which we have dropped inflow, instead of going up to our numerical -- to get us as close as possible to our numerical value.

0064

That's my understanding. I believe that's Mr. Birmingham's understanding. And perhaps --
HEARING OFFICER DEL PIERO: Anybody wish to object to the Department's representation as to what their understanding of their own letter is?
MR. GARY SMITH: That's my understanding of it.
HEARING OFFICER DEL PIERO: That's good, Mr. Smith. I'm glad.
MR. GARY SMITH: I attempted to explain that.
HEARING OFFICER DEL PIERO: Okay. Now that we've got that, Mr. Roos-Collins, do you have another question, sir?
Q. BY MR. ROOS-COLLINS: Mr. Smith, so the record is clear, you do concur with the stipulation that Miss Cahill just proposed?
A. BY MR. GARY SMITH: Oh, yes.
Q. That is an accurate statement of the Department's policy as reflected in footnote two, on page 2 --
A. Yes.
Q. -- of this letter.
A. (Witness nods head.)
Q. Let me turn now to another sticky wicket, which I hope we can get through somewhat more easily.
Specifically, the starred footnote on the first

page of Exhibit 170-A. Do you have that exhibit in front of you?
A. Yes.
Q. Could you explain what this footnote means?
A. What that means, if a change in flow is made by Mono Lake Department Water and Power, then the ramping rate in Exhibit DFG 170-A applies.
If the change in flow is brought about through circumstances other than Los Angeles' change in, physical change in flow, then the ramping rate does not apply.
In other words, quote unquote, a natural change or natural daily change, hourly change, weekly change in flow that Los Angeles does not cause, the ramping rates would not apply.
Q. So the ramping rate would not apply to the change in inflow resulting from the change in release from SCE facilities upstream from LA's facility.
HEARING OFFICER DEL PIERO: It would not apply?
MR. GARY SMITH: Would not apply.
HEARING OFFICER DEL PIERO: Thank you.
MR. GARY SMITH: We would certainly like to see those ramping rates, if SCE were to cause ramping rates to be very abrupt, if there's something that DWP could do to dampen the effects, it would be appreciated, but that's not a requirement of our criteria.

Q. Thanks. Now let's turn to Dr. Hardy's rebuttal testimony. Do you still have that in front of you?
A. Yes.
Q. Page 1, in the section entitled, "Reach Three Weighted Usable Area Results," states that, "The draft report clearly articulates sound reasons for exclusion of this data and the computation of total WUA for use in the final analysis for recommended instream flows.
You previously discussed that sentence with Mr. Birmingham?
A. Yes.
Q. In the course of this proceeding, did Dr. Hardy contact you to discuss your reasons for including Reach Three in the final Lee Vining Creek report?
A. No.
MR. BIRMINGHAM: Objection. Misstates the testimony. I think this witness has testified about Dr. Lee having included it. And I don't think there's been any testimony that this witness made a decision to include the testimony or to include the data.
HEARING OFFICER DEL PIERO: I'm going to sustain the objection.
Q. BY MR. ROOS-COLLINS: Mr. Smith, in the course of this hearing, did Dr. Hardy contact you to discuss Dr. Lee's reasons for including Reach Three in the final Lee Vining Creek report?
A. BY MR. GARY SMITH: No.
Q. To the best of your knowledge, did Dr. Hardy contact Dr. Lee during that same period for that same purpose?
A. There was some contact between Dr. Hardy and

Dr. Lee, but it was, I believe, exclusively for -- in response to the Department of Water and Power's request for the IFG4 calibration information on Lee Vining Creek.
Q. Now, after Dr. Lee submitted the final report to the Department, did you have a go, no go decision whether to adopt that report as the Department's?
A. The Department has the option of reviewing the reports, and adopting them or modifying them to comply with the Department's responsibilities.
Q. Did you adopt Dr. Lee's final report --
A. Yes.
Q. -- as the Department's report for Lee Vining Creek?
A. Yes, we did.
Q. Mr. Vorster, several questions for you.
Mr. Birmingham discussed with you Exhibit 198. He specifically discussed with you how the results might change if the exhibit concerned days, rather than

0068

months.
Do you recall that examination?
A. BY DR. VORSTER: Yes, I do.
Q. Why does Exhibit 198 concern months?
A. Because the data that's been provided for the models that we've constructed developed for this proceeding are all in mean monthly basis. The models -- let me start from square one.
We realized that to construct a daily model simulation model was probably more than what was needed to analyze the impacts that we were wanting to analyze. And so LAAMP was constructed as a monthly model, which would rely on mean monthly data as its input.
Q. Now, you were called in part as a surrebuttal witness for the testimony of William Hasencamp?
A. Yes, I was here.
Q. Do you have Mr. Hasencamp's rebuttal testimony in front of you?
A. Yes. He submitted two different rebuttal testimonies. I want to make sure, is it the one that's --
Q. The one entitled, "Analysis of DFG Recommended Stream Flows."
A. Is it the -- if you give me a date it was submitted -- I just want to make sure.

0069

Q. It's contained within the rebuttal testimony volume submitted by the City of Los Angeles. It's entitled, "Analysis of DFG Recommended Stream Flows."
Do you have that in front of you?
A. Yes, I do.
MR. HERRERA: I believe that's L.A. DWP Exhibit 133.
MR. ROOS-COLLINS: Thank you, Mr. Herrera.
Q. BY MR. ROOS-COLLINS: Mr. Vorster, could you please turn to page 4 of that testimony?
A. BY DR. VORSTER: Okay.
Q. Second sentence says that, "In 38 percent of months in the 50-year period, the minimum instream flows exceed the monthly runoff of the stream."

Is it your understanding that Mr. Hasencamp is here discussing Rush Creek?
A. That's correct.
Q. Is it your understanding that he is discussing the Departments's original flow recommendation for Rush Creek?
A. That's correct.
Q. And how does that percentage stated in Mr. Hasencamp's testimony compare with Exhibit 198?
A. Well, the -- it is no longer a situation where in 51 percent of the months in the 50-year period, the

0070

minimum instream flows exceed the stream runoff, if you interpret the minimum instream flows would be restricted to the -- that they be no lower than the dry year recommended flow.
And the analysis in 198 shows how often that would be the case. And about 15 percent of the months, the inflow would be less than the dry year recommended flow.
Q. So Mr. Hasencamp testified that the Department's flow recommendation exceeds the Grant Lake inflow in 38 percent of the months. Am I right so far?
A. Yes. I'm actually referring to -- his most recent testimony has Table 6, "Comparison of DFG Recommended Flows to Historical Flows."
Q. Mr. Vorster, one thing at a time. I asked you specifically about page 4 --
A. Yes.
Q. -- of the rebuttal testimony entitled, "Analysis of DFG Recommended Stream Flows."
Does Mr. Hasencamp there testify that in 38 percent of the months in a 50-year period the minimum instream flows exceed the monthly runoff of the stream?
A. Could you show me where?
Q. First paragraph, second sentence.
A. Okay. I was looking -- I'm sorry. I was looking

0071

further down. Yes, in 38 percent of months in a 50-year period.
Q. And he goes on to say, "That is, the DFG recommends augmenting the stream in a one-month period of time"?
A. That's correct.
Q. Now, your analysis of the Department's revised flow recommendation shows that the Department would augment inflow in 15 percent of the months; is that correct?
A. Over the year's period, that's correct.
Q. Thank you. Now, you were referring to other testimony, which apparently has another estimate by Mr. Hasencamp?
A. No, not at all. I'm sorry. I didn't want to create confusion. In his most recent testimony, he actually lays out what he described on page 4. He lays it out in tabular form.
So our comparison, the comparison between 198 and what he says, is much more straightforward. If you look at Table 6, you can go month by month by month and see how it compares to Exhibit 198.

