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## Trial Transcript, Vol. 92, Afternoon Session

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

IN RE: )  
)  
THE GENERAL ADJUDICA- )  
TION OF ALL RIGHTS TO )  
USE WATER IN THE BIG )  
HORN RIVER SYSTEM AND )  
ALL OTHER SOURCES, )  
STATE OF WYOMING. )

Civil No. 4993

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*Margaret V. Hampton* ..... CLERK  
..... DEPUTY

VOLUME 92

Afternoon Session

Monday, July 27, 1981

**ORIGINAL**

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1 THE SPECIAL MASTER: All right, Mr. Merrill.

2 MR. MERRILL: Thank you, Your Honor.

3 MR. SACHSE: Your Honor, before Mr. Merrill con-  
4 tinues with the cross-examination, I want to report  
5 that we have given Mr. Merrill a copy of all of the  
6 interview sheets with the Indian owners of fee land  
7 that were referred to before the lunch break. We  
8 have not deleted anything from this. It was not our  
9 intention originally to make these available, but in  
10 light of the Court's ruling, we decided it's better  
11 to just do so in its entirety.

12 THE SPECIAL MASTER: I appreciate that.

13 MR. SACHSE: We have the originals here too.

14 CROSS-EXAMINATION

15 BY MR. MERRILL:

16 Q Mr. Higginson, right before we broke for lunch we  
17 were talking about the hydrographic photos supplied  
18 to you by Mr. Billstein of HKM. Are you familiar  
19 with the different types of irrigation service that  
20 HKM used to characterize the lands they investigated  
21 on the reservation?

22 A I have a copy of a sheet on which they described each  
23 of the types, and it's included as part of my report.

24 Q Is that the last page of appendix A in your report?

25 higginson - cross - merrill

1 A. Yes.

2 Q. That identifies land Types I through Type VII?

3 A. Yes.

4 Q. On the aerial photographs that you obtained from  
5 HKM, did those photographs indicate the land types  
6 which HKM land classifiers had applied to these areas  
7 tracts they studied?

8 A. I can't say categorically. I wasn't looking at the  
9 same lands that HKM was looking at, so I didn't pay  
10 any attention to what was on the remainder of the map.

11 But with regard to the portion of the photo that  
12 I was interested in, in many cases it was not a  
13 designation but in some cases, there were.

14 Q. Where there were designations on the Indian owned  
15 fee land that you investigated, did you take those  
16 land type designations into account in determining  
17 the water duty for those lands?

18 A. Took it into account in determining whether the  
19 lands were irrigated or irrigable.

20 Q. Why did you include the list of land types in your  
21 report? I didn't see any reference to it in the  
22 text of your study.

23 A. Because it was a source of additional information that  
24 I used during the course of my determination.

25 higginson - cross - merrill

1 Q Is it true that among other things, land types  
2 indicate the frequency and amount of irrigation  
3 service the tract of land is receiving?

4 A. It's true that it indicates the amount of water  
5 that needs to be applied to mature a crop.

6 Q Is it indicative of the irrigation service that's  
7 currently being applied to a tract of land?

8 A. It is to the extent that you could ignore the  
9 artificial irrigation of that tract by subirrigation  
10 or some other occurrence.

11 Q Would Type IV lands, for example, indicate lands  
12 that are receiving partially service -- Excuse me,  
13 receiving partial service and therefore only  
14 occasionally irrigated?

15 A. I'm not sure I heard a question.

16 Q Let me try it again. Is it true that Type IV lands,  
17 according to HKM's definition, which you have  
18 included in your report, Type IV lands receive only  
19 partial irrigation service and are only occasionally  
20 irrigated rather than receiving full service  
21 irrigation?

22 A. That's what I understand their definition to mean.

23 Q Would you please pull out your aerial photograph  
24 marked Exhibit 10-16.

25 higginson - cross - merrill

1 (Witness complied.)

2 Q. I notice in Appendix C of your report, which is  
3 the overlays which you developed of the aerial  
4 photographs, there is a Tract 50. Would you  
5 please turn your report to the overlay for Tract  
6 50.

7 A. Yes, I have it.

8 Q. Okay. Is the land depicted by that overlay also  
9 shown on aerial photograph 13-179-106 which is  
10 marked as Exhibit 10-16?

11 A. Yes, it is.

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higginson - cross - merrill



1 Q (By Mr. Merrill) Isn't it true that according to the  
2 land type applied to the northern irrigated parcel  
3 within that tract, that HKM gave that land a Type V?

4 A. That's what the photo indicates.

5 Q. Isn't it also true that according to the land types  
6 that you have incorporated in your report, the Type V  
7 lands are subirrigated or seeped lands which are not  
8 intentionally irrigated but receive sufficient water  
9 from adjacent irrigated lands to provide beneficial  
10 use.

11 A. As I understand their definition.

12 Q. Do you adopt that definition by including it in your  
13 report?

14 A. No, I didn't.

15 Q. If Type V lands are subirrigated or seeped lands that  
16 are not intentionally irrigated, why did you apply a  
17 full duty of water to those lands?

18 A. Because there's nothing that guarantees those lands  
19 will always receive water from some outside source.  
20 If the neighboring lands are no longer irrigated, in  
21 order for these lands to continue to grow crops, they  
22 would have to have a full water right. You can't require  
23 the neighbor to continue to irrigate his land for the  
24 benefit of the subirrigation.

25 higginson - cross - merrill

1 Q If a land is subirrigated, and therefore Type V,  
2 does that mean to you it is also irrigable land?

3 A. Yes.

4 THE SPECIAL MASTER: How much Type V was in-  
5 cluded in your total?

6 A. I can't tell you, I haven't made that determination.

7 Q (By Mr. Merrill) Did you make a breakdown of any of  
8 the lands you classified as irrigable or irrigated by  
9 any land type other than Type V?

10 A. No, I did not.

11 Q Would you please turn your report to the overlay  
12 in appendix c for tract 16? Pull out the exhibit  
13 copy of 10-37.

14 (Witness complied.)

15 Q Is tract number 16 depicted on the aerial photograph  
16 that's marked Exhibit 10-37?

17 A. Yes.

18 Q Isn't it true that according to Exhibit 10-37, the  
19 northern most and largest irrigated piece of land  
20 in that quarter quarter section has been typed IV  
21 by HKM?

22 A. Yes.

23 Q Isn't it also true that according to your report,  
24 Type IV lands are occasionally irrigated sporadically

25 higginson - cross - merrill

1 or irregularly by water spreading systems that are  
2 conventional systems and receive only partial water  
3 service?

4 A. I can't verify that. I can tell you that's what  
5 HKM classified it, and I included the definition of  
6 their classification in my report for informational  
7 purposes.

8 Q. In terms of the water requirement for the irrigated  
9 parcel, tract 16, irrigated portion of tract 16, did  
10 you use a full duty of water?

11 A. Yes, I did.

12 Q. Do you know how many acres of Type IV lands you classi-  
13 fied as irrigated or irrigable?

14 A. No, I don't.

15 MR. SACHSE: The question has been answered,  
16 and I would like to object.

17 MR. MERRILL: You are welcome to object. You  
18 can move to strike it, if you want.

19 MR. SACHSE: I do move to strike on the grounds  
20 it seems to me we need clarification anyway. The  
21 witness has testified the land that he has classified  
22 as irrigable or not irrigable is not the land that  
23 HKM studied to classify as irrigable or not irrigable.  
24 HKM very specifically limited its study to trust land,

25 higginson - cross - merrill

1 and Mr. Higginson has very specifically limited his  
2 study to fee land, so the series of questions that  
3 counsel is asking as to how much land has Mr. Higgin-  
4 son classified as irrigable that would be Class 4  
5 under the HKM or Class 5 or Class 6 under the HKM  
6 land classification, is essentially misleading  
7 because HKM has not classified any of the land  
8 that Mr. Higginson has classified. Mr. Higginson  
9 has already testified that he did not use these  
10 classifications for the land that he did classify.  
11 So the only thing I can see is this series of  
12 questions is an attempt to mislead by inferring  
13 that Mr. Higginson is classifying land in a way  
14 that's contrary to what HKM did when the fact is  
15 they're classifying different land.

16 THE SPECIAL MASTER: Well, that distinction  
17 needs to be made, and I'm glad you made it, but  
18 I'll overrule the Motion to Strike and leave what  
19 is in the record in the record. I think the line  
20 of questioning seeks to show that some areas that  
21 may very well be Type IV lands which are occasionally  
22 irrigated and used for native hay and pasture with  
23 the flooding once or twice a year may not have the  
24 same water duty as a good, rich soybean crop, if  
25 there's any up there, or alfalfa or corn, if it's in

1 lower elevations. Maybe that's what your questions  
2 are leading to.

3 MR. MERRILL: My questions, Your Honor, were  
4 only to determine whether the witness took into  
5 account this information, and we will present as  
6 part of our case in chief that land which he classi-  
7 fied as irrigable or irrigated, broken down by the  
8 various types of irrigation service.

9 Q. (By Mr. Merrill) Mr. Higginson, isn't it true  
10 that the aerial photographs you received from HKM  
11 contained land type designations or parcels of land  
12 which are fee land according to your study?

13 A. Some of the fee lands on the photos do have a  
14 designation, but not all of them.

15 Q. Did you put any of the land type designations on  
16 those photos for the Indian owned fee lands?

17 A. No, I did not.

18 THE SPECIAL MASTER: Of course, Mr. Merrill,  
19 while you're on that subject matter, what may be  
20 a Type IV land in this decade may not be a decade  
21 from now.

22 MR. MERRILL: I agree, Your Honor. If there's  
23 anything we learned about the status of land where  
24 it's irrigated and remained irrigated is you can't

25 higginson - cross - merrill

1 tell what is going to be ten years from now and  
2 what was ten years ago.

3 THE SPECIAL MASTER: Precisely.

4 Q (By Mr. Merrill) Mr. Higginson, as part of your  
5 study, I believe you toured part of the Bureau of  
6 Reclamation projects in the vicinity of your study  
7 area, is that correct?

8 A. Yes.

9 Q Would you describe to the Court generally what you  
10 did on your tour, what you looked at, what information  
11 you obtained?

12 A. I visited the Riverton Office of the Bureau of  
13 Reclamation, and visited with the project manager,  
14 and he invited me to take a tour with him and a  
15 member of his staff out over the Midvale Irrigation  
16 District to look at the project, the structures,  
17 the facilities and particularly to look at some  
18 of the drainage that they were constructing and  
19 other work that they had done.

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higginson - cross - merrill

1 Q (By Mr. Merrill) As part of your tour, did you  
2 examine lands which were at one time irrigated  
3 but having been out of service for one reason  
4 or another?

5 THE SPECIAL MASTER: Within the category  
6 of the fee lands he's charged with or generally?

7 MR. MERRILL: I'm sorry, the question was  
8 not specific.

9 Q (By Mr. Merrill) I meant the question to apply  
10 to the lands you examined within the Bureau's  
11 project areas.

12 A I don't know that we looked at any lands that  
13 had completely gone out of production. We had  
14 looked at some lands that were a very low  
15 productivity that were pointed out as requiring  
16 drainage, and they had planned some drainage  
17 construction on.

18 They were very low value lands at that  
19 particular point in time and they also pointed  
20 out lands which they described as having been  
21 similar in character which now appear to be  
22 highly productive because drainage had been  
23 installed.

24 Q During your tenure as the United States Commissioner  
25 higinson-cross-merrill

1 of Reclamation, did you have reason to become  
2 aware of the irrigability problems of lands in  
3 the third division of the Midvale Reclamation  
4 Project and the subsequent buy-back of many  
5 of those lands by the Federal Government?

6 A Only very casually aware of the buy-back, but  
7 during my tenure as Commissioner, nothing came  
8 up on that particular matter that I can recall.

9 Q Are you generally familiar with the history of  
10 that problem?

11 A Just generally. And certainly not, if you were  
12 to ask me a question, to describe what happened,  
13 I could not do so.

14 Q No, I wasn't going to do that. I'm wondering if  
15 you might have discussed that problem with any  
16 of the people that you interviewed in the Bureau  
17 of Reclamation districts in the area?

18 A No, I did not.

19 Q In determining the practicability of your  
20 irrigating the lands which are not now being  
21 irrigated, did you consider the possibility of  
22 problems arising, such as those which have arisen  
23 in the third division of the Midvale Project?

24 A Yes. It's always a consideration as to what the  
25 higinson-cross-merrill



1 effects may be of putting water on the lands  
2 as far as drainage and the quality of the land.

3 Q Did you make any investigations as to the  
4 drainage that might be required -- artificial  
5 drainage, excuse me, that might be required for  
6 some of the lands that you have classified as  
7 practicably irrigable?

8 A No. It was my understanding that other Tribal  
9 witnesses would touch on the subject of drainage  
10 and that it was not part of my charge.

