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## Trial Transcript, Vol. 51, Morning Session

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File 158  
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Case # 4993 .

File # 158

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IN THE DISTRICT COURT FOR THE FIFTH JUDICIAL DISTRICT  
WASHAKIE COUNTY, STATE OF WYOMING

IN RE: )  
 )  
THE GENERAL ADJUDICATION )  
OF RIGHTS TO USE WATER )  
IN THE BIG HORN RIVER ) Civil No. 4993  
SYSTEM AND ALL OTHER )  
SOURCES, STATE OF )  
WYOMING. )

FILED .....  
5/20 1981  
*Margaret V. Hampton* CLERK  
..... DEPUTY

VOLUME 51  
Morning Session  
Wednesday, May 6, 1981

**ORIGINAL**

APPEARANCES

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FOR THE STATE  
OF WYOMING:

HALL & EVANS  
2900 Energy Center One Building  
717 17th Street  
Denver, CO 80202  
BY: MR. MICHAEL D. WHITE and  
MR. JAMES MERRILL, Special  
Assistant Attorneys General  
and  
MR. SCOTT KROB

FOR THE UNITED STATES  
OF AMERICA:

MR. JAMES CLEAR and MR. JOSEPH MEMBRINO  
Attorneys at Law  
Land and Natural Resources Division  
Department of Justice  
P.O. Box 7415  
Benjamin Franklin Station  
Washington, DC 20044

and

MR. THOMAS ECHOHAWK  
Attorney at Law  
Land and Natural Resources Division  
Department of Justice  
1961 Stout Street  
Denver, CO 80294

FOR THE SHOSHONE  
TRIBE:

SONOSKY, CHAMBERS & SACHSE  
200 M. Street  
Washington, DC 20006  
BY: MR. HARRY SACHSE

CLERK TO THE  
SPECIAL MASTER:

MR. LEO SALAZAR  
Attorney at Law  
701 Rocky Mountain Plaza  
Cheyenne, WY 82001

1 THE SPECIAL MASTER: Please come to order.  
2 Mr. White.

3 MR. WHITE: Your Honor, pursuant to your  
4 order of last evening, I've collected some,  
5 but not all of what I believe to be copies of  
6 Dr. Mesghinna's program listing. I would like  
7 the permission of the Court to give these to  
8 The Court rather than the United States, and  
9 the reason for that is that some of our expert's  
10 work product, their comments and their thoughts  
11 about the program are listed on the exhibit.  
12 So I would hand those to the Court with the  
13 request that the Court destroy them.

14 THE SPECIAL MASTER: How many copies?

15 MR. WHITE: I think there are 12, Your  
16 Honor, let me check them.

17 (Brief pause.

18 MR. WHITE: Thirteen, Your Honor.

19 THE SPECIAL MASTER: Thirteen. And you  
20 do represent that to the best of your know-  
21 ledge these are all, you believe, that are  
22 out floating around?

23 MR. WHITE: No, I don't represent that.  
24 I know there are more, but I haven't been able  
25 to get ahold of them overnight.

1 THE SPECIAL MASTER: You will continue  
2 to look for them?

3 MR. WHITE: I'll continue to look for  
4 them, and I should tell the Court that I  
5 have one in my possession which I assume  
6 responsibility for the purposes of the  
7 litigation.

8 THE SPECIAL MASTER: All right.

9 MR. CLEAR: Your Honor, as you recall in  
10 that EM-2, there were two computer programs,  
11 one which preceded --

12 THE SPECIAL MASTER: Well, six pages all  
13 told, this is the two programs, isn't that  
14 it?

15 MR. CLEAR: As I recall this part starts  
16 Stetson Engineers and there was quite a bit  
17 before that and as I understand, that's the  
18 same computer program written in a different  
19 language. I think Dr. Mesghinna --

20 THE SPECIAL MASTER: Well, these are seven  
21 pages of documents that beginning with Stetson  
22 Engineers, 1282 AG, Wold.

23 THE WITNESS: Mesghinna, Woldezion  
24 Mesghinna.

25 THE SPECIAL MASTER: The next page, what

1 is the word, W-o --

2 MR. CLEAR: That's his first name, Your  
3 Honor.

4 THE SPECIAL MASTER: What?

5 THE WITNESS: That's my first name.

6 THE SPECIAL MASTER: Oh, that's your  
7 first name, of course.

8 MR. WHITE: Woldezion.

9 THE SPECIAL MASTER: Then there was one,  
10 two and then there are five numbered pages,  
11 that makes up the entire printout that we're  
12 concerned with.

13 MR. CLEAR: No, Your Honor. As I said,  
14 FM-2, which is the entire document we're  
15 talking about had two computer programs in it.  
16 The part preceeding the printout saying  
17 Stetson Engineers, 1282, AG, Wold Mesghinna --

18 THE SPECIAL MASTER: You mean the page  
19 that begins, "This program sets up and prints  
20 out the determinants of the growing season  
21 for various crops"?

22 MR. CLEAR: Yes, Your Honor. As I under-  
23 stand, this is the same program written in a  
24 different computer analysis.

25 THE SPECIAL MASTER: You totally failed to

1 discuss any of that yesterday.

2 MR. WHITE: Your Honor --

3 MR. CLEAR: I did.

4 THE SPECIAL MASTER: You did not. You  
5 went right to the middle of this --

6 MR. CLEAR: That's where --

7 THE SPECIAL MASTER: Handed it in and said  
8 let's begin with the two pages beginning with  
9 Stetson Engineers. There was no --

10 MR. CLEAR: No, Your Honor; no, Your  
11 Honor.

12 MR. WHITE: Your Honor, I think the  
13 record will reflect I asked Dr. Mesghinna  
14 whether those earlier programs were his and  
15 he said no. I got permission of the Court  
16 and consent of Counsel to substitute another  
17 FM-2, which did not include the work that  
18 Dr. Mesghinna was unable to identify, and I  
19 hereby tender to the Court that replacement  
20 FM-2 which excludes the previous information.  
21 It starts with the Stetson Engineering program  
22 that Dr. Mesghinna testified to.

23 MR. CLEAR: Yes, Your Honor. We excluded  
24 the two pages which were the printout, which  
25 we think is proper for cross-examination, but



1 the -- oral argument and order covers all the  
2 pages of that document FM-2 except those two  
3 or three pages which are the printout.

4 THE SPECIAL MASTER: I didn't think --  
5 I did not intend to do that when I signed it  
6 because it was not brought to my attention  
7 that that was what you wanted. I clearly  
8 understood you to tell me that what you wanted  
9 this order to apply to were the pages beginning  
10 with the names Mesghinna and the five pages  
11 thereafter.

12 MR. CLEAR: No, Your Honor.

13 THE SPECIAL MASTER: With the cropping  
14 season which was exactly the subject matter  
15 of what this was all about.

16 MR. CLEAR: Not the cropping season. We  
17 think that is proper to stay in evidence,  
18 that's the printout, we think that is proper  
19 and there was cross-examination on that.

20 THE SPECIAL MASTER: It's not proper to  
21 stay in their possession however.

22 MR. WHITE: Your Honor, --

23 THE SPECIAL MASTER: You wanted copies of  
24 it because of the argument you gave to support  
25 your order.

1 MR. WHITE: I might point out, Your  
2 Honor, you are exactly right. You'd already  
3 given us permission to replace the FM-2 that  
4 was tendered to include those portions of  
5 FM-2 that he was able to identify.

6 THE SPECIAL MASTER: Mr. Clear, if you  
7 want copies of that, WRIR FM-2, dealing with  
8 those pages prior to the Stetson Engineers,  
9 1282, Ag, pages, you will have to make  
10 different efforts to get them. They have no  
11 bearing whatsoever upon the matters before  
12 this Court yesterday afternoon. They were --

13 MR. CLEAR: Your Honor. --

14 THE SPECIAL MASTER: They were not referred  
15 to by the Witness, they were not discussed by  
16 the Witness. His testimony dealt purely with  
17 the translation for me and for the Court of  
18 the matters on Page 2 dealing with which crops  
19 in which months and how much rain for each one.

20 MR. CLEAR: Yes, Your Honor, and we think  
21 that's proper. The stuff I'm -- the portion  
22 beginning on Page 2 is proper, that's the  
23 printout, and we think that's proper and the  
24 order was drafted so that will remain in the  
25 possession of the State and there can be

1 cross-examination. It's the similar printout  
2 to what's in his report. What we are talking  
3 about is the program which preceeds that  
4 printout and the order as drafted covers all  
5 pages of Exhibit FM-2 except 13.59.38, Page 2,  
6 and the next two following pages which have  
7 been identified by Dr. Mesghinna as being a  
8 computer printout.

9 THE SPECIAL MASTER: Can you get those,  
10 Mr. White?

11 MR. WHITE: I don't know if I can.

12 THE SPECIAL MASTER: Can you try? The  
13 order states what Mr. Clear says it states.  
14 You shall immediately return to them all  
15 computer programs and computer listings  
16 contained in the document captioned State's  
17 Exhibit FM-2, and the Exhibit FM-2-- And  
18 the Exhibit, FM-2, we talked about splitting  
19 it in two, but we didn't get around to it.

20 MR. WHITE: Well, you gave me the  
21 permission to do it, and I just gave you the  
22 replacement FM-2.

23 THE SPECIAL MASTER: You gave me a portion  
24 of FM-2 that had relevance to what I thought  
25 was the entire document.

1 MR. WHITE: Your Honor, I asked Dr.  
2 Mesghinna about those earlier programs. He  
3 said no, they weren't his programs.

4 MR. CLEAR: Why don't we ask him again,  
5 Your Honor, and we can clarify it.

6 MR. WHITE: I'd like to point out this  
7 was delivered voluntarily by the United States.

8 THE SPECIAL MASTER: I know that.

9 MR. WHITE: It was looked at by their  
10 counsel before it was provided to me. This  
11 was sort of a big joke during the deposition,  
12 by Mr. Toedter. He told Mr. Billstein he  
13 could hardly wait until he gave me that big  
14 printout and watch my eyes fall out of my  
15 cheeks. This has just gone far enough.

16 MR. CLEAR: I'm not accusing --

17 THE SPECIAL MASTER: Let's just keep in  
18 mind the goal in this matter, and if the  
19 first half of the papers of FM-2 contain the  
20 unique proprietary rights of Stetson Engineers  
21 that is sought to be protected by my ruling  
22 yesterday in this matter, and by the order,  
23 then you'll have to comply with it too, Sandy,  
24 as best you possibly can.