Q. Just to try to wrap up this line of questions in a neat package, would it be fair to say that you estimate the Department requires release from storage less than

0072

half as frequently as Mr. Hasencamp?
A. Correct, because of the revised recommendation.
Q. Thank you.
MR. ROOS-COLLINS: Thank you. No further questions.
HEARING OFFICER DEL PIERO: Thank you very much. Ladies and gentlemen, we're going to take a ten minute break.
(A recess was taken at this time.)
HEARING OFFICER DEL PIERO: Ladies and gentlemen, this hearing will again come to order.
Mr. Roos-Collins, we've completed your examination of the witnesses; is that correct?
MR. ROOS-COLLINS: Correct.
HEARING OFFICER DEL PIERO: Mr. Valentine, any questions?
MR. VALENTINE: No.
HEARING OFFICER DEL PIERO: Mr. Frink?
MR. FRINK: Yes, I do have a few questions. But I'll wait for Mr. Smith's return, however.
HEARING OFFICER DEL PIERO: Where is Mr. Smith? There he is.
Actually, Mr. Smith, do you have my copy of the Los Angeles Department of Water and Power rebuttal testimony?

0073

MR. GARY SMITH: Yes, I do. That's this one.
HEARING OFFICER DEL PIERO: I don't want to lose this one.
MR. BIRMINGHAM: The question is, Mr. Smith, did you look through it to see if there were any really rotten notes?
HEARING OFFICER DEL PIERO: Actually, I've got extensive comments on the quality of individual's ties written down here in the margins. Other than that, nothing of particular import.

CROSS EXAMINATION BY THE STAFF

Q. BY MR. FRINK: Mr. Smith --
A. MR. GARY SMITH: Good morning, Mr. Frink.
Q. Mr. Birmingham asked you a question regarding what the Department of Fish and Game would recommend if there were a conflict between maintaining a specified minimum storage level at Grant Lake and maintaining the dry year flows in Rush Creek.
And I believe you answered that if those conditions occurred, the Department of Fish and Game would consider if the change in the flow rate in Lower Rush Creek would be appropriate; is that accurate?
A. Would consider if releasing additional stored water was water that would cause Grant Lake to go below roughly 11,000 acre-feet storage, is what I was

0074

addressing.
The two items that you have to consider, among others: How much water is in Grant? What is Grant's inflow? What is the release into Lower Rush Creek, the

release rate? What are the reservoir temperatures? What are the stream temperatures? We would have to consider a number of factors.

So I was really addressing in my response whether or not we would call for Grant Lake to go below eleven five, and at this point 11,500 acre-feet is simply an arbitrary level that we generated for, or agreed with, for purposes of modeling in LAAMP.

Q. Okay. And from that answer, then, I take it that the Department of Fish and Game has not made a recommendation on what the minimum storage level in Grant Lake should be for protection of fish or recreation; is that correct?

A. We have made a preliminary recommendation that if it can be maintained about eleven five, as a minimum, that would, I think, meet the fishery purposes.

Q. Is recreation also a consideration to the Department?

A. I'm sorry?

Q. Is recreation in Grant Lake also a consideration to the Department?

0075

A. The angling would be a consideration. The -- I personally did not review any records, angling records and storage records, on Grant. I can't give you a good response to your question.

Q. Is Grant Lake a stocked lake with fish? Does the Department of Fish and Game stock Grant Lake?

A. Yes.

Q. Now, from your answer earlier, I take it that you believe that it may be conceivable that a situation would occur in which the Department would recommend reducing the flows below the dry year flow recommendations; is that correct?

A. I would consider a situation where we would reduce Grant to maintain the stream flows, which is not quite the same as your stated question.

Q. And is the flip side of that also a possibility, that if --

A. Not in my mind.

Q. So regardless of the storage level in Grant Lake, the Department of Fish and Game would advise maintaining the dry year flows in Lower Rush Creek?

A. Again, this is the -- some of the -- I can't give you a positive answer, because we would need to have some information like I laid out on items I described a moment ago; lake temperature, stream temperature, and

0076

the like, what time of year, and so on, and what are the flows we're talking about.

Q. Mr. Vorster, if the inflow into Grant Lake were to be used as a criteria for determining the downstream flow requirements at a particular time, would one use mean monthly inflows or daily flows?

A. BY DR. VORSTER: I think that the modeling was done with mean monthly. But the protocol that you're asking for, I guess, clarification on, is something that hasn't been determined, whether the release would be based upon a daily inflow and changed accordingly to a day or bi-weekly or some averaging period. I think

that clarification hasn't been made, although Mr. Smith suggested daily, I think.

MR. GARY SMITH: Again, excuse me, I'm not familiar enough with Los Angeles' operational facilities and modes to know whether they accomplish it on a daily basis or not. Ideally, a daily basis would be a good change rate.

Q. BY MR. FRINK: As a practical matter, the mean monthly flows aren't known until the end of the month; is that correct?

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

DR. VORSTER: I think we've heard testimony from Mr. Hasencamp that they do have the capability to

0077

manually change the flow as often as necessary.

I think the key requirement would be to somehow to have the information from the inflow gauging station made available on a fairly rapid basis, what we call a real-time basis.

For example, the Lee Vining Creek inflow is available on a real-time basis. You can literally dial up the station and get that flow. Rush Creek doesn't have that capability right at this point in time. But I would think that could be something installed in Rush Creek.

MR. FRINK: Okay. That's all my questions. Thank you.

HEARING OFFICER DEL PIERO: Mr. Satkowski?

MR. SATKOWSKI: Yes.

Q. BY MR. SATKOWSKI: Mr. Vorster, I have a couple questions about DFG 198, which is the months in which the inflow to Grant Lake is less than DFG dry year recommendation.

What period of records did you use for your analysis?

A. BY DR. VORSTER: The 1940 to '89, 50-year period, which is the base period we're using for LAAMP right now.

Q. Does this, in your table, which is DFG 198, do you

0078

include all the months in that 50-year period to come up with your percentages, or just the dry years?

A. No, all the months, all the months.

Q. Have you done a similar table looking at just dry years?

A. In other words, just comparing dry year inflow -- comparing the inflow to Grant Lake in dry years?

Q. That's correct.

A. Just in dry years. No, I haven't done that separate analysis.

Q. If an analysis of that type were to be done, would the compared percentage numbers increase?

A. Well, the dry year recommendation, and Mr. Smith probably could add to this, was developed based upon the median -- in fact, I'm going to let Mr. Smith answer the question, so I don't trip up, so you can understand how often it would occur. Once you can understand how the recommendation for dry year was developed, you would expect deficiencies.

A. BY MR. GARY SMITH: The Rush Creek dry year

criteria, or excuse me, stream flow recommendations, were developed using the habitat duration analysis of PHABSIM output.

It took the 20 percent dry years, calculated the habitat available given the flow during each of those

0079

year types.

DR. VORSTER: Each of those who?

MR. GARY SMITH: Each of the dry years. Then developed a frequency of currents of habitat. And from that, made a flow recommendation.

Now, your question was: If you look at only dry year, dry years, let's make sure I'm understanding it correctly, would the 14.8 percent average impaired percent in DFG 198 go up? The answer is, no, it would not go up. It would go down.

Q. BY MR. SATKOWSKI: I guess maybe there's a misunderstanding here. My question was that if one were to look at only those dry years in the 50-year period, and do an analysis to look at the months in which the inflow to Grant Lake is less than the Fish and Game dry year recommendations, then would these percentage values increase?

A. BY DR. VORSTER: They could go up, since the habitat duration analysis was based upon the median habitat for -- in each month. We're comparing, see, the recommendation for base month habitat. And to translate the habitat into flows is what we'd have to do here. But I would think they would go up a little bit, if you just look at the dry years.

Q. Thank you. Let's go on. I have just one last

0080

question. These are unimpaired percentages in Fish and Game 198. Did you perform a similar analysis using unimpaired flows?