11 Q Okay.

12 MR. MERRILL: I'm sorry, Your Honor, I got  
13 my notes a little out of order.

14 Q (By Mr. Merrill) Mr. Higginson, I'd like you to  
15 turn in your report, which is Exhibit 8 I believe,  
16 to the overlay for Tract No. 64. Then turn to  
17 Tract 65 and fold that page in half back towards  
18 the binder so that it's possible to overlay  
19 Tract 64 and 66 and examine the two of them  
20 together.

21 (Witness complied.)

22 Q Isn't it true that a portion of the lands  
23 described as Tract No. 66 are also included as  
24 Tract No. 64, both portions, Section 2 of

25 higginson-cross-merrill

1 Township 1 North, 4 East, the Wind River Meridian?

2 A Tract No. 66 is a 60-acre piece of land of which  
3 only 52 acres are covered by the property  
4 description of Reno and Evelyn M. Long, out of  
5 that 60 acres; and the other was six more acres  
6 that are covered by David M. and -- David A. and  
7 Deborah M. Long of Tract 64. So the total  
8 acreage does not exceed the land area shown in  
9 the overlay on Tract 66.

10 Q Are the overlays on the pages intended to  
11 delineate the boundaries of the lands having the  
12 designation within --

13 A Insofar as the legal description allows that to  
14 happen, but there were occasions such as in  
15 Tract 64 where it is described by legal description  
16 as a six-acre tract within a 40-acre description.  
17 And I could not identify which acres, but the  
18 entire tract is irrigable so I didn't think it  
19 made any difference.

20 Q I understand, okay. Mr. Higginson, isn't it  
21 true that one of the sources of information on  
22 which you relied in defining the tracts of  
23 irrigated and irrigable lands was a study by  
24 the United States Bureau of Reclamation that

25 higginson-cross-merrill

1 applies to some of the areas that you investigated?

2 A Yes, that's true.

3 Q Do you know when that study was performed?

4 A There was more than one study. Some of them were  
5 done, as I recall, in the early '60s, if the  
6 dates are indicated in the bibliography.

7 Q I'd like to hand you what's been marked for  
8 identification as Wyoming Exhibit KH-7. Do  
9 you recognize that document?

10 A This document sheet I don't particularly  
11 recognize, but it looks very much like the  
12 sheets that I used and had available to me as  
13 part of the study.

14 Q Okay. I direct your attention to the legend  
15 box in the lower right-hand corner and ask you  
16 if this sheet appears to be a portion of one of  
17 the studies performed by the Bureau of Reclamation  
18 in 1964 on which you relied, among others --

19 A Yes.

20 Q -- in your work?

21 Isn't it true that Tract 64 and 66 are  
22 indicated in Section 2 at the top of that sheet?

23 A Yes.

24 Q Are you familiar with the classification symbols  
25 higinson-cross-merrill

1 used in these Bureau of Reclamation studies?

2 A Yes.

3 Q Would you please tell the Court what the land  
4 classification symbol 6W-6BHW over 33 would  
5 indicate?

6 A Well, it's indicated in the legend at the bottom  
7 of the map. The land class given to it by the  
8 Bureau of Reclamation is Class 6.

9 Q What does Class 6 mean when the Bureau uses that  
10 term?

11 A Generally non-irrigable land.

12 Q Okay. What does the rest --

13 A But you have to understand that that Class 6  
14 may be by reason of the land use capability  
15 standard that's used for that particular time  
16 for that particular project purpose, and at the  
17 time of these studies no consideration was being  
18 given to consideration of sprinkler irrigation  
19 or to extensive drainage that could be applied  
20 to make the land irrigable.

21 Q Would you please continue -- I'm sorry, I  
22 interrupted you when you were describing to the  
23 Court what the legend meant, just to the right  
24 of the little 60 with a circle around it. Would

25 higinson-cross-merrill

1 you please go ahead and decode that.

2 A To the extent that you could decode it, the  
3 W would indicate that it is wetlands, high  
4 water table problem. S would indicate a soil  
5 deficiency, and the D would indicate a drainage  
6 deficiency.

7 The 33 at the bottom of that designation  
8 would indicate that it had a productivity under  
9 their classification of three and a land  
10 development cost of three, which is a higher  
11 than a one class would be as far as the develop-  
12 ment costs.

13 Q What does the little 60 with the circle around  
14 it mean?

15 A That refers to the soil profile over on the left  
16 side of the particular sheet.

17 Q What does the soil profile for location 60 say?

18 A It indicates that the top 12 inches -- if I'm  
19 doing that correctly -- is a silty clay loam  
20 and --

21 MR. MERRILL: I'm sorry, Your Honor, I gave  
22 the most legible copy I had to the Witness so  
23 he could read it.

24 THE SPECIAL MASTER: He's got trouble with that,  
25 higginson-cross-merrill

1 you can imagine where I am with this.

2 MR. MERRILL: I understand.

3 A Well, this would indicate that for the entire  
4 profile it is listed as silty clay loam.

5 THE SPECIAL MASTER: Does it show a depth  
6 to barrier?

7 THE WITNESS: It does not, that I can see.

8 Q (By Mr. Merrill) Does the information for soil  
9 logs 60 also indicate a water table 18 inches  
10 below the surface of the land?

11 A Yes.

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higginson-cross-merrill

1 Q (By Mr. Merrill) Do you consider a tract of land  
2 with a water table eighteen inches below the surface  
3 to be an irrigable or practically irrigable piece of  
4 land?

5 A. With some effort and some construction, yes, it  
6 could be irrigated.

7 Q Did you make any determinations for this tract as to  
8 the amount of artificial drainage that would be  
9 required given the fact the entire tract is surrounded  
10 --

11 A. I testified earlier I didn't make any drainage  
12 determinations.

13 Q Isn't it true that this tract was at one time irri-  
14 gated?

15 A. I don't know that.

16 Q I would refer you to the legend at the bottom of the  
17 Exhibit KH7, which indicates that land with a  
18 diagonal slash in the upper right to lower left  
19 is irrigated.

20 THE SPECIAL MASTER: Isn't this from the  
21 upper left to the lower right?

22 MR. MERRILL: Sure is, Your Honor. I'm sorry.  
23 I think it means all hatched land is irrigated.

24 THE WITNESS: Well, in terms your question  
25 higinson - cross - merrill

1 was if it was at one time irrigated, and I assume  
2 you were implying it's not now irrigated. I said  
3 I didn't know that.

4 Q (By Mr. Merrill) Isn't it true that Appendix C  
5 in your report shows no irrigated land for either  
6 Tract 64 or Tract 66?

7 A. That's true.

8 Q Is that based on your determination that these  
9 parcels are not now being irrigated?

10 A. Yes.

11 Q Lands that have a previous history of irrigation  
12 which you studied and which are not now being  
13 irrigated, did you make any investigation as to  
14 why irrigation ceased on those tracts?

15 A. No, I did not.

16 Q We are done with KH7 if you want to put that big  
17 sheet away for a while.

18 A. If I could just point out in connection with my  
19 testimony that the Bureau of Reclamation land  
20 classification maps were not the only source of  
21 information that I relied on in reaching my land  
22 classification. I relied also upon information  
23 for this particular tract, on information from the  
24 Soil Conservation Service soil survey of the Riverton  
25 higinson - cross - merrill



1 area.

2 Q. Would you please turn in your report to the overlay  
3 sheet for Tract No. 9?

4 (Witness complied.)

5 Q. Handing you what has been marked for identification  
6 as Wyoming Exhibit KH8, which I will identify for  
7 the record as being a blue-lined print of United  
8 States Exhibit C-148-12, which was offered and  
9 admitted into evidence for the truth of its con-  
10 tents, I have marked in red on the right side of  
11 KH8 three tracts of land, and I would ask you to  
12 take a look at those and tell the Court whether  
13 those red outlines fairly depict the three parcels  
14 of land which comprise Tract No. 9 shown in your  
15 report?

16 THE SPECIAL MASTER: Define KH8. Keith  
17 Higginson? What's --

18 MR. MERRILL: Yes, Keith Higginson 8.

19 THE SPECIAL MASTER: That's right.

20 THE WITNESS: Well, assuming that your  
21 intention was to draw a red line around the  
22 portion of my designation of Tract 9 on the right-  
23 hand side, which hasn't been done, I assume that  
24 yes, it does depict it.

25 higginson - cross - merrill

1 Q. Okay. Are the red lines on KH8 --

2 Yes, that was intended to go across the top of  
3 the heavy hatched line and on around the side.

4 A. Okay, I'm with you.

5 Q. Do those red lines comport reasonably well with  
6 the outlines shown in Tract 9 in your report?

7 A. Yes.

8 Q. Isn't it true that according to KH8 that HKM  
9 classified pieces of land which you say are  
10 practicably irrigable as 6ST(6), which means  
11 nonarable gravity and nonarable sprinkler based  
12 on soils and topographic deficiencies?

13 A. There's that kind of notation on the photo I'm  
14 looking at, but I can't tell you who put those  
15 notations there.

16 Q. As part of your determination of the irrigability  
17 of the parcels of land that you studied, did you  
18 consider any of the land classification information  
19 developed by HKM?

20 A. I did not have a copy of their land classification  
21 information.

22 Q. Let me ask you to turn in your report to your over-  
23 lay sheet for Tract No. 53.

24 A. Before we leave 9, may I point out I did have  
25 higginson - cross - merrill

1 available again the photo maps included as part  
2 of the Soil Conservation Service soil survey of  
3 the Riverton area, which was the source that I  
4 relied on most heavily, and particularly in  
5 connection with the classification of this tract.

6 Q Okay. Would you please turn to your overlay sheet  
7 for Tract 53 in your report.

8 THE SPECIAL MASTER: Mr. Merrill, can you  
9 tell us how the terms 6ST(6) got on that portion  
10 of the tract we are just leaving, Tract 9?

11 MR. MERRILL: Your Honor, I think that the --

12 THE SPECIAL MASTER: If you intend to intro-  
13 duce KH8 in evidence, I'll ask that question. If  
14 you don't, I shouldn't ask it.

15 MR. MERRILL: I do intend to introduce KH8  
16 into evidence. I will admit to the Court now it  
17 is duplicative, and it's a blue-line copy of the  
18 Exhibit C-148-12, which is the United States  
19 Exhibit which was offered and admitted into evi-  
20 dence for the truth of its contents through testi-  
21 mony of HKM.

22 THE SPECIAL MASTER: And it has this notation  
23 on it also?

24 MR. MERRILL: I believe so, Your Honor.

25 higinson - cross - merrill .

1 If you like, we can bring the original copy  
2 of this exhibit into the Court and check to  
3 see if it says that.

4 THE SPECIAL MASTER: No. Thank you.

5 Q (By Mr. Merrill) You have Tract 53 open in  
6 your book?

7 A. Yes.

8 Q Okay. Would you please turn over toward the  
9 left side of Exhibit KH8, and I direct your  
10 attention up to the northwest corner.

11 A. Yes.

12 Q And I'll ask you if up in Sections 6 and 7 in  
13 the northwest corner of that exhibit there are  
14 red and heavy black lines that depict the out-  
15 line of the tract that comports substantially  
16 with your Tract No. 53.

17 (Brief pause. Off-the-record  
discussion between counsel.)

18 Q (By Mr. Merrill) Mr. Higginson, does the area  
19 outlined in heavy black or blue, I guess it is,  
20 and also a little bit of red, substantially agree  
21 with the boundaries of the parcel you have identi-  
22 fied as Tract No. 53 in your report?

23 A. Yes.

24 Q Same township and range and section and so forth?

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1 A. Appears to be, yes.

2 Q. Okay. Isn't it true that of the land in Tract No.

3 53 that you have indicated is practicably irrigable,

4 a large piece of that land is classified 6ST(6)?

5 A. That's the designation for a part of the land, yes.

6 Q. Isn't it true that that designation indicates that

7 the land is nonarable using both gravity and sprinkler

8 techniques because of the soil, topographic and

9 drainage deficiencies?

10 A. Again, I can't answer that because I don't know who

11 put the designation on, and I don't know what it

12 was intended to indicate.

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1 THE SPECIAL MASTER: Let me ask a fair  
2 question, I hope, for all concerned. On what  
3 did you rely to include that in an irrigable  
4 piece of land?

5 THE WITNESS: I used information available  
6 from --

7 THE SPECIAL MASTER: SCS?

8 THE WITNESS: In this particular case from  
9 Bureau of Indian Affairs' land classification  
10 maps, sheets 57 and 65 of their soil and range  
11 resource inventory.

12 Q (By Mr. Merrill) Okay. I believe we're done with  
13 Exhibit KH-8, if you want to put that one aside.

14 Would you please turn in your report to  
15 your overlay for Tract No. 5.

16 (Witness complied.)

