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Record of Proceedings at the Trial, Vol. III

Wayne C. Lenhart

Court Reporter, Spokane, Washington

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IN THE DISTRICT COURT OF THE UNITED STATES
FOR THE EASTERN DISTRICT OF WASHINGTON

FILED IN THE
U. S. DISTRICT COURT
Eastern District of Washington

FEB 13 1976

J. R. FALLQUIST, Clerk

RF

Deputy

UNITED STATES OF AMERICA,)
)
 Plaintiff,)
)
 v)
)
 BARBARA J. ANDERSON, et al,)
)
 Defendants.)

No. 3643

VOLUME III

pgs 401-600

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1 attribute to each part of that. For instance, in this
2 '69 one, I gave that '67 a waiting of one; the '68,
3 which is 15.5, a waiting of two, and the '69, which is
4 in this, in the immediate adjacent areas, a waiting of
5 four. You have to wait its effect.

6 Q In other words, what you're saying, you would have seven
7 parts going through the system in '69, four of them
8 would be '69 parts, two would be '68, one would be '67,
9 and one would be the other year you mentioned?

10 A You asked how I got it in '69, I told you that I got,
11 I waited, how I waited each of those. If all that
12 water fell in one spot that took the whole two years,
13 that would be one thing, but it doesn't, it falls, and
14 I have to wait it as it comes down through.

15 Q Well, what was your rainfall, your precipitation, in
16 1969?

17 A My precipitation in '69 was 24.85.

18 Q Now, what, in '69, how much was lost to man-made with-
19 drawals, have you made a calculation of that?

20 A I would have to assume that if it's man withdrawal, it
21 would have to be direct, or with a delay of one, I have
22 gone through this before, now, for instance, if it's--

23 Q You mean, by "direct", you mean direct out of the
24 stream?

25 A All right, if it's below, in the lower area, it takes

1 water out, it's direct, immediate, you're taking water
2 out of the ground water. In certain areas in the
3 valley, it would be, maybe, a year delay in the upper
4 end, approaching a two-year delay.

5 Q Well, what direct--

6 A Are you speaking Newhouse?

7 Q Yes.

8 A Probably up to a year delay.

9 Q I'm not asking you for the delay, I'm asking you for
10 the amount, how much the flow would have been had it
11 not been for man-made withdrawals?

12 A All these figures that I have given you are without
13 man-made withdrawals, assuming no man-made withdrawal.

14 Q And that was your actual flow also?

15 A No. Those are projected without man-made withdrawals.

16 Q Well, for a minute I would like to switch gears, now,
17 and go to what the gentleman who's examining you right
18 before I came on was about, and that's about Exhibit
19 No. 3 over there. Now, you have stated that, in looking
20 at Exhibit 31, you have stated that your output at the
21 Springs in a normal year, your projected output, and
22 you assumed 1971 was a normal year, is that correct?

23 A Yes.

24 Q You said your projected output at the Springs is 18,700
25 acre feet a year?

1 A We're going back in as projected, yes.

2 Q But you have also said that this 18,000 acre feet per
3 year up in the Upper Chamokane, the only flow you have
4 coming over your, you have a weir up there, right?

5 A Yes.

6 Q --Is 700 acre feet a year?

7 A Yes.

8 Q And that is cut off by the moraine up there?

9 A And in part, the 16,300 that you see below there; flood
10 waters.

11 Q Well, the question I'm asking you is, that I want to ask,
12 is, if that is cut off, if that 8000 acre feet per year
13 is cut off, how do you arrive at the figure 18,700 feet
14 coming out of the springs? I just don't understand the
15 correlation there. In other words, it would seem like
16 there would have to be another 8000 feet of ground
17 water you would have to pick up somewhere?

18 A As the floods come out of the Upper Chamokane, I'm
19 assuming that we get a benefit from that water. Now,
20 this is in that projected year again, 8000 second feet,
21 8000 acre feet of that.

22 Q Come out in the flood season?

23 A No, I did not say that. It comes out through, and does
24 come down through, and we are able to get that into the
25 ground water. There is a continuous flood, or flow, of

1 700, that was, that we measured, and that's continuous,
2 and I'm not saying where its source is, probably in
3 one of the other, smaller streams, and then we will
4 also have coming into the prairie itself, falling right
5 on it, 2000 acre feet.

6 Q Well, you have answered my question.

7 A Yes, sir.

8 Q I was just wondering where the other 8000 in the Upper
9 Chamokane came from.

10 In looking at Exhibit No. 3, have you made an
11 estimate of how much water that makes up your flow
12 down at your USGS gauge; have you made an estimate of
13 how, what the percentage is that comes off of those non-
14 Indian lands?

15 A No, we have not made any discrimination between--

16 Q Well, it would be quite a high percentage, would it not,
17 judging from where you say the flow comes from?

18 A We have made no estimate of that at all, we haven't
19 investigated it.

20 Q Now, I would like to ask you a couple of questions
21 about your geophysical traverse, and I understand you
22 have gone over this before, but one of the things I
23 would like to know is, let's see, I think that's
24 Exhibit No. 8; could I have the exhibit, please?

25 A Do you want the traverse, or the other that goes with it?

1 Q No, that's fine. You did some in what I think you
2 spoke of as "Newhouse lane"?
3 A Yes.
4 Q You did some drilling?
5 A Yes.
6 Q Now, what was your-- Do you have your test records for
7 those--
8 A Yes. Drills, or wells. We just barely get the thing
9 under and shoot it, is all. It's a concussion you
10 measure, it isn't drill holes, it ain't drill holes,
11 no, no.
12 Q When you do that, you don't catch whether the makeup
13 is gravel, clay, or anything about the makeup of the
14 underlying ground, you just catch its density?
15 A With resistivity, we pick up the variation here in
16 the overburden, the density of it, yes, sir. The report
17 is in here, Shannon & Wilson's report is in here.
18 Q Well, the question I'm asking is, could you tell from
19 that, at what level you would find a layer of clay, or
20 what?
21 A Yes, yes, we can, and that was done and labeled on this
22 map.
23 Q Okay.
24 A In the first place, we did run surface traverses, and
25 these represent, so then these are related to sea level

1 datum.

2 Q Okay, well, for your first six, for your first six
3 holes that you dug, what was the level of clay across
4 all those, at what depth did you run into this layer
5 of clay?

6 A Of the mixture of clay, sand and gravel, we titled
7 later at the east end, it would be within 10 feet of
8 the surface.

9 Q At the east end, over on the east side of--

10 A Yes, and gets deeper, and as we got to the far west end,
11 here, it got down at that point, we were nearly 75 to
12 100 feet, probably.

13 Q Is that layer, does the water flow through it back and
14 forth, or is it--

15 A That is our heavy water-bearing layer.

16 Q Well, where did you find, the Newhouse is the well I
17 think you're somewhat familiar with, aren't you?

18 A Yes.

19 Q He went 85 feet, and then he hit--

20 A Clay.

21 Q --very hard clay.

22 A Yes.

23 Q What I'm asking about, is that layer of clay, how does
24 that run?

25 A In all probability, Newhouse would have been, probably,

1 at, oh, midway, let's see, it would be shown on this
2 thing as probably, not as a clay, but as a tighter layer,
3 you see, you wouldn't segregate the clay specifically,
4 but it would be a tighter layer, and would be in the
5 area of probably 50 feet.

6 Q Probably what?

7 A Probably 50 feet, just looking, just glancing at this.

8 Q Why, he hit it at, maybe I'm not following you, his well
9 log shows he hit it at 85.

10 A Right, and in this whole, this whole layer, this whole
11 upper layer, that can vary from feet to feet, it can
12 vary at 50, or it can vary at 100 feet, it can be
13 different, we found a differential in the Hill Well,
14 and in a well we drilled almost immediately adjacent
15 to it. It does vary some, it isn't just flat, a flat
16 plane.

17 Q Okay. The last question I would have is, in your
18 geological, well, if you take a full look at the trough,
19 as you see it, is the materials that make up that
20 trough, is that fairly homogeneous, all the way from
21 the top to the bottom?

22 A I think the lower part, right underneath the, in the,
23 tighter layers, is comparatively uniform, yes.

24 Q In the tighter layer?

25 A Yes, in the tighter layers. The upper layer is not

1 necessarily uniform because it has been formed by, as
2 the glacier receded, it's been rinsed out, and water
3 traveling all over that place, and we'd find tighter
4 and looser layers all over, but it's generally looser
5 in the upper layer of where the water, the receding
6 glacier did rinse it out.

7 Q But you generally find your ground water in the tighter
8 type of water, or do you find it up above?

9 A I find the ground water in all layers; there is ground
10 water in all layers. It is a degree of how it will
11 receive moisture and how it will relinquish moisture.