A. I want to make sure I heard your question correctly. I think you meant to say impaired.

MR. SATKOWSKI: Impaired, I'm sorry.

DR. VORSTER: Did I do a similar analysis using unimpaired? No, I did not.

MR. SATKOWSKI: Thank you. Those are all the questions I have.

HEARING OFFICER DEL PIERO: Mr. Smith?

MR. HUGH SMITH: Yes, I've got a couple of questions. Thank you.

Q. BY MR. HUGH SMITH: A point of clarification. You are going to be requiring storage releases for flushing flows, are you not, for Rush Creek? We had a long discussion about fish flows and storage releases. But you are going to be requiring storage releases for flushing flows now?

A. BY MR. GARY SMITH: Yes. If the inflow were less than the flushing flow requirement, then storage would be required for flushing flow releases.

MR. BIRMINGHAM: Would the reporter mark that, please?

A. BY DR. VORSTER: I hope I'm not being too

0081

nonresponsive here.

MR. BIRMINGHAM: That's okay, Mr. Vorster, we'll

come back to you if you are.
DR. VORSTER: My comparison, as you correctly observed, was the comparison of inflow to Grant Lake with the DFG dry year recommendation.
I think I understand what Mr. Birmingham was asking. Would there also be releases from storage to meet those flushing flows. As Mr. Smith said, yes, there would be.
How often and what the magnitude would be, that's something -- we can get the frequency from Mr. Hasencamp's testimony, page 5 of his testimony, and that was DWP Exhibit 133 on page 5.
In 40 percent of the years, Department of Fish and Game requires a flushing flow of 300 cfs for two days. Mr. Hasencamp analyzed how often there would be 300 cfs, the inflow to Grant Lake would be 300 cfs, and he said it would occur in 26 percent of the years.
So that gives you an indication in how many years you would have to release some water from storage in order to meet that 300 cfs for two day flushing flow requirement.
The magnitude is something you can look at. For example, in 1973, which would be considered an above

0082

normal year, the requirement of 300 cfs flushing flow, but the inflow only reached 255, 260, 255.
And therefore, you would have to release a hundred and seventy acre-feet from storage during those two days in order to meet the 300 cfs flushing flow requirement.
Q. BY MR. HUGH SMITH: Okay. Thank you. One more question.
L.A. DWP Exhibit 163, if I can just show it to you. It's the Lee Vining diurnal flows. You don't have to have it, I -- just do you recall it?
A. BY DR. VORSTER: Yes, I do.
Q. Is the Department of Fish and Game recommending diurnal flows to mimic Rush Creek? Or perhaps --
A. BY MR. GARY SMITH: I don't think they have the ability to do that on Rush Creek.
Q. A follow-up question. We have had some testimony about re-doing the Mono Gate Number One, so we would have some real-time ability to work with it. I think it was some of your testimony, Mr. Vorster, and also Dr. Stine's testimony.
If that kind of equipment were put in, would you expect something like diurnal flows on Rush Creek?
A. BY DR. VORSTER: When -- I was referring to real-time capability of monitoring inflow. But, yes,

0083

you could put a valve mechanism that would respond to -- could respond to flow changes and have it do diurnal fluctuations. That would be possible.
Whether -- how often the valve would need to be replaced because of the changing a lot, is another question. But it is possible, I assume, to put in a control mechanism in order to have the out flows match the inflows.
MR. HUGH SMITH: Okay. Thank you. That's all the questions I have.

HEARING OFFICER DEL PIERO: Mr. Herrera?
Q. BY MR. HERRERA: Yes, first for Mr. Vorster.
I believe you testified earlier today that -- and I believe the word you used was "on occasion," during dry year conditions, if you were to look at a mean daily flow requirement, would release from storage from Grant Lake be required to meet dry year DFG flows.
I'm a little bit confused. And one is "on occasion." Do you have any idea on number of days, what kind of time frame that -- you know, how many consecutive days? Or is it one day a month? Or is it every third or fourth day or --
A. BY DR. VORSTER: It obviously depends on the nature of the dry year. I think we were examining 1977, which is the extreme dry year, the lowest dry

0084

year.
So for example, in April, the release -- the dry year release requirements is 35 cfs. And nearly every day is slightly below 35 cfs. It's in the range of 32, 33 cfs. So just about every day, you would release a small amount of water from storage.
So when I say on occasion, some months it would be 28 days. In another less dry dry years it would be, for example, if you looked at 1992, it might be only one or two days that you would need to make that release requirement.
Q. Would you anticipate those to be consecutive type days, or do they follow a pattern of several days in a row?
A. It would be consecutive days. Because generally, when the inflows are that low, the runoff is within a fairly constant range. It's not varying a whole lot.
When you're in snow melt, the runoff is obviously fluctuating more. But when you're in low stream flow conditions, it's within a few cfs, and generally, reflecting the releases from the power plant.
Q. Again, I want to go back a little bit to Grant Lake. And we were talking about operational capabilities. And I'm assuming you've incorporated some of that in the analysis that you've done in

0085

developing the Mono Lake Committee's Management Plan.
And it's my understanding, again, that the operations for releases out of Grant Lake are manual, and are they -- is it your understanding, or do you understand how they operate that, or whether or not they can operate that to react to daily flows?
A. Well, we had testimony earlier from Mr. Hasencamp that said it is possible to make flow changes on a fairly continuous basis, it's theoretically possible, if you had someone out there standing over and making release changes all the time.
In fact, during the last several years when the ramping was done in Rush Creek, I think flow changes were made twice a day. So it's just how often you want to have the personnel out there to make those changes.
I think we also heard testimony that there are two changes that might be involved, depending on whether any export occurred.

If there was no export occurring, you could just make a change at Grant Lake outflow, which is a release mechanism that there's more control over than the mechanism at Mono Gate Number One.

Where, if there was some export going on and some releases going into Rush Creek, as Mr. Hasencamp testified, that is not a very sophisticated mechanism

0086

and needs to be fine tuned, before you get things to settle down to where you want them to be.

Q. Do you know, or do you have an understanding if there's any limitations on the release of water from Grant Lake at lower lake levels, and did you use any of that analysis in your manual?

A. Well, there isn't -- no releases can occur in Grant Lake when it gets down to what we call a dead storage level. But that's --

Q. And that dead storage level is?

A. I think it's elevation 7,065 feet or 66 feet. But we -- the model assumes a minimum reservoir storage of eleven and a half thousand acre-feet for LAAMP. I think it runs 11,000 acre-feet for the DWP plan.

And so we were -- that's the amount of storage -- that's active storage, 11,000 acre-feet of active storage. So that never came into play.

There is an issue, though, that has come up in the past. And one reason the 11,000 and a half acre-feet was -- not the main reason, but a consideration was given that as you get down to lower reservoir levels you start entraining sediment, fine sediment, into the outflow. And several years ago we observed higher turbidities in Rush Creek because of the entrainment of sediment in the -- from Grant Lake.

0087

There was a suggestion of some monitoring, which never actually occurred. But that is a possibility, because if it's windy and the waves kick up sediment, it can be entrained into the outflow.

Q. Mr. Smith, again on the same subject matter, did you in making the recommendation for various releases, including maintenance and flushing flows for Rush Creek, did you include the problem that Mr. Vorster just discussed about additional sediments being discharged into Rush Creek below Grant Lake from lower lake levels in meeting some of your instream flow requirements and some of your flushing flow requirements?

A. BY MR. GARY SMITH: No, I did not.

Q. Also I'd like to clarify one thing. I believe Mr. Kondolf made a recommendation yesterday, or in our last session, regarding the percentage of change for ramping rates on Lee Vining Creek.

And he was discussing the change from your recommendation on DFG 170-A of 10 percent change in stream flow for 24 hours to a 20 percent ascending rate and a 15 percent descending rate.

