

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28

NO. 105, ORIGINAL
IN THE SUPREME COURT OF THE UNITED STATES
OCTOBER TERM 2002

STATE OF KANSAS,)
)
 PLAINTIFF,)
)
 VS.) VOLUME NO. 265
)
 STATE OF COLORADO,)
)
 DEFENDANT,)
)
 UNITED STATES OF AMERICA,)
)
 INTERVENOR.)

PROCEEDINGS HELD BEFORE
ARTHUR L. LITTLEWORTH, SPECIAL MASTER

LOCATION: UNITED STATES COURT OF APPEALS
FOR THE NINTH CIRCUIT
125 SOUTH GRAND AVENUE
COURTROOM NO. 3
PASADENA, CALI FORNI A

DATE AND TIME: THURSDAY, DECEMBER 19, 2002
9: 00 A. M.

REPORTED BY:
STEPHANIE SLONE, CSR, RPR
(NO. 10609)

KRAUSE COURT REPORTERS
625 FAIR OAKS AVENUE, SUITE 245
SOUTH PASADENA, CALI FORNI A 91030

(626) 799-0810

KRAUSE COURT REPORTERS

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28

APPEARANCES

FOR STATE OF KANSAS: MONTGOMERY & ANDREWS
BY: JOHN B. DRAPER
325 Paseo de Peralta
Santa Fe, New Mexico 87501
(505) 982-3873
- and -
LELAND E. ROLFS,
Kansas Department of
Agriculture
109 S.W. Ninth Street
Topeka, Kansas 66612-1280
(785) 296-4623

FOR STATE OF COLORADO: HILL & ROBBINS, P. C.
BY: DAVID W. ROBBINS
DENNIS M. MONTGOMERY
100 Blake Street Building
1441 Eighteenth Street
Denver, Colorado 80202
(303) 296-8100

♀

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28

I N D E X

WITNESS:	DI RECT EXAMI NATI ON	CROSS EXAMI NATI ON	REDI RECT EXAMI NATI ON
DALE BOOK	5	36	72
STEVEN P. LARSON	74	119	-
DAVID L. POPE	149	157	-

E X H I B I T S

PLAINTIFF'S	I N T O EVI DENCE	I N T R O D U C E D
1186 - Farm Uni ts wi th Surface Water Only Fi el ds in 1998 Survey	35	-
1187 - Maps Refl ecti ng Anal ysi s Perf ormed by Mr. Book i n Response to the Col orado Rebuttal Re Dry-Up Cl ai ms	35	-
1188 - LAWMA Di rect Fl ow Credi ts Graph	35	-
1203 - Change i n Di versi ons Between Hi stori c and Compact Runs, Kansas Revi sed H-I Model (01/02) vs. Col orado Revi sed Test Model (04/02)	118	103
1207 - Annual Predi cted Statel i ne Fl ows, Kansas Revi sed H-I Model	148	113
1209* - Average Monthl y Di fference i n Streamfl ow Between John Martin Reservoi r and the Statel i ne Fl ows	118	105

♀

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28

E X H I B I T S (Conti nued)

DEFENDANT' S	INTO EVI DENCE	I NTRODUCED
1456 - Arkansas Ri ver Basin Study Di tch Company Book - Bates Intervi ew	70	68
1459 - Ten-Year Accounti ng Exempl e	36	24

1 PASADENA, CALIFORNIA; THURSDAY, DECEMBER 19, 2002

2 9:00 A.M.

3 * * *

4 THE REPORTER: Please rise and come
5 to order for the case of Kansas v. Colorado in
6 the Supreme Court of the United States, the
7 Honorable Arthur L. Littleworth, Special Master,
8 presiding.

9 SPECIAL MASTER: Morning everyone.

10 MR. DRAPER: Good morning,
11 Your Honor.

12 MR. ROBBINS: Good morning,
13 Your Honor.

14 SPECIAL MASTER: Stephanie asked me
15 if this was getaway day. I said, "Well, I'm not
16 betting on it." So we'll see.

17 All right, Mr. Draper.

18 MR. DRAPER: Thank you, Your Honor.

19

20 DALE E. BOOK,
21 having been previously duly sworn, was
22 examined and testified further as follows:

23

24 DIRECT EXAMINATION (Continued)

25 BY MR. DRAPER:

26 Q. Good morning, Mr. Book.

27 A. Good morning.

28 Q. When we concluded yesterday, the special master

♀

1 had put the question as to what concerns you had⁶
2 about the Colorado proposal for compliance other
3 than the ones that he had indicated that he was
4 aware of.

5 And do you have any further concerns
6 you'd like to bring to the master's attention?

7 A. Yes, I do.

8 SPECIAL MASTER: Okay.

9 THE WITNESS: My understanding of
10 the proposal as we discussed it yesterday was
11 that, at the end of the ten-year period, the
12 H.I. model would be operated and there would be
13 a tabulation of the results over the ten-year
14 period. The period being -- the length of time
15 being proposed is ten years. So the total
16 output of the model for the entire ten years
17 would be reviewed, and if it showed that there
18 was a shortage, the total amount of that
19 shortage would be replaced as makeup water
20 during Year 11.

21 Then during Year 11, at the end of
22 Year 11, the model would be rerun with the
23 replacement and pumping for Year 11 and earlier
24 years, and the result of that analysis would be
25 totaled again for the period Years 2 through 11.
26 And if there was additional depletion that
27 resulted from that Year 11 in that average --
28 this would be an average result -- that that

1 additional depletion showing up for those ten
2 years would be replaced in Year 12 as makeup
3 water.

4 SPECIAL MASTER: What do you mean
5 that would be an average result?

6 THE WITNESS: That the model results
7 for the Years 2 through 11 would be divided by
8 10, that the value, that average annual value,
9 would then be replaced in Year 12 because the
10 result for Years 1 through 10 would have been
11 reconciled in Year 11.

12 MR. ROBBINS: Your Honor, I think
13 they still misunderstand the proposal.

14 SPECIAL MASTER: That's what I'm
15 thinking also, Mr. Book. My understanding was
16 that Year 11, you see whether -- look at what
17 the model shows, and you see whether over that
18 period of time, over ten years, there would
19 be -- taking into account any overdeliveries or
20 underdeliveries, you'd see where you stood, and
21 whatever that deficiency was, if there was one,
22 you'd make a payment, pay it up in full.

23 THE WITNESS: Yes.

24 SPECIAL MASTER: And if it showed
25 that too much water had been delivered, well,
26 then that's simply a carryover into the next
27 year. You'd then be looking at the model -- in
28 Year 12 you'd be looking at ten years prior,

1 dropping off the first year, adding one more,
2 and you would see where you were. If at that
3 point there was a deficiency, it would be made
4 up in that year.

5 THE WITNESS: In Year 12?

6 SPECIAL MASTER: Yes. So I
7 understood --

8 THE WITNESS: That's what I said,
9 that you would analyze the model results for the
10 Years 2 through 11, and if there was a
11 deficiency indicated on that average, that that
12 would be made up in Year 12.

13 SPECIAL MASTER: Okay. I guess it's
14 the word "average" that is causing me problems.

15 THE WITNESS: My understanding of
16 the proposal is it's an averaging proposal so
17 that the results of the model would be expressed
18 as a ten-year average value. That's what the
19 proposal is.

20 MR. ROBBINS: I thought --

21 SPECIAL MASTER: Do you want to
22 explain this, Mr. Robbins?

23 MR. ROBBINS: Well, Your Honor, I
24 thought we made that clear. Mr. Draper
25 expressed the serious concern that I'd used the
26 term "average," and I corrected myself, and I
27 said it was a ten-year running total. And
28 that's what it is. It's not an average.

1 There's no averaging that I'm aware of involved.

2 What's happening is, at the end of ten
3 years -- and I want to be clear. The Colorado
4 water users and the state engineer have no
5 interest going into Year 10, 10,000 acre-feet in
6 the hole. So they're going to be trying to
7 figure out where they are as they move along.

8 In Year 10 we look at what the model
9 results are. We already have five or six years
10 under our belt. In Year 10 we are either over
11 or under. If we are over -- summing up each
12 year's depletion as you go along or accretion.
13 If we're over, then we don't have anything to
14 do. We move on. We're doing what we said we'd
15 do. If in Year 10 we're under, in Year 10 we
16 add the underage to bring us even. That's in
17 Year 11.

18 Then we move ahead, drop one, add one,
19 and we look again. Again, we're looking at each
20 year, over/under, over/under, keeping an
21 accounting as we go. And if we were over in
22 Year 11, we go into Year 12 over, and we see how
23 it adds up with Year 12 in the model run. That
24 was our proposal, and I don't think that's
25 averaging. I may not understand it, but I don't
26 think that we're proposing an averaging of the
27 ten years.

28 SPECIAL MASTER: Well, that's the

1 way I had understood the proposal .

2 Now, Mr. Book, is that the way --

3 THE WITNESS: If I could comment,
4 what I'm trying to do is square the proposal
5 here with the opinion of the Colorado experts
6 that the results of the model are only usable on
7 a ten-year average basis. My interpretation of
8 that opinion is that the results of the model
9 would be summed over ten years and divided by
10 ten, and that would be considered to be the
11 depletion for that ten-year period.

12 SPECIAL MASTER: I think that's not
13 what -- if we are responding to the proposal
14 that Mr. Simpson made, I don't think that's the
15 proposal that he made --

16 THE WITNESS: Mr. Simpson's proposal
17 went to the accounting for maintaining
18 compliance. I didn't hear him say how he was
19 going to total the H.I. model results and use
20 those particular results, though.

21 SPECIAL MASTER: Well, you've just
22 heard Mr. Robbins -- and, I think, speaking for
23 the State of Colorado -- explain the way he
24 understood the Colorado proposal through
25 Mr. Simpson to operate. And so I think we
26 should respond to that. I think that's the
27 Colorado position on the record at this point,
28 and that's what you should assume, and then

1 respond on that basis.

2 THE WITNESS: Yes. That effectively
3 becomes an annual accounting, then, of the H.I.
4 model. It takes the results of the model each
5 year, and assuming that Years 1 and 10 have been
6 reconciled, then the results for Year 11, if
7 there were to be a depletion, stands on its own.

8 SPECIAL MASTER: Do you understand
9 that to be the way it would operate,
10 Mr. Robbins?

11 MR. ROBBINS: No, sir, I don't.
12 If going in to Year 11 we are over, even
13 if there's a depletion in Year 11, there is an
14 offset because we've already -- we've built the
15 bank up. The idea behind this is to give our
16 water users incentive to build the bank. We
17 can't tell them to do that because we can't
18 guarantee them it won't spill. But we want them
19 to build the bank so if we hit a year where the
20 model burps and produces a bunch of depletion as
21 a result of its reservoir operations and that,
22 they understand that might happen and they are
23 putting themselves in a position where that
24 won't result in an unmanageable depletion in
25 that year.

26 And so I don't understand it that way at
27 all. I don't understand that each year
28 thereafter it's strict accounting. The only way

1 it becomes strict accounting is if we find the
2 model going continually into debt, showing us to
3 go continually into debt. In that instance
4 Mr. Simpson has testified, "I have to change the
5 way I'm doing things."

6 But assuming -- if that happens, then
7 every year it becomes -- we're looking at the
8 long -- at the ten-year running total, but we
9 are responding to what the model is telling us
10 about our replacement programs. We believe that
11 we will be able to be above so that each year
12 we're going in a little bit to the good unless
13 we have a burp when depletions that we don't
14 expect come out of the model. And in that case,
15 we've got to fix it, and then we'll go forward
16 again.

17 SPECIAL MASTER: What about
18 Mr. Book's point that under this analysis, when
19 you've gone through the first ten years, after
20 that, in fact, you would be relying on the
21 annual results of the model?

22 MR. ROBBINS: We're relying on the
23 ten years of the model. We're not relying on --

24 SPECIAL MASTER: Let's assume --

25 MR. ROBBINS: We're not relying on
26 the accuracy of the annual data.

27 SPECIAL MASTER: Let's assume for a
28 second that the first ten years shows a

1 defi ci ency of, oh, 10,000 acre-feet. Year 11
2 you make up 10,000 acre-feet. And so you are
3 balanced at that point.

4 MR. ROBBINS: Yes, sir.

5 SPECIAL MASTER: Year 12 it shows
6 5,000 acre-feet defi ci ency. I think what
7 Mr. Book is saying, as I understand it, is that
8 then at that point you are relying upon the
9 annual results of the model.

10 MR. ROBBINS: In our proposal that
11 is correct because in Year 13 there might be a
12 20,000 acre-foot credi t because what we know is
13 that each year's value isn't particu larly
14 accurate. That's our posi ti on. We know that
15 over time, because it's cali brated over a long
16 time -- and as Dr. Brendecke pointed out, he
17 thinks it's more like 13 or 15 years, but over
18 time those results catch each other up.

19 And so we're willing to allow that to
20 occur, and we understand that sometimes we're
21 going to pay for a deple ti on that didn't exist
22 in that year. We're just going to do that
23 because presumably in previ ous years we got some
24 credi ts that might not have actual ly existed if
25 perfect model ing could have occurred.

26 But at least we're not expecting that
27 what happened in previ ous years where we did a
28 good job and we put extra water in the bank got

1 washed out. The problem we have with the Kansas
2 proposal is they want to say, "Accretions:
3 Thanks a lot, but next year's a new year.
4 Depletions: You owe us every single year."

5 We're trying to come up with a solution
6 that melds the two concerns and allows us to
7 recognize that the model is not going to
8 accurately predict it on a short-term basis,
9 that in any given year, it's not going to be
10 accurate, but if you look at it compared to the
11 previous ten years, you will at least obtain
12 closer to an average. And if that means in the
13 tenth year we owe a little bit and the 11th we
14 owe a little bit, that's what we'll owe.

15 Just as an example, if we use these
16 first ten years, we have a series of years of
17 accretions. The model is -- both models show
18 some accretions. Well, come to the 11th year,
19 the 12th year we're going to drop one of those.
20 And so unless we're on the money, we're liable
21 to -- the next ten-year look will show us short
22 2,800 acre-feet or whatever it is of accretion.

23 And the point they're making, I think,
24 is the same one here, which is you're doing a
25 different ten year -- a different set of values
26 every ten-year period because you're dropping a
27 year. So you're looking at a moving set of
28 ten-year values.

1 SPECIAL MASTER: Let me see if I can
2 refine the -- don't sit down -- refine the
3 Colorado proposal a bit more.

4 I think Mr. Simpson's proposal was to
5 start it after the rules were effective.

6 MR. ROBBINS: 1997.

7 SPECIAL MASTER: So beginning in
8 1997, that's the proposal?

9 MR. ROBBINS: Yes, sir.

10 SPECIAL MASTER: All right. Then
11 secondly, under the proposal how would Colorado
12 handle the accretions?

13 MR. ROBBINS: Accretions within the
14 ten-year period would be added into the bank, as
15 it were.

16 SPECIAL MASTER: So they would be
17 not restricted to simply accretions which
18 occurred during the irrigation season, but they
19 would occur -- I mean, if they -- I can't quite
20 remember how the accretions showed up in the
21 last model analysis, but they showed up over a
22 longer period than just the irrigation season.
23 So those would count in favor of Colorado --

24 MR. ROBBINS: Yes, sir.

25 SPECIAL MASTER: -- under the
26 proposal? Okay.

27 All right, Mr. Book. With that
28 understanding of the proposal --

1 THE WITNESS: I don't understand
2 what the proposal is for Year 12, assuming that
3 you reconciled Years 1 through 10, you ran the
4 model, you achieve a result after adding Year 11
5 to the results.

6 SPECIAL MASTER: And it shows a
7 deficiency, a depletion?

8 THE WITNESS: Yes.

9 SPECIAL MASTER: It's my
10 understanding -- and correct me if I'm wrong --
11 that that would then be something that would
12 have to be made up right at that point. It
13 would not be averaged in some way. You're right
14 in that sense, that then the model would be
15 operating on an annual basis.

16 MR. ROBBINS: The ten-year total is
17 changing each ten years.

18 SPECIAL MASTER: Right.

19 MR. ROBBINS: So in Year 12 it's a
20 different ten-year total than it had been in
21 Year 11 because you dropped a year and you added
22 a year. The fact that you -- the only reason it
23 becomes an annual obligation is if you assume
24 Colorado is going to run into debt every year.

25 If Year 12 is positive, the ten-year
26 total is different. It's only in the instance
27 which Mr. Simpson testified he would avoid that
28 you start to run a series of negative years that

1 you're looking at the model as having some sort
2 of significant influence on an annual basis. If
3 it's running positive totals, then those are
4 just adding and Colorado's moving along, trying
5 to stay above the line.

6 SPECIAL MASTER: I think my last
7 comment was not correct. So I think that
8 Mr. Robbins has stated it properly for Colorado.

9 So with that in mind, do you understand
10 how Year 12 would go?

11 THE WITNESS: My understanding is
12 that it would be based on an average for Years 2
13 through 11, as an average the degree of
14 depletion if there were to be a depletion that
15 occurred in Year 11.

16 SPECIAL MASTER: Well, I guess the
17 word "average" is what's bothersome. It seems
18 to me that you would be looking at what happened
19 over ten years. What you would have in Year 12
20 is you would have a different ten-year period.

21 THE WITNESS: Right.

22 SPECIAL MASTER: And if there had
23 been a depletion in Year 11, there would now be
24 some water made up. So the accounting would
25 be -- if it was fully made up in 11, in Year 11
26 you'd be going into Year 12 on an even basis,
27 but as you dropped one year and added one year,
28 I don't know. You might be even. You might not

1 be then in the next year.

2 THE WITNESS: That's right. And my
3 understanding was that there would be a makeup
4 payment that would occur in Year 12. I think
5 the question here is how would that amount be
6 determined. Would that be based on the sum of
7 the Years 2 through 11 divided by ten, or would
8 it be the result out of the model for Year 11?
9 That's the specific question I don't quite have
10 an answer to yet.

11 SPECIAL MASTER: Well --

12 MR. ROBBINS: It would be the total
13 of Years 2 through 11, pluses and minuses
14 totaled, and a number comes out at the end.
15 That's all it would be.

16 THE WITNESS: That's what I'm
17 referring to as an "average."

18 SPECIAL MASTER: Okay. All right.
19 So --

20 MR. ROBBINS: There's no division
21 involved. It's lawyer math only. You take each
22 year, and you add it to the next year, and
23 negatives take away, and positives add. And at
24 the end there's a sum, and it's positive or
25 negative. You don't divide anything by
26 anything.

27 THE WITNESS: Then that would be a
28 replacement of the Year 11 result of the model.

1 SPECIAL MASTER: And that's what I
2 thought you said earlier, and I put that to
3 Mr. Robbins, and he said, yes, that could
4 happen.

5 MR. ROBBINS: Well, if the total was
6 a negative --

7 SPECIAL MASTER: Yes.

8 MR. ROBBINS: -- that matched,
9 adding ten years together that matched exactly
10 the Year 11 result, but it's just as possible
11 that there might be a positive in Year 11 or
12 there might be a positive coming into Year 11.

13 THE WITNESS: Well, I understand
14 those two scenarios, and I was just looking at
15 the scenario where you've reconciled after
16 Year 10, and there could be eight years of
17 accretions, two years of depletions -- whatever.
18 At the end of ten years, you have reconciled.
19 So you have a balance, if you will, of zero.

20 Then the question is what do you do with
21 the Year 11 model results and whether the
22 Year 11 result, if it were a depletion, were
23 replaced in Year 12 or whether the Year 11
24 result would be computed as Years 2 through 11
25 divided by 10 because Years 2 through 10 have
26 already been accounted for. Repayment has been
27 provided so that you're at a zero balance.

28 SPECIAL MASTER: Well, so the

1 question is -- I guess this would be for you,
2 Mr. Robbins.

3 The question is that, as you look at
4 Year 11, you faced a 5,000 acre-feet depletion,
5 taking into account ten prior years of the
6 model, sometimes positive, sometimes negative,
7 end up at that time in the negative position.
8 So in Year 11, then you're assuming the 5,000.
9 You then would have to deliver 5,000 acre-feet.

10 MR. ROBBINS: That's my
11 understanding of Mr. Simpson's proposal.

12 SPECIAL MASTER: That's the way it
13 would go.

14 Now, Year 12 we are now balanced as of
15 Year 11. Add one more year. We dropped an
16 earlier year. We've added a year in which the
17 model shows something -- don't know exactly what
18 it shows.

19 What happens at that point?

20 MR. ROBBINS: We see what the result
21 is. But what the witness is missing is we drop
22 a year. If the year we dropped was a big
23 negative, then we'd go into Year 12 and the
24 model may show now suddenly in Year 12 we're
25 positive again because we included that negative
26 in ten years.

27 That showed a 5,000 acre-feet deficit
28 that we paid back in Year 11, but we drop that

1 huge deficit in Year 12, and we do it again, and²¹
2 we were even to start with in Year 11. We got
3 rid of the big deficit in Year 1. So now the
4 model may show a negative, and we may still be
5 positive. So we're not going to pay what the
6 model shows us in Year 12 exactly unless Year 1
7 was a zero.

8 SPECIAL MASTER: Uh-huh.

9 MR. ROBBINS: If we were even in
10 Year 1 and we drop Year 1, the witness is
11 correct.

12 SPECIAL MASTER: Okay.

13 MR. ROBBINS: But if we have
14 anything else in Year 1 and we drop it, the
15 witness is not correct because it changes what
16 we do in Year 12.

17 SPECIAL MASTER: Okay.

18 MR. ROBBINS: So that's the point
19 that we're trying to make here. It's not simply
20 an annual payment thereafter. It's looking at
21 ten years with a new ten years, and what you
22 drop is as important as what you predict in what
23 Colorado owes.

24 MR. DRAPER: Your Honor, if I may
25 state my understanding. I've been here
26 listening to Mr. Robbins, and I think what he's
27 saying is in Year 12 you will look back at the
28 previous ten years, and having balanced out the

1 first ten years, now you've got another ten
2 years that runs 2 through 11.

3 If 11 is a negative number, that will
4 then be compared to -- you're essentially
5 comparing it to what Year 1 was. If it's a
6 negative number and Year 1 were a positive
7 number in the same amount, then Colorado would
8 be even in Year 12.

9 MR. ROBBINS: Yes, sir, that's
10 correct.

11 MR. DRAPER: And just to state it
12 the other way, if Year 11 were a negative --
13 well, I'm going to leave it at that for a
14 moment.

