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## Trial Transcript, Vol. 43, Afternoon Session

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Case # 4993

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

IN RE: )  
)  
THE GENERAL ADJUDICATION )  
OF RIGHTS TO USE WATER )  
IN THE BIG HORN RIVER )  
SYSTEM AND ALL OTHER )  
SOURCES, STATE OF WYO- )  
MING. )

Civil No. 4993

FILED \_\_\_\_\_  
5/1 1981  
*Margaret V. Hampton* CLERK  
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VOLUME 43

Afternoon Session

Tuesday, April 21, 1981

**ORIGINAL**

1 THE SPECIAL MASTER: Please come to order.

2 MR. MEMBRINO: Your Honor, the Government  
3 calls as its next witness Robert Toedter.

4 THE SPECIAL MASTER: All right. Mr.  
5 Toedter, will you please stand up and raise your  
6 right hand and be sworn.

7 ROBERT TOEDTER

8 being first duly sworn, was examined and testified as  
9 follows, to wit:

10 DIRECT EXAMINATION

11 BY MR. MEMBRINO:

12 Q Would you please state your name.

13 A My name is Robert J. Toedter.

14 Q And you address?

15 A 3909 Bluebird Street, Billings, Montana.

16 THE SPECIAL MASTER: What street?

17 THE WITNESS: Bluebird.

18 Q (By Mr. Membrino) What is your occupation,  
19 Mr. Toedter?

20 A It's an agricultural engineer.

21 Q And could you describe the educational background  
22 you have leading to your occupation as an  
23 agricultural engineer?

24 A Yes. I have a Bachelor of Science in agricultural

25 toedter-direct-membrino

- 1 engineering from the University of Idaho.
- 2 Q Have you done any post graduate work?
- 3 A Yes, I have. During the summer of 1970 I
- 4 attended a soils scientist institute sponsored
- 5 by Colorado State University in Fort Collins,
- 6 and it was a program between the U.S. Bureau
- 7 of Reclamation and the University in order to
- 8 update the level of education for both land
- 9 classifiers and drainage engineers within the
- 10 Bureau of Reclamation.
- 11 Q Are you presently licensed as an agricultural
- 12 engineer?
- 13 A Yes, I am.
- 14 Q Which state is that?
- 15 A The State of Washington. I was licensed in 1975.
- 16 Q Do you belong to any professional societies?
- 17 A Yes, I do. I belong to the International
- 18 Congress of Irrigation and Drainage, and I also
- 19 belong to the American Society of Agricultural
- 20 Engineers.
- 21 Q Where are you presently employed?
- 22 A I am presently employed with HKM Associates in
- 23 Billings, Montana.
- 24 Q Can you tell me what work background you had
- 25 toedter-direct-membrino

1 between the time you left school and the time  
2 you were employed at HKM?

3 A After completing my college training I joined  
4 the U.S. Bureau of Reclamation in Bismark,  
5 North Dakota on the Garrison Project.

6 THE SPECIAL MASTER: What year was that?

7 THE WITNESS: In 1969. Upon starting my  
8 work effort there, that was my rookie assignment,  
9 and I got deeply involved in the drainage  
10 investigation for that unit. The project was  
11 authorized and we were out classifying or the  
12 land classifiers were out classifying land, and  
13 I participated in a follow-up drainage  
14 investigation for that program.

15 Q (By Mr. Membrino) How long were you working up  
16 at -- on that project?

17 A I worked three and a half years.

18 Q And following that what did you do?

19 A Following that I transferred to the Columbia  
20 Basin Project.

21 Q Is that also the Bureau of Reclamation?

22 A Yes, it is, at LaFreda, Washington. I was  
23 assigned to the Pasco Drainage Branch in  
24 Pasco, Washington.

25 toedter-direct-membrino

- 1 Q What were your responsibilities there?
- 2 A My responsibilities again were as a drainage  
3 engineer. What falls under that assignment,  
4 I was assigned the investigation of two major  
5 blocks of irrigated land within the project  
6 to investigate, to determine the level of a  
7 water table within these areas and also the  
8 drainability of the materials within the area.  
9 Once that was completed I proceeded on into  
10 the design and layout phase. Upon completion  
11 of that I presented my work both to a committee  
12 of specialists within the Bureau at the LeFreda  
13 office and to the farmers who had the signoff  
14 on the project prior to any further work efforts.
- 15 Q When you talk about the design and layout,  
16 you're talking about the drainage system design  
17 and layout?
- 18 A That is correct.
- 19 Q How long were you at the -- there at Pasco?
- 20 A I was there for approximately nine months.
- 21 Q And would you tell the Court what you did  
22 following your work there?
- 23 A Okay.. I transferred to the Chief Joseph Dam  
24 Project in North Central Washington. My reason  
25 toedter-direct-membrino

1 for leaving the Columbia Basin Project was to  
2 get an opportunity to expand my area of work  
3 efforts. On the Chief Joseph Dam Project I  
4 was the coordinator for the drainage within  
5 the project up there. They had just newly  
6 initiated a new program and also I was responsible  
7 for the initiation of an irrigation management  
8 services program.

9 Q Could you tell the Court a little bit about  
10 what irrigation management system is all about.

11 A Okay. Irrigation Management Services Program  
12 was a program that was developed by the  
13 Reclamation as an attempt to help local growers  
14 to better manage their water resources. This  
15 was done right at the farm level. What we attempted  
16 to do by utilizing their computer program was to  
17 make a recommendation for these guys of the  
18 amount of water to apply and also the time to  
19 apply it.

20 Q What would the effect of that be?

21 A The effect of the overall program was in -- was  
22 an attempt to reduce the quantity of water being  
23 utilized within the irrigation project.

24 Q That would improve irrigation efficiency?

25 toedter-direct-membrino



- 1 A That's correct. It also generally decreases  
2 some of the drainage problems that occur on  
3 the projects too.
- 4 Q How long were you there at Chief Joseph?
- 5 A I was there for two and a half years. I saw  
6 seven of the nine miles that I had designed  
7 constructed while on the project.
- 8 Q That's the seven of nine miles of drainage  
9 system?
- 10 A Yes, that's correct.
- 11 Q And you then left that project?
- 12 A Yes. I left that project to become Irrigation  
13 Management Services coordinator at the Upper  
14 Missouri regional office at Billings, Montana.
- 15 Q And what year was that?
- 16 A That was in -- it was between 1975 and 1976.
- 17 Q Did you assume further responsibilities with  
18 this transfer or were you doing the same work?
- 19 A I assumed a little bit different responsibilities  
20 with this transfer. I was no longer associated  
21 with drainage in the project. However, I became  
22 totally involved with Irrigation Management  
23 Services Program and had some identification with  
24 on-going operation maintenance projects on  
25 toedter-direct-membrino

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irrigation districts throughout that region,  
which included Wyoming, South Dakota, North  
Dakota and Montana.

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toedter-direct-membrino

1 Q (By Mr. Membrino) Did you have occasion to do  
2 some work down at Riverton?

3 A Yes, I did. The Riverton area was probably  
4 the largest on-going irrigation management  
5 service program that the Bureau of Reclamation  
6 had at that time.

7 THE SPECIAL MASTER: In that district?

8 THE WITNESS: It was out of the Riverton  
9 Unit.

10 THE SPECIAL MASTER: The largest --

11 THE WITNESS: Out in the Midvale Irrigation  
12 Division.

13 THE SPECIAL MASTER: But it was the largest  
14 that the Reclamation had in what district, out  
15 of the Billings office? It wasn't the largest  
16 in the nation?

17 THE WITNESS: It was one of the largest  
18 programs in the 17 western states at that point  
19 in time. Since some of the areas -- other areas  
20 have become larger.

21 Q (By Mr. Membrino) Now, when did you join --  
22 well, when did you join HKM? Was it following  
23 your work up in Billings that you just described?

24 A Yes, it was. It was in October of 1976.

25 toedter-direct-membrino

1 Q And you were hired into what position there?

2 A I was hired as a senior drainage engineer.

3 Q What were some of your responsibilities for  
4 HKM?

5 A Some of my responsibilities included participation  
6 in the development of the specifications for the  
7 Buffalo Rapids Pumping Plant, which is a pumping  
8 plant of about 150 cfs.

9 Some of my other work includes some small  
10 drain design projects in the area.

11 Other work responsibilities have included  
12 the drainage investigational efforts on the  
13 Wind River Indian Reservation, likewise on Fort  
14 Berthold and the Jicarilla Reservations.

15 Q Were you involved in any other work related  
16 to Indian Reservations and water rights besides  
17 what you have just described while working at  
18 HKM?

19 A No, I have not been.

20 Q Mr. Toedter, I gave you what's been marked for  
21 identification as United States Exhibit WRIR  
22 C-230 and ask you to identify that, please.

23 A Yes. This is a copy of my resume.

24 Q It fairly and accurately displays your academic  
25 toedter-direct-membrino

1 and professional credentials?

2 A Yes, it does. We've probably expanded a little  
3 bit more into some of my previous experience  
4 prior to joining HKM than what the resume shows.

5 MR. MEMBRINO: Your Honor, at this time I  
6 move Mr. Toedter's qualifications as an  
7 agricultural engineer specializing in irrigation  
8 and drainage and request that he be permitted  
9 to testify as an expert in this case.

10 MR. WHITE: May I voir-dire, Your Honor?

11 THE SPECIAL MASTER: Yes.

12 VOIR DIRE EXAMINATION

13 BY MR. WHITE:

14 Q Mr. Toedter, you received your B.S. in ag  
15 engineering from Idaho in 1969?

16 A That is correct.

17 Q During your three and a half years in Bismark  
18 working on the Garrison Project, how many  
19 acres were you working on with respect to  
20 drainate?

21 A Okay. I was in the main office at Bismark, and  
22 we had three field offices within the project,  
23 and I sat under the individual that was directly  
24 in charge of the program, and the direct evaluation

25 toedter-direct-membrino  
toedter-voir dire-white

1 was for 250,000 acres within the project, of  
2 which I got to see a minor or a major portion  
3 of the investigation of all these lands.

4 Also, I personally was involved in some of  
5 the drainage investigational efforts of a million-  
6 acre review over in the Red River Valley in  
7 North Dakota.

8 Q How much actual field work did you do out of  
9 the Bismark office?

10 A I was in the field from a third to a half the  
11 time during the course of the year.

12 What they would do is send me, mainly for  
13 training purposes as much as anything, out to  
14 the field offices in order to get some experience.

15 Then I came back into the local office when  
16 they needed help in there.

17 Q So you spent about half to a third of your time  
18 for that three and a half years in the field?

19 A That's correct.

20 Q Covering roughly 250,000 acres --

21 A Right.

22 Q -- is that right? You mentioned that you'd been  
23 licensed as an agricultural engineer. Is the  
24 licensing process for that any different than

25 toedter-voir cire-white

1 that for a professional engineer?

2 A No.

3 Q Are they the same thing? Would you tell --

4 A I'm a licensed professional engineer in  
5 agricultural engineering in the State of  
6 Washington.

7 Q In your work in the Columbia Basin Project,  
8 you indicated that you were assigned the  
9 investigation of two major blocks of irrigated  
10 land.

11 What was the combined total of those blocks  
12 of land in terms of acreage?

13 A Okay. The acreage for one was about 1,500 acres.  
14 I'm just guessing, plus or minus, maybe 100 to  
15 150 there.

16 And the other one was about 4,000 acres.

17 Q And how much time did you actually spend in the  
18 field during that nine months?

19 A On this particular assignment I didn't spend a  
20 great deal of time in the field. Most of my  
21 activities were spent in the office.

22 However, this generally wasn't the practice,  
23 but due to my previous investigational experience  
24 on the Garrison Diversion area, we got in a pinch,  
25 toedter-voir dire-white

1 and I had to follow through and obtain some  
2 additional field data, and so I went out in  
3 the field and supervised some of the guys in  
4 order to get the work done.

5 Q During your two and a half years with the  
6 Chief Joseph Dam Project in North Central  
7 Washington, how much of your time was spent  
8 working on drainage?

9 A I'd say probably 75 percent of my time was  
10 spent on drainage, and the balance was spent  
11 on the irrigation management services.

12 Q And how much of your drainage time did you spend  
13 in the field?

14 A I think for the clarity of the record here I  
15 should point out what I did on that job.

16 Upon arriving at Manson, I started an  
17 investigational program which included the  
18 development of a drilling program in order to  
19 determine both the lands that were wet and also  
20 the soils present in these areas.

21 Upon obtaining that information, I took  
22 it and developed drain layouts which were to  
23 be used in order to maintain the water level.

24 Then once that was completed and the  
25 toedter-voir dire-white



1 appropriate reviews were made with people in the  
2 Pacific Northwest Regional Office at Boise  
3 and the Engineering and Research Center at  
4 Denver, I supervised a survey crew in order to  
5 survey these streams.

6 Once the surveying was complete, I worked  
7 with technical people within the office to  
8 develop plan and profile drawings of these drains  
9 for specific purposes.

10 Once that was completed, I prepared a  
11 compilation of design data. Once the design  
12 data and plan and profiles were complete, this  
13 documentation was sent to the regional office  
14 for preparation of specifications for construction  
15 of the job.

16 Upon or while the specifications were being  
17 prepared, there was coordination back and forth  
18 obtaining additional field data for these guys  
19 to get everything wrapped up into a specification.

20 Once the specifications were prepared, the  
21 bid opening was held and the job was let. I got  
22 involved in the drain, the actual drain construction  
23 during the job, and as I mentioned before, as one  
24 of the inspectors, I participated in a portion of  
25 toedter-voir dire-white

1 an inspection of seven of the nine miles  
2 constructed within the job.

3 Q Back to the original question: How much time  
4 did you spend in the field and, say, prior to  
5 your drain construction inspection work?

6 A Off and on, about six months.

7 Q And how many acres were involved in the lands  
8 for which you developed the drainage?

9 A Approximately 8,000.

10 Q You mentioned that you developed a drilling  
11 program for lands which were wet?

12 A Yes.

13 Q What's the difference between drilling programs  
14 for lands which are wet and lands which are  
15 dry?

16 A Well, there's no real point in drilling lands  
17 that are dry.

18 THE SPECIAL MASTER: Why don't you define  
19 for us how do you describe lands that are wet?

20 THE WITNESS: Okay. The lands that we were  
21 concerned with are lands that have the water  
22 table up either in the root zone or very close  
23 to; in other words, a situation where the water  
24 table is within four feet or less of the ground

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surface were those lands that we described as  
being wet lands.

\* \* \* \* \*

toedter-voir dire-white

1 Q (By Mr. White)) What do you mean by plan  
2 profile drawing?  
3 A Plan profile drawings?  
4 Q Yes. Isn't that the term you used in describing  
5 your work?  
6 A Yes. What a plan profile drawing does is it's  
7 a drawing, an elevation drawing that shows the  
8 center line of a pipeline. You take the ground  
9 surface and plot it according to elevation on  
10 a piece of paper. Then you plot the grade of  
11 your drain and underneath your ground surface  
12 and then you show all your pertinent design  
13 facts; pipe size, manholes. Now, in the plan  
14 view, that merely is just the picture of the  
15 top of the center line of a drain system, to  
16 looking at an aerial photograph. Generally the  
17 center line is shown in the middle, you show  
18 your right of way limitations that the contractor  
19 has to live within, out to each side of a  
20 pipeline, and then any pertinent physical features  
21 that the contractor may be interested in knowing  
22 about during construction.