Is that the DFG current recommendations for ramping rates?

A. Yes, it is. As 170-A explains, it's 10 percent

0088

change unless data indicate otherwise. And Dr. Kondolf completed his analysis after 170-A was prepared.
Q. So the answer to the question is: Now the official DFG recommendation for ramping is 20 percent ascending rate and 15 percent descending rate?
A. I believe that's correct. And that's only when DWP is making the flow change.
Q. Okay. Thank you.
I have one last question of Mr. Vorster. Do you know what the storage was in Grant Lake when you mentioned the sediment problems that releases to Rush Creek?
A. BY DR. VORSTER: It was in -- if I remember correctly, it was the 11 to 12, 13,000 acre foot range.
MR. GARY SMITH: If my memory also serves me correctly, it was in the minimum range 11 to 12,000 that we've been talking about today.
Q. BY MR. HERRERA: And Mr. Vorster, you mentioned a lake elevation, just momentarily here.
What was the volume or the storage in Grant at that elevation? And my memory is --
A. BY DR. VORSTER: I think I was answering a question about the elevation of dead storage, if my memory serves me correctly. But it's information we can easily obtain from DWP. Dead storage is at an

0089

elevation 7,066 feet, 7-0-6-6 feet.
The elevation capacity is 7,130, so I'm sure --
Q. That's present day capacity?
A. Yes, present day capacity. But it's a number we can easily obtain. We may have it here. In fact, I do have it here, now that I think about it.
MR. HERRERA: Thank you. I think that concludes my questions.
HEARING OFFICER DEL PIERO: Mr. Canaday?
Q. BY MR. CANADAY: Mr. Vorster, what determines the inflow to Grant Lake?
A. BY DR. VORSTER: Well, it's the combination of natural water shed processes in responding to precipitation input, as well as the releases from the Rush Creek power plant by Southern California Edison.
So during the snow melt season, it's mainly natural processes, especially when the Edison reservoirs are spilling.
But after snow melt, during fall and winter especially, the releases that flow into Rush Creek going into Grant Lake is largely determined by any flow changes as to SCE.
Q. Then in dry normal years and in dry years, primarily the flow into Grant Lake would be dictated by the operation of the SCE power plant?

0090

A. The flow changes especially. The volume of flow, for example, in a dry year, let's say May of a dry year, when the snow melt is occurring, the total volume may be such that half is coming from the uncontrolled part of water shed, half coming from the power plant releases.
But any change in flow would, because of power plant release, would reflect their control. Later on

in a dry year, then when the flows from the uncontrolled part of the water shed are relatively low, then it's much more dictated by the SCE releases.
Q. Then there's a possibility of times that flow -- or releases from Grant storage to make up Fish and Game flows or stream flushing flows will be dictated by the operations of the SCE project, and not the actual inflow to the lake; is that correct?
A. Correct. In fact, earlier I gave an example of 1954, where it appears there is a large deficit that has to be made up because the inflow is so low. But I think the inflow is so low because there was virtually nothing coming out of the power house.
Q. You see that as being realistic to require additional Grant -- the potential modification of Grant Lake storage because of the SCE operation for Fish and Game flows?

0091

A. I want to make sure I understand the question.
Q. I'll withdraw the question. On point number two, or on page -- I'm working from a fax here. I believe it's page 3 of DFG 170-A.
A. Page 2 of the letter?
Q. Yes, page 2 of the letter. And the footnote two at the bottom.
A. Yes.
Q. How would we predict when that would occur to make those releases?
A. Well, there's a number of ways you could do that. One, DWP, when they issue their forecast, initially they forecast what the unimpaired flow will be on a monthly basis. And they also have equations which translate that into an impaired flow on a monthly basis. That would be one technique.
The other is to coordinate with Southern California Edison to find out how they're actually going to operate. They have pretty clear operating guidelines. They actually develop a forecasted release from their power house. They do that every few months.
And from that, you could see on a forecasted basis, what you think the inflows to Grant Lake would be.
Separately from the LAAMP model, or whatever model

0092

you're using, your water balance model, to determine what the lake level releases will be, you know what volume of lake level releases would be required.
So merging those two pieces of information, you could say on a forecast basis, that it looks like that the inflow to Grant will be X, which may be less than the Fish and Game requirement for that year, but there appears to be a requirement for a lake release.
And so the idea is to, with that knowledge, to use the storage in Grant Lake to -- when you're making the lake release, do it in a month in which you can augment the inflow that might be less than the recommended fish flow, so that it equals the recommended fish flow or be higher.
Q. So it's not something you could predict with a high degree of certainty; is that correct? It's a

probability, but it's not something you could forecast with the idea of, using the DFG language, preferentially? It would be tough to meet that kind of a standard?
A. Actually, it wouldn't be too tough if in your non-snow melt season. Because flows are fairly uniform in a non-snow melt season, it would be fairly -- you could have a fair degree of confidence. In the snow melt season, the timing of the snow melt is very

0093

difficult to predict. So that would be a problem.
Q. Mr. Smith, earlier you testified that your recommendation on Grant Lake was based upon some recreation fishery studies.
Has that data been supplied to the Board?
A. BY MR. GARY SMITH: No. I'm assuming that that information was taken into consideration. I don't have that information. The 11,500 acre foot storage, minimum storage on Grant, was generated to facilitate the LAAMP modeling activities, primarily.
Q. It wasn't generated in an order by the Court?
A. The Court considered that, yes.
A. BY DR. VORSTER: Let me -- I think I understand your question. On April 1st, 1989, the Grant storage was at or near 11,500. And in Judge Finney's orders, he said that releases shall be made, but in no -- it wouldn't be required if Grant storage fell below 11,480 acre-feet. I think that's contained in his interim stream flow order.
Q. But that was in the interim stream flow order, right, correct?
A. Correct.
Q. Mr. Smith, just so I'm sure you're clear, on your recommendations for Walker and Parker Creek, on your maintenance and flushing stream flow requirements, if,

0094

in fact, the Board were to require the full release of all natural flows, then that moots those recommendations; is that correct?
You're not suggesting that we use water from Parker and Walker Lake to augment stream flows?
A. BY MR. GARY SMITH: No.
MR. CANADAY: Thank you, that's all I have.
HEARING OFFICER DEL PIERO: Thank you very much, Mr. Canaday. Ms. Cahill?

REDIRECT EXAMINATION BY MS. CAHILL

Q. BY MS. CAHILL: Mr. Vorster, a few moments ago you made some references to 1954. That's used as a sample year in Mr. Hasencamp's testimony, in his original rebuttal testimony, on page 3.
Do you recall that testimony?
A. BY DR. VORSTER: Yes, I do.
Q. And what was it that he concluded there?
A. I think his point there was, he thought 1954 or -- well, in his analysis, 1954 was in the normal year classification.
And the required DFG releases would be, at the time, for 8,582 acre-feet or 8,470 acre-feet, that would have been in the stream naturally.
Q. In the period of record that you used, would it

have been categorized as a dry year?

A. In the base period that we're using in the LAAMP runs which is 1940 to '89, it was in the dry year category. It's an example of a year right on the borderline. Depending on the base year you use, it's either a dry normal year or a dry year.

Q. And going by the original DFG recommendations, had it been a dry year, then in fact, the recommendations would have required approximately 30,000 acre-feet of water?

A. That's correct.

Q. So in that year that would have allowed approximately 40,000 acre-feet of export, if you had characterized it as a dry year?

A. I think you misspoke. 10,000 acre-feet of export.

Q. Thank you. In fact, though, do the revised recommendations handle years like this?

A. Yes, that's -- these borderline years don't become as problematic because the recommendation is no longer sensitive to the year type, except as long as the inflow is at or above the dry year recommendations.

So, for example, in 1954, if the -- as long as the inflow was at or above the dry year recommendation, all you'd be required to release was the inflow, and you'd only have to use storage if it was below.