15 MR. ROBBINS: If Year 11 were a
16 negative and Year 1 were a negative, we'd owe
17 more in Year 12.

18 MR. DRAPER: Right.

19 SPECIAL MASTER: Yes.

20 MR. ROBBINS: That's what you were
21 about to say, I think.

22 MR. DRAPER: Yes.

23 MR. ROBBINS: And that's correct.
24 It's exactly right. This is sort of live by the
25 sword, die by the sword.

26 BY MR. DRAPER:

27 Q. Now, Mr. Book, does that clarify your question
28 about the Colorado proposal?

1 A. Not totally. But --

2 Q. Can you articulate what the remaining ambiguity
3 is?

4 A. My understanding is that if the Year 11 would be
5 reconciled through ten years and the Year 11
6 result is a depletion, that you would be repaid
7 that depletion in order to reconcile through the
8 Years 0 -- 1 through 11, but I'm not certain
9 that that's what's being proposed.

10 SPECIAL MASTER: Would it help if we
11 put two examples on the butcher paper here, one
12 which brings us to a deficit at the end of the
13 first ten years in Year 11 and one that brings
14 us to a surplus?

15 THE WITNESS: I think I understand
16 what happens with the surplus. The credit just
17 carries forward. There's no additional
18 repayment that goes with that.

19 SPECIAL MASTER: Well, would it help
20 if Mr. Robbins were to put the situation where
21 there's a deficit ending up after the first --
22 well, after ten years balanced out in Year 11?

23 MR. DRAPER: I think it might,
24 Your Honor, if we took a short break to do that.

25 SPECIAL MASTER: Why don't we take a
26 break and give Colorado a chance to work out an
27 example here. And then we'll put that on the
28 butcher page. So we'll take --

1 MR. ROBBINS: Yes, sir.

2 SPECIAL MASTER: -- ten minutes here
3 and give you a chance to work out a possible
4 example.

5 MR. DRAPER: Very good.

6 (Recess.)

7 THE REPORTER: Please remain seated.
8 Court is again in session.

9 SPECIAL MASTER: All right,
10 Mr. Robbins. I see that you've got an analysis
11 on the butcher paper here.

12 MR. ROBBINS: Yes. Let me swing it
13 around so you can see it a little better. The
14 theory behind the analysis is this: Years 1
15 through 14 are on the left-hand side. The next
16 column is depletions and accretions. The next
17 column, then, is the ten-year total as those
18 occur. Year 1 is a plus. So it's a plus.
19 Year 2 is a plus. So it's a plus 3, coming down
20 to a ten-year total of a plus 1.

21 Year 11, we drop the first year and add
22 Year 11, which is a plus 1. So we're dropping a
23 plus 1 and adding a plus 1. And, again, we come
24 out at a plus 1. Year 12, we're dropping a
25 total of plus 3, and we're adding a minus 2. So
26 when we do the addition -- and this is a
27 minus 1, a minus 2, a minus 4, a minus 2, and a
28 minus 1 because we're running the total -- we

1 end up with a mi nus 3, and we have to add 3 of
2 water.

3 In Year 13 we are at a plus 2, but we're
4 droppi ng a plus 3. And so in Year 13, we end up
5 at a mi nus 4. So we have to add 4. Now, at the
6 same time in the Years 13 and 14, we're adding a
7 total of 7 in so that values in Years 13 and 14
8 are going to start movi ng in the other
9 directi on, presumably, and we go through the
10 same process, and we end up at the end of
11 Year 14 at a plus 2 (i ndi cati ng throughout).

12 MR. DRAPER: Mr. Robbins, in your
13 exampl e under the column headed "Total Year 12,"
14 you have a mi nus 3 and a plus 3 ci rcl ed.

15 MR. ROBBINS: Ri ght.

16 MR. DRAPER: What do those si gni fy?

17 MR. ROBBINS: If we came out mi nus
18 at the end of one of these ten-year periods,
19 Mr. Simpson said we had to add in in that year
20 what we were negati ve, and so we di d.

21 SPECIAL MASTER: That's the makeup
22 water?

23 MR. ROBBINS: Yes, si r.

24 SPECIAL MASTER: Uh-huh.

25 MR. DRAPER: And that's total ly
26 Years 2 through 11?

27 MR. ROBBINS: Yes.

28 MR. DRAPER: And that totals in your

1 example to a minus 3?

2 MR. ROBBINS: Yes.

3 MR. DRAPER: And so in Year 12 you
4 add 3?

5 MR. ROBBINS: Yes.

6 MR. DRAPER: Okay.

7 MR. ROBBINS: So we're even. But I
8 wanted to show that it's not an average, that
9 Mr. Simpson -- and as the master described it,
10 and I think he did accurately -- and it
11 results -- it isn't a year to year -- it doesn't
12 really -- Mr. Book was wanting to say that it
13 becomes an annual running of the model, but it
14 doesn't because these values over here don't
15 have the same magnitude as the circled values in
16 any given year.

17 They're different because you are
18 dropping off a value and adding a value, but
19 it's what happened in the intervening ten years,
20 which is how we understand what may happen
21 within the model that counts, which is you may
22 have depletions that aren't being displayed at
23 the stateline. You may have accretions that
24 aren't and then they are displayed in a
25 subsequent year, and in this way we wash all of
26 that together.

27 Presumably if we were paying attention
28 to what we were doing in the way of replacement

1 in these years, we wouldn't be operating to
2 produce a long -- Mr. Simpson's testimony was we
3 wouldn't be operating to produce a long series
4 of what we might be concerned would be
5 negatives. We might start adding to the account
6 in order to avoid this consequence (indicating
7 throughout).

8 SPECIAL MASTER: Mr. Robbins, would
9 you put the next exhibit number on that.

10 MR. ROBBINS: I'd be happy to.

11 But what this also shows is the great
12 vulnerability that LAWMA and the Colorado
13 replacement programs have to spill out of John
14 Martin because if they see themselves producing
15 this series of years and they put some water in
16 and we get a spill year, then Colorado really is
17 going to have to scramble to comply with its
18 obligations (indicating). So the storage in
19 John Martin will be critical to long-term
20 planning under this. But because we have the
21 offset account, it's there for that planning,
22 and that's basically how we would intend that.

23 I'll ask Lynette to put an exhibit
24 number on that.

25 What number would that be, Lynette?

26 MS. NICHOLS: 1459.

27 MR. ROBBINS: It would be 1459,
28 Your Honor.

1 SPECIAL MASTER: Would you reduce
2 that to an 8 1/2 by 11?

3 MR. ROBBINS: I'd be happy to. I'll
4 have Mr. Straw check the math because this is --

5 SPECIAL MASTER: Right.

6 MR. ROBBINS: This is lawyer math.
7 There are no zeroes, you notice, and they're
8 just pluses and minuses.

9 SPECIAL MASTER: If the math isn't
10 correct, well, then, let us know.

11 MR. ROBBINS: Right.

12 SPECIAL MASTER: And --

13 MR. ROBBINS: It doesn't change the
14 concept at all. I think I've got it right.
15 Mr. Straw pointed out, as you can see, two
16 mistakes where my in-line computer went kafoeey.

17 SPECIAL MASTER: Give us correct
18 math on this thing.

19 MR. ROBBINS: Yes, sir.

20 SPECIAL MASTER: All right,
21 Mr. Book. With that explanation of the Colorado
22 proposal, do you then have either questions or
23 comments?

24 THE WITNESS: Yes, I do, I believe.
25 I have two comments regarding the proposal.

26 SPECIAL MASTER: All right. Let me
27 have those comments.

28 THE WITNESS: Sure. The

1 calculations of the repayment water -- I can
2 term it repayment water. The assumption is here
3 there would be accretions which would be carried
4 forward. In some years there would be
5 shortfalls calculated by dropping the first year
6 and adding the tenth and 11th year so that the
7 results would be dependent on the annual output
8 of the model to some extent.

9 So one comment I would have is that the
10 result of that particular year of the model
11 would be part of the analysis.

12 SPECIAL MASTER: Any other comments?

13 THE WITNESS: The proposal -- I
14 think one of the most important concerns to the
15 State of Kansas is going to be the flexibility
16 in providing additional water or makeup water as
17 part of the ten-year accounting and how flexible
18 that is going to be because any additional water
19 delivered in years of excess supply, large
20 supplies in the basin, is going to result in
21 credits being carried forward, which would
22 reduce obligations for delivery in other years.

23 And so it's important that those values
24 be appropriately limited so that you don't have
25 large accretions or prepayments, if you want to
26 call it that, occurring.

27 SPECIAL MASTER: So you're
28 suggesting there would need to be some limit on

1 the accumulation of accretions?

2 THE WITNESS: Yes. I think both on
3 an annual and on the accumulation amount. One
4 condition, of course, needs to be that any
5 accretions are usable. And if those accretions
6 or prepayments or excess water is through the
7 offset account, that would deal with the issue
8 of usability to Kansas.

9 SPECIAL MASTER: Anything else?

10 THE WITNESS: It's my opinion that
11 because of the flexibility allowed in a
12 multi-year averaging and especially in a
13 ten-year averaging, which is a long period, that
14 in general the replacements are going to tend to
15 be under the depletions because of periodic
16 payments would be above the level of depletions
17 being predicted by the model, just under the
18 flexibility that would be allowed under such a
19 program.

20 SPECIAL MASTER: Okay.

21 THE WITNESS: There are a couple of
22 other comments I have. The presumptive
23 depletion factors should be reviewed. The
24 presumptive depletion factor approach should be
25 maintained all the way to the stateline. I
26 think there's some potential, at least in my
27 reading of the rules, that if, for example, the
28 credit was accumulating, whether the application

1 of presumptive depletion factors would be
2 applied all the way to the stateline or whether
3 there would be some ability to relax that
4 application for the areas covered only by
5 Rule 3.

6 SPECIAL MASTER: Okay. I'm not
7 understanding that, Mr. Book. Do you want to
8 give me a little fuller explanation of that
9 comment?

10 THE WITNESS: Yes. The presumptive
11 depletion factors are included in Rule 4 in the
12 rules, which covers replacement of depletions to
13 Colorado, senior Colorado water users. I think
14 the Rule 3 requirement does not necessarily
15 include the -- or require the continuance of the
16 use of depletion factors for the reaches that
17 are covered only by Reach 3, but I think it's
18 important that that is maintained.

19 My understanding is that that's the
20 proposal, but I don't see that required under
21 the rules, and I think if you were to approve a
22 ten-year averaging, which would have credits
23 being carried forward, certainly the potential
24 is there that they would try to take advantage
25 of those credits by relaxing the replacement.

26 I think as part of the process that
27 Mr. Simpson described was an ongoing review of
28 the presumptive depletion factors, and my

1 opinion is that the presumptive depletion
2 factors should not be reduced based on credits
3 being carried on the books or accretions that
4 are not caused by the rules. An example I would
5 give would be the Fountain Creek spills that
6 occurred in the years 1997 through 1999, which
7 under the Colorado approach would leave a credit
8 outstanding on the books. There's a question, I
9 think, if the PDFs are evaluated, whether those
10 types of accretions would be considered in that
11 evaluation as a basis to lower the PDFs.

12 I think with respect to how the makeup
13 water is delivered -- for example, shown in
14 Years 12 and 13 -- we need to be concerned about
15 whether that is delivered through the offset
16 account or whether there are proposals to make
17 direct deliveries to the stateline as occurred
18 in 1996, I believe.

19 It's my understanding from Mr. Simpson's
20 testimony that this makeup water, if and when
21 required, would be through the offset account.
22 I think there are issues that arose in the 1996
23 operations that certainly would cause problems
24 for Kansas if deliveries were being made to the
25 stateline but not through the offset account.

26 SPECIAL MASTER: Okay. Are you
27 suggesting that the makeup water should be
28 delivered through the offset account --

1 THE WITNESS: Yes.

2 SPECIAL MASTER: -- and not directly
3 to the stateline?

4 THE WITNESS: Yes.

5 MR. ROBBINS: Just as a matter of
6 history, '96 was the first year. There wasn't
7 even an offset account. To sort of draw
8 analogies to how operations ought to occur using
9 '96 isn't exactly a fair comparison.

10 BY MR. DRAPER:

11 Q. What is your recommendation, then, Mr. Book,
12 with respect to whether makeup water is
13 delivered through the offset account or not?

14 A. It's my recommendation that it be made through
15 the offset account.

16 SPECIAL MASTER: And I presume that
17 that has the advantage, as far as Kansas is
18 concerned, that it then allows you to draw upon
19 that water when you think it's needed?

20 THE WITNESS: Yes.

21 SPECIAL MASTER: And I suppose the
22 potential disadvantage to Colorado is that some
23 of that might spill?

24 THE WITNESS: There could be certain
25 conditions when there may be risk of spill. I
26 guess those would tend to be at times when I
27 would expect accretions in the system, assuming
28 that the presumptive depletion factors were at

1 appropriate levels on the average. And the
2 periods that we're talking about here should
3 correspond more to the low water supply
4 conditions. There's always the risk of spill in
5 any storage in the basin.

6 SPECIAL MASTER: Anything else you
7 want to add?

8 THE WITNESS: No, I don't believe
9 so.

10 SPECIAL MASTER: You'll never get a
11 question like that again. All right.

12 MR. DRAPER: Your Honor, we do have
13 this one scenario that has been put up by
14 Mr. Robbins. I think we need -- we've had a few
15 minutes at this point to look at the array of
16 numbers --

17 SPECIAL MASTER: Right.

18 MR. DRAPER: -- but we, I think,
19 need to take a closer look at it and in some way
20 through additional examples clear up any
21 ambiguities that may remain.

22 SPECIAL MASTER: Well, I think
23 that's important. So if we're here tomorrow,
24 you can do that. If, in fact, we're not here
25 tomorrow and we're occupied today, if you have
26 some other thoughts on this when we come back in
27 January, I'll hear them at that time.

28 MR. DRAPER: I think with that,

1 then, I have no further questions of Mr. Book.

2 SPECIAL MASTER: All right.

3 Mr. Robbins, do you have any cross-examination?

4 MR. ROBBINS: Yes, I do.

5 SPECIAL MASTER: All right.

6 MR. DRAPER: Your Honor, I would
7 offer three exhibits in connection with
8 Mr. Book's testimony. Those are Plaintiff's
9 Exhibit 1186, the data compilation from the
10 Colorado irrigated area database; Plaintiff's
11 Exhibit 1187, the two maps concerning dry-up;
12 and Plaintiff's Exhibit 1188, the table of LAWMA
13 direct flow credits. I would ask --

14 MR. ROBBINS: We have no objection,
15 Your Honor.

16 SPECIAL MASTER: All right. Those
17 will be admitted.

18 (Whereupon Plaintiff's Exhibit
19 Nos. 1186, 1187, and 1188 were
20 admitted into evidence.)

21 MR. DRAPER: Thank you, Your Honor.

22 MR. ROBBINS: Your Honor, I can
23 either offer 1459 at this time or I can wait
24 until our rebuttal case and put it on through
25 Mr. Simpson, but that's it, if you need it in
26 the record.

27 SPECIAL MASTER: Let's offer it
28 right now.

1 MR. ROBBINS: I do so.

2 MR. DRAPER: No objecti on,

3 Your Honor.

4 MR. ROBBINS: Wi th the understanding
5 that they're going to put it onto 8 1/2 by 11
6 and check my math.

7 SPECIAL MASTER: And check your
8 arithmeti c.

9 MR. ROBBINS: Yes, sir. That's all
10 the limitation I need to add.

11 THE REPORTER: Is that admitted,
12 then?

13 SPECIAL MASTER: Yes. Excuse me.
14 It is.

15 (Whereupon Defendant's Exhi bi t
16 No. 1459 was admitted into
17 evi dence.)

18
19 CROSS-EXAMI NATION

20 BY MR. ROBBINS:

21 Q. Hel lo, Mr. Book.

22 A. Good morni ng.

23 Q. Do you have a copy of Kansas Exhi bi t 1186?

24 A. Cou ld you remi nd me whi ch exhi bi t that is?

25 Q. Yes. That's the exhi bi t i n whi ch you descri be
26 the farm uni ts whi ch you had focused on i n your
27 response to Colorado's case i n chief and whi ch
28 you then reviewed concerning the -- extracted

1 out of the farm units that were part of
2 Mr. Tyner's verification.

3 A. Yes, I have that.

4 MR. ROBBINS: Okay. Do you have
5 1186, Your Honor?

6 SPECIAL MASTER: Right here
7 (indicating).

8 MR. ROBBINS: Thank you.

9 Q. Could you look at Section C at the bottom of the
10 first page of the exhibit.

11 A. Yes.

12 Q. These are farm units that had been surveyed in
13 1998 but were not included in the Colorado 2002
14 updated database that Mr. Tyner used to
15 determine acres irrigated by wells in 1997, '98,
16 and '99; is that right?

17 A. Yes.

18 Q. The farm units listed in Section C are not
19 included in the 2002 updated database because
20 Mr. Tyner determined that wells within those
21 farm units were inactive during the '97, '98,
22 and '99 period; is that correct?

23 A. I think that's probably the case, yes.

24 Q. He examined the power records for the wells on
25 those farm units to confirm they hadn't been
26 pumped; is that right?

27 A. That's how he would determine that, yes.

28 Q. Do you agree that the removal of the farm units

1 in Section C was reasonable?

2 A. I have not had a chance to review that in
3 detail, but presuming that Mr. Tyner's work is
4 accurate, I think that's a reasonable approach.

5 Q. Thank you.

6 Do you have a copy of Kansas
7 Exhibit 1187 with you, the maps?

8 A. Yes, I do.

9 Q. Thank you.

10 This is the exhibit in which you depict
11 the fields where there's still disagreement
12 between the states on dry-up acreage and claims
13 for dry-up acreage; is that correct?

14 A. Some of the disagreements are indicated in red
15 on this map. We probably need to look at the
16 table in the Colorado report to actually see
17 differences in some of the other tracts.

18 Q. In the acres?

19 A. Yes.

20 Q. But I'm just wanting to talk at this point just
21 about the nature of your concerns.

22 A. Yes.

23 Q. For the tracts under the Fort Bent Canal where
24 there is disagreement, your issue is primarily
25 that the field was not historically irrigated;
26 isn't that correct?

27 A. I think there were two issues on the Fort Bent,
28 the areas not historically irrigated and then

1 also some disagreement about the documentation
2 and verification that occurred on a couple of
3 the tracts.

4 Q. With regard to the tracts like the Stein tract
5 and the Bishop tract and the Neuhold tract,
6 those are primarily disagreements about whether
7 the land was irrigated at all or if it was
8 appropriately dried up; is that correct?

9 A. Yes.

10 Q. And you agree that Mr. Helton did an
11 investigation of the fields historically
12 irrigated, but you don't always agree with his
13 findings from that investigation.

14 Is that fair?

15 A. Yes.

16 Q. Now, the Colorado water courts will examine the
17 issue of what fields were historically irrigated
18 and when they were dried up when LAWMA files its
19 application to change its shares of its Fort
20 Bent Ditch Company shares?

21 A. I'm not sure what will be included in the
22 application with respect to the specific shares.
23 It would make a difference whether they're
24 leased or owned, but if you assume that these
25 shares are included in the application, then I
26 would expect as part of that process there would
27 at least be some consideration for the historic
28 use of those shares.

1 Q. From your fairly extensive experience in
2 Colorado water court proceedings, would you not
3 agree that that is one of the issues that water
4 courts traditionally pay attention to when there
5 is a change of water rights?

6 A. I think that's generally the case, yes.

7 Q. And under the rules, would you not agree that
8 LAWMA must go to court if it wishes to continue
9 to rely upon claims of historical use of tracts
10 and claims of dry-up of tracts in its claims?

11 A. I'm not sure about what distinction is going to
12 be made between leased shares and owned shares.
13 I understand there may be some distinction with
14 respect to how the rules would apply to that
15 source of water.

16 Q. Assume with me, if you would, for purposes of
17 this question, that LAWMA will include all of
18 the Fort Bent shares that have been testified to
19 by Mr. Helton, whether leased or owned outright.

20 Would you not agree that the water court
21 will examine the historic use, the dry-up, and
22 the dry-up in its proceeding and will include
23 those sorts of limitations and decisions in its
24 decree?

25 A. I think those issues would be considered. In
26 terms of the depth of examination, I think it's
27 somewhat speculative to conclude how intense
28 that investigation would be. I think considered

1 would be more appropriate at this point.

2 Q. Let me go through each tract to be sure we can
3 identify Mr. Hel ton's work with which you
4 disagree.

5 Do you have a copy of Exhi bi t 1414?

6 A. Is that the Colorado joint report?

7 Q. No. That's the report that Mr. Hel ton di d on
8 the Fort Bent Canal .

9 A. No, I don' t.

10 Q. I would be happy to loan you a copy.

11 SPECIAL MASTER: 1414?

12 MR. ROBBINS: Yes, sir.

13 Q. I've been instructed not to give you a copy
14 because Lynette wants it back. She's quite
15 intent on that subject, it being a thick report.

16 If you could, in the front of the report
17 there's a memorandum to David Harrison from
18 Mr. Hel ton and hi s partner, Mr. Wi lli amsen.

19 Do you see that?

20 A. Yes.

21 Q. If you would turn to page 6, please, of that
22 memorandum.

23 A. Yes.

24 Q. The first tract that you identi fied in your
25 direct testimony was the Stein tract, and
26 Mr. Hel ton's interpretation of the Stein tract
27 is shown at the top of that page; is that right?

28 A. Yes.

1 Q. And in order to avoid flipping back and forth,
2 for purposes of the questions, I believe that
3 the photographs that are associated with the
4 Stein tract are photographs 1-A, -B, and -C.
5 I'm not going to ask you to confirm that. I
6 think it's correct, but I'll just identify it
7 for the record.

8 And also on page 6 is the Bishop tract,
9 which was the second tract that you expressed
10 concerns about; is that right?

11 A. Yes.

12 Q. And those photos are 2-A, -B, and -C in
13 Mr. Helton's report.

14 The next tract that you had concern
15 about was the Cruikshank farm; is that correct?

16 A. Yes.

17 Q. And that's on page 8. Would you confirm that,
18 please.

19 A. Yes.

20 Q. And those photos are photos A, B, and C [sic].

21 The next tract you had concerns with was
22 the Neuhold tract; is that right?

23 A. Yes.

24 Q. And that's on page 9, is it not?

25 A. Yes.

26 Q. And the photos being 5-A, -B, and -C.

27 And the final tract that you had
28 concerns about was the Kendall tract; right?

1 A. Yes.

2 Q. And that's shown on page 10; is that right?

3 A. Yes.

4 Q. And the photos for the Kendall tract were photos
5 6-A, -B, and -C.

6 These, then, represent the locations of
7 Mr. Helton's opinions with which you disagree
8 concerning those tracts; is that right?

9 A. Yes.

10 Q. If dry-up credit is to be given for the tracts
11 that are described in Mr. Helton's report, as
12 we've defined it, and your opinions, the water
13 court will have to agree to that dry-up credit
14 and include it within the decree when LAWMA's
15 plan of replacement and augmentation is
16 considered.