25 MR. WHITE: Well, Your Honor, I will try

1 to comply with it, but if I can add, on  
2 Page 4539, for example, I specifically asked --  
3 of the transcript -- I specifically asked  
4 Dr. Mesghinna whether or not those earlier  
5 portions were his program and he says: That's  
6 not mine.

7 MR. CLEAR: Let's ask him again, Your  
8 Honor, maybe he didn't recognize --

9 THE SPECIAL MASTER: He was under oath  
10 when he answered. I'd like to think he was  
11 telling the truth.

12 MR. WHITE: If he can't recognize his own --

13 THE SPECIAL MASTER: You can ask him again  
14 if you want to.

15 MR. CLEAR: Well, Your Honor, I've been  
16 saying it's his program in a different  
17 language, and if there's some question about  
18 my veracity I would like to ask him that.

19 MR. WHITE: That's proper for redirect,  
20 Your Honor.

21 THE SPECIAL MASTER: Well, if you would  
22 be good enough to gather them up because  
23 obviously they're not, they have no bearing  
24 on the -- what you were cross-examining on  
25 yesterday, which was the cropping pattern and

1 .. growing seasons and planting order.

2 .. MR. WHITE: Let me explain what they  
3 do have bearing on, Your Honor.. Mr. Toedter  
4 .. is scheduled to return to testify again  
5 about a depletion analysis that he did.  
6 He provided those programs to me as part of  
7 a deposition on that depletion analysis. And  
8 I think I'm entitled to at least keep those  
9 until I have a chance to inquire about those  
10 programs as a part of his depletion analysis,  
11 because that's what he provided them to me for.

12 THE SPECIAL MASTER: Well, I will order  
13 you to gather them up and keep them and have  
14 them ready to turn over after you've done  
15 your cross-examination. You may keep one copy  
16 for yourself as you have the other, if you  
17 wish.

18 MR. WHITE: Thank you, Your Honor.

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1 MR. CLEAR: Your Honor, I again appreciate it  
2 if -- I think we do have the assurances of the  
3 State that the one copy that they will retain  
4 will not be made available to their experts.

5 THE SPECIAL MASTER: Yeah, I think they  
6 appreciate that.

7 MR. WHITE: Your Honor, I'm not going to  
8 make any copies of the one I retain.

9 THE SPECIAL MASTER: It is a proprietarial  
10 thing and it's been ordered that way.

11 All right. Let's proceed with the cross  
12 examination.

13 MR. MERRILL: Your Honor, before we resume  
14 the cross examination I wonder if I might bring  
15 up a couple of preliminary matters with the  
16 Court.

17 As you recall during the testimony of Mr.  
18 Robert Toedter a couple of weeks ago concerning  
19 drainage, Mr. Toedter testified in essence that  
20 at the time of Mr. Kersich's testimony concerning  
21 the future arable base Mr. Toedter lacked certain  
22 facts and data upon which to reach conclusions  
23 concerning drainage, and at that time the State  
24 of Wyoming made a motion to strike Mr. Kersich's  
25 direct testimony. You denied that motion at the

1 time but invited briefs on the point which, as you  
2 are aware, we filed last Friday of last week and  
3 served on counsel for the United States and the  
4 Tribes, and I would ask the Court at this time  
5 if the Court would entertain oral argument con-  
6 cerning the motion or what procedurally we should  
7 do about that pending motion?

8 THE SPECIAL MASTER: I would not want to  
9 entertain oral argument on the motion until the  
10 time has run. And I think, secondly, we have a  
11 limitation of cross examination time, and it  
12 would not only deny that from Mr. White, so can  
13 it keep and be argued Monday?

14 MR. MERRILL: It certainly could.

15 THE SPECIAL MASTER: All right. Why don't  
16 we set it first thing Monday.

17 We are virtually under a five day rule rather  
18 than a ten day rule for the rest of the trial  
19 really. Is that right?

20 MR. SALAZAR: Yes, sir.

21 THE SPECIAL MASTER: All right. The second  
22 thing, Mr. Merrill.

23 MR. MERRILL: The second is a motion that I  
24 would like to make now, and that is a motion in  
25 general form which we will make more specifically



1 later in these proceedings. The State of Wyoming  
2 moves for the Special Master in August of this  
3 year to visit certain portions of the Wind  
4 River Indian Reservation in person to examine the  
5 historic and future areas that are claimed by the  
6 United States to be arable as well as to examine  
7 the drainage conditions of some of the livestock  
8 grazing areas and some --

9 THE SPECIAL MASTER: I knew I was going to be  
10 denied an August vacation, but go ahead.

11 MR. MERRILL: Your Honor, what I'm simply  
12 proposing is a one or two day visit by helicopter  
13 of you and Mr. Salazar to view some of the areas  
14 which are in issue in this litigation. We will  
15 be more specific as to dates and times and specific  
16 areas to be visited in order to allow the United  
17 States and the Tribe to respond.

18 THE SPECIAL MASTER: I would welcome that  
19 trip and let's figure the exact dates of August  
20 and let's make sure that we have present one or  
21 two counsel for the Tribes, one or two United  
22 States attorneys and one or two or three Wyoming  
23 attorneys.

24 MR. ECHOHAWK: Your Honor, if possible, I'm  
25 not sure how we can -- perhaps it would be more

1 appropriate after Wyoming has put on their  
2 case after their evidence if you could see the  
3 lands so we can see what's in issue and what --

4 THE SPECIAL MASTER: I think Wyoming will  
5 have their case completed by the end of July.

6 MR. WHITE: That will be in the dead of  
7 winter.

8 THE SPECIAL MASTER: No, you didn't hear me.

9 MR. WHITE: I understand, Your Honor.

10 MR. SACHSE: Your Honor, on behalf of the  
11 Tribes we would of course welcome your viewing  
12 the reservation. I would like to see that not  
13 done in August though. I think Your Honor ruled  
14 last week that we would have a dead period in  
15 this trial from the last week of July --

16 THE SPECIAL MASTER: Mr. Merrill --

17 MR. SACHSE: -- until September, from the  
18 last week of July. That can be done, you know,  
19 in September.

20 THE SPECIAL MASTER: I know one man here is  
21 pretty concerned who is a family man, he has  
22 concern for family and that's you (directed to  
23 Mr. Merrill). This has been hard work on the  
24 part of all of us and it has been a strain on  
25 all of us and we were hoping that, you know,

1 August would be one month away from all of this.  
2 Just -- I think your predecessor in the Attorney  
3 General's office has done it the last two or three  
4 years anyway, and I would like to scratch August  
5 and take care of the family. My kids will be  
6 getting back in school. We will have finished up  
7 probably four weeks in July or three weeks of  
8 hard trial and I would like to do what you sug-  
9 gested and I -- in fact I should do what you're  
10 suggesting and I will, but maybe we can do it on  
11 Labor Day weekend of September.

12 MR. MERRILL: Your Honor, my only concern  
13 is I think it would be very helpful for the  
14 Court to do it while irrigation season is still  
15 operating up in that neck of the woods, and  
16 therefore I would suggest if we don't do it in  
17 August we do it as early in September as prac-  
18 ticable.

19 THE SPECIAL MASTER: We have seen diversion  
20 canal a couple of times during the irrigating  
21 season, we would be happy to see it again. If  
22 we are not going to meet Frontier Week of July,  
23 and I believe we --

24 MR. WHITE: Let's hope we don't. It was  
25 such a mess last year.

1 THE SPECIAL MASTER: It may be the time to  
2 slip up there, would be Frontier Week of July and --

3 MR. MERRILL: That would be a great idea.

4 THE SPECIAL MASTER: What are we talking  
5 about, three days at the most?

6 MR. MERRILL: At the very most, Your Honor.  
7 We would propose you visit by helicopter so the  
8 time factor --

9 THE SPECIAL MASTER: For the time, why don't  
10 you look at Frontier Week of the July period and  
11 pick the three day period that you and Mr. Echo-  
12 hawk could agree upon.

13 MR. MERRILL: All right.

14 THE SPECIAL MASTER: Let's check with Tribal  
15 officials and make sure everything is -- that we  
16 might be welcome to stop there. We can stop by  
17 wherever you want to maybe and whatever you two  
18 want to show me.

19 This will be a non-on-the-record type of  
20 visit. This is a visit to view and view only.  
21 We are not taking testimony nor produce nor intro-  
22 duce facts or anything of that kind.

23 MR. MERRILL: Thank you, Your Honor.

24 THE SPECIAL MASTER: All right, Mr. White.

25 MR. WHITE: Excuse me, Your Honor, I'd better

1 get set here with some water.

2 CROSS EXAMINATION (RESUMED)

3 BY MR. WHITE:

4 Q Dr. Mesghinna, I believe you indicated that an  
5 analysis of climate was really the first step in  
6 your work, is that correct?

7 A Yes, sir.

8 Q And your climatic investigation culminated in the  
9 development of your climatic zones?

10 A Yes, sir.

11 Q Isn't it true that the aerial extent of those  
12 climatic zones as well as the climatic data that  
13 is associated with each one of those zones consti-  
14 tutes the keystone of your entire effort?

15 A What the climatic zone map shows is areas of simi-  
16 lar crop evapotranspiration, and that's it.

17 Q So if your climatic zones change, the rest of  
18 your work would not change?

19 A Of course there will be slight changes as I have  
20 indicated in my testimony.

21 Q So a change in the climatic zones would effect the  
22 rest of your opinion, is that correct?

23 A You know, as I have said it again and again in my  
24 testimony all the things are interrelated so one  
25 effects the other.

mesghinna - cross - white

1 Q One of the elements of climatic data which you  
2 were concerned with was solar radiation, was it  
3 not?

4 A Yes.

5 Q And isn't it true that the solar radiation analy-  
6 sis which you did was based on data from the  
7 Lander airport?

8 A That's true.

9 Q And isn't it true that beginning in the early '70s  
10 the Lander airport no longer kept records of solar  
11 radiation?

12 A I never received -- to start with I have never  
13 received any solar radiation data from the Lander  
14 airport.

15 Q I didn't understand what you said.

16 THE SPECIAL MASTER: He said he had never  
17 received any radiation data from that airport  
18 station.

19 THE WITNESS: Never any solar radiation  
20 data from the Lander airport. I received per  
21 cent sunshine data, that is the ratio of the actual  
22 to possible sunshine.

23 Q (By Mr. White) Dr. Mesghinna, I hand you what has  
24 been marked as Plaintiff's Exhibit FM-5 and ask  
25 you if you can identify that?

mesghinna - cross - white

1 A Well, on the top of it is written Meteorological  
2 Data for the Current Year and on the middle part  
3 of the paper is written normals, means and ex-  
4 tremes.