Q. Thank you. And with regard to the requirement for releases from storage to meet flushing flows, is it your understanding, Mr. Vorster, of Mr. Hasencamp's testimony is that the L.A. DWP management plan would also, in some cases, require releases from storage to meet flushing flows?

A. That's my current understanding of their plan, yes.

Q. Would the L.A. DWP management plan ever draw Grant Lake below minimum storage in order to meet fish flows?

In fact, let me start by asking what the L.A. DWP's minimum storage is in Grant Lake?

A. I think it's stated in Mr. Hasencamp's testimony as 11,000 acre-feet. But on page -- there's no formal page numbering, but I call page 8 of his second rebuttal testimony on the DWP plan, he indicates that the normal minimum in the reservoir would be 11,000 acre-feet.

Although he says that, as he states further, in the middle of the page, in the middle paragraph, "Under the DWP plan, the normal minimum reservoir storage would be 11,000 acre-feet. This minimum would occur in dry years early in the runoff year. The reservoir would be operated, prevent spills -- no, I'll just leave it there. Oh, next paragraph.

"Because the runoff begins before the summer recreation season does, the reservoir will usually gain significant storage before the summer season begins. The reservoir will be held at levels well above the minimum through the summer, except in the driest years."

Next paragraph, "The normal minimum in the reservoir will be 11,000 acre-feet. However, if emergency conditions warrant, the reservoir will be lowered on a temporary basis. Such emergency conditions include the potential dewatering of Lower Rush Creek, and the immediate need for water in Crowley Lake Reservoir or emergency need for water in Los Angeles."

Q. So, apparently that doesn't include meeting fish flows?

A. Not at this point.

Q. Can you think of circumstances that would cause the dewatering of Lower Rush Creek?

A. Well, to the extent that they would use -- draw the reservoir down to meet the potential dewatering of Lower Rush Creek, obviously that would be -- they would make those releases to keep the fish alive.

I assume he was referring to a collapse of the Mono return channel. And in that case, they would

0098

somehow, either with a siphon or some kind of a mechanism, have to get water into Lower Rush Creek.

Q. Okay. Thank you.

Mr. Smith, just very briefly back to Reach Three. Mr. Birmingham quoted Dr. Hardy as stating that, "There was no defensible justification for including data for Reach Three in the final report."

In your professional opinion, is there any defensible justification for excluding the data from Reach Three in the final report?

A. BY MR. GARY SMITH: No, there is not.

Q. In your professional opinion, would the fact that there was increased WUA in Reach Three at higher flows, compared with Reach Two, mean that the Reach Three results are inaccurate?

A. No, it would not.

Q. Did you work with Dr. Lee? Were you in close contact with him while he was working on the final Rush Creek report?

A. Yes, we worked quite closely together.

Q. I'm sorry. Lee Vining Creek report.

A. Yes.

MS. CAHILL: I believe that's all. Thank you.

HEARING OFFICER DEL PIERO: Thank you very much, Ms. Cahill. Mr. Birmingham?

0099

RECROSS EXAMINATION BY MR. BIRMINGHAM

Q. BY MR. BIRMINGHAM: Mr. Vorster, you were just reading from Mr. Hasencamp's testimony there. You said "I assume what he meant by his statement was that if there was a problem with the Mono Gate return ditch, they would use a siphon or some kind of device to get water to Rush Creek."

Do you recall saying that?

A. BY DR. VORSTER: Yes.

Q. You don't know what Mr. Hasencamp meant there?

A. No. As I said, I'm making an assumption, or I'm speculating.

Q. You were speculating?

A. That's correct.

Q. I wanted to establish that that was speculation, and there was no basis for your saying that. You are speculating?
A. Mr. Hasencamp and I have not talked about that particular thing. We have talked about everything else.
MR. BIRMINGHAM: I asked the reporter to mark a particular place in the transcript during Mr. Smith's response to the question. I wonder if we could go back to that.
HEARING OFFICER DEL PIERO: Would you like her to

0100

read it?
MR. BIRMINGHAM: I'd like her to read the question and the answer.
(Whereupon the record was read as requested.)
Q. BY MR. BIRMINGHAM: Mr. Vorster, you would agree, wouldn't you, that 1981 was a normal year under the classification system used by the Department of Fish and Game?
A. BY DR. VORSTER: Did you say 1991?
Q. 1981.
A. Oh, '81, yes, yes.
Q. So in 1981, under the Department of Fish and Game's proposed recommendations, there would have been a requirement for flushing flow of 200 cfs; is that correct?
A. No. In fact, under the Department of Fish and Game classification, it was a dry normal year, so there wouldn't have been a requirement. So --
Q. Wait a minute. I thought I asked you a moment ago if it was normal year, and you said it was?
A. I'm sorry. I --
Q. I want to make sure I understand, because you keep talking about dry and dry normal, and you talk about Department of Fish and Game classification and LAAMP classification.

0101

The Department of Fish and Game's classification is based upon a 50-year data set; is that correct?
A. That's correct.
Q. And the first ten -- the driest ten years are classified as dry years; is that correct?
A. That's correct.
Q. And the next driest ten years are dry normal years; is that correct?
A. That's correct.
Q. And then after that comes normal years?
MR. DODGE: Objection. Ambiguous as to creek. I'm looking at DFG Exhibit 170-A. And it looks to me like there are two different definitions.
HEARING OFFICER DEL PIERO: You want to specify the creek, Mr. Birmingham?
MR. BIRMINGHAM: Rush Creek, we're talking about.
HEARING OFFICER DEL PIERO: Mr. Vorster, have your answers been in response to the conditions in Rush Creek?
DR. VORSTER: That's correct.
HEARING OFFICER DEL PIERO: So the record is clarified.

Q. BY MR. BIRMINGHAM: So Mr. Vorster, let me ask you this, if there were 21 years in the 50-year record that were drier than 1981, then 1981, under the

Department of Fish and Game's classification, would be considered a normal year; isn't that correct?
A. BY DR. VORSTER: If that were the case.
Q. I'm asking you to assume that was the case.
A. Okay.
Q. Just for purposes of illustration.
A. Yes.
Q. If there were 21 years drier than 1981, then 1981 would be considered a normal year?
A. If you were looking at a 50-year record, yes.
Q. Isn't that what the Department of Fish and Game did?
A. Yes. I just wanted to make sure, because --
Q. I'm asking, Mr. Vorster, though, about what the Department of Fish and Game did. And I'm confused. I don't know what happens to the record, but I'm confused when you ask me "if you want to make that assumption."
I'm asking: That's what the Department of Fish and Game did, looked as a 50-year record?
A. Yes.
Q. Now, assume that there were 21 years that were drier than 1981. That would make 1981 a normal year under the Department of Fish and Game's classification?
A. Yes. I really want to clarify my answer to the last question. For the LAAMP runs we did, we used a

50-year period of record. Okay?
And therefore, you correctly said that the first the driest ten years would be considered dry, because that's ten out of 50 is 20 percent. The next -- the driest 20 years -- I'm sorry. Let me back up.
The years between the 11th and the 20th driest year would be considered dry normal. And between the years that were between the 21st and 30th, would be considered normal normal, using the 50-year period of record.
This exceedence -- so the analysis was based upon the 50-year runs that we did for LAAMP. This exceedence will go beyond 50 years in term of this analysis as we get a longer data base. But for right now, we're using a 50-year period record.
Q. And using the 50-year period of record that the Department of Fish and Game used in coming up with this classification scheme, if there were 21 years dryer in the 50-year period, than in 1981, if there were 21 years in the 50-year period drier than in 1981, under the Department of Fish and Game's system of classification, 1981 would be a normal year?
A. That's correct.
Q. I'm going to ask you to make that assumption.
A. Yes.