23 THE SPECIAL MASTER: Is that your final act  
24 before the design stage is complete and is sent  
25 to edter-voir dire-white

1 back to headquarters for preparation for specs,  
2 is that your last stage?

3 THE WITNESS: Yes, that would be the last  
4 portion of the design phase.

5 Q (By Mr. White) With respect to your work  
6 in 1975 and 1976 in the Billings office, could  
7 you describe -- Strike that, let me start again.

8 You told the Master that, I believe you  
9 worked on the Midvale District in terms of  
10 irrigation management program?

11 A No, I did not.

12 Q Okay. I'm not certain. Where did you work?

13 A Okay. I worked in the Upper Missouri regional  
14 office.

15 Q What work did you do in the Riverton area then?

16 A Okay. My involvement with the Riverton area  
17 was just as a liaison between the individual who  
18 was coordinator of that project --

19 THE SPECIAL MASTER: Which project?

20 THE WITNESS: The Midvale Project.

21 THE SPECIAL MASTER: Third division or do  
22 you remember?

23 THE WITNESS: Yes. Actually the Midvale  
24 and third division were all participants in the

25 toedter-voir dire-white

1 program.

2 MR. WHITE: You got ahead of me, Your  
3 Honor. That was my next question.

4 THE SPECIAL MASTER: I'm sorry.

5 MR. WHITE: I was just joking.

6 Q (By Mr. White) Did you develop the Irrigation  
7 Management Program or system for the third  
8 division?

9 A No, I did not. It was on-going.

10 Q With respect to that Irrigation Management  
11 Program for the Third Division, was it successful  
12 or unsuccessful?

13 A I think we should clarify that. It's not just  
14 the Third Division, Sandy. It's the whole  
15 irrigation district, which includes the Midvale  
16 District and the Third Division.

17 Okay. In answer to your other question,  
18 irrigation management, not through the fault,  
19 because of the technical portion of the program  
20 has been sound, there has been some problem in  
21 terms of getting acceptance within the program  
22 by the farmers. Now, if the federal government  
23 were to foot the bill 100 percent of the way  
24 there would probably be 30 percent participation

25 toedter-voir dire-white

1 at least, and maybe greater than that within  
2 an irrigation district. However, when it comes  
3 to paying a charge of three to five dollars  
4 an acre, some farmers are somewhat hesitant to  
5 go on ahead and dig money out of their own  
6 pockets in order to pay for a program and the  
7 service that's involved with that.

8 Q Okay. What do they get when they pay for the  
9 program that's --

10 MR. SACHSE: Objection, Your Honor. I  
11 object to this line of questioning as being  
12 beyond the appropriate scope of voir dire.  
13 If Mr. White wants to introduce Mr. Toedter as  
14 his witness to testify about factual matters  
15 in the Third District he can do it after Mr.  
16 Toedter has testified on direct. If he wants  
17 to cross-examine Mr. Toedter about anything he  
18 can do it. But the purpose of the voir dire  
19 is simply to determine whether Mr. Toedter is  
20 as he claims to be and as the United States  
21 presented him to be, an expert in irrigation  
22 engineering. And the voir dire should appropriately  
23 be limited to that and it should be a rather  
24 short matter. It's then done on that one single  
25 toedter-voir dire-white

1 issue, is he qualified as an expert.

2 THE SPECIAL MASTER: I agree with that.

3 MR. WHITE: Your Honor, I'd like to state  
4 that if the objection is sustained I would  
5 move to strike all that portion of the voir  
6 dire which went to irrigation management systems.

7 THE SPECIAL MASTER: Your question's what  
8 do they get for their operation or management  
9 fee. That's not a competent question to ask  
10 him on voir dire.

11 MR. WHITE: Thank you, Your Honor.

12 THE SPECIAL MASTER: Your other questions  
13 are all right.

14 Q (By Mr. White) Mr. Toedter, in your resume,  
15 which has been marked for identification as  
16 Exhibit 230, I see that you list here drainage  
17 investigation for potentially irrigable lands  
18 on several Indian Reservations including the  
19 Crow Reservation; is that correct?

20 A Okay. That is correct.

21 Q Would you please describe the work which you  
22 did on the CRow Reservation.

23 A Okay. My work on the Crow Reservation was  
24 similar to that performed upon the Wind Reservation.

25 toedter-voir dire-white



1 Generally what takes place in a determination  
2 of arable lands is the land classifiers go  
3 out, classify the land. I follow up with a  
4 review of literature of the work that's been  
5 done in a area before, scope it out for its  
6 accuracy, then get involved in a drilling  
7 program. And then after -- Once the drilling  
8 program is completed, usually we follow with  
9 a hydraulic conductivity testing program,  
10 testing the typical textures that we find within  
11 the area for their hydraulic conductivity.

12 Q You do the hydraulic conductivity testing after  
13 you determine the textures that are shown by  
14 the drilling program?

15 A Generally yes, after the typical textures are  
16 determined.

17 Sometimes it's coordinated at the same time.  
18 Like I might be out drilling and I'll have a  
19 technician under me that's doing hydraulic  
20 conductivity testing.

21 Q Was your work on the Crow Reservation reduced  
22 to a written report or written summary?

23 A Well, we prepared a preliminary report.

24 Q Who's we?

25 toedter-voir direwhite

1 A HKM --

2 (Brief interruption.)

3 Q (By Mr. White) I'm sorry, was that HKM?

4 A Yes, HKM.

5 Q Did the report deal with drainage on the Crow  
6 Reservation?

7 A That was one of the components.

8 Q You testified that your work on the Crow was  
9 similar to the work on the Wind River Reservation;  
10 is that correct?

11 A The investigational efforts were similar.

12 Q How many acres on the Crow Reservation did you  
13 do drainage work for?

14 A I can't remember, Sandy. It's probably 40,000  
15 acres or so.

16 Q I also notice on your resume, which has been  
17 identified as Exhibit C-230, that halfway down  
18 the first page, a paragraph that reads performance  
19 and coordination of a depletion study used in  
20 determination of the level of natural flow  
21 throughout the Wind River Reservation in Wyoming.  
22 This work has been introduced as part of the  
23 litigation for determination of Reservation water  
24 rights.

25 toedter-voir dire-white

1                   Would you please describe the depletion,  
2 if any, which has already been introduced?

3                   MR. MEMBRINO: Your Honor, I object.

4                   THE SPECIAL MASTER: Objection overruled.  
5 It's on his resume, how can I help but --

6                   MR. MEMBRINO: Your Honor, it goes beyond  
7 the scope of what Mr. Toedter is being offered  
8 to serve as an expert about.

9                   THE SPECIAL MASTER: One of the qualifications  
10 of his -- of his experience, assertions towards  
11 becoming an expert, and if he listed it he ought  
12 to be permitted to direct a comment on it.

13                   MR. MEMBRINO: Your Honor, his experience  
14 is broader than what he's being offered to  
15 testify about.

16                   THE SPECIAL MASTER: Of course it is, but  
17 his list of experience includes some performance  
18 in coordination of a depletion study used in  
19 determining the level of natural flow throughout  
20 the Reservation in Wyoming. He may have done  
21 that, but this work has been introduced as part  
22 of the litigation. If it has it's not in error,  
23 if it hasn't then that's in error, and we'd like  
24 to know that.

25 toedter-voir dire-white

1 MR. MEMBRINO: I do believe that portion  
2 is in error, but I would add that it is true  
3 that Mr. Toedter has worked on that issue.

4 THE SPECIAL MASTER: Let's let him tell us,  
5 why don't we instead of you. That's the  
6 purpose of the question.

7 MR. MEMBRINO: I just wanted to point out  
8 he will be testifying at a later date about  
9 that work and I think that's the appropriate  
10 time to investigate his credentials.

11 THE SPECIAL MASTER: All right. I'll  
12 overrule it. Do you remember the question?

13 THE WITNESS: Could you repeat it?

14 THE SPECIAL MASTER: Sure.

15 MR. WHITE: Why don't I try it again.

16 Q (By Mr. White) Would you please describe  
17 your work which was part of a depletion study  
18 on the Wind River Indian Reservation, which  
19 has been introduced as part of this litigation.  
20 I assume that means it has been introduced into  
21 evidence as part of this litigation?

22 A Okay. My work in depletion study -- Let me  
23 explain what the depletion study is first. The  
24 depletion study is a component part of the

25 toedter-voir dire-white

1 hydrology work that was performed by HKM on  
 2 the Wind River Reservation. My part in that  
 3 work effort was to determine that portion of  
 4 the water supply in the upper reaches of the  
 5 Wind River Basin that is presently being depleted  
 6 in order to take and make a natural flow  
 7 assessment of the waters passing through the  
 8 Wind River Reservation.

11 \* \* \* \* \*

25 toedter-voir dire-white

1 THE SPECIAL MASTER: For what purpose? To make  
2 a natural flow assessment for what purpose?

3 THE WITNESS: The purpose is just to determine  
4 the level of natural flow.

5 THE SPECIAL MASTER: I see.

6 Q (By Mr. White) Isn't it true, Mr. Toedter, that your  
7 depletion work, which is a part of the natural flow  
8 study or virgin flow study, has not yet been offered  
9 or admitted in evidence in this case?

10 THE SPECIAL MASTER: It may, but he hasn't said  
11 it has.

12 Q (By Mr. White) Has it been introduced?

13 THE SPECIAL MASTER: What does that mean?

14 Q (By Mr. White) When your resumé says that work has  
15 been introduced --

16 THE SPECIAL MASTER: In what?

17 MR. WHITE: As a part of the litigation for  
18 determination of the reservation of water rights.

19 THE SPECIAL MASTER: I'll get straight with  
20 you if you do with him. It's around here someplace.

21 MR. WHITE: Let's back up.

22 Q (By Mr. White) What does it mean, Mr. Toedter,  
23 when it says this work has been introduced as a  
24 part of the litigation for determination of the

25 toedter - voir dire - white

1 reservation of water rights?

2 A. All right. That's actually in error in terms of  
3 the resumé because it hasn't been introduced for-  
4 mally yet.

5 Q. Mr. Toedter, back to your work on the Crow Reserva-  
6 tion, were the land forms and soil textures which  
7 you encountered there similar to the land forms and  
8 soil textures that you encountered in the Wind River  
9 Indian Reservation?

10 A. The geology of the area was similar in nature. How-  
11 ever, the textures of the soils that we found within  
12 the area were completely different.

13 Soils were considerably heavier on the Crow Reser-  
14 vation and deeper than what we found present in the  
15 Wind River Reservation.

16 THE SPECIAL MASTER: By the way, Mr. White,  
17 and Counsel, I will strike the word "introduce" from  
18 this resumé and put in the word "done", so it says  
19 this work has been done as part of the litigation  
20 for determination. I suspect --

21 MR. WHITE: Let me ask a couple questions to  
22 follow up on that.

23 Q. (By Mr. White) Mr. Toedter, isn't it true you have  
24 done depletion work for two purposes in this

25 toedter - voir dire - white

1 litigation, natural flow or virgin flow study, and  
2 a systems study?

3 MR. MEMBRINO: Your Honor, I object.

4 THE SPECIAL MASTER: I'm about to sustain the  
5 objection to that.

6 MR. MEMBRINO: Thank you.

7 THE SPECIAL MASTER: I don't think that is in  
8 the proper province of your examining him in his  
9 expert status.

10 Q (By Mr. White) Mr. Toedter, is your depletion  
11 study for the virgin flow analysis done?

12 MR. SACHSE: Objection, Your Honor.

13 MR. MEMBRINO: Objection.

14 THE SPECIAL MASTER: I overrule the  
15 objection on that. The question was is your  
16 performance -- is your work done on the depletion  
17 study?

18 MR. WHITE: For virgin flow analysis.

19 THE SPECIAL MASTER: Is it done?

20 THE WITNESS: Yes, it's essentially complete.

21 Q (By Mr. White) Is the same thing true with  
22 respect to the systems analysis or systems  
23 study?

24 A No.

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1 MR. WHITE: I have no further questions,  
2 Your Honor, and the State will have no  
3 objection to the acceptance by the Court of  
4 Mr. Toedter as an agricultural engineer.

5 THE SPECIAL MASTER: Thank you.

6 MR. WHITE: If he offers opinions outside  
7 that area, we may object though.

8 THE SPECIAL MASTER: Mr. Toedter, were you  
9 with -- this is more for my information and also  
10 for this case too -- were you in the Billings  
11 office at the time examinations were made of the  
12 drainage and land classification of the Polecat  
13 Addition to Heart Mountain Project in this  
14 water division?

15 THE WITNESS: If I understand your question  
16 correctly, I believe I left just prior to that  
17 time.

18 Q You left at a very propitious time.

19 All right. I wanted to ask some questions  
20 about that project because I lived with it for  
21 about a year and a half, and some of our  
22 representatives worked very hard on that project  
23 and had many problems to overcome, one of which  
24 is the land wasn't even owned by the United  
25 States in large part.

1 Okay. Well, I see no reason why I should  
2 not at this time -- do you have additional  
3 questions, Mr. White?

4 MR. WHITE: I was just going to say that  
5 the United States had no objection to the  
6 admission of Exhibit 230 as corrected.

7 THE SPECIAL MASTER: At this time I will  
8 admit --

9 MR. WHITE: The State of Wyoming, Your  
10 Honor. I'm sorry.

11 THE SPECIAL MASTER: We got thrown by  
12 what's going on across the street, and we have  
13 been -- for the record, Mr. Toedter, you are  
14 admitted as an expert in these proceedings, and  
15 your expertise is recognized.

16 Secondly, Exhibit WRIR C-230 is admitted  
17 into evidence.

18 (Whereupon, U.S. Exhibit  
19 (WRIR C-230 was admitted  
20 (into evidence.

21 THE SPECIAL MASTER: Proceed, Mr. Membrino.

22 MR. MEMBRINO: It is clear that Mr.  
23 Toedter is qualified to testify as an agricultural  
24 engineer specializing in irrigation and drainage?

25 THE SPECIAL MASTER: I believe so.

MR. WHITE: He wasn't offered for that

1 Okay. Well, I see no reason why I should  
2 not at this time -- do you have additional  
3 questions, Mr. White?

4 MR. WHITE: I was just going to say that  
5 the United States had no objection to the  
6 admission of Exhibit 230 as corrected.

7 THE SPECIAL MASTER: At this time I will  
8 admit --

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10 Honor. I'm sorry.

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12 what's going on across the street, and we have  
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22 MR. MEMBRINO: It is clear that Mr.  
23 Toedter is qualified to testify as an agricultural  
24 engineer specializing in irrigation and drainage?