17 Would you agree with that?

18 A. Yes, I think that's generally correct.

19 Q. Thank you.

20 SPECIAL MASTER: Mr. Robbins, the
21 pictures are in here, aren't they --

22 MR. ROBBINS: Yes, they are, sir.

23 SPECIAL MASTER: -- the same
24 exhibit?

25 Okay. Let's just take an example of one
26 of these. I want to see what the disagreement
27 is.

28 MR. ROBBINS: Okay. Maybe --

1 SPECIAL MASTER: Take one of those
2 farms and the appropriate pictures.

3 MR. ROBBINS: How about 2-A, -B, and
4 -C, the Bi shop Farm.

5 Do you have photo 2-A?

6 SPECIAL MASTER: I have those
7 pi ctures.

8 BY MR. ROBBINS:

9 Q. Okay. On 2-A, Mr. Book --

10 SPECIAL MASTER: And I don't recall
11 the testimony, but Mr. Hel ton's testimony is
12 that these were taken in some historic period.
13 I see one of them --

14 MR. ROBBINS: 2-A is 1947, yes, sir.

15 Q. And the tract at issue, Mr. Book, is the tract
16 surrounded by the dashed line just about in the
17 center of the photo; is that right?

18 A. Yes, that's correct.

19 Q. And that is the field that Mr. Hel ton asserts
20 was irrigated and you do not believe was
21 irrigated; is that right?

22 A. Yes.

23 SPECIAL MASTER: Wait. I'm not
24 fi nding the dashed line in the center.

25 MR. ROBBINS: There's a somewhat
26 ir regular -- there's a small field right in the
27 middle of the photo.

28 SPECIAL MASTER: Okay. I think I

1 see it.

2 MR. ROBBINS: It has a dashed line
3 around it. The other lines are darker lines.

4 SPECIAL MASTER: So looking at that
5 photo, Mr. Book, does that indicate to you that
6 it was irrigated in 1947?

7 THE WITNESS: I think on this parcel
8 when you take the record as a whole, considering
9 several photographs up through 1980, that this
10 tract is not an irrigated tract on a regular
11 basis. This is part of an area that's somewhat
12 of a bulky area. When you go out in the field
13 and look at it, it's very low, collects some
14 drainage, has some subirrigation occurring, and
15 it has been my view all along that this was not
16 an irrigated parcel and had not been included as
17 such when I did my mapping based on the 1980
18 aerial photos.

19 MR. ROBBINS: Okay. And I think
20 they're all very similar.

21 SPECIAL MASTER: All right.

22 MR. ROBBINS: I mean, not
23 necessarily that they were bulky, but the photos
24 depict Mr. Helton's analysis, and you can
25 compare that to Mr. Book's testimony.

26 SPECIAL MASTER: That was on the
27 Bishop tract, was that?

28 MR. ROBBINS: Yes, sir.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28

SPECIAL MASTER: Okay.

BY MR. ROBBINS:

Q. Let's go back, then, to Plaintiff's Exhibit 1187, your maps.

A. Yes.

Q. And we won't be using 1414 any further.

On the right-hand side of the first map in the exhibit and the left-hand side of the second map, you show the Center Farm under the Lamar Canal; is that correct?

A. Yes.

Q. And it is shown as being fully irrigated on the maps; is that right?

A. The shading here indicates that it was identified in the LAWMA 2002 plan as potentially irrigated.

Q. But the shading on the maps in the legend of the maps says "Continuing Irrigation"; is that correct?

A. Yes.

Q. And for the period 1997, '98, and '99, it was irrigated, was it not?

A. Yes, it was.

Q. And Colorado showed it as irrigated in '97, '98, and '99, did it not?

A. Yes.

Q. And you did as well?

A. Yes.

- 1 Q. So there's no dispute for the '97 through '99
2 period about the status of those tracts; is that
3 right?
- 4 A. That's correct.
- 5 Q. Now, the Center Farm is not owned by LAWMA, is
6 it?
- 7 A. That's my understanding.
- 8 Q. It's owned by the Division of Wildlife; right?
- 9 A. I believe so, yes.
- 10 Q. And the Division of Wildlife can irrigate the
11 Center Farm if it chooses; isn't that correct?
- 12 A. That's my understanding, that that's the way the
13 plan has been submitted, was that they could
14 irrigate the entire farm or parts of it.
- 15 Q. And if the Division of Wildlife dries up the
16 Center Farm, the Division of Wildlife can use
17 the dry-up credits as it chooses; isn't that
18 correct?
- 19 A. I'm not sure what limitations would be on where
20 they could use those credits. I really have not
21 investigated what their uses would be.
- 22 Q. Well, as it stands today, LAWMA is entitled to
23 15 percent of any dry-up credits, at a minimum,
24 if it manages the Division of Wildlife's
25 replacement plan; right?
- 26 A. I'm not sure about what arrangement they have.
- 27 Q. But LAWMA has no permanent claim on the Center
28 Farm dry-up credits as it stands today, does it?

1 A. That's my understanding, they do not.

2 Q. Okay. Thank you. I didn't want there to be any
3 confusion on the master's part that the Center
4 Farm was formerly part of the LAWMA plan.

5 And on the second page of Exhibit 1187,
6 the XY-Graham lands are depicted generally on
7 the right side of the exhibit; is that right?

8 A. Yes.

9 Q. In looking at the legend, the green speckled
10 parcels are indicated to be continuing
11 irrigation of those lands; is that right?

12 A. Yes.

13 Q. However, that doesn't mean that physically all
14 of the green speckled lands are actually
15 continuing in irrigation, does it?

16 A. I think these are indicated in the plans each
17 year as potentially irrigated, and so they may
18 or may not be irrigated during the season.

19 Q. So it doesn't mean that they are, in fact,
20 irrigated. It just means that they were
21 indicated as having the potential to be
22 irrigated when LAWMA submitted its plan; is that
23 right?

24 A. Yes.

25 Q. And your position, if I understand it, is that
26 if LAWMA says on its submittal "potentially to
27 be irrigated," it should not get credit for
28 dry-up on those lands even if no irrigation

1 occurred that year; is that right?

2 A. I think the opinion that I've expressed is that
3 that type of designation makes monitoring and
4 verification quite difficult in an area like
5 this which is contiguous with some lands being
6 irrigated and some lands being not irrigated
7 and, further, that the documentation that has
8 been collected so far in the implementation of
9 the rules has not been adequate to allow us to
10 go through each year and positively confirm what
11 has or has not been irrigated.

12 Q. So in your analysis, you have chosen to exclude
13 any lands designated as potentially to be
14 irrigated from any claim of dry-up -- right? --
15 or any granting or acknowledgment of dry-up?

16 A. That's what we have done for the years 1997
17 through 1999. I don't believe I have evaluated
18 years after that at this time.

19 Q. Now, if LAWMA changed its designation and said
20 "potentially to be dried up," would that work
21 better for Kansas because then LAWMA would get
22 credit unless they had actually irrigated the
23 lands?

24 A. I think the issue for us is documentation of
25 what's actually happening in the field and
26 whether there are sufficient procedures in
27 place. And if there's some ambiguity in the
28 application and the administration of the plan,

1 I think that ambiguity would be a problem either
2 way.

3 Q. Well, would you think that you would recommend
4 to Kansas that they give credit for XY lands if
5 LAWMA simply claimed them as dried up in its
6 proposed submittal and then toward the end of
7 the year filed an amendment to show those lands
8 which it turned out were irrigated by a tenant?

9 A. Well, I think what you're describing would be a
10 first step in the process of documentation. If
11 you're going to maintain this level of
12 flexibility and this dry-up, it's going to
13 create needs for more monitoring and
14 verification to be able to document what
15 actually happened during the year. That's the
16 issue here. And so if there's going to be
17 midyear reports, that's certainly an
18 improvement.

19 Q. Well, I said at the end of the year they would
20 simply file an amendment and say certain lands
21 were irrigated. That would be better than
22 indicating the lands that the State of Colorado
23 ought to pay attention to and verify starting
24 up.

25 A. I think with that scenario you would still have
26 the same substantive issues about verification
27 and monitoring.

28 Q. But it's your view that LAWMA ought to be

1 deprived of credit for land that is, in fact,
2 dried up if they don't say it; right?

3 A. No. It's not tied to the words in the report.
4 It's tied to the actual implementation and
5 administration of the plan and what monitoring
6 and verification is actually done. And to
7 require that there be an unambiguous designation
8 of land I don't believe is unreasonable and that
9 there be monitoring to ensure that that dry-up
10 has actually occurred. The dry-up is an
11 important issue to the State of Kansas, and
12 they're concerned about it.

13 Q. It's an important issue to the State of Colorado
14 as well because the results of every acre of
15 lost crop production need to be credited so that
16 Colorado's water users receive the benefit of
17 the money they paid for that dry-up.

18 So my question is, is it your position
19 that unless the application unambiguously says
20 the lands are dried up, whether at the end of
21 the year, in fact, they are or not is the
22 standard you would like to see followed?

23 A. I believe flexibility of the type that you're
24 requesting here is going to lead to ongoing
25 disagreements about the documentation that is
26 occurring -- at least at the level that had
27 occurred over the past five or six years, and if
28 the goal is to renew these potential

1 disagreements, then the plan should be
2 administered less ambiguously.

3 Q. Now, we do have power records for all the wells
4 in the XY Ranch, don't we?

5 A. Yes.

6 Q. And we receive those records effectively
7 monthly; right?

8 A. Yes.

9 Q. And so there's some independent basis to
10 determine where irrigation is potentially
11 occurring, is there not, separate and apart from
12 just going out and physically looking at -- just
13 as what I think is a humorous aside is
14 Dr. Groeneveld, a witness in this case many
15 years ago said, "conducting an ocular
16 inspection."

17 So there are other ways?

18 A. Well, that might work for some properties, but
19 on the XY Ranch, it's generally one consolidated
20 property with the ability to move water pretty
21 much throughout the ranch.

22 Q. Now, you also have some physical dry-up issues
23 with the XY-Graham; is that right?

24 A. What do you mean by "physical"?

25 Q. Whether or not, in fact, parcels are actually
26 dried up or ought to be shown as irrigated.

27 A. Well, I think that relates to the topic we've
28 just been discussing of verification and what

1 actually happened in the field.

2 Q. It was my understanding that the two smaller
3 parcels at the bottom, not in Parcel B but the
4 smaller parcels at the bottom, you had some
5 question about whether they were appropriate to
6 claim for dry-up.

7 A. I do have a disagreement on Tract E, which is in
8 the lower right area in green, and that, again,
9 goes to the issue of documentation and
10 verification and whether there was verification
11 that that field was not irrigated.

12 Q. This is only for purposes of identifying it for
13 the master's notes. I'm going to hand you
14 Defendant's Exhibit 1416 and ask if, in fact,
15 that isn't the section in Mr. Helton's XY report
16 which is in evidence in this case that depicts
17 his assessment of the appropriate acreage to be
18 dried up and why.

19 A. Yes, it is.

20 SPECIAL MASTER: So which page?

21 BY MR. ROBBINS:

22 Q. What page does it begin on?

23 A. It starts on page 9 and continues through
24 page 11.

25 Q. Now, would you agree that Colorado should be
26 able to have some flexibility as long as there
27 is adequate verification of what actually
28 happened?

1 A. Yes. That's a relative question because the
2 more flexibility you grant, the more potential
3 for disagreement there's going to be and the
4 higher the requirement is going to be for
5 documentation, I believe.

6 Q. Certainly. But as we move along in this process
7 and as Colorado better understands your
8 concerns, you're not suggesting that flexibility
9 is inherently unacceptable as long as Colorado
10 is able to properly verify to your satisfaction
11 the lands that were dried up and the lands that
12 were in any given year irrigated.

13 Is that fair?

14 A. Yes. I would make the point, though, that I
15 think this type of flexibility goes somewhat
16 beyond the normal standards we see for dry-ups
17 and water transfers where typically fields are
18 designated for dry-up and they can then be
19 monitored as dried up.

20 Q. Were you in court for Mr. Harrison's testimony?

21 A. Yes.

22 Q. And so you understand that in order for LAWMA to
23 afford to buy the XY Ranch, it had to negotiate
24 some flexibility with the Division of Wildlife
25 so that the Division of Wildlife was willing to
26 share in the cost of the ranch acquisition.

27 Do you recall that?

28 A. Yes.

1 Q. So it's going to be very hard -- wouldn't you
2 agree? -- for Colorado to meet a standard of no
3 flexibility when the very basis of acquiring
4 this replacement water inherently includes some
5 flexibility.

6 Wouldn't you agree?

7 A. Well, I'm not sure what all the considerations
8 are of the state agency that owns this property,
9 but I would think that they would consider
10 dry-up of this nature for compact compliance to
11 be a very serious issue and would certainly want
12 to work with LAWMA in the natural resources
13 department to make sure that it's clear how this
14 land is being used.

15 SPECIAL MASTER: Mr. Book, I'm
16 looking at Plaintiff's 1197, the second page,
17 and the large brown area in the lower right part
18 of the --

19 THE WITNESS: Yes.

20 SPECIAL MASTER: -- exhibit with the
21 islands of green.

22 Is that Division of Wildlife property?

23 THE WITNESS: Yes. The XY Ranch.

24 SPECIAL MASTER: It's like Center
25 Farm's, then?

26 THE WITNESS: I believe that's the
27 case, yes.

28 SPECIAL MASTER: Okay.

1 BY MR. ROBBINS:

2 Q. Mr. Book, would n' t you agree that the di fference
3 between the XY property and Center Farm' s i s
4 that the XY property was purchased by LAWMA and
5 then sold to the Di visi on of Wi ldl i fe wi th some
6 water to i rri gate cover crop, whereas Center
7 Farm was bought di rectly by the Di visi on of
8 Wi ldl i fe?

9 A. Yes.

10 Q. Okay. Now, with regard to the XY Ranch, the
11 water court wi ll al so have to consi der thi s
12 matter i n the LAWMA appli cati on and make a
13 determi nati on about appropri ate dry-up
14 standards, wi ll i t not?

15 A. I suspect that wi ll be something the court wi ll
16 consi der.

17 Q. Thank you.

18 Now I' d l i ke to ask you about the WANT
19 factors devel oped by Mr. Schroeder.

20 You testi fi ed that you di dn' t agree wi th
21 Mr. Schroeder' s use of separate WANT factors for
22 the di tches downstream from John Marti n
23 Reservoir for the period 1980 to 1994; i s that
24 correct?

25 A. I di sagree wi th hi s proposal to use WANT factors
26 derived over that period for the ongoing use of
27 the model .

28 Q. Now, the H. I. model uses separate stateli ne

- 1 calls to predict releases from John Martin
2 Reservoir for Kansas beginning in 1980, doesn't
3 it?
- 4 A. There is a routine in the model to check the
5 stateline flow, and if the flow does not meet a
6 level of demand that's specified as data input,
7 which is separate for each month, then the call
8 is put on the reservoir to get the flow at the
9 stateline up to that demand level.
- 10 Q. And that procedure begins in 1980, doesn't it?
- 11 A. A similar procedure is used for the compact
12 operation of the model. There's a threshold
13 flow in that case which is checked, and then if
14 that threshold flow is not met, the call is
15 placed for the compact model by the State of
16 Kansas, either 400 or 500 c. f. s.
- 17 Q. And the procedure changed in 1980 the way that
18 call occurred; right?
- 19 A. It changed a little bit to account for the
20 difference between the calling for the compact
21 amount, which is allowed per the compact, and
22 calling for a demand amount that was different
23 than the compact amount.
- 24 Q. It's true, is it not, that the 1980 operating
25 plan allowed water users in Colorado and Kansas
26 to hold water in in their accounts and call for
27 it when it was most beneficial?
- 28 A. Yes.

1 Q. In fact, the special master described in his
2 first report how, when conservation storage was
3 treated as a common pool, both states generally
4 demanded simultaneous releases at maximum rates
5 in order to ensure that they would receive their
6 share of stored water in many years, and
7 reservoir storage was completely drawn down
8 early in the irrigation season.

9 Do you remember that general finding in
10 his first report?

11 A. I don't remember the specifics of that exact
12 finding. I know that the way the compact
13 operated in dry times typically there was a high
14 demand and the calls were generally concurrent
15 between the State of Kansas and the Colorado
16 water users. In higher water supplies, what I
17 would term average to wetter water supplies,
18 there was a tendency of Kansas not to call when
19 they didn't need the water at the stateline
20 because the return flows generated from the
21 Colorado ditches would maintain stateline flows.
22 So the operation was actually variable,
23 depending on water supply.

24 Q. Well, I won't hand you a copy -- I could, I
25 suppose, but it's Volume I, pages 46 and 47, is
26 where the master made that determination.

27 If it's reasonable to make changes in
28 order to develop separate stateline calls to

1 predict releases from John Martin Reservoir for
2 Kansas beginning in 1980, why isn't it
3 reasonable to develop separate WANT factors for
4 the ditches downstream from John Martin
5 Reservoir to represent the change in their
6 demands for reservoir water from early in the
7 irrigation season to later in the irrigation
8 season?

9 A. Well, the change that we made on the stateline
10 call was not a very significant change in terms
11 of either logic or flow rates. It did recognize
12 that after the period 1980, Kansas had deferred
13 their calls somewhat into July and August
14 instead of April and May. The situation is
15 somewhat different for the canals in Colorado.

16 A large amount of the water that is
17 still diverted by the Colorado ditches is
18 diverted on priority in administration of the
19 water rights system. If there's not water in
20 the conservation pool, for example, they go back
21 to the priority administration, and a lot of
22 their diversions occur under that scenario,
23 which is the same as it was before the compact
24 with some slight modification. We had actually
25 made a change in the model for the District 67
26 ditches for the 1996 version of the model, which
27 accounted for the existence of the B agreement
28 and the deferral of the calls that would occur

1 at times.

2 So my view is that issues related to the
3 '80 operation -- '80 plan operation have been
4 accounted for, and after reviewing the
5 calibration comparison that I described
6 yesterday, it does not occur to me that any
7 additional adjustment is needed.

8 Q. So there's nothing inherently wrong, however,
9 with attempting to better represent the changed
10 operation below the reservoir either in Colorado
11 or Kansas, is there?

12 A. No.

13 Q. If you calibrate WANT factors over the entire
14 1950 to '94 period for ditches downstream from
15 John Martin Reservoir, aren't you failing to
16 recognize that the pattern of demands for
17 storage water changed after 1980?

18 A. Well, I don't believe it changed that
19 significantly for those ditches. I think that's
20 borne out by looking at the predicted and
21 observed diversions for that period. They're
22 very close over the 15-year period.

23 Typically the water-long ditches are
24 going to take the water at the beginning of the
25 season when they want it because they can simply
26 go on the river and make a priority call and get
27 their water supply if their account is drawn
28 down. There may be some tendency on the part of

- 1 the Amity Canal to hold water in storage that
2 they would not have over the compact.
- 3 Q. Mr. Schroeder preferred the period 1970 to 1994
4 to recalibrate the model; is that correct?
- 5 A. Yes.
- 6 Q. He preferred that period because there is better
7 data in the later period and the 1980 operating
8 plan was effective for most of that period;
9 isn't that correct?
- 10 A. I think that was his reason, yes. I don't agree
11 with him on the data issue.
- 12 Q. Well, you would agree that we have better data
13 on pumping during that period, wouldn't you?
- 14 A. Not necessarily. I think actually the data from
15 the '60s may be superior to what was available
16 from 1970 to the early '80s.
- 17 Q. Would you agree that we have better data on
18 irrigated acreage in the later period?
- 19 A. Not necessarily. I think the analysis that I
20 have done which was based on the 1957
21 photographs and the 1980 photographs was
22 comparable between the two periods.
- 23 Q. Would you agree that the acreage irrigated by
24 wells in the later period is better than it was
25 in the 1950s?
- 26 A. I think the acreage irrigated by wells tended to
27 correspond to the fully developed condition of
28 the wells, which, in my opinion, is not a

1 significant difference upstream of John Martin
2 Reservoir over the entire period. It may have
3 been somewhat different downstream of John
4 Martin Reservoir, but I'm not sure that the
5 acreage irrigated by wells within the range that
6 we're talking about would significantly affect
7 the calibration parameters.

8 Q. Well, it certainly won't if you allow the WANT
9 factors to go as low as they can -- right? -- as
10 low as they need to?

11 A. I'm not sure what the relationship is between
12 the supplemental irrigated area and the WANT
13 factors. It's not intuitive that the
14 supplemental acreage is driving the WANT factors
15 one way or the other.

16 Q. Now, whether the period '50 to '94 or '70 to '94
17 is used to calibrate the model, there are
18 separate stateline calls used to predict
19 releases from John Martin Reservoir for Kansas
20 before and after the 1980 operating plan; is
21 that right?

22 A. Yes. As I described it, there was a change in
23 the amounts of the stateline demand that
24 occurred when the operation changed from the
25 compact operation to the 1980 plan.

26 Q. So Mr. Schroeder's use of separate WANT factors
27 for the ditches downstream from John Martin
28 Reservoir before and after 1980 doesn't go to

1 the calibration, per se, but, rather, goes to
2 the representation of the effect of the 1980
3 operating plan.

4 Would n' t you agree?

5 A. I think that's what his view of it is, but I
6 don't agree with that view, that the change in
7 the WANT factors is necessary to adequately
8 represent the '80 plan. I think we dealt with
9 the 1980 plan issues when we made the change in
10 the model to defer the calls to account for the
11 B agreement.

12 Q. You testified that on average the revised Kansas
13 model was predicting diversions by ditches below
14 John Martin Reservoir quite close for the period
15 1980 to 1994; is that right?

16 A. Yes.

17 Q. But you could only achieve that calibration by
18 consistently underpredicting diversions upstream
19 for that same period; isn't that right?

20 A. That's the result of the calibration, which,
21 when you look at the ditches upstream of John
22 Martin and downstream of John Martin, I don't
23 think you should use the operation upstream of
24 John Martin Reservoir as the rationale for
25 modifying the WANT factors for a different set
26 of canals.

27 Q. Well, if the model had been calibrated to
28 increase diversions upstream for the period '80

- 1 to '94, you would have had a problem predicting
2 diversions downstream, wouldn't you have?
- 3 A. Well, if you're changing the calibration in part
4 of the model, then you're going to change the
5 calibration in the other part. But it's
6 speculative to say that if you changed the
7 parameters throughout the model that you would
8 have a different fit. You don't know that until
9 you do it and test it.
- 10 Q. Your concern about using the period '70 to '94
11 to calibrate the model or calibrating WANT
12 factors for the period '80 to '94 is that it is
13 a period of better water supply and will result
14 in higher WANT factors; isn't that correct?
- 15 A. It will result in an overprediction of
16 diversions over the longer study period. That's
17 my concern.
- 18 Q. And it will result in higher WANT factors in the
19 calibration, won't it?
- 20 A. Yes. The parameters would be higher, and that's
21 what would cause the overprediction of
22 diversions over the longer period.
- 23 Q. Now, there were dry years after 1980, between
24 1980 and 1994, weren't there?
- 25 A. A couple.
- 26 Q. The revised Kansas version of the model
27 consistently underpredicted diversions in each
28 year after 1981, however, didn't it?

