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Trial Transcript, Vol. 65, Morning Session

Frontier Reporting Service

File 172
4423
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case # 4993

File # 172

4423

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 WYOMING.	) Civil No. 4993

BEFORE: The Honorable TENO RONCALIO, Special Master Presiding.

FILED 6/23 1981

Margaret L. Houghton CLERK

DEPUTY

VOLUME 65

BE IT REMEMBERED that on this 19th day of May, 1981, at Room 302, Capitol Building, Cheyenne, Laramie County, Wyoming, the above-entitled matter resumed for hearing before the Honorable Teno Roncalio, Special Master Presiding, whereupon the following proceedings were had, to wit:

ORIGINAL

P R O C E E D I N G S :

APPEARANCES

FOR THE STATE OF WYOMING:	HALL & EVANS 2900 Energy Center One Building 717 17th Street Denver, CO 80202 BY: MR. JAMES MERRILL and MR. MICHAEL D. WHITE, Special Assistant Attorneys General
FOR THE UNITED STATES OF AMERICA:	MR. JAMES CLEAR and MR. JOSEPH MEMBRINO Attorneys at Law Land and Natural Resources Division Department of Justice P.O. Box 7415 Benjamin Franklin Station Washington, DC 20044 and MR. THOMAS ECHOHAWK Attorney at Law Land and Natural Resources Division Department of Justice 1961 Stout Street Denver, CO 80294
FOR THE SHOSHONE and ARAPAHOE TRIBE:	WILKINSON, CRAGUN & BARKER 1735 New York Avenue Washington, DC 20006 BY: MR. R. ANTHONY ROGERS
CLERK TO THE SPECIAL MASTER:	MR. LEO SALAZAR Attorney at Law 701 Rocky Mountain Plaza Cheyenne, WY 82001

THE SPECIAL MASTER: Come to order, please.

I would like to announce to all of you that I have asked Judge Joffe to issue to me an amendment of the first order of certification of May 29, 1979, in which I have asked him to delete from the referral and certification to me all of paragraphs 2 and 3 dealing with permits, and I represented to him that in my opinion, if paragraphs 2 and 3 are to be recognized and fulfilled, that in itself would require an adjudication of many years devoted to the examination of all of the permits in the State Engineer's office and would be totally without the ability of this particular case and hearing.

I have asked him also to extend the date for the report in this case -- well, first, and I have consequently asked that this report confine itself to the treatment of the adjudicated or certificated water rights only that have been issued and a resolution of federal questions of reserved water that he dealt with in the certification.

Secondly, I asked that the date of my report limitation be raised from January 1, 1982, to February 1, 1983. He's already given me an oral approval on this months ago. I thought I would get it in writing and let you know about it.

MR. ROGERS: January, '82, to what?

THE SPECIAL MASTER: To February 1, '83.

Just because I have done that doesn't mean that we can now proceed to extend and embellish our proceedings because we are still going to finish the trial sometime this fall, and that is it, and if I have to order that with an assignment of dates to each party and you telescope within those dates your own case, we will do that, but this thing cannot stretch on beyond September to November this fall, and at least give me the benefit of six months to ten months to get a report ready and printed and distributed and fulfilled.

Okay. We are ready to continue with the United States' case, Mr. Echohawk.

MR. ECHOHAWK: Your Honor, the United States would like to call back to the stand David Dornbusch.

THE SPECIAL MASTER: Mr. Dornbusch, you are still the same witness that was with us a few weeks ago?

MR. DORNBUSCH: Hardly.

THE SPECIAL MASTER: I wanted to remind you that you were still under oath.

MR. DORNBUSCH: Yes, Your Honor.

MR. ECHOHAWK: Your Honor, as you recall, up to this point we've had testimony on arable lands both for the future lands and the historic lands, historic Type VII

and VIII.

We have had the engineering testimony and the water duty testimony from Stetson Engineers regarding both the future and historic VII and VIII's and the unadjudicated in use as well as the testimony regarding the adjudicated lands.

Now with Mr. Dornbusch's testimony, which follows his economic analysis of the future lands, he will now present testimony concerning the Type VII historic lands, Type VIII historic lands, and a brief bit of testimony regarding the unadjudicated in current use category, and with this, this will complete the irrigable acreage portion of the United States' claim and we will proceed on to other areas after that.

DIRECT EXAMINATION (RESUMED)

BY MR. ECHOHAWK:

Q Would you please state your name for the record?

A David Dornbusch.

Q Are you the same David Dornbusch that gave testimony regarding the economic feasibility analysis of the future lands.previously?

A Yes, I am.

Q Mr. Dornbusch, would you please briefly describe for us what your assignment was regarding this portion of the

case?

A Yes. I made a study of three different types of lands, one of them so-called Type VII lands, another so-called Type VIII lands, and then the unadjudicated portion of the Reservation which are lands in use.

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Q (By Mr. Echohawk) And would you describe for us generally what your approach was regarding the Type VIIs and Type VIIIs?

A In general, the approach was very similar to the one we did and which I described earlier on the new lands. We developed a determination of the crops which could feasibly be grown in those areas, the prices, yields for those crops, and actually proceeded in very much the same fashion as we did earlier to relate those gross returns from the crops, crop yields and prices to the system costs to determine the benefit costs ratio for these lands.

Q All right. Mr. Dornbusch, have you prepared a report regarding your economic feasibility analysis of the Type VII and Type VIII lands?

A Yes, I have.

Q I show you what has been marked as United State's Exhibit WRIR C-278. Would you please identify that exhibit for us?

A Yes. This exhibit is my report for the Type VII and Type VIII lands, and it shows the numbers which comprise the analysis showing the feasibility for these type lands.

Q Would you please give us the title of that report?

A "Economic Feasibility Analysis for Irrigated Agriculture, Historic Type VII and Type VIII Lands, Wind River Indian Reservation".

Q Can you give us just a brief indication of what types of items are contained in that report?

A All right. The report begins with Type VIII lands, and if you will thumb through you can see that the tables are basically laid out the same way we laid out the tables for the new lands, the same type of items are included. We began with identification of the crops, crop yields, crop prices, and based upon those we compute the gross returns per acre; then we subtract out the production costs per acre, and there are tables in here which show the production costs for each of the crops. Subtracting those production costs gives us the net return per acre, then by weighting the net returns by the crop distribution, the percentage distribution and the crop mix, we have determined the weighted average for the high and low acreages, multiplying that by the appropriate present value factor. In other words, this is a stream of future benefits. We are discounting, then, that future stream to one present value, an equivalent value, and multiply that by the appropriate factor to get our present value for the net benefits for the high and low acreages, and then we have taken the cost from Dr. Mesghinna of Stetson Engineers and performed the analysis of those costs we did before, or I should say not analysis, but adjustments for the opportunity costs of

labor and normalization which you recall is the attempt to determine the most representative costs at the same point in time as we determined the returns so we are relating the costs and returns to the same point in time, same dollars. We then determine the system cost, and then dividing the present value of the returns by the present value of the system cost we determine benefit cost ratios.

Q Is there a similar approach used for the Type VII lands?

A Yes, a similar approach in that the process is the same. The Type VII lands are a bit more complex in that the Type VII lands that we performed an analysis and determined the benefit cost ratio for each parcel within the Type VII lands. For the Type VIII lands we determined it for the project area.

Q Mr. Dornbusch, using Exhibit C-278 somewhat is a roadmap to keep track where we are, why don't we proceed -- proceed through. What was the first step in your analysis of the Type VIII lands?

A The first step was to select the crops, and if you look at Table 1 you can see a listing of the crops which we have selected. Those crops and, in fact, this table is exactly identical to the corresponding table for the new project lands. The same crops, same yields, same prices per unit

and almost the same gross returns.

Okay, next, as I said, we determined the costs of production, and next you see the production costs consist of two items; one is what we call -- which are the cultural operations, the cost of cultural operations, that is on farm operations; then the sprinkler irrigation costs. All of these lands will be irrigated with sprinklers.

Q How did you determine the cost of cultural operation?

A Okay, the cost of cultural operations are derived from the same report that I referred to earlier by Doug Agee performed for the Midvale Irrigation System.

THE SPECIAL MASTER: What is your definition of a cultural operation?

THE WITNESS: Okay, it is the on-farm operations, the preplanned operations, the planting, the growing, the harvesting. It's all the operations that occur on the farm with the exception of the irrigation.

THE SPECIAL MASTER: Beginning with what, beginning with a soil analysis?

THE WITNESS: No, preparation of the soil for seeding, then the seeding and the -- all the operations that occur --

THE SPECIAL MASTER: Is the word "cultivating" what you use cultural for?

THE WITNESS: Cultivating, right, then right through

harvest.

Q (By Mr. Echohawk) Mr. Dornbusch, have you prepared any tables that depict cultural operations?

A Yes, and they are all in here. I have the cultural operations immediately following on Table 2 for each of the crops that are a part of those Type VIII projects.

THE SPECIAL MASTER: Will you identify it by page, please?

THE WITNESS: Yes. On page 4 we have the cost of producing malting barley, and it wouldn't fit on that page so it continues to page 5. On pages 6 and 7 are the cultural operations, the cost of producing the nurse malt barley, that is the nurse crop for alfalfa. On pages 8 and 9 -- I'm sorry, on page 8 exclusively is the cost of producing alfalfa; pages 9 and 10, the cost of producing corn for silage; pages 11 and 12, the cost of producing corn for grain.