25 THE SPECIAL MASTER: I believe so.

MR. WHITE: He wasn't offered for that

1 purpose, Your Honor, and we would object. If  
2 he was offered as an agricultural engineer,  
3 we have no objection, but if it's for  
4 specialization in drainage, we would have an  
5 objection.

6 THE SPECIAL MASTER: But he specialized  
7 in drainage, and I would admit him for that  
8 purpose, and if you want to make the objection,  
9 you can, Mr. White.

10 MR. WHITE: I was going to say that the  
11 work that Mr. Toedter referred to in the  
12 drainage area was work in a much smaller  
13 geographical area than that of the Wind River  
14 Indian Reservation. It was work at least with  
15 respect to field work done nowhere near to  
16 the Wind River Indian Reservation.

17 He had some supervisory responsibility  
18 in Billings. He acted as a liaison with people  
19 in the Riverton Project, but the point I wish  
20 to make, Your Honor, is that he may have  
21 expertise in the areas in which he has experience,  
22 the geographical areas in which he has experience,  
23 but that expertise should not extend to the Big  
24 Horn or Wind River Basin in which we all know  
25 that the drainage problems as evidenced by the

1 Third Division were rather peculiar and  
2 significant.

3 THE SPECIAL MASTER: I would conclude  
4 otherwise and feel that he is an expert for  
5 purposes also of the drainage -- for drainage  
6 problems and their reduction, and the Court  
7 may recognize him and Mr. White may take  
8 exception if he wishes.

9 Go ahead.

10 MR. MEMBRINO: Thank you, Your Honor.

11 DIRECT EXAMINATION (CONTINUED)

12 BY MR. MEMBRINO:

13 Q Mr. Toedter, as a senior engineer with HKM,  
14 have you been assigned to assist in the  
15 preparation of the United States' claims in  
16 this case?

17 A Yes, I have.

18 MR. WHITE: Objection. I move to strike.  
19 Which United States' claims? As we know, Your  
20 Honor, we have got several sets --

21 MR. MEMBRINO: I will rephrase the question.

22 THE SPECIAL MASTER: You don't have to  
23 rephrase it. The objection is overruled.

24 We are going to be a little less patient

25 toedter-direct-membrino

1 on these things only in the interest of  
2 concluding the litigation when the matter is  
3 so obvious and the claims are so complex  
4 anyway, as Mr. White says.

5 I don't think it makes any difference.  
6 He's helped with some of them obviously.

7 Go ahead, Mr. Membrino.

8 MR. WHITE: Your Honor, can I make a  
9 statement for the purpose of the record?

10 For that purpose, I would simply state  
11 the inquiry was to whether they were claims  
12 asserted in the Statement of Claims or any one  
13 of several claims asserted during the testimony  
14 given in this action.

15 THE SPECIAL MASTER: As the Special Master  
16 I still say it is really irrelevant.

17 Q (By Mr. Membrino) Mr. Toedter, have you had  
18 a role in the land classification program on  
19 the Wind River Reservation to which Mr. Kersich  
20 and Mr. Waples have earlier testified?

21 A Yes, I have.

22 Q What were your responsibilities?

23 A Okay. My responsibilities were as a drainage  
24 engineer. However, we have close cooperation

25 toedter-direct-membrino

1 within the office, and I have worked closely  
2 with Mr. Waples and also Mr. Kersich on the  
3 job.

4 Q Mr. Toedter, I show you what has been introduced  
5 in evidence as United States Exhibit WRIR C-226,  
6 the historic land study that was introduced  
7 through Mr. Waples, and I direct your attention  
8 to table 1.

9 A Yes.

10 Q Would you identify that table, please?

11 A Table 1 is a set of land classification standards  
12 that were developed by HKM for the Wind River  
13 Reservation.

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toedter-direct-membrino

1 Q (By Mr. Membrino) Did you ever have a role  
2 in the preparation of those land classification  
3 standards?

4 A Yes.

5 Q Which ones?

6 A My main role was in the area of the development  
7 of the latter portion of the standards.pertinent  
8 to drainage. They are in the areas of sub-  
9 surfacehydraulic conductivity and soil depth  
10 to barrier.

11 Q Those are located on what page of that table?

12 A On Page No. 7.

13 THE SPECIAL MASTER: How do you distinguish  
14 what you've been saying about Page 7 from the  
15 table I thought you were testifying to about  
16 on Page 5, what you say about all three of them,  
17 5, 6 and 7?

18 THE WITNESS: Okay. What I'm saying is  
19 the part that I played in the development of  
20 the total standards is on Page 7, and there is  
21 a section entitled "Drains" at the top, and my  
22 participation was in the second item identified  
23 as "Subsurface Hydraulic Conductivity", and then  
24 the third item which is identified as "Soil Depth

25 toedter-direct-membrino



1 to Barrier".

2 Q (By Mr. Membrino) Could you tell us a little  
3 bit about why it's important to consider  
4 drainage in irrigating agricultural  
5 development?

6 A Yes.

7 THE SPECIAL MASTER: Do we need to have  
8 that or is that in the area of something that  
9 reasonable men ought to have sufficient  
10 knowledge of that we may proceed?

11 MR. MEMBRINO: We may proceed, Your Honor.

12 THE SPECIAL MASTER: Any objection? If  
13 we don't, please restate the question and go  
14 ahead.

15 Q (By Mr. Membrino) How did you go about  
16 selecting the hydraulic conductivity in that  
17 table that's listed as one-tenth of an inch  
18 per hour and the depth to barrier of six feet?

19 MR. WHITE: I'll object to the question,  
20 it's already asked and answered by Mr. Kersich.  
21 It was his professional judgment that ended up  
22 in the standards that were established for his  
23 work, and I believe the same thing is true of  
24 Mr. Waples.

25 toedter-direct-membrino

1 MR. MEMBRINO: Your Honor. --

2 THE SPECIAL MASTER: Try to reframe your  
3 question, bring out any personal knowledge of  
4 this witness, what he did find.

5 Q (By Mr. Membrino) Mr. Toedter, you said you  
6 participated in the selection of the standards,  
7 these criteria for the standards:

8 A That's correct. I was a very important component  
9 in the development of these standards.

10 THE SPECIAL MASTER: Tell us what you did.

11 Q (By Mr. Membrino) Could you tell us what you did?

12 A Okay. My involvement in the development of these  
13 standards is both using my previous professional  
14 experience and in considerable discussion with  
15 some of the people that I'm personally acquainted  
16 with in the engineering and research center down  
17 here at the Bureau of Reclamation in Denver.

18 We discussed what the minimum hydraulic  
19 conductivity would be, which would enable  
20 sustained irrigation on a project. And we arrived  
21 at the conclusion that one-tenth of an inch an  
22 hour was about as low as you could go. So as a  
23 consequence, we said this is our standards.

24 Q What happens if you go less than a tenth of an  
25 toedter-direct-membrino

1 inch per hour as a physical matter?

2 A Well, oftentimes what ends up happening is  
3 you can place drains in the ground, they'll  
4 be somewhat functional, but they won't maintain  
5 the water table below the root zone. So you  
6 kind of end out in no man's land where you've  
7 designed a drain in an area but it doesn't  
8 really do the job.

9 Q Is that because -- because at the rate of a  
10 tenth of an inch per hour the water does not  
11 move fast enough?

12 A Yeah, just isn't fast enough into the drain to  
13 do the job.

14 Q By the same token, how did you select the six  
15 feet?

16 A The six feet is kind of an economic consideration.  
17 You're trying to maintain the water level below  
18 the root zone and so as a consequence you have  
19 to move some lateral heights, which essentially  
20 the energy that it takes to move the water over  
21 to the drain when you're in between the two drains,  
22 so you have to have about that depth in order to  
23 sufficiently move the water over to the drain and  
24 get rid of it.

25 toedter-direct-membrino

1 MR. WHITE: I move to strike the answer,  
2 Your Honor. Both Mr. Kersich and Mr. Waples  
3 were asked about economic standards and they  
4 indicated none were made. This witness has  
5 been asked and he indicated they were made. I  
6 think the record ought to be square on that  
7 point.

8 THE SPECIAL MASTER: Objection is overruled.  
9 The record speaks for itself. We may draw our  
10 conclusions there from the testimony.

11 Q (By Mr. Membrino) Mr. Toedter, I direct your  
12 attention to footnote 3 in that table which  
13 reads: "With these parameters (depth and  
14 hydraulic conductivity) a drain spacing should  
15 be at least 200 feet." Did you -- Were you  
16 involved in the writing of that footnote?

17 A Yes, I was. Again, this involved the sum of  
18 my previous professional experience and discussion  
19 with the people in the engineering and research  
20 center.

21 Q Is it your testimony that 200 foot drain spacing  
22 is what would be necessary to drain lands that  
23 had a hydraulic conductivity of a tenth of an  
24 inch per hour and a six foot depth to barrier?

25 toedter-direct-membrino

1 A Well, it doesn't quite work that way. If you  
2 have a tenth of an inch per hour you have to  
3 have a depth to barrier of 30 feet or so in  
4 order to meet these 200-foot limitations, and  
5 if you have a six foot depth to barrier  
6 you have to have about an inch per hour hydraulic  
7 conductivity.

8 Q That's -- In other words, ten times the hydraulic  
9 conductivity that your minimum sets forth?

10 A Yes, that's right.

11 Q Well, if the 200-foot spacing is not a function  
12 of a tenth of an inch per hour hydraulic  
13 conductivity and six feet depth to barrier, what  
14 is it, what is its function in these standards?

15 A Well, what it is is it's the lowest drain  
16 spacing that we allowed on all the arable lands,  
17 and it looks like it's somewhat hard to make a  
18 decision as to what level of hydraulic  
19 conductivity that you have to have and what the  
20 depth to barrier is in order to obtain a 200  
21 foot drain spacing.

22 What I did is we have a computer program  
23 at HKM that goes through a quick irrigation  
24 scheduling analysis, and then utilizing this you  
25 toedter-direct-membrino

1 determine the quantity of deep perc that  
2 occurs at a given time and the amount, and you  
3 grind that on into your drain spacing analysis.  
4 Then I took and made comparisons throughout,  
5 a number of iterations where I used different  
6 depth to barrier and different hydraulic  
7 conductivities, and I plotted out the curve on  
8 a piece of graph paper that showed the level of --  
9 or where that 200-foot drain spacing would be  
10 relative to a given depth to barrier and  
11 hydraulic conductivity.

12 Q Having participated in the development of the  
13 drainage standards you just discussed, did you  
14 use them in investigating the availability  
15 rather than the arability of lands in the Wind  
16 River Reservation as testified to by Mr. Kersich  
17 or Mr. Waples?

18 MR. WHITE: Excuse me, could we have the  
19 question read back? You're facing away from me.

20 THE SPECIAL MASTER: Would you read it,  
21 please.

22 (Thereupon the following  
23 (question was read back as  
24 (follows: "Q Having  
25 (participated in the develop-  
(ment of the drainage standards

toedter-direct-membrino

1 (you just discussed, did  
2 (you use them in investigating  
3 (the availability rather than  
4 (the arability of lands in  
5 (the Wind River Reservation  
6 (as testified to by Mr. Kersich  
7 (or Mr. Waples?"

8 MR. MEMBRINO: I should clarify that  
9 question. It was the arability of lands, the  
10 investigation of the arability of lands on the  
11 Wind River Reservation.

12 Q (By Mr. Membrino) Do you have the question?

13 A Okay. Yes. All of the lands within the Wind  
14 River Reservation were reviewed and subjugated  
15 to these standards. Some lands ended up falling  
16 out as a result of the fact that they did not  
17 meet these standards, but every parcel of land  
18 within the Reservation was put to this test.

19 Q Did your investigation include an office  
20 evaluation?

21 THE SPECIAL MASTER: Include what, Mr.  
22 Membrino?

23 MR. MEMBRINO: An office evaluation?

24 THE SPECIAL MASTER: An office evaluation?

25 MR. MEMBRINO: In other words, not in the  
field but in the office.

THE WITNESS: Okay. Yes.

toedter-direct-membrino

1 THE SPECIAL MASTER: What's the difference  
2 between an evaluation made in the office and  
3 one made in the field if he's evaluating --

4 MR. MEMBRINO: Well, the approaches are  
5 different, Your Honor. There would be some --

6 THE SPECIAL MASTER: Which, approaches  
7 in the report or approaches in the work?

8 MR. MEMBRINO: Approaches in -- approaches  
9 in the work by applying, for example, previously  
10 acquired information, studying literature,  
11 studying a theory of drainage and going into  
12 the field and doing empirical investigations.

13 THE WITNESS: You want me to answer the  
14 question? Okay. Actually there were two levels  
15 of office evaluation. The first level was merely  
16 a level of gathering materials and then  
17 evaluating those materials that were gathered.  
18 So I had some idea of what to expect prior to  
19 entering the field.

20 The USBR did a study in 1962 on the Wind  
21 River Basin there, studying lands and most of  
22 these lands were within the same study areas  
23 which Mr. Kersich testified to during his  
24 testimony.

25 toedter-direct-membrino



1 Q (by Mr. Membrino) When did you make that  
2 first review of the USBR work?

3 A This was done in the fall of 1978.

4 Q Did you also do a field investigation?

5 A Yes, I did.

6 Q When did that occur?

7 A Okay. We started in the fall of 1978. We got  
8 snowed out of the field and so we went back  
9 in July of 1979 and worked for a couple more  
10 weeks. Then the following fall we hadn't  
11 performed any work at all in the Big Horn Flats  
12 at all. So we went back into that area and did  
13 another investigation and then last fall we went  
14 into the lands that were project lands that Mr.  
15 Waples testified to and did another drawing  
16 program.

17 Q Could you outline briefly the method you used  
18 when you get out in the field and do your  
19 investigation?

20 A Yes. Generally what we do is I, of course, take  
21 all the available data with me and review that  
22 as I go. I get out on the ground, drive around,  
23 kind of get a feel for the topography of the area,  
24 the land forms. I take the geology map with me,

25 toedter-direct-membrino

1 similar to this one shown here, Exhibit C-33.  
2 That gives me an indication of some of the  
3 materials that I'd expect to find in the field.  
4 Then after that I start my drilling activities  
5 and generally it's done on the basis to confirm  
6 what I've already found in the field or in  
7 cases where there's no material at all available,  
8 then it's identified where it's in the area.

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toedter-direct-membrino

1 Q (By Mr. Membrino) You mentioned that you had re-  
2 viewed the Wind Division report that had been pre-  
3 pared by the United States Bureau of Reclamation.

4 Did that report contain any information on  
5 hydraulic conductivity and depth to barrier?

6 A. Okay. That report contained a number of profiles  
7 of drill holes that were logged in the area. The  
8 hydraulic conductivity as introduced in Mr. Ker-  
9 sich's testimony wasn't very good.

10 I knew the individual personally who was on the  
11 Reservation at that time, is now presently the drain-  
12 age engineer on the Garrison project in Bismarck,  
13 North Dakota, and there's some limitations in some  
14 of the results that those gentlemen obtained.

