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Transcript of proceedings Volume VIII, Pages 1530-1748

Wayne C. Lenhart
Court Reporter

IN THE DISTRICT COURT OF THE UNITED STATES

FOR THE EASTERN DISTRICT OF WASHINGTON

COLVILLE CONFEDERATED TRIBES, Plaintiff,

v.

BOYD WALTON, JR., et ux, et al., STATE OF WASHINGTON, Interv. Deft., Defendants,

Consolidated with

UNITED STATES OF AMERICA, Plaintiff,

v.

WILLIAM BOYD WALTON, et al., Defendants.

No. 3421

No. 3831

TRANSCRIPT OF PROCEEDINGS

April 12, 1978

Volume IX

Pages 1749 - 1935

Spokane Calendar

Neill J.

I N D E X

E X H I B I T S

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State of Washington				
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Morning Session

April 12, 1978 9:00 A.M.

THE COURT: Good morning.

COUNSEL IN UNISON: Good morning.

MR. VEEDER: Your Honor, may I inquire momentarily about the plans of the Court if we do not finish up, I mean everyone get his case in through Friday. Do I understand that we are going to go to the 25th then?

THE COURT: You will have to go to the 25th because I am involved in criminal trials all next week and Mondays we have to take care of the motion and criminal calendars, so, in the vernacular, I'm "dead in the water" until the 25th.

MR. VEEDER: In other words, we will project on to the 25th.

THE COURT: Right.

MR. VEEDER: All right, thank you.

MR. PRICE: I have a trial starting the 25th. It has been scheduled for some time. I don't know which takes precedence. There is also the possibility --

THE COURT: It's a civil matter?

MR. PRICE: That is correct, Your Honor.

THE COURT: I think we simply have got

to finish this case.

MR. PRICE: We just won't convey that to the other party in the civil case and I will try to get that settled.

THE COURT: All right.

Well, let's see, I guess the State wished cross-examination of Dr. Koch.

MISS ECKERT: That is correct.

THE COURT: You may proceed, Miss Eckert.

DAVID LAWRENCE KOCH, called as a witness herein, having been previously sworn on oath, testified as follows:

CROSS-EXAMINATION

BY MISS ECKERT:

Q Good morning.

A Good morning.

Q Dr. Koch, drawing your attention to Colville Exhibit 37-27, the chart showing the coliform counts, you gave us one date yesterday and I believe you told us that you would have the date of the second sample available for us today. Do you have that?

A I didn't say I would have it available today. I don't have that data in Spokane here with me. I

A No, I have not.

Q Now, in connection with your work in establishing the Lahonton fishery, is it my understanding that you performed a number of analyses on the water quality of both Omak Creek - excuse me, No Name Creek and Omak Lake?

A Yes, I did.

Q And could you briefly explain what those water quality tests were and how you went about it.

A Okay. I took periodic samples from No Name Creek and had detailed chemical analysis done at the Water Resources Research Laboratory of the Desert Research Institute in Reno, and those results indicated, for example, TDS concentration, total dissolved solids, concentrations in No Name Creek to be approximately 100 parts per million. I'm just recalling this from memory at this point.

The Omak Lake waters were analyzed with a hydro lab water quality analyzer and occasionally I took discreet sample for laboratory analysis. The hydro lab water quality analyzer analyzed for dissolved oxygen, temperature, pH, and conductivity in the vertical water column, so that we could get vertical profiles of what the water column was in terms of quality.

Q Did any of the parameters which your various water qualities study and sampling programs addressed themselves to, did any of those parameters include testing for coliform?

A No, they did not.

Q And why not?

A Because I do not do that analyses. I usually -- if I have it done, I will have it done by a lab that specifically does that.

Q And you did not have it done by any other lab?

A No, I did not.

Q Now, turning to the Lahonton fishery itself, from your testimony yesterday you indicated the Lahonton trout is not a native of Omak Lake; correct?

A It wasn't there previous to its introduction, no.

Q Previous to the introduction of the Lahonton trout, was there any other trout species living in the lake, to your knowledge?

A Not in Omak Lake.

Q Would it have been possible for any other trout species to live in Omak Lake?

A Not to my knowledge, and having worked with many of the species of trout. For example, the rainbow trout, the brook trout, cannot physiologically survive in those high alkaline saline waters which

the Lahonton cutthroat trout has evolved to adapt to.

Q Just out of curiosity, can you tell me, if I were to put an adult, healthy adult rainbow trout into Omak Lake, approximately how long might it survive?

A I think, as I said in the deposition, it would last maybe 20 or 30 minutes.

Q To the best of your knowledge, do you know if there were any stocking programs attempted for Omak Lake prior to the Lahonton program?

A Yes, there were, as pointed out in -- I believe it's Colville Exhibit 37-9.

Q That is the Thiessen report?

A That is the Thiessen report. Mr. Thiessen reports in there, I think, one occasion of planing rainbow trout and one occasion of planting brook trout in Omak Lake.

Q In Omak Creek [sic] and by that, at this point I'm referring only to that portion of the Creek below the granite lip, in other words, between the granite lip and the lake. In your studies for the Colville Tribe, did you find any native trout species in that lower portion of No Name Creek?

A I think you are referring to No Name; right?

Q That is right, excuse me.

A We found some brook trout below the granitic lip, yes.
Q And do you know what the source of that brook trout resource, I guess you would call it, is?
A As best we could determine at that point, it was derived probably from some of the plants that were made into Omak Lake that went up No Name Creek.
Q And do you have any estimate of how extensive that -- I will call it a native fishery -- is or was?
A First off, I would like to point out brook trout are not native. They were an introduced species as well.
Q I used the term with implied quotation marks. I think the record should show that.
A The extent of that population was very small. They were very small fish. The fish we caught out of there through electro-fishing ranged in size five to six inches in length and it looked like it was just a small residual population that had established itself in those little pools below the granitic lip.
Q On your comments on Kartar Creek which is a creek that flows into the southern end of Omak Lake; correct?
A Yes.
Q You indicated that you didn't consider that for the establishment of the Lahonton program because

it was (a) too expensive and (b) you felt that Kartar Creek was intermittent.

On what did you base your conclusion that Kartar Creek is intermittent?

A The intermittent stage after observing the U.S.G.S. flow, miscellaneous flow measurements on Kartar Creek over several years' period and then having watched Kartar Creek myself since 1975, it doesn't flow to the lake for a very long period of the year which, I think, is another indication why we didn't observe any fish species in that stream at all.

Q Are you familiar with any of the upstream uses on Kartar Creek?

A I think I indicated yesterday, from personal observations it appears that it is mostly pasture land and then Moses George's home --

Q So, there would be cattle along that creek?

A Yes.

Q In connection with the endangered species and threatened species classifications that you testified about, it is my understanding that to undertake to move an endangered or a threatened species, one is to obtain a permit from the Fish and Wildlife Service. Is it your understanding that any such permit was obtained for the Lahonton

Project?

A It was not necessary in the sense that the Fish and Wildlife Service is the agency that transplanted them.

Q To what degree has the Fish & Wildlife Service maintained control over the on-going Lahonton fish project?

A The Fish and Wildlife Service has been working with the Colville Tribes through that agreement that we introduced as an exhibit, and they are working jointly each year now on the Lahonton cutthroat trout to obtain spawn that they take to the Winthrop National Fish Hatchery for return to the lake. They, the Fish and Wildlife Service, have assisted me in the intensive surveys that we did of the lake population and in making recommendations for the renovation of No Name Creek channel.

Q Turning to the impression of the natural -- I shouldn't say -- excuse me -- the pre-Lahonton state of the fishery's resource in Omak Lake, besides trout-type species, what other species existed in the lake or still exist in the lake?

A Oh, prior to the Lahonton cutthroat?

Q That's correct.

A We have two other species that occur there. One

is the redside shiner. I believe the scientific name on that is Richardsonius egregius, and the smallscale sucker which its scientific name is Catostomus.

Q Are either of those considered sport fish?

A No, they are not.

Q And to the best of your knowledge, do both, do either or both of these species of fish still exist in Omak Lake at this time?

A Yes, they do. The redside shiner forms an extremely important forage fish for the adult Lahonton cutthroat trout as a food source.

MISS ECKERT: I have no further questions. Thank you.

THE COURT: Does the Government have cross-examination? Mr. Sweeney?

MR. SWEENEY: I have a couple of questions, I believe.

THE COURT: All right.

CROSS-EXAMINATION

BY MR. SWEENEY:

Q Dr. Koch, you first became involved with the Lahonton planting program in Omak Lake and the establishment of spawning grounds in No Name

Creek in 1974; is that correct?

A That is correct.

Q And to get my mind clear on just what had happened, prior to the time you became acquainted with that, the Fish and Wildlife Service had commenced a program in 1968 to plant Lahonton trout in Omak Lake.

A Their efforts began, really, in 1964 when they encouraged the contract with Oregon State to produce the Thiessen Report of the Survey of all of the fishery resources and then 1965 and '66 Mr. Eugene Nugent of the Colville Tribe and one of the employees of the Fish and Wildlife Service did the initial testing of the fish in the water of Omak Lake.

Q I see. The 1968 date is in my mind. Was that the first substantial planting?

A That is when the first substantial plant was made of 56,225 fish.

Q It is my understanding that in the period following 1968, then, that the lake was restocked with Lahonton trout that were artificially spawned at the Winthrop hatchery.

A The spawn was taken from Summit Lake and some were taken from Heenan Lake in California, and the eggs

were taken to Hagerman National Fish Hatchery in Hagerman, Idaho, which were stocked into Omak Lake.

Winthrop National Fish Hatchery became involved when they started obtaining spawn from the Omak Lake population that was established.

Q I see. How long was that after 1968, then?

A I believe the last Hagerman fish came into Omak Lake in 1970.

Q And there after they were, the eggs were incubated at the Winthrop Hatchery?

A From 1970 on.

Q That is a fish that is not native to the Reservation?

A That is right.

Q And its official name is Salmo clarki?

A The Lahonton cutthroat trout is Salmo clarki henshawi, a sub-species of the original cutthroat trout.

Q And that is native to these lakes that you mentioned in Nevada?

A Well, the cutthroat trout is native to the western U.S., west of the Continental Divide, and then we have had various sub-species evolve off into different basins.

Q This is a sub-species that was not native to the Colville Reservation?

A Right.

Q You mentioned several resolutions that were passed and ordinances that were passed by the Colville Tribe after the planting of the fish. Several times was the lake opened for fishing purposes?

A There was no fish to be caught prior to, say, 1970, 1971.

Q I mean following that, 1970 and '71. Were there fishing seasons established for Lahonton trout?

A Not until 1975 with the first limited fishing season.

Q And how many licenses were sold, or do you know?

A The first limited season, there were 20,000 permits sold specifically for Omak Lake.

Q 20,000?

A I'm not sure on that. I think 2,000. 2,000.

Q 2,000.

A Right.

Q What was the charge made for each of those?

A If my recollection serves me, I believe they charged $20 per permit.

Q This is for the 1975 --

A Season only.

Q Did it have certain restrictions on the types of equipment that could be used to fish for the Lahonton trout?

A Yes, it did, and primarily because through the recommendations of Fish and Wildlife Service and the ones we made to the Tribe after our intensive survey prior to any fishing season, we felt that we wanted to have a very limited harvest the first year, and also there were many large fish that, you know, we knew were in there, and so we recommended that a single barbless hook be used and I think I stated earlier that that makes it a challenge to keep a fish on a line without any barb on that hook and a maximum number of three fish per fisherman per season.

Q After the 1975 season was there another fishing season established by the Colville Tribe?

A The second fishing season was more liberal. They opened it up to artificial lures and the season was much longer. The first season was from September until February only and the following year it was opened up for a greater portion of the year.

Q That would be 1976?

A Right.

Q And what was the charge for the permit or license to fish for the Lahonton trout?

A The permit during the second season was a $10 Tribal permit.

Q That is the regular Tribal permit?

A I believe that was the Tribal permit plus a special for the Omak Lake.

Q Do you know how many permits were sold specifically for --

A During the second season?

Q Yes.

A No, I don't.

MR. SWEENEY: That is all I have. Thank you.

THE COURT: Redirect, Mr. Veeder?

MR. VEEDER: There will be no redirect, Your Honor.

THE COURT: You may step down, Dr. Koch. Thank you, sir.

(Witness is excused.)

MR. VEEDER: Your Honor, we would like to be permitted to withdraw 37-2 which is the Thiessen report, have copies made of it and offer the copies in lieu of this particular report, if we may.

THE COURT: Any objection?

MR. PRICE: No objection.

THE COURT: Motion will be granted.

THE VEEDER: The Colville Confederated Tribe rests, Your Honor.

THE COURT: Mr. Price or Mr. Mack or Miss Eckert, who is going to lead off with the defense?

MR. SWEENEY: I had anticipated that the United States would present some testimony following the testimony by the Tribe.

THE COURT: You may proceed.

MR. SWEENEY: I would like to request the indulgence of the Court for a few minutes' recess. I have the exhibits that I have mounted and I would like to have them put on the Board and so forth.

THE COURT: Very good. The Court will take a recess while you arrange the exhibits. Advise me when you are ready.

MR. SWEENEY: Yes.

THE BAILIFF: All rise. Court stands in recess subject to call.

(A short recess is taken.)

THE COURT: You may proceed, Mr. Sweeney.

MR. SWEENEY: All right, Your Honor. I would like to call Mr. Marlan Harvey as the first witness for the United States.

MARLAN D. HARVEY, called as a witness, being first duly sworn on oath, testified as follows:

THE CLERK OF THE COURT: Would you please state your full name for the Court.

THE WITNESS: Marlan D. Harvey.

THE CLERK OF THE COURT: Will you spell your first name.

THE WITNESS: M-a-r-l-a-n.

DIRECT EXAMINATION

BY MR. SWEENEY:

Q Mr. Harvey, where do you reside?

A 1413 Monte Vista Drive, Pocatello, Idaho.

Q And by whom are you employed?

A Bureau of Indian Affairs.

Q And in what capacity?

A As a soil scientist.

Q How long have you been employed by the Bureau of

Indian Affairs?

A About 26 years.

Q Has it always been as a soil scientist?

A Yes, it has.

Q Would you give us a brief statement as to your educational background.

A Yes, I received a degree in agronomy in 1954 from Brigham Young University. I completed the requirements for a Bachelor's degree in soil science in 1955 and went to work for the Soil Conservation Service in southwestern Wyoming as a soil scientist and about a year later --

Q When did you do that?

A Beg your pardon?

Q When did you go to work for the Soil Conservation Service?

A In 1955.

Q I see. Then go ahead.

A And about a year later I transferred to the Bureau of Indian Affairs on the Uintah and Ouray Reservation.

Q Could you spell that, please.

A U-i-n-t-a-h and O-u-r-a-y.

Q Well, you have been with the Bureau of Indian Affairs for 26 years?

A Yes, I have.

Q In the capacity as a soil scientsit?
A Yes.
Q Would you tell us generally what are your duties in that position.
A Yes, I will tell you generally. I don't know if this is exactly what you want or not. I act as advisor to the Tribal Council, land owners and land operators in all matters of soils and land use, and within the parameters of our trust responsibilities to Indians and the resources, I attempt to determine the wishes, the goals and objectives of the land owners and then provide them technical information and make recommendations for soils and land use commensurate with good conservation practice for the preservation of Indian resources.
Q Now, you have done that on various reservations throughout the western United States?
A Yes, I have.
Q And you are now with the Portland Region?
A Yes.
Q And does the Portland Region of the Bureau of Indian Affairs include the Colville Indian Reservation?
A Yes, it does.
Q As a matter of fact, were you -- well, tell us

briefly your familiarity with the Colville Indian Reservation.

A I came up to the Colville Reservation about 1961 and worked on the Colville and the Spokane Reservations for about 12 years.

Q Now, in the course of your work there, did you make at various times examinations as to the capability of land for agricultural production?

A Yes, I did.

Q Are you familiar with the lands which are the subject matter of this proceeding here, namely No Name Creek Valley on the Colville Indian Reservation?

A Yes, I am.

Q Would you tell us where you got your familiarity with that land.

A In 1969 or '70 -- I don't remember exactly when -- I got a request from my supervisor who was the Land Operations officer for a general map showing potentially irrigable land within the No Name Creek Valley and as a result of that request, I took the field sheets that had a soil survey on them completed about 1959. These sheets were on a 1" = 1320' scale and I made a tracing on these sheets and using my judgment and the soils

information in that survey, I made a tracing of what I consider to be the irrigable lands or potentially irrigable lands.

Q Now, this was back in 1969 or '70?

A Yes.

Q And you, yourself, did not make the original soil sheets?

A No, I wasn't involved in the original survey.

Q Thereafter, did you have occasion to make what I would call a more detailed survey of the soil classifications?

A Yes, as a result of, I believe it was telephone conversation with Mr. Kuhn.

Q Who is he?

A Solicitor in Portland.

Q You had a conversation with Mr. Kuhn?

A Yes, he indicated that there was a controversy about water rights in the No Name Creek area which was getting more intense and in our discussions it was my suggestion that we go back in and make a more detailed soil survey using a larger scale and more accurate photographs.

Q That was in 1974?

A Yes, this was in 1974.

Q What did you do then?

A I proceeded to go in and make a more detailed survey in the No Name Creek area.

Q How did you accomplish that, generally?

A We take an auger and spade and backhoe, if we can find one, anything to get out of manual labor, pH indicators, slope measuring devices, instruments, and walk out over all of the land. We determined the physiographic positions, the parent material of the soils through the physical examinations and comparing the finding of the direct findings, comparing those to the established mapping units of soils that are in our guidelines, we designate the kind of soil that we are dealing with.

Q You did this work for the lands within the No Name Creek Valley?

A Yes, I did.

Q And that was in 1974?

A Yes.

Q And did you do that for the trust lands, the four allotments that are involved?

A Yes.

Q The two to the north of the Walton property, 526 and I think 892.

A Yes.

Q And also 901 and 903.

A Yes.
Q Did you also do that on the Walton property itself?
A Yes, I did.
Q Did you talk to Mr. Walton?
A I'm not sure I was -- Mr. Boyd Walton, I believe, accompanied me on part of it, on the trip through his place.
Q All right. This was in 1974. As a result of that work, did you prepare a map showing the land plot classifications that you found on those lands that you examined in No Name Creek Valley?
A Yes, I did.
Q When was that prepared?
A Well, the final preparation was done in 1975.
Q Now, I would like to direct your attention to the United States proposed identification No. 8 which is on the easel before you. Do you recognize that?
A Yes, I do.
Q Would you tell us what it is.
A It is a land capability classification on the soils in the No Name Creek area.
Q Is it based on the investigations that you made in 1974?
A Yes.
Q Was the map prepared in the offices of the Bureau

of Indian Affairs?

A Yes.

Q Under your direction.

A Yes.

Q Is it an accurate portrayal of the conclusions that you reached as to the land classifications?

A I believe it is quite accurate, yes.