17 Q Mr. Higginson, I hand you what's been marked for  
18 identification as Wyoming Exhibit KH-9. I could  
19 tell you that that is a blue line copy of  
20 United States' Exhibit C-148-13, which was  
21 offered and admitted into evidence for the truth  
22 of its contents through the testimony of Mr.  
23 Billstein of HKM.

24 THE SPECIAL MASTER: U.S. C-148-13?

25 higginson-cross-merrill

1 MR. MERRILL: Yes, Your Honor. I'm sorry,  
2 Your Honor, it was Mr. Kersich.

3 THE SPECIAL MASTER: That's okay.

4 Q (By Mr. Merrill) I direct your attention over  
5 to the left side of that exhibit and ask you if  
6 you see a parcel of land depicted there which  
7 would comport with your Tract No. 5 in the North  
8 half of Section 18?

9 A No. What I have on the left side is Section 17  
10 and my lands are in Section 18.

11 Q May I look at your copy?

12 A Sixteen, 17 and I'm in 18.

13 Q Okay. I got the wrong map, I apologize.

14 You can put away KH-9.

15 I'll hand you what's been marked for  
16 identification as Wyoming Exhibit KH-11. As  
17 part of the information you received from HKM,  
18 were you ever supplied with any land classification  
19 standards developed by HKM during their work on  
20 the Wind River Indian Reservation?

21 A I believe in the very beginning I was supplied  
22 with some information, but I did not subsequently  
23 obtain copies of their land classification maps,  
24 so I really never referred to it nor do I

25 higinson-cross-merrill

1 remember whether for certain I did receive it,  
2 but it's possible I did on my first visit to  
3 their office.

4 Q During the course of your study of these 125  
5 tracts, did you ever develop land classification  
6 guidelines similar to those shown in KH-11?

7 A No, I didn't. I used the soil classification,  
8 land classification studies that were available  
9 and published in the Federal reports.

10 Q When you used each of those Federal reports,  
11 did you make any comparison of the land  
12 classification standards, if there are any, which  
13 are set forth in those reports?

14 A I'm not sure I follow your question.

15 Q Let me back up one question. Did any of the  
16 reports, Federal reports that you consulted,  
17 contain a series of guidelines or standards  
18 by which the authors of that report proceeded to  
19 apply to those lands to determine their  
20 classification?

21 A Yes, they did, and I reviewed that information  
22 and I included in my report the explanation of  
23 the soils symbols used in the various land and  
24 soil classification studies of the Federal agencies.

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1 Those are in Appendix 8.

2 Q That would be in the --

3 A Center part of the report.

4 Q Okay. Right before the table of land types that  
5 we were discussing earlier?

6 A Yes.

7 Q Okay. Did any of these reports also contain an  
8 overall descriptive set of land classification  
9 standards similar to those set forth in KH-11?

10 A Well, there is extensive information, particularly  
11 in the Soil Conservation Service report and in  
12 the Bureau of Indian Affairs and Resource  
13 inventory report as to the standards used in their  
14 classification.

15 The Bureau of Reclamation maps did not come  
16 accompanied by a detailed explanation nor did one  
17 of the sets of the Bureau of Indian Affairs land  
18 classification maps.

19 Q Isn't it true that the soils survey and land  
20 classification reports developed by the Federal  
21 agencies on which you relied, were developed for  
22 different purposes?

23 The question may be ambiguous, I don't mean  
24 different purposes than what you used them for,

25 higinson-cross-merrill

1 but each report was developed distinct from the  
2 others?

3 A Each agency has its own mission and responsibility,  
4 and I'm sure that the work they do serves those  
5 missions and they may be different, yes.

6 Q How did you account for the different purposes  
7 and the apparently different classification  
8 standards used in those reports when you relied  
9 on them to classify land here for gravity or  
10 sprinkler irrigation?

11 A Well, there were some obvious apparent differences  
12 in the classification. I understood the basis  
13 for the, and the purpose for the various land  
14 classification and surveys. I took those purposes  
15 into consideration in connection with my review  
16 of the data and information.

17 For example, the Bureau of Reclamation soils --  
18 or land classification has, at least it's my  
19 understanding, up to this time, in the entire  
20 Riverton area, have not focused on the capability  
21 of land to be irrigated by sprinkler irrigation,  
22 and if land is above a canal or requires any  
23 kind of pump to put the water on the land, it  
24 was automatically Class 6, whether the soils  
25 higinson-cross-merrill

1 were of a type that could irrigate or not.

2 I took that into consideration in reviewing  
3 it as compared to a, say the Soil Conservation  
4 Service soils survey which indicated that the  
5 soils were of a type that could be irrigated.

6 Q I'd like to turn now to a different area of your  
7 study, and that concerns the water requirements  
8 for the irrigated and irrigable lands, just so  
9 that I don't switch areas without giving you a  
10 chance to get organized.

11 You testified in your direct examination,  
12 I believe, that you used the Blaney-Criddle method  
13 of determining unit consumptive use of crops; is  
14 that correct?

15 A That's correct.

16 Q Did you use the modified Blaney-Criddle or the  
17 original formula?

18 A I used the modified Blaney-Criddle. The --  
19 Well, I'd have to go back and say that there is  
20 no such thing as a modified Blaney-Criddle.  
21 There are some people who refer to it as a  
22 modified Blaney-Criddle, but the basic formula  
23 revised by Blaney and Criddle has not been changed  
24 over the years. They have added some additional

25 higginson-cross-merrill

1 considerations to the application of their  
2 formula and there are some who refer to it as  
3 modified Blaney-Criddle because of those  
4 adaptations.

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1 Q (By Mr. Merrill) Okay. Did you use the version  
2 of the formula that includes these later developed  
3 adaptations?

4 A I used the versions of the formula that's used  
5 by the State of Wyoming in its Water Planning  
6 Report No. 5.

7 Q Do you know which version that is?

8 A Well, there is no reference to the word "modified"  
9 in the report that I can see at first glance, so  
10 I assume it's the Blaney-Criddle formula.

11 Q Did you use a temperature adjustment factor  
12 known as  $K_T$ ?

13 A No, I didn't.

14 Q During the course of your work did you become  
15 aware that the Federal Government's experts,  
16 specifically Dr. Mesghinna, were using uni-  
17 consumptive use calculations based on the Jensen-  
18 Haise method?

19 A I was aware the Jensen-Haise method was being used  
20 by some witnesses, but I wasn't aware who was  
21 doing it.

22 Q I'm curious, since the Jensen-Haise data was  
23 available and the work had already been done by  
24 the time you began your analysis, whether you  
25 higinson-cross-merrill

1 considered the Jensen-Haise methodology?

2 A I considered it. I considered Penman, I  
3 considered Thornthwaite, I considered Lowry  
4 Johnson, but I'm more familiar and comfortable  
5 with the Blaney-Criddle, so I used the Blaney-  
6 Criddle.

7 Q You have referred to Wyoming Water Planning Report  
8 No. 5.

9 THE SPECIAL MASTER: Louder, Jim, please.

10 MR. MERRILL: What?

11 THE SPECIAL MASTER: A little louder, Jim,  
12 please.

13 MR. MERRILL: I'm sorry, Your Honor.

14 Q (By Mr. Merrill) You referred earlier in your  
15 testimony to Wyoming Water Planning Report No. 5.  
16 Do you know when that report was developed?

17 A The date on it is July, 1970.

18 Q Did you adopt the consumptive use figures given  
19 in that report, or did you do an independent  
20 analysis and use the report as a check?

21 A I used the report, and then I did an independent  
22 analysis as a check.

23 Q Did you have occasion to discuss the report with  
24 its authors?

25 higginson-cross-merrill

1 A No.

2 Q Did you investigate the purpose for which Mr.  
3 Berriman developed the report?

4 A Not beyond reading the introduction to the  
5 report which explained, at least as of the time  
6 it was printed, its purpose.

7 Q Would you please describe to the Court the method  
8 that you used to estimate effective precipitation?

9 A I used the information from the report which  
10 calculated effective precipitation, and there is  
11 on Page 11 of the report their method of  
12 estimating it, and I used it.

13 Q As part of your study, did you consult the methods  
14 set forth in what is commonly known as TR twenty-  
15 one?

16 A I'm not familiar with TR twenty-one.

17 THE SPECIAL MASTER: They used to call that  
18 a game I played in Rock Springs when I was a  
19 youth. Would you tell me what TR twenty-one  
20 stands for?

21 MR. MERRILL: He sure gave the right answer,  
22 Your Honor. It cut out the next five questions.

23 THE SPECIAL MASTER: Does anybody want a ten-  
24 minute break? Why don't we stand in recess now.

25 higginson-cross-merrill (Whereupon, a short recess  
(was taken.

End 18

1 THE SPECIAL MASTER: Okay, counsel. All  
2 right, Mr. Merrill.

3 MR. MERRILL: Thank you, Your Honor.

4 Q (By Mr. Merrill) Mr. Higginson, in computing the  
5 unit consumptive use, what irrigation season did  
6 you assume would prevail on these lands?

7 A. I used the same irrigation season used in the  
8 State of Wyoming report.

9 Q. Do you know the starting and ending dates for  
10 irrigation?

11 A. The tract particularly in this area or as they  
12 do in a normal practice?

13 Q. I'd just like the starting and ending dates that  
14 you used.

15 A. Well, the report has growing season and the computer  
16 study that they did took into account the affected  
17 precipitation and when the affected precipitation  
18 was not meeting the consumptive requirements of the  
19 crop, it began irrigating. Now, to tell you for  
20 each one of these stations, for each one of the  
21 crops when they began irrigating, I can't do that.  
22 The computer study would have done that automatically.

23 Q. Okay. I note on the bottom of Page 14 of your  
24 report a footnote that talks about an irrigation

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1 season from April 15 through October 15.

2 A. Yes.

3 Q. Did you assume that to be the active irrigation  
4 season, or do you know if the study on which you  
5 relied assumed those dates?

6 A. No, that's just an example of the amount of water  
7 that would be allowed under what I understand  
8 Wyoming law to be if you had an irrigation season  
9 of April 15 to October 15. I did not use that  
10 number as part of my study. As I said, I relied  
11 on the information in the State of Wyoming report.

12 Q. Well, I'm curious why you selected those particular  
13 dates to discuss in your footnote.

14 A. I use it only because it is illustrative of the  
15 amount of water that would be allowed under Wyoming  
16 law, if you had an irrigation season of that period.

17 Q. As part of your work, did you make any study of the  
18 availability of sufficient water, particularly  
19 early and late in the irrigation season, to service  
20 the lands which you say are irrigated and practicably  
21 irrigable?

22 A. The only study I made was in connection with a  
23 review of the work done by HKM Associates in their  
24 water supply study. I did not make an independent

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1 investigation.

2 Q. How did you use HKM's study?

3 A. I just reviewed the printouts of the water available  
4 at various node or control points on the average  
5 for their thirty-four years of record, assuming  
6 that all of the trust lands were irrigated.

7 Q. Did you make any assumptions with respect to the  
8 maintenance of minimum stream flows for fishery  
9 in determining the adequacy of water to irrigate  
10 the land you studied?

11 A. No.

12 Q. On Page 12 of your report, I'm -- I'm sorry, Page  
13 11, Table 4, I notice that the upper and lower  
14 area averages of the consumptive irrigation  
15 requirements for crops appear to be arithmetic  
16 averages of the weather stations in each area;  
17 is that correct?

18 A. They are arithmetic averages of the estimated  
19 consumptive irrigation requirement of the crops  
20 using the data from the weather stations, yes.

21 Q. Why did you decide to use the State arithmetic  
22 average of that data rather than weighting it  
23 based on the occurrence of each of these crops  
24 in the respective weather station areas?

25 higinson - cross - merrill

1 A. Because there's so little difference among the  
2 weather station information that is used, that  
3 I could see that it had little value in taking the  
4 time and effort in trying to weight them.

5 Q. Did you actually do a trial run by weighting  
6 them?

7 A. No, I did not.

8 Q. As a result of your water supply analysis, which  
9 we were just discussing, did you determine that  
10 there was sufficient water available at the head-  
11 gates of the various ditches to irrigate all of  
12 these lands?

13 A. As indicated, I've only made a determination by  
14 comparison with the HKM study, and I only did that  
15 with regard to the Little Wind River and based  
16 upon what Mr. Billstein testified to concerning  
17 Owl Creek.

18 Q. Okay. In evaluating the sufficiency of water in  
19 the Little Wind River and in Owl Creek, did you  
20 make any assumptions concerning whether the  
21 diversions on behalf of the Indian owned fee lands  
22 would be senior or junior or equivalent in priority  
23 to the diversions made by the United States for  
24 the trust lands?

25 higinson - cross - merrill

1 A. I made no assumption concerning the priority of  
2 right. I took the information from the study as  
3 a given and subtracted from that the depletions that  
4 would be resulting from the irrigation of the fee  
5 lands and compared the result.