Q (By Mr. Echohawk) These tables that you have just mentioned, pages 4 through 12 are Exhibit C-278, are those sometimes referred to as crop budgets?

A Yes, I have referred to them as crop budgets.

Q Okay. On your earlier examination we went through these, we went through one as an example. Were these prepared generally the same as the ones we discussed for the

future lands?

A Yes, they are the same with one basic exception, and that is in discussions with Stetson Engineers and looking at the fields that they were going to be developing, proposing to develop Type VIII lands, we found that the average type of field was smaller than in the new project lands. Because we felt that there would be some loss of efficiency in cultivating those smaller fields, we increased our budget here for the operations that occur on the field. You have the tractors and equipment that you are running down the field, and you have just more turning operations essentially because of the smaller field sizes, so we increased our costs to account for the decrease in efficiency, and that is reflected in these budgets. Not all of the operations include that because not all of them are involved in the actual field operations, but all of the field operations do reflect an increased cost.

Q I notice, say, for instance, on page 4, the crop budget for malting barley, you have an indication of Classes 1 through 3.

A Yes.

Q Why -- strike that question.

Where did you obtain your information for the crop budgets?

A From the Agee reports, and then I increased Agee's costs -- well, let me say I obtained them really from my crop budgets for the new project lands which go back to the Agee report. I described how I developed my crop budgets in the new budget lands based upon his reports and other things. These crop budgets are derived directly from the crop budgets in my new project lands with that efficiency factor I just described.

Q And the same crops were considered?

A Precisely the same crops.

Q All right. What is the next step after you determined your costs of cultural operations?

A Okay, we determine the sprinkler irrigation costs.

Q How did you do that?

A Okay, for each of the crops we determined the number of irrigations and the repair --

THE SPECIAL MASTER: What do you mean by the number of irrigations?

THE WITNESS: The number of times that the crop would be irrigated during the season, and then based upon the costs for actually performing your on-farm labor operations to perform those irrigations and the other repair maintenance, the overhead and management costs, just the way I had done for the new project lands, and redetermined

what the irrigation costs would be for these sprinklers.

These sprinklers will all be hand-move sprinklers.

Q (By Mr. Echohawk) Where did you get the information to determine the number of irrigations?

A That was from Joe Dimaggia of Stetson Engineers.

THE SPECIAL MASTER: On which table is this information contained?

THE WITNESS: There's a summary of what the costs are on Table 2.

THE SPECIAL MASTER: On Page what?

THE WITNESS: Page 3.

THE SPECIAL MASTER: There's no breakdown, just the summary?

THE WITNESS: Yeah, the breakdown is not included in here. This is just a summary.

Q (By Mr. Echohawk) Mr. Dornbusch, now that we have the cost of the cultural operations from your crop budget and the sprinkler irrigation cost, is that all that comprises the production cost?

A Yes, adding those together you get the production costs shown on Page 3, and those are the same production costs that are then repeated on Page 13.

Subtracting those production costs from the gross returns, which were shown on Page 2, we then have calculated the net returns for lowland and highland acres shown on Page 13.

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Subtracting those production costs from the gross returns, which were shown on Page 2, we then have calculated the net returns for lowland and highland acres shown on Page 13.

Q Your breakdown for lowland and highland, is that the same elevation break point that you used for the future lands?

A Yes, it is.

THE SPECIAL MASTER: Is that elevation 5,600?

THE WITNESS: 5,900 feet.

Q (By Mr. Echohawk) So now we have net returns for highland and lowland for each crop?

A Right.

Q What would be the next step after that?

A Then on Page 14 we show how we have determined the weighted average net returns because of the various percentages that the crops comprise in the lowland and highland crop mixes.

Q Are these the same percentage distributions used in the future lands?

A They are exactly the same.

Q All right. And it's just a simple weighting by percent?

A Weighting by percent, that's right, to determine the weighted average net returns per acre lowland and highland.

Q What do you do after you take the weighted average?

A Next is the conversion of that annual stream of returns to a net present value equivalent.

Q Would you describe for us just real briefly what the present value concept is?

A We have, for example, in the lowland acres you see there's 100 and -- well, you see the number there of the weighted average, without getting into the numbers. You see what the weighted average net return is. That will occur each year for a stream of 100 years.

In order to compare those returns to the system investment costs, we go through a process called discounting, which essentially takes that stream of annual returns, discounts them back to one equivalent number in the present time using a discount rate.

THE SPECIAL MASTER: Isn't this identically what you did with the other lands?

THE WITNESS: Precisely the same thing.

A So the numbers you see on Page 14 are really equivalent. The weighted average net returns are equal to those present values discounted to the present.

THE SPECIAL MASTER: And if you would have used three percent or two percent, they would have been a much, much higher net return, and if you would have used the five or six percent, they would have been a much, much lower return?

THE WITNESS: Exactly.

Q (By Mr. Echohawk) Now, Mr. Dornbusch, we have the present value net returns. What's the next step in your analysis?

A The next step was to obtain from Dr. Mesghinna his determination of the costs for each of the system components that would comprise the system in order to deliver water for the irrigation of those project lands.

Q And --

THE SPECIAL MASTER: Why is Type VIII irrigation system costs per acre in with the Type VII report? Pages 1 to 16 is your Type VII lands. Type VIII lands begin with 17. Yet you have got a Page 15 devoted to Type VIII lands. Is that because it's out of place?

THE WITNESS: Your Honor, I'm not clear --

THE SPECIAL MASTER: Do you want me to go through that again?

THE WITNESS: Yes, please.

THE SPECIAL MASTER: Your exhibit, Pages 1 through 16, deals with Type VII lands. On Page 17 you have Type VII lands. Then you have got Type VIII lands and Type VII lands next, first.

I beg your pardon. One to 16 is Type VIII lands; is that correct?

THE WITNESS: That's correct.

THE SPECIAL MASTER: And beginning on Page 17 is Type VII lands; is that correct?

THE WITNESS: Yes.

THE SPECIAL MASTER: So this exhibit you are looking at is the last of your Type VIII lands?

THE WITNESS: That's right.

Q (By Mr. Echohawk) Now, the irrigation system costs, where did you get those?

A From Dr. Mesghinna. And then I made the adjustments that I described, the same types of adjustments that I described for the new project lands.

Q Can you run over just generally what type adjustments those would be?

A Yes. Each of the system components has a labor component, and if you recall, I described in my earlier testimony that in an economic analysis like this one, it's necessary to consider costs according to their true value, in this case the true value being the next best use where you have the opportunity.

In fact, where it's clear that the labor will be drawn from unemployed resources and there's no prospect for those people to be otherwise employed, it's necessary to determine that value at zero, which is its opportunity cost, and we made the adjustment for the

opportunity cost.

We also made adjustments to Dr. Mesghinna's cost for normalization.

We also, since his costs will be incurred over a construction period and because his systems will have to be replaced periodically through the 100-year period, we had to make adjustment for discounting to a present value.

So we have the opportunity cost adjustment, the normalization adjustment, and then the movement in time for construction and the discounting for future replacement of the system to a net present value.

THE SPECIAL MASTER: We went through a little of this the first time, but your basis for your opportunity cost computations are purely theories of the profession?

THE WITNESS: No.

THE SPECIAL MASTER: Where did you get them?

THE WITNESS: We made a determination of the percent of skilled and unskilled labor which would be comprised in each of those systems development, and that comes from Bureau of Reclamation data.

Having determined what the components are of the skilled and unskilled labor, we then made an estimate of how much of that labor could come and would come

from unemployed Indians.

THE SPECIAL MASTER: Well, surely you used the same factor on all six projects, didn't you?

THE WITNESS: Well, each of the different systems -- on all six projects, yes. On all six projects we used the same factors, but within each project you have the on-farm system, the pipe system, the various investment costs.

THE SPECIAL MASTER: But you don't have the same amount from on-farm depending on unemployment as you have from a pipe network, do you?

THE WITNESS: Not as it's determined from unemployment, but they have different labor components.

These different systems will have different proportions of capital, purchase of equipment, and different components of labor. You get different amounts of labor in the pumping plant than you do in developing the canals and related structures, that kind of thing. They generally fall in the same range, but there are differences.

THE SPECIAL MASTER: Go ahead.

A So I guess just to complete my thought, making the adjustments for each of those, we then determined the net present value for each of those system components.

The contingencies we handled the same way as I described before. Those are 25 percent of the items above it, excluding the on-farm system.

In other words, the pipe network, pumping plant and construction, and drainage times 25 percent gives you the contingencies.

Land development, I estimated the same way as we did before, for the new lands.

Fencing costs here, we determined that the average fencing cost for the average size parcel in the Type VIII lands would be as shown here, and we just show the same fencing cost for all of it.

THE SPECIAL MASTER: Why don't we give the figure and it might help us to work with this, $87.00 per acre?

THE WITNESS: That's right, for fencing costs.

A Adding all those costs up gives you the total investment.

The operation costs are the annual cost of operating the system.

THE SPECIAL MASTER: Mr. Dornbusch, let me interrupt one more time?

THE WITNESS: Yes.