12 Q It's not as homogeneous at the top, then, you would say,
13 as it is down?

14 A There is more clay rinsed out of the top, yes.

15 MR. TRACY: I have nothing further.

16 MR. GERMERAAD: Your Honor, I have found out that
17 a witness which was mentioned earlier today, Mr., or
18 Dr. George Maddox, would probably be having exhibits
19 introduced through him, and since the State has not
20 filed any documents with the Court, as far as I know,
21 as the Court directed in its Pretrial Order, plaintiff
22 and plaintiff intervener would certainly like copies of
23 any scientific studies that would be introduced in the
24 next few days. We would like an opportunity to see
25 them, at least.

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THE COURT: Well, I think that is a reasonable request.

MR. DUFFORD: Your Honor, I'm aware of no exhibits the State intends to introduce through Dr. Maddox.

THE COURT: But if there are any exhibits not pre-filed, counsel has the right to an opportunity to examine them.

MR. GERMERAAD: I believe I was told there was going to be a flow net; is there or is there not going to be a flow net that Dr. Maddox has made, introduced?

MR. : We will be more than happy to provide you a copy of what--

MR. GERMERAAD: Are you going to?

MR. : Our intention was to have him discuss what he has done.

MR. GERMERAAD: It will be based on something he did do, and you're not going to introduce it into evidence. It's going to come out on Cross-examination the first time, and I think we would be at a distinct disadvantage for having our exhibits filed for almost a month, or more.

MR. DUFFORD: Your Honor, we'll be more than happy to make that available.

MR. GERMERAAD: Thank you.

MR. RUDOLPH: One additional question relating to

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that, have any of your two witnesses, Mr. Dufford, written any reports to you, or anyone else? If there are such written reports, we would ask that we be allowed to see those also.

MR. : Certainly. The answer to the question is no.

THE COURT: We will be in recess until 9:30 in the morning.

(Court adjourned for the day.)

1 Hon. Marshall A. Neill, Judge
2 Spokane, Washington
3 Thursday,
4 March 14, 1974
5 9:30 A.M.

6 THE COURT: It may be a little early to determine
7 yet, but I think we ought to give some thought to if
8 this case is not completed by tomorrow evening, whether
9 we want to run Saturday, or carry over to Monday. I
10 suppose it depends a little bit on how it hooks on
11 timing. I'm not adverse to holding a Saturday session,
12 if we can get everybody out and back to their other
13 business for the week. I'll kind of leave that up to
14 counsel; I just throw the thought out for the moment.
15 I suppose it's a little early to tell, and we will see
16 how we develop things today, as to whether we hold a
17 Saturday session, but I would like to finish up this
18 case this week, as far as the testimony is concerned,
19 although we're not going to finish the case this week,
20 if at all possible.

21 So, I guess we're down to Redirect for Mr.
22 Woodward, correct?

23 MR. GERMERAAD: Yes. Your Honor, I think Mr.
24 Rudolph talked to most counsel yesterday, and it was my
25 thought that, in light of Mr. Woodward's health, and he
had been on for three straight days, we would like, if
the Court please, to delay Redirect, perhaps, until

1 tomorrow afternoon. I did have about 40 questions, I
2 could probably strike several of those to keep it as
3 short as possible. I just told Mr. Woodward to go home
4 and relax and take today off, and I expect him just to
5 rest.

6 THE COURT: That's all right. I was quite con-
7 cerned about him yesterday. I really felt his physical
8 condition contributed to some of the problems we had
9 getting some of the answers. Unless there is serious
10 objection from some of the defense counsel, I think it's
11 the proper action to take.

12 MR. TRACY: No objection.

13 MR. REKOFKE: We have no objection.

14 THE COURT: Very good.

15 MR. GERMERAAD: In that case, your Honor, I would
16 like to call--

17 THE COURT: Excuse me. Mr. Rudolph?

18 MR. RUDOLPH: Oh, I was just going to ask, excuse
19 me, Mr. Germeraad, if the record could show, and possibly
20 we should ask Mr. Woodward, when he's here, exactly
21 what it is, he's been on medication, and I think the
22 record should show that, and I can't tell you what it is,
23 but I think it's proper that it be in the record, that
24 it show the status of that medication.

25 THE COURT: Perhaps when he's back on the stand,

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we could ask him.

MR. RUDOLPH: Yes.

MR. GERMERAAD: Your Honor, I would like to call, then, another witness for the United States. This is Mr. Richard J. Navarre.

THE COURT: Proceed.

RICHARD J. NAVARRE,

being first duly sworn, testified on behalf of the plaintiff as follows:

THE CLERK OF THE COURT: Would you please state your full name for the Court, spelling your last name?

A Richard J. Navarre, N-a-v-a-r-r-e.

THE CLERK OF THE COURT: Thank you.

DIRECT EXAMINATION

BY MR. GERMERAAD:

Q Mr. Navarre, would you give us your business address, please?

A 495 Tye Drive, Tumwater, Washington.

Q And would you spell Tye for the record?

A T-y-e-e.

Q Mr. Navarre, what is your present employment?

A I'm the assistant program manager of the Northwest Fisheries Program.

1 Q And the Northwest Fisheries Program is part of what
2 larger organization?

3 A It's the field office of the United States Fish &
4 Wildlife Service, under the Department of Interior.

5 Q And what are your responsibilities as Assistant
6 Program Manager of the Northwest Fisheries Program?

7 A Well, I provide technical assistance to Indian tribes,
8 conduct surveys, supervise the work of others, we work
9 on Indian reservations in the State of Washington,
10 military areas and national parks. We also have a sub-
11 office in Vancouver, Washington, that is working out
12 with Indian tribes in parts of Oregon and Idaho.

13 Q You said that you provide technical assistance; in what
14 areas do you provide technical assistance?

15 A Provide technical assistance in fisheries, management
16 and development.

17 Q In addition to the Spokane Indian Reservation, could
18 you name a few other federal areas under your jurisdic-
19 tion or supervision?

20 A Work on the Colville, Quinault, Makah, Lukki, Tulalip,
21 Muckleshoot, and several smaller reservations; military
22 areas which we work on is Fort Lewis, McChord Air Force
23 Base, key port naval stations, McCaw (phonetic) Air
24 Force Radar Station.

25 Q How about national parks?

1 A The Olympic and Mt. Rainier National Parks.

2 Q Would you please give us a short resume of your educa-
3 tional training?

4 A I attended Michigan State University from 1949 through
5 1956, with the exception of 21 months at which time I
6 was in the Army. There I received a Bachelor of
7 Science Degree in the field of Fisheries and Wildlife,
8 and I also attended graduate school, where I had about
9 50 quarter hours of graduate study in the same field.

10 Q You mentioned Fisheries and Wildlife; did you special-
11 ize in one or the other?

12 A I specialized in the Fishery option, although I took a
13 number of Wildlife courses with it.

14 Q After Michigan State, where were you first employed?

15 A That would be January 1st of 1957, I took a job with
16 the New Mexico State Department of Game & Fish, and
17 there I was stationed at Truth or Consequences, New
18 Mexico. I was assistant project leader there, and my
19 duties there were to conduct, make fishery surveys in
20 the Southwestern District of New Mexico.

21 Q Could you tell us what you mean by "basic fishery
22 survey"?

23 A At that time, we were inventorying the waters of the
24 State, trying to determine what species of fish were
25 present in the waters, determine what could be done to

1 improve those fisheries. We would write up reports on
2 the data we collected, making recommendations for
3 improving the fishery.

4 Q Were you later moved to another region of New Mexico?

5 A Yes, in October of 1957, I was transferred to Roslyn
6 (phonetic), New Mexico, where I was a project leader
7 of the Southeastern District of New Mexico. There I
8 conducted surveys similar to the types that we were
9 doing in the Southwestern part of the State. Some of
10 the other things I did, I evaluated a fish trap barrier
11 on the Pecos River, evaluated the effectiveness of it
12 in catching fish, and effectiveness of trapping and
13 removal of what fish would have on the game population
14 in that section, the fish population in that section of
15 the stream.

16 Q What kind of fish were you trying to catch in that trap?

17 A We were catching carp, suckers and shads, and removing
18 them from the stream, and by removing these competitor
19 species, we had hoped the game fish population would
20 increase.

21 Q The suckers, and carp, these species, sometimes, are
22 determined trash fish?

23 A Trash fish, or non-game fish.

24 Q Later, with the New Mexico Game & Fish Department, did
25 you take on another position?

1 A Yes, I believe that was in about the late summer or
2 early fall of 1960, I transferred to Santa Fe, New
3 Mexico, and became a Dingell-Johnson coordinator.

4 Q Could you tell the Court what a Dingell-Johnson coor-
5 dinator is?

6 A First, Dingell-Johnson is a Congressional Act which
7 places an excise tax on manufacturers of certain items
8 of sports fishing equipment. The tax so collected is
9 then distributed to the various state game officials
10 on a formula basis, and the states use matching money
11 on these projects so approved.

12 Q And what was your function, then, as the Dingell-
13 Johnson coordinator of the State of New Mexico?

14 A I wrote up the plans and specifications and estimates
15 of fishery management, development, or land acquisition
16 programs which the State wanted to accomplish, and I
17 would supervise these programs to completion.