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1 Q (By Mr. Merrill) Are you aware that during his  
2 work on behalf of the Federal Government, Dr.  
3 Mesghinna developed a map showing various  
4 climatic zones and their probable occurrence  
5 aerially on the Reservation?

6 A No, I'm not aware of that.

7 Q You mention in your report that the Midvale  
8 Irrigation District is diverting approximately  
9 six and eight-hundredths acre-feet per acre,  
10 is that a fair statement?

11 A That's based on information I have, yes.

12 Q Okay. Is that amount of water measured at the  
13 farm or at the diversion works?

14 A I understand that's at the diversion works.

15 Q Do you know what portion of that six and eight-  
16 hundredths acre-feet per acre duty would be  
17 wasted between the diversion point and delivery  
18 to the crops? In other words, is that figure  
19 net of waste or does it include waste?

20 A I think you would have to define "waste" for  
21 me before I could answer that.

22 Q I define waste as the loss of water not used  
23 for any beneficial use between the diversion  
24 works and the point of application to the field.

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1 A The question I would have is if the water is  
2 back in the system and goes by groundwater or  
3 subterranean flow back to the river at some point  
4 and below the irrigated land, is it wasted if it's  
5 still in the river system?

6 Q Do you know if the approximately six acre-feet  
7 includes the amounts lost due to canal leakage?

8 A I'm sure that it would include that.

9 Q I direct your attention to Page 9 of your report,  
10 and particularly Table 2 on that page. I'm  
11 curious why you did not use crop occurrence  
12 information for 1977.

13 A 1977 was a very dry year over most of the western  
14 part of the country, including the State of  
15 Wyoming, and it was my assumption -- well, I  
16 looked at the 1977 data, but it appeared to be  
17 so different than the other three years that were  
18 available to me, that I thought it was not  
19 representative, and therefore, didn't use it.

20 Q How would a dry year such as 1977 affect the  
21 cropping pattern?

22 A It would affect certain decisions in farming.  
23 A farmer might not choose to plant a crop of corn  
24 or a crop of hay if he was of the opinion he

25 higinson-cross-merrill

1 wouldn't have sufficient water to mature the crop,  
2 so the cropping pattern would change drastically  
3 in certain dry years.

4 Q Isn't it true that the cropping pattern would  
5 shift toward crops with a lower consumptive use  
6 of water?

7 A No, I think primarily they would shift to crops  
8 that are of the perennial nature such as hay  
9 and pasture.

10 Q Isn't it true that some crops which may have  
11 originally been planted as grains might end up  
12 becoming hay for lack of water late in the  
13 irrigation season?

14 A That's a standard practice, yes.

15 Q If that were the case, wouldn't the consumptive  
16 use of water in a dry year be lower?

17 A Yes. The usual thing to expect in a dry year  
18 is that you use less water, there is less water  
19 available.

20 Q If you lower the consumptive use, don't you also  
21 lower the diversion requirement?

22 A In most cases, yes.

23 Q Isn't it fair to assume that dry years such as  
24 1977 will continue to occur in the future?

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1 A Yes.

2 Q Why then did you ignore a dry year in projecting  
3 future consumptive use?

4 A I guess because of the years that I've had  
5 available to me I didn't have what I would call  
6 a wet year to add to to make it come out closer  
7 to a normal. I was trying to find normal infor-  
8 mation. This was background information for the  
9 purpose of arriving at a crop mix which I did  
10 based upon this and other information I had  
11 available.

12 Q Did you consider data from any years prior to  
13 1976?

14 A I didn't have any BIA data comparable to what's  
15 indicated in Table 7, but I had other information  
16 from reports of the Bureau of Reclamation and  
17 the Bureau of Indian Affairs, which I'm certain  
18 used information from years prior to 1976.

19 Q You discussed in your direct testimony this  
20 morning the division of the tracts you studied  
21 into those falling in the upper area and lower  
22 area of the Reservation. I see that Table 3 on  
23 Page 10 of your report indicates that the break  
24 point between the upper and lower areas is 5,900

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1 feet elevation. Did you select that elevation  
2 based on your discussions with the experts who  
3 have testified on behalf of the Federal Government,  
4 or was your selection of 5,900 feet based on your  
5 own independent analysis?

6 A It was based upon my own analysis. I had no  
7 discussion with the experts, but I had available  
8 to me the reports which they have used the same  
9 elevation break, and physically out on the ground  
10 there is almost a natural break in the watershed  
11 just above Diversion Dam at approximately the  
12 mouth of Dinwoody -- or Bull Lake Creek, which is  
13 about 5,900 feet elevation. It appeared to be a  
14 natural place to break it.

15 Q Did you rely on any published studies of the  
16 Wind River Indian Reservation in selecting your  
17 break of elevation?

18 A Well, I read through a lot of published studies,  
19 and they're all described and identified in the  
20 bibliography to my report. To the extent that they  
21 influenced my decision, yes, I used those studies.

22 Q I hand you what has been marked for identification  
23 as Wyoming Exhibit KH-5, and ask you if you can  
24 identify that document?

25 higinson-cross-merrill

1 A I've never seen it before.

2 Q All right. Let me try another document, that  
3 being marked KH-6, which I will hand you a copy  
4 of. I will tell you that it is an excerpt of  
5 what the cover page indicates what the document  
6 to be, the entire document having been previously  
7 admitted into evidence as Wyoming Exhibit WRIR  
8 ED-17. As part of your study did you rely on what  
9 is shown as the BIA Completion Report?

10 A No, I did not.

11 Q I direct your attention to the first paragraph  
12 on Page 7 of that report and ask you if that  
13 paragraph suggests a break point of 5,500 feet  
14 for distinguishing cropping patterns on the Wind  
15 River Indian Reservation?

16 A Well, you can make a break point anywhere you  
17 choose to make a break point. You could make it --  
18 you could make ten different diversions. The  
19 fact that they have indicated 5,500 feet elevation  
20 and a cropping pattern below that particular  
21 elevation to me is insignificant. The fact is  
22 that we do have data from weather stations, I had  
23 one of them at the break point or approximately  
24 at the break point at Diversion Dam, and it seemed

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1 to be a logical point to make a diversion. I  
 2 could have come up with ten instead of two, and  
 3 I can't see what the logic of all this is.

4 Q Mr. Higginson, what is the elevation of the  
 5 Diversion Dam Weather Station?

6 A About fifty five seventy-four feet.

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1 Q. (By Mr. Merrill) Almost 400 feet below your break-  
2 point; isn't that correct?

3 A. That's true, but there's very little between the  
4 Diversion Dam weather station and the next irri-  
5 gated tract of land upstream.

6 Q. Let's turn to the portion of your study that con-  
7 cerns the efficiency of the use of water. You  
8 testified in direct examination that you assumed  
9 an overall efficiency from the point of diversion  
10 to the point of use of 35 percent; is that correct?

11 A. Yes.

12 Q. And that figure assumed gravity irrigation?

13 A. Yes.

14 Q. Did you develop any assumptions or project any  
15 efficiencies for the use of sprinkler irrigation  
16 on any of these Indian owned fee lands?

17 A. Yes, I did.

18 Q. What assumptions did you -- Excuse me. What effi-  
19 ciency did you assume for sprinkler irrigation?

20 A. I assumed 40 percent.

21 Q. Did you assume the 40 percent efficiency for particu-  
22 lar tracts of land in Appendix C to your report?

23 A. Yes, I did.

24 Q. Would you please indicate to the Court which tracts,

25 higginson - cross - merrill

1 A. It would be all of those tracts of land where the  
2 diversion requirement is either listed as 4.15 acre-  
3 feet to the acre or 3.86 acre-feet to the acre -- or  
4 3.82, excuse me.

5 Q. Did those two duties correspond to sprinkler irri-  
6 gation in the upper and lower areas respectively?

7 A. Yes.

8 Q. Is it correct to say that 4.36 and 4.75 correspond  
9 to gravity irrigation in the upper and lower areas?

10 A. Yes; the other way around.

11 Q. 4.36 would be upper?

12 A. Upper.

13 Q. 4.75 would be lower?

14 A. Yes.

15 Q. Okay.

16 THE SPECIAL MASTER: Mr. Merrill, is your plan  
17 to go another hour or so at this or end this a little  
18 sooner, do you think? Can you tell?

19 MR. MERRILL: Probably another hour would be  
20 a pretty fair estimate, Your Honor. It's difficult  
21 to tell how fast some of it's going to go. Certain  
22 of his answers will forego certain lines of inquiry.

23 Q. (By Mr. Merrill) Mr. Higginson, as part of your  
24 investigation of these Indian owned fee lands, did  
25 higginson - cross - merrill

1 you encounter occurrences where lands, Indian owned  
2 fee lands are served or most logically would be  
3 served by ditches shared with non-Indian irrigators?

4 A. I had no information concerning Indian versus non-  
5 Indian ownership of tracts other than the fee lands  
6 that I had. So to say that the ditch would be  
7 shared with non-Indian irrigators, I'm unable to  
8 determine that. There were other irrigators sharing  
9 ditches that were non-Indian fee owners, but whether  
10 they were non-Indians I can't tell.

11 Q. All right. Would you please turn to your outline  
12 for tract 34 in the back of your report.

13 (Witness complied.)

14 Q. Isn't it true that tract number 34 contains no lands  
15 that are currently irrigated?

16 A. Well, that's not entirely true. Some of the lands  
17 that are indicated as practicably irrigable are  
18 lands that are above the Pilot Canal and I did not  
19 make a survey on the land to try to lay out the  
20 land lines to determine whether the tracts that  
21 are irrigated that are just above the Pilot Canal  
22 extend on to this land, but there's an indication  
23 in the Soil Conservation Service soil survey photo  
24 map that edges and corners of currently irrigated

25 higinson - cross - merrill

1 land come on to this particular tract. But I had  
2 no way of determining that exactly, and, therefore,  
3 I indicated it as practicably irrigable based upon  
4 the soil classification not upon what the photo seems  
5 to indicate as far as irrigation.

6 Q That being the case, would you please explain to  
7 the Court where the Appendix C to your report includes  
8 seven acres as presently irrigated land for tract 34?

9 A. Well, all I can say with regard to that is that I've  
10 got an error in this particular overlay because as I  
11 say, the photo map from which I took it clearly shows  
12 that some of the land is currently irrigated, and  
13 my worksheet shows seven acres, and I've apparently  
14 made an error in the preparation of this particular  
15 overlay.

16 Q So it's the overlay for tract 34 that should show  
17 some irrigation?

18 A. Should show on the fringes, on the east side of  
19 the tract that is in section six and seven, that  
20 some fringes of that area up to seven acres are  
21 currently irrigated.

22 Q Can you indicate to the Court the location of that  
23 currently irrigated land?

24 A. I can by the sheet from my worksheet, which you have  
25 higginson - cross - merrill

1 as a -- from the deposition.

2 THE SPECIAL MASTER: Would you like him to  
3 point at it?

4 MR. MERRILL: I was wondering if I could  
5 borrow the Court's copy of the report and correct  
6 that page.

7 THE SPECIAL MASTER: Sure. I tried it with  
8 my own crude way, by just pointing to it and indi-  
9 cate there's a seven acre error.

10 THE WITNESS: Here's the pieces along the edges  
11 that are irrigated.

12 (Off the record discussion.)

13 THE SPECIAL MASTER: So it's on the original.

14 Q. (By Mr. Merrill) Did you determine the acreage of  
15 that irrigated land to be seven acres with the use  
16 of a planimeter or was that a visual estimate?

17 A. This one I believe was a visual estimate. I don't  
18 have any notes on here that would indicate any plani-  
19 meter numbers, so I assume I estimated that one.

20 Q. That was based on the SCS soil survey photo map?

21 A. Yes.

22 Q. When was that photo map prepared?

23 A. Well, I can tell you that, but I can say I also  
24 looked in the field and the land is in fact irrigated.

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1 The report was issued in December of 1974.

2 Q Would you please turn to your overlay for tract  
3 119.

4 THE SPECIAL MASTER: One what?

5 MR. MERRILL: 119.

6 THE SPECIAL MASTER: I thought I heard 192,  
7 I thought I was going to jump.

8 MR. MERRILL: I'm sorry, I'm sucking on a cough-  
9 drop trying to keep my voice together.

10 Q (By Mr. Merrill) Isn't it true that your overlay  
11 for tract 119 does not indicate any lands to be  
12 practicably irrigable with the notation P?

13 A That's true, that's what the overlay shows, but  
14 that's not what my sheet shows nor what Appendix  
15 C shows.

16 Q Would you please describe to the Court the corrections  
17 that should be made.

18 A Yeah. The error is that the piece of land in the  
19 top of the overlay of tract 119, that is indicated  
20 as nonirrigated, should be indicated as practicably  
21 irrigable.