THE SPECIAL MASTER: Give the factors again that go to the contingency item of $356 on Arapahoe down on Johnstown.

THE WITNESS: Okay. That is -- the purpose of

the contingency is to allow for the engineering design and for problems, unexpected problems in the actual construction.

Those contingencies and engineering design apply to all of the items above the contingencies with the exception of the on-farm system.

THE SPECIAL MASTER: Do they duplicate the items above?

THE WITNESS: They don't duplicate. It's the engineering fudge factor.

THE SPECIAL MASTER: It's the engineering fudge factor?

THE WITNESS: It's the engineer's admission --

THE SPECIAL MASTER: That they are going to need one-fourth again as much money? They worked for the Pentagon before they went to work here.

Is that what it is? It's just an admission of saying we have to have more money?

THE WITNESS: That's the idea, to be sure.

THE SPECIAL MASTER: So you crank in 25 percent more then?

THE WITNESS: Right. Now, part of it is certain. There's a portion of it that's the engineering design, and the engineering design we know we are going to have

to incur that cost. The engineers know that it generally comes to be a fixed proportion of the total cost, and that's in there.

Above and over the engineering design are those -- are the things that I referred to as the fudge factor, the unexpected problems, the kind of situation you go out in the field and with all the borings and tests that you have done in the soil, you are not always absolutely sure that when you go and remove the soil in all of the areas that you have to that you are going to hit exactly what you thought you were going to hit, and if you hit certain problems, you are going to have higher costs, and that's what it allows for.

* * * * * * *

Q (By Mr. Echohwak) Okay, Mr. Dornbusch, have you completed your discussion on the operation costs and your adjustments there?

A No, I just started that. Again, from Dr. Mesghinna we obtained estimates. For energy and power for the operation repairs and maintenance, however, we obtained from Don Crook.

Q Who is Don Crook?

A Don Crook, I forgot his title precisely, but he is the head of the irrigation operations for the BIA for the Wind River Tribe. From his we obtained estimates of the cost per acre for operation, repairs and maintenance.

Q All right.

A We then made the same kinds of adjustments for opportunity costs of labor and normalization, and then because this is an annual stream of costs into the future, we discounted those back to the present to determine the net present value, which is shown on Page 15. Adding all of those up, that is the investment costs and the operation costs, gives us the net present value for the total system costs.

Q And those would be the numbers reflected at the bottom of each column, Table 5, Page 15?

A Right, right, for each of the project areas. Those

numbers are then repeated on the following page.

Q That would be Page 16, Table 6?

A Right. Under Irrigated System Costs the project unit and the net benefits are also shown, and here on Page 15 you see that all of the project areas are in the lowland region with the exception of the Upper Wind Unit, which is in the highland. That information is used to select which net benefits are used. For example, you see that the net benefits are all the same for all the project areas with the exception of the Upper Wind, which uses the highland net benefits and it's lower. Then dividing the net benefits by the irrigation system costs, we determined the benefit cost ratios for each of those project areas.

Q All right. And by determining the benefit cost ratios for each of the six units described on Table 6, in your opinion are they economically feasible?

A Yes, they are.

Q Could you give us the benefit cost ratio for each unit that you considered in the Type VIII lands?

A For Coolidge the benefit cost ratio is 1.48.

MR. MERRILL: Your Honor, I will object at this time to the Witness testifying from an exhibit not in evidence.

THE SPECIAL MASTER: I will overrule it. Go ahead.

THE WITNESS: For Johnstown the BC ratio is 1.70. For the Upper Wind, 1.40. For Subagency, 1.42. For the Ray Unit, 1.42, and for the Arapahoe Ranch, 1.46.

Q And is your method for determining benefit cost ratio the same method that you used for the future project lands?

A Yes. The basic method, the process is the same. The numbers, of course, are different in the cases where I mentioned them. In some cases they are the same and in some cases they are not.

Q All right. Let's move on to the Type VII lands. I believe earlier in your discussion this morning, your testimony, you mentioned that your general approach was the same but it was a little more complex. What special considerations did you have to take into account in your analysis of the Type VII lands?

A In the Type VII lands we found in discussing that types of lands would be developed or could be developed with the engineers, we discovered that we could expect that some of the lands would be irrigated with sprinkler. Most would be irrigated with flood system irrigation.

We also discovered that there were going to be some Class 4 lands. You will note that in the new project

lands and the Type VIII lands all Class 4 lands were eliminated, they were removed. We were not attempting to irrigate any Class 4 lands there.

In the Type VII lands we do consider Type IV lands and have done an analysis to check their feasibility. We also have a special situation wherein some of the lands we run out of water in July, and we address the question of could we grow, could we feasibly grow crops on those lands and would it be feasible to irrigate them and obtain a return that would justify that irrigation. So we have more considerations. We have, first, the soils classes 1 through 3 and we also have the addition of the Class 4 soils. Within those soils we have the possibility --

THE SPECIAL MASTER: Which table now are you on?

THE WITNESS: I really am not referring to a table.

THE SPECIAL MASTER: All right.

THE WITNESS: But it will begin to emerge as we go through these tables. I'm trying to lay it out.

THE SPECIAL MASTER: Very good.

THE WITNESS: Then within these class soils we have sprinkler, we have flood under the full irrigation possibility, then we have the water shortage situation. We also have the high and low acreages, and we have lots

of considerations.

Q (By Mr. Echohawk) All right. Let's begin our discussion of Type VII lands in reference to Table 7.

A Okay. Here is where we begin to see the distinctions that I just started to describe.

Q All right. Were the crops used in the Type VII analysis the same crops used in the future lands or the Type VIII lands?

A Some are, some are not.

Q What are the differences?

A Okay. First, we did use the malt barley, the nurse malt barley, that is the nursing for alfalfa; and alfalfa. We do not include corn in here. The reason being is that corn requires special equipment. We were concerned that there might not be enough lands in the Type VII lands to really allocate that equipment sufficiently to use it effectively, and that we wouldn't be close enough to the new project lands to be able to use the equipment that was being used up there on a cooperative basis, so we have eliminated corn.

Also on Page 18 you see that under Land Class 4 we have a different crop mix, and we have nurse oat hay and we have grass hay. This is based upon the capability of the Class 4 lands, and the problem that you face,

because the land is not as good as the one through three classes is you don't have the same potential for growing the same types of crops. So we chose a different system of crops in the Class 4 lands. If you turn the page to Page 19, the difference between those two -- the Page 18, is the full irrigation scenerio of the Type VII lands; Page 19 is the water short situation -- In the water short situation on the land Classes 1 through 3, we have oat hay nursing alfalfa, then alfalfa being the principle crop. Then on the Class 4 lands they have nurse oat hay nursing grass hay just as we had for the Class 4 lands in the full water. So we have here represented the different crop mixes for the different types of land, full water and water short.

Q And how were the prices obtained that are shown in Table 7 and Table 8?

A The prices were obtained the same way as we did for the new project lands. They are, in fact, the same prices for the comparable crops. I beg your pardon?

Q For the nurse oat hay and grass hay, where were those prices obtained?

A You recall the price $52.99 was the price per ton of all hay published by the Water Resources Council for normalized 1979 prices. I am using that price here.

The grazing and aftermath price, $5.48 is the same used before in the new project lands for the aftermath per a.u.m. In the water short Type VII lands you see the same prices reflected for hay and the aftermath grazing.

Q And was the field information obtained the same as before?

A Well, for the Type -- excuse me, for the Class Lands 1 through 3, for full irrigation, the yields are the same as the new project lands for the same crops. However, for the Class 4 lands and for the water short situations, the yields are based upon discussions with various agricultural extension people in Wyoming: Ron Cunningham in Riverton, Lynn Merrick in Fort Washakie and Wes Seamands who is an extension agronomist in Laramie. I think there were some others, as well.

Q All right. The crop yields and the prices, what did you do with those?

A Same process as before, yields times prices gives us the annual gross returns per acre for highland and lowland.

Q Is the highland and lowland breakdown for the Type VII the same, at the same elevation, as discussed previously?

A It is, yes.

Q All right. Now that we have the annual gross return per acre for highland and lowland, what would be your

next step?

A The next step as before is to subtract out the production costs. Here again, the production costs consisted primarily of the on-farm, what I called before the cultivation operations. But also it includes some other things.

Q What would those other things be?

A As before, again, it includes the on-farm irrigation costs, so here the production costs include both the cost of cultivation and the irrigation costs. We also have a situation where some of the parcels were not as tightly clustered as we have in the new project lands, and we thought there would be some costs incurred because of extra handling of equipment, movement of the equipment to the fields. So we did an investigation to see how scattered these parcels were and how much added cost we might have to move equipment to the fields over and above what we were already incurring, and for those situations we have included in the extra cost of moving the equipment. That only occurs in the non-FIP lands. So look at Page 20 where you see now there is a new wrinkle, there is a cost split between the FIP and non-FIP lands. The only difference is that the non-FIP lands has that additional cost of moving the equipment,

otherwise they both have the same cultivation on-farm costs and irrigation costs.

Q Did you prepare crop budgets for your Type VII analysis also?

A Yes, we did.

Q Are those reflected in your report C-278?

A Yes, on Pages 24 through 34.