Q. Now, I'd like you to look at Figure 2 from the rebuttal testimony of Mr. Hasencamp, L.A. DWP Exhibit 133.
HEARING OFFICER DEL PIERO: Mr. Birmingham, just

for my information, how long do you expect your examination to go on?
MR. BIRMINGHAM: I would say five minutes, if things go a little smoother than what they have up to this point.
MR. DODGE: This is the only panel we have today, Mr. Chairman.
HEARING OFFICER DEL PIERO: Yes, I know.
MR. DODGE: Hopefully, we'll get it done before lunch.
HEARING OFFICER DEL PIERO: I hope so. I have an appointment at 12:00 noon. And if you have to carry over, I need to work that out. And there are some other people who had anticipated us by being done by 12:00.
MR. BIRMINGHAM: We'll be done by 12:00. I'll be done by 12:45 at the latest. I mean, 11:45 at the latest.
Q. BY MR. BIRMINGHAM: Do you have Figure 2 in front of you, Mr. Vorster?
A. BY DR. VORSTER: Yes, I do.

Q. Again, 1981 being a normal year, there would have been a requirement of the Department of Fish and Game's recommendation for DWP to release flushing flows of 200 cfs; is that correct?
A. That's correct.
Q. Now, in 1981, the maximum -- the peak flow in Rush Creek was about 155 cfs; is that correct?
A. That's correct.
Q. So the additional 45 cfs would have had to have been made up by storage?
A. That's correct.
Q. Now, did you include that analysis, that kind of an analysis, that kind of flushing flow requirement in your analysis of the amount of water that would be available to DWP to export during -- based on the Fish and Game recommendations?
A. No, I did not. As I stated, LAAMP does not give us the ability to directly analyze that, but --
Q. So, in fact, there would be less water available for the Department of Water and Power to export than you've reported under your analysis?
A. As an annual average, over the 50-year period of record, it would be very, very small.
Q. But in response to my question, the answer is yes?
A. Absolutely.

Q. Let's talk about some questions that you responded to that were framed by Mr. Roos-Collins. It relates to Table 6 in the second set, or the second document, of statement of rebuttal testimony submitted by Mr. Hasencamp, and it's the rebuttal testimony related to water supply modeling issues.
Now, I just want to make sure the record is clear on this. The data that is contained in Table 6, that data is still correct; isn't it, Mr. Vorster?
A. Depends on how you interpret -- it says DFG recommended flows. If it's the flows that are contained in the Rush Creek IFIM addendum, it is. But

to the extent that the recommended flows now equal inflow, it is not correct.
Q. Now, let's look at the top table on Table 6, there are two tables. The top one relates to Lee Vining Creek.
Isn't correct that the recommended flow of the Department of Fish and Game equals or exceeds the historical flow rates according to the percentages set forth in this table?
A. The problem I have is how you interpret "recommended flows."
Q. Well, the Department of Fish and Game has recommended a minimum flow for a given month; is that

0107

correct?
A. Or the inflow.
Q. Now, the recommended flow that the Department of Fish and Game has specified is equaled or exceeded the percentage of time contained in Table 6; isn't that right?
A. If you assume the recommended flows are those that are specified -- those that were based upon the analysis of the weighted usable area. But the recommendation, I want to make sure it's very clear, and Mr. Smith can correct me if I'm wrong, is equal to the inflow on Lee Vining Creek at all times. And on Rush Creek is equal to the inflow, unless it's less than the dry year flow.
Q. But I just wanted to make sure that we all understood that those percentages in Table 6 have not changed based upon the change of the Department of Fish and Game's recommendation; is that right, Mr. Vorster?
MR. DODGE: Objection. Vague as to form. I think we have to be very specific as to whether we're talking about the DFG numerical recommendations, or we're talking alternatively about the lesser of the DFG numerical recommendation for the natural flow.
MR. BIRMINGHAM: Fair enough. Mr. Dodge is correct.

0108

Q. BY MR. BIRMINGHAM: Let's just restrict your answers to numerical recommendations of the Department of Fish and Game.
A. As contained in, I think, their IFIM reports?
Q. And their addendum.
A. And their addendum. With that assumption, I think these numbers are correct.
Q. With that assumption, these numbers set forth in Table 6 of Mr. Hasencamp's rebuttal testimony are still correct?
A. I would assume so. I haven't done the unimpaired analysis. I've done the impaired analysis. I assume it's correct.
Q. You have no reason to doubt they're correct?
A. No.
Q. Thank you. Now, in response to some questions by Mr. Dodge, you said in dry years, the Department of Water and Power is required to release water to -- from storage to make up for the flows in Rush creek.
It would require the release of about a thousand

acre-feet of water from storage; is that right?
A. On the average, I would say. I said it was the range. I did say I was going to check at the break.
Q. Did you check?
A. No, unfortunately, I didn't. But I want to make

0109

sure you understand this. Based upon the LAAMP runs I did, and as I stated before the LAAMP runs require that the minimum reservoir level -- you cannot lower it below the minimum. Therefore there will be dry years in which you cannot release water from the storage, because they're at the minimum reservoir.
Q. But Mr. Smith says that's not necessarily the position of Department of Fish and Game?
A. That's true.
Q. Now, let's analyze 1976, first, and then we'll analyze 1977.
Now 1976, the runoff in Rush Creek was approximately 25,524 acre-feet; that is correct, Mr. Vorster?
A. In 1976, yeah, 20 -- yeah, I think so.
Q. And Mr. Hasencamp wants me to -- he's objected on the grounds it's an ambiguous question. We're talking about runoff here, isn't that right, Mr. Vorster?
A. That's true, April through March.
Q. And during that year, the Department of Water and Power would have been required to release about 5,000 acre-feet of storage water from storage to meet the minimum dry year recommendations of the Department of Fish and Game?
A. Taking the lump sum of the annual amounts, it

0110

would be -- I can tell you that in the LAAMP run, that would not be the case.
Q. But looking at actually what happened historically, it would have been about 5,000 acre-feet?
A. As a lump sum. Let's just use a lump sum of 25,000 acre-feet of runoff, 30,000 acre-feet of requirement, you obtain 5,000 acre-feet.
Q. Now, 1977 the following year, that also would have required about 5,000 acre-feet of water from storage to meet the Department of Fish and Game's minimum dry year flows?
A. That's correct, using the same reasoning, 25,000 acre-feet as a lump annual sum of runoff, the annual requirement, the requirement of DFG dry year flows is 30,000 acre-feet on an annual basis.
Q. It's correct, Mr. Vorster, and I'm going to ask you here to assume that it would be necessary to release water from storage below the level of 11,500 acre-feet.
If you make that assumption, in 1976 and 1977 Grant Lake would have been reduced to dead storage to meet the minimum Department of Fish and Game flows?
A. Close to it, but not quite. I think operationally you can -- again, just using a lump sum approach, you would be close to it. It would probably not happen,

0111

but using the assumptions, you're right.
Q. Now, the last question I have is for either one of

you. Mr. Smith asked a question about whether or not you were recommending that diurnal flows on Rush Creek mimic what occur naturally.

And in response to a question, Mr. Vorster, you said you could install a mechanism to accomplish the release of diurnal flows in Rush Creek to mimic what happens naturally.

My question is: Neither of you are recommending the adoption of an order that imposes diurnal fluctuations to mimic what happens naturally; isn't that correct?

A. BY DR. VORSTER: I think --

A. BY MR. GARY SMITH: No, no we're not.

Q. BY MR. BIRMINGHAM: You're not making that recommendation?

A. BY MR. GARY SMITH: If it can be done, it would be desirable. But I don't believe we're making that recommendation at this time.

MR. BIRMINGHAM: I went a minute over. I apologize.

HEARING OFFICER DEL PIERO: You don't have to apologize for that, Mr. Birmingham. Mr. Dodge?