Q And does it also include a computation as to irrigable acreage within certain allotments and the Walton property?

A Yes.

Q Within the valley?

A Yes. It does.

MR. SWEENEY: I would offer proposed Exhibit No. 8.

THE COURT: Any objections?

MR. PRICE: I am wondering if he is going to go into the exhibit.

I have no objection.

THE COURT: U.S. 8 is admitted.

(U.S. Exhibit No. 8 is admitted.)

MR. SWEENEY: Is there a pointer?

THE COURT: Yes.

MR. SWEENEY: There it is, Your Honor.

I guess you can reach that pretty much, Mr. Harvey.

THE WITNESS: Yes.

Q (By Mr. Sweeney) First, what are the classifications, the overall classifications that are listed on the Exhibit 8? I mean, is it 1 through 7?

A The overall classification on this particular map are 2 through 8.

Q Where did these classifications come through, 2 through 8?

A The capability classification system is developed mainly by the Soil Conservation Service and it is interdisciplinary project.

Q With the Bureau of Indian Affairs?

A Yes, and the Bureau of Indian Affairs cooperates and follows the general guidelines for these classes.

Q Now, as I understand it, this portrays what in your judgment would be irrigable lands within those parcels within No Name Creek Valley and is based on a scale of from 2 to 7.

A Yes. Generally, we limit the irrigable classes in capabilities 2 through 4. Those classes above 4 are generally not considered irrigable for general crops.

Q And what factors enter into the determination of whether a particular parcel -- I shouldn't say parcel, but a particular portion of the lands examined are, say, category 2, 3, 4, 6 or whatever?

A It is the degree of hazard or limitations that a soil has that determines which capability class it is in.

Q And what might be hazards?

A Erosion, excess water, excess chemicals, stones, excessive gravel, shallow soils.

Q Is slope also considered?

A And slope, yes.

Q Now, on Exhibit 8, is there portrayed certain portions of the lands involved that are listed within classifications 2 through 4?

A I beg your pardon. Would you state that again.

Q Well, all right. On the Exhibit No. 8, various portions of the lands that you examined are given different classifications; is that correct?

A Yes, that is correct.

Q Now, were some of the lands classified as 7?

A Yes, they are.

MR. PRICE: Pardon me, Counsel?

MR. SWEENEY: As 7.

MR. PRICE: Thank you.

Q (By Mr. Sweeney) And those would be non-irrigable?
A Yes.
Q Were portions of the lands classified within the category or classifications of 2 through 4?
A Yes.
Q Does this map have notations as to acreage amounts of lands that were classified 2 through 4?
A Yes, it does.
Q Does it have that both for the trust lands lying to the north and south of Mr. Walton's property as well as Mr. Walton's property?
A Yes, it does.
Q Now, did you make the acreage computations that appear on the Exhibit?
A Yes, I did.
Q Briefly state how you did that.
A I did this with a digital planimeter on the field sheets.
Q Turning back to the exhibit, as far as the Allotment No. 525, the Tribal trust land, how many acres did you ascribe as being irrigable within that parcel?
A 60.5 acres.
Q And turning to, I believe the next allotment, trust Allotment 892, how many acres did you ascribe as

being irrigable?

A I have 58.7 in 892.

Q Now, I will get back to what your conclusions were as to Mr. Walton's property, but turning to the lower allotment, Allotment 901, what did you arrive at as far as irrigable acreage is concerned?

A I have 50 acres in 901.

Q And then the last Tribal trust allotment, Allotment 903, how many acres were ascribed as being irrigable?

A I calculated 57.6.

Q Did you have a total within the trust properties, then, of all those that you --

A Yes, I do. It is 253.4.

Q Okay. Now, you did the same type of examination and analysis and measurement, as I understand it, as to Mr. Walton's property.

A Yes.

Q And did you arrive at a figure on the lands within the Walton property that you would ascribe as being irrigable based on your classifications.

A Yes, I calculated about 170 acres.

MR. SWEENEY: I have no further questions.

THE COURT: Cross-examination. The State?

Did you have further?

MR. SWEENEY: I may have another. Could I go back on the record.

THE COURT: Yes, go ahead.

Q (By Mr. Sweeney) I see I made an error. I misled you, Mr. Harvey. When I asked you for the acreages for each of the four trust allotments, you gave me an acreage for each of the allotments; is that correct?

A Yes.

Q I should have pointed -- or asked you, does that map also show portions of lands that lie outside the actual boundaries of the trust allotments that you examined and were found to be irrigable?

A Yes, it does.

Q And is that acreage outside the allotments also shown on your Exhibit 8?

A Yes, and that is included in the total I gave you.

Q How much is outside the actual boundaries of the allotment?

A I calculated 26.6 acres.

Q And including the 26.6 acres, that is included in the total of 253.4?

A Yes, it is.

Q Okay. Thank you.

MR. SWEENEY: I have no further questions.

THE COURT: Miss Eckert.

CROSS-EXAMINATION

BY MISS ECKERT:

Q Mr. Harvey, drawing your attention to U.S. Exhibit 8, in the middle portion of the exhibit there is a figure labeled 80 which has been crossed out and then a figure 75. Do you see to what I am referring?

A Yes, I do.

Q Which figure was it that was used in the addition of your acreage figure?

A 75. Apparently in rechecking my measurements, I neglected to exclude the homestead area in my original calculations.

Q Now, also still on that same exhibit, there is a double dashed line which proceeds in the general direction from the Mission down toward the lake and it is not labeled on the key and I wonder if you could tell me what that double dashed line is.

A That is the main roads.

Q Now, when you say that you used a digital planimeter on the sheets to come up with your acreage, can you explain what that process is, what it involved.

A All a digital planimeter is, it's a regular planimeter with an easy-to-read lighted panel.

Q But how does one go about using it. I mean, what do you do with it?

A You -- it's an instrument, well known instrument, I think, that you measure areas. You adjust the scale, the scale of your map or whatever, and you trace the pointer around the areas.

Q You basically go around the outlines; is that correct?

A Yes.

Q Okay. Now, and that is the process that you used in coming up with this exhibit?

A Yes.

Q When you used that tracer process or the planimeter process, did you include the areas that are shown on the exhibit as being the road?

A No, I did not.

Q Now, looking again at that exhibit, I notice in the, it would be the eastern portion above Allotment 903, there is a circle with an arrow that then proceeds down through a portion of 903 into 901 and can you tell me what that indicates?

A Yes, that is indicated in the legend as a spring.

Q And then what is the ultimate destination of the waters from that spring? Your arrows end in the middle of 901.

A They fan out into the more or less swampy area in 901.

Q In that area where the arrows fan out on the Exhibit 8, it is marked 6W; is that correct?

A Yes.

Q Do you see what I am referring to?

A Yes.

Q At present what is the condition of that land; do you know?

A The water is at or near the surface.

Q In terms of making your classifications, you have got classifications 1 through 8; correct?

A Yes.

Q Can you tell me what it is, what are the criteria that distinguish a classification 1 soil from a classification 2 soil?

A Yes, it is degree of limitations or hazards that limit the use of that soil or the hazard of soil damage.

Q Do you have -- let me try it this way, then.

In the factors that go into making the classification, I take it, are things like slope and depth of soils and acidity and so on.

A Yes.

Q For a classification 1 soil, let's just go through

these criteria.

What is the maximum amount of slope you can have and still be in a classification 1?

A I don't have that criteria right here, but it would be about 2 percent.

Q And then for classification 2 soil, if you recall, what would be the maximum amount of slope that would be permissible?

A I believe it would be about 4 percent.

Q And then for a class 3, again, with the amount of slope; do you recall?

A Now, these criteria are -- they are combinations of soil factors, so just the single slope criteria would not necessarily determine that class.

Q I recognize that. I have a whole series of questions coming.

Do you recall the question I asked you for classification 3, what might be considered the maximum permissible slope and still be in that?

A About 8 percent.

Q And then for classification 4?

A I believe it's about 12.

Q Now, another parameter, criteria, whatever, is it permeability of the soil; is that correct?

A Yes.

Q And do you recall for classification 1, how that criteria is expressed?

A No, I can't. I can't recall the exact inches per hour.

Q Is ponding one of the factors which goes into considering the suitability of soils in your classification system?

A You mean the accumulation of water on the surface?

Q That is right.

A Sure, yes.

Q And in classes 1 through 4, would ponding be an acceptable characteristic?

A Not for a major part of the growing season. Significant part of the growing season, I should say.

Q Do your classifications, well -- strike that.

In making these classifications for the No Name Creek Valley, were you considering a particular crop that would be used on the land in No Name Creek Valley?

A No, no particular crop.

Q Did you make any consideration of the relative costs of development as between the various classifications of land?

Let me ask it this way? In general, is it

fair to say that a class 2 land may be somewhat less expensive to develop than a class 3 land?

A In a very general way, yes, but not directly.

Q In the No Name Creek Valley classification that you came up with as shown on Exhibit 8, can you tell me what percentage of the lands in your total acreage are class 2 lands?

A No, I didn't make that determination.

Q Okay. Did you make that determination for class 3?

A No, I didn't.

Q Or class 4?

A No.

Q Now, on your using the planimeter method of determining acreages, is there a range of accuracy for those figures? In other words, is there a plus or a minus on either side?

A Yes, it would be within about 2 to 3 percent, I think.

Q In making your 1975 map, did you have any occasion to consider your results with the results on irrigable acres obtained by the Colville Indians, by Morrison-Maierle for the Indians?

A No, I did not.

Q Were you present when Mr. Kaczmarek was testifying earlier in this trial?

A I was present for part of his testimony.
Q In 1974, you testified that you got a phone call from a Mr. Kuhn?
A Yes.
Q From the Solicitor's Office?
A Yes.
Q I take it he represents the Bureau of Indian Affairs; is that correct?
A He represents the Department of Interior.
Q Can you recall, please, for us, the substance of his request to you?
A He wanted to get my recommendations about what kind of a map should be prepared.
Q And was that in connection with the litigation that has resulted in this trial?
A Apparently, yes.
Q Did he refer to the case of Colville v. Walton?
A I believe he indicated there was litigation in process, yes.
Q At that time, in 1974, were you requested to make any surveys of irrigable acres on any other portions of the Colville Indian Reservation?
A No, not --
Q The request was specific to No Name Creek Valley?
A Yes, as far as Mr. Kuhn was concerned.

Q Incidentally, have you ever done any other surveys of irrigable acreages on the Colville Indian Reservation?
A Yes, I have.
Q And do you recall when that was?
A Intermittently between 1961 and 1972.
Q Now, you testified that what is now Exhibit 8 was a result of the conversation with Mr. Kuhn, essentially, but before that time in '69 or '70 there had been a request for a general map; is that correct?
A Yes.
Q And did you, in fact, prepare such a map?
A I took the information from maps already available.
Q Okay, and then when you say you took the information from maps already available, the maps that were already available had been prepared by whom?
A By the Bureau of Indian Affairs.
Q And do you recall the dates of those maps?
A I believe the survey was completed in 1959.
Q In 1970, then, after taking that information from the previous surveys, did you draw a map comparable to what is now Exhibit 8?
A All that map indicated was the potentially irrigable lands.

Q Do you have that map with you today?
A No, I do not.
MR. SWEENEY: Excuse me. It is proposed Exhibit No. 7.
MISS ECKERT: Oh.
(Counsel are talking to each other off the record.)
THE COURT: Are you going to propose No. 7, Mr. Sweeney?
MR. SWEENEY: She is referring to, I believe, proposed Exhibit No. 7.
MISS ECKERT: It has been marked but apparently not offered at this point.
MR. SWEENEY: No, they asked me to have it available.
Q (By Miss Eckert) Well, let me ask you, Mr. Harvey, I'm handing you what has been marked as U.S.A. Exhibit 7 and ask you if you recognize that?
A I recognize most of the information on it. There are a lot of additional numbers, figures and so forth that I didn't put on there myself.
Q Is this the map that you were talking about that you came up with in roughly 1970?
A Yes, it is.
Q Okay. And with the exception of those items that

you don't recognize, did you prepare the map?

A Yes.

Q And if you would, could you tell us which items appear on that map which you did not put on?

A There is a blue line down through the center. There are acreage figures which I did not put on. There are locations of homes, homesteads, springs, which I did not put on.

Q Do you know who put that information on?

A No, I do not.

Q All right. Do you know if it was any employee of the BIA?

A No, I don't.

MISS ECKERT: I guess I should at this point, although it is not our exhibit, I would like to offer the exhibit --

MR. VEEDER: May we see it?

MISS ECKERT: -- which has been marked as U.S.A. 7.

MR. VEEDER: Your Honor, we have not seen this. I have no idea the source of it. If it is going to be identified by the State and they are going to call a witness, fine, that is something else, but at this point, the gentleman on the stand indicated it was largely hearsay. He didn't

know where it came from, didn't know who put the marks on it.

I interpose the objection that there is no basis for it.

THE COURT: The difficulty, as I sense it at the moment anyway, is that this witness has testified that what seems to be the pertinent information as far as this case is concerned was not put on the map by him.

MR. VEEDER: Yes, and I would think that it is strictly hearsay at this point, Your Honor, and I interpose the objection.

MISS ECKERT: Well, maybe we are confused here, Your Honor. As far as I'm concerned, I believe that he did say he had drawn the outlines of the land.

THE COURT: Yes, but the issue which we have here is the extent of irrigable acres.

MISS ECKERT: That's correct.

THE COURT: And he testified, unless I misread him, that he did not put the acreage figures on that map.

MISS ECKERT: No, Your Honor, but I just want to know how the shapes compare.

MR. VEEDER: I couldn't hear what she

said.

MISS ECKERT: I'm trying to find out how the shapes compare.

THE COURT: The shapes, the delineation of the lands.

MISS ECKERT: On the two maps that he has drawn, and I believe he did say that he had drawn that.

I might also ask Mr. Harvey --

Q -- is this a BIA record; do you know? Was this in the files of the Bureau of Indian Affairs?

A The original field sheets from which that map was taken are in the files. Yes.

Q Would it -- let me -- .

MISS ECKERT: Well, I renew my offer.

MR. VEEDER: And I renew my objection, Your Honor.

THE COURT: I think I have a problem here in that this witness cannot state that the acreages on there are within his knowledge.

MR. SWEENEY: Perhaps I can explain, Your Honor.

This was in a file. It has been in the file that we have had all this time, but we could not find out who put on this additional information

after Mr. Harvey did the base map, so -- and we showed it to counsel for the State and to Mr. Price.

THE COURT: I'm going to deny the admission at this time. This might be renewed with some later testimony.

(U. S. Exhibit No. 7 is denied.)

MISS ECKERT: Okay.

MR. VEEDER: And that is, for identification, is it, No. 7?

THE COURT: It is U.S. 7 for identification.

MR. VEEDER: Thank you.

MISS ECKERT: I have no further questions at this time. Thank you.

THE COURT: Mr. Price, do you have any cross?

MR. PRICE: I believe so, Your Honor.

CROSS-EXAMINATION

BY MR. PRICE:

Q Mr. Harvey, to follow up the Judge's inquiry concern, with respect to Exhibit 8 you have delineated acreages on that exhibit from your own personal knowledge and calculations; is that correct?

A Yes, I did.

Q In conducting your soil survey, did you contact the local branch of United States Soil Conservation

Service located in Okanogan, Washington, to review their records on soil surveys?

A Yes, I did.

Q With whom did you meet there or whom did you contact?

A I believe Al Blumdahl, the conservationist.

Q All right, and did you meet with Mr. Bill Bennett?

A Not about this specific area, I don't believe. I don't recall.

Q Did you attempt to correlate their records with your records to see if they matched?

A They indicated they hadn't done any work on Mr. Walton's property at least in recent times. No, I didn't make any attempt to correlate the acreage figures.

Q All right. Now, the acreages that you delineated are irrigable, not irrigated; is that correct?

A That is correct, yes.

Q Exhibit 8 does not purport to represent the water duty for any particular acreages; is that correct?

A No, it does not represent water duty.

Q Can you tell me the ranges of classifications that appear on Allotment 526, just from the lowest range to the highest range category?

A It appears class 2, 3 and 4 and some in class 6.

Q In class 6?

A Yes.

Q Were the class 6 considered by you to be irrigable or not irrigable?

A There is a little slip of class 6 that I considered irrigable, yes.

Q According to your definitions, as I understand them, and the soil legend as used by the United States Department of Agriculture Soil Conservation Service, class 6 would be denominated as land not suitable for cultivation; is that correct?

A The guidelines I have say that generally class 6 is not suited for general cultivated crops, yes.

Q How many acres in Allotment 526 have you classified as class 6?

A I didn't calculate those figures.

Q Can you give me an approximation by looking at the map?

A Gosh, I -- there is probably about, between 40 and 50 acres, I would judge from that.

Q In Allotment 526?

A Yes.

Q Okay. Can you give me the ranges in Allotment 892, please, of the classifications from the lowest to the highest?

A They range from class 2 to class 6.

Q And will you estimate for me, please, the number of acres that are classified as class 6?

A I would estimate -- well, we can subtract the irrigable acres from the total and I don't have the total there, apparently about 50 acres.

MR. VEEDER: I object to this, Your Honor. He says he doesn't have the total, so it is just purely speculative.

THE COURT: I think he is giving his best opinion. It may stand.

Q (By Mr. Price) On Allotment 903 have you calculated any irrigable acres -- excuse me, what class range of classifications did you include in 903, please -- 901, I'm sorry.

A I have class 3 and class 4 in 901.

Q So, all of the acreages that you denominated as irrigable fall within a range of 3 or 4?

A Yes.

Q And Allotment 903, please.

Would you give me the range of classification in Allotment 903 for the areas that you denominated as irrigable?

A Class 3 and 4.

Q On Waltons' property would you give me the ranges of classification for lands that you denominated as

irrigable.

A They are Class 2, 3 and 4.

Q And your estimation was 170 irrigable acres for Waltons' property?

A That is what I calculated, yes.

Q Did you soil survey show on the Walton property any breakdown as to alkaline content, what fields have high alkaline content?

A Yes, they do.

Q And did you classify those as class 3 lands?

A No.

Q What class did you class them in?

A They are class 4.

Q Class 4.

Thank you very much, Mr. Harvey.

MR. PRICE: That is all I have, Your Honor.

THE COURT: Mr. Veeder?

MR. VEEDER: Yes, Your Honor, I have a few questions. May I approach the exhibit, please.

CROSS-EXAMINATION

BY MR. VEEDER:

Q Now, Mr. Harvey --

MR. VEEDER: May I stay here for just a

moment, Your Honor, with the witness.

Q I observe, Mr. Harvey, that you have what appears to be an intermittent stream connecting with Omak Creek.

Now, you may -- you offered no testimony in regard to that; did you?

A I don't recall that I did.

Q Well, you --

A Yes, it is my judgment. It is an intermittent stream or it has been in recent years.

Q Have you noticed any water in it at any time?

A Yes, I think I have.

Q Was it artificially put there?