5 Q Isn't that the meteorological data for 1971 for  
6 Hunt Field at Lander?

7 A Yeah, it's on the right-hand side; it says 1971.

8 Q And which of this data, the meteorological data or  
9 climatic data did you use with respect to solar  
10 radiation?

11 A Well, I haven't used this one.

12 Q You didn't use this?

13 A I have never seen this paper before.

14 Q You haven't?

15 A I haven't.

16 Q What was the source of your data then?

17 A I've indicated it in my deposition I have received  
18 the data of actual to possible days of possible  
19 sunshine from HKM which they received it from  
20 Lander airport.

21 Q So you did not use the actual airport records, the  
22 meteorological records, you relied on HKM to give  
23 you that information?

24 A They received it from Lander themselves.

25 mesghinna-cross-white

1 Q Do you know the form in which they received it, was  
2 it in the form of FM-5?

3 A No, it was not, it was in the form of -- Let me try  
4 to find it. I might have it with me.

5 (Brief pause.)

6 A It was in the form of on the top of it were the  
7 months of the year: January, February, March,  
8 April, May, June, July, August, September, October,  
9 November, December, and with the years going --

10 Q May I see it, please?

11 A It was not exactly this one that I received. This  
12 is the second one that I received, I guess. The  
13 original one that I received is not with me. I  
14 couldn't find it.

15 Q Dr. Mesghinna, you have worked with records similar  
16 to FM-5 before, haven't you?

17 A Yes.

18 Q And you are acquainted with this type of record,  
19 aren't you?

20 A Yes, I am.

21 Q Do you know where this type of record FM-5 might  
22 be found?

23 THE SPECIAL MASTER: I wonder if that question  
24 is appropriate. He said he's never seen this  
25 document before.

mesghinna-cross-white



1 MR. WHITE: I was asking him about this.  
2 general type of report, Your Honor.

3 MR. CLEAR: I think that's an ambiguous  
4 question, Your Honor.

5 THE SPECIAL MASTER: Well, --

6 MR. WHITE: I think the witness can answer,  
7 Your Honor, he is a competent engineer --

8 A It must be from NOAA.

9 Q (By Mr. White) All right. Do you know how the  
10 percentage of possible sunshine which HKM provided  
11 to you and which you kindly furnished me was  
12 derived?

13 A Well, this is the measure that they have -- that  
14 it has been measured in Lander airport and they  
15 have received it from there, I believe.

16 Q Who measured it at the Lander airport, if you  
17 know?

18 A I don't know.

19 Q Do you know what agency measured it at the Lander  
20 airport?

21 A That's not of much interest to me. What I need is  
22 the data itself.

23 Q What you're interested in -- I'm sorry I didn't  
24 hear the last.

25 mesghinna-cross-white

1 A I'm interested in the data itself.

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25 mesghinna-cross-white

1 Q (By Mr. White) Did you rely on this data,  
2 percentage of possible sunshine in developing  
3 your analysis?

4 A Sure I relied. However, there might be a slight  
5 difference or not between this one and the one  
6 that I have used, which I received originally.

7 THE SPECIAL MASTER: When you say  
8 "Difference between this one", you mean  
9 difference between FM-5 and the one you used  
10 or the difference between the long one which  
11 Mr. White had that you gave him just now?

12 THE WITNESS: Yes. The difference between  
13 this one and the one I used in my analysis.  
14 I received this one recently.

15 Q (By Mr. White) Dr. Mesghinna, I hand you the  
16 document which you gave me, the percentage of  
17 possible sunshine, Lander Municipal Airport,  
18 which has now been marked Plaintiff's Exhibit  
19 FM-5-A, and with leave of the Court and Counsel,  
20 I will make a copy of that, put a regular  
21 sticker on it and return the original to Dr.  
22 Mesghinna so his original isn't fouled up.

23 THE SPECIAL MASTER: Counsel agree?

24 MR. CLEAR: Yes, Your Honor.

25 mesghinna-cross-white

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THE SPECIAL MASTER: All right, that's fine.

Q (By Mr. White) Is it true then with -- that with some minor variations, the values which you used which were provided to you by HKM are displayed on FM-5-A?

THE SPECIAL MASTER: I wonder about the admissability of this document. It's like the one he used, he said.

MR. WHITE: Well --

THE SPECIAL MASTER: I wonder if it has any value.

MR. WHITE: My problem is I don't want to get into a screaming match upon the facts and data which he relied upon and if he says this is close enough, then I wasn't going to ask for the production of actual data.

THE SPECIAL MASTER: Is that document close enough to what you relied upon?

THE WITNESS: It must be close enough, but I don't exactly remember the dates. One thing I remember is that it doesn't go to 1979.

Q (By Mr. White) So you used 1979 values?

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1 A I didn't use 1979.

2 Q You did not use?

3 A I did not use 1979. I think I have used up  
4 to 1975, I am not sure.

5 Q Let me make sure I understand, that you do not  
6 know who collected the basic data which is  
7 analyzed on the tabulation which now is marked  
8 as Plaintiff's Exhibit FM-5-A?

9 A It must be -- it must have been collected by  
10 some kind of agency that collects meteorological  
11 data. It says Lander Municipal Airport.

12 Q Isn't that Hunt Field?

13 A Must be, I don't know.

14 MR. WHITE: Your Honor, at this time we  
15 would offer FM-5-A for the purpose of showing  
16 the type of information or facts and data of  
17 relied upon by Dr. Mesghinna.

18 THE SPECIAL MASTER: I thought you were  
19 going to make a copy and then offer it after  
20 the break?

21 MR. WHITE: I will, Your Honor, when we  
22 have a break I will make these copies.

23 MR. CLEAR: As I understand it though,  
24 this is not in fact the final percentage of

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1 sunshine sheets, this is just a sample?

2 THE WITNESS: This is just a sample.

3 MR. CLEAR: Or initial copy?

4 THE WITNESS: Yeah, I received this one,  
5 I believe very recently. The one I used for  
6 my analysis is not with me.

7 THE SPECIAL MASTER: If the purpose of  
8 the cross-examination is to put into doubt  
9 the accuracy of the -- or validity of his  
10 findings thereon, ought not we have the actual  
11 document he relied upon?

12 MR. WHITE: You're right, you're absolutely  
13 right. I was trying to avoid the necessity  
14 for getting that document, but based on Dr.  
15 Mesghinna's indication as to sample, I think  
16 I'm going to have to ask for the production of  
17 the original document then.

18 THE WITNESS: I have given you my  
19 percentage of sunshine data before this time  
20 in my deposition.

21 MR. WHITE: Excuse me for just a minute  
22 and let me check.

23 (Brief pause.)

24 MR. WHITE: Your Honor, Dr. Mesghinna is  
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1 right. We have that, we don't have it in  
2 the Courtroom. I will withdraw my offer of  
3 5-A for the moment until we can see if --  
4 if we have the original document. We may  
5 not have the original document, we may just  
6 have some printout of that data.

7 Let me ask a few more questions about  
8 the original document.

9 Q (By Mr. White) Is it true, Dr. Mesghinna,  
10 that with respect to --

11 THE SPECIAL MASTER: I should get you a  
12 stand for that and I think I know how to do  
13 it with Judge Brimmer's, but it will probably  
14 cause you some troubles.

15 (Off-the-record discussion.)

16 Q (By Mr. White) Let's go back on the record.  
17 Dr. Mesghinna, with respect to the actual  
18 data which you did use for percentage of  
19 possible sunshine, is it true that first it  
20 was provided to you by HKM?

21 A Yes, it was provided to me by HKM.

22 Q Is it also true that you do not know the person  
23 or agency who collected the basic data?

24 THE SPECIAL MASTER: I thought he answered  
25 mesghinna-cross-white

1 that and he said that it is true.

2 MR. WHITE: I was asking him about the  
3 original data now rather than 5-A.

4 THE WITNESS: Let me say this. I have  
5 used such kind of data before this time, not  
6 only on this but in other places. It is  
7 common to collect data at airports. One thing  
8 that I would like to cite is for example,  
9 Salt Lake City Airport, they collect such  
10 data and we have used for our analysis. We  
11 don't have to question that because those  
12 datas are accurate and they have to be taken  
13 very carefully because they mean a lot to many  
14 things. So, it's no reason for me to question  
15 such a data.

16 In fact, the very fact that I found such  
17 a data was a very lucky on our side because  
18 it's extremely hard to find solar radiation  
19 data.

20 Q With respect to the data which you used, however,  
21 isn't it true that you do not know either the  
22 person or the agency which collected the  
23 basic data?

24 A I can't really recall at this time.

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1 Q Do you know whether or not the basic data  
2 was expressed in percentage or whether certain  
3 mathematical differences were made or operations  
4 were made to come up with the percentages?

5 THE SPECIAL MASTER: He has testified that  
6 that is not a concern of his. He accepted the  
7 research figures from the airport people and  
8 other predecessors and is accurate governmental  
9 statistics and scientific computed data from  
10 the station and he stated that.

11 MR. WHITE: I think what he stated is  
12 that he got this information from HKM.

13 THE WITNESS: Let me answer it, sir.

14 THE SPECIAL MASTER: He's talking about  
15 the airport, gathering facilities at the  
16 airport.

17 THE WITNESS: Let me answer this; it's  
18 an easy question. The percentage sunshine  
19 data, as it says, percentage sunshine is the  
20 ratio of actual sunshine to possible sunshine,  
21 meaning bright sunshine, bright sunshine. So  
22 it should be easier if percentage, if it is  
23 a full number it is percentage, if it has a  
24 dot in front of the number then it is just a

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1 ratio, a fraction. So it's either in fraction  
2 or it's either in percentage. So if you see  
3 a full number like 67, 76 and so on, so that  
4 is in percentage.

5 Q (By Mr. White) I understand that these values  
6 are in percentage on Exhibit 5-A, but what  
7 I'm asking you is whether or not HKM performed  
8 the percentage calculations or whether someone  
9 else performed the percentage calculations?

10 THE SPECIAL MASTER: If you know.

11 THE WITNESS: I don't know who calculated  
12 the percentage, but I don't think there is  
13 any sophisticated calculation here, it's a  
14 straight forward matter. It's just a ratio.

15 Q (By Mr. White) So you got the information  
16 from HKM?

17 THE SPECIAL MASTER: He answered that  
18 twice, he's answered that twice, Mr. White.  
19 He said "Yes" both times. He needn't answer  
20 it a third time unless you're dying to.