- 1 A. You're describing the set of canals upstream of ⁶⁵
2 John Martin Reservoir. Downstream of John
3 Martin Reservoir it was about even.
- 4 Q. I'm describing your calibration of the model --
5 right? -- which includes all the canals.
6 Diversions are critical, are they not?
- 7 A. Sure. We're talking about the canals below John
8 Martin if we're discussing Mr. Schroeder's
9 change. But certainly if you look at all the
10 canals taken as a whole, yes, you're right.
- 11 Q. So the revised Kansas model, even in the dry
12 years of the calibration period overpredicted --
13 I'm sorry -- underpredicted diversions even in
14 the dry years after 1981, didn't it, taking the
15 canals as a whole?
- 16 A. Again, you're referring to the upstream canals.
17 The downstream canals, I'm not sure how those
18 years parsed out between wet and dry.
- 19 Q. I haven't in my questions been breaking out the
20 canals upstream and downstream. I've been
21 simply asking you about your model predictions,
22 and I believe I'm correct in saying that your
23 model underpredicts in each year after 1981 --
24 isn't that true? -- taking all the canals as a
25 total?
- 26 A. Yes. My opinion goes to Mr. Schroeder's
27 recommendation for the downstream canals. So I
28 think the downstream canals are what are

1 relevant here.

2 Q. But your model still underpredicts even in the
3 dry years during that period; isn't that true?

4 A. For the upstream canals, yes.

5 Q. And for the canals taken as a whole; isn't that
6 true?

7 A. Yes.

8 Q. Colorado's concern about using the longer period
9 to calibrate the model is that pumping estimates
10 in the 1950s are more uncertain. The
11 percentages that Kansas used to determine the
12 acreage irrigated by groundwater was based on
13 the decreed and permitted acreages for all wells
14 and didn't accurately represent the acreage
15 irrigated before all the wells were developed,
16 and the 1980 operating plan wasn't in effect in
17 those years.

18 Isn't that what you understand our
19 concern to be?

20 A. I understand those concerns -- those to be the
21 concerns of Mr. Schroeder. I do not agree with
22 those.

23 Q. If we collect better data in an effort to
24 improve the model but we go back to the earlier
25 period to calibrate the model, how are we going
26 to improve the model's predictions of diversions
27 and stream flow?

28 A. Well, we could certainly look at extending the

1 calibration period of the model. That wasn't
2 proposed by Mr. Schroeder, but that's one way to
3 deal with that. But I don't think the level of
4 difference in data in this basin would warrant
5 deleting 20 years off the calibration period.
6 It's just too long of a period to remove.

7 Q. If the states were to agree to arbitration of
8 disputes about the model, do you think that this
9 is an issue in which the opinion of an
10 independent expert might be useful?

11 A. What opinion? The length of the calibration
12 period?

13 Q. Yes.

14 A. I suppose if we're in an arbitration setting
15 that any types of issues that either state wants
16 to raise are potentially accessible to that
17 process.

18 Q. Is this the sort of issue that an independent
19 expert might be able to help you and help
20 Mr. Schroeder or Mr. Straw resolve your
21 differences?

22 MR. DRAPER: Your Honor, this is
23 asking --

24 SPECIAL MASTER: I'll sustain the
25 objection. That's --

26 MR. DRAPER: Thank you.

27 SPECIAL MASTER: -- pretty
28 speculative.

1 BY MR. ROBBINS:

2 Q. Let me move on, then, to Buffalo Canal.

3 You testified that one of the sources of
4 information that you relied on regarding Buffalo
5 Canal was an interview with an official of the
6 Buffalo Mutual Irrigation Company concerning the
7 deliveries of water by the canal; is that
8 correct?

9 A. Yes. That was not an interview that I had.
10 That was interview notes that were produced to
11 us.

12 Q. Those were the interview notes that were
13 prepared by Colorado in the early stages of this
14 controversy?

15 A. Yes.

16 Q. Let me hand you what's been marked as Colorado
17 Exhibit 1456 for identification.

18 Mr. Book, are those the interview notes
19 that you referred to?

20 A. Yes, I believe they are.

21 Q. These are the notes of an interview with
22 Mr. Harry Bates that was conducted in 1986; is
23 that right?

24 A. Yes.

25 Q. And this is the set of notes that you relied
26 upon?

27 A. Yeah. The reliance on these notes was for the
28 indication about the amount of water delivered

1 to the shareholders.

2 Q. I understand.

3 And who was Mr. Bates?

4 A. Vice president of the Buffalo Mutual Irrigation
5 Company, as indicated here.

6 Q. Could you please turn to page 21 of the notes --
7 to paragraph 21 of the notes, which is about the
8 second page from the end.

9 A. Yes.

10 Q. Could you read for me, please, paragraph 21.

11 A. "Mr. Bates has no estimate of transmission
12 losses. The ditch has no return flows. Buffalo
13 picks up water from Amity waste water and
14 drainage flows. Right now, about 20 cfs seeps
15 from Amity. USGS has information on Fort Lyons
16 to Amity to Buffalo."

17 Q. So Mr. Bates did not have an estimate of
18 transmission losses, but he did say that the
19 Buffalo ditch picks up water from the Amity,
20 both wastewater and drainage flows, and that
21 right at that time there was 20 c.f.s. seeping
22 into the Amity; is that correct?

23 A. Yes.

24 Q. The revised Kansas version of the model
25 significantly overpredicts stream flows at
26 Lamar, does it not?

27 A. Yes, I believe the predicted exceed the observed
28 there.

1 Q. Mr. Schroeder's changes to the model
2 significantly improve the prediction of stream
3 flows at Lamar; isn't that correct?

4 A. I think his changes resulted in producing the
5 predicted Lamar flows. So he got closer to the
6 observed, yes.

7 Q. Is your major concern with Mr. Schroeder's
8 changes that they reduce depletions to usable
9 stateline flows?

10 A. Well, certainly we have looked at that when
11 Mr. Schroeder proposed the changes to the model.
12 We evaluate the sensitivity to see whether it's
13 an issue that we should investigate further or
14 whether it's not a significant issue. We
15 determined this to be a significant issue, and I
16 believe that more data is needed before this
17 type of change is made.

18 MR. ROBBINS: Thank you. I have no
19 other questions at this time, Your Honor.

20 I would offer Defendant's Exhibit 1456,
21 which is the notes of the Bates interview.

22 SPECIAL MASTER: Any objection to
23 that, Mr. Draper?

24 MR. DRAPER: No objection,
25 Your Honor.

26 (Whereupon Defendant's Exhibit
27 No. 1456 was admitted into
28 evidence.)

1 SPECIAL MASTER: Do you want to just
2 carry on until lunchtime or maybe a short break?

3 MR. ROBBINS: A short break would be
4 great before redirect.

5 MR. DRAPER: A short break would
6 be --

7 SPECIAL MASTER: Why don't we take
8 five minutes, then.

9 (Recess.)

10 THE REPORTER: Please remain seated.
11 Court is again in session.

12 SPECIAL MASTER: Mr. Draper,
13 redirect.

14 MR. DRAPER: Thank you, Your Honor.
15 I just have two subjects, which may be
16 approximately two questions.

17 SPECIAL MASTER: That's usually
18 Mr. Robbins' line.

19 MR. DRAPER: I did say
20 "approximately." I'm sure about the number of
21 subjects.

22 SPECIAL MASTER: All right.

23 MR. ROBBINS: I'm just glad to see
24 you chuckling as you usually do when I give the
25 same line.

26 ///

27 ///

28 ///

1 REDI RECT EXAMI NATION

2 BY MR. DRAPER:

3 Q. All right, Mr. Book. Mr. Robbins in his
4 questioning of you on cross-exami nati on wi th
5 regard to the cali brati on of the Kansas revised
6 model to di versi ons after 1980 suggested that
7 there were dry years after 1980, not just wet
8 years.

9 Is that a fair characterization?

10 A. I think it was generally a wetter period, really
11 not any signifi cantly dry years in that period.
12 The ranking that has been prepared by Colorado
13 in their Exhi bi t 1408 and used by us in
14 devel opi ng some of our analyses indi cated that
15 between the rankings of very dry to very wet,
16 that one of the years in that period was in the
17 dry category wi th all the other years bei ng
18 ei ther average to very wet.

19 Q. And can that be seen in Defendant's Exhi bi t 1408
20 in Table 11 at page 88?

21 A. Yes.

22 Q. And my second area relates to the questions
23 Mr. Robbins asked at the end of his
24 cross-exami nati on concerni ng Defendant's
25 Exhi bi t 1456 and the reference in the interview
26 notes of Mr. Bates to the fact that there was
27 20 c. f. s. of seepage at that time.

28 Those notes were from 1986; is that

1 right?

2 A. Yes.

3 Q. And was 1986 a wet year or a dry year?

4 A. If you look at the table, Table 11, that gives
5 the rankings for the years leading up to that
6 interview, including the year of the interview.
7 And actually the years 1983, '84, '85, and '86
8 were all in the very wet category. That was a
9 period of very high water supply for the Amity
10 Canal, and certainly if Mr. Bates was speaking
11 from recent memory, there would have been
12 several years of very abnormal water supply.

13 Q. And so would the 20 c. f. s. figure constitute an
14 abnormally high figure, in your opinion?

15 A. Well, it wasn't clear from the notes if he was
16 referring to recent years or some sort of a
17 longer term, but certainly the years very near
18 that interview were very wet, very large water
19 supply.

20 Q. Wasn't the sentence in the notes in Defendant's
21 Exhibit 1456 -- and I quote -- "Right now about
22 20 cfs seeps from Amity"?

23 A. Yes, you're correct. He was speaking about
24 current conditions.

25 MR. DRAPER: That's all my
26 questions, Your Honor.

27 SPECIAL MASTER: Thank you.

28 MR. ROBBINS: No questions,

1 Your Honor.

2 SPECIAL MASTER: All right,

3 Mr. Book. Thank you very much. You're excused.

4 THE WITNESS: Thank you.

5 MR. DRAPER: Your Honor, I would now

6 call our next witness, Mr. Larson.

7

8 STEVEN P. LARSON,

9 having been previously duly sworn, was

10 examined and testified as follows:

11

12 DIRECT EXAMINATION

13 BY MR. DRAPER:

14 Q. Good morning, Mr. Larson.

15 A. Good morning, Mr. Draper.

16 Q. In this trial phase, we have had testimony --

17 let me -- before I ask that, state your name,

18 please, for the record.

19 A. Steven P. Larson.

20 Q. And you've previously testified in this case?

21 A. Yes, I have.

22 Q. As I was about to say, we have had testimony in

23 this trial phase that other models use such

24 factors as WANT factors, and I think that the

25 master has acknowledged that that has been

26 established.

27 Would you agree?

28 A. Yes, I would.

1 Q. So it is clear that the use of WANT factors is a
2 method that has been accepted by other
3 investigators in river systems such as the
4 Arkansas River Valley; is that right?

5 A. Yes, that's correct.

6 Q. And now Dr. Brendecke has stated that the values
7 used in the revised Kansas H.I. model are
8 unrealistic.

9 Is that your understanding?

10 A. Yes.

11 Q. And do you agree with Dr. Brendecke's
12 characterization in that regard?

13 A. No, I would disagree.

14 Q. And why do you disagree?

15 A. Well, when the WANT factors were, I think,
16 developed for use in this model, I think they
17 were intended to represent more than simply a
18 relationship between crop demand and diversions.
19 While that is one component of what they were
20 considering in looking at the demand, other
21 factors that would influence the diversion
22 behavior were also factors that would be
23 incorporated into the WANT factors.

24 It would include things like irrigation
25 scheduling issues or availability of water that
26 may change the way people make decisions about
27 when and how much to divert. And those were --
28 I believe those kinds of factors were all

1 intended to be part of what would go into the
2 WANT factors.

3 I think we also have to understand that
4 the model itself is an idealization and as a
5 consequence in some respects may become more
6 efficient than you can be in the real world. So
7 the WANT factor would also have to incorporate
8 some of those kinds of issues in order to
9 appropriately allow the model to replicate the
10 measured diversions as best we can.

11 Also in terms of whether they're
12 unreasonable, I think it's worth comparing to
13 some other investigations such as the Burns
14 model to see whether or not the values that have
15 been used are out of line with the values that
16 we find in that analysis.

17 In that analysis -- and I think there's
18 been some discussion of it already in some of
19 the cross-examination -- we can see that there
20 are values that range from about .5 to something
21 over 3 -- I believe 3.4 -- that are used as
22 demand factors in that model, and I believe that
23 when you look at those, they tend to be within
24 the range of the values that have been used in
25 the revised Kansas model. I don't find that
26 they're unreasonable relative to those
27 particular factors.

28 Q. Do those factors appear in Plaintiff's

1 Exhi bi t 687?

2 A. Yes, they do.

3 Q. Do you have a copy of that?

4 A. Yes, I do.

5 MR. DRAPER: Your Honor --

6 SPECIAL MASTER: Pl ai nti ff' s 687?

7 MR. DRAPER: 687. I believe you
8 have one, but I can supply you one if that's
9 more convenient.

10 SPECIAL MASTER: Oh, I do have one.

11 Okay.

12 BY MR. DRAPER:

13 Q. Do the USGS WANT factors appear in Pl ai nti ff' s
14 Exhi bi t 687?

15 A. Yes, they do. If you look at page 90 -- and I
16 think we've, again, had some previous discussi on
17 about this -- the demand factors appear for each
18 of the various ditches as part of the input data
19 described on page 90 and on the subsequent
20 pages. And I'll just show you a few of the
21 values to illustrate what we're talking about
22 and maybe just to refresh your recollection.

23 If we look at the first line on page 90,
24 we have the information for the Bessemer ditch,
25 and if you look on that line, the first number
26 is simply an identi fication number. Then you
27 have the Bessemer ditch. Then you have the type
28 of use, which is the "1," which would mean an

1 agricultural type of use. Then you have a
2 figure for the acreage associated with this
3 user.

4 Then you have their demand factor, and
5 the demand factor has two characteristics, as I
6 think we've heard in some of the discussion, a
7 sign and a magnitude. The sign is to indicate
8 which of two distributions of demand to use to
9 apply this factor to. The value, in this case,
10 1, is used to scale whichever demand
11 distribution is being used.

12 When you actually look at the demand
13 distributions, there's what they call an ag
14 demand distribution, and there's a PET
15 distribution. And the minus 1 indicates which
16 of those two to select. But if you look at
17 those two distributions in the summer months,
18 they're basically both the PET. So we're really
19 just scaling the PET for the most part.

20 Then as you go down --

21 SPECIAL MASTER: So wait a minute.
22 Which of all those numbers is the demand factor,
23 then? It's equivalent to the WANT factor?

24 THE WITNESS: The value of 1.0, for
25 example, for the Bessemer would be their demand
26 factor.

27 SPECIAL MASTER: That's the figure
28 which appears in the same line as the word

1 "Bessemer"?

2 THE WITNESS: Yeah. You see there's
3 a value minus 1.0.

4 SPECIAL MASTER: Yes.

5 THE WITNESS: The sign is simply a
6 trigger to determine which of two distributions
7 to use. But the absolute value of that --

8 SPECIAL MASTER: Just 1.

9 THE WITNESS: -- is what's used to
10 scale whichever demand is appropriate for that
11 ditch.

12 BY MR. DRAPER:

13 Q. And that 1.0 is the WANT factor value for the
14 Bessemer in this model?

15 A. Yes, that's correct.

16 Then if you go down the page, say, at
17 the bottom of the page, you see the Booth
18 Orchard. The value there is a plus 3.4. Then
19 you continue on on page 91 and 92 and 93, and
20 values for each of the different users has been
21 tabulated. If you look at the range of those
22 values, they go from about .5 at the low end up
23 to 3.4 at the high end.

24 Now, I should point out that in this
25 model, a single demand factor is used for all
26 months of the irrigation season that is applied
27 to a PET-type distribution as it is in the
28 Kansas -- or in the H.I. model, but only a

1 single value is used whereas in the H.I. model ,
2 a series of different monthly values are used as
3 we've had considerable discussion about.

4 So in order to really compare these
5 directly to the H.I. model , I think you need to
6 look at either an average or a weighted average
7 value over the season since the H.I. model uses
8 actual monthly values.

9 BY MR. DRAPER:

10 Q. And did you perform the analysis necessary to
11 make the values comparable?

12 A. Yes. What I did is I looked at the distribution
13 of PET or ag demand factors that they'd used and
14 used those as a weighting factor to compute a
15 weighted average of what the Kansas H.I. model
16 values would be if you weighted them according
17 to those values, the PET or ag demand, and I
18 also looked at just the simple average. And
19 what I found was that for the Kansas H.I. model ,
20 our weighted average or average values ranged
21 from about 0.6 or 0.7 up to about 2.9.

22 So my conclusion from that was that they
23 did not seem unreasonable when compared to the
24 use of the demand factors in the USGS model .

25 Q. Now, if your adjusted range for the H.I. model
26 factors were .6 or .7 to about 2.9, what was the
27 corresponding range in the USGS model ?

28 A. Their demand factors ranged from .5 on the low

- 1 end up to 3.4 on the high end.
- 2 Q. So they ranged from lower values to higher
3 values; is that correct?
- 4 A. Numerically, that's correct. I think
5 generically what I concluded was they were in
6 the same range and there was nothing
7 unreasonable about the values that we were using
8 relative to those that were being used in that
9 model.
- 10 Q. What conclusion did that lead you to with
11 respect to Dr. Brendecke's criticism?
- 12 A. Well, at least as regards the use of these
13 factors in the USGS model, we were not
14 unreasonable in the values that we were using in
15 the Kansas H.I. model.
- 16 Q. And are there any other indications of the range
17 that WANT factors might span?
- 18 A. Well, Mr. Schroeder basically follows the same
19 kind of procedure that we do. That is, they are
20 calibration parameters. And I think he has
21 values that range from a low of about .3 -- now,
22 these are the monthly values -- a low of about
23 .3 up to, I believe, a high of about 7 in terms
24 of the range of values that he has used. Those
25 are monthly values, I would caution you.
- 26 Q. Dr. Brendecke also, in addition to the WANT
27 factors in the Kansas H.I. model, also
28 criticized the use of diversion reduction

1 factors; isn't that right?

2 A. Yes.

3 Q. Have you analyzed whether that criticism is
4 appropriate?

5 A. Well, I believe that -- yes, I have.

6 Q. And how did you go about making that review?

7 A. Well, what I did was to look to see whether
8 these kinds of parameters were used in -- well,
9 I was familiar with the fact that parameters
10 like this were used in other -- at least one
11 other model that I was familiar with and that
12 the use of these parameters was not something
13 unique to -- or these kinds of parameters was
14 not unique to the H.I. model.

15 Q. In that regard I'd like to direct your attention
16 to Plaintiff's Exhibit 1198.

17 What is Plaintiff's Exhibit 1198?

18 A. Plaintiff's Exhibit 1198 are some excerpts from
19 the draft documentation of the North Platte
20 River Water Utilization Model.

21 Q. Is this a model that you are familiar with?

22 A. Yes. During my -- I worked some on the
23 Nebraska v. Wyoming matter, and during some of
24 my work on that matter, I did make some test
25 runs with the North Platte River Water
26 Utilization Model basically to evaluate its
27 capabilities and address some of the issues in
28 the case.

- 1 Q. So you have actually operated this model?
- 2 A. Yes, I have.
- 3 Q. Now, do you agree with Dr. Brendecke's testimony
4 that the gain utilization parameter in this
5 model is not comparable to the diversion
6 reduction factors in the H.I. model?
- 7 A. No, I do not. I believe that these parameters
8 in the North Platte river water utilization
9 model serve a similar purpose, at least in some
10 respects to the diversion reduction factors.
- 11 Q. Is there anything in the excerpt that
12 constitutes Plaintiff's Exhibit 1198 that
13 reflects that?
- 14 A. Well, if you look at the page numbered 100 --
- 15 Q. Is that the --
- 16 A. -- which is actually about the --
- 17 Q. Is that the third page from the back of the
18 exhibit?
- 19 A. Yes, it is.
- 20 Q. And what is shown there that relates to your
21 conclusion?
- 22 A. Well, if you see the third paragraph from the
23 bottom, it talks about gain utilization
24 parameters, and it's describing the use of a
25 parameter that's applied to two of the reaches
26 in the model. And the purpose of this parameter
27 is to limit the amount of -- or at least the
28 amount of some of the available water in the

1 reach in terms of its use to satisfy diversion
2 demands as is described in that paragraph.

3 Basically, it's a value between zero and
4 one that applies to gains that accrue to those
5 reaches. And what it's doing is it's assigning
6 a certain portion of those gains as being not
7 available to satisfy the diversion demands for
8 ditches within each of the reaches to which they
9 apply.

10 They also describe there and in
11 subsequent descriptions that one of the purposes
12 of this parameter is to, as it's described on
13 page 100, simulate rainstorm events for which
14 the system cannot be perfectly operated and used
15 completely to meet the diversions. And as I
16 understand that is that there are events that
17 occur over short periods and that there's an
18 inability to deal with or capture all of those
19 flows, those gains by the ditches, and they're
20 using this parameter to express that inability.

21 I think when you -- and if you go on to
22 the third page, entitled G-158 --

23 Q. Is that the last page of the exhibit?

24 A. Yes.

25 -- you can see that at the bottom of
26 that page under the "ADATA Items" there's a 1
27 and a 2, and these two lines present the values
28 that are used for two reaches to which these

1 parameters apply. We have .95 applying to
2 irrigation season in the -- what's called the
3 Guernsey to Whalen reach, and then .90 is the
4 Tri-State reach.

5 So in effect what they do is to make a
6 certain percentage -- in this case, 5 percent --
7 of the gains in the Guernsey to Whalen reach not
8 available for use in satisfying diversion
9 demands. And similarly in the second reach,
10 10 percent of the gains in that reach would not
11 be available to satisfy diversion demands in
12 that reach.

13 I think when you look at the diversion
14 reduction factor, that's what it basically does,
15 is it says that a certain amount of water that
16 the model would calculate to be available for
17 diversion to satisfy demands would not be
18 allowed to actually satisfy that demand, and I
19 think in that regard they're similar.

20 And also I think if you look at the
21 testimony in the case about things that the
22 diversion reduction factor was intended to deal
23 with, one of them was issues related to
24 short-term events that occur within the river
25 for which we don't have, say, good data or the
26 model idealizes that and it can't be captured
27 100 percent by the ditches in terms of using all
28 of that water, which I think is similar in

1 concept to the use of the gain utilization
2 parameter in the North Platte model.