22  
23 \* \* \* \* \*

24  
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1 Q (By Mr. Merrill) That would be the triangular  
2 shaped tracts in the northeasternmost corner?

3 A. Yes, up in Section 32.

4 Q 32. Did you planimeter that area?

5 A. Yes.

6 THE SPECIAL MASTER: How many acres is that  
7 little portion?

8 THE WITNESS: Ten acres.

9 Q (By Mr. Merrill) Would you please turn to your  
10 overlay sheet for Tract 109, starting with Sheet 1?

11 (Brief pause.

12 Q Have you found that one?

13 A. Yes.

14 Q I'm curious about the two triangular shaped areas  
15 that are formed by what looks like the boundary  
16 of Tract 109 and the dark red line that runs at  
17 a triangle from the northwest to the southeast.  
18 Are those two little triangular areas in the north-  
19 east corners included in Tract 109?

20 A. You refer to a red line. I -- In my overlay, I  
21 don't have a red line.

22 Q Oh, I'm sorry, I didn't mean to -- Let me point  
23 it out to you. It might be the easiest.

24 Do these two (indicating) triangles, there  
25 higginson - cross - merrill

1 and there --

2 THE SPECIAL MASTER: These have an "N" in it?

3 THE WITNESS: No, they are blank.

4 MR. MERRILL: No, Your Honor, I'm asking  
5 about these two triangles there (indicating).

6 THE SPECIAL MASTER: I see, at the bottom.

7 THE WITNESS: They are not included in the  
8 acreage figures or numbers in the tabulation in  
9 Appendix C or in the Table 6.

10 Q. (By Mr. Merrill) Okay. Now, I'm looking at the  
11 sheets for Tract 109 and the Tract 110. I notice  
12 that Tract 110 has been comprised entirely of  
13 nonirrigable acres, is that correct?

14 A. Yeah, there's a typographical error I found just  
15 last night or the other day in the corrected Appendix  
16 C.

17 Q. 109 and 110 ought to be reversed?

18 A. Yes.

19 Q. Mr. Higginson, I note at the top of Appendix C,  
20 which is Higginson Deposition -- Exhibit 9 -- my  
21 mouth still thinks I'm in a deposition -- the  
22 righthand column is entitled "Most Logical Source."  
23 I'm wondering what those words mean, first, with  
24 respect to the tracts of land that you found to

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1 be presently irrigated. Does that mean that  
2 is the actual source being used to irrigate  
3 those lands?

4 A. That means as far as I could tell without per-  
5 sonally tracking out and walking out every ditch,  
6 that appeared to be the source from which the  
7 water to serve those tracts was coming.

8 Q. On what facts or data did you rely without walking  
9 out the ditches to determine the most logical  
10 source?

11 A. I relied on the information available from inter-  
12 pretation of the aerial photos and from personal  
13 inspection of the lands in the fields, their  
14 proximity, their downstream or upstream location  
15 with regard to various tributaries, their existence  
16 adjacent to an existing canal that I knew where it  
17 diverted and so forth.

18 Q. For each tract identified in Appendix C, did you  
19 identify the particular conveyance facilities  
20 serving water to that tract?

21 A. On my worksheets I put a notation where I was  
22 able to determine from the field work or from the  
23 aerial photo interpretation, I put a notation of  
24 the ditch under which that particular land lay

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1 and from which it was served.

2 Q Were there tracts for which you were unable to  
3 determine the actual source of supply?

4 A. There were tracts that were not currently served,  
5 there were tracts that I was not able to determine,  
6 Particularly presently nonirrigated tracts. I  
7 was not able to determine where the water might  
8 come from in every case except the most logical  
9 local convenient source.

10 Q When you say "local", I take it that proximity to  
11 the water source was a paramount consideration, is  
12 that correct?

13 A. It was part of my definition of a practicably  
14 irrigable land.

15 Q What other factors did you consider in selecting  
16 the most logical source for those lands for which  
17 you could not determine the source or those lands  
18 which were not being irrigated?

19 A. Well, again, most of the lands in question here  
20 lie adjacent to and intermixed with lands that are  
21 already irrigated, and it was fairly simply to  
22 conclude that an extension of an existing canal  
23 or service from an existing ditch or canal would  
24 be the logical way of serving those lands. Now,

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1 there are some lands which lie above existing  
2 canals, and in those cases I had to determine  
3 what would be the most logical source and  
4 direction from which to bring the water to  
5 the land, and that was based upon my review  
6 of the area, field inspections and review of  
7 the aerial photos.

8 Q. Were there any tracts of land for which there  
9 was no existing conveyance structure that would  
10 take water to the land for which a new structure  
11 would be required?

12 A. Yes, there were.

13 Q. How many such tracts did you find?

14 A. Oh, there are six to ten tracts, such tracts.

15 Q. I take it that all of the balance can be served  
16 by some existing structure?

17 A. Again, it's just an estimate of the number, but  
18 yes, generally that's the case.

19 THE SPECIAL MASTER: What would your estimate  
20 be of the acreage in that number, the ten tracts,  
21 five hundred acres?

22 THE WITNESS: Well, may I clarify what I'm  
23 saying? There are quite a number of tracts in  
24 here that are above, for example, the Pilot Canal.

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1 Now, the water could be brought through the  
2 Pilot Canal and be pumped to these lands as  
3 it is on adjacent lands. There are sprinkler  
4 systems installed before the Pilot Canal that  
5 are irrigating lands there, and these fee areas  
6 are adjacent to these sprinkler irrigated areas,  
7 so I'm assuming that's an area that has an  
8 existing facility, the canal is in place and  
9 could be used if you decided to do so.

10 THE SPECIAL MASTER: Were there parcels of  
11 fee lands you rejected as "PI", practicably  
12 irrigable, because of their unsuitability to  
13 water, logical water, either being too high or  
14 too remote?

15 THE WITNESS: There were lands that I  
16 questioned. At the request of the Tribal  
17 attorneys, we referred the issue to Mr. Lansford  
18 for his consideration of those particular tracts  
19 of land.

20 THE SPECIAL MASTER: Thank you. Go ahead,  
21 Mr. Merrill. Sorry for --

22 Q (By Mr. Merrill) Did you hear back from Mr.  
23 Lansford with respect to his conclusions concerning  
24 the irrigability of those tracts you referred to him?  
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1 A. Yes, I did.

2 Q. What were his conclusions?

3 A. His conclusions were that of the -- there were five  
4 tracts -- well, four ownerships, five pieces of land.  
5 Of the two that were north of the Big Horn River,  
6 it was his opinion the land could be served. The  
7 other three were tracts of land that are on Big Horn  
8 Flat, and it was his opinion they could not be  
9 served except as part of an overall project.  
10 They could not be served independently.

11 THE SPECIAL MASTER: Are they a part of any  
12 proposed irrigation project that you know of so  
13 far as trust lands are concerned on Big Horn Flats?

14 THE WITNESS: On Big Horn Flats, I'm not aware  
15 of any trust land project to irrigate that tract of  
16 land.

17 Q. (By Mr. Merrill) Can you identify by tract number  
18 the tracts that were referred to Mr. Lansford for  
19 review?

20 A. Yes.

21 Q. Would you please do so?

22 A. The lands on Big Horn Flat are Tracts Nos. 69, 96  
23 and 97.

24 THE SPECIAL MASTER: Mr. Higginson, give me  
25 higginson - cross - merrill



1 a half a minute, will you?

2 (Brief pause.

3 THE SPECIAL MASTER: Okay. The ones on  
4 Big Horn Flats are 69 --

5 THE WITNESS: 96 and 97. And the lands north  
6 of the river are Tract 54.

7 THE SPECIAL MASTER: I see.

8 Q (By Mr. Merrill) Other than these roughly six  
9 to ten tracts for which you believe a new facility  
10 would be required, I take it that the remainder of  
11 the tracts could be served by some existing ditch  
12 or structure?

13 A. Yes.

14 Q. What investigations did you make, if any, to deter-  
15 mine whether existing ditches and other means of  
16 conveyance had sufficient unused capacity to serve  
17 the lands which you say are practicably irrigable?

18 A. I didn't make any investigation. You are assuming  
19 -- I assume by the question you are assuming that  
20 all current irrigation would continue?

21 Q. Yes.

22 A. I made no such investigation.

23 \* \* \* \* \*

24

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1 MR. MERRILL: Your Honor, could I have  
2 just a moment to check one of my notebooks?

3 THE SPECIAL MASTER: Yes. It's break time,  
4 would you like ten minutes?

5 MR. MERRILL: That would be fine with me.

6 THE SPECIAL MASTER: That gives you 20  
7 minutes to conclude on this witness. We'll  
8 take ten minutes.

9 (Thereupon a ten-minute  
10 recess was taken.)

11 THE SPECIAL MASTER: All right, may we  
12 resume, please.

13 Q (By Mr. Merrill) Mr. Higginson, as part of your  
14 study, I believe you indicated in your direct  
15 examination that you evaluated the existence  
16 and status of state awarded water rights to  
17 serve these 120 or so tracts; is that correct?

18 A Yes.

19 Q During your study, did you find any lands under  
20 certificate which you determined to be non-  
21 irrigated and non-irrigable?

22 A There are some small pieces of land for which  
23 certificates have specifically been issued by  
24 the State of Wyoming, that at the time of my

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1 study were not then being irrigated. They're  
2 portions of fields or other minor areas, yes.

3 I did find --

4 Q Are these tracts -- I'm sorry. Are these tracts  
5 that were not being irrigated, did you also  
6 classify them as non-irrigable?

7 A I really haven't gone through it for the purpose  
8 of determining that. I would not be surprised  
9 but what there might be a tract or two that had  
10 more land adjudicated, more acres adjudicated  
11 than I found in a combination of irrigated or  
12 practicably irrigable.

13 Q Let me --

14 A But I have not made a study of that as an  
15 independent effort.

16 Q Let me direct your attention to Table 6 in your  
17 report and specifically the page that refers to  
18 Tract No. 21.

19 Isn't it true that according to Table 6 of  
20 your report, a Certificate of Appropriation  
21 exists to serve 68 acres in Section 23 of  
22 Township 4 North, 4 West?

23 A Yes.

24 Q Isn't it also true that you classified five of  
25 higinson-cross-merrill

1 those acres listed in the certificate as N or  
2 non-irrigable?

3 A Yes, but those lands are primarily classified  
4 that way because the lands are in farmsteads or  
5 roads, and as I explained in my report, I assume  
6 those are non-irrigated only from the standpoint  
7 that I assume that the present use of the land  
8 will not change, not that the soils were of a  
9 type that could not be irrigated.

10 Q Isn't it also true that the same certificate  
11 covers 80 acres in Section 24?

12 A Yes.

13 Q Of the same township and that you classified  
14 nine of those acres as non-irrigable?

15 A That's true. Again, because of the roads and  
16 farmsteads primarily.

17 Q So I take it during your study you found lands  
18 under certificate which are not in fact irrigable?

19 A Not in fact currently irrigated.

20 Q Now, you talked about the existence of farmsteads,  
21 and I presume this would include barns and  
22 equipment lots and things of that nature?

23 A Yes.

24 Q During your analysis or your determination of the  
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1 acreage of irrigable land, did you exclude each  
2 individual farmstead or did you make some across  
3 the board reduction, say five percent for farm-  
4 steads, roads, fences, canals, right-of-ways,  
5 that sort of thing?

6 A No. I excluded each individual farmstead as I  
7 could identify it on the aerial photos that I  
8 was using.

9 Q Okay.

10 A And again, the explanation of that is at the top  
11 of Page 15 of my report.

12 Q Let's talk for a moment about the method that  
13 you used.

14 THE SPECIAL MASTER: About what again?

15 MR. MERRILL: I'm sorry, Your Honor.

16 Q (By Mr. Merrill) Let's talk for a moment about  
17 the method you used to determine the acreage of  
18 each area which you studied. You've testified  
19 so far, I believe, that you planimetered these  
20 areas; is that correct?

21 A I planimetered them for the most part. There  
22 were some that I did not planimeter because I  
23 could estimate the areas that were out of  
24 irrigation easier than I could planimeter two

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1 acres out of an 80-acre tract, for example.

2 Q What techniques did you use to visually estimate  
3 acreage out of irrigation?

4 A I guess a technique learned from interpreting  
5 photos for 25 years.

6 Q Would you please describe that technique.

7 A Well, look at the area, make some assumptions.  
8 When I was doing work for Mr. Criddle in his  
9 development of his Blaney-Criddle formula some  
10 25 years ago, I used what we call a dot planimeter,  
11 in which you had a grid of dots and you counted  
12 the dots and multiplied it by a conversion factor  
13 and came up with the acreage, number of dots that  
14 showed up on a transparent overlay that lay on  
15 that grid. And you get to the point where you  
16 can look at an area and say that particular  
17 corner looks like about two acres, three acres  
18 out of an 80-acre tract. And just from familiarity  
19 with aerial photos, and there were some cases  
20 where I did that rather than try to planimeter  
21 a little bitty two-acre piece out of a 40-acre  
22 tract that was only a half inch square.