21 Q (By Mr. White) Dr. Mesghinna, why did you  
22 not use the meteorological data provided  
23 by NOAA rather than only the information which  
24 HKM provided you in the form similar to

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1 FM-5-A?

2 A Well, my understanding was this data is  
3 summarized yearly and monthly basis and  
4 why would I go through years of looking into  
5 data if I have a summarized data.

6 Q Did you perform any check to see whether or  
7 not the values represented on FM-5-A or the  
8 original which you received, accurately  
9 represented the values shown in the climatic  
10 data or the meterological data by NOAA  
11 such as FM-5?

12 A I said that I haven't seen that paper, FM-5  
13 before this time.

14 Q Did you perform any check to determine the  
15 accuracy of these numbers?

16 A Well, I have never measured any percentage of  
17 possible sunshine.

18 Q In addition to not making any measurements,  
19 did you check any records to evaluate the  
20 accuracy of the information you received from  
21 HKM?

22 A What I am saying is I have used those datas  
23 and I relied on those datas.

24 Q On FM-5, Dr. Mesghinna, isn't it true that the  
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1 last column, farthest column to the right  
2 is the NOAA data for solar radiation?

3 MR. CLEAR: Objection, Your Honor, he  
4 says he has not seen FM-5 before.

5 THE SPECIAL MASTER: Well, he can answer  
6 what's on his last column. Of course he  
7 hasn't seen it or used it and is irrelevant,  
8 but we'll let it be answered. And I don't  
9 know what else I can do, I don't want to  
10 keep overruling Mr. White's questions. Go  
11 ahead and answer it if you can.

12 THE WITNESS: Yes, average solar  
13 radiation is shown on the last column in  
14 Lander.

15 Q (By Mr. White) Isn't it true, Dr. Mesghinna,  
16 that you are familiar with the type of format  
17 and the type of information contained in the  
18 NOAA records such as FM-5? You may not have  
19 seen FM-5, but you're familiar with that type  
20 and source of information, aren't you?

21 A Well, there are many types, it's very hard  
22 to remember which of which, you know.

23 Q I hand you what's been marked for identification  
24 as FM-6, which is the same information

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1 but for the following year, 1972 in Lander,  
2 and ask you if it isn't true that solar  
3 radiation was not recorded in 1972?

4 A Yes, it is not recorded in 1972.

5 Q And isn't it true that the last footnote at  
6 the bottom of the page in the right-hand  
7 column shown by a double star or asterisk  
8 says: That the National Weather Service  
9 considers the accuracy of solar radiation data  
10 questionable, therefore publication is  
11 suspended pending determination of corrected  
12 values?

13 A Yes, I see that.

14 Q Were you familiar with the conclusion by the  
15 Weather Service that solar radiation values  
16 are suspect or questionable?

17 MR. CLEAR: Your Honor, again he testified  
18 he did not use this solar radiation data. If  
19 he didn't use NOAA's solar radiation data and  
20 NOAA says our radiation data is questionable,  
21 what's that have to do with anything?

22 THE SPECIAL MASTER: Objection's overruled.  
23 Are you familiar with the fact that they quit  
24 using those compilations in '72, yea or no?

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1 THE WITNESS: No.

2 THE SPECIAL MASTER: All right. Next  
3 question.

4 Q (By Mr. White) Upon what did you base your  
5 conclusion that you could develop solar  
6 radiation value which was -- or values which  
7 was accurate -- or were accurate, excuse me?

8 A Okay. Let me tell you one thing about solar  
9 radiation. I don't think there is anyone in  
10 the world who has complete accurate solar  
11 radiation data, not even in research I can make  
12 this statement.

13 So the researchers, scientists are not  
14 certain up to this point, and even if you  
15 measure it, the measuring instruments have  
16 shown some tendencies of not measuring good  
17 or well all the time. So the only source  
18 available up to now, if you have a solar --  
19 solar radiation measured at the site, try to  
20 use it.

21 If it is long-range, say many, many years,  
22 but that kind of data, we don't have it in  
23 the Reservation. So what method we have, how  
24 do we calculate our evapotranspiration because

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1 this solar radiation is needed, it's an input  
2 in the computation of evapotranspiration. So  
3 what we did is we used all the available  
4 equations for determining solar radiation so  
5 that we'll be sure that we are doing it to  
6 the most exact we can.

7 We did not use only one equation. We  
8 would have used one equation, but we want to  
9 be certain enough that we are not missing the  
10 solar radiation, so I used four different  
11 equations and I determined the average of the  
12 four different equations from four different  
13 researchers. So that's how I came to the  
14 determination of solar radiation.

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1 Q (By Mr. White) Isn't it true, Dr. Mesghinna --

2 THE SPECIAL MASTER: Mr. White, I've got to  
3 let you know that I think you have made a thorough  
4 and complete probe of the solar radiation differences  
5 between his testimony and that which you seek to  
6 prove regarding the fact that it was held by NOAA  
7 to be a subject matter that is inaccurate and,  
8 therefore, they questioned it and suspended publi-  
9 cation pending determination of more corrected values.  
10 To continue your probe, in my opinion, any more you  
11 are jeopardizing your time for the remaining subject  
12 matter areas you have for cross-examination.

13 MR. WHITE: I have two more questions.

14 THE SPECIAL MASTER: You be the judge, however,  
15 of that.

16 MR. WHITE: I have two more questions, Your  
17 Honor.

18 Q (By Mr. White) Isn't it true, Dr. Mesghinna, that  
19 there are methods for determining evapotranspiration  
20 which do not require the use of solar radiation?

21 A Yes, there are.

22 Q Isn't it true that you applied the values for solar  
23 radiation which you developed based on the HKM data  
24 from Lander to all the climatic zones, not just the

25 mesghinna - cross - white



1 Lander climatic zone?

2 A. Yeah. Because -- I can answer that because solar  
3 radiation, as I have indicated it before, it's hard  
4 to get it in any other place, so we have sort of  
5 averaged solar radiation for all of the climatic  
6 stations.

7 Q. Your calculations of solar radiation were based on  
8 percentage of available sunshine or days of sunshine,  
9 is that correct?

10 A. Yes.

11 Q. And isn't it true then that your assumption is that  
12 the same percentage applies throughout the Reserva-  
13 tion?

14 A. Yes.

15 Q. Dr. Mesghinna --

16 MR. WHITE: Your Honor, could I shut that door?  
17 I'm having trouble hearing mostly because of traffic  
18 in the hallway.

19 THE SPECIAL MASTER: All right.

20 Q. (By Mr. White) Dr. Mesghinna, in developing your  
21 units which are described in your report as well as  
22 in Exhibits C-249 through 255, you must have spent  
23 substantial time in the field, isn't that correct?

24 A. Well, first of all, the fieldwork is to be done by  
25 mesghinna - cross - white

1 HKM. They have done what you call the soil classifi-  
2 cation, you know, all the things that we have dis-  
3 cussed before me here. What we did is, based on  
4 their data, we designed our system, but we have also  
5 been there and we have checked, as I have indicated  
6 in my direct testimony.

7 Q Okay, roughly how many days did you spend in the  
8 South Crowheart area?

9 A Well, I can't really remember how many days I spent  
10 in the South Crowheart area.

11 Q Do you recall how many days you spent in the Arapahoe  
12 area or unit?

13 A Well, let's say after we put our systems there to see  
14 whether we are in the right location for, you know --  
15 to see with the map and the grounds there, let's say  
16 I spent a day in South -- in Arapahoe or three quarters  
17 of a day. I wouldn't exactly remember.

18 Q Isn't it true that your field in some instances con-  
19 tained people's houses?

20 A Well, if it is classified as irrigable land, we might  
21 have missed it. You know, it is easy to miss a small  
22 spot if it is not exactly shown on the maps or -- it  
23 is a possibility, there is no question about it.

24 Q When you did encounter someone's house in one of your

25 mesghinna - cross - white

1 preliminary field layouts, did you attempt to exclude  
2 it?

3 A. If we see a house?

4 Q. Uh-huh.

5 A. Yeah, we try to eliminate -- I mean, try to exclude  
6 it.

7 Q. And what about cemeteries, did you try to exclude  
8 those?

9 A. Well, I don't recall cemeteries in an area --

10 Q. Isn't it true that on your Plate 7 for the Big Horn  
11 Flats Unit, which was marked as U.S. Exhibit C-252,  
12 which is also before you here as Plaintiff's Exhibit  
13 FM-1252-A, that there is a cemetery right on the  
14 boundary between Fields 9 and 10, the Bawling Bull  
15 Cemetery -- or maybe Wallowing Bull, I can't read it  
16 very clearly.

17 Do you want to look on your quad sheet?

18 A. No, this is the only one that I have.

19 Yes, as I can see it from Plate No. 7, there  
20 is a small area that contains cemetery.

21 Q. In the costs which you developed for your project,  
22 did you include any costs for removing houses or  
23 cemeteries or gravel pits or dumps or things like  
24 that that might be located in your fields?

25 mesghinna - cross - white

1 A. To start with, these areas are newly classified  
2 lands, they are future lands. And we have assumed  
3 5 percent for farmsteads, cemeteries, roads and  
4 other things, and that's what it is. So we have,  
5 in a sense, we have excluded 5 percent. If you  
6 see in our claim for water -- in our claim of  
7 water our acreages are reduced by 5 percent, and  
8 that includes all these things.

9 Q. Those are the acre-foot values at the bottom of  
10 Page 42 in your report?

11 A. Yes.

12 Q. They have been reduced by 5 percent?

13 A. The acreages have been reduced. For example, if  
14 we see North Crowheart, we have, I believe, 38,773  
15 acres net acreage. We have designed for 40,814  
16 acres, so we have reduced it by 5 percent to take  
17 care of all of these problems.

18 Q. What happens when you have a water tank or a house  
19 or a cemetery or a dump or a gravel pit right in the  
20 middle of one of your fields, doesn't that affect  
21 the operation of that field as well as the costs  
22 associated with it?

23 A. I think I know which area you're talking about. In  
24 Arapahoe there is a dump area and we think that thing  
25 mesghinna - cross - white

1 can be cleaned quite easily and the sprinklers or  
2 the side rolls or hand-move sprinklers can make it  
3 quite easily through those areas.

4 Q How would you deal with the house and farmstead if  
5 you know it exists that's located on Field 2-10  
6 South Crowheart?