3 Q. I notice on that last page of the exhibit there
4 are 12 values for each reach.

5 Do those correspond to the 12 months of
6 the year?

7 A. Yes, they do.

8 Q. So there is the potential there for a separate
9 value for each month --

10 A. Yes, that's correct.

11 Q. -- similar to the diversion reduction factors?

12 A. Well, the diversion reduction factor will apply
13 to certain ditches during certain months. These
14 apply during the irrigation season to reaches
15 and apply to all the ditches within those
16 reaches.

17 Q. And does the comparison that you have made
18 between the diversion reduction factors in the
19 H.I. model and the gain utilization factors in
20 the North Platte river water utilization model
21 lead you to any conclusions with respect to the
22 propriety of using diversion reduction factors
23 in the H.I. model?

24 A. Well, I think it demonstrates that other models
25 like the H.I. model have had to deal with these
26 kinds of problems that have used parameters
27 similar to the diversion reduction factors to
28 help them deal with the kinds of problems that

1 you encounter in this kind of modeling.

2 Q. I'd now like to move on to the suggestion by
3 Dr. Brendecke that ungaged tributary inflows
4 could be adjusted to achieve H.I. model
5 calibration.

6 Is it reasonable to adjust ungaged
7 tributary inflows to achieve model calibration?

8 A. Well, I think it would be reasonable to try to
9 improve the data, say, through monitoring or
10 other means in terms of ungaged tributary
11 inflow, but I don't think it would be helpful to
12 make ungaged tributary inflows a calibration
13 parameter.

14 Q. And so would you recommend that for improving
15 the H.I. model?

16 A. I would not recommend making ungaged tributary
17 inflows a calibration parameter in terms of
18 trying to make improvements to the H.I. model.

19 Q. Now, with respect to the issue of WANT factors,
20 Dr. Brendecke has indicated that the Kansas H.I.
21 model WANT factors constrain diversions in the
22 compact run of the model; is that right?

23 A. Yes, I believe so.

24 Q. And on that basis, Dr. Brendecke has criticized
25 the Kansas version of the model.

26 Do you agree with that criticism?

27 A. No, I don't.

28 Q. Why not?

1 A. Well, first of all, I think you have -- in my
2 view, the purpose of the WANT factor is to
3 provide a limit on the demand for water such
4 that the model is able to adequately predict the
5 historical diversions. And the way we do this
6 is by calibrating the WANT factors to the
7 historical diversions.

8 And if we do this over a long enough
9 period, I believe that these WANT factors will
10 reflect the average diversion behavior that we
11 see over a range of water supply conditions.
12 Now, when you go into the compact run of the
13 model, there is a change in the water supply
14 associated with the removal of the pumping and
15 with the removal of the transmountain return
16 flows.

17 But when you look at that change in
18 supply relative to the conditions that have been
19 used to derive the WANT factors -- that is, the
20 range of hydrologic conditions -- that change in
21 supply is relatively small as compared to the
22 change in the conditions that have been used to
23 derive the WANT factors.

24 Just as an example, when we look at
25 diversions, diversions range from 400,000
26 acre-feet to over almost 1.4 million acre-feet
27 per year, depending on which year you're in. So
28 you average about 900,000 acre-feet per year.

1 So you're seeing a change of, say, 500,000
2 acre-feet per year above and below the average.

3 That way when you look at the increase
4 in the water supply when dealing with pumping of
5 maybe a 130- or 135,000 acre-feet per year on
6 average and a portion of that changes the water
7 supply in the compact run, my conclusion is that
8 that change is well within the range of
9 conditions that have been used to try to derive
10 the WANT factors from the historical data.

11 Now, in terms of trying to understand,
12 you know, whether there's been an unreasonable
13 constraint on the WANT factor in the compact
14 run, unfortunately we don't know what the
15 diversions would have been. We don't have
16 measurements of what the diversions would be
17 under the compact conditions. So we can't
18 really make a direct comparison that way.

19 MR. DRAPER: Your Honor, it's noon.
20 So I would suggest we take our lunch break.

21 SPECIAL MASTER: Okay. We're going
22 to do this in one hour, then?

23 MR. DRAPER: About an hour and a
24 quarter. I think we're doing pretty well, but I
25 think that would be helpful if we would do an
26 hour and a quarter.

27 SPECIAL MASTER: All right. We'll
28 be back at 1:15, then.

♀

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20
- 21
- 22
- 23
- 24
- 25
- 26
- 27
- 28

(Lunch recess.)

1 PASADENA, CALIFORNIA; THURSDAY, DECEMBER 19, 2002

2 1:17 P.M.

3 * * *

4 THE REPORTER: Please remain seated.
5 Court is again in session.

6 SPECIAL MASTER: All right,
7 Mr. Draper.

8 MR. DRAPER: Thank you very much,
9 Your Honor.

10 Q. Mr. Larson, good afternoon.

11 A. Good afternoon.

12 Q. Before lunch, we were talking about WANT
13 factors.

14 Are there any comparisons that you can
15 make to evaluate whether WANT factors have been
16 somehow unduly constrained in the compact run of
17 the H.I. model as revised by Kansas?

18 A. Well, as I indicated, we don't have measurements
19 of what goes on in the compact run, but I
20 thought it would be instructive to look at some
21 other calculations similar to this, for example,
22 the Colorado water budgets -- there were some
23 calculations done by Taylor/Luckey -- and also
24 to look at the Colorado revised test model to
25 make some general comparisons to see if there
26 was something anomalous about the change in
27 diversions that we were calculating with the
28 Kansas revised H.I. model.

1 Q. I'd like to show you an excerpt from Defendant's
2 Exhibit 135* that I'll provide you for your
3 convenience. This is simply the title page of
4 that exhibit and page 6.1.

5 Was the information contained on
6 page 6.1 of the Colorado water budget
7 documentation in 135* -- was that helpful in
8 comparing the extent to which diversions are
9 constrained in the model in the compact run?

10 A. Well, if you recall, the Colorado water budget
11 operates differently than the H.I. model. But I
12 thought it would be instructive to see how much
13 change in diversion they computed since they
14 don't use WANT factors in the compact condition.
15 And on page 6.1 at the bottom of the page, if
16 you look across the columns and in Column 12,
17 they summarize their estimates of changes in
18 diversions in looking at the so-called compact
19 analysis. This is the "What if 2" analysis, and
20 you can see at the bottom of that column from
21 the '50 to '85 period that they have estimated
22 6,808 acre-feet per year as an average change in
23 the diversions associated with the compact
24 condition.

25 The amount of pumping here that is
26 simulated for the compact condition is a little
27 bit lower than what we have in the Kansas H.I.
28 model. The change in pumping that they examined

1 in this analysis was about 96,000 acre-feet per
2 year on average. The ratio of these changes in
3 diversions to that change in pumping is about
4 7 percent.

5 If you look at the Kansas H.I. model,
6 the prevalent ratio, if we just take the ratio
7 of computed changes in diversions to changes in
8 pumping, the changes in diversions from the
9 historical to the compact run, the diversions
10 increase by about 26,000 acre-feet per year
11 after you account for the transmountain
12 diversions, and that's about 19 percent of the
13 change in pumping. So it's a little bit higher
14 on a percentage basis, and it is higher
15 quantitatively.

16 If you look at the Taylor-Luckey
17 report -- I think there's been some discussion
18 previously in the case, and I won't go into a
19 lot of detail, but I would like to point out
20 that they also calculate a change in canal
21 supply associated with a change in pumping in
22 one of their scenarios.

23 SPECIAL MASTER: Let me get the
24 figures straight. You're saying in the Colorado
25 water budget they indicated a change in
26 diversion of around 7 percent when pumping was
27 subtracted?

28 THE WITNESS: No. That's relative

1 to the change in pumping, that is, the ratio of
2 the change in diversions to the change in the
3 pumping is about 7 percent. And, similarly, the
4 19 percent figure that I gave you is the ratio
5 of the change in diversions calculated by the
6 Kansas H.I. model relative to the change in
7 pumping in that analysis.

8 BY MR. DRAPER:

9 Q. And when you say "change in diversions," do you
10 mean change in diversions when you go from the
11 historic to the compact run of the model?

12 A. Yes, that's correct.

13 Q. Does the comparison with the Colorado water
14 budget lead you to any conclusion with respect
15 to the reasonableness of the increase in
16 diversions shown by the Kansas revised model?

17 A. There's nothing -- first of all, it's lower on a
18 percentage basis, but there's nothing that would
19 indicate that the changes calculated by the
20 Kansas model are anomalous in any fashion.

21 Q. Now, you've mentioned the Taylor and Luckey
22 study. Let me provide you a copy of Joint
23 Exhibit 78, which reports on that study.

24 What is it in this joint exhibit that
25 you were referring to when you mentioned it just
26 now?

27 A. I think there's been discussion previously in
28 the case about the fact that in this study one

1 of the analyses that they made was an analysis
2 where they assumed that there was no groundwater
3 available and that -- if you look on Table 2 --

4 Q. Is Table 2 the multi page table more or less in
5 the center of the exhibit?

6 A. Yes.

7 If you look at Table 2, the first item
8 in the table called "Normal Operation" is an
9 analysis of a scenario associated with a certain
10 level of groundwater pumping, in this case
11 153,000 acre-feet per year on average.

12 SPECIAL MASTER: I'm not finding
13 those figures.

14 THE WITNESS: Okay. If you look in
15 the first row of Table 2 under item 1 --

16 BY MR. DRAPER:

17 Q. Is that the one that's designated "Normal
18 Operation" --

19 A. Yes.

20 Q. -- in the left-hand column?

21 SPECIAL MASTER: Wait. Wait. Just
22 a second.

23 THE WITNESS: Table 2 is about --

24 SPECIAL MASTER: I was starting on
25 the second page of it.

26 THE WITNESS: It's about five pages
27 back.

28 SPECIAL MASTER: Okay.

1 THE WITNESS: In the second column
2 you see groundwater?

3 SPECIAL MASTER: Yes. Uh-huh.

4 THE WITNESS: And that 153 is
5 153,000 acre-feet per year of groundwater in use
6 of the analysis.

7 If you go to -- and also, if you note
8 there, the canal supply for that scenario is
9 580,000 acre-feet per year. If you turn --

10 SPECIAL MASTER: That's diversions?

11 THE WITNESS: Yes.

12 If you turn to the next page under
13 item 14, you see a line labeled "Use No
14 Groundwater."

15 SPECIAL MASTER: Yes.

16 THE WITNESS: In that analysis the
17 groundwater is assumed to be -- groundwater use
18 is assumed to be zero. The canal supply
19 increased in that analysis to 620,000 acre-feet
20 per year, which is an increase of about 40,000
21 acre-feet per year. The ratio of that change to
22 the change in the pumping is about 26 percent.

23 BY MR. DRAPER:

24 Q. And before I ask you for your conclusions, did
25 you also compare the increase in diversions in
26 the Kansas H.I. model with the change in
27 diversions in the revised Colorado test model?

28 A. Yes. I also made that comparison in a similar

1 manner to the way I made the analysis for the
2 Kansas H.I. model. In that comparison, I found
3 that the change in diversions for the revised
4 Colorado test model was about 16,000 acre-feet
5 per year, which is about 12 percent of the
6 change in the pumping associated with that
7 compact run.

8 Q. And what conclusion, then, did you draw from the
9 comparisons that you made?

10 A. Well, in just reviewing all of these different
11 quantifications of changes in diversions, I
12 didn't see anything that indicated to me that
13 the changes in diversions computed by the Kansas
14 H.I. model were anomalously low in any fashion.
15 In fact, the Colorado water budget, for example,
16 is quite a bit lower than the value that we've
17 computed, as is the Colorado test model, not
18 quite a bit lower, but it was lower.

19 So I found that they were generally the
20 same range overall and didn't see anything that
21 would indicate that there was some anomalous
22 behavior associated with the Kansas revised
23 model.

24 Q. Now, the Taylor and Luckey analysis indicated a
25 greater change than occurs in the revised Kansas
26 H.I.M.; is that right?

27 A. Yes, it did. But I would note that it also
28 computed a greater change in stateline flows

1 relative to pumping than the Kansas H.I. model,
2 and I think there's been previous testimony
3 about that, that -- and you can look at the
4 table and see that the change in stateline flow
5 was about 67,000 acre-feet per year in the
6 Taylor and Luckey analysis, which was about
7 44 percent of the change in the pumping
8 associated with that analysis. The equivalent
9 number for the Kansas H.I. model is about
10 27 percent.

11 Q. So what does that all tell you about the
12 reasonableness of the increase in diversions in
13 the H.I. model as revised by Kansas?

14 A. I couldn't find any indication that those
15 changes were anomalous in some fashion. It
16 looked to be similar in terms of their
17 distributions to other analyses, some of which
18 did not use WANT factors at all and others which
19 used, in the Colorado test model case, WANT
20 factors that were higher, at least generally.

21 Q. Now, going to the next subject -- and, actually,
22 the next subject was addressed by Mr. Book. So
23 I won't go into any detail.

24 But do you agree with the views
25 expressed by Mr. Book with respect to the
26 calibration period used by Mr. Schroeder in his
27 revised Colorado test model?

28 A. Yes, I do. I think what we want to try to do is

1 avoid using numbers that can bias the results to
2 the degree that we can prevent it, and I think
3 there's a certain bias built into using this wet
4 period that we would like to avoid.

5 Q. Do you have a copy -- I'm now going to another
6 subject.

7 Do you have a copy of Dr. Brendecke's
8 report, Defendant's Exhibit 1410?

9 A. Yes, I do.

10 Q. Now, Dr. Brendecke testified that error in
11 predicting stateline flow with the H.I. model
12 can be significant in any single year; is that
13 right?

14 A. Yes. If you recall, he had a graph that he
15 prepared to plot the maximum difference between
16 the model predictions and the measured stateline
17 flows, using different averaging periods, and I
18 think he indicated that this graph would
19 indicate the amount of error you might have in
20 predicting stateline flows in any given year,
21 although I'm not exactly sure what that was.

22 Q. Are you referring to Figure 3.4 on page 47 of
23 his report?

24 A. Yes.

25 Q. How does this graph relate to the amount of
26 error in depletions?

27 A. Well, as the graph shows, this isn't the error
28 in depletions. It's the maximum error in the

1 computed flow at the stateline on an annual
2 basis, and then for periods greater than one, it
3 looks at actually an average, a multi-year
4 average, rather than an individual year.

5 Q. Would you explain this graph, please.

6 A. Well, as I understand it -- and I think as
7 Dr. Bredecke has testified -- he looked at the
8 comparison between the computed and measured
9 stateline flows for, first, each year. In the
10 first bar he then plotted the maximum absolute
11 difference as a ratio to the average stateline
12 flow. If I recall correctly, he used 43 values.
13 I think two years were not used because they
14 were flood years, '61 and '55. So what the
15 first bar would indicate is that once out of 43
16 years, there was a departure of this magnitude.

17 Now, the next bar is a two-year average.
18 So it's not -- we're not calculating the flow in
19 any given year. We're calculating the flow over
20 a two-year time span, an average flow over a
21 two-year time span, and there were 42 sets of
22 those two-year flows, two-year average flows,
23 that could be used to compare -- or that were
24 used to compare. And so then once in every
25 42 -- or one out of 42 times it was as high as
26 you see in the second bar on Figure 3.4. And he
27 then continued that process on out with more and
28 more years included in the average measure that

1 he was using.

2 Q. Now, is this the average of the maximum possible
3 error?

4 A. No. This is taking five consec- -- or let's say
5 five -- the fifth one is taking five consecutive
6 years, averaging those. So we're looking at the
7 model's ability to predict a five-year average,
8 not an individual year, but a five-year average.
9 Then if we move forward one year again, it's a
10 running average. So he takes those five years
11 and looks at the model's ability to predict
12 those five years, again, looking at the
13 five-year average.

14 SPECIAL MASTER: Let's go back
15 again. Tell me what the first bar means, the
16 one that ranges around 65 percent.

17 THE WITNESS: That's for a single
18 year.

19 SPECIAL MASTER: Okay. And that
20 means that one time in 43 years there was a
21 difference between stateline and between
22 predicted and observed flows of 65 percent?

23 THE WITNESS: Yes. And then the
24 rest of the values were smaller, the rest of the
25 departures would be smaller than that.

26 SPECIAL MASTER: Now, tell me then
27 what the second bar is.

28 THE WITNESS: The second bar, groups

1 of two years were taken from this group of 43
2 values. So they were taken in two year groups,
3 and an average of each two year group -- and
4 there would be in this case 42 of those
5 groups -- was taken. So we're looking at the
6 model's ability to predict a two-year average
7 and comparing that to the measured two-year
8 average. And then from that collection of 42
9 values, the largest departure was selected, and
10 that's what's plotted on the chart.

11 And, similarly, as you go forward in the
12 chart, more and more years are included in the
13 average. The number of averages that you have
14 to compare drops by one each time as you go out.

15 BY MR. DRAPER:

16 Q. Now, did the figures shown on this graph -- do
17 they relate directly to the model's ability to
18 predict depletions to usable stateline flows?

19 A. No. The calculation of the depletions is the
20 difference between two model runs. And so if we
21 looked at any given year in a group of averages
22 here where we subtract those two, if there are
23 correlated errors in each of the rows, when you
24 make that subtraction, there would be some
25 canceling of those errors. Now, we don't know
26 what the depletions are, and I think
27 Dr. Brendecke has testified to that, and so we
28 can't measure the error in depletions because we

1 don't have values to compare against.

2 But I think when you look at the flows
3 that are calculated by the model in the compact
4 condition and in the historical condition, those
5 flows are highly correlated. You'll see that
6 the correlation of those -- the correlation
7 coefficient associated with those flows both on
8 an annual basis and a monthly basis is quite
9 high, .94 to .99 correlation coefficient, which
10 is fairly large.

11 So I think when you see that kind of
12 correlation, I think there's a reasonable
13 expectation that some of the errors will be
14 correlated between the historical run of the
15 model and the compact run of the model, and
16 there will be some canceling of errors as a
17 consequence of that when you take the difference
18 between the two.

19 Q. I'd now like to turn to what's been marked as
20 Plaintiff's Exhibit 1203.

21 What is shown on what's been marked as
22 Plaintiff's Exhibit 1203?

23 A. Plaintiff's Exhibit 1203 tabulates the
24 calculations that were used to determine the
25 changes in diversions between the historical run
26 and the compact run associated with the Kansas
27 revised model and with the Colorado revised test
28 model.

1 Q. Was this exhibit prepared under your
2 supervi si on?

3 A. Yes, it was.

4 Q. And in particular what does it show?

5 A. Well, what we did was to go into the model files
6 and retrieve from them changes in the diversions
7 as calculated by the model -- or, actually, the
8 diversions themsel ves as calculated by the model
9 for the two different runs, historical run and
10 the compact run, for different time periods.
11 And we've tabulated those in the left-hand
12 column as a volume in acre-feet and then in the
13 right-hand set of three columns as an annual
14 average over the period as indicated, whether it
15 be '50 to '94, '50 to '69, or '70 to '94.

16 Once we tabulated those amounts of
17 diversions and their differences, we then had to
18 adjust for the transmountain water in the
19 historical and compact run, and that adjustment
20 is made. And ultimately in the last line of
21 each group where it says "Change in Diversions
22 Net of Transmountain Deliveries," we have
23 tabulated the amount of change in diversions
24 that the model is calculating in going from
25 historical run to the compact run.

26 And if you recall, earlier in my
27 testimony I mentioned 26,000 acre-feet per year
28 roughly for the Kansas revised H.I. model, and

1 that's shown in the first column under '50 to
2 '94 as 25,964.

3 Q. And how does that compare to the Colorado
4 revised test model?

5 A. If you look down to the second group, we have
6 the same tabulation, and the number that I
7 mentioned was 16,000 acre-feet per year, which
8 would correspond with 16,290 for the period '50
9 to '94.

10 Q. And what conclusions do you draw from this
11 comparison?

12 A. Well, as I indicated, this shows that there is a
13 lower amount of change in diversions as
14 calculated by the Colorado revised test model in
15 spite of the fact that it has somewhat higher
16 WANT factors. And as I indicated previously, I
17 didn't see anything anomalous about the change
18 in diversions calculated by the Kansas revised
19 H. I. model.

20 Q. I'd now like to direct our attention to what's
21 been marked as Plaintiff's Exhibit 1209*.

22 Is this an exhibit that was prepared
23 under your supervision?

24 A. Yes, it is.

25 Q. What does it show?

26 A. This exhibit was prepared to compile information
27 about the average monthly difference in stream
28 flow between John Martin Dam and the stateline,

1 which is one of the measures that we had used in
2 our evaluation of the calibration of the model
3 and to compare that measure against the observed
4 data and also to contrast it between the
5 Colorado revised test model and the Kansas
6 revised H.I. model.

7 Q. And would you take us through the details of the
8 comparison that's shown here.

9 A. Yes. In the first line we have the averaging
10 period, and you'll see there are two different
11 periods of years that are tabulated on this
12 exhibit, 1950 to 1994 and 1970 to 1994. And
13 then for each of those two periods we've also
14 subdivided them into winter and summer periods
15 to look at winter months as opposed to summer
16 months, winter months being November through
17 March and summer months being April through
18 October.

19 Going across the first line, the first
20 thing that we tabulate is the observed
21 difference, that is, the difference between the
22 measured flows on a monthly basis between John
23 Martin Reservoir and the stateline. The number
24 is shown in parentheses because it's a negative
25 number, and it indicates that there's a loss in
26 flow on average as measured between the gages at
27 John Martin Dam and the stateline. So the first
28 column of observed data shows what that

1 difference is on an average monthly basis from
2 the measured data.

3 The next column under the Colorado
4 revised test model group is the amount of that
5 difference as predicted by the model. Again,
6 it's a negative value, indicating a loss in
7 flow, the average monthly value being 5,522
8 acre-feet per month. This loss is about
9 27 percent higher than the loss -- or than the
10 measured difference in the first column, and
11 that's what the ratio of predicted to observed
12 tabulates, the ratio of the predicted value to
13 the observed value.

14 Q. What does the 1970-'94 refer to on the Colorado
15 revised test model?

16 A. That refers to the version of the revised test
17 model that has been used in this compilation.
18 It's the one that Mr. Schroeder testified is
19 calibrated to the period 1970 to 1994.

20 Q. Please go ahead, then.

21 A. If we then look further to the right, we see the
22 same calculation for the Kansas revised H.I.
23 model, again, showing a computed loss of 5,253
24 acre-feet per month, which is about a 21 percent
25 greater loss than the observed values.

26 SPECIAL MASTER: Let me go back
27 through these figures and make sure I've got
28 them straight. Go to the 4,358 figure, and that

1 is telling me that the stateline flows on
2 average were 4,358 acre-feet -- this is observed
3 data -- less than the flows at John Martin?