A I believe it was, yes.

Q In other words, water was induced out of Omak Creek into that. You never saw it naturally flow out of there, did you?

A I -- no, I don't recall seeing natural flow.

Q And at the present time there appears to be a man made ditch down there; isn't that right?

MISS ECKERT: Your Honor, so the record is clear, I don't know what he is talking about, "a ditch down there." Perhaps he could ask --

MR. VEEDER: Well, I will be glad to make it clear. I am pointing to an intermittent

area flowing -- well, it's got an arrow and a broken line and 892 running directly down from Omak Creek.

Does that clear it up?

MISS ECKERT: I still don't know where the ditch is that you are talking about, Counsel. I don't want to belabor this. I'm sorry.

Q (By Mr. Veeder) Go ahead, please.

A I really didn't pay that much attention to the channel. I didn't think it was man made.

Q But you don't know?

A I'm not sure.

Q You don't know.

A No, I don't know whether it was man made.

Q And when did you see water running down that ditch?

A Sometime between 1967 and 1972.

Q But you haven't seen any since you went on there and made this soil survey; right?

A I haven't -- last Sunday was the first time I have been on there since I made the soil survey.

Q And you are not testifying that it is presently an intermittent stream; are you?

A Not at this particular time, no.

MR. VEEDER: I have no further questions.

THE COURT: Redirect, Mr. Sweeney?

MR. SWEENEY: Yes.

REDIRECT EXAMINATION

BY MR. SWEENEY:

Q Mr. Harvey, Mr. Price asked you about the irrigable lands that you found was in Allotment 526 which is the most northerly allotment.

A Yes.

Q And as I understand it, you found a total of 60.5 acres there.

A That is right.

Q Would you tell us what classifications of land within Allotment 526 that you regard as irrigable?

A Class 2, 3, 4 and a small acreage of class 6.

Q When you say a small acreage in class 6, how much is that acreage?

A 3.6 acres.

Q When you responded -- well, first of all, why did you include 3. whatever it is acres of class 6 within that irrigable capability?

A It's right on the borderline between class 4 and class 6, to begin with, and the prospects of soil damage under high management, high management level especially for irrigation appeared to me in my judgment to be not severe.

Q And that was 3.6 acres.

A Yes.

MR. SWEENEY: Your Honor, may I approach the exhibit?

THE COURT: You may.

Q (By Mr. Sweeney) Mr. Harvey, I notice lying to the east partially on Allotment 526 and some of it beyond the boundary, there is some class 6 land shown; is that correct?

A Yes.

Q And did you regard that area as irrigable?

A Not for general cultivated crops, no.

Q Did you include it in your computation of irrigable acres?

A No, I did not.

Q I believe, if my memory of your testimony to Mr. Price is concerned about 526, you mentioned that there are about 40 or 50 acres of class 6.

A Yes.

Q Did you mean to say that that land was included as irrigable land?

A No, I did not.

Q So, it is merely the 3.6 acres?

A Yes.

Q Did you find any class 1 lands on either the trust allotments or Mr. Walton's property?

A No, I did not find what I judged to be class 1.

MR. SWEENEY: That is all the questions I have.

THE COURT: This raises the question in the Court's mind, my notes indicate, Mr. Harvey, that you also testified that, I think it's on 892, I believe it is the next allotment, that there was somewhere in the neighborhood of 50 acres of class 6 land that was included in your irrigable acreage.

A No, I did not mean that.

THE COURT: Well, that is what I want to get straight.

I think, Counsel, you better go into that allotment.

MR. SWEENEY: All right.

Q On the next allotment, 892, how many total acres of irrigable land did you conclude were in that allotment?

A I have 58.7.

Q And of what classification of land is that 58.7 acres, does it consist of?

A That is class 2 and class 4.

Q Are there any class 6 lands within Allotment 892 which are included within your determination of 58.7 acres of irrigable land within 892?

A No, there are not.

Q Did you include 892?
A No, there are not.
Q Did you include any class 6 lands as irrigable within parcel -- Allotment 901 on the south?
A No, I did not.
Q Did you include any class 6 lands as irrigable land within your acreage figure for Allotment 903?
A No.
Q Is it correct to say that the only portion of class 6 lands within the entire land represented on Exhibit 8 which you included as irrigable was the 3.6 acres on parcel -- or Allotment 526?
A Yes, that is correct.
Q Did you state that you saw Omak Creek flowing into or south from its present course?
A I have seen water, yes, and I'm not absolutely positive. It may have been artificially diverted.
Q Do you know how water is transported now from Allotments 526 and 892 to Allotments 901 and 903?
A Just from the general observation. It flows down No Name Creek.
Q From Allotment 892?
A Yes.
Q And it's --

A Now, this was several years ago. 1974.

Q Have you seen that property -- or when was the last time you saw the property?

A I was on the property last Sunday.

Q Of course, it wasn't being irrigated at that time.

A No, it is not.

Q Okay.

MR. SWEENEY: I have no further questions.

THE COURT: Further examination of the witness?

MR. VEEDER: I have no questions.

MR. PRICE: No questions, Your Honor.

THE COURT: You may step down, Mr. Harvey. Thank you.

(Witness is excused.)

MR. SWEENEY: I would call Mr. Bennett, please.

THE COURT: Let's take a short recess before you put this witness on. The Court will be in recess about 10 minutes.

THE CLERK OF THE COURT: All rise. Court is in recess for 10 minutes.

(Second morning recess is taken.)

THE BAILIFF: All rise. Court is reconvened following recess.

MR. SWEENEY: I called Mr. Bennett, Your Honor.

THE COURT: Yes.

WILLIAM A. BENNETT, called as a witness herein, being first duly sworn on oath, testified as follows:

THE CLERK OF THE COURT: Would you please state your full name to the Court.

THE WITNESS: William A. Bennett.

THE CLERK OF THE COURT: Thank you.

DIRECT EXAMINATION

BY MR. SWEENEY:

Q Mr. Bennett, where do you live?

A Okanogan, Washington.

Q And what position do you hold?

A I'm a soil conservationist with the Soil Conservation Service.

Q Is that part of the Department of Agriculture?

A Yes. United States Department of Agriculture.

Q Pardon?

A United States Department of Agriculture.

Q And for how long have you worked with the Soil Conservation Service?

A Since February of 1949.

Q Could you tell us first of all a little bit about your educational background.

A I graduated as an agricultural engineer in February of 1949, went directly to work with the Soil Conservation Service in Wenatchee.

Q And where did you graduate from?

A From WSU, Washington State College at Pullman.

Q And you went directly with the Soil Conservation Service?

A Yes.

Q From that?

A At Wenatchee.

Q And would you tell us where you were and how you progressed there.

A In May of 1949 I transferred to Twisp as an agricultural engineer and then two years later in 1951 I transferred to Okanogan. I think my title then was a civil engineer. It vascillated back and forth between agricultural engineering and civil engineering with the SCS, and in 1965, I believe it was, I became the area engineer for

what we called area 3 which comprised Okanogan County, Chelan County, Douglas County, Ferry County and Stevens County.

Q And have you held that position since that time?

A Well, until about 3 years ago, I believe it was, when the areas were combined and I was reassigned as a soil conservationist.

Q Well, would you tell us briefly what your duties are in connection with that position as a soil conservationist?

A Well, as a soil conservationist, I am dealing mainly with water consumption, adaptability of crops, recommendations as to crops for certain types of land. Prior to that, as the engineering specialist, I was in charge of the engineering for area 3. At that time I was responsible for designs of irrigation systems, dams, diversions, terraces, drainage systems, and other engineering practices.

Q Now, in the course of this work, have you had occasion to become familiar in any way with the lands within what we call the No Name Creek Valley?

A Yes, I have worked on several of the fields out there to different degrees, really.

Q Well, who was that for?

A Well, some for the St. Mary's Mission when the Mission was out there and also for Wilson Walton when he was doing some, when he was having some irrigation systems designed.

Q Was this back in 1950 --

A I can't remember the date except that it was in the 1950's, really.

Q Now --

A Probably the middle to the latter '50's. I would imagine.

Q So your experience in the area, the general area of No Name Creek Valley, extends back to about 1949, then?

A Well, 1951 was when I transferred to Okanogan and so actually -- and in that time, it wasn't too long before I had been out to Wilson Walton's.

Q Okay. Now, in making your analyses for the different projects and proposed irrigation works and so forth that you analyzed, do you make determinations or reach conclusions as to the probable precipitation or rain belt areas that such lands might be located?

A Well, only in -- not really in the design of the irrigation systems. However, we have really a rather general knowledge because of the different

rainfall belts give us the different adaptability of different dry land crops for the area.

Q Okay, now, as far as No Name Creek Valley is concerned, what do you consider the rainfall belt that that is located in?

A It would be near 10 inches per year.

Q Turning to a crop such as alfalfa, if I may, do you have occasion to reach conclusions as to consumptive use or water duty for that type of crop in that area?

A In the design of irrigation systems, we do, yes.

Q And what type of consumptive use would you determine?

A Well, consumptive use varies from day to day and month to month according to the temperature, the daylight hours, the amount of wind and so forth, but usually we design on the basis of a quarter of an inch a day of water to actually be used by the plant and this is the figure that we use to determine how long a crop can go between irrigations and how much water to apply each irrigation.

Q Does that calculate out at an average of 30 to 36 inches in this area?

A Per year, a yearly consumptive use for an alfalfa

crop would be normally about 30 inches. On an exceptionally hot year it may go as high as 36 inches and this is assuming a 100 percent application efficiency of your irrigation water.

Q Now, if you don't have 100 percent application efficiency, what do you do?

A You have to apply more water to make up for the losses that occur due to the wind and evaporation.

Q Is there a general range of efficiency rate that you usually consider?

A Yes, actually the range of efficiencies are usually 65 percent for soils which are relatively shallow and when we -- soils which have rather, that have 12 -- that the water is applied in a 12 hour period.

As we get into our deeper soils that hold enough water that they can go 16 days or more between irrigations, we usually go up to about a 75 percent efficiency and figure on using a 24 hour set with the irrigation, so as to save labor and make it more convenient for the farmer.

Q I should ask you, now, when we're talking about irrigation, we're talking about sprinkler irrigation, are we not?

A All that I have said so far has been with sprinkler irrigation. There is some irrigation besides

sprinkler irrigation being done in this area though.

Q I know that, but I mean --

A Rather small areas, relatively, but then there are some.

Q But the figures we have been talking about refer to sprinkler irrigation.

A Yes, however, the consumptive of a quarter of an inch a day is irregardless of the way the water is put on.

Q That remains constant.

A That is what the crop uses.

Q Now, considering, then, say a 30 inch requirement that you mentioned, and calculating on, say, a 70 percent efficiency, what would be the requirement in inches?

MR. PRICE: (Unintelligible.)

A That would be --

Q Just a moment. Counsel has asked me to repeat the question and I will try to do so.

Now, considering a 30 inch requirement and a 70 percent efficiency, what would be the amount required?

A It would be approximately 43 inches of water.

Q And how would that calculate out as far as acre-feet is concerned?

A Well, 3. -- approximately 3.6 acre-feet of water.
Q Now, would you take a 36 inch requirement and a 70 percent efficiency. What would that calculate out to?
A That would be just slightly over 51 inches of water.
Q And how would that convert into acre-feet?
A About 4.3 acre-feet.
Q So, I take it then that based on those calculations, there is a range between 3.6 acre-feet and 4.3 acre-feet; is that correct?
A Yes, under those circumstances that you gave me, yes.
Q And so would an average between those be approximately 4 acre-feet?
A I don't remember what the first figure was that I gave you.
Q I believe it was 3.6.
A 3.6, okay. It would be just slightly under 4.
Q 4 acre-feet.
A Just slightly under 4.
Q Okay.

MR. SWEENEY: That is all the questions I have.

THE COURT: Cross-examination. Mr. Price?

MR. PRICE: Thank you, Your Honor.

CROSS-EXAMINATION

BY MR. PRICE:

Q Good morning, Mr. Bennett.

A Good morning.

Q In terms of classifying lands as to their adaptability to various types of crops, did you hear Mr. Harvey's testimony this morning about the various land classifications that he had?

A Yes, I did.

Q And were the land classifications that he testified to being 2 through 4, are they adaptable to the raising of alfalfa?

A Yes.

Q Okay.

A Very much so.

Q And are they adaptable to raising grass lands -- or grass, excuse me.

A It would be well within their capability, yes.

Q All right. You indicated that you worked for St. Mary's Mission in addition to doing some work for Wilson Walton. When would you have done work for St. Mary's Mission?

A Really, it's been several -- it's been probably

three to four times and probably the first time was back in the very early '50's, near the time that we were working with Mr. Walton for the first time.

Q I see.

A All based on a request from them for our services.

Q I guess what I'm getting at is what services did you perform for them specifically?

A One of the people that was working under me, and I did actually work with him and look over his designs, worked up a sprinkler irrigation design for St. Mary's Mission.

Q Do you know what land that system was designed for?

A I did at one time, but I really can't recall all of them. I know that one of them was to the southeast of the intersection of the road and Omak Creek where it crossed, but then there were several fields involved in this system and I really can't be real sure as to where all of them were.

Q Do you know if any of those fields involved were in Allotment, what is referred to as Allotment S-526 which is the northerly most portion of Exhibit No. 8, United States Government Exhibit No. 8?

If you can locate maybe the intersection of the road and Omak Creek.

A Here's the intersection of the road and Omak Creek.

Q I believe that is the boundary of the watershed, Mr. Bennett.

THE COURT: Perhaps you can point it out to him.

A Am I wrong? Is that Omak Creek?

Q You may be correct. I think you are correct. I believe you are correct.

A There was a field right in here, but it seems to me that there was more area just to the north of that too. I really haven't looked at that thing for many years and --

Q You are correct. There are fields to the north of that as well that are not depicted on that exhibit.

Where did the water come from for that system; do you know?

A There was a diversion up above Omak Creek, I mean, on Omak Creek and considerably upstream, and as I recollect, they were getting gravity pressure from a diversion that they had up Omak Creek.

Q Just a surface diversion from Omak Creek to the east of the St. Mary's Mission?

A Yes, into a pipeline so that they would have gravity pressure without pumping.

Q Fine.

A I have been to that site where they had that diversion.
Q Do you know if that diversion still exists today?
A I really don't. I haven't been there for probably 12 years and so I don't know as it's still in existence or not.
Q Okay.
A They were having problems at that time with it.
Q You are talking about consumptive use of crops. Is that the same thing as saying water duty? Is that a term that is used interchangeably or not?
A Well, I'm not real familiar with your term "water duty."
Q All right.
A I guess.
Q Do you ever use that term "water duty"?
A I do not.
Q You do not. And when you are talking about consumptive use for crop, that is how much water it takes for a particular type of crop to grow productively?
A Yes, and that is applied on both a yearly basis or a daily basis.
Q When you say it doesn't make any difference between sprinkler irrigation or some other form, say, rill

irrigation, the plant doesn't care how the water gets there. It's only concerned about how much is usable to it; is that not right?

A That is correct.

Q However, it may make a difference in terms of how much water you have to apply to make sure it gets to the plant, as between --

A Considerably. With flood irrigation you might find efficencies as low as 25 to 30 percent. With sprinkler irrigation -- I have checked sprinkler irrigation systems in which efficiency were in excess of 80 percent.

Q All right. And would rill irrigation be less than sprinkler irrigation efficiency?

A Normally rill irrigation, as far as our design would be concerned, we would assume that they would have about a 40 percent efficiency of their water.

Q 40 percent efficiency?

A Yes, with rill irrigation.

Q Comparison basis, that is not very good as compared to sprinkler irrigation; is that a fair statement?

A No.

Q It is not? Okay.

A That is one reason why Okanogan County has gone over probably 85 to 90 percent to sprinkler

irrigation instead of surface methods.

Q Because sprinkler is --

A Sprinkler is much more efficient in terms of water use.

Q All right. Fine.

Now, you talk about the range of efficiency, ranging from 65 percent to sprinkler irrigation systems in shallow soils. Can you explain, elaborate a little more the difference between irrigation on a 12 hour period versus a 24 hour period and the time interval in between the actual irrigation as to how that affects.

A Well, if I understand your question, the frequency with which water must be applied to a soil is determined by the amount of water which that soil will hold and when that water will be gone from the crop having used it. So many of our soils will only hold maybe two and a half to three inches of water, and with those, we don't like to extract the entire amount of water in the soil, so we use no more than about 60 to 65 percent of the water at any one time. This brings us down to frequencies that are often as low as 6 days and when we have efficiencies -- when we have frequencies that low, our rates of application are

so low that we have a lot of water being lost due to the sun striking and heating the area where the water is falling and the wind going through the water as it is in the air, so that a bigger percentage of that water is lost than if you had a higher application.

Q By higher application, you mean to say 24 hour period of irrigation versus 12?

A Well, even if you had a soil that could go maybe 12 to 14 days, you would be applying twice as much water at the same time over the same area, as if it had been a six to seven day frequency, and you don't have twice the amount loss due to the wind and the evaporation. There is only so much energy that is going to that screen of water as it is falling to the ground, and so you don't have as much water loss as you have on higher application rates.

Then, when you go to twenty-four hour application rates, and these can only be done on soils that -- well, normally, we don't like to do it, to have twenty-four hour sets on soil that won't hold at least enough water for 14 days. At 14 to 16 days we will go to a twenty-four hour set.

Q What soil classification would that be, normally?

A Well, classification is not the whole thing. It's the amount of water that the soil will hold and classification, you are talking about land capability classifications of 1, 2, 3, 4, and 6.

Q Correct.

A It's the feature of the amount of water which the soil will hold rather than the capability of that soil.

Q And the soil classifications we have heard about this morning don't necessarily give you that?

A Not necessarily so.

Q All right.

A But as you go to a night -- to a twenty-four hour set, which you have nighttime irrigation as well as daytime being applied to the same soil, the same spot. Our nighttime evaporation is very low and in our country we usually have very low winds, if any, at night, so that our efficiency goes up very high during the nighttime, and the average, then, through the day and night, we will figure at 75% on a design basis.

Does that answer your question, Mr. Price.

Q Yes, it does, thank you.

Mr. Sweeney --

I guess maybe I should follow that up with --

if I understand your testimony correctly, the longer interval you can go between irrigation periods, the greater you are going to increase your efficiency.

A Normally the more water a soil will hold because of a deeper texture, deeper depth or a heavier texture, you will have a higher irrigation efficiency, yes.

Q All right. You answered in response to Mr. Sweeney's questions and made some calculations about consumptive uses for alfalfa under sprinkler irrigation being 30 inches and up to 36 inches maybe in a hot year, and converted that to acre-feet, and to make that clear, were you referring to alfalfa?

A Yes, I was.

Q As a crop.

On what basis did you arrive at this figure of 30 inches consumptive use being required by the crop for alfalfa in the Omak area?