7 A. If we know it exactly -- if it exists there, pro-  
8 bably there we would have bypassed it, but we are  
9 making allowances for it. We are decreasing our  
10 acreages by 5 percent; that is a big, big, what you  
11 call, area. I mean, if you have in North Crowheart  
12 alone, if we have 40,814 acres and if we go down to  
13 38,773 acres, we are excluding over, how many, 1,000,  
14 over 1,000 acres just for this matter. So it's  
15 really taken care already. But all our costs are  
16 based on the gross irrigable lands, not on the net  
17 irrigable lands. Our claim of water is on reduced  
18 acreages.

19 Q Have you made investigation to determine whether or  
20 not the 5 percent value is sufficient?

21 A. Yes, we have made a great deal of research on this.

22 Q What have you done within your project areas or  
23 within your units to determine that 5 percent is  
24 sufficient?

25 mesghinna - cross - white

1 A. Well, from our experience, from the company's ex-  
2 perience, the reduction goes from about 2 -- even  
3 we have seen 2 percent reduction, from about 2 to  
4 5, or even 6 percent. One thing we have to say is in  
5 here we have been, in fact, very conservative. The  
6 reason why I am saying this is -- the reason why I'm  
7 saying this is these areas are undeveloped as such,  
8 and one can pre-plan to put the housing and farm-  
9 steads outside of the irrigable areas and reduce to  
10 even 2 percent or 3 percent. So we are on the safe  
11 side. We have taken some studies also. In the Mid-  
12 vale Irrigation District, we have taken some areas  
13 and which have, you know, farmsteads and roads and  
14 so on. We came up with about 4 percent, that is  
15 our estimation. But one thing that we have to say  
16 there is they are not sprinkler irrigation like us  
17 - sprinklers - most of the things are hidden.

18 THE SPECIAL MASTER: By what?

19 THE WITNESS: You don't have canals, you know,  
20 which bisect areas that reduce the acreages and so  
21 on, like gravity irrigation. So really on this 5  
22 percent we are highly on the conservative side and  
23 it takes care of all the problems that you mentioned  
24 before like cemeteries and so on.

25 mesghinna - cross - white

1 Q (By Mr. White) Well, you have indicated that this  
2 land was considered to be undeveloped, is that cor-  
3 rect?

4 A Yeah, these future lands are areas that are newly  
5 classified lands.

6 Q Well, isn't it true that your units are liberally  
7 sprinkled with individual allotments?

8 A Could you say that question again? I'm not sure --

9 Q Well, do you know what an individual allotment is?  
10 An allotment to an individual Indian?

11 A To -- Yeah, you mean there are areas that are irri-  
12 gated within two allotments --

13 Q No, I'm not talking about irrigation for the moment,  
14 I'm just talking about the status of the land being  
15 contained in the allotments --

16 MR. SACHSE: Your Honor, I object to this line  
17 of questioning on the same grounds and objection as  
18 I made yesterday. Dr. Mesghinna is not an expert on  
19 land tenure in Indian reservations.

20 THE SPECIAL MASTER: I'll sustain the objection,  
21 but I think Mr. White can frame his question by  
22 merely asking within the units are there areas where  
23 there's presently some people living and some irriga-  
24 tion will be taking place, some pasturage --

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1 MR. SACHSE: That's a quite different question.

2 THE SPECIAL MASTER: I know it is.

3 MR. SACHSE: When he says different things  
4 happening just means who owns it.

5 MR. WHITE: Well, let me --

6 THE SPECIAL MASTER: Did you hear my framing  
7 of the question? I'll let you repeat it.

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1 Q (By Mr. White): Of your knowledge, are there --  
2 aren't there, in fact, areas where people  
3 are living where people are conducting  
4 businesses, where there are cemeteries, where  
5 there are dumps, where there are gravel pits  
6 and other types of cultural, manmade cultural  
7 features within your units?

8 A Well, these units, the areas that we have put  
9 our system are classified as irrigable lands --  
10 arable lands, sorry, okay. And we base our  
11 work from there. And if anything comes, if  
12 there are houses as you said, or there are  
13 dumps and the dumps that I have mentioned it  
14 before, that I have seen there and checked it,  
15 we have made allowances for this and I just  
16 can't see what the point we are in this.

17 Q So once again you relied on the information  
18 given to you by HKM, isn't that correct?

19 A I have relied on it and I have also seen it  
20 myself as much as I can, you know, but it  
21 doesn't mean that I have seen it as what HKM  
22 has seen it, you know.

23 I think you can understand what kind of  
24 works, what kind of assignments we have.

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1 Q I understand that, I want to make sure the  
2 Court does.

3 In developing -- excuse me, in working  
4 up your costs, particularly your operation  
5 and management costs, you must have assumed  
6 that those persons in possession of the land  
7 covered by your fields would cooperate, isn't  
8 that true?

9 A The areas that we have designed are trust lands,  
10 and we have those units there, and of course,  
11 everyone will cooperate -- you have to assume  
12 that belongs to -- that is a trust land, belongs  
13 to the Tribe and the management will be in  
14 cooperation. And I have indicated and I have  
15 given it to you, my -- the professional duty  
16 of different persons who are going to work in  
17 the operation and maintenance, and you have the  
18 list, number of people and so on for the  
19 matter.

20 Q Did you assume the individual allottees of  
21 lands within your projects would cooperate  
22 in the operation of the project when you  
23 developed your cost?

24 MR. CLEAR: I think the question is  
25 mesghinna-cross-white

1 irrelevant.

2 THE SPECIAL MASTER: I'll sustain the  
3 objection.

4 MR. WHITE: On what basis, Your Honor?

5 THE SPECIAL MASTER: It has nothing to  
6 do with his professional work.

7 Q (By Mr. White) Did you make any assumptions  
8 with respect to the cooperation of allottees?

9 THE SPECIAL MASTER: He answered that  
10 question when he said he was doing professional  
11 work for the Tribes, that he presumes they  
12 have jurisdiction over their trust land, and  
13 he presumed the cooperation forthcoming, and  
14 he just answered it just a moment ago.

15 MR. WHITE: I'd like to inquire into  
16 that, Your Honor, because you may recall that  
17 when the subject of the Wyoming's visit to  
18 the Reservation came up, the United States and  
19 the Tribes quite clearly said that they could  
20 not provide consent for the State to even go  
21 on the lands held by individual allottees. A  
22 consent has to be obtained from those allottees  
23 themselves, and I'd like to make it absolutely  
24 clear that contrary to the position announced

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1 by the United States and the Tribes, Dr.  
2 Mesghinna has assumed that that consent and  
3 cooperation would be automatically forth-  
4 coming.

5 MR. CLEAR: Your Honor, one thing, the  
6 question here is what are the practicably  
7 irrigable acres and what are the water rights  
8 for those acres. And an allottee, if he has  
9 practicably irrigable acres has a water right  
10 whether he cooperates or not. He does not  
11 lose a water right if he does not cooperate,  
12 and that's all we're talking about here is if  
13 these acres are practicably irrigable. They  
14 have a water right whether the allottee, he  
15 has that water right whether he cooperates  
16 with any project that's ever built or not,  
17 and he still has the water right and we're  
18 measuring that water right.

19 THE SPECIAL MASTER: Generally what you  
20 say is true, but the mere fact that an allottee  
21 is there doesn't preclude that he is  
22 automatically entitled to a water right.

23 MR. CLEAR: That's what we're trying to  
24 measure. There are allottees that we are not  
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1 assuming water for.

2 THE SPECIAL MASTER: I generally approve of  
3 what he said.

4 MR. WHITE: I'd like to say --

5 THE SPECIAL MASTER: Make your offer.

6 MR. WHITE: -- that we're here to determine  
7 p.i.a. or practicably irrigable acreage, but as  
8 we've heard time and time again, p.i.a. is not only  
9 a question of arable lands base, but engineering  
10 and economics and also unless there is cooperation  
11 shown by the people in possession of the lands,  
12 what is practicably irrigable is an economic matter,  
13 is open to dispute.

14 THE SPECIAL MASTER: I fail to follow the  
15 logic of your statement, Mr. White. I simply  
16 fail to follow the logic of that statement, whether  
17 or not practicable or economic, whether it's  
18 an allottee's land or someone else's, it has  
19 nothing to do with the water right. It involves  
20 the Indians, and we welcome them too and hope  
21 they'll face it in a few years.

22 MR. WHITE: If I happen to be an allottee,  
23 Your Honor, and Dr. Mesghinna's project comes  
24 in and I say that I want nothing of it

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1 because there may well be allottees out there  
2 that say that, then all of the costs and all  
3 of the values which are used by Dr. Mesghinna  
4 as well as Mr. Dornbusch, the economist. --

5 THE SPECIAL MASTER: When you're talking  
6 about allottees, you're talking about Indians  
7 only, are you?

8 MR. WHITE: Yes, sir.

9 THE SPECIAL MASTER: All right. I will  
10 sustain the objection.

11 MR. WHITE: Your Honor, I would make an  
12 offer of proof at this time that if allowed  
13 to pursue the question of existence of  
14 allottees within the units planned by Dr.  
15 Mesghinna. --

16 THE SPECIAL MASTER: All the units?

17 MR. WHITE: Yes, sir, I would show by  
18 comparison of his Exhibits, C-249 through  
19 255 with the Exhibit M-1, all of which have  
20 already been admitted for the truth of their  
21 contents, that the following fields in the  
22 indicated units are contained within Indian  
23 allotments; Big Horn Flats -- and these are  
24 as numbered on Exhibit FM-1249 through 1255.

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1 Big Horn Flats Field No. 7-6, -7, -10, -12,  
2 -11 and -8.

3 THE SPECIAL MASTER: Is the acreage given  
4 of the allottee's land?

5 MR. WHITE: I don't know the acreage out  
6 of those individual tracts. We'll get to that  
7 later in the cross-examination, Your Honor.

8 THE SPECIAL MASTER: Why don't we get to  
9 it now, it's something that's squarely before  
10 us.

11 MR. WHITE: Well, I can't ask him about  
12 it, it's an offer of proof.

13 THE SPECIAL MASTER: You're making an offer  
14 of proof, but I thought you knew the acreage.

15 MR. WHITE: No, I don't. I'm going to  
16 ask him about the acreage later on. I thought  
17 I'd just get the offer of proof out of the  
18 way.

19 Also in Big Horn Flats on Plate 6, 1B-A,  
20 1B-9, 1B-10, 1B-11.

21 South Crowheart, this is all Plate 8;  
22 1-4, 2-10, -2-12, 3-15, 2-11, 2-13, 2-14, 2-17;  
23 4-1, 5-2, 7-5, 7-6, 9-10.