4 THE WITNESS: Yes, indicating a loss
5 in flow as between those two on average.

6 SPECIAL MASTER: Right. And that's
7 the observed data?

8 THE WITNESS: Yes, that's correct.

9 SPECIAL MASTER: And then the next
10 column is simply what the two models predicted.

11 THE WITNESS: Yes, that's correct,
12 for that period.

13 SPECIAL MASTER: Right. Okay.

14 THE WITNESS: Then in the next line
15 we look at a different averaging period, 1970 to
16 1994 and going across make the same calculations
17 as we did for the 1950 to 1994 period. You can
18 see there that the Colorado revised test model
19 overstates the loss by about 12 percent, and the
20 Kansas revised H.I. model overstates the loss by
21 about 14 percent for that period.

22 SPECIAL MASTER: And the Kansas
23 revised model is always being calibrated for --
24 or in this row of figures, did you calibrate or
25 use the data from the Kansas model or only the
26 '70 to '94 period?

27 THE WITNESS: Yes. The model was
28 calibrated for the 1950 to 1994 period. What

1 I've tabulated here is what the model calculated
2 for that particular group of years.

3 SPECIAL MASTER: All right. Okay.

4 THE WITNESS: Now, moving down to
5 the next two groups, I've divided the
6 calculations into winter and summer periods, and
7 what you'll see now is in 1950 to 1994 for the
8 winter period we do see a positive value
9 indicated under the observed data of 5,699.
10 That would indicate a gain in flow between John
11 Martin Dam and the stateline during the winter
12 period on average with that amount.

13 And then moving across under the
14 "Colorado Revised Test Model," we see that the
15 computed value for that difference indicates a
16 gain of 6,318 acre-feet per month, about
17 11 percent larger than the observed value, and
18 then, continuing over, the Kansas revised H.I.
19 model, 6,178 acre-feet, or about 8 percent
20 higher than the observed gain.

21 Then we go to the summer period, and
22 here we have losses again. The observed data
23 showed an average monthly loss for the period
24 '50 to '94 of 11,825 acre-feet per month. We
25 then go to the Colorado revised test model. The
26 average monthly loss predicted for the period
27 1950 to 1994 is about 14,313 acre-feet per
28 month, about 21 percent greater loss than the

1 observed loss. And for the Kansas revised H.I.
2 model, a predicted loss of 13,742 acre-feet per
3 month, or about 16 percent greater loss than
4 observed.

5 And then moving down to the last group
6 and looking at the same winter and summer
7 periods for the period 1970 to 1994, if you look
8 across, you'll see that the Colorado test model
9 is about 13 percent greater gain in the winter
10 period. The Kansas revised H.I. model is about
11 2 percent above the observed gain. And when you
12 look at the loss under the losses in the
13 summertime, the Colorado revised test model is
14 about 12 percent greater loss, and the Kansas
15 revised H.I. model is about 10 percent greater
16 loss.

17 Q. Now, looking at the figures that you have
18 brought together here, what comparisons is it
19 possible to make between the Colorado revised
20 test model calibrated 1970 to '94 and the Kansas
21 revised H.I. model?

22 A. Well, when you look at the second line, which
23 tabulates the average over all months, it would
24 indicate an improvement from the values in the
25 Kansas revised H.I. model to the Colorado
26 revised H.I. model of that average monthly loss
27 over all months. But when you look down at the
28 winter and summer periods, you'll see that what

1 has happened is that there's been actually --
2 that both for winter and summer periods, there
3 hasn't been an improvement in going from the
4 Kansas revised H.I. model to the Colorado
5 revised test model values.

6 And that sort of anomalous situation is
7 the result of overstating gains during the
8 wintertime and understating -- and overstating
9 losses during the summertime, and then they've
10 had to cancel out. So while it appears over all
11 months that you're doing better, you're actually
12 not doing better.

13 Q. Now, Mr. Schroeder, in discussing his revised
14 test model, had relied on Table 5a of his
15 report, Defendant's Exhibit 1411, testified that
16 his model with its lower PET values did a better
17 job of estimating the consumption in the reach
18 between John Martin and the stateline as shown
19 by the John Martin and stateline gages.

20 Given the comparison that you have made
21 in Plaintiff's Exhibit 1209*, is Mr. Schroeder
22 correct in making that claim for his model?

23 A. I don't think so because while -- if you look at
24 it from the standpoint of the average for all
25 months, that's true. When you actually break it
26 down to looking at winter and summer periods,
27 you'll see that it hasn't been an improvement.

28 SPECIAL MASTER: Well, you're

1 suggesting that the Colorado revised test model
2 does a better job for all months from '50 to
3 '94?

4 THE WITNESS: Not for '50 to '94. I
5 was focusing on the '70 to '94.

6 SPECIAL MASTER: Oh, just the '70 to
7 '94 period. Okay.

8 THE WITNESS: Yes.

9 SPECIAL MASTER: The difference
10 between the 12 percent and 14 percent?

11 THE WITNESS: Right. Because I
12 think that's what Mr. Schroeder referred to in
13 his graph --

14 SPECIAL MASTER: Right.

15 THE WITNESS: -- or his chart, was
16 the '70 to '94 period.

17 BY MR. DRAPER:

18 Q. And how do the two models compare with respect
19 to that test of model calibration and
20 performance?

21 A. Well, this would indicate to me that, again,
22 there really hasn't been an improvement in that
23 measure. In spite of the fact that there are
24 different values of PET used in the two models,
25 this hasn't improved that situation.

26 Q. Now, the Kansas H.I. model has higher PET values
27 in it, doesn't it?

28 A. Yes, that's correct.

1 Q. And has that worsened its simulation of the
2 consumption downstream of John Martin Reservoir,
3 given the information that you show on 1209*?

4 A. I think what this indicates to me is that even
5 though they're using the lower PET, this hasn't
6 improved this measure of the calibration as to
7 looking at the difference between these two
8 gages.

9 Q. And, in fact, for most periods, the Kansas model
10 performs better?

11 A. Yes, especially when we look at it as between
12 winter and summer periods.

13 Q. I'd now like to turn to what has been marked as
14 Plaintiff's Exhibit 1207.

15 Is this an exhibit that was prepared
16 under your supervision?

17 A. Yes, it is.

18 Q. What does it show?

19 A. The first page of the exhibit is a chart that
20 graphs the annual stateline flows as predicted
21 by the model for the historical run shown in the
22 solid line and for the compact run as shown in
23 the dashed line.

24 Q. And this is the Kansas revised H.I. model?

25 A. Yes, that's correct. You can see that there is
26 some separation between the two lines,
27 indicating a difference in stateline flows. And
28 on the second page we've tabulated those annual

1 values that are shown graphically in the first
2 page and also tabulated the differences in the
3 columns on the second page.

4 SPECIAL MASTER: Now, these are
5 differences between model runs?

6 THE WITNESS: That's correct.

7 SPECIAL MASTER: Okay.

8 THE WITNESS: We're comparing the
9 historical run in the one case and the compact
10 run in the other case.

11 BY MR. DRAPER:

12 Q. And this is the comparison that is made in the
13 analysis that leads to the determination of the
14 depletions to stateline flows; is that right?

15 A. Yes. It's these differences that are then used
16 to characterize the depletions. In fact, on the
17 second page we've tabulated the usable stateline
18 flows and the differences in usable stateline
19 flows as well as the total stateline flow.

20 And at the bottom of this page, we've
21 tabulated various period averages and at the
22 very bottom have computed the correlation
23 coefficients between the two calculations as the
24 historical values on the one hand and the
25 compact values on the other hand. So we're
26 computing the correlation coefficient which
27 describes how well these two traces tend to
28 follow one another in terms of their ups and

1 downs and changes. There is a difference
2 between the two, but here we're looking at the
3 patterns of the changes and whether they tend to
4 follow one another.

5 And you can see that the values that
6 have been tabulated for various periods at the
7 bottom of the page are fairly significant. We
8 have values ranging from 94 percent up to more
9 than 99 percent in terms of the correlation
10 between these two sets of values, both on an
11 annual basis and on a monthly basis.

12 SPECIAL MASTER: Mr. Larson, are
13 these figures from the Kansas prospective
14 analysis model?

15 THE WITNESS: No. These are from
16 the run of the compact condition --

17 SPECIAL MASTER: Okay.

18 THE WITNESS: -- for the period 1950
19 to 1994.

20 SPECIAL MASTER: So this is just the
21 two historic runs?

22 THE WITNESS: We have one historical
23 run --

24 SPECIAL MASTER: And one compact
25 run, but for this period of years?

26 THE WITNESS: That's right.

27 SPECIAL MASTER: So it's showing,
28 then, average depletions for 1950 to '94 are

1 14,719 acre-feet?

2 THE WITNESS: Those are the -- yeah,
3 the differences. We were focusing in this
4 exhibit on the correlation, but those are the
5 differences.

6 SPECIAL MASTER: But that's what --
7 that presumably that figure should coincide with
8 some other Kansas exhibits and what depletions
9 are?

10 THE WITNESS: Yes, I believe so.

11 SPECIAL MASTER: Okay. Well, I need
12 to be sure I'm right here.

13 You've run this with a model but I guess
14 not the same model, for instance, that was used
15 to calculate depletions through 1950 to 1985.

16 That was our first run, wasn't it?

17 THE WITNESS: The first model, yeah.

18 SPECIAL MASTER: The first model?
19 The first time we calculated them?

20 THE WITNESS: Yes. This is the same
21 kind of calculation that's being done --

22 SPECIAL MASTER: With a different
23 model?

24 THE WITNESS: The Kansas H.I. model.

25 SPECIAL MASTER: So the next model
26 that we use from '85, then, to '94, these
27 figures aren't going to total up?

28 THE WITNESS: That's correct.

1 SPECIAL MASTER: Okay.

2 BY MR. DRAPER:

3 Q. Mr. Larson, based on this analysis, how would
4 you characterize the degree of correlation
5 between the compact run and the historic run of
6 the revised Kansas H.I. model?

7 A. Well, as you can see from the correlation
8 coefficients at the bottom of the page where
9 we're comparing these two different figures, the
10 compact figure and the historical figure, they
11 are highly correlated. They are different.
12 There is a difference between the two, but they
13 are highly correlated.

14 Q. And what does that suggest to you with respect
15 to the ability of the model to predict
16 depletions to the stateline flows?

17 A. Well, as I testified earlier, when you subtract
18 the two results, to the extent that errors are
19 correlated, there will be some canceling of the
20 errors. I view this as an indication that it's
21 likely that there is going to be some
22 significant correlation of those errors and that
23 there will be some canceling.

24 Q. And based on that, what is your overall opinion
25 with regard to the reliability of the Kansas
26 revised H.I. model for purposes of determining
27 depletions to usable stateline flows?

28 A. Well, I would conclude that, given the structure

1 and the data that we've used in the analysis,
2 that that H.I. model provides our best estimate
3 that we're able to make with regard to
4 depletions to stateline flows.

5 MR. DRAPER: Thank you, Your Honor.
6 No further questions at this time.

7 SPECIAL MASTER: All right.

8 MR. DRAPER: So I should offer the
9 exhibits we discussed. There are three:
10 Plaintiff's Exhibit 1203, the comparison of
11 changes in the historical and compact run
12 diversions; 1207, the one we were just
13 discussing, comparing the two runs of the Kansas
14 revised H.I. model; and 1209*, which compares
15 the Colorado and Kansas models with respect to
16 the John Martin and stateline gages.

17 MR. ROBBINS: I'd like you to
18 withhold ruling on 1207. We don't object to
19 1203 or 1209*.

20 SPECIAL MASTER: All right. 1203
21 and 1209* will be admitted, and we will wait
22 your cross-examination, then, on
23 Plaintiff's 1207.

24 (Whereupon Plaintiff's Exhibit
25 Nos. 1203 and 1209 were admitted
26 into evidence.)

27 MR. ROBBINS: Thank you, Your Honor.

28 ///

1 CROSS-EXAMI NATION

2 BY MR. ROBBINS:

3 Q. Good afternoon, Mr. Larson.

4 A. Good afternoon, Mr. Robbi ns.

5 MR. ROBBINS: I'm going to give you
6 a copy of Pl ainti ff' s 1190 which was introduced
7 into evi dence.

8 SPECIAL MASTER: Well, my
9 housekeepi ng has fallen behind.

10 MR. ROBBINS: May I give you a copy,
11 Your Honor? That's the one that we had -- it's
12 the sensi tivi ty run.

13 SPECIAL MASTER: Is it one we've
14 just been using recently in this pile?

15 MR. ROBBINS: It was Mr. Sullivan.
16 No, sir.

17 SPECIAL MASTER: Wait a minute,
18 though. I have notes on my things. So I like
19 to keep my copy.

20 MR. ROBBINS: I understand.

21 SPECIAL MASTER: I just need to find
22 it, which I have done, 1190.

23 MR. ROBBINS: Great.

24 Q. Mr. Larson, on the first page of Pl ainti ff' s
25 Exhi bi t 1190 -- this is an exhi bi t that
26 Mr. Sull ivan put into evi dence. He shows the
27 revised Kansas model base runs.

28 Do you see that in the first line on C03

- 1 and C04?
- 2 A. Yes, I do.
- 3 Q. And he states what the results of those runs
4 were as far as the usable stateline depletions;
5 is that right?
- 6 A. Yes.
- 7 Q. And he also shows the total stateline
8 depletions, the amount predicted by the model in
9 those runs; is that right?
- 10 A. Yes.
- 11 Q. If you compare the predictions Mr. Sullivan
12 suggests as the result of his model runs with
13 the predictions which the model runs which you
14 have used, it appears to me for the '50 to '94
15 period that they are not the same.
- 16 SPECIAL MASTER: Which ones are you
17 comparing? Which exhibits?
- 18 MR. ROBBINS: On Exhibit 1207,
19 second page.
- 20 Q. The usable stateline flows for the period in
21 your model run, '50 to '94, shows that 14,719
22 acre-feet, doesn't it, and Mr. Sullivan's
23 comparable is 16,028; is that right?
- 24 A. I think the label on the averages there is
25 incorrect. It probably should -- I think it
26 should be '80 to '94 instead of '50 to '94 in
27 that particular row.
- 28 Q. Okay.

1 SPECIAL MASTER: So under
2 "Averages," the 1950 to '94 should be 1980 to
3 '94?

4 THE WITNESS: Yes, I believe so.

5 BY MR. ROBBINS:

6 Q. Which should be '80 to '94?

7 A. The second row of figures.

8 Q. Okay. And so the '50 to '94 average is 15,967,
9 and Mr. Sullivan's is 16,028?

10 A. Yes. I think that's just round off in terms of
11 the calculations that were done. If you look
12 over at the total it corresponds to the 27,079.
13 I suspect there's some round-off in there.

14 Q. Okay. The difficulty in not having had the time
15 to review the exhibits, it may be a round-off
16 there. It looks to be close to 100 acre-feet,
17 and while that may be round-off error, it's
18 significant to Colorado, and I don't know why it
19 is, and I'm going to test it.

20 SPECIAL MASTER: With all of the
21 possible errors we have in all of the figures
22 we're using, you know, I doubt that
23 100 acre-feet is that significant. This is a
24 figure over the years. So 4,000 acre-feet, I
25 guess, over all those years; is that right?

26 MR. ROBBINS: (Attorney nods head.)

27 SPECIAL MASTER: Anyway, if you need
28 time to really examine that difference, we'll

1 give it to you -- we're going to come back in
2 January -- if that's important.

3 MR. ROBBINS: We will. I
4 understand.

5 SPECIAL MASTER: Yeah.

6 MR. ROBBINS: And with that -- and
7 we will propose to call several rebutter
8 witnesses, not for a long time. There are a
9 number of these exhibits that were generated as
10 surrebuttal, but we're going to comment on them.

11 SPECIAL MASTER: Okay.

12 MR. ROBBINS: And that's a perfectly
13 acceptable way to handle it. With that
14 understanding and the witness's statement of
15 what he believes to be the case, we won't object
16 to the exhibit, 1207.

17 Q. Mr. Larson, let me ask you about your testimony
18 about the WANT factors in the revised Kansas
19 model, if I could.

20 In the revised Kansas H.I. model,
21 Mr. Sullivan calibrated WANT factors that in
22 some cases are not high enough to allow ditches
23 to divert enough water to satisfy the crop
24 consumptive use demand input into the model,
25 assuming no losses for canal seepage, lateral
26 seepage, tailwater, or deep percolation; right?

27 A. I believe that's correct, yes.

28 Q. You testified that the WANT factors in the model

- 1 represent more than the relationship between
2 crop demand and the diversions required to
3 satisfy that demand, things such as irrigation
4 scheduling and changing availability of water
5 supply; right?
- 6 A. I believe so, yes.
- 7 Q. Is it reasonable to expect that year in and year
8 out the irrigators under water-short canals in
9 Colorado would not want to divert enough water
10 to satisfy crop demands?
- 11 A. Well, I think the WANT factors, because they
12 incorporate these other things, reflect what
13 took place historically with respect to the
14 various ditches, and they, in fact, are intended
15 to do that. So whatever the different factors
16 or conditions that might have influenced their
17 behavior, they will be part of the WANT factor.
- 18 Q. But in the model the State of Kansas has
19 assumed -- you are assuming in that statement --
20 that the potential evapotranspiration values
21 that have been input into the model are, in
22 fact, accurate for the Arkansas Valley, aren't
23 you?
- 24 A. Yes. Those were estimated independent from the
25 model and are used as input.
- 26 Q. So in order for you to make the statement that
27 those WANT factors match historical operations,
28 you have to accept that the PET values which

- 1 have been used are, in fact, accurate, don't
2 you?
- 3 A. The PET values are not calibration parameters.
4 They are assumed to be correct, and then the
5 WANT factors are calibrated in accordance with
6 those.
- 7 Q. And just for the point of argument, just for the
8 point of the question, if, in fact, those PET
9 values for whatever reason were incorrect or
10 inaccurate as it relates to agricultural
11 conditions in the Arkansas Valley and they were
12 too high, the WANT factors in the model would be
13 too low; isn't that correct?
- 14 A. If you use a different set of values for the
15 PET, you would calibrate a different set of WANT
16 factors. I think the purpose of the WANT
17 factors is to allow us to simulate the demand
18 properly and basically achieve as close a
19 correspondence with the observed diversions as
20 we are able to.
- 21 Q. But the demand that you are using is driven by
22 the WANT factor you assume?
- 23 A. That's one of the parameters that goes in.
- 24 Q. Did you do any investigation into the kinds of
25 other factors that might cause the Colorado
26 Canal or the Fort Lyon Canal or the ditches
27 below John Martin Reservoir not to want to
28 divert enough water to satisfy the crop demand

- 1 input into the model?
- 2 A. I didn't do any specific investigation. I did
3 note that in some cases -- for example, I think
4 it was on the Rocky Ford -- that there are
5 indications that there are certain times when
6 they choose not to take water. I did observe
7 that kind of behavior.
- 8 Q. And that's behavior on probably the most
9 water-rich ditch in the system; right?
- 10 A. I believe it's a senior ditch, yes.
- 11 Q. When Mr. Sullivan input new PET values into the
12 revised Kansas model, he had to lower the WANT
13 factors to recalibrate the model; right?
- 14 A. I think generally that's correct, yes.
- 15 Q. And, in your opinion, you can adjust the WANT
16 factors to any values that are necessary to
17 predict historical diversions; is that correct?
- 18 A. Yes. I think the purpose of the WANT factors is
19 to allow us to determine the demand that would
20 provide the model the ability to predict
21 diversions as accurately as we can.
- 22 Q. But we agree that the way in which the model
23 attempts to simulate those diversions first
24 requires the inputting of a set of PET values?
- 25 A. Yes, the PET values are an input data set to the
26 model.
- 27 Q. And as a general rule, the higher the PET values
28 they put in, the lower the WANT factors that

1 will come out in the calibration?

2 A. Everything else being equal, I think that's a
3 fair statement.

4 Q. Thank you.

5 When the special master accepted the
6 approved version of the H.I. model in his second
7 report, he said that the approved model was
8 doing a much better job of predicting diversions
9 than the version of the model that Mr. Schroeder
10 had developed in which he had removed diversion
11 reduction factors.

12 Do you recall that?

13 A. Not specifically, but I'll take your word for
14 it.

15 Q. Okay. Thank you.

16 The revised Kansas model, as
17 Mr. Sullivan has recalibrated it, consistently
18 underpredicts diversions after 1981; is that
19 correct?

20 A. The revised model at least with respect to the
21 upstream ditches I think has that tendency. I
22 think downstream of John Martin it is consistent
23 in that regard, I think -- actually, more like
24 right on the money, I think.

25 Q. But the revised Kansas model, looking at all of
26 the diversions, which are one of the statistics
27 that Kansas has used in the past, underpredicts
28 for the period 1982 to 1999, doesn't it?

- 1 A. When you look at totals?
- 2 Q. Yes, total diversions.
- 3 A. I think that's generally the case. I think,
4 again, our goal was to use the full period of
5 data, 1950 to 1994, to try to provide a set of
6 factors that don't have any bias in them.
- 7 Q. But with regard to the revised Kansas model and
8 the fact that as to total diversions it
9 underpredicts every year from 1982 to 1999, for
10 the period of overlap with the approved version
11 of the model, which was used through 1996, the
12 revised Kansas model does not do as good a job
13 at predicting diversions, does it?
- 14 A. If I recall, the general characteristics were
15 similar. I think we did make some improvements
16 in the prediction of diversions. With respect
17 to the bias, I believe, downstream, in the
18 downstream area, I think we were able to make
19 some improvements there. I think that was
20 largely through the use of -- the automated
21 calibration procedure that Mr. Schroeder
22 developed, I think, allowed us to make some
23 improvements on the overall bias. I think in
24 some respects on distribution, it may have not
25 been quite as good, but I think overall it was
26 improved.
- 27 Q. Did the approved model underpredict in every
28 year -- the approved model -- from 1982 to 1996?

1 A. I don't recall what that was.

2 Q. If it did not, if it, in fact, had a more
3 sinuous set of calibration statistics -- in
4 other words, it underpredicted in some years and
5 overpredicted in others -- would it not be true
6 that that model could be considered better
7 calibrated than one that consistently
8 underpredicts diversions throughout the period?

9 A. I think you could say that for that particular
10 feature, but I think what we've learned here is
11 that it's very important to try to get the bias
12 out of the calculation of diversions. I think
13 we want to be able to calculate diversions that
14 are unbiased and over a variety of hydrologic
15 conditions.

16 And so I think it's actually a little
17 more important for us to look at the long period
18 and get rid of the bias that may cause some
19 differences in the distributions, but I think
20 the bias is very important because the
21 overprediction or underprediction of diversions
22 does lead to changes in the estimates of the
23 depletions.

24 Q. So a model that overpredicts diversions for the
25 early going and then underpredicts diversions
26 consistently for the last 17 years does not have
27 any form of bias associated with it?