A Well, this is a figure, actually, which was given to me in my training as much as anything. It's also one which is borne out in certain circulars and that are put out by different publication agencies and experience has indicated, too, that this has to be in this area, really, to satisfy the needs of a crop.

Q What circulars are you referring to specifically?
A Well, I have one with me. This was one which was circulated to, I think most all of our Soil Conservation Service offices that had to do with irrigation. It was a 1952 circular called "Estimates of Consumptive Use and Irrigation Requirements of Crops in Washington." It was made by Aldert Molenaar who was an ag engineering instructor at Pullman, by Wayne Criddle who -- I'm sure he is the one who was involved in this Blaney-Criddle method on water consumption, and Claude Pair who was formerly in the Soil Conservation Service and then transferred to agricultural research service.
Q All right.
A And this was put out by -- it's shown as cooperating Washington Agricultural Experiment Stations, Institute of Agricultural Sciences, State College of Washington; Division of Irrigation Engineering and Water Conservation, Soil Conservation Service, U.S. Department of Agriculture; is the titles on there.
Q And so you have drawn on that in addition to your experience in arriving at this 30 inches?
A Yes, this is one of the things that was sent to us as a tool for our work with irrigation in the

Soil Conservation Service.

Q All right. You mentioned a Blaney-Criddle. Is that another report with which you are familiar?

A No, this is -- Blaney-Criddle -- I don't have any report on them, but they did a lot of checking and working on determining consumptive use of plants and how to determine consumptive use.

Q All right. Did they do any work, to your knowledge, in the Omak area, say, for the Omak-Okanogan area?

A I can't really say they did. I'm not sure how they obtained their information.

Q Okay. Do you have any circulars or information that you have used that purport to have made any studies for the Omak-Okanogan area?

A Well, this particular pamphlet here does. It refers to Omak and Okanogan.

Q All right, would you read from it, please, and designate the portions that might refer to Omak-Okanogan.

A Well, let's see. They have several tables. Here on their Table 2 and its titled Total Consumptive Use of Water and under alfalfa in inches they show Omak -- they show Okanogan as 30.8 inches and they show Omak as 27.8.

Q 27.8 inches for alfalfa in the Omak area?

A That is alfalfa. Now, where the difference is between Omak and Okanogan, I'm not sure unless one was taken down along the river and the other one was taken on a large flat, which is about -- oh, probably about 350 feet in elevation higher.

Q Talking about the flat in Omak?

A Yes, Pogue Flat up above Omak where most of the orchards are located.

Q And do I understand you correctly that this table supports, you feel that supports your testimony of 30 inches of water for alfalfa crop in the Omak area?

A Well, yes, except I think that this is an average figure and we do have the exceptional year when we do have to have more water than this on exceptionally hot years.

Q Okay. Now, at 70 percent efficiency -- by the way, when you design a system, what efficiency do you shoot for or attempt to achieve?

A On frequencies which are below 11 days, I usually use a 65 percent efficiency. If I have one -- and then one falls in the 11 to 14 day area, I use a 70 percent efficiency. If I'm over 14 days and have a twenty-four hour set, I go to 75 percent efficiency.

Q What happens if you fall below 65 percent efficiency?
A You mean in actuality, the system is less than 65 percent?
Q If, in your planning, you design it and you see that it's going to be less than 65 percent efficient, what do you do?
A Well, occasionally there are some soils which are irrigated that are very low in water holding capacity that may have to be irrigated every five or six days. Normally, we don't really figure that they should be an irrigated soil, but because of speciality crops and so forth, someone may go ahead and put them on, like an orchard or some such thing, and in those cases we will drop efficiency down to maybe 60 percent.
Q But that is an exception, as I understand it?
A In very few cases do we have to do that on because most of the soils, we figure, can go at least seven days between irrigation.
Q Are you, in terms of the -- maybe you can't base your testimony of Mr. Harvey's testimony --
A Could I interrupt a minute?
Q Yes.
A The one exception of these has been the large circle systems where we have very coarse soils that have

very low water holding capacity, but where they can make a complete circle in a twenty-four hour period, and on those they are able to irrigate alfalfa, even though they do apply just a small, very light application of water, but their efficiencies are quite high under that. We don't have to go -- we wouldn't have as low as a 60 percent efficiency under that condition.

Q A circle system would have a much higher efficiency?

A Yes, because their application rate is so high.

Q Okay.

A They are dropping down near an inch per hour with the circle.

Q I would like you, Mr. Bennett, to work through some calculations in connection with the acreages here in No Name Creek Valley, if we could, please.

Mr. Bennett, I would like you to work through some calculations for me based on 50.7 -- well, 50 acres. Let's just take 50 acres. A crop of alfalfa at 30 inches of water and calculate out how many acre-feet a year it would take to irrigate that crop for that acre for a year.

A 50 acres of alfalfa?

Q Correct.

A And 30 inch consumptive use for one year?

Q Correct.

Now, I would like you to calculate as you would if you were sitting in your office designing the system in Omak, how much water you would have to get to that crop to satisfy its 30 inch requirement.

A Well, the amount of water that I would need to get into the ground would just be simply 30 times -- 30 inches or two and a half feet times 50 feet or 125 acre-feet, unless I have made a mistake in my -- but now that is at 100 percent efficiency of application.

Q Okay. I want you to work it the way you would, should work it if you were designing a system, taking into consideration efficiencies and one other thing.

A I would need to know the type of soil we are working with.

Q All right. Are you familiar with the soil in the No Name Creek Valley?

A Yes, they are quite varied.

Q Okay, are you familiar with the soil on the Walton property?

A Yes, they too are quite varied.

Q All right, would you take one of the soils -- how do you classify them if you don't use soil

classification 2 through 4?

A Well, they are classified by a soil series and type and by soil series, I mean -- well, you are familiar with Pogue Flat.

Q Yes.

A Pogue Flat is typically -- has two -- has about 30 inches of sandy loam soil underlain by washed gravel but as you get down to about 12 inches in depth of that soil you start picking up some gravels in it and then, so, a soil that has been made under the same conditions of weather, temperatures, and other soil-forming characteristics would be called -- would come out and be the same kind of soil as that up there.

Q Maybe -- this was called a Pogue soil and, therefore, any other soils that were made under the same conditions would be called a Pogue.

Q Maybe I could speed this up.

Do you have a specific designation of a certain soil on Walton's property here with you?

A Yes, I do.

Q Could you get that, please, and just refer to one of the soils and work through your computation based on one of those soil classifications that you have.

A The most northern field of Mr. Walton's place was

mapped by the BIA as a C7-G2 and a C7-G2 is a Cashmont sandy loam, we call it. A Cashmont sandy loam is a well drained, very deep soil with a sandy loam surface and gravelly sandy loam sub-soil with varying amounts of gravel mixed throughout the profile. Water holding capacity is moderate, five to six inches, equivalent to a 15 to 17 day interval of irrigation.

We normally would apply a 70 percent irrigation efficiency if this were done on a twelve hour set, however, this could be done on a twenty-four hour set and at that time we would have irrigated that soil with the 75 percent efficiency.

Q Would you work through for me your calculations designing a system for that particular soil on Mr. Walton's northern field that you just described.

MR. SWEENEY: I object. This is, I thought, a hypothetical, and it is changed into a specific example. I don't think there has been shown what the acreage is or that the witness knows it if we are talking about the northerly field of Mr. Walton.

THE COURT: I think all Counsel is trying to do is find out how he arrives at his final conclusion of the illustration.

MR. PRICE: Yes, Your Honor. I am just trying to pin him down to some soils so we wouldn't spend a lot of time.

THE COURT: You may proceed.

A Really, this is not the way I would design an irrigation system. This is the way I would try to calculate the amount of storage that would be required for this field.

Q All right.

A Not in determining what my daily use would be as far as the sprinklers and pressures and so forth would be determined, but actually, we have 125 acre-feet and if we are going to have an efficiency of .70 or 70 percent, we can just divide that.

Q Now, you are going to use a 70 percent or 75?

A I was using a 70 percent. I could use a 75. If it were going to be a twenty-four hour set I would use the 75 percent.

That comes out to 179 acre-feet.

Q In that calculation have you considered groundwater that is already in the ground from the previous winter?

A No, I have not.

Q What does that have to do, if anything, with your calculation and would consideration of that element

alter your calculation in any way?

A There is approximately four inches of water that will be available for plant use in the spring which is the normal -- which I would say in an average carryover from our 10 inches of water that falls during the year and this can be, this four inches can be subtracted from this 30 inch figure right here because it can -- it will be used by the plants and extracted from the soil for growth.

Q Is what you are saying, then, that that would reduce the consumptive use requirement of the plant?

A Well, the plant would still have to have the same amount of water but it would reduce that amount that had to be applied artificially by man.

Q Okay. I understand.

A These figures here are the total use.

Q All right. Would you work through your calculations, then, taking into consideration the four inches of water that would normally be in the soil.

A Okay. Again, we have 30 inches of water which is needed for the crop which was the figure you gave me. We can subtract 4 from that and we will have 26 inches as needed. That would be -- we would now need two and one-sixth feet of water times 50, divide that by .7, gives us approximately 155

acre-feet of water, taking into account the residual water left over from spring -- in the spring from the winter moisture.

Q Very good. Thank you.

Have you had any occasion recently to determine the validity of this storage holdover of water in the ground in terms of whether it should legitimately be considered?

A I checked it both this year and a year ago.

Q And would you describe how you checked it, please.

A Well, I checked it by digging down in the soil until I came to dry soil, determining the amount of soil that had got damp and applying that to that, what we consider the water which is available for plant use on a per foot basis. In other words, how much water a foot of soil can hold against the draw of gravity.

Q Okay. Did that confirm this four inch calculation or not?

A This year it is approximately four and a half to five inches, slightly above what I have found in other years that I have checked it and considerably above a year ago when we had a drought situation with very little winter moisture.

Q I guess my final question, again, does that confirm,

for you, the validity of the four inch availability of water that could be used in calculating the acre-feet requirement for a particular crop?

A Yes, this four inches is available and it is usually used by delaying the time at which you start to irrigate.

Q Okay.

A However, there is one other situation and that is on exceptionally shallow soils or very coarse soils. They are not able to hold the entire four inches of water.

THE COURT: Counsel, we are about to break for lunch, but I want, after lunch, to have somebody explain to me the relationship between the testimony of four acre-feet needed for alfalfa and the figures up there somewhere between 155 acre-feet and 179. There is some element missing some place and I don't quite understand.

MR. PRICE: It is 50 acres versus 1 acre, Your Honor.

THE COURT: All right.

THE WITNESS: No efficiencies have been applied to these figures. Well, yes, the 70 was.

MR. PRICE: Yes. The four acre-feet was for one acre and we have taken that, his calculation,

and applied it to the 50 acres, Your Honor. We will break that down after lunch.

THE COURT: We will take the recess then for lunch. Resume at 1:30, please.

THE BAILIFF: All rise. This Court stands at recess until 1:30.

(Luncheon recess is taken.)

Afternoon Session

April 12, 1978 1:30 P.M.

THE BAILIFF: All rise. This Court is reconvened following recess. You may be seated.

THE COURT: You may continue with cross-examination, Mr. Price.

MR. PRICE: Thank you, Your Honor.

CROSS-EXAMINATION CONTINUED

BY MR. PRICE:

Q Mr. Bennett, I think the Judge has pointed out a point here that may make it easier to understand.

Would you work through that last calculation on a one acre basis.

A Okay. We were working on the basis of 30 inches of water for the season and we subtracted from that the amount of moisture which our average year will have carried over in the soil from winter use of four inches which left a requirement of 26 inches of water. So, that would be two and one-sixth feet, 26 inches divided by 70 percent, or approximately 3.1 acre-feet of water per acre.

Q Thank you. You deducted the four inches from the 30-inch figure. Would the deduction of that four inches be appropriate in connection with what you

describe as a hot year where you start out with 36 inches. Would it be appropriate to subtract the four inches from the 36 in working that computation?

A Yes, because this four inches applies to the winter before, not to that summer's moisture.

Q So, in working through a hot year computation, we might start with a figure of 32 inches, then, instead of 36; is that correct?

A Yes.

Q And could you briefly run through the calculation and determine the acre-feet required for one acre.

A May I work this through in inches and then convert to feet when I get through?

Q Certainly.

A Okay. That would be 32 inches divided by .7 and then further divided by 12. It came out to three and eight-tenths acre-feet of water.

Q And then the average would be computed just with the figures of 3.1 versus 3.8; is that correct?

A Pardon?

Q The average could be computed, then, using 3.1 and 3.8?

A Really, this is the average figure here, this 3.1, but this is one that we will find occasionally happening probably every four to five years because

of the hot summer.

Q So, basically, the 3.1 is the average and you've got the exception --

A There will be years in which the use will be lower than this. This is the average but this one also, we know we are going to have this. We will either suffer -- we either have to allow for it or we will suffer some reduction in crop yield if we don't allow for it.

Q All right, so if we are considering producing alfalfa, we would take your figures of 3.1, say, and multiply it times the number of acres in a given field and come up with the water requirements for that field; is that correct?

A On the average year?

Q Yes.

A Yes.

Q That is all I have. Thank you very much, Mr. Bennett.

MR. PRICE: Thank you, Your Honor.

THE COURT: Does the State have cross?

MISS ECKERT: Briefly, yes.

CROSS-EXAMINATION

BY MISS ECKERT:

Q Mr. Bennett, your testimony so far has been in

relation to the crop of alfalfa.

A Correct, yes.

Q Have you expertise with the water requirements in the Okanogan area for crops other than alfalfa?

A Well, we do work with them. However, we have this problem and that is that, first of all, alfalfa and orchard are very close to the same consumptive useful water and almost always we will find our fields will go over to one or the other, either alfalfa or orchard, so very seldom do we design on anything but these two crops, even though there may be temporary times, like with grain or maybe even with pasture grasses where the use will be less than this figure.

Q Okay. When you say grain, does that mean wheat and barley, that kind?

A Wheat, barley, oats.

Q And the use would be less, generally?

A Yes, because they mature much earlier in the year. During the time they grow they use approximately the same amount of water but you take the water off from them usually in July sometime.

Q Now, for an alfalfa crop what would be considered in the Okanogan area the standard irrigation season?

A Normally, our irrigation should start near the first

of May, the 1st to the 5th of May is when most of our farmers start. There are some that start earlier. There are some that start later.

Q And --

A But this is the period, around the 1st to the 5th of May is when the irrigation canals are usually turned on.

Q And then about when does the season then terminate?

A Usually in the latter two-thirds of September, somewhere around the 20th. Occasionally an individual that has his own water source may irrigate longer.

Q Now, you testified that in what you called the rain-fall belt or the area around Omak and in the No Name Creek Valley that the precipitation was near 10 inches per year; is that correct?

A Right.

Q And can you just tell me very quickly where you got your 10 inches per year figure?

A Well, we do have charts that delineate the areas, but I really can't say that I have specifically looked at that, but this is the elevation in which the ten -- in which we figure the 10 inch rainfall occurs.

Q Now --

A I have looked at the chart, but I haven't looked at them recently, I should say.

Q All right, fine. On an alfalfa crop, just very quickly, as I understand it, you get more than one go-around over the field, generally speaking; is that not true?

A You mean irrigated more times?

Q No, excuse me. On the crop itself, you mow it.

A Normally, you will get four crops, four cuttings of alfalfa in that area.

Q In which area?

A Out in the -- in that Omak Lake area, around No Name Creek.

Q And in getting the four cuttings that you normally or that you might expect to get, do you generally see a decrease in the yield of the cuttings as each successive cutting yields somewhat less than the previous cutting?

A Well, I can't really say because I'm not -- I have not been involved in the weights of those figures.

Q Now, you and Mr. Price went in some length into the four inches of moisture that can be expected to be in the soil as a result of the winter precipitation.

A Yes.

Q And that, then, you used to reduce the water requirements that you have testified about.

Is rainfall included in your water requirements?

A There is a summer rainfall, but I really feel it has very little effect because it comes in such small quantities at any one time that it's main effect is decreasing the evaporation rate for that particular day. The efficiency for that particular day may be increased and also the amount, the rate at which the plant uses water will be reduced because the day will be cooler and the air will be more moist.

Q But that is not figured into your -- well, for example, your 36 inch figure, that is not included?

A Or the 30, no.

Q Or the 30?

A No. The four inches is a thing you can go out and actually measure in the soil that is there available, right now.

Q Okay. Now, when you went through a series of hypothetical calculations, well, calculations with Mr. Sweeney where he asked you if it was 70 percent efficiency and a 30 inch water requirement or how much acre-foot per acre would the requirement for water be.

A Yes.

Q And you testified on the basis of the figures of 70 percent at 30 inches and 70 percent at 36 inches.

Based on your experience in the general Okanogan area and also your knowledge of the No Name Creek Valley, are those, in fact, realistic figures to apply to the No Name Creek Valley?

A Well, they are realistic. However, in the design of an irrigation system which is where I usually have been involved, we don't really take the total use for the year but the daily use into account. This would be needed -- you need to take the yearly amount into effect when you were -- well, if you had a limit as to how many acre-feet you could get from an irrigation district or if you were going to make storage available for the water.

Q Now, in the St. Mary's Mission system, the work that you did in connection with the St. Mary's Mission irrigation system back in the '50's I take it --

A Yes.

Q Is that correct?

A Now, it was another individual that designed it, but I did look it over.

Q Okay, and you said that you had seen the diversion

from Omak Creek.

A Yes.

Q And you weren't entirely certain what it was, but do you know --

A Well, I was certain where it was, but I don't know that it is still in use because I have not been there.

Q Well, then, let me ask you, do you know the area on Omak Creek that the Falls or sometimes referred to as the Mission Falls?

A Well, I think that, I believe, is the same place where this diversion is because there were some -- there were falls in this area.

Q Well, let me see if I can have this marked.

Mr. Bennett, I'm going to hand you what I've had marked as Exhibit S-SW, and simply for illustrative purposes on that, can you indicate for me where you believe the St. Mary's diversion was?

A It has been several years since I was there, but it was up in this area somewhere, I believe.

Q Perhaps you could circle the area to which you are pointing on Exhibit S-SW.

A Okay.

MR. VEEDER: Just a moment. In that

regard, he says he doesn't know where it is; it's up here in this area someplace, and a circle on an aerial of that character that is pasted together, could have a variance of a mile or half a mile or so. He's not going to be able to locate it with any clarity or definity; isn't that right?

THE WITNESS: I'd say I could well be off 300 feet.

THE COURT: That's close enough. Go ahead.

MISS ECKERT: Simply for illustrative purposes.

THE COURT: Except I want this exhibit number.

MISS ECKERT: It's Exhibit S-SW.

THE COURT: I want to see where the S comes from.

THE WITNESS: My pencil won't mark on this.

MR. VEEDER: Is it possible to have the legal subdivision marked on this, then, so we will know some location on this thing?

THE COURT: He has testified he can locate it within 300 feet in this area. I think that is reasonable.

MISS ECKERT: Thank you.