THE SPECIAL MASTER: Before we get to them, Mr. Echohawk, could I ask a question about Page 21? Your full water sprinkler irrigation system, I presume your search went into the probable irrigations, as you called them, per season? On 21, for water flood irrigation, how many floodings to a field did you base your costs on there?

THE WITNESS: It varies according to the crop.

* * * * *

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THE SPECIAL MASTER: Alfalfa, let's take.

THE WITNESS: Yes, all right. Excuse me while I search my notes. I have a table that shows just that.

THE SPECIAL MASTER: May I see it?

No.

MR. MERRILL: I'm going to ask for it if you don't, Your Honor, so you might as well.

THE WITNESS: Yes --

THE SPECIAL MASTER: I don't want to see it. Is it three times a season or --

THE WITNESS: For alfalfa full water it's four times. Was your question to full water, Your Honor?

THE SPECIAL MASTER: Yes. Okay, thanks for that.

That's the only questions I had leading up to 22.

Q. (By Mr. Echohawk) Mr. Dornbusch, I got a bit ahead of myself. On the production costs and for the Type VIII lands,I believe those included the cultural lands and the sprinkler irrigation cost. Is that the same situation for the Type VII lands?

A. That is except for the added cost for the FIPs for the extra equipment movement.

Q. All right. And how did you determine the sprinkler irrigation or the irrigation costs?

A. All right. You are asking how did I determine the

sprinkler and the irrigation for flood irrgation as well?

Q. How did you determine, say, first, the sprinkler irrigation costs?

A. Okay. It's the same way as we determined it before for the Type VIII lands as I described.

Q. And how did you determine the flood irrigation costs?

A. Okay. For the flood irrigation, it's based upon information from Ag Extension publications; for example, the Agee report I referred to earlier. It's based on discussions with Ag Extension people.

THE SPECIAL MASTER: There is very little difference in cost actually. There is a very small percentage of difference.

THE WITNESS: That's right.

THE SPECIAL MASTER: Were those irrigation costs --

THE WITNESS: But, Your Honor, we felt we had to go through the process because we didn't know what the end of the story was, and those little differences might have mattered, and you can see we carried a lot of numbers, but, unfortunately, we felt we had to.

Q. (By Mr. Echohawk) Your on-farm irrigation costs for the Type VII lands as depicted in Exhibit 278, specifically Page 23, is that a correct table?

A. On my calculations -- Please repeat the question.

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Q. The on-farm irrigation costs for the Type VII lands --

A. Yes.

Q. -- depicted on Page 23 of Exhibit 278 --

MR. MERRILL: Your Honor, may I simply enter a continuing objection to the witness testifying from his exhibit?

THE SPECIAL MASTER: If the witness is testifying from the result of his work, he can do so. If it's from an exhibit not in evidence, that's a coincidence that doesn't destroy his right to testify from his own work material.

MR. MERRILL: I think the record should reflect that he's been referring to this exhibit.

THE SPECIAL MASTER: And his notes, a little bit of both.

MR. MERRILL: That's correct, Your Honor, and it raises the inference that perhaps the witness could not have testified as to all the details that have been brought out on direct examination without reference to that exhibit.

THE SPECIAL MASTER: Well, Mr. Echohawk,would you argue the proposition that the witness has a right to continue answering your questions even though he has before him his work papers and the exhibit not yet in evidence?

MR. ECHOHAWK: Yes, Your Honor, the exhibit is merely an illustration of what he has in his work notes, and the compilation of the work that's gone on in preparation of

his testimony.

He could either testify from what's handy in the exhibit or from his notes. The same information is contained there.

THE SPECIAL MASTER: Your question could deal with actual on-farm irrigation costs without having referred to Page 23 at all; is that right?

MR. ECHOHAWK: All I'm trying to do is simply lay the foundation for what is contained in C-278 and where it is.

THE SPECIAL MASTER: Proceed.

A. Yes, on Page 23 I show the on-farm irrigation costs for the different classes of land and for the full irrigation, sprinkler and surface, and for the water short, surface irrigation.

Q. (By Mr. Echohawk) Mr. Dornbusch, as to the crop budgets that you prepared for the Type VII lands, what would be the differences in your crop budgets for the Type VIIs as compared to the budgets prepared for the Type VIII lands?

A. Well, in some cases they are the same. For example, alfalfa and nurse malt barley and malt barley, they are the same budgets.

Then we get into some crops which we haven't talked about before, and these budgets are based upon Extension reports and discussions with Agricultural Extension people

as to the content of those budgets.

THE SPECIAL MASTER: On what page of this exhibit do you summarize those?

THE WITNESS: All right. That page is 24 through 34 are those crop budgets. We are using interchangeably crop budgets, crop cultivation costs, on-farm costs.

Q. (By Mr. Echohawk) Are your cultivation costs summarized in another table of Exhibit C-278?

A. The cultivation costs are within the production costs on Page 22.

Q. Have you prepared crop budgets for full service irrigation and partial service irrigation also?

A. Yes, those are within the crop budgets.

Q. All right. I notice in reference to Table 14 you made a determination of costs of transporting equipment. Why would that be necessary?

A. That's the extra cost. There are costs of transporting the equipment already in the crop budgets, but we felt we needed to add some additional costs for transport because of the fact that the parcels in Type VII lands were somewhat more scattered.

Q. Where did you get this information from?

A. We made estimates of the distances that would have to be covered. We looked at them, the types of equipment which

would have to be moved, the number of times they would have to be moved within each of the cultural operations, and then using the same kinds of fixed and variable costs that we used before, we developed an analysis of the additional cost that would be incurred for that equipment.

Q. So up to now, have we included all items that would go into the production costs?

A. We have.

Q. All right. And what did you do with these production costs then?

A. Subtracting the production costs from the gross returns gives you the net returns for lowland and highland acres, shown on Page 21.

THE SPECIAL MASTER: On page what?

THE WITNESS: Pages 21 -- excuse me -- on Pages 20, 21 and 22.

Page 20 shows the net returns for full water sprinkler irrigation, 21 for full water flood irrigation, and 22, water short flood irrigation.

THE SPECIAL MASTER: You have a $200 per acre crop insurance in your cost. Can you tell me how you arrived at that figure?

THE WITNESS: For the barley?

THE SPECIAL MASTER: Yes.

THE WITNESS: Yes. That's something that's generally done for barley. It's derived from other Agricultural Extension publications where they insure barley because of potential damage, even destruction early in the season. It's an insurance item.

THE SPECIAL MASTER: Your Page 27 doesn't really show what it's for, but I assume it's barley. It just says crop insurance, $20 coverage. Is there a premium for that or is that a federal program?

THE WITNESS: Page 27? Crop insurance, yes, the premium is over in the materials and custom column.

THE SPECIAL MASTER: $10?

THE WITNESS: That's the cost per acre.

THE SPECIAL MASTER: Where on Page 20 is your gross return for that? Your first item? The first two items?

THE WITNESS: For malt barley?

THE SPECIAL MASTER: Yes. It's your first item?

THE WITNESS: Go ahead, Mr. Echohawk.

MR. ECHOHAWK: Your Honor, we have been going about an hour.

THE SPECIAL MASTER: Okay. Let's take a ten-minute break.

(Whereupon a recess was taken.

* * * * *

THE SPECIAL MASTER: We will come to order, please.

Q (By Mr. Echohawk) Mr. Dornbusch, I believe we have the gross returns and ended up finally with the net returns per acre. What would be your next step after your net return determination?

A Okay. Once we determined the net returns for highland and lowland acres that we show on Pages 20, 21 and 22, we can then move to Page 36 where we take those net returns for each crop and we determine a weighted average net return according to the crop mix within the various areas. The crop mixes are shown on Pages 36 and 37. Page 36 shows the Type VII lands, Classes 1 through 3, for full water sprinkler, full water surface, and then water short surface and non-FIP areas. Then Page 37 shows the same kinds of things, the crop mix for Class 4 soils. Then taking the weighted average according to the crop mixes, we determined a weighted average by each of these categories shown in the two tables.

Q And how did you determine the crop percent distribution?

A The crop percent distribution in the Class 1 through 3 soils, with the exception of water short, is the same basic idea as we have in the new project lands. However, corn is eliminated and instead of corn in the sixth year of rotation, it's entirely malt barley. We nave taken

out corn and replaced it entirely with malt barley. There was some, if you recall, some malt barley in the new project lands, but now it's all malt barley.

For the water short type -- excuse me -- for the water short Class 1 through 3 and for the Class 4 lands the crop mix is based upon discussions with Wes Seamands, primarily.

Q And who is he?

A He's an agronomist -- extension agronomist in Laramie, and he specializes in grass lands -- grass-hay operations, as I recall.

Q So you just took a simple weighted average --

A Excuse me, not only grass-hay, he does specialize in a full range of hay operations, grass included.

Q You took your weighted average and your net returns, and what did you do after that?

A Then we again -- we have annual returns and I have discounted these to an equivalent net present value, and those present values are shown also on the same table on Pages 36 and 37.

Q Now that we have the net benefits per acre off the highland and lowland, what is the next step?

A The next step was to perform some adjustments to Dr. Mesghinna's costs, and in this case you recall I said

that --

Q Would those be Dr. Mesghinna's costs or Mr. Stetson's costs for the Type VII?

A Excuse me, for the Type VII lands they were Tom Stetson's costs, yes. Yes, that's right.