24 H-18, H-19, H-20; 12-20-A, 12-22, 14-26,  
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1 15-28, 15-30, 15-31, 15-32, -33, 16, -36, -35,  
2 -36, and 16-39.

3 And Arapahoe Unit, 1-1, -6, -7, 4-17,  
4 5-19, -20, 6-1, -2, -3, 7-6, -7, -8, -9, -10 --  
5 excuse me, should be 8-10, -11, -12, -13, -14;  
6 9-16, -17, -18, -19, -20, -22, -23, -24,  
7 -25, -26, -28.

8 Riverton East Unit, Fields 10-1, -2, -3, -4,  
9 -5, -6, -7, -14, -15, -28, -29, -30, -31, -39,  
10 -40, -40 and 41.

11 MR. SACHSE: Your Honor, at this time I'd  
12 like to request the Court, for completeness,  
13 to ask Mr. White to present the data on the  
14 amount of allotted land in the existing and  
15 operating Federal Indian Project which operates  
16 over allotted lands and lands owned by the  
17 Tribes. If this is relevant at all as to  
18 where the land is allotted, it certainly would  
19 have been relevant there too.

20 THE SPECIAL MASTER: I'm holding that  
21 it's irrelevant.

22 MR. SACHSE: Thank you, Your Honor.

23 MR. WHITE: It's an offer of proof, Your  
24 Honor. I'm not going to do Mr. Sachse's work

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1 for him because that is part of his work.

2 Q (By Mr. White) Dr. Mesghinna, you used the  
3 Jensen-Haise method; is that correct, for  
4 estimating evapotranspiration?

5 A Yes, sir.

6 Q And is that the method that's set out and what's  
7 generally referred to as the orange consumptive  
8 use manual?

9 A It's the one that I have it in my report.

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1 Q (By Mr. White) Okay, is it also set out and des-  
2 cribed inconsumptive use of water and irrigation  
3 water requirements, American Society of Civil  
4 Engineers?

5 A I don't know whether it is exactly the same way  
6 that I have it in my report. It could be in here.  
7 I haven't checked it in here.

8 Q Isn't it true that the consumptive use methodologies  
9 contained in the ASCE Manual are those which are  
10 generally accepted by people of your expertise?

11 A Consumptive use equations -- different people have  
12 different preferences, so I can't say who pre--  
13 you know --

14 THE SPECIAL MASTER: I presume that you're  
15 not familiar with what the authorities are that your  
16 competitors use and can testify and answer that ques-  
17 tion, is that probably true?

18 THE WITNESS: It is probably true. Really, I  
19 mean, this orange book, it has several equations  
20 there. They have some summary equations.

21 Q (By Mr. White) They do list limitations for their  
22 use, isn't that correct?

23 A Oh, yeah.

24 THE SPECIAL MASTER: Gentlemen, we've been at  
25 mesghinna - cross - white

1 it for an hour. Shall we take a ten-minute break?

2 MR. WHITE: Fine, Your Honor.

3 THE SPECIAL MASTER: Okay.

4 (Recess, 10:27 a.m. to 10:40 a.m.)

5 THE SPECIAL MASTER: I think -- Can we begin  
6 without Tom Echohawk?

7 MR. CLEAR: Yes, Your Honor.

8 THE SPECIAL MASTER: All right, let's resume,  
9 Mr. White.

10 Before you ask -- May I ask the witness: On  
11 what page of 245 are the formulas contained that  
12 you referred to just before the recess?

13 THE WITNESS: Okay.

14 MR. WHITE: The Jensen-Haise evapotranspira-  
15 tion.

16 THE WITNESS: Okay, it's on Page 3.

17 THE SPECIAL MASTER: Page?

18 THE WITNESS: Three.

19 THE SPECIAL MASTER: Three. Thank you.

20 Q (By Mr. White) Dr. Mesghinna, do you know whether  
21 or not that's the same formula that's described in  
22 the ASCE orange book, Consumptive Use of Water and  
23 Irrigation Water Requirements?

24 A Well, I didn't check that formula there, but I'm

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1 sure they will be the same.

2 Q Okay. Isn't it true that the Jensen-Haise equation,  
3 as is true with the other equation for the determina-  
4 tion of consumptive use, is a method of estimating  
5 consumptive use?

6 A Yes, it is a method of estimating.

7 Q So that the values of potential evapotranspiration  
8 set forth in Table 1 on Page 4 of your report are  
9 estimates, is that correct?

10 A Yes, they are estimates.

11 Q Isn't it true that the only way to make a direct  
12 measurement of evapotranspiration is with a lysimeter?

13 A I wouldn't say that. There are other methods, too,  
14 but lysimeter is a measure of direct measurement of  
15 evapotranspiration.

16 THE SPECIAL MASTER: Spell that, would you for  
17 me, someone?

18 MR. WHITE: It is l-y-s-i-m-e-t-e-r-s.

19 L-y-s-i-m-e-t-e-r-s.

20 Q (By Mr. White) Dr. Mesghinna, I hand you what has  
21 been marked for identification as Plaintiff's  
22 Exhibit FM-8, as well as a copy of the orange book,  
23 and ask you whether or not FM-8 is an accurate copy  
24 of the cover, the fly leaf and Pages 64 and 151 from

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1 Q. the orange manual?

2 A. Yeah.

3 Q. Isn't it true that on Page 64, under Paragraph --  
4 Heading (b), small (b), Tanks and Lysimeters --

5 A. Uh-huh.

6 Q. -- the first sentence describes what a lysimeter  
7 is and the methodology to measure ET, and the  
8 second says, "This method provides the only direct  
9 measurement of ET and is frequently used to study  
10 climatic effects on ET and to evaluate estimating  
11 procedures"?

12 A. Yes, it is saying that.

13 Q. How many lysimeter tests did you run for each of  
14 your climatic zones?

15 A. I don't intend to run lysimeters on our work and  
16 I have never done it on our climatic zones, and it  
17 is not necessary to use them.

18 Q. Isn't it true that without running a lysimeter, you  
19 cannot verify the accuracy of your estimate of evapo-  
20 transpiration - I mean, actually verify that that's  
21 what's happening on the ground?

22 A. Let me tell you one thing about lysimeters. Lysi-  
23 meters --

24 THE SPECIAL MASTER: Lysimeters what?

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1 A. Lysimeters themselves are not accurate measurements.  
2 How can you make the distinction between estimated  
3 data and lysimeters? Plus the evapotranspiration  
4 calculation by Jensen-Haise is derived from actual  
5 data based on actual data that lysimeters and also  
6 by this other -- although in this publication it  
7 says that lysimeters are the only direct measure-  
8 ment method of evapotranspiration, there's also  
9 another way of measuring evapotranspiration directly  
10 from moisture.

11 Q (By Mr. White) Is that a neutron probe?

12 A. Yeah, a neutron probe; gravimetric studies and so  
13 on.

14 Q Did you conduct any neutron probes within your  
15 climatic zones to verify the accuracy of your  
16 estimates?

17 A. I have said it earlier in such -- in this, let  
18 alone in this kind of work, the things are seldom  
19 used in research because the amount of funds  
20 necessary to run such a thing and the timing  
21 necessary to go to verify this will take years  
22 and years and an enormous amount of money to do  
23 so. However, what I would like to suggest on  
24 this matter is since we have done, I believe, a

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1 very accurate work on this matter, I would suggest  
2 if anyone would give funds to the universities re-  
3 lated who are working on the areas to verify our  
4 studies, that's the only way you can do. Otherwise,  
5 you can't verify by lysimeters. First of all,  
6 lysimeters are not 100 percent correct themselves  
7 because there are effects on them, I can explain,  
8 if necessary; and, secondly, with the level of work  
9 that we are doing, you can't go on and do university,  
10 what you call, type research. And the other thing  
11 is we have, you know, when you have lysimeters, if  
12 you have a lysimeter, you have to have the area  
13 completely shaded with the kind of crop that you  
14 want to plant there. For a big area, there shouldn't  
15 be any interaction of other climatic weather and so  
16 on. You know, there are many things that you have  
17 to take care before you do any lysimeter test. So,  
18 on this, because of these reasons, I wouldn't go  
19 and use lysimeters to verify our data -- I mean,  
20 our calculations.

21 Q Is it true then that you have conducted no verifi-  
22 cation of your evapotranspiration estimates by  
23 actual measurements in the fields within each of  
24 your climatic zones?

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1 A. What I'm trying to say, I don't find it necessary,  
2 but I have checked my results with other works that  
3 have been done within the state in the area.

4 Q. How about within those climatic zones?

5 A. I'm talking within the area; that includes the  
6 climatic zones, which means there are -- I'm talk-  
7 ing, if I am talking within the area, I'm talking  
8 like Riverton and so on, you know.

9 Q. What--

10 THE SPECIAL MASTER: The other projects around  
11 the Reservation?

12 THE WITNESS: Yeah.

13 Q. (By Mr. White) What actual measurements on the  
14 ground did you use to check your lysimeters in,  
15 for example, the Diversion Dam climatic zone?

16 A. Let me bring some publications that discuss this  
17 problem. These will end up our discussion on this.

18 Q. Well, can you answer the question whether or not --  
19 Did you have a field measurement within the Diversion  
20 Dam climatic zone which you used to check ET, your  
21 ET estimates?

22 THE SPECIAL MASTER: I'm not sure I understand  
23 the question.

24 MR. CLEAR: I think there are two different

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1 questions.

2 THE SPECIAL MASTER: What does that have to do  
3 with this?

4 MR. WHITE: Well, one, there is a climatic  
5 zone called Diversion Dam, Your Honor, on the cli-  
6 matic zone map.

7 THE SPECIAL MASTER: Yeah.

8 MR. WHITE: And I'm asking him whether or not  
9 he conducted -- what field tests --

10 THE SPECIAL MASTER: For his accuracy?

11 MR. WHITE: Yes, to verify the accuracy of  
12 his estimates made within the Diversion Dam cli-  
13 matic zone, if there were any.

14 THE WITNESS: I think I have answered that  
15 question before. We haven't done any field tests  
16 and --

17 Q (By Mr. White) Okay --

18 A And these sort of studies, you don't do that kind  
19 of test.

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1 Q (By Mr. White) How did you determine effective  
2 precipitation in your determination of  
3 consumptive use or irrigation requirements?

4 A As I have stated it in my direct testimony,  
5 I used the Soil Conservation Service method  
6 of estimating effective precipitation.