Q Do you know in connection with the diversion from

Omak Creek for the St. Mary's Mission if there was a gas pump installation to pump water through that diversion?

A There would have been no need for a pump at that particular elevation because it had gravity flow. It had adequate elevation for gravity flow sprinklers.

Q You were discussing the soils in the No Name Creek Valley, as you would call it, and I believe you talked about Walton's farm in terms of the Cashmont sandy loam.

A That was one field.

Q Yes, can you give me an idea of how many soils series you might find in the No Name Creek Valley.

A I did go through and make a list of the ones which I believe encompassed the area that is in question and -- two, four, six, eight, ten, twelve -- there were thirteen soils involved.

Q And when was that work done, do you recall?

A When did I do this?

Q Yes.

A I did this when I found I was going to be coming to this court about two and a half months ago.

MISS ECKERT: I have no further questions, but I would like to move the admission of Exhibit identified No. S-SW for illustrative purposes only.

THE COURT: Mr. Sweeney, have you had a chance to examine that?

MR. SWEENEY: No, I haven't, Your Honor, Could I ask a question?

THE COURT: You might.

MR. SWEENEY: Do you know the scale of this?

THE WITNESS: I think that is three and two-tenths inches to the mile. It's a contact photo, it appears to me to be.

MR. SWEENEY: And based on a three and two tenths inches to the mile, you could be off 300 feet or so?

THE WITNESS: I could well be off 300 feet. The physical features are so small that it's a little difficult, along with the fact that it has been several years since I was to this point.

MR. SWEENEY: I have no objection.

THE COURT: Mr. Price, have you examined it?

MR. PRICE: No, I would just like to observe where the marking was. I don't anticipate any objection.

I have no objection.

MR. VEEDER: May I look at it once more?

May I ask the witness a couple of questions, Your Honor.

THE COURT: You may.

VOIR DIRE EXAMINATION

BY MR. VEEDER:

Q I see you marked on this map, this aerial photograph, an area with an X and a circle and it is for illustration purposes only. What is the illustration of; can you tell me?

A That is merely the point at which this diversion takes off.

Q And does it have anything to do with the lands in the Walton property or the other properties; do you know?

A Well, it has to do with the irrigation of that area that had been irrigated from, on St. Mary's Mission.

Q Well, was that --

A But not on Walton's place.

Q And it was not on the 526 or 892; was it?

A I'm not familiar with the areas, but I think that 526 --

Q Just a moment. You are not familiar with it; is that right?

A Pardon?

Q You are not familiar with it?

MISS ECKERT: Let him answer.

A I'm not familiar with which numbers are which allotments.

Q And you don't know where the water was used?

A I know where the water was used physically, I don't know the allotment numbers.

THE COURT: Counsel, I think this morning he identified the location of the Mary's Mission. The point, as I recall it, would lie within 526, if I understood his testimony right.

MR. VEEDER: I wasn't sure where it was. I'm just going to put an objection in because I think it is incompetent, irrelevant --

A Was the 526 the --

MR. VEEDER: Just a moment.

A The most northerly allotment?

THE COURT: I will admit S-SW.

(State of Washington Exhibit S-SW is admitted.)

MR. VEEDER: Well, I want to have my objection in there. I think it is incompetent, irrelevant, and immaterial because I don't think he has related it to any piece of land in this

litigation.

THE COURT: Counsel, you must be aware that that sort of objection is meaningless.

MR. VEEDER: Well, I mean --

THE COURT: Proceed.

MR. VEEDER: Not with me, Your Honor. This man has not identified any of the land whatever, Your Honor. I think it is incompetent because he doesn't know where the water is used; he doesn't know whether it used today or not. I think it is irrelevant unless he says it is in someway involved in the quantity of water being applied to 526. I think it is also irrelevant and immaterial if it doesn't in some way involve the waters of No Name Creek.

THE COURT: The Exhibit has been admitted.

MISS ECKERT: I'm through with the testimony on cross-examination.

Your witness.

THE COURT: Do you have redirect or -- excuse me.

MR. VEEDER: I'm going to have some questions.

THE COURT: You have some questions.

. . .

CROSS-EXAMINATION

BY MR. VEEDER:

Q Did your investigations, Mr. Bennett, in any way involve Allotment 903?

A I'm not sure where 903 is. Which one is it?

Q Well, you are not --

MISS ECKERT: It might help if the map was put up, Your Honor.

Q (By Mr. Veeder) There is a map down here, if you want to look at it.

A I did interpret the soils.

Q You didn't what?

A I interpreted the soils on that, on that place from the BIA field sheets.

Q But you didn't go on the land yourself?

A Oh, I have been on the land.

Q And how much of an investigation did you do in regard to the water-holding capacity of the soils down there?

A I determined them merely from the description that the BIA made.

Q But you don't know yourself; do you?

A No.

Q And you don't know, not knowing the holding capacity, then, it would be impossible for you to

state what would be the reasonable water requirements for down there; wouldn't it?

A Well, the BIA --

Q But you don't know from your own knowledge, now.

THE COURT: Counsel, let him finish his answer.

MR. VEEDER: All right.

A The BIA officially notifies us as to the type of soil involved and we do accept this as being true. We have no reason to question it, so these figures that we get from the BIA are used in our irrigation designs and in our farm planning.

Q And did you make an irrigation design for this 903?

A No, I didn't.

Q So, really you didn't really get into any determination as to what the water requirements would be for down there; did you?

A I did look up the BIA, look up the figures that the BIA gave us and make further determination according to what they said the soils were, yes.

Q But you didn't plan any system for that?

A I did not plan a system for it.

Q And so you are not in the position to state how much water would be required from No Name Creek

to irrigate that land; you are not in a position to give that information, testimony?

A I don't know the number of acres involved. I didn't measure it.

Q And you don't really know the method of irrigating that; do you?

A I talked to the lady that is doing the irrigation on it.

Q But you don't know yourself.

A I didn't go out. I saw the sprinklers out there.

Q Do you know where the water came from for that?

A Yes, I was shown the pump where it was pumped out of No Name Creek.

Q But you didn't know where this water came from originally; did you?

MR. PRICE: Your Honor, this is being argumentative, and I think it's getting to the --

THE COURT: I will sustain the objection. He hasn't testified about the source of the water.

Q (By Mr. Veeder) Would it make any difference in your determination if that water were pumped out of the area on 526 and delivered down the open channel for use?

A Well, down an open channel it will have losses in that open channel.

Q That's right. So those losses should be taken into consideration; isn't that right?

A Those losses would have to be taken into consideration.

MR. PRICE: Your Honor, excuse me. I would like to impose an objection.

This witness was testifying to water crop consumptive uses and Counsel is now asking questions about delivery systems and losses in delivery systems which are not related to consumptive uses of the crop.

THE COURT: Objection is sustained. I think this is not within the scope of direct examination.

MR. VEEDER: So, as a matter of fact, this wouldn't be utilized, Your Honor, in making any determination.

THE COURT: Counsel, that is argumentative. Ask the question of the witness.

Q (By Mr. Veeder) Are you familiar with the Bulletin 512 from the Washington State University as to water requirements?

A I believe it was shown to me during the noon recess today.

Q But you didn't consider it in coming up with the

conclusions?

A I had never seen it, to my knowledge, before today.

Q Have you any reason to assume that it was incorrect.

A I have no reason to believe one way or the other on it.

Q But you really didn't understand it, then, did you? You didn't really study it?

A I did not study it. I just saw the one, leafed through a few pages quickly.

Q And when you were saying, then, that the irrigation requirements are of a particular range, it is just a broad generality; isn't that right?

A No, it's based on many years of work with irrigation and based on S -- on material that has been given to me in my job.

Q But basically, though, we are speaking of a particular piece of land with a particular water requirement in regard to a particular area and you have just given us generalizations; isn't that right?

A These -- these soils are certain, what we call soil series, and are related, are very closely related to other soils that I have worked with, because, as I mentioned earlier, a soil which is formed in two different places, but under the same

conditions, would have the same characteristics.

Q And did you take into consideration, then, in this matter the fact that the WSU report says it is 34 inches and this is developed at Prosser and do you have a disagreement with that?

A I didn't see that. I will say that this pamphlet here has disagreement with that.

Q Well, do you have disagreement -- an official document we were given --

THE COURT: Just a moment. The reporter can't get both of you talking at once.

Now let him answer the question before you give him the next one.

MR. VEEDER: All right.

Q Go ahead.

A Pardon me?

Q I asked you a question in regard to the water requirements as developed at Prosser by Washington State University which chose a water -- an irrigation requirement of 34 inches in this particular area. Do you have a disagreement with that number?

A Well, I do, yes, based on the information that I have had in the past and with my own experience.

Q And from the standpoint of consumptive use with an

effective precipitation of six inches, that runs to 40 inches; doesn't it?

MR. PRICE: Your Honor, I didn't understand the question.

Q (By Mr. Veeder) I say, on the basis of this --

MR. PRICE: I don't think it was a proper question in that it didn't make sense to me.

MISS ECKERT: I have a problem too.

MR. VEEDER: I will start again.

THE COURT: Let him rephrase the question.

MR. VEEDER: I will rephrase the question.

Q With an irrigation requirement of 34 inches, that is plenty of water required for irrigation?

A This is the figure given by that pamphlet.

Q That is right.

A For -- now, that was given -- I did notice that that was given for a certain number of -- something that was to occur within a certain number of years.

Q That's right.

A And what -- how many years was that? I don't remember.

Q What do you mean by number of years; I don't know.

A Well, at the top of the page it said something about a frequency of five years and --

THE COURT: Just a moment. You're getting

clear away here. Ask a specific question so he can give you a specific answer.

MR. VEEDER: All right.

MR. PRICE: We don't need to play guessing games. If he has a page there that he would like to refer to, I think the witness should be given the opportunity.

MR. VEEDER: I will give you this opportunity, then, Mr. Witness.

May I approach?

THE COURT: You may.

Q (By Mr. Veeder) Now, will you look at that. This is from the official Washington University and it shows the water requirements as set forth in that official bulletin.

A You referred me to a monthly K_c value which I don't see defined.

Q Would you say that again, please.

A Well, Table A-2 that you referred me to says, "Monthly K_c Values for Selected Crops Grown in Washington."

Q Yes.

A And I don't see what K_c means.

Q I'm going to have to ask my expert.

THE COURT: Well, Counsel, I can shortcut

this. This witness obviously is not familiar with that. He can hardly testify to it. You may want to put it in at some other time.

MR. VEEDER: We will put it in on rebuttal, then, Your Honor.

I have no further questions.

THE COURT: Redirect, Mr. Sweeney?

MR. SWEENEY: I have some questions, Your Honor.

REDIRECT EXAMINATION

BY MR. SWEENEY:

Q Mr. Bennet, I think you testified that this is in a ten-inch rain belt, in your opinion.

A Yes.

Q And that in your calculations for the consumptive use -- well, first of all, I would like to strike that and start another question.

First of all, you were testifying about consumptive use of a particular plant, namely alfalfa; is that correct?

A That's right.

Q And that is when you gave us the figure of 30 to 36 inches.

A Yes.

A And with the average being closer to 30 inches rather than the 36.

A The average is 30 inches, but we have an occasional year and it probably occurs every, roughly four to five years in which we will have -- we will need more water and it will be up to about 36 inches.

Q Okay. Then, if you calculate an average on that you would take -- if you take a four year occurrence, you would take a 30 inch consumptive use for three years and then the fourth year 36 inches?

A No, you couldn't hardly do that. I mean, actually the 36 is a peak and there will be a low demand that will be below the 30 inches.

Q So, it would balance out?

A So the average is about 30 with a high of 36 is what I am trying to get at. There will also be lower periods than the 30 inches.

Q I see, but that is the average that you work with, the 30 inches?

A The 30 inches, but recognizing that we will have -- that we will run into a 36-year use occasionally.

Q Not -- 36 inch year?

A 36; isn't that what I said.

Q I thought you said 36 years.

A 36 inch per year, I'm sorry.

Q Now, you mentioned that when you are considering that, you don't really give much credit to the rains that occur during the growing season.

A Not during the growing season, very seldom does it account -- does it amount to enough to really add to our soil moisture. It does slow down the use for that one or two days in which it occurs.

Q And is that a characteristic of that area of No Name Creek Valley?

A Yes.

Q Okay.

MR. SWEENEY: I think that is all. Thank you.

THE COURT: Further examination of the witness?

MR. PRICE: I have none, Your Honor.

THE COURT: You may step down, Mr. Bennett. Thank you.

(Witness is excused.)

MR. SWEENEY: Should I call my next witness, Your Honor?

THE COURT: Yes, call your next witness.

MR. SWEENEY: Mr. Jones, please.

. . .

. . .

FRED O. JONES, called as a witness herein, being first duly sworn on oath, testified as follows:

THE CLERK OF THE COURT: Would you please state your full name to the Court.

THE WITNESS: Fred O. Jones.

THE CLERK OF THE COURT: Thank you.

DIRECT EXAMINATION

BY MR. SWEENEY:

Q Mr. Jones, where do you reside?

A At 39 West 26th, here in Spokane.

Q Mr. Jones, you live in Spokane. What is your profession?

A I am an engineering geologist or hydrogeologist.

Q And would you define those terms in a general manner.

A Well, my work is about one-half in engineering and geology and the other half in groundwater work.

Q Are you a consultant in those fields?

A Yes, I'm a consultant.

Q How long have you been a consultant in those fields?

A Since 1955.

Q And perhaps I should ask you first of all, what is

your educational background?

A I graduated from Colorado College in geology, hold a Bachelor's degree.

Q And what year was that?

A 1933.

Q And do you also belong to any societies, professional societies?

A Yes, I belong to the American Society of Civil Engineers. I'm a fellow of the Geological Society of America and I belong to the American Association of Engineering Geologists.

Q Would you give us a rundown as to how you put your expertise or your profession or how you have worked in your profession since the time that you left school and got your degree.

A Are you asking for my various experience records?

Q Not the experience, but after you left Colorado, what did you do at the University of Colorado.

A This was Colorado College. I went to work for the Sinclair Oil Company in Wyoming and I worked there as a plant engineer and a construction engineer.

Q How long did that take place?

A I worked there until 1940. In 1940 I came to the Grand Coulee and I worked on the Columbia Basin Project there as project geologist for about seven

years.

Q That was commencing in 1940. For whom did you work there?

A The Bureau of Reclamation.

Q And what type of study or what type of work did you do for the Bureau of Reclamation?

A I did foundation investigations and had charge of the drilling programs for the two power houses and the pumping plant and the north dam site, south dam site, O'Sullivan Dam and many other features.

Q Now, did this have anything to do with groundwaters within the Columbia Basin Project?

A Very much so. Seepage was one of the biggest problems facing the project in connection with the construction of the Banks Lake in the Grand Coulee. The Corps of Engineers had earlier estimated that it might leak as much as a thousand cubic feet per second and so we made very detailed studies of that and came to the conclusion that it was going to leak, but not that much.

Q How long did this experience last, at the Columbia Basin Project?

A Well, I think practically all the time I was there.

Q And that was from 1940 until when?

A About 1947.

Q And in 1947 where did you go?
A I went to China as chief geologist for the National Hydro-electric Engineering Bureau.
Q Well, was that for the Republic of China at that time?
A Yes.
Q And did that last very long?
A No. I worked on dam sites from the Tibetan Highland down through the gorges of the Yangtse River and the Communists would be in our way at one end of the gorge and then, so we would work at the other end and vice versa, so I finally got out before they got in.
Q Well, then you returned to the United States.
A Yes.
Q And did you ever work with the United States Geological Survey?
A Yes.
Q And that was following your trip to China?
A Yes, I worked with the Geological Survey then for about seven years here in Spokane, my headquarters here.
Q Did you perform work involving groundwaters or in connection with the groundwater studies with the U.S.G.S.?

A Well, to a certain degree. I had charge of the engineering branch here in the Northwest and I had a research project on Lake Roosevelt of studying landslides and we studied the groundwater conditions in the terraces and related that to the landslides. In fact, the groundwater conditions in the terraces are the most significant single element in landslides.

Q Now, have you had anything to do with or acted as a consultant concerning the Spokane Valley aquifer?

A Yes, I have.

Q And when has that taken place?

A Oh, it must have begun in about 1970. I did some studies for the City of Spokane in connection with an investigation program here in Spokane County and then a couple of years ago I had charge, was consulted for the Panhandle District on the Rathdrum section of the aquifer.

Q Now, that is in Idaho?

A Yes, that is from Pend Oreille Lake and Coeur d'Alene Lake to the state line.

Q That did involve a study of groundwaters, then?

A Yes, this was a quality groundwater study but for the Panhandle District. The study here in the State of Washington was largely a study of the condition of the river where the river goes under

ground and where -- or not the river, but the flow of the river is above the water table. In some places it's even with it. So, it's a situation very much like Omak Creek going over the aquifer in the No Name Creek deposits in that our Spokane River in some places is above the water table.

Q Now, that is the water table in the Valley?

A Yes.

Q Now, as long as we brought No Name Creek Valley up, have you had occasion to become familiar with No Name Creek Valley?

A Very much so.

Q When did that commence?

A That began in the late fall of 1975.

Q How did that come about?

A Well, Mr. Dean Smith asked me if I would come with him and assist in formulating a hydrologic testing program and look after it for the Department.

Q Well, Dean Smith was the United States Attorney at that time.

A Yes.

Q And he requested that you do that?

A Yes.

Q Now, did you then go out and visit the property?

A Yes, my first visit to the property was in

December of 1975 and I have, while there have been any operations going, I visited the project about every two weeks for about two days each time.

Q Now, commencing -- well, you visited the property in December of 1975. Did you also formulate a proposed testing program?

A Yes, I did.

Q As to the groundwaters?

A Yes, I did.

Q And was that formulated in an order that was entered by the Court in January of 1976?

A Yes.

Q And was that testing program subsequently modified by another order entered in July of 1976?

A It was.

Q Now, those tests, what areas within No Name Valley did those -- did that testing program concern?

A The testing in those orders concerned the upper basin, down as far as what has been referred to here as the rock lip.

Q I see. Where there any tests done below the rock lip?

A Yes. There were two drill holes put down in 901 in December of 1976.

MR. SWEENEY: Could I have U.S. Exhibit

No. 2.

May I take a moment to put this on the easel?

Q Now, I have placed on the easel U.S. Exhibit No. 2, which was previously admitted during the testimony of Mr. Denny Cline, but I would like for you to tell us briefly about what you found as to geologic formations in No Name Creek Valley and perhaps you might use the exhibit to explain that.

A The exhibit covers the north part of the Omak trench and from this area in the Mission area the elevation slopes southward toward Omak Lake. The valley is from 800 to about 1800 feet wide and the mountains on the side rise several thousand feet and are very smooth due to the glaciation that they have experienced.

The materials in the valley consist of sands and gravels and bedded silts, clays. There is probably some till on the bottom of them.

Q Well, how did you arrive at that conclusion?

A By examining the drill logs and examining the drilling of some of the holes that we put down, and field examinations.