28 A. That's not bias. I think that's -- bias is what

1 we're trying to over the long period shoot in
2 the center, and that's trying to get over that
3 long period, '50 to '94, on average on target.
4 That's what the bias is.

5 The distribution that you're talking
6 about is there is a tendency, I guess, during
7 the wetter periods to underpredict it and drier
8 periods to overpredict as a general tendency,
9 but that's not bias.

10 Q. Are we, under your view of the model, using it
11 over a 45-year average period to determine
12 compact compliance?

13 A. No. I believe we're using it on a -- I would
14 recommend using it on an annual basis to
15 determine compliance.

16 Q. Even though on an annual basis the model
17 overpredicts and underpredicts significantly in
18 some years?

19 A. There will be some overprediction and
20 underprediction. That's the uncertainty that
21 you might have, but the feature that you really
22 want is that any given estimate doesn't have any
23 built-in bias in it. It may in certain years
24 overpredict and in certain years underpredict.
25 I think the feature we like to have in it is the
26 lack of bias.

27 Q. Certainly depending on the period of record that
28 you take a look at, you may have bias or you may

1 not have bias with the model as it's been
2 calibrated by Mr. Sullivan; isn't that true?

3 A. Well, I think that's why you want to look at a
4 long enough period that you incorporate a
5 variety of conditions. And, in fact, I think
6 that's one of our concerns about Mr. Schroeder's
7 use of the period from 1980 to 1994, that
8 because it was a wet period, you could end up
9 with some bias if you used those factors to go
10 forward in time over long periods.

11 Q. Do you have a copy of Kansas Exhibit 1093?

12 A. No, I do not.

13 Q. Let me borrow one from Donna, and we will
14 provide that to you.

15 SPECIAL MASTER: Before you go into
16 that, Mr. Robbins --

17 This case was filed in -- I guess the
18 complaint was actually filed in early 1986. And
19 if we had entered an instant judgment at that
20 point using your current model, it looks like
21 depletions would have been overestimated in
22 every single year. Now, if you did it on an
23 annual basis, we'd have Colorado having to
24 provide makeup water more than Kansas would be
25 entitled to if you looked at results over a
26 longer period of time.

27 So I guess I'm troubled by that kind of
28 a concept. When you say if you remove bias that

1 means trying to be on target over the whole
2 period, 1950 to '94, that may be true that you
3 want to get a model which, over a long period of
4 time, is right, but it looks like if it has long
5 periods, 20-year periods, when it's
6 underpredicting, overpredicting, it can give you
7 some pretty bad results if you're applying it on
8 an annual basis.

9 THE WITNESS: I think you have to
10 look at the fact -- there's the flip side of
11 that, too, which during drier periods you may
12 underpredict the depletions. And, in fact, when
13 you look at that pattern over the long term, the
14 model itself is actually doing some averaging.

15 It tends to underpredict generally when
16 it's maybe drier and overpredict when it's
17 wetter. If you look at the swings of the
18 depletions that it would calculate, that swing
19 would be actually less than the swing that you
20 would get if you assumed that you were
21 overpredicting and underpredicting, and that's
22 just part of the averaging process that's kind
23 of built into the model (indicating throughout).

24 BY MR. ROBBINS:

25 Q. If your purpose is to use the model annually,
26 isn't accuracy in individual years more
27 important than the bias of the model?

28 A. No, I don't believe so. I think bias is the

1 first step that you want because you want the
2 estimate in any given year to be unbiased. Now,
3 it may be different than the true value, which
4 we don't know, by some amount, but you don't
5 want it to be biased.

6 Q. Going to Exhibit 1093, there are a series of
7 yellow sheets in the exhibit. The first one, I
8 believe, is entitled "Figures." The next one is
9 "Tables." And the third one is called
10 "Appendix A, Calibration Statistics."

11 Have you been able to find that?

12 A. Yes, I have.

13 Q. On the first page of the calibration statistics,
14 there are averages for observed and predicted
15 stream flows; is that correct?

16 A. Yes, among other things.

17 Q. Looking at the Las Animas gage, the revised
18 Kansas model underpredicted flows at Las Animas
19 for the period 1980 through 1999; is that
20 correct? Las Animas is the fifth gage from the
21 left.

22 A. Yes.

23 SPECIAL MASTER: Mr. Robbins, I lost
24 that page. Would you --

25 MR. ROBBINS: I'm sorry, Your Honor.
26 The third yellow sheet back is calibration
27 statistics. Go to the page immediately after
28 it.

1 SPECIAL MASTER: I have the
2 calibration statistics. Okay.

3 MR. ROBBINS: The first page after
4 it starts. I'm sorry.

5 SPECIAL MASTER: "Analysis of HIM
6 Output for Streamflow"?

7 MR. ROBBINS: Yes, sir.

8 SPECIAL MASTER: Okay.

9 MR. ROBBINS: And in the top box
10 there is annual averages. The period is in the
11 left-hand column, and then there are gages at
12 the head of the heading, and go to the
13 Las Animas gage --

14 SPECIAL MASTER: Uh-huh.

15 MR. ROBBINS: -- and the bottom
16 statistic.

17 Q. Is that correct, Mr. Larson, in answer to my
18 question, which was whether or not the revised
19 Kansas model underpredicted flows at Las Animas
20 for the period 1980 to 1999?

21 A. Yes, by about 4 or 5 percent.

22 Q. About 5 percent. It shows a 95 percent value
23 there?

24 A. Uh-huh.

25 Q. Okay. And looking at the stateline, which is
26 the fourth box from the right, the revised
27 Kansas model underpredicted stateline flows for
28 the period 1980 to 1999 by 7 percent; is that

1 right?

2 A. Yes, approxi matel y.

3 Q. If you look at the calibration statistics for
4 upstream and downstream di tches, then -- which
5 is, if you go back through the exhibi t, about
6 five pages. There' s another di vi der, and then
7 the di tch di versi on statistics is behind that
8 di vi der.

9 SPECIAL MASTER: Okay.

10 MR. ROBBINS: Fi ve pages back
11 there' s another di vi der, and it has the analysi s
12 of output for di versi ons behind i t. So if you
13 go fi ve pages further back in the exhibi t
14 after -- in the same statistics -- di d you get a
15 di vi der page? And the page after the di vi der
16 page.

17 SPECIAL MASTER: After the di vi der?

18 MR. ROBBINS: Yeah. There' s a blue
19 page, and then there' s something that says
20 analysi s of output for di versi ons.

21 SPECIAL MASTER: Okay. I have that.

22 BY MR. ROBBINS:

23 Q. Do you have that, Mr. Larson?

24 A. Yes, I do.

25 Q. During the same period, 1980 to 1999, the
26 revis ed Kansas model consi stentl y underpredi cted
27 upstream di versi ons; is that ri ght? That' s the
28 fi rst column which suggests 92 percent, or an

- 1 8 percent underpredi cti on?
- 2 A. The 92 percent, yeah.
- 3 Q. Is that right?
- 4 A. Uh-huh.
- 5 Q. And during that period the model underpredicted
6 diversions downstream from John Martin Reservoir
7 as well; is that correct?
- 8 A. Yes.
- 9 Q. By 6 percent?
- 10 A. Yes.
- 11 Q. If consumption is being computed accurately by
12 the revised Kansas model over that period of
13 years, 1980 to 1999, then if diversions upstream
14 are being underpredicted by about 70,000
15 acre-feet a year over the period 1980 to 1999
16 and downstream are being underpredicted by
17 12,000 acre-feet per year, then you would expect
18 the undiverted water to be passing Las Animas or
19 the stateline, would you not?
- 20 A. Well, this model is calibrated to the period
21 1950 to '94 over a longer period. So during
22 some periods it's not going to do as well as
23 others.
- 24 Q. I guess my question is, though, how can you be
25 underpredicting diversions and underpredicting
26 gage flows at Las Animas and the stateline?
- 27 A. That's a result of the various factors that are
28 calibrated to the longer period when they're

1 applied to this shorter period.

2 Q. Doesn't that suggest that the model is
3 overpredicting consumption of water since 1980?

4 A. I don't know if I would necessarily agree with
5 that. I think that the differences that you see
6 when you look at shorter periods are a result of
7 the fact that the calibration has been targeted
8 to the longer period, which would include drier
9 periods and this particular period, which is
10 very wet.

11 Q. Well, but for this 20 year -- approximately 19-
12 or 20-year period, if it's not showing up at the
13 stateline and it's not being diverted, there's
14 obviously got to be water going somewhere, and
15 the only place it can go is consumption; isn't
16 that true?

17 A. Again, the consumptive calculations are based on
18 looking at the entire period of record, 1950 to
19 1994. So it would be different during a shorter
20 period.

21 Q. But during this period the model is
22 overpredicting consumption, is it not?

23 A. During this period it's underpredicting
24 diversions and the stream flow at those gages
25 that you indicated.

26 Q. Which means it's overpredicting consumption?

27 A. I don't know if you can get directly to that
28 conclusion just from those facts.

1 Q. But you would agree that that's what's
2 happening, wouldn't you?

3 A. That's one possible explanation. I think,
4 again, because these parameters are calibrated
5 to the longer period, there's going to be
6 differences when you look at shorter periods.

7 MR. ROBBINS: Okay. Your Honor, if
8 we could take our break now -- it's about --

9 SPECIAL MASTER: All right. We'll
10 do that.

11 MR. ROBBINS: -- 20 to -- that would
12 be great.

13 Thank you.

14 (Recess.)

15 THE REPORTER: Please remain seated.
16 Court is again in session.

17 SPECIAL MASTER: All right,
18 Mr. Robbins.

19 MR. ROBBINS: Thank you, Your Honor.

20 First, I'd like to provide you with a
21 copy of Exhibit 1459. I've already provided
22 Mr. Draper with two copies. That's the printed
23 version of the chart. I went over it, and Donna
24 has gone over it for Kansas to be sure that it
25 is an accurate representation, and I believe it
26 is.

27 SPECIAL MASTER: All right.

28 BY MR. ROBBINS:

1 Q. Mr. Larson, let's see if we can get this thing
2 wrapped up here.

3 A. Sounds good to me.

4 Q. I'd like to move to your testimony about the
5 changes in diversions calculated by the revised
6 Kansas model.

7 You testified that the changes in
8 diversions calculated by the revised Kansas
9 model were not anomalous when compared to other
10 models in the revised -- other models, other
11 groups of models, or the revised Colorado test
12 model; is that correct?

13 A. Yes. I tried to make several comparisons.

14 Q. Did you determine the changes in diversions
15 computed by the revised Kansas model compared to
16 the approved model?

17 A. No.

18 Q. The revised Kansas model calculates higher
19 depletions to usable stateline flows than the
20 approved model; isn't that correct?

21 A. Yes, that's correct.

22 Q. That's about 27 percent higher; isn't that
23 correct?

24 A. I believe that's correct, yes.

25 Q. You've presumed the results from three different
26 versions of the H.I. model during the --
27 actually, let me say that again.

28 You've presented the results of three

- 1 different versions of the H.I. model during the
2 course of this case; is that right?
- 3 A. Yes.
- 4 Q. And each time you've said that the model
5 provided your best estimates of depletions; is
6 that right?
- 7 A. I believe it to be correct, yes.
- 8 Q. All three versions have calculated different
9 depletions to usable stateline flows; isn't that
10 right?
- 11 A. On comparable periods, that's correct.
- 12 Q. The depletions calculated by the model are
13 sensitive to changes in input data, are they
14 not?
- 15 A. They are affected by the assumptions in the
16 input data that you put in, yes.
- 17 Q. And they are sensitive to certain calibration
18 parameters like the WANT factor; isn't that
19 correct?
- 20 A. I don't -- one of the things that they're
21 sensitive to are input data, such as irrigated
22 acreage, PET, and those sorts of things. I
23 think those are the predominant things that
24 affect the absolute value of them. If you've
25 calibrated to the historic diversions and to the
26 extent that you can get those correct, then the
27 differences tend to relate, I think, more
28 towards those other assumptions and data that

1 have changed in going from one calibration to
2 the next.

3 Q. Increasing PET values increase depletions to
4 stateline flows; isn't that correct?

5 A. Yes. I think all other things being equal, that
6 would be correct. Higher PET values tend to
7 give you more depletions.

8 Q. Do you think the previous versions of the model
9 that you have presented in this case are
10 reliable to determine depletions to usable
11 stateline flows?

12 A. I think we've made improvements as we've gone
13 along, always trying to make the assumptions in
14 data better. I would conclude that as you make
15 improvements -- that it's really a degree of
16 reliability that, as you make those
17 improvements, I would at least qualitatively
18 characterize the reliability as improving.

19 Q. Do you think the Colorado water budget model was
20 reliable to determine depletions to stateline
21 flows from postcompact pumping?

22 A. For the assumptions that went into it, the
23 calculations were made based on those
24 assumptions.

25 Q. Do you think that it was reliable for purposes
26 of determining depletions?

27 A. For the assumptions that went into it, that was
28 the estimate that they developed, and that would

1 be a reliable estimate for those assumptions.

2 If you changed the assumptions or the
3 conditions, you can change the calculated
4 values.

5 Q. Do you think the Taylor-Luckey model was
6 reliable to determine depletions to stateline
7 flows from postcompact pumping?

8 A. Similarly, I think it's a matter of degree.
9 There are certain assumptions and idealizations
10 made there. I think the H.I. model that's used
11 by both Colorado and Kansas, I think, are
12 improvements in both the detail and the amount
13 of the data. So I think they're probably more
14 reliable in that regard, but for the assumptions
15 that went into those calculations, they are, as
16 far as I know, a reliable measure given those
17 assumptions.

18 Q. Well, how do you determine if a model is
19 reliable?

20 A. Well, in part, it's based on -- you could base
21 some of it on calibration. Other determinations
22 would have to be based on judgment about the
23 conditions and assumptions that go into it.

24 Q. Don't we need to know the potential error in any
25 particular model results if the special master
26 is going to rely on the results to determine
27 compact compliance or assess damages against
28 Colorado if the model shows depletions to usable

1 stateline flows?

2 A. Well, unfortunately with respect to depletions
3 since we don't have measurements, we can't
4 compute an error. With the computed uncertainty
5 in our estimate -- or we can try to. As I think
6 I've explained before, it would be very
7 difficult to do that because you'd have to go to
8 some kind of a Monte Carlo analysis to try to
9 incorporate the variations in parameters and/or
10 conditions in order to come up with a
11 distribution of results that you could use to
12 quantify the uncertainty.

13 Again, we would not be able to quantify
14 the error anyway because we can't measure
15 depletions. We can quantify uncertainty in the
16 estimate. The estimate would still be
17 considered a best estimate. It would just have
18 a certain range of uncertainty, and that's what
19 we might be able to quantify. I don't think we
20 would be able to quantify the error because we
21 can't measure depletions.

22 Q. Look at Kansas Exhibit 1207 for a minute, would
23 you. That's the one that we were chatting about
24 at the beginning of your cross-examination.

25 This is a graph with a backup table of
26 the historical run of the revised Kansas model
27 and the compact run of the revised Kansas model;
28 is that right?

1 A. Yes.

2 Q. The resul ts.

3 Did you graph the di fference between
4 stateline flows in the -- and it graphs
5 stateline flows; right?

6 A. Stateline flows for the compact condi tion and
7 for the hi storical condi tion.

8 Q. Di d you graph stateline flows for the hi storical
9 run and the compact run of the approved model ?

10 A. No, I di d not.

11 Q. Would you expect any di fference in the
12 correlati on coeffi cients for the approved model
13 compared to the revised Kansas model ?

14 A. No. I would expect si mi lar hi gh correlati on.

15 Q. Di d you graph the di fferences between stateline
16 flows in the hi storical run and the compact run
17 of the Colorado revised test model ?

18 A. No, I di d not.

19 Q. Would you expect any di fference in the
20 correlati on coeffi cient for the Colorado revised
21 test model as compared to the Kansas revised
22 model ?

23 A. No. I would expect that they would al so be
24 hi ghly correl ated.

25 SPECIAL MASTER: Mr. Larson, you
26 reran the same period that we used for the
27 so-called approved model wi th the new Kansas
28 revised model , and I don' t remember what the

1 precise figures are, but I take it that's the
2 27 percent roughly increase in depletions which
3 showed up on the -- running the same period of
4 time with the revised Kansas model as opposed to
5 the model that was previously used; is that
6 right?

7 THE WITNESS: Yes, something on that
8 order.

9 SPECIAL MASTER: Are we left with
10 the conclusion that either the earlier results
11 were too low or that the current results are too
12 high?

13 THE WITNESS: I think you're left
14 there. In some sense I think when I look at
15 these results and the range of results, I think
16 if we get the calibration right and the
17 diversions at least for the assumptions that go
18 into that calculation, we should get a good
19 estimate of the depletions.

20 However, if you change the conditions or
21 the assumptions that are not part of the
22 calibration, those can affect the results. And
23 I think in this case, you know, what we have is
24 a change in the PET or a change in the maximum
25 farm efficiency, as the case may be. Those
26 kinds of things are not parameters in the sense
27 that we're calibrating them. They're conditions
28 that we've estimated outside the model and are

1 assuming fixed, and I think that's -- those are
2 the kinds of things that account for the
3 di fferences.

4 BY MR. ROBBINS:

5 Q. Let me hand you a copy of 1410, if I could,
6 please.

7 Do you have a copy up there of
8 Dr. Brendecke's report?

9 A. Yes, I do.

10 Q. You do. Okay. Thank you.

11 Would you turn to page 27 of the report,
12 please. Would you read the first full paragraph
13 on page 27, the one that begins "The correlati on
14 cri teri on."

15 A. "The correlati on cri teri on is commonly used in
16 model calibrati on, although it too is one that
17 can be mi sleadi ng. Correlati on quanti fi es the
18 degree that above (bel ow) average values in the
19 predi cted data are associ ated wi th above (bel ow)
20 average values in the observed data. A
21 correlati on coeffi ci ent near 1.0 indi cates a
22 strong associ ati on; a coeffi ci ent near 0.0
23 indi cates li ttle associ ati on. The correlati on
24 coeffi ci ent says nothing about the relative
25 magni tudes of predi cted and observed values; it
26 is possi ble for two data series to be hi ghly
27 correl ated but have very di fferent magni tudes."

28 Q. Do you di sagree wi th Dr. Brendecke's statement

1 about correlati on coeffi cients or cri teri a?

2 A. No, I do not.

3 Q. Now I'd like to ask you to -- I guess the
4 follow-up question, then, is that thi s
5 (i ndi cating) is merely a graph of the
6 correlati on of two runs of the revised Kansas
7 model ; ri ght?

8 A. Yes. I think, as you can see -- well , the graph
9 is the trace of the two runs.

10 Q. Yes.

11 A. The correlati on coeffi cient is the statisti c of
12 that correlati on, and you can see that there is
13 a separati on. There's a di fference in the
14 values, but they track one another in terms of
15 their ups and downs, which is what the
16 correlati on coeffi cient is measuri ng.

17 SPECIAL MASTER: And, for the
18 record, everybody is talki ng about
19 Pl ai nti ff' s 1207.

20 MR. ROBBINS: Yes, si r.

21 SPECIAL MASTER: That's "thi s. "

22 MR. ROBBINS: Thank you very much,
23 si r.

24 THE WITNESS: Sorry.

25 MR. ROBBINS: Thi s is, in fact,
26 1207, yes. Thank you.

27 Q. Okay. Let' s just move on to a di fferent topi c,
28 then.

- 1 In your discussion about the Burns
2 model, did the Burns model use the same time
3 step as the H.I. model?
- 4 A. I believe it's a monthly time step.
- 5 Q. So it's different than the daily time step used
6 in the H.I. model?
- 7 A. I believe so, yes.
- 8 Q. Did the Burns model use constant values of PET
9 from year to year?
- 10 A. Yes. They use a single distribution of values
11 that -- two sets. One was associated with
12 ditches that had diversions in the wintertime
13 and one, ditches that had diversions in the
14 summertime.
- 15 Q. Didn't the Burns model use a single value for
16 demand factors for each user?
- 17 A. Yes. As I indicated in my testimony, they used
18 the constant value that was then applied to the
19 varying values of either demand -- ag demand or
20 PET.
- 21 Q. Wasn't the Burns model developed primarily to
22 demonstrate techniques of displaying the results
23 on a computer screen?
- 24 A. I don't think it was developed simply to display
25 graphical techniques on a computer screen. It
26 looked like a considerable amount of effort had
27 gone into assembling the data for the Arkansas
28 River basin, and I would highly doubt that that

1 was the only reason that it was put together.

2 Q. Okay. The reason I asked that was that on
3 page 4 of Exhibit 668*, the authors state "One
4 of the major reasons the new model was developed
5 for this project rather than applying an
6 existing model was the desire to obtain results
7 interactively on a computer terminal screen."

8 That was the reason I asked the
9 question.

10 Thank you. I don't have other questions
11 on cross at this time.

12 SPECIAL MASTER: All right.
13 Redirect, Mr. Draper?

14 MR. DRAPER: No questions on
15 redirect, Your Honor. And I would move the
16 admission of Plaintiff's Exhibit 1207.

17 MR. ROBBINS: Well, after I'd asked
18 that initial question, I believe I indicated
19 that I did not object to the exhibit.

20 SPECIAL MASTER: Okay. Plaintiff's
21 1207 will be admitted, then.

22 (Whereupon Plaintiff's Exhibit
23 No. 1207 was admitted into
24 evidence.)

25 SPECIAL MASTER: Are we going to see
26 Mr. Pope this afternoon?

27 MR. DRAPER: Yes, Your Honor. He is
28 our next and our final witness --

1 SPECIAL MASTER: All right.

2 MR. DRAPER: -- today.

3

4 DAVID L. POPE,
5 having been previously duly sworn, was
6 examined and testified as follows:

7

8 DIRECT EXAMINATION

9 BY MR. DRAPER:

10 Q. Good afternoon, Mr. Pope.

11 A. Good afternoon.

12 Q. Please state your name for the record.

13 A. David L. Pope.

14 Q. And your position?

15 A. Chief engineer, Division of Water Resources,
16 Kansas Department of Agriculture.

17 Q. Have you testified earlier in this case?

18 A. Yes, I have.

19 Q. Were you here during Mr. Book's testimony with
20 regard to the proposal by Mr. Simpson that was
21 discussed earlier today and yesterday afternoon?

22 A. Yes, I was.

23 Q. I realize you haven't had much time since the
24 Colorado proposal was clarified this morning,
25 but I would like to pose to you the master's
26 question to Mr. Book, and that is whether you
27 have any concerns about the proposal to the
28 extent you've been able to review it that have

1 not already been fully discussed in the last
2 day.

3 A. Yes. While the time has been short to review
4 the proposal, it's been helpful to have it
5 clarified and have a better understanding, at
6 least, of the proposal. I haven't had a chance
7 to look at all the different iterations that can
8 occur from something of this nature, but there
9 are some concerns and some issues that I could
10 express regarding that.