23 Q Okay. What did you do in those areas for which  
24 you had no aerial photography coverage?

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1 A When I did not have an aerial photography  
2 coverage, I used the next best coverage I had  
3 as far as a photo, and I have good coverage in  
4 the Soil Conservation Service Land Classification  
5 Report, and I also have reasonably good coverage  
6 in the two reports of soil classification by the  
7 Bureau of Indian Affairs. They are an aerial  
8 photo base report.

9 Q How did you deal with changes of scale on the  
10 HKM aerial photographs?

11 A I checked the scale with an engineering scale,  
12 and where there were slight discrepancies because  
13 of edge conditions on a photo or other matters,  
14 I adjusted it, again, somewhat visually.

15 Q Are the HKM photos, from which you planimetered  
16 most of your areas, scale rectified photography?

17 A Well, it's my understanding that the base photos  
18 were scale rectified, but I cannot guarantee  
19 that the prints that I got from the aerial photos  
20 were themselves scale rectified.

21 Q If you were planimetering from photos that you  
22 don't know are scale rectified, can you describe  
23 to the Court what kinds of correction techniques  
24 you used to insure that you are planimetering

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1 accurate acreages?

2 A Well, we're dealing here with rather small tracts  
3 of land. In most cases the tract of land in  
4 question has a little description of 40 acres.  
5 Then I planimetered off of a photo and came up  
6 with 39 and one half acres. I assumed that for  
7 my purposes of rounding off my study, I would  
8 assume that you had planimetered 40 acres. If  
9 then a piece of that was non-irrigated and plani-  
10 metered it as, say, ten acres, I would make no  
11 adjustment to the ten acres because there is only  
12 one-fourth, half of an acre.

13 Q Is there some particular margin of error that you  
14 can tell the Court might be applied to the  
15 acreage figures that you have developed, plus or  
16 minus one percent, plus or minus ten percent?

17 THE SPECIAL MASTER: I think I tried to run  
18 that road this morning and ran into a detour,  
19 so I don't know if you're going to have much  
20 better luck, but go ahead and try it.

21 THE WITNESS: I'm satisfied that the numbers  
22 I've come up with are within the realms of usual  
23 engineering accuracy on a study of this type.

24 Now, to say that they are within one percent  
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1 accuracy would be probably claiming more credibility  
2 to my report than maybe I could usually claim,  
3 but it certainly would be untrue to say that they  
4 were, oh, ten percent off. I don't believe that  
5 they are that far off, but they certainly ought  
6 to be within one or two percent of accuracy one  
7 way or the other.

8 Q Okay.

9 A Certainly not farther off than that; they may be  
10 low.

11 Q When you received the aerial photography from HKM,  
12 did the prints of the photographs you received  
13 contain the grid that HKM applied to them showing  
14 corners of townships and corners of sections?

15 A Yes.

16 Q Did you rely on HKM's markings in developing  
17 your areas of these tracts?

18 A I did to the extent that my subsequent checking  
19 from independent sources would verify that HKM  
20 had done it properly.

21

22

23

\* \* \* \* \*

24

25

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1 Q. (By Mr. Merrill) What independent sources did  
2 you check to verify HKM land markings?

3 A. I used other maps of the area, including the  
4 soil classification maps of the other agencies  
5 I referred to earlier, which themselves had a  
6 land survey grid on them.

7 Q. During the times when you found it necessary to  
8 resort to the BIA or SCS studies, what procedures  
9 did you use to make sure that you were planimentering  
10 accurate acreages off of those photo maps?

11 A. Well, it's no different than planimentering off of  
12 a large photo to a smaller one. The technique of  
13 planimentering doesn't change. All that changes is  
14 your conversion factor in taking the numbers from  
15 your planimeter and converting them into acres. So  
16 I had to use, of course, a different conversion  
17 scale, depending on which set of photos or maps I  
18 was working on.

19 Q. Were the photo maps attached to the SCS and BIA  
20 reports scale rectified photo maps?

21 A. I can't say whether they were or not, but we are  
22 still dealing with the fact that you have a tract  
23 of land which has a legal description encompassing,  
24 say, forty acres, and what I was trying to assure

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1 is that the total of the area that I planimetered  
2 off of that particular tract of land totaled forty  
3 acres. When I came up with forty acres, it didn't  
4 matter whether the photo was scale rectified or not.

5 Q Did you at any time during your work encounter non-  
6 standard sections or quartersections or quarter-  
7 quarters?

8 A. Yes.

9 Q That is, tracts that didn't contain 640, 160 or 40  
10 acres?

11 A. Yes, I did. But the description of those particular  
12 tracts as far as the fee lands are concerned included  
13 the total acreage figure based upon the, I assume,  
14 assessor's rolls.

15 Q I notice on your set of photographs, which have  
16 been marked as Exhibits 10-1 through 10-40,  
17 there are a number of red lines indicating the  
18 outside boundaries of tracts of land. Are the  
19 red lines you drew the ones you used to planimeter  
20 the acreages within those tracts?

21 A. In most cases, yes. There were some cases where  
22 I could indicate a boundary on the photos, aerial  
23 photos, but because of the lack of detail on the  
24 photos, I had to turn to the soil classification

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1 information for the purpose of determining irrigable  
2 or nonirrigable land, and therefore, the acreage  
3 figures I took off the classification maps rather  
4 than the aerial photos.

5 Q. Is there any rule of thumb that you can tell the  
6 Court when that occurred? In other words, would  
7 that apply to all tracts which are not outlined in  
8 red on your photo maps?

9 A. No. Again, in many cases I did outline the tract  
10 in red on the map, but I didn't take the acreage  
11 off the photo, I took it off the Soil Conservation  
12 Service or the BIA land classification maps. So I  
13 can't give you a rule of thumb that if it isn't  
14 outlined in red there, I took it someplace else  
15 because there are some places I took it regardless.

16 Q. Do your worksheets indicate the source of your  
17 planimeter data?

18 A. No.

19 Q. Is there any way you can tell us those cases in  
20 which you found it necessary to resort to the  
21 SCS or other photo maps --

22 MR. SACHSE: Your Honor, I want to object to  
23 this line of questioning going any further. It seems  
24 to me that counsel has demonstrated we are dealing

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1 with whether something might be a half acre one  
2 way or the other, and he had maybe twenty or thirty  
3 questions about planimentering. We have gone into  
4 that in great detail with the prior witnesses, too.  
5 It seems to me this has reached the point of being  
6 repetitious.

7 THE SPECIAL MASTER: You might have won an  
8 observation for the understatement of the day,  
9 Mr. Sachse, I don't know, but I'm very reluctant  
10 to cut off any particular theme of Mr. Merrill's  
11 because he seems to move along exceptionally expertise  
12 with professionalism and good judgment, so I'm going  
13 to let him go on and question and then go on to the  
14 next one. He said he's got three or four more to  
15 go, and I'm sure you are going to wind up pretty  
16 soon.

17 MR. MERRILL: Not even that many, Your Honor,  
18 on this particular area.

19 Q. (By Mr. Merrill) Is there any way we can know by  
20 examining your work which map or photograph you used  
21 to planimeter a particular tract?

22 A. I don't have any ready reference that I could give  
23 you indicating that there was this particular tract,  
24 this was the way I got the acreage, no.

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1 THE SPECIAL MASTER: I'm of the opinion  
2 on Tract No. 28 you got the acreage from Overlay  
3 Photo 14-179-67. I have looked through your  
4 tracts, and I looked through your overlays for  
5 the photo and feel that's your basic authority  
6 for the size of your tract. Is my observation  
7 a fair one?

8 You may want to read that back to the witness.  
9 I thought that would answer Mr. Merrill's question.

10 MR. MERRILL: Your Honor, I believe that that  
11 does correctly indicate the photograph number, but  
12 I'm not sure Mr. Higginson wants to go with the  
13 position that that photograph is the source of the  
14 planimeter work on which he bases his acreage.

15 THE SPECIAL MASTER: Then I'm glad we are  
16 looking at it, because I was of the opinion that  
17 was the first source, anyway, for basing his acreage.

18 THE WITNESS: Yes, Your Honor. In connection  
19 with that particular tract of land, I did get the  
20 acreage off the aerial photo.

21 THE SPECIAL MASTER: But that's not necessarily  
22 true, that doesn't necessarily follow as a general  
23 rule on the rest of the tracts, it may or may not  
24 be true?

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1 THE WITNESS: That's right, that's right.

2 Q (By Mr. Merrill) Mr. Higginson, I hand you what  
3 has been marked for identification -- let me hand  
4 you another copy of it so I can give the sticker  
5 copy to Mr. Salazar -- as KH3. Do you recognize  
6 that document?

7 A. I recognize the cover sheet.

8 Q. Why do you recognize the cover sheet?

9 A. Because these generally come to the commissioner  
10 in a draft form by marginal notations and corrections  
11 and insertions and so forth. The commissioner then  
12 reviews it, signs the cover sheet, and the attachments  
13 to the cover sheet are then prepared in the form you  
14 see it, and I've never seen this.

15 Q. You have never seen the document itself?

16 A. Not in this form. I saw it in the draft form with  
17 all the marginal notations and insertions.

18 THE SPECIAL MASTER: But that is your signature?

19 THE WITNESS: That is my signature, so I can  
20 say I recognize the cover sheet, but not the body  
21 of the report, because I have never seen it in this  
22 form.

23 Q (By Mr. Merrill) Was that document issued in May, 1980?

24 A. Yes.

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1 Q During that time, were you Commissioner of the  
2 United States Bureau of Reclamation?

3 A. Yes.

4 Q Do you believe that the principles set forth  
5 in KH3 apply to the determination of arability  
6 and irrigability of lands within Indian  
7 reservations?

8 A. Well, if you hadn't put that last modifier on  
9 there, I would have agreed with you. They pertain  
10 to the arability and irrigability of lands for  
11 Bureau of Reclamation projects.

12 Q Well, if I don't put the modifier on there, the  
13 question is irrelevant to the work that we are  
14 talking about today.

15 THE SPECIAL MASTER: Gentlemen, you touched  
16 that this morning when the witness did give some  
17 of the reasons he felt that there was some quali-  
18 fications and modifications as to criteria for  
19 Indian lands that may not have been applicable in  
20 the benefit cost ratio of them. In any event,  
21 maybe it applies here, too. Maybe one would  
22 proceed a little bit and we'll see.

23 MR. MERRILL: I thought we might dig into a  
24 little bit of this, Your Honor, in some detail.

25 higinson - cross - merrill



1 Q (By Mr. Merrill) Mr. Higginson, would you please  
2 turn to Page 115.2.3, which says at the top of the  
3 page, "Chapter Two, Land Resource Investigations  
4 for Irrigation Suitability"?

5 A. Yes.

6 THE SPECIAL MASTER: I'm lost. 115.4?

7 MR. MERRILL: .2.3, Your Honor. I'm sorry.

8 THE SPECIAL MASTER: I go from 110 -- I beg  
9 your pardon, I see what I did. I'm sorry.

10 Q (By Mr. Merrill) You indicated in your testimony  
11 that one of the documents on which you relied in  
12 your analysis was an SCS survey of the Wind River  
13 Indian Reservation area, is that correct?

14 A. It's a soil classification of the Riverton area  
15 which is only a portion of the Wind River Reservation.

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higginson - cross - merrill

1 Q (By Mr. Merrill) Is the SCS study on which you  
2 relied accurately characterized by the definition  
3 B about midway down the page, Soils Service,  
4 A Systematic Examination?

5 A On page --

6 Q 115.2.3, I'm sorry.

7 THE SPECIAL MASTER: Does that definition,  
8 is it contained in the paragraph with an H before  
9 it?

10 MR. MERRILL: No, Your Honor. It's a  
11 paragraph with a capital B at the beginning of  
12 the page. I think it's right there.

13 THE SPECIAL MASTER: He's on page -- numbered  
14 on the left.

15 MR. MERRILL: It's the following page that's  
16 .2.3 G, and I'm on the page right before that one.

17 THE WITNESS: Could I have the question  
18 again?

19 Q (By Mr. Merrill) Is the soils survey prepared  
20 by the SCS, on which you relied, of the type  
21 described in the definition under paragraph  
22 capital B of Soils Surveys?

23 A I can't say it is or it is not. This would  
24 indicate from the footnote that the Soil

25 higinson-cross-merrill

1 Conservation Agricultural Handbook No. 436 is  
2 the source of the definition of soils survey  
3 under B. Now, I just assumed that Soils  
4 Conservation Service may have used the same  
5 definition for the preparation of this report,  
6 but I can't say for certain it did or it did not.