RECROSS EXAMINATION BY MR. DODGE

0112

Q. BY MR. DODGE: Mr. Vorster, hypothetically, you were asked to assume that 1981 was normal, and it was pointed out that there was a peak in 1981 on Rush Creek of a hundred and fifty-five cfs; is that correct?

A. That's right.

Q. So you would have to make up from storage for five days, 45 cfs or more; is that a fair statement of what would have occurred to meet the recommended flushing flows?

A. Right, right. The recommendation for 200 cfs for five days.

Q. Let's say it was a make up of 45 cfs for five days. How much water is that?

A. That would be 90 acre-feet a day times five would be 445 acre-feet.

Q. Let me ask you a broader question, still the same subject matter, whether or not you would have to use storage for flushing.

Mr. Smith, would you agree that it would be desirable to try to avoid that?

A. BY MR. GARY SMITH: Yes, yes, I agree.

Q. Now, Mr. Vorster, hypothetically if the decision-maker were trying to avoid using storage for flushing, that would mean, I take it, timing the flushing flows to come down the same time as the normal

0113

high flows come down, correct?

A. BY DR. VORSTER: That's correct.

Q. And it's been pointed out in 1981, assuming that's a normal year, that you still wouldn't meet the DFG minimum recommendation of 200 cfs for five days.

I just have a general question. Assuming you are trying to time the flushing flows to correspond with the high flows, how often would you have that sort of a situation, where you had to make up flushing flows with storage?

A. BY DR. VORSTER: Not very often. I think I referred -- I think Bill Hasencamp referred to the frequency in his testimony, that in wet years, it would be 14 percent of the years. In normal years, it would be, I think, it was 6 percent of the years.

The magnitude, though, is what I think is most important. I think 1981 is the extreme example. That's about as high of a make up as would be required. In some of those other years it would be much smaller. I think I use the example of 1973, I think it was only a hundred and seventy-eight acre-feet.

Q. And again, 1981 it was 450?

A. Yes.

Q. Assuming that was a normal year?

0114

A. That's correct.

Q. Now, I think you established in response to questions by Mr. Roos-Collins, I believe, that -- I'm looking at DFG Exhibit 198. You've now got a situation under DFG Exhibit 198 where, as I understand it, the Hasencamp figure of 38 percent for Rush Creek on page 4 of his rebuttal testimony is now reduced to approximately 15 percent?

A. That's correct.

Q. Now, refresh my recollection as to what those two figures compare, because I've forgotten.

A. It compares the number of months in which the inflow to Grant Lake is less than DFG dry year recommendation. And that's what I've shown in DFG 198.

What Mr. Hasencamp is showing, I think is comparable too. Whether he included the flushing flow requirement, I do not know.

Q. Now, if you moved over to Lee Vining Creek, and you assumed that the DFG recommendation is the either/or. Either the numerical cfs or whatever comes down the creek, whichever is less. Then the comparable figure for Lee Vining Creek is zero; isn't it?

A. That's correct.

Q. So DFG is in no case recommending that more go

0115

down Lee Vining Creek than is actually being supplied to it?

A. That's correct.

Q. Okay. Last question for either of you.

We've had a series of questions about what would happen if Grant Lake got down to 11,500 acre-feet. And the incoming water was less than the DFG recommended dry flows.

Do you recall those questions?

A. BY DR. VORSTER: Yes.

A. BY MR. GARY SMITH: Yes.

Q. Now, do either of you have an opinion as to how likely it is that that situation will be faced in real life, assuming that whoever is managing the reservoir is trying to avoid it.

A. BY DR. VORSTER: It would be a situation that only in the very driest of years, like we had in the 1977 situation, where you would face that. But actually, in

considering 1977, DWP was trying to export as much water as possible, I believe, and was drawing the reservoir down for that reason.

To the extent that we have different reasons to release or maintain water in the reservoir, I think it would be possible to nearly always avoid that situation, unless you had obviously a very, very long

0116

period of extended dry conditions, very, very dry conditions.

Looking at the historic record, it would be extremely rare.

Q. My question asked for you to assume that the reservoir operator is trying both to maintain 11,500 acre-feet minimum and to send down the recommended DFG flows down Rush Creek.

Now you told me that in 1977, the operator's intent was not to do that but rather to export.

A. That's correct.

Q. Now, I want you to stick with my assumption, that the operator is trying to maintain a minimum of 11,500 acre-feet, and also send down Rush Creek the DFG recommended flows for dry years.

Let me ask you directly: Had DWP been trying to do that in 1977, in your judgment could it have been accomplished?

A. To the extent that 1977 followed 1976, there may have been -- you know, the reservoir may have been drawn down so that by the end of '77 they were close to minimum, and they would have been in that situation where a decision would have to be made by the Department of Fish and Game.

But I think prudent operations would be able to

0117

keep it above 11,000 acre-feet until later on in the year.

In other words, because '77 followed '76, your reservoir levels would be gradually drawing down through the year.

Q. Are you saying the problem of choosing between DFG flows and reservoir minimums occurs only in a two-year situation?

A. I think that's when you would most likely see it. I think if you were in a one-year drought situation, as long as you, you know, planned and forecasted in a fairly accurate way, you could avoid it in most circumstances.

Q. Are you aware of any other situations in the 50-year historical record where there would have been a problem for the reservoir operator both to keep a minimum of 11,500 acre-feet and to send the DFG flows down?

A. I haven't done the detailed analysis, but if you look at the last six-year drought we just experienced, DWP was able to maintain the reservoir at or above the 11,500 acre-feet.

And I can -- well, the flows generally, in fact, almost always -- I don't have the flows right in front of me, were at or above the DFG recommended dry year

0118

flow.
MR. DODGE: No further questions.
HEARING OFFICER DEL PIERO: Thank you very much. Mr. Roos-Collins, how many questions do you have? How much time is it going to take you?
MR. ROOS-COLLINS: I can conclude in five minutes.
HEARING OFFICER DEL PIERO: Staff, any questions?
MR. FRINK: No questions here.
MR. SATKOWSKI: No questions.
MR. CANADAY: Just a couple.
HEARING OFFICER DEL PIERO: I have to make a phone call before 12:00 noon. So we're going to take a five minute break. It's going to take me two minutes to make the phone call. We'll come back and finish by ten minutes after the hour.
(A recess was taken at this time.)
HEARING OFFICER DEL PIERO: Back in session Mr. Roos-Collins please, proceed.

RECROSS EXAMINATION BY MR. ROOS-COLLINS

Q. BY MR. ROOS-COLLINS: Mr. Smith, in the course of your examination today, you've been asked questions by all attorneys, and also by State Water Board Staff as to whether your numerical recommendations are monthly, daily, diurnal.
Do you recall those questions?

0119

A. BY MR. GARY SMITH: Yes.
Q. Let's go back to DFG 52, the stream evaluation report for Rush Creek, and specifically the addendum sheet which sets forth the numerical recommendations.
Do you have that addendum sheet in front of you?
A. Yes, I do.
Q. Now, that sheet states that the flows recommended are Mono Gate One releases?
A. Yes.
Q. Is that correct? When you were here for your direct testimony, I asked you whether the numerical recommendations are instantaneous flows. I recall that your answer was yes.
A. Yes.
Q. That was your answer?
A. Yes.
Q. And it is your answer today?
A. Today, yes.
Q. So if it were feasible to operate Grant Dam, so as to change the fish release on a daily basis to comply with the flow recommendations you would recommend that that be done?
A. Are you referring to the addendum flows?
Q. Yes.
A. The -- as long as these flows are met, yes.

0120

Q. In other words, you would recommend that the State Water Board get as close as is feasible to continuous compliance with the numerical recommendations stated in this addendum; is that correct?
A. Yes, yes.
Q. Thank you. Now, let's return to footnote two, in Miss Cahill's January 26th, 1994 letter to this Board.
On the basis of your testimony, and also

Miss Cahill's and Mr. Birmingham's stipulation. I believe I understand footnote two now.