Q To digress just a moment, during the time that the testing program went on, were you provided with data by, for instance, the United States Geological

Survey?

A Yes.

Q And did you also obtain data from the Tribal hydrologist and geologist?

A Yes, I did.

Q That included the well logs and so forth?

A Yes.

Q I see. Now, did this continue from the time -- well, first of all, what time did the testing begin, approximately?

A The testing began in 1976, rather late in the summer, and they pumped until late fall and then it began again on April the 6th, 1977, and continued on until October something.

Q Were further readings taken after that October of 1977?

A Yes, there have been readings taken to this time.

Q Almost to today; is that correct?

A Yes.

Q When you say there is an Omak trench, to what do you refer?

A This is a trench in the granitic basement rocks that extends from the Okanogan Valley to the Columbia Valley. It is probably an ancestoral channel of the Okanogan River and it was probably

blocked when the lava flows of the Columbia Basin dammed it at its southern end forcing the Okanogan River westward around the edge of the plateau.

Q Now, in these investigations that were made during this time of testing, did that reveal anything about the groundwater aquifer that appears in the No Name Creek Valley?

A Oh, yes, a great deal.

Q Now, I would like to show you Colville Exhibit No. 6.

MR. SWEENEY: If I may approach the easel, Your Honor.

THE COURT: You may.

Q (By Mr. Sweeney) Do you recognize this exhibit, Mr. Jones?

A Yes, I do.

Q This exhibit was prepared by the Colville Tribes' consultants; is that correct?

A That is correct.

Q Based on the formation shown there, would you give us your analysis as to where the groundwaters would lie within the No Name Creek Valley.

A The groundwaters principally lie within this green band, right through here, which consists of an old sand and gravel deposit which is interbedded

with some mixtures of silt and clays. It appears to be a considerably different or an older formation than the other sands and gravels in valley.

Q Well, you said it lies approximately here on the exhibit. Would you tell us approximately its southerly boundary and its northerly boundary.

A The southern boundary is just south of the north line of Section 20 and 21, and the north boundary is a short distance -- I think this is right, eight inches to a mile, so that would be two-thirds of a -- a little over a -- about a third of a mile north of the north line of the center sections 8 and 9.

Q Okay. Now, what is the character -- well, did you examine the location of Omak Creek in relation to the groundwater of No Name Creek Valley?

A Yes, I did.

Q And would you explain your conception of how that situation exists.

A Yes. During the glacial period, probably rather early in the glacial period, the ice or ice products such as till and ground moraine, forced the Omak River up on the shoulder of the mountain along the east and it became notched there in a canyon where it was trapped and it has cut quite a deep canyon

in the shoulder of this mountain and the Omak Creek now empties out onto the floor of the No Name Creek Valley in the form of an alluvial fan.

Q In its present state, does Omak Creek flow across a portion of the No Name Creek groundwater aquifer?

A Yes, it does.

Q And would you point out where that occurs, on Colville Exhibit No. 6.

A I'm using a pointer here, and following the creek from the canyon which is right at this location, which is just north and east of site no. 6 on the exhibit, follows down here to a point on the line between sections 9 and 16, and then it flows in a rather straight line across to a granite outcrop on the left side of the valley about, on this map, an inch and a quarter south of the line between Sections 9 and 16.

Q What did you conclude as to whether Omak Creek flows across the groundwater aquifer in No Name Creek Valley?

A Well, it flows across the valley above the aquifer in a channel that has been excavated at some time in the past.

Q Then does it turn to the north in Omak Creek?

A Then it turns to the north and follows the natural

channel.

Q Now, at the southerly end, as far as the boundary line between the Walton property and Trust Allotment 892, where does the groundwater aquifer, usable groundwater aquifer, stop?

A It stops at the line between the green and the red color here, just south of location 18 and north of location 20 and 19.

Q Well, is that, in relation, is that in the northerly part of Mr. Walton's property?

A Yes. It is.

Q Now, as I understand it then, you were provided with data from various sources.

A That is correct.

Q During the period of your study period.

A That is correct.

Q Among other things, did you make any investigation as to the rainfall amount that you would use concerning that area?

A Yes, I did. The rainfall, according to the present Omak records, is 12.36 inches per year, but in talking with the elder Mr. Walton quite some time about the place, he spoke of how little rainfall there was, and so I thought that perhaps I should look into it, the matter, and I was directed to Mr.

Bennett who has been here and testified, and he feels that 10 inches is a fair appraisal for that high level area, and I'm inclined to think that that is probably about right.

Q Is that a figure that you adopted in your calculations?

A I did.

Q Now, would you tell us whether there was any -- well, strike that.

The testing program, as I understand it, began in July or August of 1976.

A Yes.

Q And it continued through October 1 of 1977?

A Yes, a little after, I believe.

Q And further readings were taken even after that?

A Yes.

Q From the point of view of determining the availability of water from the No Name Creek aquifer, what benefit do you feel was gained because of the length of time that data was obtained?

A Well, we have had an opportunity to get our hands on some real numbers about the elements of recharge to the aquifer. There are only three of these, precipitation, and return flow from irrigation water, and seepage water from the No Name Creek into the

aquifer.

Q Now, you have these three elements that contribute to the aquifer?

A Yes.

Q And what was the advantage, because of the length of time that the testing took place?

A Well, it's not as high as it was last year, but it is getting up so close that we can fairly accurately project it. The Peters observation well is considered by the Tribe consultants and the U.S.G.S. as about the best barometer of the aquifer that anything could have and on the 5th of this month, 5th of April, the projection showed that by the high water of this year, we will be two and a half feet below where we were last year.

Q Getting back to the three elements that contribute to the aquifer, that is precipitation, return flow, and what is the third?

A The infiltration from Omak Creek down into the aquifer.

Q Do you agree with the hydrologists that have previously testified that there is some infiltration from Omak Creek into the aquifer?

A Oh, yes.

Q Did you arrive at any calculations as to the amounts

of water that were recharged to the aquifer during the last irrigation season?

A Yes, I have.

Q And what were these calculations based upon?

A The precipitation was based on 10 inches of rainfall and outlining the area that is contributing to the aquifer, the drainage basin. There is a drainage basin map, a watershed map, Exhibit No. 7 that I can show that a little better than on this exhibit.

Q Is that the U.S.G.S. Figure 7?

A No. This is the Tribal Figure 7.

Q I see. Do you agree with the Tribes' analysis as to the watershed basin contributing through precipitation?

A Well, where I checked there, where I planimetered their areas, I checked them very closely. But in regard to the final line down here, Mr. Watson's area ends at the flume which is just above Mr. Walton's line, and I extended my area, I think, for about, oh, it was three and a half more acres to take in an area down to where I felt the basin ended.

Q Well, based on that, what was your calculation as to the amount of recharge to the aquifer from precipitation?

A 137 acre-feet.

Q And did you calculate the amount of return flow?

A Yes, I did.

Q And how was that arrived at?

A That was arrived at by the amounts of water that was pumped to irrigation from the four irrigation wells that are contributing to that, Paschal Sherman well, Colville No. 1 and 2 and Mr. Walton's well, and then in addition adding the spring flow.

Q From the springs at the head of the creek?

A Yes, in order to get from our total pump. Our total pump, according to the flow meter records, was 988 acre-feet, and in that -- well, just a moment, Mr. Jones.

MR. SWEENEY: Could I hand Mr. Jones a proposed exhibit, Your Honor?

THE COURT: Yes.

MR. SWEENEY: Thank you.

THE COURT: What is it?

MR. SWEENEY: It's a summary of the 1977 pumping, Your Honor.

THE COURT: I mean its number.

MR. SWEENEY: Oh, excuse me. No. 10.

I hand a copy up to the Court.

Q Mr. Jones, was the pumping that occurred during the

last irrigation season, during 1977, monitored during that period?

A Yes.

Q And these were by flow meters?

A Flow meters is one of the measuring devices that was placed on all of the wells and they also all had recorders. My figures that I used, I used strictly the flow meter records.

Q And where did you get those records?

A They were furnished by the U.S. Geological Survey.

Q Now, before you you have a document that is designated as United States proposed Exhibit No. 10, and would you tell us what that is.

A This is a summary of all of the water pumped in 1977.

Q And is it based on the U.S.G.S. records as supplied to you.

A Yes.

MR. VEEDER: Mr. Sweeney, excuse me. Do you have a copy for us so we can follow it?

MR. SWEENEY: I thought I gave you a copy.

Q Well, then, you have made a summary. Is Exhibit 10 a summary of the data that you received from the U.S.G.S.?

A Yes, it is.

MR. SWEENEY: I was going to offer this. I don't know if Mr. Veeder has had a chance to look at it.

MR. VEEDER: I haven't seen this previously and I'm just looking at it now.

THE COURT: Is it feasible to go ahead with something else and they can examine that at the next recess?

MR. SWEENEY: Sure. Yes, Your Honor.

Q Did you have a figure as to the total amount of water pumped from the aquifer during the 1977 season?

A Yes, the total from -- I divided the aquifer up into two parts, the No Name Valley aquifer and then the relatively small Walton irrigation pond aquifer. There are so many small springs in there as well as water that is diverted to it.

Q And that lies about in the middle of Mr. Walton's property?

A Yes, it does.

Q Well, what was the total amount of water pumped?

A 1,086 acre-feet.

Q And that includes the Walton irrigation pond too?

A That includes the Walton's irrigation pond.

Q Now, how did you use that figure in arriving at a determination as to the amount of water from return

flow and from infiltration from Omak Creek?

A Well, I didn't use the 1,086, Mr. Sweeney. I used 988 which was the acreage pumped from the main No Name aquifer. I have a computation here of the aquifer water, if you would like for me to --

Q Yes, would you explain that.

A -- give that.

Q Yes.

A I would prefer to read it, if I may.

Q Yes.

A Total pumping from the aquifer according to flow meter readings was 988 feet. An examination of the well records, pumping records and spring flow records for 1977 shows that the water level in the Omak observation well took from April 6, the beginning of the pumping season, to April 27 to lower two and one half feet. During this period 97 acre-feet of water was either pumped from the aquifer or lost by spring flow. The following is a tabulation. The Paschal Sherman well, 51.5 acre-feet. Colville No. 1, 9.3 acre-feet. Colville No. 2, 3.4 acre-feet. Walton's new irrigation well, 10.6. The spring flow, 22.4. For a total of 97.2 which I rounded off to 97.

Q What does that 97 represent?

A That represents the water in the upper two and one half feet of the aquifer that we started pumping on that 6th day of April, 1977.

Q I see. Then what did you do?

A By deducting this 97 acre-feet from the 988 feet pumped from the aquifer in 1977, we find that there was recharge in the 1977-78 period of 891 acre-feet. From this we can compute the approximate volume of the three parts of the aquifer recharge. Precipitation is estimated at 137 acre-feet. Return flow from irrigation, 900 acre-feet, for a total of 228. By deducting the 228 acre-feet from 891 acre-feet, we arrive at an estimated recharge from the Omak Creek infiltration of 663 acre-feet.

Q Now, this is during the 1977 season?

A Yes.

Q And you feel that is the amount of water that was infiltrated or leaked from Omak Creek into the aquifer?

A Yes, approximately.

Q By the way, do you have an opinion as to whether or not there is a hydraulic, or hydrologic connection between Omak Creek and the No Name Creek aquifer?

A There is no direct hydraulic connection.

Q When you say there is no direct, what do you mean?
A Well, by running water, say, into the aquifer. There is no stream of any kind. There is simply this infiltration and seepage down through the materials down through the aquifer of No Name Creek.
Q Is that an unusual phenomena?
A Well, I don't believe so when you have a stream crossing over the top of an aquifer that is largely in sand and gravel. We have the same situation here in the Spokane Valley and there have been tunnels put down and driven under the river to see how this works because we know that there is a transfer of water and so it has been observed by hydrologists of the Geological Survey that the water in a tunnel under the river just continuously drips.
Q Well, on a smaller scale, then, is it your opinion that the same thing or same type of thing occurs with the No Name Creek aquifer in No Name Creek?
A Yes, I think it's approximately the same thing. The water forms a film around each little particle and it keeps going down.
Q Now, turning to another subject --
MR. VEEDER: I have no objection.

MR. SWEENEY: To proposed Exhibit No. 10?

THE COURT: Has the State seen that?

MR. MACK: Yes, we have. But I would like to ask a question if it's going to be moved for admission at this point.

MR. SWEENEY: I was going to, so go ahead.

THE COURT: Go ahead.

VOIR DIRE EXAMINATION

BY MR. MACK:

Q What I do note, Mr. Jones, was that for the acre-feet totals on U.S. Exhibit 10 for the four wells, the totals have been broken down into two groups for each well, that is, pumped to No Name Creek and pumped to irrigation.

A Yes.

Q Did you break down those figures or are those, is that the breakdown given to you by the U.S. Geological Survey?

A This is a breakdown furnished me by the Colvilles, by the Colville Tribe consultants.

Q So the information on this exhibit, the acre-foot figures, were supplied to you by the U.S. Geological Survey but the breakdown as to where the water was pumped was supplied to you by the Tribes?

A Yes. The Geological Survey furnishes all the readings from the wells and the meters but the breakdown is furnished by the Colville Tribes.

Q Thank you.

MR. MACK: No objection.

MR. PRICE: No objection, Your Honor.

THE COURT: U.S. 10 will be admitted.

(United States Exhibit No. 10 is admitted.)

DIRECT EXAMINATION CONTINUED

BY MR. SWEENEY:

Q Now, in the course of the testing season for 1977, Mr. Jones, did you have occasion to keep track of the change in levels in the irrigation wells and the test wells within the No Name Creek aquifer as the pumping continued?

A I did.

Q Did you have made or did you prepare an exhibit showing the profiles showing the changes in the water levels within those holes and wells?

A I did.

MR. SWEENEY: If I could approach the easel and rearrange my exhibit.

THE COURT: What number is that, Mr.

Sweeney?

MR. SWEENEY: That would be No. 9.

Q Mr. Jones, I'm showing to you on the easel the United States Proposed Exhibit No. 9. Would you tell us generally what it is.

A This is a series of profiles of the four irrigation wells showing the high level on the left in March of 1977, the depression in the middle due to the pumping, and then the refilling of the aquifer on the right, and then the lines above, the highest lines on the right, are a plot of the 1977, I guess, yes, the 1977 filling of the aquifer.

Q Okay. Now, these show the change in water levels?

A Yes.

Q Within the testing area?

A Yes.

Q And the data which you used to place those lines on the proposed exhibit came from where?

A From the U.S. Geological Survey.

Q Was there any data provided by the Colville Tribe?

A There has been the last few weeks, about the last six weeks, in fact, I have received data from Mr. Watson.

Q And that is concerning readings this past -- in 1978?

A Yes.

Q Now, is that an accurate representation of what you found from your examination of the data supplied to you concerning the water levels?

A Yes, it is.

Q Now, these two lower tables, one is an aquifer data table. Is that also prepared based on the information which you received?

A Yes, it is.

Q And it shows levels at various times throughout the season?

A Yes. It shows the highs and the lows for each year beginning in 1976.

Q Now, on the right of the exhibit in the lower part there is a table called the Groundwater Surface Profiles and then there is a legend. Does that correspond with the lines that appear on the graph?

A Yes, it does.

MR. SWEENEY: I would move for the admission at this time of proposed Exhibit No. 9 of the United States.

THE COURT: Do Waltons have any objection?

MR. PRICE: No, Your Honor.

THE COURT: The State?

MR. MACK: No objection.

MR. VEEDER: Colville Tribe has no objection.

THE COURT: U.S. 9 is admitted.

(United States Exhibit No. 9 is admitted.)

Q (By Mr. Sweeney) Well, Mr. Jones, I'm not going to ask you to point out every single level that appears on Exhibit No. 9, but what I would first like to ask you to do is, in a general way, tell us what happened during the irrigation season commencing on April 6 of 1977 as far as the water levels within the No Name Creek aquifer as it is reflected on the exhibit.

A May I step down.

Q Do you need a pointer?

A I think I will use this triangle. The high level, of course, was in March of 1977.

Q Mr. Jones, I have one problem. I think that it's hard for these other people to see it all.

THE WITNESS: If I get over here, can you see it, Your Honor?

THE COURT: I can see it.

THE WITNESS: All right, fine.

A The upper line, I'm sure these are very hard for you to see, is Paschal Sherman Well No. 1, a line

with short dashes. The next well which is the next line which is a solid line represents Colville No. 1. The line below that which is a long dash represents the Colville No. 2 and the dash-dot-dot line represents the new Walton irrigation well.

Q When did the pumping commence in 1977?

A On the 6th day of April.

Q Of 1977?

A Yes.

Q And was there an immediate showing of that in the water tables?

A Yes, there was a showing almost immediately. The readings, the first readings taken after the pumping began on the 19th and then again on the -- 19th and 20th, and they showed a very, very rapid draw down to begin with in which the wells of the Colville No. 1 went down over 15 feet in that short space of time. Paschal Sherman well, of course, our biggest well and it went down the slowest.

Q Was there an upsurge later on?

A Yes, there was a leveling off in late May and June during this period.

Q To what --

A In fact, they came back up.

Q To what do you attribute that?

A Well, there was considerably less pumping along the top of the exhibit. I have plotted the pumping rates at the various times the wells were read and during that period the pumping was down, say, in Paschal Sherman well from 910 gallons per minute to 530 and Colville No. 1 and 2 were both pumping zero and Mr. Walton was only pumping 275. So, the total pumping was down from 1885 to 855.

Q Now, how long did that continue?

A That continued until about the 20th of June at which time the wells again started in a preety steep decline and it was this decline that first caused us some concern because if you would project, say, this bottom line here which is Colville No. 2, you can see that it would rapidly have gone down to this elevation which is the bottom of the pump in about the first week in August.

Q And this is the bottom of the pump where, in which well?

A In Colville No. 2, and Walton's well at that time would have been projected to be dry in mid-August, but then again the profiles flattened out a bit because they were shut down for haying and I believe there were a few rains in that period and

so it looked pretty fair until we get over into the late July and August period when they started on another decline which would have put Walton and Colville No. 2 out of water in the latter part of August.

Paschal Sherman doesn't look too bad, but they were having a little difficulty getting the water they wanted so because of this Mr. Price and Mr. Veeder got together and decided on a program of reduced pumping so that he wasn't pumped dry.

Q Was that sort of a conversation?

A Pardon?

Q Was that sort of a conversation?

A Well, as I understand it, yes.

Q Was that reflected on the profile that appears on Exhibit No. 9?

A Yes, this exhibit, yes.

Q Yes.

A Yes.

Q And the water levels began to go up again; is that correct?

A Yes, they did.

Q Now, you mentioned earlier something about the two and a half feet below the levels -- that in 1978 later readings indicate that the water levels

are approximately two and a half feet below the levels that would correspond in the wells in the spring of 1977.

A Yes.

Q And is that reflected on the exhibit?