18 Q In supervising these programs to completion, did you
19 supervise other employees, then, of the State
20 Department?

21 A Yes, all the management, biologists, were under the
22 program, and, of course, it was my job to review their
23 work and their completion reports.

24 Q Did you, in drawing up these plans, deal with some
25 broader aspects of the recreational use, other than the

1 straight fishery program?

2 A On government projects, of course, if we had proposals
3 for two dam sites, one in one location and one in
4 another, we would have to make evaluations on which
5 particular area would receive the most fishing use so
6 we could determine which one to build; you just have
7 so much money.

8 Q How long were you in Santa Fe as the Dingell-Johnson
9 coordinator and supervisor of the fishery management,
10 biologists, and fishery development program?

11 A I was there until March 15th of 1963.

12 Q Then where were you employed?

13 A I then was employed by the U. S. Fish & Wildlife
14 Service and station at Springerville, Arizona.

15 Q And what were your duties at Springerville, Arizona?

16 A In Springerville, I was working on Indian reservations
17 in Arizona. I probably spent eight percent of my time
18 working the San Carlos Apache Reservation, where I
19 worked with tribal personnel and conducted surveys on
20 the waters on the reservation, made management proposals,
21 made up stocking programs, rehabilitated waters and
22 established a viable sports fishery on that reservation.

23 Q What other federal areas, other than the San Carlos
24 Apache Reservation, did you do work for?

25 A There was one more, before completing what I did on

1 San Carlos, I might mention, I spent a considerable
2 amount of time there walking out drainages, and they
3 were mainly intermittent drainages, looking for dam
4 sites, and once we could locate a dam site, and the
5 engineers could tell us that, yes, this is a dam site,
6 and you could create a lake of so-many acres, and it
7 would be so deep, and we would make an evaluation as
8 to the numbers of people that would be attracted to this
9 area, to help the engineers evaluate if this is a fea-
10 sible, feasible project.

11 And the other areas, to your second question, I
12 did some work on the Pappigo Reservation, at Fort
13 McDowell, and the Salt River Reservation, and also on
14 Fort Wachuka Military Base.

15 Q You talked about how many people would be attracted to
16 various areas; was this attraction simply for fishing,
17 or a broader recreational use?

18 A Fishing is one, is the main attraction now. We find
19 more people will come fishing to an area if the qual-
20 ity of the fishery is maintained good. We will have
21 more people come to an area if there are adequate
22 campgrounds, good campgrounds. We find out if there is
23 no campgrounds, for example, we get mainly individual
24 fishermen. If there is good campgrounds, generally they
25 bring their families, and so we would get more people

1 into the area that way.

2 Q And this would contribute to the economics, then, of
3 the project?

4 A This would contribute to the economics of the project.

5 Q Where did you go next with the Fish & Wildlife Service?

6 A I was transferred to Phoenix, Arizona, and there I had
7 the same area and responsibility as I had in Springer-
8 ville.

9 Q The office was simply moved, then?

10 A The office was simply moved.

11 Q Later, what did you do with the Fish & Wildlife
12 Service, and where did you go?

13 A Later I was transferred to Tumwater, Washington.

14 Q And this was approximately when?

15 A This was the beginning of September of 1967. There
16 I was transferred, was a project leader, I was working,
17 providing technical assistance in managing and develop-
18 ing fishery resources on Indian reservations in
19 Western Washington, on the national parks, and on the
20 military areas, which I mentioned earlier.

21 Q Your present position is with the Northwest Fisheries
22 Program; could you tell us how this program came about?

23 A The Northwest Fisheries Program was established in the
24 spring of 1973. It was established primarily to pro-
25 vide assistance in the field of off-reservation treaty

1 Indian fishing rights, and provided a great deal of
2 information used in the United States v. Washington
3 court case involving Indian fishing rights. At the
4 same time, the project that I had was incorporated into
5 the Northwestern Fisheries Program. The area expanded
6 to include all of Washington, part of Idaho, and Oregon.
7 Q Going all the way back to the time of the New Mexico
8 Game Department, the time of the Fish & Wildlife Service
9 in Arizona, and since 1967 up here in the Northwest,
10 have you worked in the area of trout fisheries during
11 this period of time?
12 A Yes, I did. In fact, about 65 percent of the fishing
13 effort in New Mexico at that time was for trout, and
14 this is where the emphasis was, a great deal of the
15 emphasis was on trout. In Arizona, state-wide, trout
16 provided about 50 percent on the mandates of angling.
17 On the area I was working specifically, in the San
18 Carlos, trout provided about 90 percent of the angling.
19 Q How about up here in the Northwest, what type of fish--
20 A In the Northwest, with the tribes, it's primarily salmon,
21 and in the military areas and national parks, it's
22 primarily trout.
23 Q Mr. Navarre, do you belong to any professional societies?
24 A Yes, I belong to the American Fishery Society.
25 Q Have you authored any professional reports or papers?

1 A Yes, I authored a paper in the transaction of the
2 American Fishery Society. One was titled, I believe
3 this is the correct title, "Application and
4 Detoxification of Toxifene (phonetic) in Clayton Lake,
5 New Mexico". This concerns evaluating Toxifene as a
6 chemical for eradicating undesirable fish population.

7 Another article I authored was, "A New Stream
8 Habitat Improvement Device in New Mexico". This con-
9 cerns a description of the stream device we were using,
10 and the merits of it, the structure we called a "trash
11 catcher". They were installed in trout streams and
12 areas where we felt that additional pools were necessary.
13 As water flows over these structures, it digs pools
14 below them.

15 Q Pools are advantageous at some point in time for trout?

16 A In certain streams, and certain areas. Pools are, of
17 course, necessary in all streams for trout because they
18 do provide resting areas.

19 Q How about any other articles that you have authored?

20 A Well, with New Mexico Game & Fish, I have written
21 numerous articles in the monthly newspaper put out by
22 the New Mexico Fish & Game Department. These related
23 generally to trout fishing forecasts and predictions of
24 the various lakes and streams, our mystic trends, our
25 various project activities that were going on.

1 When the newspaper ceased being published in
2 New Mexico, the Department started putting out a
3 magazine, and I recall writing an article on the white
4 bass, which appeared in this magazine. This was just
5 concerning the introduction of white bass in several
6 of the State waters, and a little bit about fishing
7 for them.

8 Q Has your work or programs that you have worked on ever
9 been noted in publications by others?

10 A Yes, the program that we developed on the San Carlos
11 Reservation was written up by an author of outdoor
12 articles and appeared in a magazine entitled Outdoor
13 Life, which is a national publication. It was simply
14 about the process of developing this fishery and as
15 it related to some of the excitement of catching fish,
16 and this type of thing.

17 Q Did some of the programs that you worked on, or directed,
18 also appear in the Arizona Republic?

19 A There was quite a few articles that appeared in the
20 Arizona Republic, which is the major newspaper published
21 out of Phoenix, regarding individual waters on the San
22 Carlos and popular sports and fishing articles concerning
23 them.

24 Q Could you please tell us about how you came to do your
25 study of Chamokane Creek?

1 A Well, I was asked to do this study by our program
2 manager, Mr. Jim Heckman (phonetic). This was some-
3 where last spring, I think in April of '73, and he
4 said he had been contacted by the regional solicitor's
5 office that they needed a study done to Chamokane Creek
6 to determine if the amount of flow necessary to main-
7 tain a quality trout fishery in the stream.

8 Q What did you do first, in setting about your study?

9 A First I obtained the background information of what
10 was knowing on the stream from our regional office in
11 Portland, and also I believe I obtained some informa-
12 tion from the regional solicitor's office. Now, I had
13 found out that a biologist out of our Portland office
14 had conducted a study and wrote a short report in 1970.
15 This was slightly more than a one-page report, and it
16 didn't have very much detail in it. I also learned, in
17 the correspondence that was involved, that the Bureau
18 of Indian Affairs had requested from our regional office
19 assistance in running a study, and they received this
20 late in '71. Our regional office responded we didn't
21 have the funds or manpower to conduct the study, and a
22 letter from the Bureau of Indian Affairs also said, well,
23 they didn't have the money to conduct the study. It
24 wasn't until 1973, when the Northwest Fisheries Program
25 was formed, that funds and manpower did become

1 available.

2 Q And after gathering this background information, what
3 was the first step that you took in beginning your
4 study of Chamokane Creek?

5 A The first step, I came to Spokane and I went to see
6 Mr. Walter Woodward, who I knew was doing some studies
7 and had information on water flows, and such, on the
8 creek, and talked to him to find out what information
9 he might have that would be useful to me.