Let me ask you a hypothetical, to ensure that the record and my understanding are clear.

A. All right.

MR. BIRMINGHAM: Before he does that, Mr. Del Piero, may I just state for the purposes of the record that my stipulation was to concur that Miss Cahill stated what she meant to state in her footnote, not that we necessarily concur that that be a condition.

HEARING OFFICER DEL PIERO: I appreciate having that on the record, Mr. Birmingham. However, that was my understanding anyway.

MR. ROOS-COLLINS: You know, I thought I had trapped the unwary into a stipulation accepting -- the Department of Water and Power into accepting the

0121

Department of Fish and Game's flow recommendations.

HEARING OFFICER DEL PIERO: Come, come, Mr. Roos-Collins, you knew that wasn't the case.

Q. BY MR. ROOS-COLLINS: Now, Mr. Smith, for the purpose of this line of questioning, you should have footnote two and the addendum to the Fish and Game Exhibit 52 in front of you.

Do you have both?

A. Yes, I do.

Q. For the month of April, the dry year recommendation is 35 cfs, correct?

A. That is correct.

Q. If actual inflow into Grant Lake is less than 35 cfs in any year type, the Department is recommending a release from storage to make up for that deficit; is that correct?

A. That is correct.

Q. Let's leave aside that scenario. Let's assume that we're in a normal or wet year, and that the inflow into Grant Dam exceeds 35 cfs?

A. All right.

Q. Now, your numerical recommendation for a normal year is 59 cfs; is that correct?

A. That is correct.

Q. Let's assume that the inflow into Grant Dam is

0122

49 cfs in a normal year?

A. During April?

Q. During April.

A. All right.

Q. As I understand it, footnote two recommends that the 10 cfs deficit between actual inflow, the 49 cfs, and the numerical recommendation of 59 cfs, be made up from storage if that would serve lake maintenance purposes; is that correct?

A. That is correct.

Q. As far as the Department is concerned, would that 10 cfs be treated as a lake release?

A. Yes.

Q. Not as a fish release?

A. Not as a fish release.

Q. It would be a lake release?

A. Correct.
Q. Credited to whatever quantity of water the State Water Board set aside for lake maintenance purpose; is that correct?
A. Yes.
MR. ROOS-COLLINS: Thank you. No further questions.
HEARING OFFICER DEL PIERO: Thank you very much, Mr. Roos-Collins.

Mr. Valentine?
MR. VALENTINE: No questions.
HEARING OFFICER DEL PIERO: Mr. Frink?
MR. FRINK: No questions.
HEARING OFFICER DEL PIERO: Mr. Satkowski?
MR. SATKOWSKI: None here.
HEARING OFFICER DEL PIERO: Mr. Smith?
MR. HUGH SMITH: No questions.
HEARING OFFICER DEL PIERO: Mr. Herrera?
MR. HERRERA: I have no questions.
HEARING OFFICER DEL PIERO: Mr. Canaday?
MR. CANADAY: Two quick questions.
HEARING OFFICER DEL PIERO: Go ahead.

RECROSS EXAMINATION BY THE STAFF

Q. BY MR. CANADAY: Mr. Vorster, when you responded to Mr. Dodge, it was a hypothetical question that if in two consecutive dry years, you could maintain the stream flow recommendations from the Department instream flow and flushing, and maintain a minimum Grant Lake level.
And you believed you could do that, correct?
A. BY DR. VORSTER: Except in a dry year, you wouldn't have any flushing flow.
Q. Okay.
A. I said you could run into some problems in your

second dry year, depending on where you started your storage at the beginning of your first dry year.
Q. And if we were to take note of some testimony that's coming up by Dr. Stine on the length of historic droughts, you believe you could make that same statement, that it would be likely you could do both?
A. Dr. Stine's going to be testifying about prehistoric droughts. Was that what you meant? Was that your question?
Q. Yes.
A. Yeah, we had droughts of prehistoric length of --
Q. 20 years?
A. 20 years, then you would run into a conflict between maintaining dry year releases and maintaining Grant storage at 11,500 acre-feet.
MR. CANADAY: This question is actually for Miss Cahill.
It was my understanding that the Department met with the FERC this morning out at --
MR. BIRMINGHAM: Objection. Relevance. I'm sorry. I didn't allow Mr. Canaday to finish his question.
HEARING OFFICER DEL PIERO: That's right, you didn't. And at this point, it's premature as to

whether or not it's relevant. He's simply asking about
0125
whether or not a meeting took place.
MS. CAHILL: It was my understanding that the meeting was postponed, and that the meeting will happen this afternoon.
MR. CANADAY: Do you know what time?
MS. CAHILL: I can find out.
MR. CANADAY: Thank you.
HEARING OFFICER DEL PIERO: Thank you very much. Miss Cahill?
MS. CAHILL: I have no questions. I would just like to thank the members of the panel, and move the admission of DFG Exhibit 170-A, in place of old Exhibit 170, and also Exhibits 198 and 199.
HEARING OFFICER DEL PIERO: Any objection? None? So ordered. Exhibits 170-A, 198 and 199 are --
(DFG Exhibits Nos. 170-A, 198, and 199 were admitted into evidence.)
MR. DODGE: What's Exhibit 199?
MS. CAHILL: It was the video.
HEARING OFFICER DEL PIERO: Mr. Smith, Dr. Vorster, always a pleasure, gentlemen.
MR. HERRERA: Does 170-A include the January 26th letter?
MS. CAHILL: I didn't think it needed to, but if the Board would prefer that it include the letter,
0126
that's fine.
MR. BIRMINGHAM: The letter is part of the Board's record.
HEARING OFFICER DEL PIERO: Yes, it was numbered as -- what was that number?
MS. CAHILL: It wasn't numbered. It was like a cover to 170-A.
HEARING OFFICER DEL PIERO: Is that what it was?
MS. CAHILL: If it would be your preference to include the letter in 170-A, we can do that.
HEARING OFFICER DEL PIERO: That's my preference.
MS. CAHILL: That will be fine.
HEARING OFFICER DEL PIERO: So ordered into the record.
(DFG Exhibit 170-A was ordered to include the January 26, 1994 letter from Ms. Cahill.)
HEARING OFFICER DEL PIERO: Mr. Roos-Collins?
MR. ROOS-COLLINS: Just a clarification for Thursday, the 17th.
HEARING OFFICER DEL PIERO: Yes, sir.
MR. ROOS-COLLINS: We intend to call Mr. Vorster to complete his testimony regarding the pre-1941 hydrology.
HEARING OFFICER DEL PIERO: Okay. Thursday the
0127
17th, as everyone may or may not be aware, is also scheduled to go into the evening. Okay? Anything else?
Thank you everyone for your participation, ladies and gentlemen, we'll see you Thursday.
(Whereupon the proceedings were

adjourned at 12:07 p.m.)

---o0o---

REPORTER'S CERTIFICATE

---o0o---

STATE OF CALIFORNIA)
) ss.
COUNTY OF SACRAMENTO)

I, KIMBERLEY R. MUELLER, certify that I was the official court reporter for the proceedings named herein; and that as such reporter, I reported, in verbatim shorthand writing, those proceedings, that I thereafter caused my shorthand writing to be reduced to typewriting, and the pages numbered 1 through 127 herein constitute a complete, true and correct record of the proceedings:

PRESIDING OFFICER: Marc Del Piero
JURISDICTION: State Water Resources Control Board
CAUSE: Mono Lake Diversions
DATE OF PROCEEDINGS: Wednesday, February 9, 1994

IN WITNESS WHEREOF, I have subscribed this certificate at Sacramento, California, on this 11th day of February, 1994.

_____
Kimberley R. Mueller, RPR
CSR No. 10060