15 One of the problems is the --

16 MR. WHITE: Your Honor, I would object to the  
17 testimony of the witness unless it's based on his  
18 personal knowledge.

19 MR. SACHSE: Your Honor, he's an expert witness.  
20 Expert witnesses have the right to testify as to  
21 hearsay.

22 THE SPECIAL MASTER: Continue with your res-  
23 ponse.

24 THE WITNESS: Okay.

25 toedter - direct - membrino

1 A. There was some problem with the casing that the guys  
2 used and they crossed across textural zones which  
3 makes it very difficult to determine what the hydraulic  
4 conductivity is for a particular texture.

5 Now, this is very important to us in the drain-  
6 age business to identify and associate a given  
7 hydraulic conductivity for a particular texture.

8 Q (By Mr. Membrino) Now, what you say -- just a moment  
9 ago you said that when Mr. Kersich testified, the  
10 hydraulic conductivity was not very good. He's not  
11 talking about HKM's work. He's talking about -- Are  
12 you referring to the USBR report on the Wind River?

13 A. Yes.

14 MR. WHITE: Objection, Your Honor. What Mr.  
15 Kersich is talking about is known to only two enti-  
16 ties, Mr. Kersich and God, and not Mr. Toedter.

17 THE SPECIAL MASTER: What Mr. Toedter said Mr.  
18 Kersich was talking about, Mr. Toedter can tell us  
19 what he thinks -- Mr. Toedter can tell us what he  
20 thinks Mr. Kersich was talking about.

21 Was he talking about the distance of subsurface  
22 hydraulic conductivity as not being very good, or  
23 were you talking about his report concerning conduc-  
24 tivity not being very good? You left an ambiguity

25 toedter - direct - membrino

1 there.

2 THE WITNESS: We are going to have to clarify  
3 this point. The rate of hydraulic conductivity.

4 THE SPECIAL MASTER: Was not very good?

5 THE WITNESS: Was not too good, the results.

6 THE SPECIAL MASTER: You weren't talking about  
7 Mr. Kersich's work?

8 THE WITNESS: No, I'm not talking about -- no,  
9 I'm talking about the USBR work.

10 MR. WHITE: Your Honor, I would move to strike  
11 the answer for lack of foundation. How does this  
12 witness know that it's not very good? It's a con-  
13 clusion --

14 THE SPECIAL MASTER: You might ask him, if you  
15 wish, Mr. Membrino, but I thought he explained it.

16 MR. MEMBRINO: I believe, Your Honor, he has  
17 already testified that he reviewed the U.S. Bureau  
18 of Reclamation work, took it into the field with him  
19 prior to making his own determination of hydraulic  
20 conductivity and depth to barrier, so I do think  
21 he's competent to speak about it.

22 THE WITNESS: I believed that Mr. Kersich  
23 introduced the memorandum into the record concerning  
24 the subject.

25 THE SPECIAL MASTER: He may have, but this case

1 is burgeoning with evidence and exhibits and paper-  
2 work beyond the comprehension of many minds to  
3 fathom, including mine, but let's go ahead.

4 Q (By Mr. Membrino) If there were those deficiencies  
5 in the Bureau of Reclamation work, how did you make  
6 use of them?

7 MR. WHITE: I object to the question because  
8 it's based on a fact not in evidence, Your Honor.  
9 He can rely on that to reach some kind of opinion or  
10 conclusion perhaps.

11 THE SPECIAL MASTER: Something does not have to  
12 be in evidence in this case to warrant him having  
13 utilized it in his work, for goodness' sake. The  
14 objection is overruled. He may answer.

15 Q (By Mr. Membrino) Mr. Toedter, did you make a review  
16 of the USBR report?

17 A. Yes, I made a report of the USBR data, and I did not  
18 use the Bureau of Reclamation hydraulic conductivity  
19 results.

20 Q Why not?

21 A. The reason why, as I stated earlier, is because of  
22 the fact that the results were so low.

23 Q How do you mean the results were so low?

24 A. Well, the results, because of the fact that there  
25 toedter - direct - membrino

1 were problems with screens that they were using at  
2 the time, there was also some problems with barrels  
3 running out of water, and they didn't know where they  
4 were at. It was just a combination of little errors  
5 that make the data questionable, so as a consequence,  
6 I didn't rely on that data at all.

7 Q Did you make your own examination?

8 A Yes, I did, and we ran our own hydraulic conductivity  
9 tests and used them accordingly for our study efforts.

10 Q Did you compare the hydraulic -- your own hydraulic  
11 conductivity and depth to barrier work with that of  
12 the results contained in the Wind Division report?

13 A Yes, I did, and they were low. This is what raised  
14 the question originally.

15 Q When you say they were low, what do you mean by that,  
16 that they were lower -- what was lower than what?

17 A Well, they were lower for a given texture than the  
18 results obtained by HKM in our investigational ef-  
19 forts.

20 Q How much land was the subject of your investigation?

21 A Okay. We investigated 84,000 acres of future land,  
22 as testified to by Mr. Kersich, and approximately  
23 7300 acres of project lands, as testified to by Mr.  
24 Waples.

25 toedter - direct - membrino

1 Q Now, you made conclusions about the hydraulic con-  
2 ductivity and depth to barrier regarding those lands?

3 A Yes, I did, based on the standards.

4 Q Do you know whether your conclusions have been in-  
5 corporated into Mr. Kersich's and Mr. Waples' con-  
6 clusions about which they have already testified?

7 A Yes, they were a component of the analysis.

8 Q Have you made a record of the facts and data on  
9 which your conclusions are based as to hydraulic  
10 conductivity and depth to barrier?

11 A Yes, I have.

12 Q Are some of those facts and data already in evidence?

13 A Yes, they are. The land classification logs and the  
14 deep drill holes were introduced for the future lands  
15 in Mr. Kersich's testimony, and the same items were  
16 introduced for the project lands or FIPs during Mr.  
17 Waples' testimony.

18 MR. MEMBRINO: Your Honor, for the record, I  
19 point out that those items are United States' Exhi-  
20 bits WRIR C-228-A, -B and -C, and U.S. Exhibit WRIR  
21 C-147-A, -B and -C.

22 The former deal with the historic lands and the  
23 lateral --

24 THE SPECIAL MASTER: Are they back in the control  
25 toedter - direct - membrino



1 of the Special Master's office?

2 MR. WHITE: They are right here, Your Honor.

3 THE SPECIAL MASTER: All right. Are you return-  
4 ing them or are they staying with the State --

5 MR. WHITE: Your Honor, only Exhibits 147-A, -B  
6 and -C were in the control of the State and --

7 THE SPECIAL MASTER: Do you want to keep them,  
8 Mr. White, for a while longer?

9 MR. WHITE: We would like to, Your Honor. We  
10 are still checking for things we don't have, but  
11 they are available in the courtroom.

12 THE SPECIAL MASTER: Very well.

13 MR. MEMBRINO: At this time, Your Honor, I  
14 would like a moment to set up an exhibit.

15 THE SPECIAL MASTER: All right. We have been  
16 at it for a good long while. Let's take a ten-minute  
17 break.

18 (Whereupon a recess was taken.)

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1 THE SPECIAL MASTER: Please come to order.  
2 If it will help any we can get another easel, but  
3 I don't know what help that might bring, or is it  
4 all right the way it is?

5 MR. MEMBRINO: I think we're all right for  
6 the moment.

7 THE SPECIAL MASTER: Then proceed, Mr.  
8 Membrino.

9 Q (By Mr. Membrino) Mr. Toedeter, I direct your  
10 attention to what has been marked for identifica-  
11 tion as United Stated Exhibit WRIRC-231 and ask  
12 you to identify that, please.

13 A Yes. This is an exhibit depicting the North  
14 Crowheart Study Unit showing depth to barrier  
15 or showing areas with similar depth to barrier  
16 and hydraulic conductivity.

17 Q I refer you for the moment to U. S. Exhibit  
18 WRIRC-35, titled the Study Area Land Base Map,  
19 and ask if you can locate this North Crowheart  
20 Study Unit on that map?

21 A Okay. Let's locate it in this area marked  
22 with the Wind River.

23 Q That area outlined in red?

24 A That's correct.

25 toedeter-direct-membrino

1 Q Thank you. Was the information in Exhibit C-231  
2 prepared by you or under your supervision?

3 A Yes, it was.

4 Q Do you know if any of the information displayed  
5 on this map, on this exhibit is already in evi-  
6 dence?

7 A Yes, it is. These areas with crosshatched marked  
8 lines are those areas as testified to being arable  
9 by Mr. Kersich during his testimony.

10 MR. MEMBRINO: For the Court's information  
11 that data is in evidence through Exhibit C-44 and  
12 C-45.

13 Q (By Mr. Membrino) I notice on this exhibit that  
14 there are areas shaded in gray surrounded by red  
15 lines. Are those your additions to the map?

16 A Yes, they are. The outline of the study areas  
17 that were used during the analysis within this  
18 project.

19 Q Now, I direct your attention to the right hand  
20 corner of the Exhibit 231 and note a legend  
21 there. There is a shaded area surrounded by  
22 a red line that's designated boundary for area  
23 of analysis. Could you tell us what an area  
24 of analysis is?

25 toedeter-direct-membrino

1 A Okay. An area of analysis, say for instance  
2 like this area here, was identified as NC-12,  
3 was an area that had similiar hydraulic conduct-  
4 tivity and depth to barrier characteristics  
5 throughout the area.

6 Q It is you who selected those areas of analysis?

7 A Yes, I did.

8 Q How did you go about selecting--selecting each  
9 one?

10 A This was a rather detailed approach. What I  
11 did after all the drilling was in-house, I  
12 utilized that, USBR information and other  
13 appropriate information and located holes that  
14 were drilled throughout the study area. Once,  
15 having that information, I continued from there  
16 and determined weighted hydraulic conductivity  
17 for each profile.

18 I wonder at this time if it wouldn't be  
19 appropriate to make a sketch in the manner in  
20 which the hydraulic conductivity determination  
21 was made?

22 THE SPECIAL MASTER: It's up to Mr.  
23 Membrino.

24 Q (By Mr. Membrino) Sure. Mr. Toedter, why don't

25 toedter-direct-membrino

1 you take one of those blank mounting boards  
2 and we'll identify it as U.S. Exhibit WRIR C-242.

3 Using that board, it may help for you to just  
4 sketch for the purposes of illustrating the testi-  
5 mony, how you--how you go about establishing  
6 hydraulic conductivity and depth to barrier.

7 MR. WHITE: Your Honor--

8 THE SPECIAL MASTER: Well, which, let me  
9 as which? I thought it wa hydraulic conductivity.

10 MR. MEMBRINO: First hydraulic conductivity.

11 MR. WHITE: Your Honor, I would object to  
12 the question. I object to the question because  
13 it asks the witness to prepare an exhibit during  
14 direct examination, which is a circumvention  
15 of the ten-day rule, if during direct examination  
16 they wish to introduce evidence that should be  
17 the subject of the ten-day rule.

18 THE SPECIAL: I will overrule the objection,  
19 on the basis that it really isn't in the province  
20 of the ten-day rule type of a piece of evidence.  
21 It is an illustrative accompaniment of oral testi-  
22 mony given to sketch or diagram or buttress that  
23 which is already spoken, Mr. White. This nothing  
24 more than a sketch of what his is testifying to

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toedter-direct-membrino

1 and I'm not even sure it will be offered. But  
2 go ahead.

3 MR. WHITE: Thank you, Your Honor.

4 THE WITNESS: Okay. What I'll attempt to  
5 do here first is show the rationale for the  
6 importance and the meaning of depth to barrier  
7 and hydraulic conductivity. Then secondly I will  
8 show how it was utilized in this exhibit C-231.

9 THE SPECIAL MASTER: Will it be easier for  
10 you to work if that is lifted up about one yard  
11 higher than where it is? We have some hooks  
12 you're welcome to make use of.

13 Right, we have some hooks to hook it up.

14 (Brief pause.

15 THE SPECIAL MASTER: There you are. Okay,  
16 Mr. Membrino.

17 THE WITNESS: Okay. I'll attempt to show  
18 a drainage system here, just a typical cross-  
19 section of what works in operation. This here  
20 is your ground surface.

21 Q (By Mr. Membrino) That's designated by the  
22 green?

23 A Designated by green.

24 THE SPECIAL MASTER: You got two lines.

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1 Are they both ground surface?

2 THE WITNESS: Okay. Now--

3 THE SPECIAL MASTER: All right, go ahead.

4 THE WITNESS: The upper line is the ground  
5 surface, the lower green line will designate as  
6 the barrier, and we'll get into how we define  
7 barrier a little bit later. And I'll call that  
8 BAR.

9 Now, the pipe drains are shown as two  
10 circles in blue. I'll show the water table  
11 level between drains as a curvilinear line in  
12 red between two pipes. Now, getting into how  
13 it relates to my analysis, I'll use a blue  
14 line and this will show a cross-section of the  
15 transmitting median. In other words--

16 THE SPECIAL MASTER: Of what?

17 THE WITNESS: Transmitting median, which is  
18 a cross-sectional area of the soils that the water  
19 moves through in order to get to drains. It moves  
20 laterally in both directions from the middle.

21 THE SPECIAL MASTER: What governs the per-  
22 forations on the drain pipes?

23 THE WITNESS: Okay. That is usually or has  
24 been a set standard in the drainage business and

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1 usually they figure about a square inch per  
2 opening per linear foot of drain is adequate  
3 to drain almost any condition. Of course, if  
4 you have a heavier soil then you won't need that  
5 opening. But that isn't a high cost item so it  
6 doesn't, you know, really become significant.  
7 Everything is designed basically the same way.

8 Okay. Then the second major item of  
9 importance to me is the barrier depth. And that  
10 is described by a material that has one tenth of  
11 the permeability of the weighted average of the  
12 material above it.

13 For instance, if the weighted average of  
14 the materials above the barrier is ten and the  
15 material in the barrier has a hydraulic conductivity  
16 of one, it would be one tenth less, meeting the  
17 definition for barrier.

18 Okay. Secondly, the information that I  
19 look at in this analysis can be shown by a profile,  
20 something like this. What I will do here is I will  
21 assign two-foot increments throughout the profile.

22 Q (By Mr. Membrino) You're referring now to a blue  
23 rectangle on the left-side of that exhibit, 242?

24 A Yes, I am. And this is an example of the profile

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1 commonly used in our business.

2 Okay. In the field when I'm logging behind  
3 a drill I will texture the appropriate soils  
4 as they're brought up out of the ground, use it,  
5 usually laying it out five feet at a time, one  
6 through five, then structuring them, sort of like  
7 a book, going from left to right. Under the first  
8 foot I put the six foot, go up to ten, then the  
9 16th foot will be put--excuse me, the 11th foot  
10 will be put under the sixth foot and go so on and  
11 so forth, up through the fifth and so on.

12 Okay. After the soils are laid out I go  
13 through and I texture each and every foot. I  
14 identify the textures that are present within that  
15 profile. Then I write a log of that profile.  
16 For instance, the first six feet might be  
17 sandy loam and I would indicate it like that on  
18 my profile.