10 Q About what date was this?

11 A This was around July 13, '73.

12 Q Okay. And what did you then do, on July 13, 1973?

13 A Mr. Woodward wanted to go out and read his gauge on
14 Chamokane Creek gaging station, so he volunteered for
15 me to follow him out, and he would show me where the
16 creek was, and the gaging station, and so we did, we
17 first went to the Boardman Road crossing, went up the
18 creek to the gauge, gaging station, and to the falls,
19 and next, I believe, we went to Mr. Alex Sherwood's
20 home, the tribal chairman of the tribe, and he wasn't
21 there, so we proceeded on to the tribal office. At the
22 tribal office, I met individually other, or collectively,
23 several members of the Spokane Tribe, including Mr.
24 Sherwood and Mr. McCoy, Mr. Galbraith, Mr. Wynn (pho-
25 netic); also that day, I talked to the superintendent,

1 Mr. Jim Stevens. I informed these tribal people that
2 the Northwest Fisheries Program was recently estab-
3 lished, and that we did now at this time have personnel
4 and funds to assist their tribe in the development and
5 management of fisheries on the reservation, if they
6 so desired. I also, at that time, told them that we
7 had a request from the regional solicitor to do this
8 study on Chamokane Creek, and I inquired of the tribe
9 that it was indeed true that they did want this study
10 done; they said, yes, they would like the study done,
11 so we proceeded on with the study.

12 Q Getting back to the beginning of the day of July 13,
13 you stated that you first came upon the creek at about
14 Boardman Road crossing. Could you now go into detail
15 concerning your findings--

16 MR. GERMERAAD: And your Honor, I'm going to be
17 asking him about different visits and the work that he
18 did each time--

19 Q (By Mr. Germeraad) --so could you start at July 13,
20 at Boardman Road crossing, and tell what you found, or,
21 you know, progressing through how you did your study?

22 A I think one of the first things, of course, I was con-
23 cerned about, was the flow of the stream. I had under-
24 stood that the minimum flows that might be expected
25 during the summer would range between 20 CFS and 30 CFS,

1 and I was concerned at the decrease in this amount of
2 flow would leave exposed areas of the stream, and
3 essentially eliminate these areas from that stream's
4 production; that as part of the stream is exposed, the
5 aquatic insects on which the fish feed could no longer
6 live in these sections, so it would reduce the total
7 food supply. Just looking at the stream bed, I could
8 see that this area of, by reducing the flow from 30 to
9 20 would not be very large. I probably estimate this
10 on somewhere, maybe, in the neighborhood of a five per-
11 cent reduction.

12 One of the other things I became concerned about
13 immediately is when I was at the Boardman Road crossing,
14 at 11:00 a.m., the temperature of the water was already
15 59 degrees.

16 Q How did you happen to take the temperature, I mean, is
17 temperature somehow important?

18 A Temperature is very important to a species of fish like
19 trout, because they're definitely a cold water fish.
20 One of the things, too, that I noticed, is the topo-
21 graphy of the area, the hillsides going up from the
22 stream, and this particular valley was oriented in a
23 northeast-to-southwesterly direction. Now, as such,
24 the stream is subject to the maximum amount of flow
25 irradiation during the day. For example, if it had been

1 oriented in an east-to-west direction, we would have
2 received some stream shading from the topography, the
3 hillside, because of the angle of the sun, on the
4 horizon, the hillsides of the south of the stream would
5 have cast shadows at least part of the day over the
6 surface water and prevent heating from direct solar
7 radiation during those periods.

8 Q Are there not trees alongside of the creek?

9 A There are trees, and the trees, of course, do offer
10 some shade.

11 Q From the Boardman Road crossing, where did you go next?

12 A Well, since I was following Mr. Woodward, I also
13 happened to have another biologist with me in my car,
14 they drove up the creek to the gauge, and I walked the
15 stream, Boardman Road to the gaging station, and made
16 observations along the way.

17 Q Did you happen to notice any wildlife while you were
18 walking the banks of the stream?

19 A Yes, I made notes of the wildlife that I did see between
20 the Boardman Road crossing and the gaging station. I
21 saw eight grouse, a muskrat, a white-tailed deer, two
22 mallards, a maganzer (phonetic), and also noted beaver
23 signs.

24 Q You were referring to a little paper book in front of
25 you. Would you tell the Court what that is?

1 A This is my field notebook, in which I kept my field
2 notes.

3 Q Before we go any farther, I would like to ask, did you
4 eventually come up with a final report on your entire
5 study?

6 A Yes, I did.

7 Q I would like to have you-- It's in the brown envelope--
8 If the bailiff could hand you the red portion?

9 THE CLERK OF THE COURT: Do you want it marked?

10 MR. GERMERAAD: What?

11 THE CLERK OF THE COURT: Do you want it marked?

12 MR. GERMERAAD: Just give him the red. Yes, I'd
13 like it marked as Plaintiff's Exhibit--

14 THE CLERK OF THE COURT: 64.

15 MR. GERMERAAD: 64?

16 THE CLERK OF THE COURT: Yes.

17 MR. GERMERAAD: Okay.

18 (Thereupon, Plaintiff's Exhibit 64 was marked for
19 identification.)

20 Q (By Mr. Germeraad) Mr. Navarre, the bailiff has just
21 handed you Plaintiff's Exhibit 64; would you please
22 examine that and tell us if that is a copy of your
23 final report?

24 A Yes.

25 Q Thank you. I will now go back to your walking up to,

1 from Boardman Road crossing, to the gaging station.
2 Did you make any additional observations at the gaging
3 station?
4 A Initial observations-- Additional observations, uh,
5 I think Mr. Woodward took the gauge reading. I also,
6 of course, picked up quite a few rocks in the bed of the
7 stream, to judge what the abundance of food forms, or
8 aquatic insects were, and I found the aquatic insects
9 quite abundant on these stones.
10 Q Did you make any measurements or anything at the gaging
11 station on that day? If you want, you can refer to the
12 field notes.
13 A Not on that day, the 13th, no.
14 Q Okay. When did you next visit the Chamokane Creek?
15 A My next visit was the next week, on the 17th, and the
16 reason I came back as soon as possible was to establish
17 thermograph stations to record temperatures, since I was
18 concerned about the water temperature, and on that day,
19 I installed a continuous recording thermograph below
20 the Boardman Road bridge. This was set out at 3:45
21 p.m.
22 Q Did you make any measurements of the air, or water,
23 temperature, about that same time that day?
24 A Pardon me, I have a correction; I arrived at the stream
25 at 3:45 p.m.; I put the thermograph in at 4:00 p.m. I

1 measured the water temperature of the stream at that
2 place where I put the thermograph in, it was 75 degrees
3 farenheit.

4 Q Did you also take the air temperature at that time?

5 A I took the air temperature at that time, at 4:00 p.m.
6 It was 94, but I took the air temperature with this
7 pocket thermometer, which is actually designed to
8 measure water temperature. Now, water temperature, you
9 adjust water temperature quite rapidly, in a few
10 minutes, but air temperature, you would have to leave
11 the thermometer out in them a much longer time to record
12 the maximum high, so 94, it may have been a little higher
13 than 94, it may have read 95 or 96.

14 Q How long did you set out the thermometer to the air?

15 A As I recall, about five minutes.

16 Q Did you visit any other locations on the stream--

17 A Well,--

18 Q --on the 17th?

19 A Well, at, right at the Boardman Road bridge, too, I
20 took the water temperature, and this was at 4:30 p.m.,
21 this was slightly above where the thermograph station
22 was, but it also was 75 degrees at that point. I also
23 had noticed at this time that I walked the stream
24 section from the Boardman Road bridge down to near the
25 mouth of the stream and where there is a house on the,

1 house on the left bank, I then went upstream to the
2 gaging station, and there I recorded the water tempera-
3 ture, and it was 73 degrees.

4 Q Could you also tell us what the flow upstream was at
5 that point in time?

6 A From the USGS records, I believe that flow was 22 CFS
7 that day.

8 Q Could you tell us what you did on, is there anything
9 else you want to tell me about July 17th before I go
10 to July 18th?

11 A I see no further notes here.

12 Q And what did you do on July 18th?

13 A July 18th, I went back in the morning, the first thing
14 I did was go back to the station where I'd set out the
15 thermograph the day before, to check to see if it was
16 working properly. From there, I also measured the
17 water temperature at that time, which was 57 degrees,
18 this was at 9:20 a.m., then I went up to the area of
19 the creek just below its confluence with Galbraith
20 Springs, and I installed another thermograph station
21 at that point.

22 Q Is there a map in your report that indicates the loca-
23 tions of these thermograph reading stations in relation-
24 ship to the creek?

25 A Yes, there is. On Page 4, Figure 2, I have a

1 diagramatic map showing sampling stations. At the
2 lower end, what I called Station 3, this was slightly
3 below the Boardman Road bridge, the Boardman Road is
4 shown on the map. The location of the gaging station,
5 the falls, and another station, Station 2, which I
6 established for other purposes, and Station 1, where
7 I established the thermograph on the 16th, is shown.

8 MR. GERMERAAD: Could I ask the bailiff--

9 Q (By Mr. Germeraad) Do you have an extra copy of that
10 report?

11 A Yes, I do.

12 MR. GERMERAAD: If I can ask the bailiff to hand
13 it to the Judge, maybe the Judge would find it easier
14 to follow along. I may be having Mr. Navarre making
15 various references to that exhibit, as it might help.