Q What type of adjustments did you perform?

A We have the costs for each parcel in Type VII. You recall we performed a separate benefit cost analysis for each parcel, so from Mr. Stetson's costs in each parcel we made the same types of adjustments for labor, opportunity cost, for normalizations, same operations as before in order to determine the net present value for the system costs.

Q What other adjustments were made?

A Other adjustments?

Q Did you have any other adjustments?

A Well, yes. I think the way to see this, we have so far been discussing these parcels on an average acre basis, and we realized that not all of the parcels were that average, that some were smaller, and as a result would have even less an efficiency as we were operating with on the average. They also would have higher fencing costs because they are smaller. So we went back and we looked at all of the parcels which as a result of being

smaller would have higher costs. We also recognized the fact that some of these parcels were going to require some soil amendments to be reclaimed, that they have developed some sodic problems that required some --

THE SPECIAL MASTER: If that is the case, why were they kept in the inventory at all?

THE WITNESS: They were kept in the inventory only to see if in running through this analysis, and if it might be possible to apply some remedies, they actually could be reclaimed.

THE SPECIAL MASTER: Do you have any idea of the percentage of lands that had that soil problem or alkalinity problem in these lands which you are testifying about?

THE WITNESS: I can tell you only a small handful we found -- that could be feasibly reclaimed.

THE SPECIAL MASTER: You left them in?

THE WITNESS: What we did is we determined the amount of soil amendments that would be required, we determined the lower yield that might be expected in the earlier years, then we ran through the analysis to see what the benefit cost ratio was. For some small number, and I can't recall exactly, we found that, indeed, some of these lands could be reclaimed, had a feasible

benefit cost ratio. There were a number that were thrown out. Not all the lands that had the problem were included, quite a number were thrown out.

THE SPECIAL MASTER: Thank you.

Q (By Mr. Echohawk) You mentioned that you ran through an analysis for small parcels that would be just smaller than the average size.

A Right.

Q Would you expand on that just a little bit as to what sort of considerations you made and adjustments?

A Yes. If we have a smaller parcel, there are more of these turning operations, and there's just less efficiency in -- let me put it this way: In running a tractor down the field, the amount of time you spend turning that tractor around is proportionately higher, so you acutally spent somewhat less time in actual field cultivations operations. So we had to allow for some loss in efficiency, and therefore, I increased the costs, which we did. Also because it is a smaller parcel, we felt if you put a fence entirely around it you were going to have more fenced miles per acre, and we did an analysis to determine how much more fencing costs you would incur as a result of the smaller parcel. So we added costs for the smaller parcels and we went

parcel by parcel and checked. We looked for the smaller parcels, and where we found the smaller parcels than the average, we added in additional costs, then examined what the benefit cost ratio would be, and only left in those that met the feasibility requirements.

Q Mr. Dornbusch, then does this take us to the final step in your analysis of the Type VII lands, the benefit cost ratio?

A Yes, it does. What I presented then, in Table 18 which is shown on Pages 39, 40 and 41, is a summary by each of the units of the feasible acres, the per acre returns, the per acre costs and the benefit cost ratios for each of those years.

Q In your analysis of the feasible acres, the Type VII lands that Mr. Stetson testified about, are your feasible acres the same totals that he testified to, or were there adjustments made?

A I think there some adjustments from the table that he was operating from, but I'm not sure about that myself. I have the final table.

Q Okay. So the feasible acreas shown on Pages 39, 40 and 41 in Table 18 would be the actual claimed acreas, the final?

A Yes. I think there might be some slight differences.

THE SPECIAL MASTER: Like the 4,398 to 4,498 and the 100 on the trust lands subtotal, or you mean in addition to that, the differences you referred to?

THE WITNESS: Yes, there might be some differences in the total feasible acres that I show in my table as opposed to the one that Tom --

THE SPECIAL MASTER: What is the total -- what is the bottom line for Type VII irrigable acres that you feel have a justifiable benefit cost ratio?

THE WITNESS: This is the bottom line, these are the feasible acres.

Q (By Mr. Echohawk) Would that be located on Page 41?

A Yes, Page 41 shows total Type VII lands, 7,946 acres.

Q In regard to Type VIII acres, were any adjustments made from Dr. Mesghinna's acre totals?

A No, We made the same checks, but we found no acres that were different from Dr. Mesghinna's totals.

THE SPECIAL MASTER: You just asked a question on Type VIII's, did you not?

MR. ECHOHAWK: Yes.

THE SPECIAL MASTER: Where is the Type VIII total in this exhibit?

MR. ECHOHAWK: I don't think there is a Type VIII total, Your Honor. But they are -- the Type VIII total

is the same total in Dr. Mesghinna's report, which is Exhibit 277.

THE SPECIAL MASTER: So this exhibit tells us only the -- what are --

MR. ECHOHAWK: Your Honor, I believe Dr. Mesghinna's report, Exhibit C-277, his total acreage was 1,461 acres.

* * * * *

THE SPECIAL MASTER: We should have prefaced your testimony this morning with a special definition of Type VII and VIII for the benefit of those who will read this transcript in the decades ahead, and so why don't we ask the reporters to inject at the very beginning this simple definition for Type VII, trust lands with a history of irrigation, but idle at the present time; Type VIII, newly classified lands within boundaries of historic Federal Irrigation Projects.

Are those definitions satisfactory to you, Mr. Dornbusch?

MR. DORNBUSCH: Yes.

THE SPECIAL MASTER: To you, the State of Wyoming?

MR. MERRILL: Yes, Your Honor.

THE SPECIAL MASTER: And to you, the United States?

MR. ECHOHAWK: Yes, Your Honor.

THE SPECIAL MASTER: And then the people that read this in the future will not have to be wasting time going from page to page, volume to volume, room to room and building to building, as some people we know these days, including the Master, have been doing.

* * * * *

Q. (By Mr. Echohawk) Mr. Dornbusch, on Table 18, Pages 39, 40 and 41, the benefit-cost ratios shown there for each area, do those depict your opinion of feasible irrigable acreage?

A. Yes, all the benefit-cost ratios exceed 1. However, this is just a summary table, and the fact is that not only these benefit-cost ratios, but the particular benefit-cost ratios for each parcel exceeds one that comprise this total.

Q. And have you developed a table that shows the benefit-cost ratio for each parcel?

A. I have a table which shows the returns and the costs and the acres. By inspection it's possible to see the benefit-cost ratios exceeds one. The table doesn't actually include the benefit-cost ratios for each parcel.

MR. ECHOHAWK: At this time, Your Honor, since there are, I guess, literally hundreds of parcels, I'm not sure whether we need that into the record or not. But if the parties feel it's necessary, I believe we could insert that.

THE SPECIAL MASTER: I don't, and let us hope.

MR. ECHOHAWK: We will leave that up to the State of Wyoming.

THE SPECIAL MASTER: Let me ask some questions, Mr.

Echohawk, that I think I need answers to.

Mr. Dornbusch, you are an expert economist and not a farmer, but I think you should answer these questions I have. If you owned these lands and they were a part of your heritage and your value and your net worth and you were managing them and you were about to put them into water and you recognized that no matter where in the Rocky Mountain West today you are using water, you have a shortage problem, would you not develop Johnstown Unit and anything else with cost-benefit ratios of 2 to 9, Dry Creek, Bull Creek, Meadow Lake, beautiful B-C ratios -- South Fork Little Wind is the highest ratio I have ever seen in twenty years, 10.23 on those -- Main Stem Little Wind -- would you not take something like Mill Creek and East Fork of the Wind and Dry Pasup Creek and Crow Creek and anything else that's a 1.9 or downward and say to yourself, "In fact, I'm not sure I want to take a chance on something that marginal. I will save any water I have for better yields."

Would you please answer my question, as an economist and as a man who understands the need to make money with investments and with effort and with human effort and sweat that goes into irrigating crops and waiting for a crop yield?

THE WITNESS: Okay. Please forgive me if I don't give

you a quick yes or no, but I want to develop it for you.

THE SPECIAL MASTER: I would like you to.

THE WITNESS: First of all, as I explained earlier, this is an economic analysis. It's taken from the point of view of somebody standing back and looking at this just -- this project or series of projects just as they might look at any other non-Indian or any development project, okay, and we have made thekind of considerations which you do from that perspective.

Okay. There are other factors which if I were, say, the owner of the land and I could speak for the Tribes, that I would wish to consider.

That would come more in what I call the financial feasibility analysis and I'd have other considerations.

I would consider things like where am I going to get the money to finance these things. And if I have some good ready sources, that I don't have to --

THE SPECIAL MASTER: That's one thing.

THE WITNESS: -- that I don't have to pay interest on and maybe even pay back for a very long time --

THE SPECIAL MASTER: That's one thing.

THE WITNESS: -- that would definitely enter into consideration.

The second thing is that there are considerations that I have not included here which I, as an owner of that

land and, say, a member of the Tribe or a representative of the Tribe, would have to consider, and that is that the potential for economic development has other implications for me as a Tribe.

THE SPECIAL MASTER: Sure.

THE WITNESS: And I'm not going to necessarily make all these connections, but there are people who I think have leveled some pretty convincing arguments that economic development brings along with it some social betterment that is very difficult to quantify, but nevertheless is real.