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- 1 Q (By Mr. Membrino) You have indicated SL there?
- 2 A Yes. And indicated SL on my drawing.
- 3 Okay. The next 8 feet typically might be fine
- 4 sandy loam, and maybe the next --
- 5 Q That fine sandy loam is designated FSL?
- 6 A Yes, it is. And the next 6 feet might be loamy sand,
- 7 designated LS. (Witness marked on document).
- 8 Q Now, on the right side of that rectangle, you have
- 9 what appear to be blue slash marks going on. What
- 10 do they represent?
- 11 A Okay. These blue slash marks were set up here in
- 12 order to identify soil depths.
- 13 The soil indications on the soil depths were
- 14 set up on the basis of 2-foot increments. I have
- 15 a little designation in the middle of the FSL block
- 16 that indicates 10. I have another designation at
- 17 the bottom of the hole that indicates 20.
- 18 Q And that's feet, 10 feet and 20 feet?
- 19 A That's correct.
- 20 Q Does that column then represent a cross section of
- 21 the graph?
- 22 A Yes. That represents a cross section of the material
- 23 in that area.
- 24 Q Are we looking from the same perspective at that
- 25 toedter - direct - membrino

1 column as we are with the diagram to the right des-  
2 cribing the drains?

3 A. Yes. This column could be moved right over into this  
4 area describing the drain (indicating).

5 One thing I might point out is that in all like-  
6 lihood we might hit hard sandstone or shale in the  
7 bottom of the hole, and that would be our barrier  
8 as indicated by this map (indicating). Usually these  
9 materials display real low permeability.

10 Q. To make something clear, material does not have to  
11 be impervious in order for it to be barrier, however?

12 A. Yes, that is correct. As long as it's one-tenth less than  
13 weighted average of the materials above it.

14 Q. Now, what do you do --

15 THE SPECIAL MASTER: It's one-tenth less than  
16 the weighted or not more than 10 percent of the  
17 weighted average?

18 THE WITNESS: Okay, 10 percent of --

19 THE SPECIAL MASTER: There's a world of differ-  
20 ence. Weighted difference is .9 and your barrier is  
21 .8, and if one-tenth more or less, but it sure is not  
22 a barrier.

23 MR. MEMBRINO: I believe it's one-tenth of the  
24 weighted hydraulic conductivity, the material above

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1 it.

2 THE SPECIAL MASTER: Not more than that.

3 THE WITNESS: Yes, it's one-tenth of the  
4 weighted. In other words, if you were to take the  
5 materials above it and divide that by 10, that re-  
6 sult by 10 --

7 THE SPECIAL MASTER: Anything higher than that  
8 from the barrier would not be barrier?

9 THE WITNESS: That's correct.

10 THE SPECIAL MASTER: Tell me -- let me ask a  
11 question, Mr. Membrino.

12 Mr. Toedter, why in your business is it that  
13 symbols are used so much differently for exactly  
14 the same substantive description? In Mr. Kersich's  
15 map symbol code he uses a V for loamy sand and uses  
16 a small B for drainage barrier, the same in Mr.  
17 Waples' report.

18 You use different terms, however, in your maps;  
19 is that correct?

20 THE WITNESS: Well, actually I use the same  
21 symbols that these guys do.

22 I think what we have to do, for clarity, is  
23 just get out what we are trying to do. When these  
24 gentlemen log profiles, they use the same symbols  
25 that I do. But when they go out and identify a

1 piece of land such as slope here and give it a land  
2 classification, in their symbols, then they use the  
3 Vs and the Ds and the other things which you are re-  
4 ferring to, so --

5 THE SPECIAL MASTER: I'm not sure I understand,  
6 but thank you for the answer.

7 THE WITNESS: It's a symbol used in land classi-  
8 fication whereas these symbols are used pertinent to  
9 logging for profile.

10 THE SPECIAL MASTER: Those were work paper sym-  
11 bols you are using on your sketch as distinguished  
12 from final product symbols in mapping?

13 THE WITNESS: No --

14 THE SPECIAL MASTER: That's not quite true?

15 THE WITNESS: That's not --

16 THE SPECIAL MASTER: Disregard my observation  
17 and my question.

18 Let's go right ahead.

19 Q (By Mr. Membrino) When you have established what  
20 the profile is, what do you do next in your schematic  
21 there to determine what the hydraulic conductivity is?

22 A I develop a weighted average of the profile from 4-  
23 foot depths, which would be the depth from my red  
24 line in my sketch down to the barrier.

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1 Q Is that what you have described as the root zone or  
2 root zone earlier in your testimony?

3 A Yes, the 4-foot zone is the root zone.

4 Q Now, you say you disregard that. Why do you disre-  
5 gard that in establishing the profile?

6 A The reason is because it is not part of the transmit-  
7 ting medium. In other words, no water is transmitted  
8 through that medium.

9 Q If you have water in the root zone, what happens?

10 A Then you start to run into all sorts of problems.  
11 Productivity becomes limited. Salinity may occur.  
12 Just some common problems that are around irrigation  
13 projects where the water table is high.

14 Q So the two circles you have indicating drains on your  
15 sketch are intended to contribute to keeping that  
16 root zone free of water? Is that what it's all about?

17 A Yes, that's their sole purpose.

18 Q Now, on your profile -- just one other question --  
19 on your profile then, are the top 4 feet of the soils  
20 represented in your profile or not?

21 A Yes. I show the entire profile. However, in my  
22 analysis I will elect to ignore the top 4 feet and  
23 continue from there on.

24 Okay. What I've attempted to do here is just  
25 toedter - direct - membrino

1 develop a weighted average. I'll take the depth of  
2 the particular zone of this sandy loam that's below  
3 4 feet.

4 In other words, the 4 to the 6-foot depth, that  
5 difference is 2 feet. Then I'll take the fine sandy  
6 loam or the FSL portion of the profile from 14 feet  
7 back up to 6 feet and determine that difference,  
8 which is 8 feet.

9 Then next I will look at the loamy sand portion  
10 of the profile, which extends from 20 feet up to 14  
11 feet, and that difference is 6 feet.

12 Now, based on the HKM hydraulic conductivity  
13 results and some of my professional experience, too,  
14 I assigned hydraulic conductivity for each one of  
15 these textures.

16 The hydraulic conductivity for sandy loam was  
17 5.0 feet. That I assigned for fine sandy loam --  
18 I'll just use an example -- is 2.6, and that assigned --

19 THE SPECIAL MASTER: What are those figures in  
20 the parentheses, inches per hour?

21 THE WITNESS: Yes, they are rated in inches per  
22 hour.

23 A. And the loamy sand is 7 1/2, and again, that's in  
24 inches per hour.

25 toedter - direct - membrino

1 Q (By Mr. Membrino) Now, you state you established  
2 those values for those kinds of soils -- you said  
3 by your experience -- does that mean you went out  
4 and actually tested soils on the Wind River Indian  
5 Reservation?

6 A Okay. Yes. That's based on mainly testing the  
7 Wind River Indian Reservation. In some cases, be-  
8 cause of the significant number of different tex-  
9 tures that I have to analyze in this analysis, some  
10 judgment was required in other areas.

11 And what I did in most cases was just look at  
12 the values that I had already obtained in the field  
13 and projected what a reasonable value for material  
14 would be that was reasonably close in texture to  
15 that.

16 Q Are there textbook sources or other kinds of sources  
17 you would use to check your determinations, your own  
18 empirical determinations against?

19 A Yes.

20 Q Did you do that?

21 A Yes.

22 Q How did they match up?

23 A Reasonably close. As close as you will in this busi-  
24 ness. This is kind of an art.

25 toedter - direct - membrino



1 Q Okay, so you now have the hydraulic conductivity for  
2 each type of soil you found there. Now, what do you  
3 do with that?

4 A Okay. What I attempted to do is find the weighted  
5 average of these numbers.

6 For example, here I have a profile that's 16  
7 feet deep, so if I find the product here, which is  
8 10, and then add this product to it (indicating) --

9 Q Now, is that perhaps the hydraulic conductivity for  
10 each is an inch per hour per foot of soil medium?

11 A Yes. These are all in column units, so as a conse-  
12 quence, you can find the product and then divide by  
13 the depth and end up with the same units you have.

14 THE WITNESS: Has anybody got a calculator?

15 MR. WHITE: Yes.

16 THE SPECIAL MASTER: What did you get?

17 THE WITNESS: Okay. I get approximately 6  
18 inches per hour.

19 THE SPECIAL MASTER: Six inches per hour?

20 THE WITNESS: Yes. That would be the weighted  
21 hydraulic conductivity for all these textures, so  
22 I'll put that up here at the top of the board.

23 So kind of in summation, what that means is  
24 this transmitting media through this area for this

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1 particular sample would have a hydraulic conductivity  
2 of 6 inches per hour, and the depth to barrier would be  
3 20 feet, and the depth to barrier is given from the  
4 ground surface down to the actual barrier depth.

5 Q (By Mr. Membrino) In this case 6 inches per hour is  
6 approximately -- is essentially 60 times your minimum  
7 standards for hydraulic conductivity set out in the  
8 table we were discussing earlier?

9 A Yes, that's correct. However, this rate of hydraulic  
10 conductivity is not uncommon for soils found within  
11 the Wind River Indian Reservation.

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- 1 Q (By Mr. Membrino) Do you have a calculation  
2 of what minimum depth to barrier you could  
3 have in a situation where you have conductivity  
4 of six inches per hour?
- 5 A I guess, Joe -- Mr. Membrino, I don't under-  
6 stand what you're alluding to.
- 7 Q Well, in terms of your minimum drain spacing  
8 standards, what kind of drain spacing could you  
9 have, what kind of minimum depth to barrier  
10 could you have where there was hydraulic  
11 conductivity of six inches per hour that would  
12 permit you to have drains spaced as close as 200  
13 feet?
- 14 A Okay. This gets out of my area of expertise  
15 within this litigation. The maximum that I  
16 looked at was one inch per hour for hydraulic  
17 conductivity, and the reason for that was  
18 because of the fact that one inch per hour was  
19 the highest rate of hydraulic conductivity  
20 required to meet the 200-foot drain spacing.
- 21 Q Thank you. Does that complete your description  
22 of the method for computing the hydraulic  
23 conductivity?
- 24 A Yes, it does.
- 25 toedter-direct-membrino

1 Q Would you describe now how you, having  
2 established the hydraulic conductivity,  
3 establish your depth to barrier?

4 A I think I've gone into a little bit of this  
5 analysis before so I won't spend a great deal  
6 of time in this area. Again, we derived as  
7 just presented, a determination of the hydraulic  
8 conductivity of the materials within the  
9 profile and then finding material that has a  
10 hydraulic conductivity that's at least ten  
11 times lower than that present above and we call  
12 that barrier.

13 Now, in an area analysis similar to what's  
14 shown on this exhibit here, there are a number  
15 of holes, and you will experience some variation  
16 from hole to hole. As a consequence, I  
17 evaluated all my data within an area, generally  
18 I didn't use the lowest value. I used something  
19 that was reasonably close to the lower values  
20 present.

21 Q I show you -- I show you what's been marked for  
22 identification as United States Exhibits WRIR  
23 C-241-A and 241-B. Would you identify them,  
24 please.

25 toedter-direct-membrino

1 A Yes. They are my computations. 241-A is the  
2 Wind River Drainage computations for the Wind  
3 River Drainage analysis, depth to barrier and  
4 hydraulic conductivity for the future lands.

5 And 241-B is again the drainage analysis,  
6 depth to barrier, an average weighted hydraulic  
7 conductivity for the historic lands.

8 A Are these copies of the same documents that were  
9 furnished to Mr. White in your deposition last  
10 week?

11 A Yes, they were.

12 Q Thank you. Turning your attention now to  
13 Exhibit C-231, North Crowheart Study Unit,  
14 would you locate -- Could you describe how you  
15 designate this area in the right-hand corner  
16 of the map? It's a gray shaded area circumscribed  
17 in red.

18 A Okay. The designation we have used is shown  
19 down here in the legend. First off we have a  
20 symbol, it's an alpha-numerical symbol. The  
21 alpha-numerical part stands for the particular  
22 study area, which is the North Crowheart Study  
23 Unit.

24 Q That is the NC designation?

25 toedter-direct-membrino

1 A The NC designation. And then the number was  
2 an identification of the area, and each of the  
3 areas were designated in consecutive order  
4 throughout the study unit.

5 Q Now, the area I have indicated on the map has a  
6 alpha-numerical symbol and it's connected to  
7 the gray and circled area by a dark line. Would  
8 you tell the Court what that symbol -- what  
9 that symbol is, what is the designation of that?

10 A Okay. This symbol here is just a symbol that  
11 indicates that these results pertain to the  
12 study area. There is no pertinent point indicated  
13 within the study area at all.

14 Q Now, NC-12 then is the area we're speaking about?

15 A Right. And that data relates to the entire  
16 study area.

17 Q Beneath the designation NC-12 there are two  
18 numbers. Would you tell the Court what they  
19 stand for?

20 A Yes. The upper number indicates the average  
21 weighted hydraulic conductivity in inches per  
22 hour for the area, and the lower number indicates  
23 the depth to barrier of the study area.

24 Q And what are they in that situation?

25 toedter-direct-membrino

- 1 A 2.7 inches per hour hydraulic conductivity,  
2 and 15 foot depth to barrier.
- 3 Q How do they compare with the standards, the  
4 land classification standards regarding drainage?
- 5 A Okay. We set minimums in our standards of  
6 one-tenth of an inch an hour and as you can see  
7 the 2.7 is significantly greater than that, and  
8 the depth to barrier was 15 feet and of course,  
9 it's significantly greater than the six feet.

10 Q Thank you.

11 MR. MEMBRINO: For the convenience of the  
12 Court we have an unmounted copy of that map  
13 on your table, if you wish to refer to it.

14 THE SPECIAL MASTER: Thank you, I appreciate  
15 that.

16 Q (By Mr. Membrino) I notice that the shaded area,  
17 the area shaded in gray in NC-12 includes more  
18 than the lands indicated by the legend as hash-  
19 mark lands, as being the arable lands. What  
20 went into your decision to include the area you  
21 did in NC-12?

22 A Okay. There was some pertinent borings in some  
23 of the areas immediately outside of the arable  
24 lands, and I chose in my analysis to make

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1 utilization of these borings. So as a  
2 consequence, my analysis area boundaries were  
3 not held in tight to the arable lands.

4 Q What value does a boring have that's located  
5 outside the arable lands to a determination  
6 of hydraulic conductivity or depth to barrier  
7 within the arable lands?

8 A Okay. This was reviewed on the basis of the  
9 geology and the land forms of the area,  
10 topography and the things such as this nature.  
11 If I felt that it wasn't pertinent I didn't  
12 include it as a portion of my data gathering  
13 process.