16 Q (By Mr. Germeraad) During the rest of July 18th, and
17 then into the 19th, what did you do at the Chamokane
18 Creek?

19 A I walked sections of the stream observing stream pool
20 riffle areas, such as that, and became acquainted with
21 access roads into various points of the stream. I did
22 make some more temperature recordings on the 19th.

23 Q Could you tell us what you mean by "pool" and "riffle"?

24 A Well, the pools, primarily, are where the trout get
25 out of the current to establish their areas, which

1 they defend against other fish. The riffles are the
2 primary areas that produce the food, or aquatic insects.
3 As the aquatic insects become dislodged from riffle
4 areas and drift downstream, the trout, being a drift
5 feeder, nabs them on the way down.

6 Q Could you describe the physical characteristics? What
7 does a riffle area look like?

8 A A riffle area is a broad, shallow area where the water
9 goes running faster, and the pool area is, of course,
10 deeper and the water is more quiet.

11 Q What was the next part of your investigation?

12 A This covered August 8th, when I made another trip over.
13 This time, I had three assistants, and we sampled the
14 fish population, and took samples of the bottom fauna.

15 Q Could you please describe for us how you did your fish
16 sampling?

17 A On the fish sampling, we used electro-fishing techniques.
18 We had a small gasoline motor, small motor, which turns
19 a generator, and the current from there goes through a
20 voltage regulator, where we could regulate the voltage
21 from zero to 700 volts. This is all mounted on a back
22 pack frame. Now, when we first, after coming, feeding
23 through the voltage regulator, the current goes out
24 through electrodes, we place two electrodes in the
25 water, the current passes through the water to the

1 other electrode, and fish that are caught in between
2 receive an electrical shock, they generally turn on
3 their sides, stiffen out, and we net them, and we can
4 identify them, or measure them, or do whatever we want,
5 and the trout that we captured in Chamokane Creek, we
6 returned these back to the stream alive. They recover
7 in just a couple of minutes and swim off.

8 Q Are the results of the survey found in a particular
9 place in your report?

10 A Yes. On Page 21, Table 6. Now, the first place we
11 went to was at Galbraith Springs, because that was the
12 end of the road, and we wanted to go to Station 1,
13 which is another quarter mile walk, or so, maybe a
14 little longer, and when we got to Galbraith Springs,
15 we wanted to test the equipment before taking it to
16 Station 1, so we tested it there at the, below the
17 springs, right below where Mr. Woodward had his weir,
18 and there we found some brook trout. Found the
19 equipment was working okay, so we took it down to
20 Station 1.

21 Q You said that you found brook trout; did you enumerate
22 them?

23 A No, we made no attempt to enumerate them.

24 Q Just the testing?

25 A This was just a testing.

1 Q Okay.

2 A Then we went down to Station 1, and there we sampled
3 an area of the stream. This particular section was
4 mainly a shallow riffle-type section, pools were few,
5 there was a couple of pools at the upper end there,
6 and we got four brown trout, in the three-inch range,
7 and one around nine inches. We got quite a few
8 sculpins. We weren't really interested in the scul-
9 pins. The whole purpose of the shocking was the,
10 to determine the locations that we find trout in the
11 various sections of the stream, and to make a relative
12 comparison as to the quantity. This in no means
13 indicates the exact number of the fish in this parti-
14 cular stream, but just the relative quantity.

15 Q Did you find a rainbow trout at that location?

16 A We found a rainbow trout, and we also observed two
17 other trout that we turned over but failed to net.
18 There was a lot of sculpins we had let just go by and
19 escape the capture. After that station, we went down
20 to what I call Station 2, which I believe is out four-
21 tenths of a mile above Chamokane Creek Falls. There
22 we shot another section of the stream. There were
23 brown trout there, too, there was four brown trout,
24 ranged in size from seven and a-half to fifteen and a-
25 half inches. There was also sculpins present.

1 Q What is a sculpin, that's a new one on me.

2 A Many of the people call them bullheads, but they're
3 really not a true bullhead, or a member of the catfish
4 family; they belong to another family of fish. They're
5 not a sport fish.

6 At this Station 2, we had deeper, more numerous
7 pools, or the pools covered a larger area of the stream
8 and that's probably the reason we found, one of the
9 reasons we found bigger fish there.

10 Q What would be the pool-and-riffle ratio at Station 2?

11 A I believe it was about 50-50, about 50 percent of the
12 area was covered by pools, and 50 percent by riffles.

13 Q Did you take the temperature of the water at Station 2
14 on that date?

15 A Station 2, the 8th of August, was 62 degrees Fahrenheit
16 at 1:45 p.m.

17 Q Could you go back, and did you also take the tempera-
18 ture of the water at Station 1 that day?

19 A Yes. At Station 1-- At least I thought I did. Yes,
20 it was 59 degrees, and this was at 11:30 a.m.

21 Q Okay, could you now talk about the sampling that you
22 did at Station 3?

23 A Station 3, we sampled there and we found one brown
24 trout, found suckers and sculpins. While my crew was
25 shocking this section, I was taking a bottom sample,

1 and the first pass-through, they did not turn up any
2 trout. By the time I had finished taking my bottom
3 samples, I said, let's go through it again, so we went
4 through it again and we picked up one brown trout, so
5 I decided, well, we'll try it one more time, and we
6 went through it again, and we didn't find any additional
7 trout, and from there we were going back up to our
8 vehicles, up to Boardman Road, so we continued shocking
9 upstream, trying to find anymore trout, and we probably
10 shocked another 150 feet or so, but we didn't turn any
11 other trout. We did turn up more sculpins and suckers,
12 and so forth.

13 Q Did you take the temperature of the water at Station 3
14 on that date?

15 A At Station 3, 88, 4:30 p.m. It was 70, the lower
16 thermograph station, 3:15 p.m., 70 degrees Fahrenheit.

17 Q What is the physical characteristic of Station 3; what
18 I mean, is there good pool-and-riffle ratios in that
19 location?

20 A Yes, it had probably the deepest pool of any section.
21 I'm sure they were deepest, there was more area covered
22 by pools in that section. Probably maybe up to 70
23 percent, as I recall, were pool areas.

24 Q Why wouldn't there be more trout in that location, if
25 the physical characteristics of the pool and riffle were

1 as good as they were?

2 A Well, after analyzing all the data, the only thing I
3 could conclude, the temperatures were just becoming
4 too warm in this lower end of the creek.

5 Q On this trip, did you remove the continuous thermograph
6 readings that you had at your various stations?

7 A I changed the charts.

8 Q Were there any difficulties with the thermographs?

9 A Yes, these were new thermographs we had purchased when
10 our new program came into being and we had funds for
11 equipment. We had used this type of thermograph before,
12 and it was, they worked quite well, so we ordered some
13 more new ones, and these were some of the new ones, and
14 I had difficulties with the charts' binding up in the
15 thermographs. On one occasion, the charts ripped
16 apart, on another occasion, a roll of charts would jam
17 up, but this in no means affected the temperature read-
18 ing, we had a number of good days, and this is why there
19 is a result in my table here, it shows some gaps in the
20 data.

21 Q And the gaps in the data which you have described, is
22 that in Table 1, which I believe begins at Page 9?

23 A Table 9, yes-- I mean, Table 1 on Page 9, yes, it
24 shows the gaps.

25 Q You mentioned that you felt that the temperature had

1 become excessive and that's why the trout were not
2 found. When temperatures do become excessive, in your
3 professional opinion, where do the fish go then?
4 A In my opinion, trout go downstream.
5 Q Why downstream?
6 A Well, a trout is a cold-blooded animal, and as such,
7 his body temperature is the same, or nearly the same,
8 as the water temperature. Now, as the water tempera-
9 tures increase, the metabolic rate of that fish increases,
10 his oxygen consumption goes up, his respiratory func-
11 tions go up, and produces more carbon dioxide in his
12 blood system, which has to be rid of, his heartbeat is
13 faster, his blood circulates faster, his enzyme digest-
14 ing actions increase, so as the temperatures increase,
15 up to a point, this is fine, I mean, the fish is able
16 to cope with it. In fact, they do best up in a range
17 of 50 to 60 degrees, they do real well. Now, when the
18 temperature continues to rise and gets up to a temperature
19 of 66 degrees Fahrenheit, they cease to feed, and so
20 they draw the limits, they're continually becoming more
21 stressed because of temperature increase, and at a
22 point this stress is so great they can't maintain their
23 positions in the stream.
24 Q What do you mean by "maintain their positions in the
25 stream"?