THE SPECIAL MASTER: Yeah, the real burden that this Court has, and I think you can appreciate it, is to have to put into reality with specific measurements the vague philosophic concepts that have been handed down over the last 100 years.

This is a piece of historic unfinished business, and one of the measures of the water to be quantified -- one of the elements I have to work with is economic feasibility.

THE WITNESS: Right.

THE SPECIAL MASTER: And everything has to be considered and if the throw-off benefits are something that are minimal and marginal and continue an Indian in the same life directions that do not add to his education, betterment or everything else, and you have an election

between that which is economically beneficial and water that can be used for other benefits that could be of benefit to him, I have to make that decision, and I would like some evidence to base it on because there are going to be inevitable appeals no matter what I do.

THE WITNESS: Just to finish up with this line, I'd say it's entirely possible, although I haven't done the specific analysis -- I have to qualify it -- I think it's very possible and probable that even at the very low benefit-cost ratios, because of the considerations I just laid out for you, that, yes, I might very well make an investment as the owner of that land.

THE SPECIAL MASTER: I don't mean to diminish the professionalism of your work.

THE WITNESS: I do understand that.

THE SPECIAL MASTER: I admire the expertise and the professionalism all of you have put into your work in arriving at these figures.

THE WITNESS: I think what you are getting at, if I may just, to help us understand one another, is you are trying to get a sensitivity for what perhaps other points of view one might take as regards these projects, and not just the one that I have presented here, which I think is valid, and I'm stating my position why I think it's valid.

THE SPECIAL MASTER: I appreciate that. Go ahead,

Mr. Echohawk.

Q. (By Mr. Echohawk) Mr. Dornbusch, we completed discussions on the Type VIIs and the Type VIIIs. In your early testimony you mentioned that you also concerned yourself with the unadjudicated in-use category of the United States' claim.

Did you perform this same type of feasibility analysis on the unadjudicated in-use areas that you described for the Type VIIs, Type VIIIs, or the future lands?

A. Well, I looked at them from the same point of view. I did not perform a detailed analysis in the way that you see here.

What I did do is talked with the engineers from HKM who went out and looked at those lands to find out what might be the extra costs that might be required. Those lands are already under irrigation. They are being cultivated.

My question was, okay, what additional cost might be necessary on into the future to continue irrigation of those lands, and based upon the answers I got back from them and the fact that these are being irrigated and crops are being grown on the land, it seems to me that they are clearly feasible, given the present situation and what we might expect to be the situation in the future.

Q. All right. Mr. Dornbusch, the economic feasibility analysis depicted in Exhibit C-278 for the Type VIIs and Type VIIIs on the various tables contained therein, do those reflect your professional opinion regarding your economic analysis?

A. Yes, they do.

MR. ECHOHAWK: Your Honor, may I have one moment?

THE SPECIAL MASTER: Do you know the acreage figure off of the unadjudicated --

THE WITNESS: No, I don't.

THE SPECIAL MASTER: I shouldn't ask you.

THE WITNESS: I have that, Your Honor. The acreage, unadjudicated in use, is 34,427.

THE SPECIAL MASTER: That, in effect,is the total of all six? Isn't that, in effect, the total of the FIPs?

MR. ECHOHAWK: That is the project and nonproject.

THE SPECIAL MASTER: Project and nonproject. That's the grand total?

MR. ECHOHAWK: Right, 34,427 is the total. Within that the project lands --

THE SPECIAL MASTER: You mentioned, Mr. Dornbusch, that you looked at these and came up with the fact that there can be some expenditures,made that would make them more efficient or economically justifiable. There is no need to prove those economically justifiable? That's being

irrigated now and has been for a good many decades?

MR. ECHOHAWK: That's right. And as such, we performed no analysis on those.

THE SPECIAL MASTER: Of course not.

MR. ECHOHAWK: Your Honor, I believe at this time that concludes the direct examination of Mr. Dornbusch.

At this time, Your Honor, I would offer into evidence what has been marked as WRIR C-278, which is the report by Mr. Dornbusch entitled, "Economic Feasibility Analysis for Irrigated Agriculture, Historic Type VII and Type VIII Lands, Wind River Indian Reservation."

THE SPECIAL MASTER: Mr. Merrill, I think you for not having any voir dire.

* * * * *

MR. MERRILL: Your Honor, before I get to my voir dire, I would like to make an objection based on the five-day rule. I believe it has now been modified to the five-day rule. If we had an hour and a half rule or even hour and forty-five minute rule, we would be in good shape here.

THE SPECIAL MASTER: Is that right, you only had this one hour?

MR. ECHOHAWK: No, Your Honor, I gave him the hand-written copy on Friday. This was typed over the week-end.

MR. MERRILL: Your Honor, the record should reflect that I was given a typewritten copy of Exhibit C-278 this morning in the elevator at 9:05 a.m., according to my notations I made on my own copy. For the Court's benefit, I would like to hand the Court copies that were served on the State of Wyoming last weekend, and I have marked those documents as --

THE SPECIAL MASTER: Served on the State of Wyoming?

MR. MERRILL: As Exhibit C-278A.

THE SPECIAL MASTER: Did you say served on the State of Wyoming?

MR. MERRILL: Yes, Your Honor. That was given to Mr. White at approximately 12:20 p.m. on Friday, which still does not meet the five-day rule.

THE SPECIAL MASTER: I'm an old prosecutor and that word still scares me. I beg your pardon. I have a different connotation then -- this was handed to you last Friday?

MR. MERRILL: That is correct, Your Honor. So as of 12:20 today we will have a four-day rule on that document, so we still haven't had it for five days, and I think you can see by examining C-278A it is very difficult to use, the information is largely modified, handwritten in pencil notations and so forth. Our people found it virtually impossible to do a detailed analysis and investigation following the work flow through that document.

THE SPECIAL MASTER: Let me say I sympathize with you and can appreciate your disadvantage. Normally what we do is recess the proceedings for a week and give you a chance to analyze it, but again, we can't do that. We just can't go that anymore.

MR. ECHOHAWK: Your Honor, the United States, in order for Mr. Merrill to have his complete five days, would allow a voir dire on this exhibit tomorrow after 12:20 p.m.

THE SPECIAL MASTER: But I just -- as I say, I recognize the difficulty and will try to make it up to you by giving you wider latitude on cross-examination, and I will try to make it up in a lot of other ways, but we have got to wind up the hearings or it's going to kill me, and I am almost about half literally on this, and it's going to

kill me if we don't, and the last thing in the world this State and Nation needs is a dead Special Master with all the evidence in his head because that just sets you back five more years, doesn't it? Really, truly, it does. That happened in a case Arizona versus California. Rifkin was the second Special Master in that case after about five years of litagation. So we will just have to do the best we can with you on the cross-examination and make it up for you.

MR. MERRILL: Your Honor, I sympathize with your concerns about the time, and I'm not asking the Court to delay the proceedings in any way, I just want to make my objection for the record.

THE SPECIAL MASTER: I appreciate that. And do you want to do any voir diring on any specific tables?

MR. MERRILL: Your Honor, again, as with the future lands analysis, I find it impossible to separate the voir dire from the cross-examination, and I will reserve my voir dire until cross-examination and make motions to strike at that time.

THE SPECIAL MASTER: U.S. Exhibit WRIR C-278 is admitted into evidence. You may begin your cross-examination if you are through, Mr. Echohawk.

MR. ECHOHAWK: Yes, Your Honor.

THE SPECIAL MASTER: All right. Mr. Merrill, on cross.

MR. MERRILL: Your Honor, I ask if the Tribes have any cross-examination.

THE SPECIAL MASTER: I beg your pardon.

MR. ROGERS: No, Your Honor, no cross-examination.

THE SPECIAL MASTER: The United States, as trustee?

MR. CLEAR: No.

THE SPECIAL MASTER: The State of Wyoming.

CROSS-EXAMINATION

BY MR. MERRILL:

Q Mr. Dornbusch, do you recall during your cross-examination last Monday, May 11th, when we discussed whether the prices in your analysis concerning the future irrigation projects are 1978 or 1979 prices?

A Yes, I recall.

Q And you testified last Monday that your prices are 1979, is that correct?

A That's right.

Q Have you had an opportunity since Monday, the 11th, to review Exhibit ED-7, which is the 1980 Water Resources Council Handbook, in your analysis? I believe you discussed the ED-7 last Monday, you might review that and comment later as to your conclusion. I am wondering if you have made such a review, and if so, do you care to amend your statement concerning the year of your prices or make

any comments about it?

A Perhaps if I didn't make it clear, I can explain now. I am looking from my own copy of that. Perhaps if you have a copy --

Q Yeah.

A -- we can refer to that.

Q Okay. I am handing you what is entitled "A Reference Handbook, U.S. Water Resources Council, dated January, 1980. It is marked as an exhibit, so you might state for the record whether that appears to be identical with what we marked previously as Exhibit ED-7.

A Yes. I have my own copy. It is.

By way of explanation, at the time we began our analysis -- what Mr. Merrill is referring to is the fact that on page 4, I believe it is, they state that -- they are referring to these normalized prices at 1978 normalized prices. When we first began working on this, we did not have the full report. What we had was the table from which we were working and which was presented in this report, which has a series of the index numbers, and actually the preceding table shows the prices, then the following table shows the index and numbers, and then in the final column it shows the current normalized index with the date up on top, September, 1979.