7 Q What facts and data did you examine by the  
8 use of that method?

9 A Effective precipitation is a function of gross  
10 precipitation and evapotranspiration.

11 Q Where did you derive the value for gross  
12 precipitation?

13 A I think I have --

14 THE SPECIAL MASTER: I think he said  
15 from SCS data, isn't that what you said?

16 MR. WHITE: He said that was the method-  
17 ology he used.

18 THE WITNESS: As I have stated it in my  
19 direct testimony, I said from NOAA.

20 Q (By Mr. White) Do you have with you the  
21 gross precipitation values which you received  
22 from NOAA?

23 A I think I have given it to you in my  
24 deposition.

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1 Q Let --

2 THE SPECIAL MASTER: I was about to ask  
3 before, what you're asking for you have  
4 already obtained in a deposition, so I would  
5 observe that it does not behoove you well  
6 to ask for it in the trial if you already  
7 have it.

8 MR. WHITE: Well, there's a difference,  
9 you can't look at the deposition, Your Honor.

10 THE SPECIAL MASTER: I know I can't. I  
11 know you're asking for something you already  
12 have in your possession and it will not be  
13 looked upon kindly as we have found out  
14 yesterday regarding those printouts.

15 Q (By Mr. White) Dr. Mesghinna, what form did  
16 you receive the information from NOAA? I guess  
17 I should have said in what form did you  
18 receive the information from NOAA?

19 A NOAA has a publication that comes out,  
20 Precipitation Average.

21 Q When you determined effective rainfall, was it  
22 necessary to establish the net depth of  
23 application?

24 A Yes.

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1 Q What was that value which you used?

2 A You mean how did I determine it?

3 Q What value did you use?

4 A Used different values for different areas,  
5 depending on what the estimation comes up,  
6 but net depth of irrigation or NIR is the  
7 consumptive use minus the effective rainfall.

8 (Brief pause.)

9 Q Dr. Mesghinna, isn't it true that you have  
10 something in excess of 700 fields in your  
11 units or projects?

12 A Yes, that's possible, sir.

13 Q For each of those fields did you determine  
14 the number of acres within the field?

15 A Yeah, we have acreages for each field.

16 Q Do you have that in tabular form?

17 A I am sure I might have it.

18 Q Would you please check.

19 THE SPECIAL MASTER: In view of the  
20 testimony of earlier witnesses on their  
21 parametering for those field acreages, is  
22 there something to be -- What is the purpose  
23 for questions of this Witness on that  
24 particular area?

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1 MR. WHITE: I'd like to find out if  
2 the acres for each field that he used, Your  
3 Honor, not only to derive his cost per acre  
4 but also to derive the total number of acres.

5 THE SPECIAL MASTER: Very good.

6 MR. WHITE: And I'd point out that I  
7 believe that this Witness measured his fields  
8 off a USGS quad sheet which is scale rectified,  
9 and therefore I'm not going to inquire into  
10 that area.

11 THE WITNESS: Yeah, I have the acreages  
12 of each field.

13 Q (By Mr. White) Do you also have your  
14 measurements of width and length of each  
15 field from which you calculated the acreage,  
16 is that also set out in the tabulation?

17 A We have two kinds of measurements. One  
18 measurement is in order to determine the acreage..  
19 The other measurement is a more rigorous  
20 measurement which determines the maximum  
21 length.

22 THE SPECIAL MASTER: Maximum length?

23 THE WITNESS: Yes, maximum length of  
24 field, in order to determine the length of

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1 the pipe. And the other is the maximum width  
2 of the field in order to determine the length  
3 of the lateral. So we have --

4 Q (By Mr. White) . You have those for each field;  
5 is that correct?

6 A Yes, but if you are interested in the acreage,  
7 I have the acreage for each field.

8 Q But you also have your widths and lengths  
9 measurements; is that correct?

10 A Yes. Those -- by making a distinction between  
11 those widths and lengths because they have  
12 different purposes.

13 Q One's for the measurement of pipe length, the  
14 other is for the calculation of acreage?

15 A Yes, because the computer uses length and width,  
16 so even though you have a triangular shape  
17 field you use rectangular shape in order to  
18 come up with that acreage.

19 Q Sure. Do you or have you determined for each  
20 field the number of acres within that field  
21 by class of arable land?

22 A No, I don't need that.

23 Q You didn't make that determination?

24 A That's not necessary in my analysis.

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1 Q Did you make a determination, you represented  
2 in tabular form, of the drain spacing for  
3 each field?

4 A Not for each field.

5 Q Excuse me just a minute.

6 (Brief pause.)

7 Q Dr. Mesghinna, referring to what's already  
8 been admitted as U.S. Exhibit C-257, which  
9 is your drainage plan for the North Crowheart  
10 Unit, and you have a similar drainage plan  
11 for each of your units, how are -- is one able  
12 to tell without access to some tabulation the  
13 precise drain spacing for each of the fields  
14 for which you have drainage illustrated on your  
15 map?

16 A Well, one can calculate from what I have given  
17 in the methodologies of Exhibit WRIR C-245.

18 Q But haven't you determined those drain spacings,  
19 and haven't you based your professional opinion  
20 on those determinations of drain spacings?

21 A Not by field.

22 Q Okay. What did you do it by, by pump or by  
23 what?

24 A Well, let me say it again because I have said

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1 it in my direct testimony, and I'll have to  
2 say it again. As you know, the hydraulic  
3 conductivity and depth to barrier are given  
4 for certain areas, and within those areas you  
5 will have almost the same drain spacing depending  
6 on natural drainage conditions and also on  
7 adjacent areas where you have to somehow average  
8 their drainage spacings in order to have  
9 alignments of the drains.

10 And I believe I have given you for each  
11 project, the length of each pipe required in  
12 each of the units.

13 Q But you haven't given that information to us  
14 by field, have you?

15 A No, we don't -- I am trying to make this clear.  
16 We don't work -- When it comes to drainage,  
17 we don't work field by field because the nature  
18 of the data that is given to us, if you  
19 remember from Mr. Toedter, the hydraulic  
20 conductivity and depth to barrier were for  
21 certain areas and within those areas you will  
22 find the same drainage spacing except there  
23 might be -- there could be some adjustments  
24 due to natural drainage occurring in the areas.

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1 And also whereby adjacent areas could have  
2 almost the same drainage spacings, and then  
3 lump up as average.

4 So we can't go field by field on this.

5 Q Well, let me ask you then on Exhibit C-257, is  
6 there a group in the fields for which, as  
7 you've described, there is the same drain  
8 spacing within that group of fields?

9 A Well, for example, if we see these fields in  
10 here, I mean in Township 3 North, Range 1 West,  
11 I believe Section 2, you can see the drainage  
12 spacing is equal.

13 Q Yes.

14 A I mean the distance between the drains is  
15 equal although there are, how many fields,  
16 one, two, three, four, five, six, in essence  
17 six fields.

18 Q What would that drainage spacing be then?

19 A One can measure the drainage spacing if  
20 necessary.

21 Q What drainage spacing did you use?

22 A You mean for that particular place?

23 Q Yes. How would you know that?

24 A Well, what you can do is try to find out from

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1 Mr. Toedter's exhibit of hydraulic conductivity  
2 and depth to barrier, once you enter that  
3 equation you'll find the drainage spacing  
4 in here.

5 Q Let me ask you whether or not the fields which  
6 you indicated are --

7 A Yes.

8 Q Fields 2380, 2379, 24103, 24104, 24105?

9 A Yes, up to 24105.

10 Q And those are the five fields that you've been  
11 describing?

12 A Uh-huh.

13 Q As they're numbered on FM-1245-A?

14 A Yes. They look like they have the same drain  
15 spacing.

16 Q In establishing your drainage cost, didn't you  
17 determine the drain spacing?

18 A That's why we have them in here. You see,  
19 you can see the drainage spacing between a  
20 certain area and another area is quite different.

21 Q My question is what drain spacing did you  
22 establish for that area upon which you based  
23 your cost?

24 THE SPECIAL MASTER: How much distance  
25 mesghinna-cross-white

1 between each of the drainage canals, drainage  
2 pipe?

3 THE WITNESS: Well, one can measure this,  
4 if you have a scale I can approximately  
5 measure it, anybody can measure this distance.

6 Q (By Mr. White) Did you derive a value for  
7 drain spacing upon which you based your costs?

8 A Of course I derived it, how can I put this  
9 without deriving the drainage spacing?

10 Q What is that value for drain spacing for those  
11 fields?

12 A Well --

13 MR. SACHSE: Objection, Your Honor, he's  
14 already testified he didn't do it field by  
15 field.

16 THE SPECIAL MASTER: What Mr. White wants  
17 to know and so do I, you establish the  
18 drainage spacing in that given area to which  
19 I'm pointing, what is the distance between each  
20 of the drainage canals?

21 THE WITNESS: The drainage --

22 THE SPECIAL MASTER: Drainage pipe.

23 THE WITNESS: Between this?

24 THE SPECIAL MASTER: Yes.

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THE WITNESS: I have to go through a long way to look through.

THE SPECIAL MASTER: I'm sorry, I didn't mean to inconvenience you. I thought that was 200 fields or a given minimum area.

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1 A No, I have to go through a long thing.

2 THE SPECIAL MASTER: Is that what you wanted  
3 to know?

4 MR. WHITE: Yes, sir. I would like to get  
5 an idea of how from a specific example, how that  
6 drain spacing was calculated and then from that  
7 drain spacing how we got to drainage costs, and  
8 I would like to use a specific example to make  
9 it clear in my mind, Your Honor.

10 THE WITNESS: We have to go through a long  
11 way. We have to look --

12 THE SPECIAL MASTER: Can you --

13 THE WITNESS: I can calculate this.

14 THE SPECIAL MASTER: Can you make an educated  
15 guess?

16 THE WITNESS: Yes, I can.

17 THE SPECIAL MASTER: All right. Do you know  
18 if measurements of the area --

19 THE WITNESS: Yeah --

20 THE SPECIAL MASTER: You know, you have eight  
21 or nine parallel drainage installations in that  
22 area and each an equal distance from the other.

23 I assume that those were -- that that drainage  
24 network was pipe and not some natural channel or  
25 some drainage ditch, Dr. Mesghinna.

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1 THE WITNESS: Yes.

2 THE SPECIAL MASTER: I'm assuming that those  
3 lines drawn across the field there are pipe and not  
4 an existing drainage ditch or an existing outlet.