A Yes, the '77 levels are plotted over here, these three wells. The upper line is Paschal Sherman, solid line is Colville No. 1, and the Walton well is the lower line, and these three lines here correspond to them and you can see on the 5th day of April -- each one of these is five feet -- the difference here between --

Q At what point was it noted that the water level was about two and a half feet below the levels experienced in 1977?

A This was a projection made just this last week after we had the measurements of the 5th.

Q And at what points did those measurements show that, I mean, was it like the Paschal Sherman well or the Colville No. 2 well or the Peters observation?

A They all showed it. The Paschal Sherman well was 2.3 feet below the level in the spring. Colville No. 1 was 4.3. The Walton was 2.9, and the Peters well which we really depend on a little more than these for this particular figure, was 2.5.

Q I see. All right. Now, turning to another subject, did you tell us what the recharge was, in your opinion, during the 1977 period to the No Name Creek aquifer?

A The --

Q I believe you said eight --

A The recharge from the aquifer, from Omak Creek, you mean?

Q No, the entire recharge during 1977 to '78.

A Yes. 891 acre-feet.

Q Now, based on the data that you have examined, and I guess as reflected upon the exhibits that you have shown us, have you arrived at an opinion as to what has been referred to as either a firm annual yield or a safe annual yield of the No Name Creek aquifer?

A Yes, I have.

Q And first of all, do you have any definition for what is a safe annual yield?

A Yes, I have, and it is taken from U.S.G.S. Professional Paper 708 entitled Ground-water Hydraulics by S.W. Lohman. I'm reading from page 61.

> "The term 'safe yield' has about as many definitions as the number of people who have defined it."

Meinzer defined his definition to:

"The 'safe yield' of an underground reservoir [is the] practicable rate of withdrawing water from it perenially for human use."

Q Now, is that Mr. Meinzer?

A Meinzer.

Q Would you spell that name.

A M-e-i-n-z-e-r.

Q And would you tell us who he is or was, I guess.

A He was a famous groundwater hydrologist for the Geological Survey.

Q Now, did you utilize that type of definition in arriving at your opinion as to the safe annual yield for the No Name Creek aquifer?

A Yes, I did.

Q And what is your opinion as to that?

A I think it is in the range of someplace between 700 and 850 acre-feet.

Q And on what do you base that determination?

A Well, on the amount of precipitation and return flow that you would get from irrigation and the recharge from Omak Creek infiltration.

Q Do you think that the figures arrived at as to those three elements for the last irrigation season are representative?

A Well, I don't think that they are too far from representative. It's pretty hard to tell. We started out very dry, but then we have had quite a little bit of moisture in the recent months and as long as there is some flow in Omak Creek, why, it seems that that Omak Creek is a pretty constant source of water supply.

Q To the No Name Creek aquifer?

A Yes.

MR. SWEENEY: I'm going to, if I may, place another exhibit on the stand.

Q I'm directing your attention, Mr. Jones, to U.S. proposed Exhibit No. 11 and is that a chart prepared by you?

A Yes, it is.

Q First of all, does it refer to the irrigable acreages within the No Name Creek aquifer?

A Yes, it refers to both irrigated and irrigable in the upper basin, in the lower basin and in Allotments 901 and 903 in that area. I have marked it all irrigable because we were in the process of -- we were irrigating here, we were getting ready to irrigate there, seeding, clear until fall, so it's all lumped together there.

Q Now, does that include certain acreages, acreage

figures for the different allotments, the Walton land and -- well, well, in 901 and 903?

A Yes.

MR. SWEENEY: If the Court will please, I have got a copy of that proposed exhibit, if I might hand it up.

THE COURT: Is counsel familiar with this exhibit?

MR. PRICE: Yes, Your Honor, I am.

MR. MACK: Yes. I missed the number.

MR. SWEENEY: It's No. 11.

THE COURT: U.S. 11.

MR. MACK: Thank you.

THE COURT: Proceed.

Q (By Mr. Sweeney) Before I actually get into the actual figures on the proposed exhibit, Mr. Jones, does that purport to show a compilation of acreage figures based on Mr. Watson's testimony?

A This exhibit shows the acreage that Mr. Watson secured from the maps. It included -- it has a second column in which you will see the figures that I arrived at by planimetering methods.

Q Well, on the figures that you arrived at, what did you use? What data did you use in arriving at that?

A I used the map, the soil classification map that

Mr. Harvey prepared as modified somewhat by Mr. Watson.

Q Was that the map that Mr. Harvey testified to today?

A Yes, it was, very slight variations.

Q And did you planimeter the areas within that?

A Yes, I did.

Q Shown on that map.

Now, as far as Mr. Walton's property is concerned, did you planimeter that area?

A Yes, I did.

Q Did you also include what Mr. Watson testified to as acreages on the Walton property?

A Yes.

Q You included, I note, a certain figure for Mr. Walton, attributed to Mr. Walton for his own land. Where did you get that figure?

A That was furnished to us on one of the Colville's maps as marked by Mr. Walton and the outline of his fields he drew in a rather broad line and I planimetered the outside perimeter of the areas, on the outside of that line.

Q Now, you also have a column noted as BIA map.

A Yes.

Q And is that from the map that was proposed Exhibit No. 7?

A Yes.
Q That was not admitted?
A No.
Q Now, did you also provide in there for estimated water requirements in acre-feet?
A Yes, I did.
Q From whom did you get information concerning that?
A I got information regarding that from Mr. Bennett and also from the State of Washington, Washington State Bulletin 512.
Q Now, do the figures that are represented on the proposed exhibits, reflect your conclusions as to the amount of irrigable acreage as well as the water requirements?
A Yes.

MR. SWEENEY: Before I have him testify to figures, I move for the admission of Exhibit No. 11.

THE COURT: Any objection to 11?

MR. PRICE: Defendant Walton has none, Your Honor.

MR. VEEDER: No objection.

MR. MACK: No objection.

THE COURT: U.S. 11 is admitted.

(United States Exhibit No. 11 is admitted.)

Q (By Mr. Sweeney) Turning first of all to the acreage figures which you found as far as Allotment 526 is concerned, what was your determination as to the acreage within that allotment as irrigated or irrigable land as compared with Mr. Watson?

A Mr. Watson measured irrigated acreages at 50.7 and I measured it as 50.8. The irrigable acreage Mr. Watson measured at 11.1 and I measured at 10.9.

Q Well, your totals, then, were they very similar?

A 61.8 for Mr. Watson and 61.7 for myself.

Q Now, as to Allotment No. 892, would you give us your irrigated, your findings as compared to Mr. Watson's findings for irrigated land and irrigable land and you can just give us the total without breaking out between irrigated and irrigable.

A Mr. Watson measured 57.9 and I measured 60.9.

Q So, there was a difference of about three acres there.

A Yes.

Q And the method that you used to determine the acreages from the map, what was that?

A By the use of a planimeter.

Q Was that similar to the method described by Mr. Harvey?

A Yes, except he had a fancier instrument than I did.

Q All right. Now, there was some additional land included on the Tribal lands west of Allotment No. H-892.

A Yes.

Q And what acreage did you attribute to that?

A I attributed 2.3. Mr. Watson measured it at 1.5.

Q Now, turning to the Walton allotments which are the next ones going south, how much acreage was attributed to those lands, Mr. Walton's land?

A Mr. Watson attributed 34.2 in irrigated alfalfa. I measured that at 36.6, and Mr. Walton's figures are 46 for that.

Q How about irrigated grass land?

A Mr. Watson had 23.5. I had 33 and Mr. Walton has 56.

Q Now, you have another item classed as irrigable. What is that reading?

A Well, Mr. Walton had -- Mr. Watson had 110.7 and I have the number of 127.4 in the column on the chart, but that needs to be stricken if the BIA map is not going to be used, and I think it is probably not proper to use it.

Q I see. Now, that was based on the original map?

A Yes.

Q Okay.

MR. VEEDER: That is your Exhibit 7? I want to be sure; is that it?

MR. SWEENEY: That is right.

MR. VEEDER: That is your 7?

MR. SWEENEY: That is correct.

Q Now, going to Allotment 901 and 903, would you tell us the figures on that?

A Yes, just the total. It so happened that this lower basin, they were irrigating, as I have said before, I guess, here and there, getting ready to irrigate there, and then later they were actually irrigating, so I just marked it all irrigable and the totals down below, Mr. Watson got 107.2 and I got 116.

Q As between you and Mr. Watson, is there a basic agreement as to total amount of irrigated acreage within the lands described?

A I think it's very close.

Q And what are those figures?

A Well, I haven't added them up, Bob, complete, the grand total on those.

Q Well --

A I can.

Q All right. I will go to another question. Now, on the water requirements, what did you do concerning

that as far as forming an opinion as to that?

A I discussed this matter with Mr. Bennett at considerable length and I reviewed Bulletin 512 from WSU and the WSU bulletin seemed to fall within Mr. Bennett's, nearly to midpoint, so I used the 34 inch figure that that bulletin gives for alfalfa in the Okanogan -- or Omak area.

Q Now, the figures given to you by Mr. Bennett was the 30 and 36 inches?

A Yes.

Q And --

MR. PRICE: Excuse me, Your Honor. I would like to object to that question as being leading, although the answer is already in. I'm wondering if we could have the question asked what figures were given to him.

THE COURT: Objection is well taken.

MR. SWEENEY: I will do that.

Q Mr. Jones, what figures did you obtain from Mr. Bennett?

A 30 to 36 inches.

Q For this area?

A For this area.

Q Now, how about grass as compared to alfalfa? Is there a difference in what you feel is a water

requirement there?

A Well, there again I'm counting on Mr. Bennett's advice. I'm not an agronomist and he said I should allow 85 percent of as much water as we do for sprinkler irrigation on alfalfa.

Q And this is for grass as distinguished from alfalfa?

A Yes.

Q Where did the grass crop occur as compared to an alfalfa crop?

A Where does it occur?

Q On what lands is there a grass crop?

A Just on the -- no -- the Walton property principally there is a grass crop where they irrigated by flood irrigation mostly, and there is some, some grass in the 901 Allotment but I have not seen any irrigation of that going on. There was pipe there but I never saw it being irrigated.

Q I see. Well, based on those figures, did you arrive at an opinion as to the amount of water that would be required to satisfy the irrigation, irrigated and irrigable requirements of land within the No Name Creek basin?

A Yes, I have a total minimum. In the allotments north of Walton my minimum figure, my figure was 506. Mr. Watson's figure which included rill

irrigation was 679. This 262 figure is mine for the Walton's property and the 737 figure gets washed out because of the BIA map.

On the lower basin Mr. Watson had 660 and I had 663 which makes a total minimum of 1428 acre-feet.

Q Did you ascribe any difference to the lands in the lower basin as compared with the lands up above in Allotments 526 and 892?

A Yes, I used an efficiency of only 50 percent there because the water has to be transported via the creek clear across the Walton property down over a waterfall to be pumped on the land.

Q I see. Does this figure that you gave us as a minimum of 1428 reflect that efficiency rating for the lands in 901 and 903?

A It does.

THE COURT: Counsel, on the exhibit he has indicated there is by reason of the non-use of the BIA map, two figures have to be changed but he hasn't testified as to how that changes his maximum and his total.

MR. SWEENEY: Yes.

THE COURT: Let's take our recess while you compute that.

MR. SWEENEY: I will have that computed.

THE COURT: The Court will be in recess 15 minutes.

THE BAILIFF: All rise. This Court stands at recess for 15 minutes.

(Afternoon recess is taken.)

THE BAILIFF: All rise. This Court is reconvened following recess. Please be seated.

THE COURT: Continue.

DIRECT EXAMINATION CONTINUED

BY MR. SWEENEY:

Q Mr. Jones, have you recalculated, based on the removal of the BIA map from consideration.

A Yes, I have.

Q And as a result of that, what figures would be changed upon the exhibit which is Exhibit No. 11 and will you go through them one by one.

A In the BIA column on the map there is a 64 that would be removed, crossed out. Lower on the Walton allotment the 197 would be crossed out and the lower basin 147 would be removed.

Q Would you put a line on the exhibit through those.

Now, what change would occur under the column Jones as far as acreage is concerned?

A The 127 for irrigable acreage would be crossed out.

Q And that would change the total below that; would it not?

A Yes.

Q What would replace the 127.4?

A 170 acres that Mr. Harvey has testified to.

Q Excuse me, I meant, that would be the total, would it not?

A That would be the total.

Q And that would replace 197.

A Yes.

Q And are you relying on Mr. Harvey's figures for that?

A Yes, I am.

Q And the 127.4, just above the 197 would be changed?

A That would be changed to 100.4 [sic].

Q Would you do that on the exhibit.

THE COURT: 104 changes from what?

MR. SWEENEY: 127.4.

Q Would the lower basin remain the same?

A The lower bains would remain the same.

Q Now, going over to the estimated water requirements on the right of the exhibit, what changes would be made there?

A In the Walton allotments, all of the materials that is in that block would be crossed off and we would show a minimum for Watson of 682. Then both the minimum, total minimum and the total maximum change. The minimum from 1428 to 1848 -- or, yes, I believe it's 1428.

Q Now, is that in the lower right-hand corner?

A Yes.

MR. PRICE: Changed to what, Counsel?

THE COURT: That would be changed to what figure?

A 1848 and the maximum would be changed from 2079 to 2031.

Q Now, your total minimum actually went up under this recalculation; is that correct?

A That is correct.

Q Now, is that a result of a change in your handling of the Walton land as far as the acreage is concerned?

A Yes, that is a difference in the handling of that.

Q Now, in your calculation as to the water requirements initially for the Waltons, did you make any allocation for the 127.4 acres that you originally had as your irrigable, but not irrigated, lands as far as water requirement is concerned?

A Yes, that was changed from 127.4 to 100.4 [sic].

THE REPORTER: Excuse me, to what?

THE WITNESS: 100.4.

Q That was the acreage change, but in your original computation as to the water requirements, did you have any requirement for the irrigable lands on the Walton property?

A Yes.

Q For water?
A Yes, I did.
Q And that was included within the maximum of 737 which you have crossed out; is that correct?
A That is correct.
Q Would you tell us how the maximum -- or the minimum amount on the lower right-hand corner is increased from the 1428 to the other figure?
A Originally I had 262 as a minimum which is simply the acreage that Mr. Walton is presently irrigating and that was changed to 682 by bringing in Mr. Watson's 110.7 acres of irrigable land, is the reason for that increase.
Q I don't know if we got all of the figures on there or not. I will have Mr. --

THE COURT: Looks like you got them all.

MR. SWEENEY: I have no further question at this time. Perhaps I could ask Mr. Jones after we finish, to put his initials on the exhibit where the changes were made.

THE COURT: Very good.

Cross-examination of Mr. Jones? Mr. Price, are you going to lead off this time?

MR. PRICE: I would like to take a break from going first, if I might, Your Honor.

THE COURT: All right. We will have the State go first.

MR. PRICE: Thank you.

CROSS-EXAMINATION

BY MR. MACK:

Q Mr. Jones, referring you to U.S. Exhibit No. 11, you answered a number of questions with the phrase used by Mr. Sweeney as "your minimum figure for the estimated water requirements in acre-feet." In answering those questions, are you referring to the numbers -- and when I use "numbers" of change -- that appear in the lower right-hand corner of U.S. Exhibit 11, is that what you understood as your minimum acre-feet figure?

A No, that is a minimum of Mr. Watson. Mr. Watson was lower than I was in the lower basin. It's a minimum of any figure in the right-hand column for a minimum, and --

Q Did --

A -- maximum.

Q Okay. Did you calculate using the figures you came up with and that you felt were reliable, did you calculate an estimated water requirement in acre-feet as a total?

A Well, no, I haven't done that, Mr. Mack, because Mr. Watson's figure of 168 was lower. So I used that for a minimum.

Q Well, let me ask you this, Mr. Jones, you show for the -- you have broken down into three areas on U.S. Exhibit 11 the lands of No Name Creek Valley and correct me if I'm wrong, you show on U.S. Exhibit 11 your figure for the northern area, so to speak, as 506 acre-feet. Your figure for the middle area or the Walton lands is 262 acre-feet and your estimate for the lower lands as 663 acre-feet. Is it correct that if those three figures were added up, one could derive the estimate of Mr. Jones as to what the acre feet are available for this valley?

A Well, --

Q And I use the figures that appear to the left of your name in the far right column.

THE COURT: But, Counsel, he adjusted those figures, those in red.

MR. MACK: Your Honor, he adjusted only one of those figures, as I understand it, which is the 737.

THE COURT: No, he adjusted the 262 up to 682.

Q (By Mr. Mack) Is that correct, I'm sorry if I

misunderstood.

A That is correct.

Q So one could add up 506, 682 and 663, then, to derive your estimated --

A That is right.

Q -- acre-foot.

And that figure varies -- and that is the figure that you wish now to testify to as the available water in acre-feet annually for this area; is that correct?

A No.

THE COURT: That is not available, Counsel.

Q (By Mr. Mack) What is it, then?

A Well, the water that I said I thought might be available is somewhere between 700 and 850 acre-feet.

Q Yes, sir. Well, then, I may be confused, but what does the 506, 682 and the 663, then, represent?

A That is the water requirement based on the acreages that we have planimetered off the map.

Q I see. I see. And my total for that is 1,851 acre-feet.

That is the figure you wish to stand by today in testifying; is it not?

A Yes.

Q And is it not correct that you were willing to stand by the figure 400 acre-feet less than that when you began testifying?

A Yes, I was using a map that I thought had some merit to it.

Q And you have changed your mind on that?

A Yes.

Q I don't think we have gone into this, but could you explain why that map had no merit.

A Well, we couldn't find anybody to verify either the areas that are shown on there in different patterns or the acreage figures that were placed alongside.

Q And that was proposed Exhibit 7, is that what you are talking about?

A I believe so. I don't have a list of exhibits.

Q And had you taken the acreage figures that appeared on that in your earlier calculations?

A Yes, I took that into consideration.

Q Okay. Thank you.

Now, Mr. Jones, is it not correct that your total acreage figures -- well, let me ask you this: You have not added up, have you, the total irrigable acreage figures you now wish to rely on although that could be done, I imagine. That is the second --

A Yes, we have the total irrigable acreages.

Q By area?
A By area, yes.
Q And one would simply just add those up and get a total?
A Yes.
Q Okay. Now, you explained that in your work here you had examined drill logs and drill holes and made field examinations. What did your field examinations consist of?
A Well, at times when there was drilling going on I would watch the drilling, see what was coming out of the hole and learn what I could about the formations in the ground. During my visits there I visit various places in the field and examine the geology and the topography and what was going on in the way of irrigation. I would take check measurements of the flumes and the weirs and on numerous occasions I observed the people from the U.S.G.S. making stream flow measurements.
Q And isn't it fair to say, Mr. Jones, that over the last two years or so you have made numerous field examinations in the No Name Creek Valley of the type you have just described?
A Yes, sir.
Q And in all seasons, irrigation seasons and

non-irrigation seasons.