7 Q According to this definition, is there any  
8 indication of a soils survey being performed for  
9 a particular purpose such as determining the  
10 suitability of land for irrigation?

11 A No, but on the other hand there is no indication  
12 there that the soils survey cannot be used for  
13 that purpose.

14 Q Okay. Did the SCS study on which you relied,  
15 contain any information that would leave you to  
16 believe that it was developed to determine the  
17 suitability of land for irrigation?

18 A Yes, it did.

19 Q What information did it contain?

20 A The fact that the various soils series and soil  
21 associations are identified starting on Page 33  
22 of that report as irrigated soils and capability  
23 of those groups for irrigation.

24 Q I hand you what's been marked for identification  
25 higinson-cross-merrill

1 as Exhibit KH-10. Will you identify that  
2 document?

3 A It appears to be a photocopy of pages from the  
4 Soil Conservation Survey of the Riverton area.

5 Q Is that an excerpt of the study on which you  
6 relied?

7 A It appears to be five pages from that study.

8 Q You want to check that against your original, make  
9 sure we got the right document since there are  
10 several series.

11 (Brief pause.

12 A It appears to be pages out of the report.

13 Q Would you please, while keeping that exhibit,  
14 Page 10 in front of you, turn your report to  
15 your overlay for Tract No. 34.

16 (Witness complied.

17 Q I notice at the bottom of your overlay sheet  
18 for Tract 34 it says overlay for photo SCS 31  
19 and 32. Does this mean that you used SCS field  
20 sheets 31 and 32 to obtain the lines and indications  
21 shown in Tract 34?

22 A Yes.

23 Q Would you please describe to the Court how you  
24 used these SCS field sheets.

25 higinson-cross-merrill

1 A This is the one we were looking at earlier. I  
2 used the Soil Conservation Service survey  
3 information as reported on these particular  
4 photomaps Numbers 31 and 32 in that report, and  
5 I blocked out the lands that the soils survey  
6 would indicate were non-irrigable and the balance  
7 of the lands I determined acreage as irrigable  
8 or irrigated land.

9 Q Isn't it true that according to the SCS field  
10 sheets portions of Tract 34, which you indicated  
11 are practicably irrigable, are marked with the  
12 soils series code p.c.B?

13 A That's true.

14 Q Isn't it true, according to the soils legend  
15 on Page 2 of Exhibit KH-10, that p.c.B. soils  
16 are Pavillion sandy clay loam soils alkali  
17 with zero to six percent slopes?

18 A That's true.

19 Q Do you consider alkaline soils to be practicably  
20 irrigable soils?

21 A Yes, under the information on Page 38 of the  
22 report, that reports the irrigability of that  
23 particular soil group, and I can read that if you  
24 like.

25 higginson-cross-merrill



1 these soils should be managed for irrigation as  
2 the same soil without the alkali condition  
3 would be managed."

4 Q Does that description of the soil indicate that  
5 certain soil amendments may be required in the  
6 start-up phase of irrigating these types of lands?

7 A That's right.

8 Q In determining that these lands are practicably  
9 irrigable in your opinion, did you take into  
10 account the probable types and quantities of  
11 soil amendments which would be required before  
12 cultivating the land the first year?

13 A I took into account the information in the soils  
14 survey that I just read to you and considering  
15 the fact that in this particular tract of land  
16 there are only some minor areas of these types  
17 soils around the fringes of the tracts of land.  
18 I assumed it was within the capability of the  
19 landowner to make those amendments.

20 Q What amendments would be required?

21 THE SPECIAL MASTER: I don't think he  
22 should be required to answer that, Mr. Merrill,  
23 because just as he has stated again and it's  
24 apparent from the map itself, that description

25 higinson-cross-merrill

1 six is a little bit of a thumb over and above  
2 the general area to which he refers and at the  
3 most it can't have anywhere near seven acres in  
4 it because of the seven acres spreads around both  
5 sides of it a little, but if you have evidence  
6 that it shows it is not the better practice to  
7 make the inclusions he did, then I think it's up  
8 to you to bring that up on your own case.

9 MR. MERRILL: We certainly will, Your Honor.  
10 I was just inquiring of the Witness whether he  
11 considered this information in one of his own  
12 sources in determining the irrigability of the  
13 soil.

14 THE SPECIAL MASTER: Well, he did within  
15 the limitations that he carefully put on it  
16 regarding drainage and more time for absorption  
17 and more time for drainage and smaller areas and  
18 that sort of thing.

19 Q (By Mr. Merrill) Mr. Higginson, is it likely  
20 that soils in a Pavillion series would require  
21 artificial drainage before they would become  
22 irrigable?

23 A Based on the information I have, yes, it's a  
24 common practice to require drainage of some of  
25 higinson-cross-merrill



1 those soils.

2 Q Isn't it true that according to the SCS report  
3 on which you have relied, that the Pavillion  
4 series consists of well-drained sandy clay loams  
5 that are underlain by clay shale or sandstone,  
6 at a depth of 20 to 40 inches?

7 THE SPECIAL MASTER: Which specific tract  
8 or portion of a tract are you referring to?

9 MR. MERRILL: Your Honor, we are still  
10 talking about Tract No. 4, and some portions of  
11 that tract that the Witness has stated have these  
12 Pavillion series soils.

13 THE SPECIAL MASTER: That are in the p.c.B.  
14 thumb that appears on Page 2 of your exhibit?

15 MR. MERRILL: Yes, Your Honor.

16 THE SPECIAL MASTER: Exhibit KH-10?

17 MR. MERRILL: Yes.

18 THE WITNESS: I've lost the question, I'm  
19 sorry.

20 THE SPECIAL MASTER: I hid it deliberately  
21 because I was hoping that it would stay buried.

22 Go ahead, Mr. Merrill with another question.

23

24

\* \* \* \* \*

25 higinson-cross-merrill

1 MR. MERRILL: Your Honor, with your indul-  
2 gence, I'll repeat the last question.

3 THE SPECIAL MASTER: All right, if you think  
4 so. I thought it dealt with that same area we  
5 have been working on.

6 MR. MERRILL: Well, it does, but I think it's  
7 an important question.

8 Q. (By Mr. Merrill) Isn't it true, according to the  
9 SCS report on which you relied that the Pavillion  
10 series, some of which you classified as practicably  
11 irrigable, consists of well drained, sandy clay loams  
12 that are underlain by clay, shale or sandstone at  
13 a depth of twenty to forty inches?

14 A. That's what the report says, yes.

15 Q. In determining whether lands you studied are practicably  
16 irrigable or not, did you use any specific figure  
17 or any guideline for depth to barrier?

18 A. No, I did not. I assumed that the information reported  
19 in the various government reports on which I was  
20 relying that indicated lands suitable for irrigation,  
21 that that had been taken into consideration by those  
22 agencies.

23 Q. Would you please turn back to your copy of Exhibit  
24 SK3 (sic), which is where we started this area, I think  
25 higginson - cross - merrill

1 -- excuse me, KH3, it's the one with your signature  
2 on the front page.

3 A. Yes.

4 Q. I direct your attention to the page following the  
5 one we were just looking at. It's noted in the  
6 upper righthand corner as Page 115.2.3G. I would  
7 ask you to review the distinction between irrigable  
8 land and arable land set forth in Paragraph H of  
9 that page, and after you have had a chance to review  
10 that paragraph, tell the Court whether you agree  
11 with those statements.

12 THE SPECIAL MASTER: Which statements, of the  
13 sentences in the arable land G, or of the irrigable  
14 -- or irrigation service lands H, or do you want him  
15 to read both of them?

16 MR. MERRILL: Just in H, Your Honor.

17 THE WITNESS: Well, of course, I agree with the  
18 definitions of irrigable lands for the purpose of  
19 Bureau of Reclamation projects, which is what these  
20 instructions are intended to cover.

21 Q. Do you agree with these definitions and the distinctions  
22 between them as applied to lands to be irrigated  
23 within Indian Reservations?

24 A. Well, as I indicated before, I think there are other  
25 higinson - cross - merrill

1 factors that must be taken into consideration in  
2 determining whether lands ought to be irrigated  
3 and projects ought to be built to serve Indian  
4 lands, and they go beyond the technical determination  
5 of the -- as described in the Bureau of Reclamation  
6 studies for its projects. I don't think you can  
7 relate the two together in any way.

8 Q (By Mr. Merrill) Would you please turn about three  
9 or four pages further into that report to Page 115.3.1A?

10 THE SPECIAL MASTER: Numbered on the left or right?

11 MR. MERRILL: On the left, Your Honor.

12 THE SPECIAL MASTER: I was afraid of that.

13 Q (By Mr. Merrill) I direct your attention to Sub-  
14 paragraph 4, which begins at the bottom of that page  
15 and continues on for another paragraph on to the  
16 following page.

17 MR. PERRY: Could we have the question read  
18 back, please?

19 THE SPECIAL MASTER: He hasn't asked it yet.

20 MR. SACHSE: Where did you say?

21 MR. MERRILL: Paragraph 4 at the bottom. It  
22 continues on to the next page, Harry.

23 THE SPECIAL MASTER: Now, Your question, Mr.  
24 Merrill?

25 higginson - cross - merrill

1 Q. (By Mr. Merrill) I take it, Mr. Higginson,  
2 you would agree that the procedures set forth in  
3 Subparagraph 4 are appropriate for determining  
4 irrigable lands for the Bureau of Reclamation,  
5 is that correct?

6 A. They are appropriate for determining what lands  
7 to include within a proposed reclamation project  
8 of the Bureau of Reclamation.

9 Q. Is this procedure appropriate for determining  
10 irrigable or practicably irrigable lands on an  
11 Indian reservation?

12 A. I think I would have to turn to the last few --  
13 or the last word or sentence at the bottom of  
14 the first paragraph on Page 15.3.1A which says,  
15 "The selection of the irrigable area is guided by  
16 plan formulation goals which are influenced by  
17 the purposes served by the plan." Now, I testi-  
18 fied earlier that it's my opinion in considering  
19 whether you serve Indian lands or not, there are  
20 purposes that are different than the purposes to  
21 be served by federal reclamation projects.

22 Q. Isn't it true that of the many federal reclamation  
23 projects built in the West, many of them serve  
24 Indian lands?

25 higginson - cross - merrill

1 A. I wouldn't say many of them, some serve Indian  
2 lands.

3 Q. Is there a federal reclamation project on the  
4 Wind River Indian Project that serves Indian  
5 lands?

6 A. Well, again, I made no study of ownership of  
7 lands other than these fee lands, so I can't tell  
8 you whether they are Indian owned or trust or what  
9 they are, other than the fee lands.

10 Q. As a former Commissioner of Reclamation, do you  
11 know whether any Bureau of Reclamation project  
12 on the Wind River Indian Project serves Indian  
13 lands?

14 A. No, I don't know that.

15 MR. MERRILL: Your Honor, could I have just  
16 a moment? I think I'm done, but I want to check  
17 with my witnesses.

18 THE SPECIAL MASTER: All right. We have the  
19 Tribes' exhibits to be admitted into evidence. If  
20 you are through voir direing them, while we are  
21 checking up on the final.

22 (Off-the-record discussion.  
23 (Brief pause,

24 THE SPECIAL MASTER: Do desire your exhibits  
25 to be identified as Wyoming KH10 or as Plaintiff's

higginson - cross - merrill

1 KH10?

2 MR. MERRILL: It doesn't really matter,  
3 Your Honor. I think we probably better call  
4 them Wyoming KH10.

5 THE SPECIAL MASTER: All right. You are  
6 using a stamp with "Plaintiff" on it.

7 MR. MERRILL: Well, I don't have any Wyoming  
8 stickers. I wish I did.

9 MR. CLEAR: We have been using "Plaintiff's"  
10 all along.

11 THE SPECIAL MASTER: We will keep using "Plaintiff's"  
12 for the sake of consistency.

13 MR. MERRILL: That's fine, Your Honor. It  
14 doesn't really matter.

15 Q (By Mr. Merrill) Mr. Higginson, of the 120 or  
16 so tracts of Indian owned fee lands you studied,  
17 are any of those within any Bureau of Reclamation  
18 project boundaries?

19 A. Yes.

20 \* \* \* \* \*

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25 higginson - cross - merrill

1 Q (By Mr. Merrill) Do you believe that the irrigability  
2 of those lands should be evaluated in accordance with  
3 the guidelines set forth in subparagraph 4?

4 A. Not necessarily.

5 Q. Why not?

6 A. I don't see any reason, any purpose to be served for  
7 that. If the lands are irrigable under standard  
8 classifications of accepted government agencies,  
9 whether it's Soil Conservation or BIA or the Bureau  
10 of Reclamation, that should be the controlling  
11 factor.

12 Q. Do you believe that the non-Indian lands within  
13 the same project boundaries should be evaluated for  
14 irrigability in accordance with the guidelines in  
15 paragraph 4?