1 A Well, a trout is a territorial-type fish, he selects
2 a territory which he will defend, and he will try to
3 maintain himself in that territory. Now, the bigger
4 fish, of course, have the better territories, because
5 they're the big boys, and they kick other guys out, and
6 so they're in a deeper, more quiet portion of the
7 stream. The little guys, they have to get off into,
8 off along the sides, they're fighting more current all
9 the time, so these little guys are already stressed a
10 little more than the big guys because they're fighting
11 this current, and they will be the first ones to be
12 affected by increased stress. The stress becomes so
13 great they cannot fight this current to maintain their
14 position, so they would generally drift downstream.
15 This, they don't all of a sudden make a mad dash down
16 the stream, but as they become weakened, they drift
17 down and might end up at the next pool, they might try
18 to get in a place where a big guy is, and he's going to
19 chase them out and he's going to get over in a current
20 again, and he might maintain himself in that pool for
21 a day or two, and the next time the temperatures get
22 up there high again, he's again under stress, so gradu-
23 ally, there is a slow drifting down of these little fish,
24 so there is a net loss of the little fish first. Now,
25 as the temperature gets higher, even the big guys will

1 become stressed and they would eventually end up down-
2 stream. They would not stay around until the temperature
3 hit the maximum tolerable level where the fish would
4 automatically die, because they are already in a
5 weakened condition, before dying, so the current
6 carries them down.

7 So, these movements are subtle, they're not
8 noticed, but the way we notice them is when we go into
9 a stream in the early parts of the year, the lower sec-
10 tions of trout streams, we generally find more fish,
11 we will find various sizes of fish, and then later in
12 the summer, and late summer, we go in and sample these
13 fish populations again, we will find fewer fish, and
14 the fish we do find will be generally larger fish.

15 Q If the fish, then, let's say, in Chamokane Creek, and
16 the water becomes excessive, would they move down into
17 the Spokane River?

18 A Would you repeat that question, please?

19 Q Okay. If the temperature does increase to, into your
20 stress level, and the trout in Chamokane Creek would
21 move downstream, they would move downstream into the
22 Spokane River, is that correct?

23 A I believe they would end up down in the Spokane River,
24 the little fish first, the ones under the most stress,
25 would end up down there, and when they get down into

1 the Spokane River, they are in another set of circum-
2 stances, they have to compete with the fish that's in
3 there, I believe there's squawfish in there, it's a
4 very predatory species that feeds upon these fish,
5 these fish may continue moving on downstream, if they're
6 in this weakened condition, they would be more subject
7 to predation, and they would be, and they would also
8 be in a weakened condition, they're more subject to
9 disease, the virulency of the disease goes up quite
10 rapidly when the temperature is above 60 degrees
11 Fahrenheit, and the fish are more susceptible to dis-
12 ease at this time.

13 Q So if the temperature goes up, basically, you lose a
14 portion of your fish habitat?

15 A We lose a portion, this can be variable, if they go
16 up high enough, we can lose the entire, all the trout
17 out of that section of the stream, but that section of
18 the stream is lost for that period of the year at,
19 before producing fish.

20 Q Would it be possible for the fish to come back into
21 the stream if they had once gone down into the
22 Spokane?

23 A I doubt this very much. I don't think they would ever
24 get back to the stream. I think the predators would
25 surely get them.

1 Q Why wouldn't the fish go upstream?

2 A The fish is under stress, he just can't physically
3 muster the energy to fight the currents in the riffle
4 areas.

5 Q In addition to this weakened condition, if we look at
6 the Chamokane Creek specifically, are there other
7 barriers that would prevent upstream migration?

8 A Certainly, the falls. If they could go upstream, they
9 could only go to the falls.

10 MR. GERMERAAD: Your Honor, this would be a good,
11 if we could maybe just take, perhaps, a five-minute
12 break?

13 THE COURT: All right, the court will be in recess
14 for about five minutes.

15 (A short recess taken at this
16 time.)

17 Q (By Mr. Germeraad) Mr. Navarre, you have covered,
18 what I might term anyway, the "short-term effect" of
19 high water temperatures on trout. What would be the
20 long-term effect?

21 A Well, eventually, in the winter or spring, small fish
22 from upstream areas seeking out new territories will
23 migrate to lower sections of the stream, seeking new
24 habitats.

25 Q So, there is some natural regeneration, then?

1 A There is natural recruitment from upstream areas. I
2 think the best example I can give of this is on a
3 stream that I worked in Arizona on the 108-mile section
4 of the stream which formed the boundary between the
5 White Mountain Apache Reservation and the San Carlos
6 Apache Reservation. Now, in the summertime, only the
7 upper 10 or 20 miles of this stream, the temperatures
8 remained suitable for trout. From there on down, in
9 this vast area of 80 miles or so, the trout would dis-
10 appear. We'll find them there in the springtime, and
11 they were coming out of the lakes and they were spill-
12 ing over in the winter, and possibly from some of the
13 tributary streams, lakes and ponds on both reservations,
14 and streams coming off the White Mountain Reservation.
15 So, we'd find these in fairly good numbers through this
16 60- to 70- to 80-mile section. In the summertime they'd
17 be gone, and the next spring, there's fish there again.

18 Q Would they come back in the same numbers?

19 A Well, I got no idea. I would suppose the recruitment,
20 upstream recruitment, might be quite variable.

21 Q We've dealt a little bit on temperatures, and I'd now
22 like to get into a little more definite. What tempera-
23 tures of water do trout need?

24 A Well, they have a range of temperature which we call the
25 "limits of tolerance". Its limits of tolerance range

1 from 32 degrees to about 76, 77 degrees Fahrenheit.
2 Now, beyond that range, they cannot live. Now, within
3 this limit of tolerance, there's a range which we call
4 the "optimum range", where the fish grow best, they do
5 well, and this is from 50 to 60 degrees.

6 Q Fifty?

7 A Fifty to sixty degrees.

8 Q You said that in the 50- to 60-degree optimum, they do
9 well. What do you mean by "they do well"?

10 A Well, I'm talking about that their food intake is
11 greater than what they're utilizing to sustain them-
12 selves, so they're putting on growth and weight.

13 Q You mentioned the figure 66 degrees. How is this rele-
14 vant, again?

15 A Well, 66 degrees is a figure given for when fish seek
16 feeding, or trout seek feeding, and I believe the trout
17 seeks feeding when they're becoming stressed and they
18 just don't have the stamina to dart out in the current
19 and catch their food supply.

20 Q Is there a maximum temperature for well-being, in your
21 opinion, for a trout fish area?

22 A Yes. The temperature, one that I recorded in a book,
23 is 68 degrees, and I've taken this from a water-quality
24 criteria, a report put out by the National Technical
25 Advisory Committee of the Secretary of Interior, which

1 lists 68 degrees for growth of salmonids, and one that
2 I really believe in.

3 Q I think the Court Reporter wanted the word salmonid.

4 A Trout belongs to the Family Salmonid.

5 Q That's spelled s-a-l-m-o-n-i-d-s. And, does that appear
6 at Table 2, Page 13, of your report?

7 A That's correct.

8 Q You said that 76 to 77 degrees Fahrenheit was the upper
9 limit of tolerance, did you?

10 A This is the upper limit of tolerance, but in order for
11 fish to withstand these temperatures, they have to be
12 adjusted, the temperature has to be adjusted slowly.
13 They cannot simply just be dumped, say, from 50-degree
14 water into 76-degree water and still live. They would
15 die then. But, if the temperature is increased gradu-
16 ally, they can tolerate temperatures up to this.

17 Q If it got higher then, I assume they would die?

18 A They would die, but before they would die, they would
19 be in such a stress that they would not be able to
20 maintain themselves in this stream, and they would
21 simply drift on down.

22 Q I think you might have mentioned this earlier, but while
23 we're dwelling on the temperature factor, is disease
24 somehow related to temperature, did you say a little
25 earlier?

1 A I said the virulity of the disease increases rapidly
2 in fish as the temperature increases from 60 on up, and
3 at the same time, and it's also probably related to the
4 stress that the fish is undergoing, is the reason why
5 this disease increases so rapidly.

6 Q In your study of Chamokane Creek, did you also do a
7 study of the food source for the fish population?

8 A Yes, I did. It's on Page 20, Table 5. I took two
9 bottom samples at each of three stations.

10 Q Could you tell us a little bit about this sampling
11 technique; describe it for the Court, please?

12 A Well, we use a device known as a "server stream sampler",
13 and a server stream sampler has a frame which is one
14 square foot in size, and this frame sits on the bottom
15 of the stream. Up vertically from this frams is another
16 frame which contains a fine mesh net which then drifts
17 in the current, tails out in back of the sampler. Now,
18 the sample, the aquatic invertebrate on which the fish
19 feed, we pick up each individual rock, and with a little
20 scrub brush, we hold this in front of the net in the
21 current and scrape off all the aquatic insects, and they
22 drift back into the net. After we've done this to each
23 individual rock, we then stir up the fine material
24 within that square frame, so that the other small
25 organisms would drift back into the net. Then, we

1 remove these from the net, and I place these in
2 bottles of isopropyl alcohol and take them back to my
3 office, where I enumerated them, and I determined their
4 volume through liquid displacement.

5 Q You talked about picking up the rocks. These rocks
6 that you talked about picking up and scraping are within
7 the one square foot on the bottom?