14 Q Can you tell the Court what land forms you  
15 examined in concluding as you did about NC-12?

16 MR. WHITE: Objection to this question. I  
17 think we've gotten two definitions of land forms,  
18 one from Mr. Kersich and one from Mr. Waples,  
19 and I think it would be appropriate before this  
20 question is answered to have a definition of  
21 what this witness means by land form, and I would  
22 object because the question's ambiguous for that  
23 reason.

24 THE SPECIAL MASTER: The objection is overruled.

25 toedter-direct-membrino



1 You may answer.

2 THE WITNESS: Okay. The materials generally  
3 present in this area are alluvial in nature and  
4 also in some cases may be a terraced format.  
5 I think probably what we should do is take U.S.  
6 Exhibit WRIR C-33 and look at that.

7 This area is comprised of terrace deposits  
8 and some alluvial materials adjacent to it.

9 THE SPECIAL MASTER: What professional  
10 conclusion motivated you to make your working  
11 area as large as you did around NC-12?

12 THE WITNESS: Okay. If I understand your  
13 question correctly, how come I chose this size  
14 of an area?

15 THE SPECIAL MASTER: Yes.

16 THE WITNESS: Assigned this depth to  
17 barrier and hydraulic conductivity for that?

18 THE SPECIAL MASTER: I can appreciate your  
19 depth to barrier and hydraulic conductivity,  
20 but you were talking now about land forms which  
21 was covering your designation of the boundaries  
22 for areas of analysis. How come such a large  
23 area of analysis around an area less than half  
24 that much which is arable land of NC-12?

25 toedter-direct-membrino

1 THE WITNESS: Okay. I guess one point that  
2 I didn't make entirely clear here is if we slip  
3 to North Crowheart area 12 of the United States'  
4 Exhibit WRIR C-241-A, which is the larger area --

5 THE SPECIAL MASTER: Okay, North Crowheart  
6 area, 21.

7 THE WITNESS: Twelve.

8 THE SPECIAL MASTER: I beg your pardon.  
9 Okay. Got it.

10 THE WITNESS: Okay. What I did is I  
11 developed some worksheets with the arable lands,  
12 in other words, the cross-hatched lands that  
13 are shown here. Then I located all the holes  
14 that I identified by symbols in table 1 of  
15 this report. They include HKM deep holes that  
16 were drilled in 1979, HKM land class holes,  
17 USBR drainage holes, USBR deep holes, which are  
18 also performed during the same drainage investi-  
19 gations; USBR test pits. When we obtained the  
20 data from the State of Wyoming, evaluated State  
21 of Wyoming's test pits, and they are shown by  
22 two different symbols on our maps, and then HKM  
23 deep holes in 1980, 1981.

24 \* \* \* \* \*

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1 THE SPECIAL MASTER: And they are shown on 231?

2 THE WITNESS: No, they aren't. I've got some  
3 work maps --

4 THE SPECIAL MASTER: No, no, I don't need to  
5 see them. God, I have got enough maps, believe me.

6 Q (By Mr. Membrino) To make this a little more simple,  
7 is the information recorded as to holes in Exhibit  
8 C-241-A recorded on your work maps?

9 A Yes, it is. It's taken right off the work maps.

10 THE SPECIAL MASTER: And are many of those holes  
11 in your study analysis area rather than actual arable  
12 land?

13 THE WITNESS: Most of them were in the analysis  
14 area.

15 THE SPECIAL MASTER: I see what you mean.

16 THE WITNESS: I don't know if you can see this  
17 worksheet, but the holes were identified by the red  
18 and green symbols (indicating).

19 THE SPECIAL MASTER: Yes, you have answered my  
20 question, if you will just identify what you are hold-  
21 ing in your hand.

22 THE WITNESS: Okay. This was a work map of the  
23 North Crowheart Study Unit showing the same informa-  
24 tion that's shown on WRIR C-231.

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1                   However, Exhibit WRIR C-231 does not show the  
2 location of the borings that I used --

3                   THE SPECIAL MASTER: Which are on the map that  
4 you are holding in your hand?

5                   THE WITNESS: Yes.

6                   MR. MEMBRINO: For ease of the record, I will  
7 mark this WRIR C-243, and it will refer to Mr.  
8 Toedter's work maps. I will put a sticker on that.

9                   THE SPECIAL MASTER: All right.

10 Q               (By Mr. Membrino) Mr. Toedter, was a copy of that  
11 work map made available to the State of Wyoming  
12 during the course of your deposition last week?

13 A               Yes, it was.

14 Q               Now, referring to Exhibit 241-A, North Crowheart  
15 Area, there are a number of holes listed, not all  
16 of which were holes dug by HKM. Is that true?

17 A               Yes, that is correct.

18 Q               On Page 13 of 241-A, there is a conclusion or a  
19 statement made that the average weighted hydraulic  
20 conductivity is 2.7 inches per hour and the depth  
21 to barrier is 15 feet.

22                   Now, on which information that's recorded here  
23 in Exhibit 241-A did you rely to establish the  
24 hydraulic conductivity of 2.7 inches per hour?

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1 A. Okay. That was based on Hole 5-B, which is at the  
2 bottom of Page --

3 MR. WHITE: I would object to this line of  
4 questioning because the question calls for an answer  
5 based on a document not yet in evidence. He's read-  
6 ing from a document not yet in evidence.

7 Until it's offered in evidence, I don't think  
8 it's permissible until I have a chance to voir dire,  
9 and I will object to this exhibit for violation of  
10 the 10-day rule.

11 THE SPECIAL MASTER: I was of the opinion that  
12 241-A -- just a second, Mr. White. Let me see what  
13 my notes show on that.

14 I have got that confused with 228-A, -B, -C.

15 MR. MEMBRINO: Your Honor, we do propose to  
16 offer this in evidence at the conclusion of Mr.  
17 Toedter's testimony.

18 I want to point out that these documents were  
19 made available to the State, admittedly not 10 days  
20 prior to this hearing, but during the course of Mr.  
21 Toedter's deposition as well as his work map.

22 THE SPECIAL MASTER: I will overrule the objec-  
23 tion, not so much on the 10-day matter, but -- as  
24 they are not being in evidence, but because of the  
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1 fact that if he knows from his own experience what  
2 he based his conclusions on, on Page 13 regarding  
3 depths and can so state, he can state.

4 Now, if he refers in doing that to Hole No. 5-B,  
5 which was drilled so and so and so on, that is admis-  
6 sible. I will hold it that way.

7 You may prove me wrong in a few years, but I'm  
8 going to hold that.

9 I have some questions on this point, too, that  
10 are not exactly an objection too, but I want to  
11 know, are you saying that you based your conclusion  
12 of depth to barrier at 15 feet and average weighted  
13 hydraulic conductivity of 2.7 inches per hour on the  
14 results of 1 out of 10 holes drilled?

15 THE WITNESS: Okay. No, I'm not saying --

16 THE SPECIAL MASTER: That's what I thought you  
17 were trying to say.

18 THE WITNESS: No.

19 THE SPECIAL MASTER: Then what are you saying  
20 you based it on?

21 THE WITNESS: Okay. Let's take a look at  
22 hydraulic conductivity first.

23 Okay, and all these holes designated by Cs are  
24 Bureau of Reclamation holes which we have alluded  
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1 to a little bit previously.

2 Those holes designated with an E are also Bureau  
3 of Reclamation test pits.

4 Okay. When one pages down through the weighted  
5 hydraulic conductivities, you will note that they  
6 range between 6 inches an hour and 15 inches an  
7 hour.

8 Now, note Hole 5-B, which is an HKM land class  
9 hole, and also Hole 79-A on the next page, which was  
10 an HKM deep hole drilled with power auger.

11 You will note that these weighted hydraulic  
12 conductivities are considerably lower than the con-  
13 clusions you would arrive at using Bureau of Reclama-  
14 tion information.

15 Consequently, I felt that the HKM results were  
16 more reliable than USBR, so I chose to take the  
17 average of these two holes, arriving at a conclusion  
18 of 2.7 inches an hour for this area.

19 I found this to be common throughout my analysis.  
20 There were just a few instances in which the weighted  
21 hydraulic conductivity for HKM holes exceeded the  
22 Bureau of Reclamation.

23 In those cases I subsequently reduced the re-  
24 sults that I arrived at in order to more closely

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1 be aligned with their results.

2 Q (By Mr. Membrino) So was it your testimony that  
3 even though the HKM --

4 THE SPECIAL MASTER: Please don't repeat his  
5 testimony because he did it beautifully, and I don't  
6 think he can be improved with a question that begins,  
7 "So it is your testimony that." We don't need it.

8 Okay, Mr. Membrino.

9 MR. MEMBRINO: Yes.

10 Q (By Mr. Membrino) How did you establish the depth  
11 to barrier in area in the NC-12?

12 A Okay. Again, that was a basis of review in this area.  
13 I looked at each one of the holes.

14 There is some variation there between 7 1/2 and  
15 15 feet. This was a very hard area in which to struc-  
16 ture a depth to barrier for.

17 I ended up assigning a value of 15 feet because  
18 of the number of holes which a barrier could not be  
19 detected in the area.

20 Now, there were some areas with some holes that  
21 indicated that the barrier was shallower than 15 feet.  
22 Generally, I believe that I was more conservative in  
23 my approach than what I was in this particular example.

24 In other words, I would take some of the lower  
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1 values, which would range in the 7 1/2 to 10-foot  
 2 area, maybe increase them by a couple feet, which  
 3 gives me kind of a weighted average for the area,  
 4 and assigned that as my hydraulic conductivity.

5 THE SPECIAL MASTER: If that depth to barrier  
 6 got down to 7 and 6 feet to where it tested your  
 7 criteria, what would you then do?

8 Did you have such examples on this Reservation?

9 THE WITNESS: Yes, I did.

10 THE SPECIAL MASTER: What did you then do?

11 THE WITNESS: Okay. I evaluated each, you know,  
 12 one on a case-by-case basis.

13 Now, if there was one hole within a block of  
 14 land such as this, generally that sort of situation  
 15 is kind of an outlyer --

16 THE SPECIAL MASTER: Kind of an --

17 THE WITNESS: An outlyer from the standpoint  
 18 of statistics.

19 In other words, it won't group within your data,  
 20 so I would more or less ignore that result.

21 However, if there were several holes in an  
 22 area which definitely indicated that the barrier  
 23 was shallower than 6 feet, the parcel was classified  
 24 as nonirrigable and is not shown on these exhibits.

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END

1 Q (By Mr. Membrino) Is there anything --

2 THE SPECIAL MASTER: Off the record, please.

3 (Off-the-record discussion.

4 THE SPECIAL MASTER: Back on the record,  
5 please.

6 Q (By Mr. Membrino) Is there any area of land  
7 classified as arable by HKM whose hydraulic  
8 conductivity or depth to barrier is less than  
9 the minimum set out in the standards we discussed  
10 earlier?

11 A There is not to my knowledge.

12 Q I direct your attention now to the area preceeding  
13 NC-12 in your -- in Exhibit 241-A, that is in  
14 C-11, and ask you to locate it on the map, if  
15 you would. That is Exhibit 231.

16 A That's this area right here.

17 Q Just south of NC-12?

18 A Yes.

19 Q Would your report to the Court what your  
20 conclusions were there on depth to barrier and  
21 hydraulic conductivity?

22 A Okay. This area had limited data upon which to  
23 work with. It was obvious from the data that  
24 the hydraulic conductivity was somewhat higher

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1 and the depth to barrier in the area was  
2 shallower based on the Bureau hole. So as  
3 a consequence I identified it as an independent  
4 area and set the depth to barrier at eight feet  
5 on the basis of the results shown on Page 11  
6 as assigned an average weighted hydraulic  
7 conductivity to it of six inches an hour.

8 Q In the area of analysis on NC -- on Exhibit  
9 C-231 in the area of analysis in NC-11 are  
10 there any holes that were dug by HKM?

11 A No, there were not.

12 Q What holes are there?

13 A There were two holes dug by the Bureau of  
14 Reclamation.

15 Q Now, how did you rely on those two holes,,if.  
16 at all, for either value, hydraulic conductivity  
17 or depth to barrier?

18 A Again, in this business you have to take into  
19 consideration your land form, you've got to  
20 consider the textures that are present. So if  
21 you'll evaluate the textures that are present  
22 first of all in area 11 on Page 11 and then  
23 those present on area 12, Page 12, it's obvious  
24 that the materials are gravelly and sandy in

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1 major.

2 MR. WHITE: Your Honor, could I have a  
3 continuing objection to testifying from  
4 documents not in evidence, please?

5 THE SPECIAL MASTER: Yes, you may, Mr.  
6 White. And I was going to say though that you  
7 didn't really answer his question. Did you  
8 refer to Hole 10-C and 18-C in your work and  
9 conclusions on area 11, yes or no?

10 THE WITNESS: Yes, I did.

11 THE SPECIAL MASTER: You did?

12 THE WITNESS: Yes, and considered some  
13 other elements.

14 Q (By Mr. Membrino) Did you adopt the hydraulic  
15 conductivities described for each of those holes?

16 A I used the lower value because that seemed like  
17 the most reasonable assignment.

18 Q Now, the information that's contained in 241-C --  
19 241-A rather, this compilation of your work  
20 is derived from your work map that we have  
21 designated as U.S. Exhibit WRIR 243, C-243?

22 A Yes, that is correct.

23 Q And what is the source of the information on  
24 that work map?

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1 A The source of the information comes from items  
2 that are identified within the legend of the  
3 United States Exhibit WRIR C-241-A.

4 Q Does that include the --

5 A That's shown on table 1.

6 Q Does that include the logs that you testified  
7 earlier were admitted into evidence, through  
8 Mr. Kersich and are designated as United States  
9 Exhibits WRIR C-147-A, B and C?

10 A Yes, it does.

11 Q Were there any aerial photographs used to derive  
12 the information you have -- you have been  
13 discussing?

14 A Yes. That was a component part of the work.

15 Q Are those photographs in evidence?

16 A Yes.

17 THE SPECIAL MASTER: Does this witness --  
18 is he a competent man to know whether they are  
19 or not?

20 Q (By Mr. Membrino) Do you know whether any of  
21 those photographs are in evidence, Mr. Toedter?

22 THE SPECIAL MASTER: Well, I submit he's  
23 not a competent witness to know whether they are  
24 or not, Mr. Membrino. If they are, just get it

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1 out, you know, introduce them.

2 Q (By Mr. Membrino) Mr. Toedter, I direct your  
3 attention to United States Exhibits WRIR C-148,  
4 numbers 1 to 30.

5 MR. MEMBRINO: Are those exhibits in the  
6 courtroom?

7 (Off-the-record discussion.)

8 MR. WHITE: Al took them back.

9 MR. ECHOHAWK: No.

10 MR. WHITE: Your Honor, I think that Mr.  
11 Kersich has those photographs.

12 MR. ECHOHAWK: He does, Your Honor, because  
13 he requested me to check those out.

14 THE SPECIAL MASTER: All right.

15 MR. MEMBRINO: I would like to know simply  
16 for the moment whether or not those photographs  
17 are in evidence and they're just not in the  
18 courtroom?