16 A. Well, whether I believe it or not, that is the  
17 fact and the government regulations and practices  
18 require that.

19 Q. What, in your mind, is the basis for the distinction  
20 of treatment of two parcels of land within the same  
21 Bureau of Reclamation project boundaries?

22 A. Well, I'm not saying there should be any different  
23 treatment, I'm saying there may be some considerations  
24 that are social or political that relate to the U.S.

25 higginson - cross - merrill



1 trust responsibility to Indians that make the service  
2 of water to those lands different than service of  
3 water to a general Bureau of Reclamation project.  
4 And I'm not in a position of making that distinction.  
5 Only the Congress can do that when it authorizes con-  
6 struction projects for those lands.

7 THE SPECIAL MASTER: Well, what Mr. Merrill was  
8 getting to too, Mr. Higginson, is that the United  
9 States Supreme Court has tossed us a very, very  
10 difficult job and that is to determine what are  
11 practicably irrigable acres, and to begin  
12 to ascertain that we have to find what the government  
13 itself has identified and defined them as, and that's  
14 what Mr. Merrill is working with now. And I think,  
15 I appreciate the distinctions you've made, that they  
16 are functions that require applications of additional  
17 material that need to be considered, not just those  
18 definitions themselves.

19 MR. MERRILL: Your Honor, that concludes my  
20 cross-examination of Mr. Higginson. If you'd like,  
21 I can go ahead and offer my cross-examination exhibits  
22 now --

23 THE SPECIAL MASTER: Let me --

24 MR. MERRILL: -- or if it would be preferable,  
25 higginson - cross - merrill

1 I can let Mr. Perry do his redirect and I'll recross  
2 later on and do it all --

3 THE SPECIAL MASTER: Why don't we see if there  
4 is any redirect. There ought not be much, and then  
5 we can admit the Tribes' Exhibits now, identify them  
6 and admit them and also yours to follow them. Do  
7 you still want all three of these maps in that I'm  
8 pointing at, KH-7, 8 and 9 or do you want to pull  
9 one of those?

10 MR. MERRILL: I still think I want them all.

11 THE SPECIAL MASTER: Is there any redirect by  
12 the Tribes?

13 MR. PERRY: Yes, Your Honor, just a bit.

14 THE SPECIAL MASTER: All right. I was afraid  
15 of that.

16 REDIRECT EXAMINATION

17 BY MR. PERRY:

18 Q Mr. Higginson, would you please clarify for the  
19 Master the extent to which drainage considerations  
20 were included in your analysis?

21 A Well, when I earlier indicated that I made no deter-  
22 mination of drainage, I meant to indicate that I  
23 had made no calculation of the economic cost or the  
24 physical location of drains that might be necessary

25 higginson - redirect - perry

1 in order to provide irrigation of these particular  
2 tracts of land.

3 I did not mean to imply that there were no  
4 drainage considerations in the soil classifications  
5 on which I relied because as we have just discussed  
6 here in cross-examination, the soil classifications  
7 themselves, both of the Bureau of Indian Affairs,  
8 the Bureau of Reclamation and the Soil Conservation  
9 Service consider and have considerations of drainage  
10 built into that classification. And, therefore,  
11 drainage has been a consideration in determining  
12 whether those lands were subject to requiring drainage.

13 The other consideration was that we are dealing  
14 here with largely somewhat isolated small tracts of  
15 land as opposed to a large land mass such as a large  
16 reclamation project, and my assumption was that since  
17 these were rather isolated small tracts of land, that  
18 the individual land owner had the capability of  
19 taking care of whatever necessary drainage became  
20 apparent with the irrigation of those lands.

21 \* \* \* \* \*

22  
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24  
25 higginson - redirect - perry

1 Q (By Mr. Perry) So is it your professional  
2 opinion with regard to each tract which you  
3 identified as being currently irrigated or  
4 practicably irrigable that any, any drainage  
5 consideration that has been identified in the  
6 sources you relied on could be, if there's a  
7 problem identified in those sources that that  
8 problem could be solved?

9 A That's been my assumption, and I believe it's  
10 my professional opinion, yes, these lands, if  
11 they have a drainage problem they can be drained.

12 MR. PERRY: Thank you, Your Honor, no  
13 further redirect.

14 THE SPECIAL MASTER: United States redirect?

15 MR. CLEAR: No, Your Honor.

16 THE SPECIAL MASTER: Thank you. The State,  
17 Mr. Merrill, Counselor for other defendants?

18 Thank you, Mr. Radosevich. All right.

19 MR. MERRILL: Your Honor, I'm sorry, I  
20 forgot one thing that I need to do and it will  
21 only take about a minute.

22 THE SPECIAL MASTER: All right.

23

24

25 higginson-redirect-perry

RECROSS-EXAMINATION

1

2

BY MR. MERRILL:

3

Q Mr. Higginson, I hand you what's been marked for identification as Exhibit KH-12. Would you please identify that.

4

5

6

A KH-12 are photocopies of the interview information sheets which we used at the meeting with fee landowners at Fort Washakie on February the 24th.

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Q Do these interview forms contain a notation concerning whether particular Indian tracts of land has ever been owned by a non-Indian?

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A There is a blank for that, but not in every case is it filled out, depending upon the extent to which the fee owner knew that information.

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Q Okay. Are these the interview forms and the information on which you relied in part in making your determination of the current irrigation of Indian-owned fee land?

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A I took the information from these sheets into consideration in making my determination, yes.

Q With respect to drainage, you stated in response to Mr. Perry's question on redirect that each drainage problem that you encountered you thought could be solved. When you say that the drainage

higginson-recross-merrill

1 problem can be solved, does that statement  
2 include implicitly in economic considerations  
3 in whether the drainage problem can be solved  
4 at a cost which the productive capability of the  
5 land can support?

6 A Well, first you indicate that I encountered  
7 drainage problems. In connection with these  
8 lands I did not encounter drainage problems. I  
9 did encounter soils, the classification of which  
10 they might be subject to drainage problems, and  
11 my assumption was that the solving of those  
12 drainage problems was within the capability of  
13 the landowner.

14 Q Did you make any determination whether solving  
15 the drainage problem was within the economic  
16 productive capability of the land?

17 A No, I did not.

18 MR. MERRILL: I have no further questions.

19 THE SPECIAL MASTER: All right. Any  
20 questions from anybody else?

21 MR. RADOSEVICH: No.

22 THE SPECIAL MASTER: There being none, let's  
23 proceed to the, proceed with the introduction  
24 of evidence worked with today.

25 higginson-recross-merrill



1 in the event the State will want you for their  
2 witness later in the case. You'll stay within  
3 the jurisdiction where they might notify you.  
4 We're having additional hearings, not in August,  
5 but in September and October possibly.

6 MR. MERRILL: Thank you, Your Honor.

7 THE SPECIAL MASTER: If there is nothing further to  
8 come forth today, let's stand in recess until  
9 nine o'clock in the morning and I think the  
10 witness is here who will begin in the morning.  
11 Is that right, Mr. Perry, Mr. Sachse?

12 MR. PERRY: Yes, Your Honor.

13 THE SPECIAL MASTER: His name is?

14 MR. PERRY: Mr. Bleisner.

15 THE SPECIAL MASTER: Thank you very much,  
16 we're in recess.

17 (Proceedings recessed at  
18 4:30 p.m.)

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25



REPORTERS' CERTIFICATE

1  
2 State of Wyoming )  
3 County of Laramie ) : SS

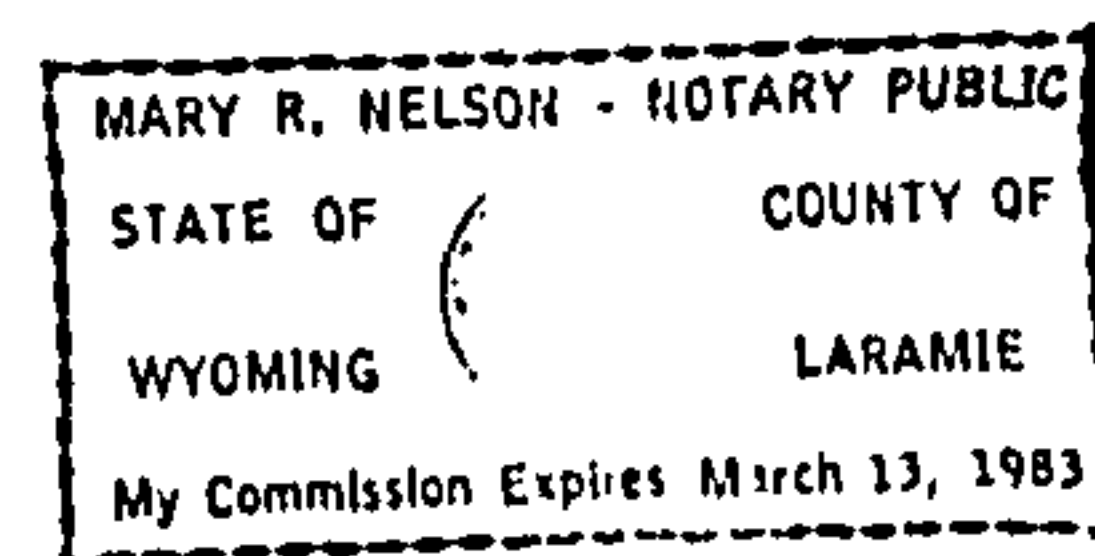
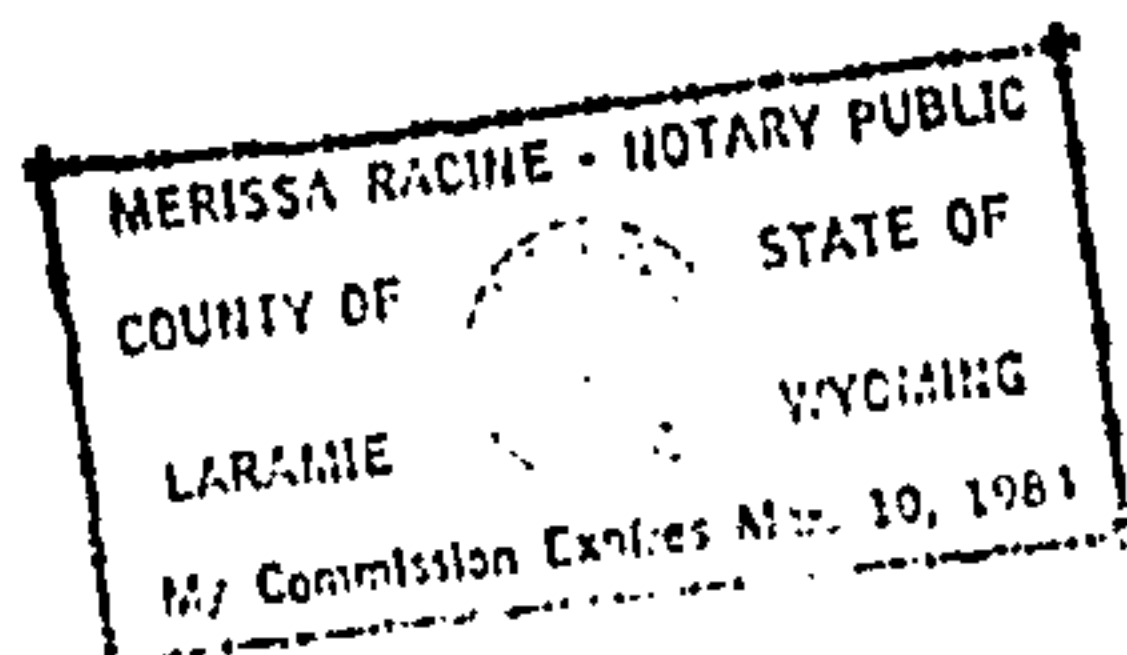
4 We, Merissa Racine and Mary Nelson, Registered  
5 Professional Reporters and Notaries Public in and for  
6 the First Judicial District, State of Wyoming, hereby  
7 certify that the facts as stated in the caption hereof  
8 are true; that we did at the time, date and place, as  
9 set forth, report the proceedings had before the Honor-  
10 able Teno Roncalio, Special Master Presiding, in steno-  
11 type; that the foregoing pages, numbered 8033- 8240  
12 inclusive, constitute a true, correct and complete  
13 transcript of our stenographic notes as reduced to type-  
14 written form under our direction.

15 We further certify that we are not agents,  
16 attorneys or counsel for any of the parties hereto, nor  
17 are we interested in the outcome thereof.

18 Dated this 27th day of July, 1981.

19  
20 Merissa Racine  
21 MERISSA RACINE  
22 Registered Professional  
23 Reporter

20 Mary Nelson  
21 MARY NELSON  
22 Registered Professional  
23 Reporter



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IDENTIFIED   RECEIVED

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