8 A Just within the one square foot.

9 Q In reference to Table 5 on Page 20 of your report, I
10 notice that Sample No. 1, No. 724, insects or whatever,
11 with a volume of .8 ccs, and yet, Sample 2 has only
12 270, as far as count goes, but 2.0 cubic centimeters.
13 Would you explain the difference for us?

14 A This would indicate that they were taken in different
15 sections of the stream, that maybe one had more rubble
16 and one had more fine material, but primarily it's
17 the size of the organism. The 724 were primarily of
18 the Order Diptera, which is your flies, your gnats, or
19 the larvae form of these, mosquitos and that type of
20 thing. The 270 were of the larger aquatic insects, of
21 the Order Trichoptera and Plechoptera and your stony
22 fly and hedis (phonetic) fly, and, of course, these
23 displace more volume.

24 Q Thank you. What are your overall conclusions about the
25 food source in the Chamokane Creek for trout?

1 A It appears quite good. In fact, when you get up to a
2 volume of two ccs, it indicates a good supply of food
3 organisms. Relatively, there seemed to be a good food
4 supply in every location I sampled.

5 Q The food source that you're measuring comes off the
6 bottom, and, I believe, earlier, you made certain
7 statements about the surface area of the stream; the
8 surface area of the stream related to food production?

9 A Yes, it is. The smaller the area covered by water, the
10 smaller the food production is going to be.

11 Q Did you also study the water chemistry of Chamokane
12 Creek?

13 A Yes, I did.

14 Q When did you do this study?

15 A This was on September 6, 1973.

16 Q And is there someplace in the report that it talks about
17 your chemical study?

18 A It's on Page 19, Table 4, gives the results of the study.

19 Q Could you tell us how you did this study, and, then,
20 the conclusions that you draw from your findings?

21 A I took samples of the water and analyzed the samples
22 immediately after taking them. The dissolved oxygen
23 levels were real good, probably at or near saturation;
24 the pH hydrogen-ion concentration was within the area
25 that indicates good for fish production; your phenol-

1 phthalein alkalinity, which is the measure of your
2 hydroxide and carbonates, was void; your methyl orange
3 alkalinity is attributed to the bicarbonates in the
4 stream. You see, the pH is more or less the degree
5 of whether the stream has or alkaline, and
6 its alkalinity tells the quantity of substance that's
7 making it so.

8 Q Was there anything in your chemical analysis that
9 indicated, in any way, that the water quality was not
10 suitable for a trout feeded?

11 A None whatsoever; it was very good.

12 Q Earlier you mentioned that the stream absorbed solar
13 radiation. Is there a relationship between the water
14 temperature of the stream and the amount of flow in
15 the Lower Chamokane?

16 A I believe there is. I believe, the more water from the
17 springs that are coming down, more cool water coming
18 down, is going to take, increase, take a longer time to
19 heat up. A larger volume does heat up the smaller
20 volume.

21 Q What is the temperature of the water source in the
22 spring?

23 A Forty-seven degrees.

24 Q Did you, in your report, plot any relationship between
25 temperature and stream flow?

1 A Yes, I did. I plotted the differences, beginning on
2 Page 7, Figure 3. Now, the air temperatures were
3 taken at the Spokane Airport, which I plotted, because
4 they are taken hourly, and we can create a curve out
5 of it. It was the nearest point we could use. There
6 is a curve showing the diurnal variation of the
7 temperature at the upper station and a curve showing
8 the variation at the lower station.

9 Q Could you also turn to Page 18 and tell us about Figure
10 6?

11 A Figure 6. This is a curve where I plotted the maximum
12 air temperature--

13 Q Air temperature or water?

14 A Pardon me, the maximum water temperature at the lower
15 thermograph station.

16 Q This is by Boardman Road crossing?

17 A Boardman Road crossing, and I plotted the average
18 daily flow from the USGS table, which appears on Page
19 15, Table 3. Now, this graph shows me that when the
20 temperature was up, the flow was down, and when I had
21 low temperatures, there were higher flows. So, this
22 indicates an inverse relationship between flow and
23 temperature.

24 Q What would we have to do to have a good trout fishery
25 in the Lower Chamokane?

1 A I believe we need more cool water emanating from the
2 springs.

3 Q And what temperature do you set as an upper limit for
4 the water of the Lower Chamokane?

5 A I believe it should go no higher than 68 degrees.

6 Q You said that we must increase the stream flow. What
7 stream flow, then, is necessary for the fish to have
8 this adequate habitat of water no higher than 68 degrees?

9 A I believe we need 30 CFS.

10 MR. TORVE: I'm going to object to that, your
11 Honor. I think that is a conclusion that is not
12 supported by any studies he has made so far. Any con-
13 clusion that it needs increased water is purely a
14 supposition on his part.

15 MR. REKOFKE: I join in the objection. I don't
16 think there is any qualifications here today, or any
17 testimony, qualifying him on that ultimate conclusion.

18 MR. GERMERAAD: Your Honor, I would say that the
19 years of experience, the training up until 1956, and
20 work with trout since 1956 certainly entitles Mr.
21 Navarre to draw this conclusion. And, what I would like
22 to point out to your Honor, is I would now be prepared
23 to take him through on how he came to this conclusion.

24 THE COURT: The objection will be overruled.

25 Q (By Mr. Germeraad) Mr. Navarre, could you please tell

1 us how you arrived at your conclusion that 30 CFS
2 would be necessary, then, to have a good trout habitat
3 in the Lower Chamokane?

4 A The way I came to this conclusion was that I took my
5 maximum water temperature in the lower creek, which was
6 75 degrees. This was on, I believe, the 17th of July.
7 Also on the 17th of July, we had a flow of 22 CFS.
8 Now, between the springs, which was at 47 degrees, and
9 the lower station, the stream water heated 28 degrees.
10 Now, if we were going to hold the water temperature at
11 68, we would have to have had seven degrees less heat-
12 ing, or seven to eight, or one-quarter less heating
13 degrees in that lower section of the stream. Now, I
14 believe, to get that lower reading, we would have to
15 increase the flow by one-quarter. Now, my calculations,
16 one-quarter times 22 gives me about five and a-half CFS
17 additional.

18 Q And this takes you to what level, then?

19 A Well, it would be 22 plus five and a-half, twenty-seven
20 and a-half. Now, we also have to take into considera-
21 tion that if we added one-quarter more water to the
22 stream, that is going to widen out a little bit. The
23 water will be deeper, but the water will be widened,
24 and it will have a little more surface area subject to
25 solar radiation, and adding a little more temperature,

1 then, if it's maintained right in the same wooded area.
2 And, we also have to make allowances for days when the
3 air temperatures become much higher, where if we had a
4 series of hot days where the stream didn't have such
5 time to cool down at night, and this is where I allowed
6 another two and a-half CFS to take care of these pro-
7 blems.

8 Q What was the maximum air temperature that you had on
9 July 17th?

10 A On Page 17, Figure 5, is a comparison of maximum daily
11 air temperature data at the Spokane Airport. Now, on
12 the 17th, it appears from this that the air temperature
13 reached about 91. Whereas, in the historical high,
14 during the periods of 1881 to 1973, it appears to be
15 about 103.

16 Q Before you go on, these temperatures on Figure 5 are
17 taken at the Spokane Airport, is that correct?

18 A That is correct.

19 Q You said this is maybe 91 or 92 degrees at Spokane, but
20 you said, did you not, there was a different temperature
21 at--

22 A The temperature I had recorded on that date at the stream
23 site with my pocket thermometer, I previously stated was
24 94 degrees and that it was probably a little higher than
25 94 degrees.

1 Q Looking at that same Figure 5 on Page 17, and, now,
2 directing your attention to the 26th of July, what is
3 the historical maximum temperature of the 26th of July
4 of Spokane?

5 A I believe 108 degrees.

6 Q You mentioned that the water might not, if you had a
7 succession of warm days, the water might not cool down
8 at night. Does the temperature of the water seek to
9 arrive at the same temperature as the air?

10 A It's always trying to seek the air, the mean air tem-
11 perature, but water, being more dense, it heats and
12 cools slower; there is less temperature variation of
13 water. The stream bed heats up with the water as the
14 water heats up, and it also heats the stream bed by
15 conduction. So, the stream bed has to cool off also.
16 These are reasons that the water heats and cools more
17 slowly than air.

18 Q If you also had warm nights when the temperature did
19 not drop, you would have a higher mean and you might
20 not, then, have any cool-off from day to day?

21 A This is correct. You'd be starting out the next morn-
22 ing with water in your stream that is higher.

23 Q Is there some type of example that you could tell the
24 Court that illustrates the principle of increasing the
25 amount of cold water, or the amount of flow of water,

1 to achieve a lower temperature, then?

2 A Well, we took two pans, each having a surface area of
3 one foot, and we had these pans, the sides of them
4 insulated, and the bottoms of the pans insulated, so
5 that the only way heat could be gained or lost was
6 through the one-square-foot surface area. We poured
7 three-quarters of a gallon of water in one pan and one
8 gallon into another. The only difference now in the
9 pans are the depths of the water.