11 Q. If you would.

12 A. I guess the first concern is that an accounting
13 over a longer period like the ten years shown
14 here does allow more replacement to occur in wet
15 years or an overdelivery, if you will, and in
16 turn underdelivery or underreplacement in dry
17 years or at least during different series of
18 years.

19 I would indicate that if this is the
20 case, then this could cause increased depletions
21 in the dry years and exacerbate the effect on
22 Kansas farmers who depend upon the supplies of
23 water from the river system. Another way of
24 saying this is basically that if you have a
25 series of dry years and if sufficient
26 replacement water is not provided during that
27 series of dry years, then there will be a
28 shortage. And even though during the same

1 ten-year period replacement is made during other
2 parts of the ten-year period, especially when
3 it's wetter, we still have the end result that
4 there will be depletion of usable flows when the
5 water would otherwise have been available to
6 Kansas.

7 We know, I think, from experience that
8 this basin has ups and downs in terms of its
9 water supply. There are periods of drought, for
10 example, in the '50s and in the '70s, the late
11 '80s and the early '90s, and certainly the last
12 period that we're in right now. In contrast, we
13 know we've had some very wet years in the '80s
14 and again in the mid 1990s.

15 So if that is the case, then the farmers
16 and water users in Kansas that rely upon a
17 supply of water from the river will experience
18 difficulties over and beyond the sort of base
19 condition. And as I think we've testified in
20 the past, it's a water-short system in normal
21 times and certainly in dry times. And there's
22 just simply a limited ability to deal with that
23 because of shortages for those people that rely
24 on river water alone, of course, is going to be
25 experienced, and there's a very limited ability
26 or some limits on the ability to offset
27 shortages with well pumpage and matters of that
28 nature.

1 So the underlying concern is the
2 variability and the pluses and the minuses that
3 sort of offset each other during the same
4 ten-year period. The numbers we see on the
5 butcher block chart are relatively small
6 numbers, but the swings could be pretty big
7 during some of the periods of time.

8 Basically, understand that the rules and
9 regulations that have been promulgated by the
10 state engineer known as the Use Rules basically
11 are predicated on averages, the presumptive
12 depletion factors, and so they're going to
13 naturally underreplace during dry years and
14 perhaps overreplace during wet years even if
15 they're right in the overall sense. I think
16 you've heard testimony that that may be not
17 adequate in a broader sense, but even if they
18 are on a long term, there would be those
19 effects, and I think that could be felt in this
20 ten-year period because it's a pretty lengthy
21 period.

22 I would, however, note in that regard
23 that if a proposal of this nature is accepted,
24 then it is extremely important that Kansas have
25 some dry year protection at least to the extent
26 provided for by the rules. There certainly
27 shouldn't be any relaxing of the rules because
28 that then essentially exacerbates replacement

1 that could occur perhaps at any time during the
2 ten-year period.

3 So there certainly needs to be at least
4 the determinations made that are provided for by
5 the current rules without a waiver, for example.

6 SPECIAL MASTER: So you're
7 suggesting it shouldn't be a system which allows
8 relaxation of the rules where a credit has been
9 developed?

10 THE WITNESS: Yes. Because you have
11 a series of dry years that are going to be
12 there, and if replacement isn't provided at
13 least at those minimum levels, then you might
14 have a credit built up during the wet period of
15 three or four years. Okay. Then you get into
16 this period of two or three or four years of dry
17 period. Well, if replacement isn't made then,
18 we're going to experience the effects of the
19 depletions from postcompact wells. So I think
20 there's some limits on what offsetting should be
21 allowed to occur.

22 I think another way of expressing that,
23 Your Honor, might be, to avoid excess
24 overreplacement, one could use the offset
25 account for that water that can be controlled --
26 in other words, water from storage, sources of
27 that nature -- and assure deliveries to the
28 offset account if there is going to be this

1 excess replacement so that it's then available
2 when it would need to be used because I think
3 there's a point at which excess replacement
4 comes at the wrong time and our situation during
5 other periods is exacerbated.

6 I guess an additional comment really is
7 that the effects of a proposal of this nature
8 need a great deal of attention so that the
9 details are worked out. It can be complicated
10 and can be unanticipated results, and it must be
11 very understandable under certain terms and
12 conditions that would be necessary to ensure
13 that it's not abused.

14 With our experience in other cases, even
15 our recent Republican River settlement,
16 negotiations have taught us it takes a lot of
17 time to figure these things out and make sure
18 they work the way that it's intended to work.

19 I guess I would summarize by saying that
20 our goal basically all along in this case has
21 been to avoid violations of the compact and the
22 Article IV-D obviously is the key provision
23 we're talking about in this regard and basically
24 still continue to focus our efforts on --
25 irrespective of some of these other issues like
26 accuracy of a model, that it has to be as good
27 as we can make it. But the water shall not be
28 depleted, the usable quantity, when they're

1 available for use. And if you replace water
2 when it's -- if you deplete water when it would
3 have been available for use and replace it at
4 some other period, to me that's not consistent
5 with the provisions of the compact and the
6 operations.

7 I guess I would summarize by saying that
8 it's still my belief that the model is an
9 appropriate tool to use. A lot of time and
10 effort has been invested in the model by both
11 states to make it as good as we can make it.
12 Certainly it's not perfect, but we've been at
13 this a long time.

14 I think you made reference earlier today
15 to the case being filed in late 1985 or early
16 '86. It will shortly be 17 years. Kansas has
17 spent a tremendous amount of time and effort and
18 carried a heavy burden to try to get to this
19 stage, and I would not like to see a situation
20 where the gains and the protections that we're
21 entitled to under the compact are washed away in
22 a form of averaging that really doesn't do the
23 job.

24 I think we have to really sort out the
25 effects of model issues from the real effects of
26 a multi-year period because all of those are
27 thrown together in a ten-year period. And we
28 talk about concerns about Colorado not wanting

1 to replace more water than it should have to. I
2 understand that. You know, I can understand
3 those concerns, and you mentioned those
4 concerns.

5 But keep in mind there's another side of
6 the ledger that if sufficient water is not
7 replaced, then it's to the detriment of Kansas.
8 We shouldn't let that happen either. I think
9 that should be equally as major of a concern,
10 and I don't believe that the risk of
11 noncompliance as a result of this extra
12 flexibility should be borne by Kansas. We've
13 essentially got the variability of the water
14 supply being shifted to Kansas, being offset
15 with these different periods of time, and I
16 think these are real concerns, and they concern
17 me a great deal.

18 I think if one -- if you are inclined to
19 consider a multi-year period, it should be as
20 short as possible, limited to something like two
21 years or some very short period of time so that
22 we don't have these big swings, we don't have
23 these impacts. It's my personal opinion that
24 ten years is simply far too long.

25 MR. DRAPER: That's my questions,
26 Your Honor. I'm finished. Thank you.

27 SPECIAL MASTER: All right.

28 Mr. Robbins.

1 MR. ROBBINS: Thank you, Your Honor.

2

3

CROSS-EXAMINATION

4 BY MR. ROBBINS:

5 Q. Mr. Pope.

6 A. Mr. Robbins.

7 Q. Don't you think that you're confusing model
8 reliability with actually what is going to be
9 happening on the river when you make these
10 remarks to the master?

11 A. My concern is that those two issues are being
12 confused. I don't think I'm confused about
13 them.

14 Q. Well, you're not suggesting that you are aware
15 of any statement by Colorado that they are going
16 to relax the Use Rules, are you?

17 A. I'm concerned that when we --

18 Q. I didn't ask you about your concerns, sir. I
19 said are you aware of any statement by Colorado
20 that they had any intention whatsoever of
21 relaxing the Use Rules? I'm not asking about a
22 level of paranoia. I'm asking about any
23 specific statement that you can point to.

24 A. I think Mr. Simpson testified about issues
25 related to the rules that could be taken to
26 indicate that if more replacement was provided
27 than -- I'm not sure I can paraphrase this
28 accurately, but that he would take that into

1 account in terms of the application of the
2 rules.

3 Q. Has Mr. Simpson ever suggested that he would not
4 enforce the rules that you're aware of?

5 A. I don't recall hearing him say that.

6 Q. Isn't it correct that what Colorado is proposing
7 here is not to change the amount of replacement
8 in wet years or dry years but, rather, to look
9 at the model results over a period of years so
10 that the inaccuracies on an annual basis that
11 your witnesses have testified to and Colorado's
12 witnesses have testified to are moderated out?

13 A. I believe Colorado has advanced with that as a
14 basis. I'm simply suggesting that when you have
15 a longer period like that, it also allows the
16 highs and the lows to offset each other within
17 that period whether or not there was a model
18 inaccuracy or not.

19 Q. There is no suggestion, is there, that Colorado
20 would not replace depletions under the Use Rules
21 in wet years and replace them in dry years at
22 the full amount of those depletions?

23 A. Mr. Robbins, my concern is that the special
24 master carefully consider this issue and clearly
25 provide criteria that ensures that the
26 enforcement of the compact occurs because none
27 of us know in the future what somebody may or
28 may not do unless the provisions of his decree

1 and how matters are viewed is clearly spelled
2 out to avoid problems or different
3 interpretations at some time in the future.

4 Q. But no one knows what the depletions are.

5 Mr. Larson just finished testifying to
6 that, didn't he?

7 A. No one knows exactly. We can't go out and
8 measure depletions, and so we use tools, in this
9 case a model, to determine what they are to the
10 best that we can.

11 Q. So the question that we're dealing with here is
12 what is the accuracy of that model over a time
13 period; isn't that true?

14 A. I believe the question is broader than that
15 because there -- even -- if you assume for
16 purposes of discussion that the model is exactly
17 right for each year -- let's assume for purposes
18 of discussion we have a perfect model. There
19 will be years of underreplacement and years of
20 overreplacement that can occur and will likely
21 occur.

22 A ten-year summing method may be better
23 than certain other kinds of averaging but will
24 allow those years of under- and overreplacement
25 to offset each other within the ten-year period.

26 Q. If you had a model that was perfect for purposes
27 of discussion, Colorado wouldn't have a basis to
28 suggest a ten-year totalling method like this,

- 1 would it, because it would be -- it would
2 know -- it's a perfect model in your hypothesis,
3 and so it would know each year whether it had
4 replaced adequately that year; isn't that true?
- 5 A. I think that would certainly remove the basis
6 for a multi-year period.
- 7 Q. Yes. But the problem is we don't know whether
8 this model is over or under. Your experts
9 don't, and Colorado's don't, and the master
10 doesn't.
- 11 A. Well, I think we've had extensive testimony from
12 some very knowledgeable experts about the model
13 and what it can do to analyze this problem. The
14 fact that it's not perfect does not mean, in my
15 view, that we should allow other impacts of a
16 multi-year period to be included within our
17 analysis. That's my concern.
- 18 Q. Well, as long as Colorado is replacing the
19 depletions that occur in the year in which they
20 occur under the Use Rules, what we're really
21 talking about is how we then test that
22 replacement program over a period of time?
- 23 A. For the most part, I think that's correct, with
24 the understanding that recognizing that there
25 are averages built into the replacement program,
26 we know there's going to be some overs and some
27 unders.
- 28 Q. Just as there are averages built into the model?

1 A. That's correct. There are averages built into
2 the model.

3 Q. We have a 45-year model averaged over 45 years,
4 bias removed after 45 years, and that's okay to
5 test, in your mind, but no averages at all for
6 Colorado? It has to come up with some method to
7 be perfect in calculating unmeasurable
8 depletions? Is that your testimony?

9 A. Mr. Robbins, I believe that there are a series
10 of averages that are used in a number of the
11 things in this case, and for the most part
12 averages work against Kansas because if averages
13 are used, you don't get the variability that
14 would help protect Kansas. So it depends on
15 which type of averaging, I suppose, how it's
16 used.

17 Q. Some may work for Kansas. Some may work
18 against. Some may work for Colorado. Some may
19 work against.

20 A. That's sort of the nature of averages.

21 MR. ROBBINS: Just one minute,
22 please.

23 Q. You testified that you had a concern about
24 excess replacements in wet years; is that right?

25 A. Yes.

26 Q. What do you mean by "excess replacements"?

27 A. In general, it was excess in the sense that
28 credits would be built up during those periods

1 and then used to offset the series of dry years
2 when the effects of depletion are felt the
3 greatest, I guess, to water users. So it's a
4 relative term.

5 I think I specifically noted that if
6 excess depletions or if replacement water is
7 being provided and one looked at the series of
8 years and you were ahead of the amount of
9 depletions that were actually being predicted by
10 the model for that series of years -- you've got
11 some series over here (indicating) -- they're
12 not real big swings but -- and as long as that
13 is managed in such a way that those excesses are
14 as usable as possible, then that makes it less
15 of a problem. I mentioned the offset account,
16 for example.

17 Q. I presume that if the Colorado water users
18 placed water into the offset account, that would
19 satisfy your concern about excess replacements
20 in a given year.

21 A. Everything else being equal, as long as the
22 offset account was being operated and we'd get
23 delivery of the water -- I mean, there's issues
24 there, but yes.

25 Q. And the offset account is limited to 20,000
26 acre-feet. So there's an upward limit on how
27 much could be placed into such an excess
28 account; isn't that right?

1 A. Through that method at any one time, that's
2 right.

3 SPECIAL MASTER: That's the current
4 limit in the offset account?

5 MR. ROBBINS: Yes, sir, it is.

6 THE WITNESS: Yes.

7 BY MR. ROBBINS:

8 Q. And the Colorado water users take a risk of
9 spill if they put excess water into the account,
10 don't they?

11 A. Yes. There is a risk of spill, as there is with
12 any reservoir.

13 Q. And the Colorado water users are having to pay
14 for the replacement water that they are making
15 to the river. So there is a built-in limitation
16 on their desire to simply allow excess water to
17 be put in the river when, in fact, there are no
18 depletions to be replaced.

19 Wouldn't you agree?

20 A. There's somewhat of a disincentive as a result
21 of the finances. But I would also say that
22 astute water users recognize that when water is
23 available, as it is in the wetter years, that
24 it's cheaper and it can be made available
25 because water is going to be more scarce, it's
26 going to be more expensive, and their options
27 are not as great during extended droughts. So
28 there's a certain amount of risk and a certain

1 amount of financial push and pull both ways, I
2 think.

3 Q. Okay. Thank you very much. Thank you,
4 Mr. Pope.

5 Your Honor, thank you.

6 SPECIAL MASTER: Any redirect?

7 MR. DRAPER: No, Your Honor.

8 SPECIAL MASTER: Okay. I want to
9 ask Colorado to do this over the recess time:
10 You know, the proposal which Colorado has made
11 is obviously an important piece of evidence in
12 this case, and we've put together one example
13 (indicating) of how it might work. Mr. Pope has
14 said that this kind of thing can be very complex
15 and needs to look at it in all of its possible
16 permutations. They've made some suggestions as
17 to things that they thought should be part of
18 it.

19 So I want you to consider whether there
20 needs to be any amplifications or any additions
21 or changes in this proposal and then let me know
22 what that might be when we get back on -- I
23 guess it will be January the 13th.

24 MR. ROBBINS: We'd be happy to do
25 that, Your Honor. And I want to be clear about
26 this exhibit that I prepared. It was designed
27 only to show how the math worked for a moving --

28 SPECIAL MASTER: Yeah. I'm not --

1 MR. ROBBINS: -- situation. The
2 numbers don't mean anything.

3 SPECIAL MASTER: I understand that,
4 but I'm not so concerned about the exhibit as I
5 am about this was a way to explain Mr. Simpson's
6 proposal in his testimony. And obviously there
7 were misunderstandings about it, and so I
8 want -- taking into account now what has been
9 said today, what the Kansas people are saying
10 about it, some of their concerns, what I want
11 you to know -- what I want you to do for me is
12 to indicate if there might be any refinements to
13 it, any limitations, any changes in any way, and
14 we can go from there on January the 13th, then.

15 MR. ROBBINS: That would be fine.
16 That's a fair thing to ask, and we would be
17 happy to do it.

18 SPECIAL MASTER: All right.

19 Mr. Draper?

20 MR. DRAPER: I believe I heard
21 Mr. Robbins indicate that he might have some
22 additional witnesses in January. If that's the
23 case, the sooner we can be informed who they are
24 and what they plan to say and the backup, we'd
25 appreciate it.

26 SPECIAL MASTER: I think I -- as I
27 understand it, on the 13th we will be having
28 Dr. Allen -- in that period of time --

1 Mr. Franzoy probably --

2 MR. DRAPER: Yeah.

3 SPECIAL MASTER: -- possibly, and I
4 did tell Mr. Robbins that there were certain
5 limited matters that he could respond to. I
6 can't remember what they have been, but we've
7 talked about them as we've gone through.

8 So that's my thought of that segment of
9 the case.

10 MR. ROBBINS: It would seem to me
11 that, as the proponent, I'm entitled to respond
12 to any matters that occurred in surrebuttal that
13 need responding to. I will certainly provide
14 Mr. Draper with, after the holidays, a list of
15 the witnesses. Clearly, we may need to respond
16 to something that Dr. Allen has to say.

17 SPECIAL MASTER: Right.

18 MR. ROBBINS: So I would like to
19 reserve that.

20 SPECIAL MASTER: I understand that.

21 MR. ROBBINS: And we might need to
22 call --

23 SPECIAL MASTER: But I think the
24 following -- following your motion and sort of
25 my general analysis of it, the Kansas testimony
26 has been quite limited. And so we don't want to
27 get into this situation where we keep going back
28 and forth.

1 MR. ROBBINS: Well, someone has to
2 have the last word, and under traditional rules
3 of jurisprudence, the party carrying the burden
4 gets the last word.

5 SPECIAL MASTER: Right.

6 MR. ROBBINS: So I presume that
7 rebutter would permit us to -- I'm not talking
8 about a day a witness or anything like that, but
9 I may have several witnesses. I may need to
10 have Mr. Tyner explain, for example, some -- any
11 explanation he needs on Mr. Book's comments
12 because Mr. Book has selected out just a number
13 of things and drawn some conclusions.

14 SPECIAL MASTER: And I understand
15 that.

16 MR. DRAPER: And I would --

17 SPECIAL MASTER: I --

18 MR. DRAPER: But I would reserve my
19 right to object --

20 SPECIAL MASTER: Yes. Yes.

21 MR. DRAPER: -- if they go beyond
22 proper scope --

23 SPECIAL MASTER: Everybody is
24 reserving everyone's rights to object.

25 MR. DRAPER: -- because Mr. Robbins
26 has had the last word in earlier segments of
27 this case.

28 SPECIAL MASTER: You know, we are --

1 I think we're all going to agree there's not
2 going to be any other cumulative testimony.
3 There may be some relatively small points that
4 need to be addressed, and we'll have some time
5 to do that.

6 If you're going to be calling additional
7 witnesses, then let Mr. Draper know so that he
8 has some idea of what they are so we don't have
9 Kansas saying, "Gee, this is a surprise. I've
10 got to have some time to take a look at this."

11 MR. DRAPER: Right. If we could
12 have the content and any backup, that would be
13 essential.

14 MR. ROBBINS: I'll probably prorate
15 the timing and the amount of time that I receive
16 and share the courtesy equally and fairly.

17 SPECIAL MASTER: All right. So is
18 that about it, then?

19 I see we have some guests in the
20 courtroom. The problem is that we're just about
21 to adjourn, and that's not a sad thing since
22 Christmas is coming and we're all trying to get
23 out of here.

24 MR. ROBBINS: But, yes, that's fine.
25 And then I think the one thing that Mr. Draper
26 and I need to talk about at some --

27 SPECIAL MASTER: Go ahead. I had
28 another thought. Go ahead.

1 MR. ROBBINS: -- at some point
2 over --

3 SPECIAL MASTER: I think we're
4 thinking about the same thing.

5 MR. ROBBINS: -- over the holiday
6 season is we need to decide if we are going to
7 need testimony on the '95-'96 damage case, and,
8 if so, what form that testimony should take.

9 SPECIAL MASTER: Right. As I
10 understand it, the issue there principally is
11 the amount of sole source land, of
12 surface-water-only land?

13 MR. ROBBINS: Yes. There are a
14 couple of minor issues as well. There was a --
15 there's a change in natural gas prices for a
16 year or two. They went up and came back down.
17 And what year period you ought to use to pick
18 for the future analysis is an issue, and then
19 there's an issue that we need to talk about
20 about future pumping costs during those two
21 years as the result of hydrologic conditions.
22 But the big issue is whether or not sole source
23 lands really existed in the manner shown in '95
24 and '96.

25 MR. DRAPER: Yes. We've just barely
26 received the tables that they have. I presume
27 we'll be getting more information on that very
28 shortly so we can assess --

1 SPECIAL MASTER: Well, if we can't
2 reach agreement on that issue, then we'll
3 take -- as part of this segment, we'll take
4 whatever testimony is needed on the remaining
5 issues, then.

6 MR. DRAPER: Very good.

7 MR. ROBBINS: That would be fine.

8 SPECIAL MASTER: Is that it, then?

9 MR. ROBBINS: Before we go off the
10 record, I'd like to wish the folks on the Kansas
11 team and Stephanie and you, Your Honor, a very
12 happy holiday season, and I hope it's a joyous
13 one for you all and relaxing, I hope.

14 SPECIAL MASTER: Well, I think --

15 MR. DRAPER: Likewise.

16 SPECIAL MASTER: -- all of our
17 families will be happy we're adjourning at this
18 time and not resuming until after New Year's.

19 MR. ROBBINS: That's true.

20 SPECIAL MASTER: Best wishes to all
21 of you also.

22 MR. DRAPER: Thank you, Your Honor.

23 MR. ROBBINS: Thank you, Your Honor.

24 SPECIAL MASTER: We're adjourned
25 until the 13th.

26 (Whereupon, the proceedings were
27 adjourned at 3:54 p.m.)

28

♀

1 STATE OF CALIFORNIA)
 2 COUNTY OF LOS ANGELES) SS

3
 4
 5
 6
 7
 8
 9
 10
 11
 12
 13
 14
 15
 16
 17
 18
 19
 20
 21
 22
 23
 24
 25
 26
 27
 28

I, Stephanie Slone, Certified Shorthand Reporter No. 10609, declare:

That the foregoing transcript was taken before me at the time and place herein set forth and was taken down by me in shorthand and thereafter transcribed under my direction and supervision, and I hereby declare that the foregoing transcript is a true and correct transcript of my shorthand notes so taken.

I further declare that I am neither counsel for nor related to any party to said action, nor in any way interested in the outcome thereof.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

In witness whereof, I have hereunto subscribed my name this 2nd day of February 2003.

 Stephanie Slone, CSR No. 10609
 RPR No. 832719

wl i tTranscri pt265. TXT

♀