A Well, very few in non-irrigation seasons.

Q You make quite a bit more in the irrigation periods?

A Yes.

Q Now, referring you again to U.S. Exhibit No. 11, is it fair to say that some of the figures on which you rely were derived from Mr. Harvey and some apparently derived from Mr. Watson.

A Well, all of the figures under Mr. Watson's name were furnished me by Mr. Watson, and the figures that are under my name with the exception of this 100.4 and the 170 at the bottom, were all measured by me with a planimeter.

Q And the 100.4 and the 170 were derived, were they not, from Mr. Watson, and you are relying on those?

A No, they were derived from Mr. Harvey.

Q I see. And do you believe that Mr. Harvey's work is reliable and that -- let me ask you this: Do you know Mr. Harvey's reputation in his field?

A Yes.

Q And is it good?

A Very good.

Q And you believe the figures he has supplied you not only with regard to this exhibit, but to others, are reliable figures and could be relied on safely

by you in coming up with your conclusion?

A Yes, I believe so.

Q Now, you have described the material which on the Colville Exhibit was shown as green.

A Yes.

Q As an older formation than the other sands and gravels in the No Name Creek Valley. How do you go about determining something like that?

A Well, for one thing, the position of it, but -- and examination of it, of the gravel at the northern end of it are -- they are different type than any of the higher level gravel that have come down off the hills from the kame terraces and the alluviums and things like that and the gravels like that, and they are much different than the gravels in the alluvium of Omak Creek.

Q And you mean higher levels in elevation, not --

A In elevation, yes.

Q Not northern, to the earth.

A Yes.

Q Now, you said when you first began your look at the precipitation contribution you had gone with a figure of 12 inches annually.

A Twelve thirty-six.

Q 12.36, and where did you derive that from?

A From the climatology records of the Commerce Department.

Q For the Omak area?

A Yes.

Q And how many years did that cover; do you know, that that was averaged out for?

A I think that the --

Q If you remember.

A I don't remember exactly, but it doesn't go clear back to 1908.

Q It's to a more recent period?

A Yes, it is.

Q And then you decided on the 10 inch figure after speaking to Mr. Harvey and making some other considerations; is that correct?

A That is correct.

Q Do you happen to know what the precipitation at the Omak Station for the last two years was?

A I did not have that right up to date, but I have the records.

Q Do you know how it compared to these figures you were using?

A Well, it's higher at the Omak Station than 10 inches.

Q The amount is higher?

A Yes.

Q And the 10 inch figure is Mr. Harvey's figure?

A Yes, it is.

MR. SWEENEY: I believe that was Mr. Bennett's figure.

THE COURT: Bennett's figure.

MR. MACK: Bennett's figure, I'm sorry.

A Bennett's figure.

Q Now, in analyzing your three factors of precipitation, return flow and seepage, and in making your analysis of this area, putting together the exhibits and that sort of thing, I understand that you relied on data supplied by the U.S. Geological Survey; is that correct?

A Partially.

Q And to a certain extent you did that in your work?

A Yes.

Q And did you believe that the data supplied to you by the U.S. Geological Survey was reliable and could be relied on in doing the work you did?

A Yes, I did.

Q And do you still believe that?

A Yes, I do.

Q And are you familiar with the measurement techniques used by the U.S. Geological Survey in its work in the No Name Creek area over the last two years?

A Yes, I do.

Q And do you believe those to have been reliable also?

A Certainly should.

Q And you relied on them; did you not?

A Yes.

Q Now, you did testify -- I think I may have misunderstood or maybe we can clarify -- that you consider three factors, one of which was seepage from No Name Creek into the aquifer. Did you mean from No Name Creek or from Omak?

A From Omak Creek.

Q Thank you.

When you stated that the Peters well was considered by the Tribe and the Geological Survey both as the best barometer of the water table in No Name Creek aquifer, what is the source of your understanding of the opinion of the Tribe and the Geological Survey as to that?

A Well, this is what both Mr. Cline and Mr. Watson told me.

Q And have you made any determinations yourself as to the reliability of the Peters observation well as compared to other wells in the No Name Creek area as a "barometer," if you will, of the water table in the aquifer?

A No, I have not.

Q You haven't done that yourself?

A No, I have not.

Q Now, I notice that of the three elements you considered, the precipitation, return flow and seepage figure, the seepage, as I understand it is derived from subtracting a total of the precipitation and return flow figures from another figure; isn't that correct?

A That is correct.

Q And the return flow figure is an actual figure for 1977; isn't it?

A Yes.

Q Whereas the precipiation is an estimated annual; isn't that correct?

A That is correct.

Q And we are not to understand, are we, that you used actual 1977 precipitation figures in arriving at that calculation?

A No, sir.

Q And is your 988 acre-feet pump figure for 1977, that is to say, is it for January 1 through December 31, 1977 or is it for some other period?

A No, it is for the annual pumping season.

Q And that figure was derived from what dates, then?

A From the 6th day of April to the 7th day of October, 1977.

Q And those records were derived from flow meter measurements; were they not?

A Yes.

Q Taken by who, the U.S. Geological Survey?

A Yes.

Q And were those records reliable, in your opinion?

A Yes, I think they are.

Q And you relied on them in your work.

A Yes.

Q Now, is it correct to say that based on your consideration of the three elements of contribution, of recharge to the No Name Creek aquifer that by and far, far and away, the largest element of contribution is from Omak Creek percolation or leakage or infiltration?

A Yes.

Q And that is represented, is it not, by the 668 acre-feet out of your 891 total?

A 600 -- what was the number you used?

Q 668.

There is something wrong there.

A 663.

Q 663. From your total of 891, and is it your

testimony, as I understand it, that that contribution from Omak Creek infiltration to this aquifer is a relatively constant factor from year to year.

A Relatively so, yes. I feel that when we have periods of very high water and the stream spreads out over a larger part of the stream bed, why, then there is -- it widens the subflow and there is a small amount of additional head, pressure on it so that it would be logical to think that the sub -- the seepage into the aquifer would be somewhat higher, but we have no proof of that.

Q I see.

A It's just an opinion.

Q I see, and is that seepage derived substantially from the subflow of Omak Creek?

A Pardon?

Q The seepage, the water, the 663 acre-feet which recharges the No Name Creek aquifer, is that derived from the subflow of Omak Creek?

A Well, yes, most of it comes through -- is from the subflow. It goes from the creek into the subflow and then from the subflow down --

Q And it seeps further vertically down, seeps until it enters the aquifer; isn't that correct?

A Yes.

Q Is there any way to know what percentage of the subflow does enter the ground as groundwater in this area and what percentage of it is carried westward and northwestward along the stream bed?

A I don't know of anyway to estimate that.

Q It would be very difficult to; wouldn't it?

A Yes.

Q Now, Mr. Jones, is it fair to say that as shown on United States Exhibit 9 that the hydrograph of the Paschal Sherman well shows -- well, let me state this:

Is it fair to say that the hydrographs of the wells depicted on that exhibit indicate generally certain important similarities in the water level behaviors in those wells?

A Yes, quite similar.

Q Isn't it also fair to say that in certain respects, however, the hydrograph indicates variations in well level readings from the Paschal Sherman well as compared to the other three wells depicted on that hydrograph?

A Well, they are pretty generally parallel. We can't have it both ways, they do and they don't, so.

Q Well, in any hydrograph you have similarities. You also can have certain dissimilarities.

A Yes. There is no individual well here that is greatly dissimiliar.

Q Well, except --

MR. MACK: May I approach the exhibit, Your Honor.

THE COURT: You may.

Q (By Mr. Mack) Referring you to U.S. Exhibit No. 9 to the period depicted on there of, oh, between May 11, 1977, and May 23, 1977, isn't it fair to say that the hydrograph indicates a rise in the water level between those dates, of the other three wells shown on that exhibit, whereas it indicates a continuing decline in the water level in the Paschal Sherman well between those two dates?

A Yes, and if you look at the table at the top, you will see that the Sherman, the pumping rates pretty well answer that question.

Q And by that you mean that the pumping rates have declined in the wells.

A The one had completely shut off. Colville No. 1 was shut off and Colville No. 2 was shut off and Paschal Sherman well was pumping and the Walton well was pumping.

Q During that period?

A Yes.

Q However, the Walton well being pumped shows no decline during those dates whereas the Paschal Sherman well does in the water table.

A Well, chances are shutting off of Colville No. 2 helped a lot.

Q Isn't it fair to say, Mr. Jones, that water levels in adjoining wells -- well, let me put it this way.

Can one expect an immediate recovery to pre-pumping levels in wells, let's say an immediate, a day after shutting off a pump or is there a recovery period? Is there a lag period in which water has to increase in that well?

A Yes, the aquifer is still recovering to this day from the pumping that we did last summer and stopped in October.

Q And that is a phenomenon that is expected not only in this aquifer system, but in others; isn't that correct?

A Yes.

Q Now, isn't it fair also to say that for wells which are not being pumped but are being influenced -- well let me put it this way.

Are there wells in this aquifer system that have not been pumped in the last two years but are

influenced by the wells which are pumped?

A Oh, yes, we have many observation wells.

Q And the Peters observation well is one of those; is it not?

A Yes.

Q Now, isn't it fair to say that the observation wells in this area cannot be expected -- well, let me put it this way.

The water level, the depth to water table in the observation wells is generally drawn down, is it not, after a period of time when pumping has begun in the irrigation wells?

A Yes.

Q And that indicates a decline in the water table in the aquifer.

A Yes, in the entire aquifer.

Q And those levels can recover, can they not, after pumping has been discontinued on the irrigation wells?

A Yes.

Q Can the recovery be expected to be instantaneous or will it occur over a period of time?

A It will occur over a period of time.

Q In what system could you expect the recovery to be instantaneous? Would it have to be a perfect

artesian system or something of that sort of is there such a system?

A Well, in some confined aquifers or an artesian condition, of course, why, the recovery is very fast.

Q But those conditions aren't present in this aquifer; correct?

A No.

Q So that the recovery would be seen days or weeks possibly or even months later after the turning off of the pumps in the irrigation wells?

A Yes.

Q Mr. Jones, do you know where the bottom of the pumps are set in the four wells depicted on U.S. -- or were set during the period that is depicted on U.S. Exhibit No. 9?

A Yes, I do.

Q And could you give me those figures, please. Do you have them here, first of all?

A They are in the courtroom.

Q Well, if you don't have them there I will go on to something else.

A All right.

Q Thank you.

Let me ask you this, also, do you know the

elevations or the depth at which the top of the bowls are for the pumps in those four irrigation wells?

A No, I know the elevation of the bottom of the tail-pipe.

Q But not the top of the bowl?

A No.

Q Do you happen to know who would have that information?

A I assume that Mr. Watson would have it for the Colville wells and Mr. Walton, I believe, would have it for his own well.

Q Thank you.

Now, you read a definition from a U.S. Geological Survey publication and it was a definition that was attributed to Mr. Meinzer.

A Yes.

Q And that dealt with safe annual yield.

A Yes.

Q Do you happen to know the consideration -- well, first of all, are you familiar with the works of Mr. Meinzer?

A Well, I'm very familiar with his textbook on water, yes.

Q Is it fair to say -- and the definition you read indicated this -- but is it fair to say that the

elements that go into the determination of, first of all, what a safe annual yield means, and second what figures are to go into it, include a number of value judgments and determinations including those of management of water resources?

It is something more than mathematical calculation; isn't it?

A Yes, I think there is a good deal of judgment involved. Certainly the figures that I gave are a judgment. I did not go through any mathematical rigmarole either on paper or in my mind.

Q Sure, but you borrowed the definition of Mr. Meinzer.

A Yes.

Q Do you happen to know what elements went into his consideration of what a safe annual yield is?

A No, I don't know in fact.

Q Is it your opinion that that definition differs from the one -- well, let me ask you this.

Did you hear Mr. Watson's testimony on what his firm annual supply meant?

A I'm sure I did, but I don't remember.

Q Then I won't ask you to compare them. It's a long time ago.

And then you came up -- let's see.

I take it that although Omak Creek's leakage

is a relatively constant source of recharge, the precipitation contribution to recharge is not fairly constant from year to year?

A No, it isn't as constant, I don't believe, as the seepage from Omak Creek.

Q And isn't return flow a rather variable element in that?

A Well, it varies with the amount of water that is put on the land to irrigate.

Q And that would vary determining, based on what men and women, if you will, want to do with the water in irrigating that area; isn't that correct? It depends on the particular plans for irrigation?

A Well, the figures that I have used is one that the Bureau of Reclamation used for many years as a rule of thumb. Return flow will, of course, vary with the types of material that are in the earth and things like that.

Q Well, you used the basic United States Bureau of Reclamation figure, then you have to perform some calculations with it for this particular area; right?

A No, I just used the figure that they use for all of their projects.

Q And you have used that in your work over the years;

have you not?

A Yes.

Q And that is, in your opinion, a reliable figure to use in coming up with this sort of information?

A Yes.

Q Now, you did use also Mr. Bennett's figure of 30 to 36 inches for this area; correct, as the range?

A Well, no, I discussed that matter with Mr. Bennett and he testified to this 30 to 36 range before you here this morning, but I actually used the 34 inches from the WSU Bulletin 512, I believe it is.

Q Well, nevertheless --

A 34 inches.

Q I'm sorry.

Nevertheless, that is within the range used by Mr. Bennett also.

A Yes.

Q And then you got a figure of 737 -- well, strike that. That has to do with the BIA map.

When you used an efficiency factor of 50 percent for the delivery of water to the lower allotments, using the creek as a delivery system, No Name Creek, did you consider an efficiency for other possible delivery systems of that water to those lower allotments?

A No, I did not.

Q Are there other delivery systems reasonable in your opinion for delivery of that water to those lower allotments?

A Well, it certainly is a physical possibility to pipe the water down there.

Q And in a sense, to pipe it, you would be using an enclosed pipeline instead of an open pipeline which, in effect, No Name Creek serves as for the delivery of water to those lower allotments.

A Yes, you could probably bring the efficiency up to about the same as we use in the northern allotments.

MR. MACK: May I approach that exhibit, Your Honor?

THE COURT: You may.

Q (By Mr. Mack) Mr. Jones, referring to the lower left-hand portion of U.S. Exhibit 9, that exhibit indicates a total volume of water pumped in 1976 as 482 acre-feet and a total volume of water pumped in 1977 as 988 acre-feet. Isn't it true that the volume of water pumped in 1977 is over double the amount of water pumped in 1976?

A Yes.

Q And what was the recovery during those periods of the water table level in the No Name Creek aquifer?

A The recovery from the 1976 pumping is given in the spring of 1977 and in the Paschal Sherman well we find that we have a minus 1.8 and that means that it lacked 2.8 feet of coming up to the March level of 1976.

On Colville No. 1 we have a minus 5.5. On Mr. Walton's well we had a minus 6.5.

Q Could you explain the difference in the --

A Wait a minute.

Q I'm sorry.

A Excuse me. I'm in error. I'm reading the wrong thing. Go back and scratch everything to the 2.8, please.

For the spring of 1977, Colville No. 1 would have a minus 1.2. Colville No. 2 would have a minus 3.6, and Mr. Walton's well minus 3.6.

Q And would you say that it is fair to say that the height of the water, the elevation of the water table in the No Name Creek aquifer, had substantially recovered it's previous level in spite of the fact that over twice as much water had been withdrawn from the aquifer from that year?

A Yes, it has substantially recovered.

Q Isn't that also true for the period ending, oh, let's say April 1, 1978 as compared to the previous

period?

A Well, I have some figures here for April the 5th.

Q Well, isn't it true that U.S. Exhibit 9 indicates using hydrographs, the height of -- the elevation of water in individual wells and I realize that is not really the height of the water table, but the height of the water elevation in individual wells both for April of last year and for April of this year, and except for a minor variation, the elevations of those water levels are similar for April of this year, as compared to April of last year, and I'm referring to the upper part of U.S. Exhibit 9.

A The upper part?

Q Yes, the hydrograph.

A Oh, yes, there is not a great deal of difference.

Q The difference is rather small; isn't it?

A Yes. I believe I read all of those into the record.

Q Yes, no, I think you have. I just want to kind of -- wanted to go into it also.

You used a figure also after the recess of 262 acre-feet which was based on Mr. Walton's rill irrigation. I am a little bit confused as to what that figure represents. Do you recall that?

A Well, whose -- now, whose well was this, Mr. Walton's

well?

Q Well, this wasn't a well, this was based on Mr. Walton's rill irrigation. I think it had to do possibly with U.S. Exhibit 11 but the figure I recall is 262 acre-feet, unless -- let me check my notes on that.

Mr. Jones, when you say that -- there is a hydraulic continuity, is there not, between Omak Creek and No Name, the No Name Creek aquifer, not in the sense of a stream -- of the Snake River, for example, running into the Columbia, but there is a hydraulic continuity nonetheless; is there not?

MR. VEEDER: I object to this question. We have been through this with every witness. This is repetitious. He has explained what he thinks is occurring, gone into this about four different times now.

THE COURT: Well, I don't recall that this witness ever expressed himself on that point.

MR. VEEDER: I thought he had described the situation that prevails.

MR. SWEENEY: I think he answered a question as to whether or not he felt there was a hydrologic connection.

THE COURT: Right.

MR. MACK: Right.

THE COURT: He can answer that.

MR. MACK: Thank you, Your Honor.

Q Keeping in mind I am using the term hydraulic continuity now instead of hydrologic connection, is there a hydraulic continuity in your opinion of whatever type between Omak Creek and the No Name Creek aquifer as that aquifer has been described in this trial by the testimony that has preceeded you.

A Well, your word, "continuity," bothers me.

Q Would connection be an easier one?

A Connection would be an easier one. There is no physical connection.

Q Now, when you say that, what do you mean?

A I mean that the waters of Omak Creek do not at any place merge, flowing into the No Name Creek aquifer. They are seeping, just seeping, dripping. They are not flowing, like you pour water out of a glass into the sink or something.

Q So, they are not directly connected in the sense of flowing?

A That is exactly right. They are not directly connected.

Q But can you not say they are connected then in the

sense of seepage, keeping in mind that Omak Creek seepage is the major contributing factor to the No Name Creek aquifer recharge.

A Connected by seepage, if you want to put it that way.

Q That is a fair --

A Seepage zone.

Q There is a seepage zone through which those waters flow and contribute to the aquifer?

A Yes.

MR. MACK: I don't have any further questions.

THE COURT: Mr. Veeder, would you like to take on cross-examination or would you rather wait until morning?

MR. VEEDER: Well, I think we could probably move along faster if I waited until morning, if Your Honor is going to stop at 4:30.

THE COURT: I was just looking anywhere between 4:30 and 5:00.

MR. VEEDER: I think I better have a little more time than that, Your Honor.

THE COURT: Very good. Court will be in recess until 9:00 o'clock a.m.

THE BAILIFF: All rise. Court stands at

recess until 9:00 a.m.

(Court is recessed until 9:00 a.m. April 13, 1978.)