THE SPECIAL MASTER: September, nineteen seventy --

THE WITNESS: Nine.

Q (By Mr. Merrill) Are you referring to page 2-9?

A Either 2-9 and 2-11, both of them.

Q Okay.

A Okay. At that time we used the term in our work and have used it here as 1979 prices, normalized prices. It turns out apparently that they choose to call them 1978 normalized prices. We are talking about the same thing. However, the price or the index that we are talking about is based upon the 1974 through 1978 prices and indices. If you recall the way I described the normalized price developed is you use a series of historic prices, weight them according to what their relative weights ought to be in order to get a prediction of what the normalized price is. They apparently called '78 in here; we called it '79. It is to be applied to fiscal year, just to confuse it more, to fiscal year 1980, which begins October 1 and goes to the following September.

THE SPECIAL MASTER: You followed the Federal practice?

THE WITNESS: That's right. And what we have done is developed normalized values based upon these normalized indices and prices for what we call '79, to be applied for fiscal '80 projects, and which apparently they call normalized

'78 here, but it is all the same. And the key point is that we are comparing our costs and our returns according to the same point in time, and normalized the prices as of what I would like to continue to call 1979 since I have done it throughout. I don't wish to correct or change anything I said before.

Q (By Mr. Merrill) Okay. Mr. Dornbusch, did you make any modifications to the prices that you took out of ED-7 before you used them in your analysis? For example, did you apply any index factor to them or did you take them straight out of ED-7 as they appear in that document?

A Well, I took prices for corn for grain and hay out of page 2-12, and used them directly without modification.

Q Are you saying, then, that there is no difference, for purposes of your analysis, between 1978 normalized prices as shown in ED-7 and the equivalent numbers that you used in your analysis?

A I don't understand your question.

Q Let me rephrase it. Are you saying that you used the 1978 normalized prices shown in Exhibit ED-7 as the prices in your own analysis?

A I used what they are referring to as 1978 normalized, which I am referring to as 1979 normalized, and used the prices from that table 2-12 in my analysis.

Q Okay, thank you.
A Corn for grain and hay, yes.
Q Okay. You can put away ED-7 for a moment, we are done with it and we will move on.

Mr. Dornbusch, I show you what has been marked for identification as Wyoming's Exhibit WRIR ED-100 and ask you to examine that, please.

A Okay.
Q Would you please take out your copies of Exhibits C-268, which is your report, and Exhibits ED-12, ED-13 and ED-14, which were admitted into evidence last Monday, May 11th?
A Okay. Now, we are talking about new project lands, correct?
Q Yes.

THE SPECIAL MASTER: Will you give me the ED on these, please?

MR. MERRILL: ED-12, 13 and 14.

THE SPECIAL MASTER: I mean what does the ED stand for?

MR. MERRILL: Economics, Dornbusch, Your Honor.

THE SPECIAL MASTER: Okay, thank you.

THE WITNESS: You asked me to take out my report.

Q (By Mr. Merrill) And ED-12, 13 and 14.
A I'm afraid I don't know what ED-12, 13 and 14 refers to.

MR. ECHOHAWK: Mr. Merrill, perhaps we could give the witness a new copy of those exhibits.

THE SPECIAL MASTER: We have some here, too.

MR. MERRILL: I can give the witness my notebook copies, Your Honor.

THE SPECIAL MASTER: Here is ED-12, ED-13 and ED-14 from me, if it will save you any trouble. I would like those back, please.

THE WITNESS: Yes. Okay.

Q (By Mr. Merrill) You have all four of them?

A I believe I do.

Q Okay. Starting with Exhibit C-268, would you please turn to the last table which I believe reflects the benefit-cost ratios you developed as part of your analysis, assuming a discount rate of four percent?

A Yes.

Q Would you then please examine Exhibit ED-100 and see whether that exhibit correctly plots the benefit-cost ratios for the five future projects as shown in your analysis?

MR. ECHOHAWK: Your Honor, in order to move the proceedings along, I believe Exhibit C-274 is already up, a chart that plots the cost ratios at the various discount rates.

MR. MERRILL: It may be, Your Honor. I would point out two things to the Court: first, that that chart plots the discount rates in reverse order as Exhibit ED-100, and secondly, I intend to use Exhibit ED-100 for illustrative purposes throughout the cross-examination of Mr. Dornbusch.

THE SPECIAL MASTER: You would rather go from three to seven and one-eighth instead of from a seven and an eighth down to three.

MR. MERRILL: Your Honor, I believe most graphs normally increase as you go out the axis from zero.

THE SPECIAL MASTER: Okay.

Q (By Mr. Merrill) Have you completed your comparison between ED-100 and C-268, Mr. Dornbusch?

A 268 being my report?

Q Yes.

A Yes, I have.

Q Okay. Would you please make the same comparison using Exhibits ED-12, 13 and 14 and ED-100 and see if ED-100 correctly plots the benefit-cost ratios based on your analysis of five, six, seven and one-eighths percent respectively?

A Yes, I will.

(Brief pause.

A. Yes, I believe that's a pretty good plot of the points, the 4, 5, 6, and 7 and 1/8 percent rates.

Q. (By Mr. Merrill) Mr. Dornbusch, does Wyoming Exhibit ED-100 correctly illustrate the benefit-cost ratios you developed as a result of your economic feasibility analysis at discount rates of 4, 5, 6, and 7 and 1/8 percent for the five future project areas?

A. No, I think I have to go back and explain again what the meaning of those percents are. First of all, the only percent that I would say represents the correct percent to use is the 4 percent, and I only say that even with a belief that the proper discount rate, the correct discount rate, is between 2 and 4 percent.

THE SPECIAL MASTER: How can it be just a vague, general, massive area? Two to four is a whole range of areas.

THE WITNESS: It sure is.

THE SPECIAL MASTER: Is there any way that the science of plotting efficiency can come to a better answer than between two and four?

THE WITNESS: Well, here is the problem. You recall that when I described what's contained in the rate of return that you want to get on an investment, you have a large component which is the inflation

component, and that is you want to get paid back dollars which will be enough to compensate you for the value of the dollars that you are putting into the investment.

If the dollars go down by 10 percent, you want 10 percent more dollars.

The problem is that that means that everybody has to forecast into the future. Whenever you set a rate like, for example, today if someone wants to loan you money, they have to guess what the future inflation is going to do to the dollars that you are going to be paying back to them, so there's imperfection in the knowledge, and what you must do is recognize the fact that everybody is guessing. Everbody is guessing what the future inflation will be.

If there was no inflation now and we were absolutely sure there was no inflation in the future, what you would find is that people would be loaning out money at -- and here again I have to fudge -- it's something like, let's say 3 percent, in the range of 2 to 4. You are always asking people to make these guesses.

What economists have done is try to find out what is going on in people's mind at the time they make this guess, and there have been analyses which have tried to relate the actual -- what we call nominal rates,

the fully inflated rate to the real rate. They try to get out that inflation, and the way they do it is they -- reasonable people will project future inflation based on the historic experience.

If you look at what inflation has done in the last few years, you will then draw some conclusions about what you might expect it to do in the future.

If it's a constant or it's going up, you will correspondingly expect it to continue to go up, maybe at a comparable rate or slower or faster rate, so what economists have tried to do is try to model what people's decisions have been and they have tried to get at how they have taken historic information to project into the future, and the kinds of studies which you see now have done just that. Now, they don't know exactly how far back people have gone to take their evidence, and they don't know how much they have weighted last year and the year before, so they have made some analyses that say, "Okay, let's go back ten years, let's go back twenty years, let's weight the near term somewhat heavier than the other."

And the studies that I have seen that have tried to do this have consistently come out with real interest rates that show the range of two to four. Precisely

what it is, they haven't been able to say because they don't know which model is the correct one, but they are quite sure that it's in the range of two to four.

Now, some economists are much more convinced than others that the range is down closer to two, even lower than two.

Other economists say, "Well, maybe it's not lower than two." What I have tried to do is take an approach which encompasses the range which I feel is valid, based on what I feel are valid analyses, and I have tried to take the top part of that range, which is 4 percent, and that's what I'm testifying to.

I'm saying that the rate is probably in the range of two to four. I'm not saying exactly because I don't know where precisely it is, but it's probably not higher than four, and that's what I'm saying here.

Now, to continue with Mr. Merrill's question, since I feel the rate is 4 percent or lower, these other rates really don't represent the proper discount rate. They represent some rate that's higher, but you and I talked about this and we understand that if somebody were to conclude differently from my conclusions, and say, "Well, if the real rate is 5 percent, then this is what you find; if the real rate is 6, this is what you would find;

and if the real rate was 7-1/8th, this is what you would find," and I prepared my graph, and I assume Mr. Merrill did for illustrative purposes, because, in fact, we are going to have to decide here what the real rate is and which rate we are going to have to use for feasibility.

And I assume that's not going to be the end of this discussion at all.

Q. (By Mr. Merrill) Mr. Dornbusch, we will discuss the appropriate discount rate a little later on in your cross-examination.

My question to you concerning Exhibit ED-100 is whether it correctly plots the benefit-cost ratios that you determined as a result of doing your economic --

THE SPECIAL MASTER: I recall, I believe, he says it does indeed.