19 THE SPECIAL MASTER: That's right.

20 MR. WHITE: I think they're in evidence.

21 THE SPECIAL MASTER: I'm informed those  
22 exhibits are in 10-H, 11-H, which is the  
23 depository for all our material now that they  
24 couldn't fit into my office or my assistant's

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1 offices.

2 Q (By Mr. Membrino) Are you familiar with those  
3 photographs?

4 A Are those the 1979 land classification photos?

5 THE SPECIAL MASTER: Obviously in  
6 determining your hydraulic conductivity  
7 evidence and depth to barrier, I would imagine  
8 the last thing you used was an aerial photograph.  
9 If you used an aerial photograph you should  
10 show me how you used it.

11 THE WITNESS: I just used it to depict the  
12 area of the work.

13 THE SPECIAL MASTER: To where you do your  
14 work?

15 THE WITNESS: Right.

16 THE SPECIAL MASTER: Any other useful  
17 contributions in arriving at these figures  
18 though?

19 THE WITNESS: No.

20 MR. MEMBRINO: Your Honor, in response  
21 to Mr. White's objection, it is clear that all  
22 the data, raw data on which Mr. Toedter relied  
23 to make his conclusions is already in evidence  
24 through other witnesses. This information here

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1 is simply a compilation of that and is prepared  
 2 for the ease of the Court and the witness and  
 3 the parties in understanding this portion of  
 4 the case.

5 MR. WHITE: Your Honor, I'd like to respond  
 6 by saying we're getting the cart before the  
 7 horse, and if he's going to offer them, let's  
 8 offer them and I'll voir dire on them. And I  
 9 would point out to the Court that they've not  
 10 been offered, and if he's not going to offer  
 11 them I'd appreciate it if he'd abstain from  
 12 making those kind of remarks until I've had a  
 13 chance to voir dire the exhibits.

14 THE SPECIAL MASTER: On that point of  
 15 interesting difference regarding 241-A let's  
 16 take a short five or ten minute recess. We  
 17 haven't had one for better than an hour.

(Whereupon a recess was  
 taken.)

\* \* \* \* \*

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1 THE SPECIAL MASTER: Okay. Let us resume.

2 MR. ECHOHAWK: Your Honor, before we resume,  
3 we need to bring up the entry to the Reservation  
4 again.

5 About an hour or two ago I was informed by  
6 Mr. Rifkin that Wyoming wouldn't be going to the  
7 Reservation until Monday.

8 THE SPECIAL MASTER: I thought they were going  
9 to go and work all weekend because of the hassle  
10 this morning.

11 MR. ECHOHAWK: And he later came back and told  
12 me they weren't going to go until Monday, so I went  
13 and made the phone call and told my people they  
14 wouldn't go until Monday and canceled all our plans.

15 Now, they have just told me they do want to go  
16 this weekend.

17 THE SPECIAL MASTER: Then you will not work  
18 over the weekend. This is enough to drive a saint  
19 to profanity.

20 What's going on, Mr. Rifkin?

21 MR. MERRILL: Your Honor, I must apologize.  
22 It was my mistake and not Mr. Rifkin.

23 I failed to inform Mr. Rifkin of your order,  
24 assuming that Mr. Krob was also going to take --

25 THE SPECIAL MASTER: It was the most favorable

1 ruling I have ever made for the State. I as much as  
2 imposed on the Indians to the accommodation of the  
3 State on the two days of work with the people up  
4 there and said it would have to be that way because  
5 it was the way I wanted it to be.

6 Now, because they were not notified, it's the  
7 other way.

8 I don't know what to do about this now.

9 MR. SACHSE: Could I say something, Your Honor?  
10 I think it makes one thing very clear, that the State  
11 doesn't need to work up there over the weekend or  
12 they wouldn't have said they would start Monday.

13 THE SPECIAL MASTER: I think that's a proven  
14 factor. Let's just forget about any work up there  
15 over the weekend and you tell your state people it's  
16 not our fault they couldn't work the two days up  
17 there. I don't know how else to explain anything  
18 of this kind. I don't know what else I can do.

19 MR. ECHOHAWK: I will make arrangements to  
20 have the escorts ready at eight o'clock Monday  
21 morning.

22 THE SPECIAL MASTER: I don't know what else we  
23 can do.

24 MR. WHITE: Does that apply to this weekend or  
25 next weekend?

1 THE SPECIAL MASTER: No, we are only talking  
2 about this weekend, the coming Saturday and Sunday.  
3 Off the record, please.

4 (Off-the-record discussion.)

5 THE SPECIAL MASTER: Let's go back on the  
6 record, Vi, and I'm sorry about that foul-up. I  
7 thought we had worked that out pretty well and I  
8 thought it was going to work out nicely to have  
9 those two days with the extended 15 days.

10 Go ahead, Mr. Membrino.

11 MR. ECHOHAWK: At this time, Your Honor, may  
12 I be excused from the courtroom to take the witness  
13 back to the airport?

14 THE SPECIAL MASTER: Yes.

15 MR. ECHOHAWK: Mr. Waples.

16 THE SPECIAL MASTER: Mr. Clear and Mr. Sachse  
17 are still here. Go ahead, Mr. Membrino.

18 Q (By Mr. Membrino) Mr. Toedter, I believe during the  
19 break you discovered a mistake in calculation on  
20 Exhibit C-242.

21 Would you like to clear that up at this point?

22 A. Yes, I would. I made a simple arithmetic error on  
23 this exhibit here. Rather than 6 inches per hour,  
24 which I will strike, I want to place 4.7 inches per

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1 hour as the weight of hydraulic conductivity.

2 MR. MEMBRINO: The record should note, Your  
3 Honor, that Mr. Toedter was handicapped by the use  
4 of a calculator furnished by the State.

5 THE SPECIAL MASTER: Unfamiliar. Furthermore,  
6 it was Mr. White's.

7 MR. WHITE: The record should also note that I  
8 told the U.S. Attorneys about the error, Your Honor.

9 THE SPECIAL MASTER: Very good.

10 Q (By Mr. Membrino) Mr. Toedter, returning to the  
11 testimony that we left just prior to the break,  
12 would you explain to the Court how you were able  
13 to employ data such as drill holes in an area that  
14 is not included in arable lands and yet be able to  
15 conclude about hydraulic conductivity and depth to  
16 barrier from that information?

17 A One thing that's a little bit different about this  
18 analysis than the land classification analysis is  
19 a consideration of the areas that are involved.

20 There's a number of more factors within the  
21 land classification analysis that have to be con-  
22 sidered for a piece of ground to meet the standards.

23 Therefore, I could utilize tools such as  
24 geology.

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1           You might note how this land form strings down  
2 through this area. There's a reason for the reason  
3 -- or for the shape of those areas down through  
4 there, and that's because it's a general land form  
5 and is related to the water movement at some point  
6 in time through the Muddy Creek area and consequent  
7 deposition.

8           Therefore, it enables me to project from a hole  
9 that I have drilled in the area out into the surround-  
10 ing area adjacent to that.

11           Another point that is important is that wherever  
12 possible, rather than just utilizing one, I tried to  
13 look at several holes within an area upon which to  
14 draw my conclusions.

15 Q       (By Mr. Membrino) Now, I notice along that Deer  
16 Creek drainage along which you have located NC-12,  
17 NC-11 and NC-10 on U.S. Exhibit WRIR C-231, you have,  
18 in fact, broken up that one land form into different  
19 areas of analysis.

20           Could you explain what facts and data you came  
21 across that led you to do that?

22           MR. WHITE: Your Honor, could I have a continu-  
23 ing objection with respect to Exhibit 231 and other  
24 exhibits where the witness testifies about the

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1 exhibit or from the exhibit before the exhibit is  
2 admitted into evidence?

3 THE SPECIAL MASTER: Yes, you do.

4 THE WITNESS: May I continue?

5 THE SPECIAL MASTER: Yes. I might say though,  
6 Mr. White, that Exhibits like 231, it's a workpaper,  
7 and others that have its basis on the study area land  
8 form base map, all seem to go back to the same general  
9 outline of the study area we are familiar with. And  
10 so, all he's doing is looking at areas that could  
11 just as easily be identified in any one of four or  
12 five exhibits that are in evidence, but your objec-  
13 tion is preserved.

14 A. Okay. As can be noted from these areas, the hydraulic  
15 conductivity varies from area to area. In some cases  
16 it isn't real significant and others it is.

17 Likewise, with the depth to barrier. The depth  
18 to barrier in this particular situation is a little  
19 bit more uniform actually than what the hydraulic  
20 conductivity was, and this is the main point that I  
21 want to bring out for breaking it in two areas is  
22 because of the fact that you see variability through-  
23 out this land form.

24 Q (By Mr. Membrino) Now, the areas of analysis you are  
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1 discussing are NC-9, NC-10, NC-11 and NC-12?

2 A. That's correct.

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1 Q (By Mr. Membrino) And the depth to barrier  
2 in those respectively are?

3 A NC-12 has a depth to barrier, 15 feet; NC-11,  
4 8 feet; NC-12: -- or NC-10, excuse me, 13 feet,  
5 and NC-9, 10 feet.

6 Q Now, is it the hydraulic -- Is it the depth  
7 to barrier or the hydraulic conductivity that  
8 caused you to establish the different areas of  
9 analysis?

10 THE SPECIAL MASTER: That causes us to  
11 establish what?

12 MR. MEMBRINO: The different areas of  
13 analysis, Your Honor, the areas shaded in gray,  
14 outlined in red and enumerated by the code  
15 NC-10, 11, and 12.

16 THE SPECIAL MASTER: I think he's pretty  
17 much answered he established the areas first  
18 and then determination of depth to barrier  
19 and the conductivity, and he identifies the  
20 work areas from the geology, from the land forms.

21 THE WITNESS: Can I clarify that point --

22 THE SPECIAL MASTER: Yes.

23 THE WITNESS: -- a little bit? This is  
24 kind of an intuitive process in terms of my

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1 analysis. I look at these profiles first and  
2 get an indication of similar profiles and see  
3 how they group together according to these  
4 areas. Then in some cases I found out that I  
5 didn't get the grouping that I wanted, so I  
6 further separated an area and this will be  
7 present in some of my future exhibits.

8 One indication was where I used 4-A and  
9 4-B for an area. It had similar depth to  
10 barrier, but different hydraulic conductivity,  
11 so consequently I assigned different area  
12 numbers.

13 MR. MEMBRINO: Your Honor, at this time I  
14 believe I am through with this exhibit and it  
15 may be an appropriate time to break until  
16 tomorrow. What I plan to do tomorrow is have  
17 these exhibits identified and have Mr. Toedter  
18 testify as to the information contained in them.

19 MR. WHITE: I'd like to keep going until  
20 five o'clock.

21 THE SPECIAL MASTER: I wanted to go on  
22 because I'm going to have to quit at two o'clock  
23 tomorrow, as I mentioned earlier to you, and if  
24 you want to move on for about another 30 minutes

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1 on your case, it might be a good idea.

2 MR. MEMBRINO: That's fine, Your Honor.

3 Q (By Mr. Membrino) Mr. Toedter, I ask you to  
4 identify what's been marked for identification  
5 as United States Exhibit WRIR C-232.

6 A Yes. This is an exhibit showing the South  
7 Crowheart Study Unit.

8 Q Was this exhibit prepared by you under your  
9 supervision?

10 A Yes, it was.

11 Q Now, I direct your attention to the legend in  
12 the upper right-hand corner. The map contains,  
13 in the legend, a shaded area in gray, circled in  
14 red. Can you describe what that is?

15 A Okay. That is the area of analysis. Again,  
16 the area with similar hydraulic conductivity  
17 and depth to barrier.

18 Q Is that legend the same legend that's been  
19 employed in U.S. Exhibit WRIR C-231?

20 A Yes, it was.

21 THE SPECIAL MASTER: And is the South  
22 Crowheart south of the Main Stem of the Wind  
23 River?

24 THE WITNESS: Yes, it is.

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1 MR. WHITE: Your Honor, for the purpose  
2 of perhaps shortening up the proceedings, the  
3 State would stipulate that if Mr. Toedter were  
4 asked the same general questions that he was  
5 asked about in Exhibit C-131 -- excuse me, 231,  
6 with respect to, I believe, 10 or 11 other maps  
7 that are very similar in format and layout, we  
8 would stipulate that he would answer the general  
9 questions in the same way with respect to those  
10 other maps that he did with respect to Exhibit C-231  
11 and that might shorten things up a bit.

12 THE SPECIAL MASTER: I appreciate that  
13 offer and I think that does shorten things up  
14 a good deal. It's the kind of cooperation I've  
15 been praying for for the past few months. It  
16 doesn't jeopardize your case one bit in coming  
17 back and hitting him on what you wish on cross.

18 MR. SACHSE: The Tribes would also so  
19 stipulate.

20 THE SPECIAL MASTER: Yes, and I appreciate  
21 that from all parties.

22 Now, however, this is not 10, it's only --  
23 is it for six specific areas or is it for ten?

24 MR. MEMBRINO: Your Honor, basically what we  
25 toedter-direct-membrino

1 have is the same kind of exhibit done for the  
2 future lands that were -- that were testified  
3 to by Mr. Kersich.

4 THE SPECIAL MASTER: All right. You have  
5 a separate one for Big Horn Flat Units?

6 THE WITNESS: Yes.

7 THE SPECIAL MASTER: Separate one for  
8 Riverton East?

9 THE WITNESS: Correct.

10 THE SPECIAL MASTER: Separate one for Owl  
11 Creek?

12 THE WITNESS: Correct.

13 THE SPECIAL MASTER: And one for Arapahoe  
14 Unit?

15 THE WITNESS: Correct.

16 THE SPECIAL MASTER: Those stipulations  
17 applied to, have you also done these for the --  
18 for the historic lands?

19 MR. MEMBRINO: We have, Your Honor. Before  
20 we proceed to them, maybe we should identify  
21 which exhibit number goes with which study area.

22 THE SPECIAL MASTER: Let's do that beginning  
23 with South Crowheart Unit.

24 THE WITNESS: Okay. The number is U.S.

25 toedter-direct-membrino

1 Exhibit WRIR C-232.

2 THE SPECIAL MASTER: C-232?

3 THE WITNESS: Correct.

4 THE SPECIAL MASTER: The one for the Big  
5 Horn Flats Unit is --

6 MR. MEMBRINO: That's out of order, Your  
7 Honor.. I believe the next one up is the  
8 Riverton East Study Unit.

9 THE SPECIAL MASTER: Okay.

10 THE WITNESS: Okay. And that number is  
11 U.S. Exhibit WRIR C-233.

12 MR. WHITE: I'm sorry, Your Honor, was it  
13 233 for Riverton East or Big Horn Flats?

14 MR. MEMBRINO: Riverton East is 233.

15 MR. WHITE: Okay, thank you.

16 THE WITNESS: The Arapahoe Study Unit  
17 number is U.S. Exhibit WRIR C-234. The exhibit  
18 number for the Big Horn Flats Study Unit is  
19 U.S. Exhibit WRIR -C-235, and the exhibit  
20 number for the Owl Creek Study Unit is WRIR  
21 C-236.