5 THE WITNESS: Yes, these are new pipes pro-  
6 posed by us.

7 THE SPECIAL MASTER: Okay.

8 THE WITNESS: I have this in front of me.

9 Q (By Mr. White) What are you looking at, Wold?

10 A It is the first part of -- can we use another one  
11 because that thing is not there, I guess. I mean  
12 you want an example.

13 Q Well, I was asking about that group of fields.

14 A Okay.

15 Q Can we just follow through with that example?

16 A Sure. Let me see.

17 Q Do you want me to give a legal description from  
18 the --

19 THE WITNESS: This is the one.

20 MR. WHITE: This is the one right here.

21 THE WITNESS: Okay. Could you hold this for  
22 me?

23 (Off the record discussion.

24 THE SPECIAL MASTER: If I had known that this  
25 mesghinna-cross-white

1 question was based upon a formula so complicated as  
2 the formula that I find on page 36 of your report  
3 I wouldn't have asked it.

4 MR. WHITE: Well, let me just ask another  
5 question, it may simplify --

6 THE SPECIAL MASTER: I would rather wait until  
7 he answers the one I have pending. One shot at  
8 a time, so to speak, Sandy.

9 MR. WHITE: Okay.

10 THE SPECIAL MASTER: I'm talking about, Leo,  
11 having a look on page 36 and you can see what I  
12 ran into.

13 I thought it was going to be 200 feet.

14 (Brief pause.

15 A I think it will be about 300 feet.

16 Q (By Mr. White) 300 feet?

17 A About 300.

18 Q Okay. What size did you use?

19 A For those?

20 Q For those in coming up with your costs, 300 feet?

21 A The spacing is 300 feet, yes.

22 Q Now, your drainage costs are really a function of  
23 pipe length and pipe size, are they not?

24 A And spacing, of course.

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1 Q Right. And spacing.

2 A Uh-huh.

3 Q Let's see if I can get at it this way: do you  
4 have the drain spacing value, the pipe size value,  
5 and the pipe length values all three for which you  
6 derive your drainage costs for each of the units  
7 set up in such a way as -- or to allow a person  
8 to go to a group of fields such as you have des-  
9 cribed and see what pipe length, pipe size and  
10 pipe spacing or drain spacing you used for that  
11 group of fields?

12 A That's exactly what I did. Now, I determined the  
13 drain spacing and anybody can determine it.

14 THE SPECIAL MASTER: But he was asking you,  
15 do you have that for the rest of the fields.

16 THE WITNESS: For all, everything, do you  
17 mean?

18 Q (By Mr. White) Uh-huh.

19 THE SPECIAL MASTER: Uh-huh.

20 A Of course. How would I come up with this?

21 Q (By Mr. White) May I see it, please?

22 THE SPECIAL MASTER: Was that the sum of your  
23 entire file?

24 THE WITNESS: Yeah, that was the --

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1 MR. WHITE: I think I'm entitled to see the  
2 facts and data upon which he based his opinions,  
3 Your Honor, and I would like to see it.

4 THE WITNESS: The facts and data upon which  
5 I came up with this I have already given it here.  
6 It is on the record. The depth to barrier and  
7 hydraulic permeability is given by Mr. Toedter.  
8 It has been given. It is here. I think you  
9 have this, don't you?

10 MR. WHITE: One minute, Your Honor, if we  
11 could go off the record.

12 (Off the record discussion.

13 MR. CLEAR: May I talk with the witness for  
14 a minute?

15 THE SPECIAL MASTER: May he talk to the  
16 witness for a minute?

17 MR. WHITE: I have no objection.

18 THE SPECIAL MASTER: It is 11:15. Let's  
19 take a five minute break.

20 (Recess, 11:15 a.m.

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1 Q (By Mr. White) Now, Dr. Mesghinna, what did  
2 your lawyer tell you during the break? What  
3 did you discuss with him during the break?

4 That's a perfectly appropriate question  
5 when there's a conference with the Witness  
6 during cross-examination. Your Honor.

7 THE SPECIAL MASTER: I will assume that  
8 what he did during the break is not proper  
9 cross-examination of his direct testimony.

10 Q (By Mr. White) Let's leave drain spacing for  
11 awhile, Dr. Mesghinna. We'll get back to  
12 that after we get some other exhibits over  
13 here.

14 Did you determine on-farm application  
15 efficiency for each field?

16 A On-farm application efficiency, we determined  
17 a weighted average for all the fields in a  
18 given unit.

19 Q In order to come up with that weighted average,  
20 did you make determinations for each field  
21 which you averaged?

22 A That is in the computer, it's done in the  
23 computer, and it weights it out and gives you  
24 actual for each climatic zone.

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1 Q For each climatic zone?

2 A Yes.

3 Q On-farm application efficiency?

4 A Yeah, because that's what you need in your  
5 analysis.

6 When you get for each climatic zone and  
7 let's assume, let's take North Crowheart, it  
8 has three climatic zones; Burriss, Diversion  
9 Dam and Pavillion, all of the three climatic  
10 zones somewhere or another are in North  
11 Crowheart. So if we get, for example, 68  
12 percent of application efficiency in Burriss,  
13 North Crowheart and 67 percent in Diversion  
14 Dam, North Crowheart, and 66 percent in Pavillion,  
15 North Crowheart, you take the weighted average  
16 of all this and determine the weighted, what  
17 you call application efficiency for the  
18 whole North Crowheart Unit, which is about  
19 67 percent. And the application efficiency  
20 for all the units are 67 percent for North  
21 Crowheart, 67 percent for South Crowheart, 67  
22 percent for Arapahoe Unit, 66 percent for  
23 Riverton East and 67 percent for Big Horn  
24 Flats. And those are the ones that we have  
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1 used for our estimation.

2 Q In other words, the on-farm application  
3 efficiencies contained on Page 12 of your  
4 report are weighted averages based on the  
5 climatic zones within each of those units;  
6 is that correct?

7 A Yes, sir.

8 Q Okay. What were the on-farm application  
9 efficiencies which you determined for each  
10 of your seven climatic zones?

11 A I can try to find them out if you want me.  
12 But what they'll give you, they'll give you  
13 those application efficiencies. There is not  
14 really much difference, you know, on the  
15 application efficiencies, it's just between  
16 66, 67, 68.

17 THE SPECIAL MASTER: That's your range?

18 THE WITNESS: That's the range really,  
19 more or less.

20 Q (By Mr. White) Is that also true with the  
21 climatic zones?

22 A Yeah, I mean between the climatic zones.

23 Q So they range from 66 to 68?

24 A Approximately, yes, plus or minus five percent.

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1 Q It could be 65 to 69?

2 A Possibly.

3 Q Did you make any determination of the number  
4 of laterals which would be used for each  
5 field?

6 A Yes. As I have indicated it in my report I  
7 have summed up the number of laterals necessary  
8 for each unit.

9 Q I'm talking about each field now.

10 A Yeah.

11 Q Have you --

12 THE SPECIAL MASTER: He answered your  
13 question by saying what he did, and he did not  
14 do what you said, he did it by the unit.

15 THE WITNESS: Let me say it again.  
16 Probably I was not clear on this matter. We  
17 have determined for each field, but within  
18 a pumping station -- let me make it clear again,  
19 When I say pumping station, laterals in a  
20 pumping station can rotate, this is the  
21 assumption we make, meaning that in a given  
22 pump station if we have a -- we have some  
23 laterals which are idle, then we can transfer  
24 them to other fields which don't have enough

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1 laterals. But we made sure that there will be  
2 equal or more laterals then is necessary in a  
3 given, what you call pumping station.

4 Q (By Mr. White) So you do have -- You did  
5 determine the number of laterals per field  
6 but only on a per pumping station basis; is  
7 that right?

8 A Yes.

9 Q Did you make a determination on -- of on-farm  
10 system costs for each field?

11 A The on-farm pumping cost is -- You see, if we  
12 go back to what we said before, that the laterals  
13 are exchangeable from field to field so you  
14 cannot exactly have a specific cost for a given  
15 field, but you have given cost for the pump  
16 stations.

17 THE SPECIAL MASTER: Then you divide that  
18 by the total number of acres in it and you get  
19 your acreage cost?

20 THE WITNESS: That's it.

21 Q (By Mr. White) That's for on-farm systems?

22 A That's for on-farm systems. You have to add  
23 something else though.

24 Q I'm sorry, I didn't hear you.

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1 A We add something to it, you know, because  
2 on-farm system includes other items too, not  
3 only the laterals.

4 Q Did you make any determination of pipe network  
5 costs on a field by field basis?

6 A Now, it's very hard to make it on a field by  
7 field basis, pipe network, because there is no  
8 way that one can determine pipe network cost  
9 for a given field. It's for a given pumping  
10 station for a given unit.

11 Q So you made that determination by pumping  
12 station; isn't that correct?

13 A Yeah, and I have given it to you.

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1 Q (By Mr. White) Right. You made a similar deter-  
2 mination with respect to pump and pumping plant  
3 costs, didn't you?

4 A Yes, sir. And I have also submitted to you last --  
5 the week before last.

6 Q Okay. The same thing is true of canals and re-  
7 lated structure costs?

8 A Yes. In fact, I gave it through the telephone.

9 Q To Henry?

10 A Huh?

11 Q Is that the information you gave to Henry over the  
12 telephone?

13 A Yes, sir.

14 Q Did you make any determination of energy costs or  
15 demand costs on field on a field by field basis  
16 or was that done on a pumping station basis?

17 A That one again I have given it to you by pump  
18 station.

19 Q Okay. But you didn't make any other breakdown,  
20 you just did the pump station breakdown, is that  
21 correct?

22 A Because if you see it physically there is no way  
23 that you can make a breakdown from that. You  
24 know, you have a pumping station, you have energy,

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1 the energy is from the pump itself so you count  
2 it there. You can't go to the fields -- it is  
3 hard.

4 MR. WHITE: Your Honor, I would like to  
5 suggest that if it's convenient for you we might  
6 break now and say come back at 1:00.

7 THE SPECIAL MASTER: That's a good idea  
8 because we have to maybe break up a few minutes  
9 before three.

10 I wish to announce that we will break up  
11 now and we will convene about 1:00. I wish to  
12 also announce that about five minutes to three  
13 we will have to move our things out of here and  
14 it may not be for more than a half hour, and we  
15 may be using the time to confer on something  
16 else. And I wish to announce that tomorrow morn-  
17 ing at 9:00, we will be in Judge Ewing T. Kerr's  
18 courtroom which is next door so it might be wise  
19 to put our things in there at the end of today  
20 and have it ready for the morning.

21 Okay. 1:00 instead of 1:30 today.

22 (Recess, 11:25 a.m.)

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