A. Yes, it does reflect the benefit-cost ratios at those rates.

Q. (By Mr. Merrill) Okay. I would like to turn for a moment back to a discussion of prices which we were talking about last Monday, the 11th. Mr. Dornbusch, isn't it true that if all of the additional irrigation proposed by the United States in both historic and future lands is, in fact, implemented, that those lands

will produce a great deal more of the crops grown on them than are currently grown in the Riverton area or the Wind River Indian Reservation area?

A. Yes, that's right.

Q. What analysis did you do to determine the impact of those additional crops being grown and sold in the market on the prices that you assumed for those crops?

A. The market for the principal crops that we're growing is so large that it's my opinion that we would have no impact on the prices, and I say that because, first of all, if you look at our crop mix, the main crop is alfalfa, and it's baled alfalfa, and baled alfalfa is not only marketed in Wyoming, it can be marketed further away. There is a very large market for alfalfa. The malt barley that we are growing is marketed to the beer manufacturers, a very large market for malt barley, and besides the fact that evidently the beer manufacturers, the distilleries, breweries, consider the malt barley raised in the Wind River Indian Reservation in that area to be of excellent quality, and they actually seek this particular product, so the markets are more than adequate to absorb the supply. This is a very small fraction of the market.

Q. Did you make, as part of your analysis, any determination

of the quantity of these crops that are currently being grown in the Wind River Indian Reservation area?

A. No, I did not.

Q. Did you, as part of your analysis, determine the amount of these crops that would be produced from the new agricultural production on the future and so-called historic lands?

A. The total volume of crops to be grown?

Q. Yes.

A. Not in specific terms; only in general terms.

Q. Did you undertake any analysis to ensure that the availability of additional malt barley, for example, will not, in fact, depress the price that is paid?

A. Yes. As I said, I looked at the volume of crops that we could expect to grow. As I said, I didn't nail it down to the last bushel, but I looked at the approximate volume we can expect to grow in malt barley and alfalfa. I looked at the volume of alfalfa that was grown in Wyoming and neighboring states and the same for malt barley, and yes, I conclude that the volume that we are growing is not so significant to depress the market.

Q In what terms did you assess the current volume of malt barley production in the area, in any quantitative

terms at all?

A. Current in the area -- no, I did not.

Q. Did you make any quantitative analysis of any type of the amount of malt barley that will be produced on the reservation by acreage --

MR. ECHOHAWK: Objection, Your Honor. We have been over this time and time again, and he said he didn't do it specifically. He said he did it generally.

MR. MERRILL: I'm trying to find out how specific it is.

THE SPECIAL MASTER: I will overrule one more time on this general questioning.

You may answer.

A. Yes, I looked at the number of acres and the proportion of the acres that would grow malt barley, and I calculated -- it was rough tons -- or bushels -- excuse me -- of barley and compared it to other data that I saw, and, as I said, the volume was just not that significant, and coupled with the fact that we are looking at very high quality barley in this area.

Q. (By Mr. Merrill) Approximately how may acres of newly irrigated lands on the Wind River Indian Reservation will produce barley?

A. All of them.

THE SPECIAL MASTER: All of them that you have indicated would produce barley?

THE WITNESS: That's right, all of the new project lands have the capability of producing malt barley.

Q. (By Mr. Merrill) And in any one given area, how many acres of all of the newly irrigated lands would produce barley?

A. Well, in the low land areas, all you have to do is take the percentages off my table in the crop distribution and multiply the acreages, and you have it.

Q. Did you perform that analysis?

A. Well, as I said, I did it, I don't have any notes of what it all comes to, but I looked at that, yes.

* * * * *

Q (By Mr. Merrill) Okay. Can you bring those notes with you tomorrow so we can come back to this area of questioning?

A I don't any longer have those notes. I ran the calculation. I suppose I could -- I could do it again, if you wanted me to reconstruct it.

Q I'm going to turn now to some of the production costs as shown in your crop budgets, just to let you know we are going to switch gears and don't get you off balance. In your direct testimony you indicated you used Mr. Agee's prices and normalized those prices according to the WRC in your crop budgets, is that correct?

A Agee's costs, you mean?

Q I'm sorry, costs.

A Some, yes. Not all.

Q Would you please indicate which costs in your crop budgets you developed by using Mr. Agee's figures and then normalizing them according to the WRC index?

A Now, we are talking about new project lands, correct?

Q Well, let's use that one as an example. I believe you testified earlier this morning you used a similar crop budget with respect to the historic lands, and we will get to that a little later.

A Okay. As I understand your question, you asked me which of Mr. Agee's costs I used, is that right?

Q Yes.

A Okay. I used his variable costs. If you look at the crop budgets and you look at the columns, if you look under "Truck or tractor" then under "Implement," I used his variable cost and then normalized them. I also used his Materials and Customs with some exceptions, but essentially I used his Material and Customs costs and then normalized those, and his labor costs and normalized those. I also made adjustments to the opportunity costs of labor.

Q Do your variable costs for truck or tractor include some assumptions concerning the price of fuel?

A Yes. The assumption with all costs-oh, wait, you mean the assumption as to the price of fuel within the Agee budget?

Q Yes.

A Yes. As with all of his costs, they're assumed to be as of 1977.

Q Did you index those costs up to 1979?

A Yes. I used the normalization process that I described which does that.

Q Would you please tell the Court what costs you assumed

for gasoline and diesel as part of the variable cost in your crop budget?

A Well, I can't do that directly. What I used was his variable costs which comprises -- comprises that. I believe I used the costs that were appropriate for our area within his budgets.

Q Do you know what cost that is?

A Well, let's see.

(Brief pause.

A I can't fine offhand if Agee specifies the price that he uses, but essentially we are working from whatever price he used as of '77 and then normalized it up.

Q Are you saying, then, that you took Mr. Agee's variable costs and simply indexed them as a total figure for each line item up to a 1979 figure?

A Oh, I see. Okay. No. Within -- let's see. I will be specific. Within the variable costs you have a portion which consists of fuel and a portion which consists of labor and then farm and motor supplies, and Agee breaks that down. What we have done is normalized his fuel price according to the normalization factor that should be applied to the fuel. It is a different factor than you do for the other components within the variable costs, so yes, we treated it differently, we

recognized that fuel costs do escalate differently.

THE SPECIAL MASTER: I'm having problems with the tyranny of words. Earlier the question was did you index the costs, and the answer was, "Yes, I normalized them." Now, are those -- are we talking about the same thing?

THE WITNESS: I assume that is what he meant.

MR. MERRILL: That is what I meant, Your Honor. I apologize.

THE SPECIAL MASTER: Okay. Thank you both.

Q (By Mr. Merrill) Mr. Dornbusch, are you saying you used Mr. Agee's figures for fuel in 1977 and brought those figures up to a 1979 value for your analysis?

A Seventy-nine normalized, yes.

Q What value did you use for '79 normalized in your analysis for gasoline?

A Well, I think the easy way to describe it is just to tell you we used Agee's fuel cost and then multiplied it by the normalization factor for fuel. I don't know if I can find buried in my notes the exact number that I used.

Q Can you find in your notes the price you used normalized to 1979 for diesel fuel?

A As I said, I didn't use a price, I used his quantity.

See, I believe what Agee did, I'm trying to recall it, is that he has a quantity times a fuel use. Okay, I think I may have what you are seeking. Agee, Page 31, he quotes the price that he used and he uses he says in his footnote A on Page 31, diesel fuel as 37 cents a gallon and gasoline at 51 and a half cents a gallon.

Q And you normalized those prices to 1979, is that correct?

A Well, effectively I think that is what it works out to that we did.

Q Mr. Dornbusch, I hand you what has been marked for identification as Wyoming's Exhibit WRIR ED-8. Would you please identify that for the record?

A Okay. This is the same report that I have been referring to. This is Doug Agee's report, Bulletin 619-R, Cost of Producing Crops, Riverton Area, Freemont County, Wyoming, 1977.

Q Would you please direct the Court to the portion of ED-8 which you used in determining your fuel prices?

A Well, I was reading from a footnote on Page 31, but I have to explain that this is not something that I personally did directly, this is the part of work that I supervised. I don't have in my notes precisely the fuel price I used. I would have to check with my staff to see what prices they did use.

Q Okay. Would it be possible for you to check with your staff over the lunch break and tell us after lunch?

A I will sure do that.

Q I would like to know the prices you used, 1979 normalized prices, for gasoline and diesel, if you could check on those, please.

Mr. Dornbusch, can you tell the Court what price you used for motor oil as part of the variable costs in your crop budgets?

A Well, I have the same problem with that. As I said, I used Agee's prices, the rate of his consumption, and then normalized them.

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Q (By Mr. Merrill) Why don't you check on that one over lunch as well?

A Motor oil?

Q Right. Just add that to your list and we'll come back to it after the lunch break.

MR. MERRILL: Your Honor, with the exception of those three items, I believe that completes my cross-examination with respect to the production costs on this particular category of Mr. Dornbusch's analysis.

I wonder if I could ask the Court's indulgence in taking a longer lunch hour so I can get something for my throat?

THE SPECIAL MASTER: Very well. We will stand in recess until 1:15.

(Whereupon a lunch recess
(was taken at 11:35 a.m. and
(will reconvene at 1:15 p.m.

* * * * *