22 THE SPECIAL MASTER: Would you give me  
23 South Crowheart again for the record?

24 THE WITNESS: I believe that's 232.

25 toedter-direct-membrino

1 Yes, it's 232.

2 THE SPECIAL MASTER: And would you give  
3 me North Crowheart Unit again for the record?

4 THE WITNESS: Two thirty-one.

5 THE SPECIAL MASTER: All right. Does Mr.  
6 White's stipulation flow to additional exhibits  
7 regarding project or nonproject idle lands or  
8 historic lands in use?

9 MR. MEMBRINO: Does your stipulation extend  
10 to that?

11 MR. WHITE: It does, Your Honor, with respect  
12 to the general questions, with respect to  
13 methodology and preparation of the exhibits.

14 THE SPECIAL MASTER: All right, very fine.

15 MR. WHITE: So the record is clear, Mr.  
16 Toedter would answer the general questions the  
17 same way he did for these exhibits as he did  
18 for 231.

19 THE SPECIAL MASTER: Why don't we --

20 MR. MEMBRINO: I want to make clear for  
21 the record that the facts and data upon which  
22 he would base his analysis of these are, of  
23 course, the historic lands, facts and data, not  
24 the future lands, facts and data.

25 toedter-direct-membrino

1 THE SPECIAL MASTER: That's all right.

2 The facts and data are in the record, too, and  
3 tables are in the record, too, so let's include  
4 those.

5 Q (By Mr. Membrino) Would you identify Exhibit  
6 WRIR C-238?

7 A Yes. It's the Johnstown Study Unit.

8 THE SPECIAL MASTER: That confuses me a  
9 little bit. The Johnstown Study Unit is a  
10 study unit of what project?

11 THE WITNESS: Okay. That's the Johnstown  
12 Project.

13 MR. WHITE: That's an FIP, I believe, Your  
14 Honor. Is that right?

15 THE WITNESS: That's correct.

16 THE SPECIAL MASTER: It's on a different  
17 route from all other computations so far  
18 because it's an FIP within the historic lands?

19 THE WITNESS: Within the historic lands.

20 THE SPECIAL MASTER: I don't see where it's  
21 totaled..

22 Yes, I see 465 acres, isn't it, and yours  
23 is identified as C- what?

24 THE WITNESS: C-238.

25 toedter-direct-membrino

1 THE SPECIAL MASTER: All right, thank you.

2 Q (By Mr. Membrino) We've taken one out of  
3 order here. Would you identify U.S. Exhibit  
4 WRIR C-237?

5 A Yes. This is for the Upper Wind Study Unit.

6 THE SPECIAL MASTER: Just a second, please.

7 Upper Wind has a total of how many acres  
8 on that, 5,900 about, or do you know?

9 MR. MEMBRINO: I don't have that figure  
10 handy.

11 THE SPECIAL MASTER: And this number is  
12 again, please?

13 THE WITNESS: U.S. Exhibit WRIR C-237.

14 Q (By Mr. Membrino) Would you identify U.S.  
15 Exhibit WRIR C-239?

16 A Yes. That includes the Ray and Coolidge  
17 Irrigation Projects and was called the Ray  
18 and Coolidge Study Unit.

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toedter-direct-membrino



1 Q (By Mr. Membrino) And U.S. Exhibit WRIR C-240?

2 A That includes the Subagency and Lefthand Units and  
3 was called Subagency and Lefthand Study Unit.

4 THE SPECIAL MASTER: All right. The last one  
5 was 230 --

6 THE WITNESS: 239.

7 THE SPECIAL MASTER: Okay. And it's Ray and  
8 Coolidge Study Unit? And Subagency is 240?

9 THE WITNESS: Correct.

10 THE SPECIAL MASTER: And Lefthand Unit is 240?

11 THE WITNESS: Yes.

12 THE SPECIAL MASTER: Thank you. Did you do the  
13 LeClaire Irrigation trust land?

14 THE WITNESS: No, I did not.

15 THE SPECIAL MASTER: Did you do the Midvale  
16 Irrigation trust lands? There were only 500 acres.

17 THE WITNESS: No, I did not.

18 Q (By Mr. Membrino) Mr. Toedter, you testified  
19 that your field investigation began in 1978 and  
20 went on for some time. Did you do any field work  
21 on drainage following the beginning of Mr. Kersich's  
22 testimony?

23 A Yes, I did.

24 Q Why did you do that?

25 toedter-direct-membrino

1 A Well, as a result of Mr. Kersich's testimony,  
2 there were some areas in question. I reviewed the  
3 documentation that we had in-house, was not able  
4 to reach a subsequent conclusion, and so I spent  
5 some time in the field doing some additional work,  
6 drilling holes, and also reviewing cut sections  
7 along stream channels, roads, and the like in  
8 order to determine whether or not these lands had  
9 sufficient depth to meet our standards and also  
10 obtained some conclusion on the rate of hydraulic  
11 conductivity. That was based on the textures of  
12 the soils.

13 MR. WHITE: Your Honor, at this time then  
14 I would move to strike Mr. Kersich's testimony  
15 since if his own expert is unable to reach  
16 conclusions based on the facts and data upon which  
17 Mr. Kersich reached his conclusions, if those  
18 facts and data are inconclusive -- this man is  
19 an expert in the drainage area established by the  
20 court -- it seems to me that then the whole of  
21 Mr. Kersich's testimony, especially that relating  
22 to whatever parcels Mr. Toedter referred to as well  
23 as the larger whole is also without adequate  
24 foundation,

25 toedter-direct-membrino

1 The rule used to be you couldn't impeach  
2 your own witness.

3 THE SPECIAL MASTER: Just let me rule on  
4 that. If this matter is of sufficient germaneness  
5 and gravamen that I should take it under advisement  
6 before I rule, I will do that. I'm not going to  
7 do that on the basis that it is now, Mr. White.  
8 Therefore, I would not concur in your motion.

9 MR. WHITE: I would urge you to take it  
10 under advisement.

11 THE SPECIAL MASTER: If you wish to file a  
12 couple pages on it with reference to some  
13 material, I would reconsider, but I would not --

14 MR. WHITE: Could we have the opportunity  
15 to submit briefs on the question?

16 THE SPECIAL MASTER: If you feel it is  
17 sufficient, if we get into it a little better  
18 and if you feel it is sufficient, then --

19 (Discussion off the record.)

20 MR. MEMBRINO: I think we will clear some of  
21 this up.

22 THE SPECIAL MASTER: One at a time, gentlemen.

23 MR. WHITE: You are asking me to submit  
24 briefs if I thought it was important enough. We

25 toedter-direct-membrino

1 will submit briefs because the evidence that  
2 you have just heard indicates that facts and data  
3 which Mr. Kersich relied on were not adequate for  
4 the drainage engineer to rely on.

5 MR. MEMBRINO: But --

6 THE SPECIAL MASTER: But you realize that  
7 these two experts were working and conferring on  
8 these points and where the opinions came to  
9 different conclusions, I think as reasonable  
10 experts and men, we can appreciate that that is  
11 how professional people work.

12 MR. WHITE: But that was after Mr. Kersich gave  
13 his opinion, Your Honor, and not before, and that  
14 is the basis for the objection. We will submit  
15 briefs.

16 THE SPECIAL MASTER: I would welcome a short  
17 brief on the point, and I will overrule it now  
18 with a right to take a look and overrule myself  
19 if in error.

20 MR. MEMBRINO: I think if we proceed with  
21 the testimony --

22 THE SPECIAL MASTER: If you want to submit  
23 one on behalf of the Tribes --

24 MR. SACHSE: I would like to take one minute  
25 toedter-direct-membrino

1 now if I could just to say that from my  
2 experience if Mr. White through his cross-  
3 examination of Mr. Kersich raised some questions  
4 that needed to be answered, then for another  
5 witness to go out, do the additional work that's  
6 required to answer those questions, that's the  
7 most ordinary and useful kind of procedure  
8 imaginable, and while I'm willing to, of  
9 course, answer any brief that Mr. White proposes here,  
10 I think it's essentially a frivolous motion to  
11 ask to strike Mr. Kersich's testimony because  
12 of additional work that's been done since Mr.  
13 White's cross-examination.

14 MR. WHITE: Your Honor, let me tell you  
15 why --

16 MR. MEMBRINO: Can I be heard?

17 MR. WHITE: Because when frivolous was  
18 mentioned, that has some remarkable overtones.

19 THE SPECIAL MASTER: I'm not sure I  
20 concur. If I thought your motion to strike was  
21 frivolous, I would overrule it and go on with my  
22 work. I have stopped and paused long enough to  
23 let you know I give it some importance.

24 MR. WHITE: The reason I think it's important  
25 toedter-direct-membrino

1 is that Mr. Kersich's opinion was based on the  
2 opinions of others. You may recall we had a big  
3 hassle about that.

4 THE SPECIAL MASTER: In part that's right.

5 MR. WHITE: And I think it's important when  
6 one of the expert's opinion does not agree with  
7 him without doing further field study.

8 MR. MEMBRINO: That is not the testimony.

9 THE SPECIAL MASTER: You can cite me to the  
10 record. It depends on what he said.

11 MR. WHITE: I will on brief.

12 MR. SPECIAL MASTER: Now, Mr. Membrino, go  
13 ahead.

14 MR. MEMBRINO: I would like to continue. I  
15 think we would have avoided a lot of this  
16 discussion had we been able to continue before Mr.  
17 White objected.

18 Q (By Mr. Membrino) Mr. Toedter, did you have any  
19 reason after doing more field work and reviewing  
20 the work that had been done -- did you have any  
21 occasion to change your conclusions?

22 A Yes, I did.

23 Q Could you explain, please?

24 A My conclusions actually ended up changing both  
25 toedter-direct-membrino

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ways. In some cases I reduced the depth to barrier. In other cases I increased it, and the same thing was also true for hydraulic conductivity.

THE SPECIAL MASTER: In other words, you won a few and you lost a few?

THE WITNESS: That's right.

nd-26-A

1 Q (By Mr. Membrino) Now, in any case, did your con-  
2 clusions as to hydraulic conductivity depth to bar-  
3 rier require you to change your opinion as to whether  
4 any of the lands testified to by Mr. Kersich -- that  
5 is, the 84,000 acres or so and the lands testified  
6 to by Mr. Waples approximating 7300 acres, should  
7 have been reduced in any manner for failure to meet  
8 the standards you had set regarding conductivity and  
9 barrier?

10 MR. WHITE: Object to the question on the  
11 grounds that it does not clearly specify the differ-  
12 ence between the problems raised on cross-examination  
13 of those witnesses and the problems raised by the  
14 offers of proof.

15 I have no objection to the question if it's  
16 specifically directed towards that testimony of the  
17 witnesses involved in cross-examination.

18 If, however, it involves offers of proof,  
19 that's completely outside -- well, it's simply  
20 improper because I was not allowed to inquire as  
21 to those areas, and the United States ought not to  
22 be able to put evidence on with respect to those  
23 areas. So I think the question is objectionable  
24 unless it's clearly directed toward the testimony

25 toedter - direct - membrino



1 of the witnesses.

2 THE SPECIAL MASTER: By way of refreshing us,  
3 what subject matter were you denied the right to  
4 inquire about? I know of virtually none.

5 I know you were limited in the scope of inquiry.

6 MR. WHITE: You are right.

7 THE SPECIAL MASTER: You gave eight or nine  
8 examples where you had about 20, but you got some-  
9 thing in on every point.

10 MR. WHITE: That's exactly the point. I can't  
11 remember -- let's say there were roughly 50 and you  
12 allowed me to inquire about 15 of so, and then I  
13 made my offer of proof with respect to the other 35.

14 My objection to Mr. Membrino's question is that  
15 it must be limited to the 15 that the inquiry was  
16 allowed for and but not include the 35 in my example  
17 where an offer of proof was made.

18 THE SPECIAL MASTER: In that case your objec-  
19 tion is only one question premature. If he answers,  
20 yes, he did, then your objection is in order.

21 If he answers, no, then it's premature. So I  
22 will overrule it now and it can be answered yes or  
23 no.

24 MR. WHITE: Could I hear the question again,  
25 toedter - direct - membrino

1 Your Honor?

2 THE SPECIAL MASTER: Yes.

3 (The question was read back by  
4 (the reporter as follows, to wit:  
5 ("Q: Now, in any case, did your  
6 (conclusions as to hydraulic con-  
7 (ductivity depth to barrier re-  
8 (quire you to change your opinion  
9 (as to whether any of the lands  
10 (testified to by Mr. Kersich --  
11 (that is, the 84,000 acres or so  
12 (and the lands testified to by  
13 (Mr. Waples approximating 7300  
14 (acres, should have been reduced  
15 (in any manner for failure to  
16 (meet the standards you had set  
17 (regarding conductivity and  
18 (barrier?"

19 A. Okay. There was no change.

20 THE SPECIAL MASTER: There was no change?

21 THE WITNESS: No change.

22 THE SPECIAL MASTER: See, the question was  
23 premature and anticipated there would be some  
24 change.

25 Very good, Mr. White.

Okay, proceed, Mr. Membrino.

MR. MEMBRINO: Your Honor, at this time I  
would like to move into evidence the following  
exhibits --

THE SPECIAL MASTER: Would you like to do it  
after a good night's sleep and a good meal?

toedter - direct - membrino

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MR. MEMBRINO: You bet, Your Honor.

MR. WHITE: Let's go ahead and get them offered.

THE SPECIAL MASTER: I'm tired, Mr. White, and I think it's close enough for a good day's work. We have been at it since 9:00 and it's almost 5:00.

Let's adjourn until 9:15 in the morning and proceed in a new direction then, and I know we are going to have a short day tomorrow, and I'm grateful to you for your stipulations that have made our workload easier, and let the record show that we worked until ten minutes until 5:00.

(Whereupon the proceedings  
(recessed at 4:50 p.m. to re-  
(convene at 9:15 a.m., Wednes-  
(day, April 22, 1981.

\* \* \* \* \*

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REPORTERS' CERTIFICATE

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State of Wyoming )  
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County of Laramie )

We, Merissa Racine and Viola J. Lundberg,  
Registered Professional Reporters and Notaries Public,  
hereby certify that we did at the time, date and place,  
as set forth, report the proceedings had before the  
Honorable Teno Roncalio, Special Master Presiding, in  
stenotype; that the foregoing pages, numbered 3615-3818,  
inclusive, constitute a true, correct and complete tran-  
script of our stenographic notes as reduced to typewrit-  
ten form under our direction.

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

Dated this 21st day of April, 1981.

Merissa Racine  
MERISSA RACINE  
Registered Professional  
Reporter

Viola J. Lundberg  
VIOLA J. LUNDBERG  
Registered Professional  
Reporter

MERISSA RACINE - NOTARY PUBLIC  
COUNTY OF LARAMIE STATE OF WYOMING  
My Commission Expires Mar. 10, 1984