10 Q Also the quantity of the water.

11 A And the quantity of the water. Now, the pan with the
12 one gallon of water is going to take one-quarter more
13 calories of energy to heat that up to any given
14 temperature, or if they're exposed to the same amount
15 of calories of heat absorption or conduction, it would
16 take one-quarter longer for the water, the one gallon
17 of water to heat up than the three-quarters of a
18 gallon of water to heat up.

19 Q Would it actually be, because if you have three-
20 quarters and four-quarters, would it actually be a
21 one-third more increase than the smaller one; or,
22 going the other way, the smaller one takes one-quarter
23 less, but the larger one would take one-third more?
24 Wouldn't that be the way the fractions would work?

25 MR. REKOFKE: He's testifying. I object to counsel

1 leading the witness.

2 THE COURT: Sustained.

3 Q (By Mr. Germeraad) Would you simply re-think the
4 quantities in your fractions, please, and decide if
5 you want to change your testimony any?

6 A Well, it takes one-quarter more calories of energy to
7 heat one gallon of water. One-quarter more-- I believe
8 that's right.

9 Q Anyway, I'll go on to the next question. I believe
10 you've already covered the example at the reservations
11 down in Arizona and New Mexico where you have trout
12 being driven from the stream. I won't ask you any more
13 questions about that, but you've already testified that
14 it would take 30 CFS flow in the Lower Chamokane to get
15 a good trout fishery. Is there any other uses for the
16 Lower Chamokane?

17 A I believe the Chamokane would make an excellent place
18 for people to go sport fishing. And, there certainly,
19 if the Tribe wanted to develop it and attract people
20 in there where they could sell them licenses and lease
21 campground space, there's lots of nice flat areas in
22 along the stream that are suitable for development of
23 campgrounds to help attract people. If the stream were--
24 If there were good campgrounds installed along there and
25 associated facilities, and if the stream was kept well

1 stocked to provide good fishing, there would be many
2 people attracted to that area.

3 Q So that there is a rather wide recreational use, then,
4 that can be made of the Lower Chamokane?

5 A Certainly.

6 MR. GERMERAAD: I think that is all the questions
7 I will have. I do believe that plaintiff intervener has
8 just a few questions they would like to ask.

9

10 DIRECT EXAMINATION

11 BY ROBERT DELLWO:

12 Q Mr. Navarre, you were mentioning about the loss of fish
13 into the Spokane River and predators, and so forth, and
14 their weakened condition. Are you familiar also with
15 the nature of the Spokane River as a trout fishing
16 habitat, with regards to water temperature, pollution,
17 oxygen content, and things of that kind, that might have
18 some effect upon the survival of any trout that get into
19 the Spokane River above Little Falls?

20 A I haven't made any particular studies myself. I under-
21 stand there may be some pollution problems.

22 Q Is there a minimum oxygen content of water, that below
23 the minimum, of it being a good salmon habitat?

24 A Yes.

25 MR. CAMPBELL: If your Honor please, I object to

1 that. He stated that he hadn't made any study.

2 MR. DELLWO: Now, I'm asking a general question.

3 THE COURT: This is a different question, I think.

4 A There are minimum tolerance levels for oxygen.

5 Q (By Mr. Dellwo) What are those minimum tolerance levels?

6 A I can't recall exact. It's different for different
7 species of fish. Offhand, as a biologist, I would not
8 like to see the oxygen levels go down below five parts
9 per million. If water temperatures are cooler, they
10 could withstand a little lower oxygen levels than they
11 can if the water temperature were higher. There's a
12 very direct relationship.

13 Q Let us assume an oxygen content in the Spokane River of
14 two parts per million or less. Would salmon survive in
15 such a water environment?

16 A I doubt it. The water temperatures, unless they are
17 pretty darn cold.

18 Q Mr. Navarre, based on your general knowledge of the
19 Columbia River system, the work that you've done for
20 many years in this area along the Chamokane, the Spokane
21 River, and the Columbia River; the work you've done for
22 a number of years associated, for example, with U.S.
23 versus Washington, and your general knowledge of the
24 Columbia River system and its relationship to the
25 Spokane River; and reconstructing in your mind what that

1 river system would be before there were any dams; and
2 letting you know that there is, through archives in this
3 case, and will be evidence to the effect that the Spokane
4 Indians and their associate tribes and bands resided
5 historically in this area for many, many years prior to
6 the date of the formation of the reservations, the period
7 of 1877 to 1887, and that they were relying upon the
8 fishery in this Columbia River system, particularly from
9 the Kettle Falls area on down to the confluence and on
10 up to the Spokane Falls, which is the falls in this city,
11 including Little Falls, Long Lake Falls, Chamokane Creek,
12 and various tributaries of the river, would you have an
13 opinion as to the nature of Chamokane Creek at that time
14 in history before the dams were built and before there
15 was substantial pollution of the Spokane River, and there
16 was access by the migratory fish to this area, and, in
17 that point of history, would you have an opinion as to
18 the nature of Chamokane Creek as to a fishery, as of that
19 date?

20 MR. TORVE: I'll object to it. I assume I'm the
21 first in line, but I assume that he's not testifying
22 from any knowledge here. The hypothetical is too general
23 for him to be able to answer. I assume that before the
24 dams, we're talking about anadromous fish, rather than
25 the type of fishery that is local to the areas. It seems

1 to me there are so many variables here this witness
2 cannot possibly answer that situation. First of all,
3 he's not testified to anything he's made a study of
4 the Spokane or Columbia River, even at this point in
5 time, as opposed to what it might have been before the
6 dam.

7 THE COURT: Well, of course, the hypothetical ques-
8 tion, and not having it waded through all of the exhibits,
9 I can only assume that the elements contained in his
10 hypothetical are in the exhibits. Now, if he's left out
11 any, he can be challenged on that ground, but the Court
12 simply can't at the moment evaluate them. I think, if
13 it were a jury, I'd have some reasonable concern about
14 this question, but I think we can let him answer. It
15 will go to the weight, rather than the relevancy.

16 You may answer.

17 Q (By Mr. Dellwo) The only answer you need give is whether
18 or not you have an opinion as to the nature of Chamokane
19 Creek at that time as a fishery.

20 A Well, I am somewhat acquainted with the fish runs. I
21 understand historically they used to come--

22 Q Let me ask you to answer yes or no, whether you have an
23 opinion?

24 A Yes, I do have an opinion.

25 Q What would your opinion be?

1 A I believe that the anadromous fish runs were up in
2 that particular area. They would move into Chamokane
3 Creek and utilize it as a spawning ground; both salmon
4 and steelhead.

5 Q Would you have an opinion as to how good it would be as
6 a spawning grounds?

7 MR. TORVE: We would have the same objection,
8 again, your Honor. It seems to me this applies as it
9 existed at that time, that he could not be aware of,
10 or that he could not even be supplied by any evidence.

11 THE COURT: Well, I take it it's a question of
12 relationship as to relevancy. A matter of this, as
13 a spawning grounds to other available spawning. I'll
14 let him answer that.

15 A Yes, it is a spring-fed stream, and, I guess, the springs
16 were there when the salmon were there. And as such, it's
17 an excellent-type stream for salmon to spawn and steel-
18 head to spawn in there.

19 Q Could you compare it, for the information of the Court
20 and counsel, as to other streams that might be tributary
21 to the Spokane, smaller or larger, as to what salmon and
22 steelhead seek as a spawning grounds or spawning stream?

23 A Well, this just appears like a good salmon stream. We
24 work with salmon over on the reservations in Western
25 Washington, and we're acquainted with the size, and the

1 depth of water, and the movement, and this just compares
2 favorably with some of the reasonably good spawning areas.

3 Q As a matter of fact, if it existed then as it does now,
4 would it be a good spawning site?

5 A As the stream exists now and salmon were coming up?

6 Q Yes.

7 A Well, by the time the salmon would enter at the spawn,
8 the temperatures would probably be suitable; and the
9 steelhead. This could present some rearing problems
10 for steelhead at this time because of excessive tempera-
11 tures, and any species of salmon that might rear there.

12 Q What is the time table of the runs of salmon and steel-
13 head and other anadromous fish?

14 MR. TORVE: Your Honor, I want to prove another
15 objection here. It seems to me if we're going to talk
16 about anadromous fish, as it were in the old days, that
17 it proves the immaterial of this lawsuit; and, I assume
18 that any runs of anadromous fish that might have been
19 have now been cut off by federally-located dams on the
20 river system, that I assume by federal action has been
21 authorized by acts of Congress, and, therefore, are not
22 involved in the scope of any water rights that the
23 Indians have.

24 MR. DELLWO: It has to do, your Honor, with the
25 purposes of the reservation, both of the land and the

1 water, at the time the reservation was formed; the
2 reason why the Chamokane Creek was included in its
3 totality within the reservation; how the Indians looked
4 at it, why they required it, and why, in conjunction
5 with the United States Government, they reserved it.

6 THE COURT: It has a relevancy in that regard. You
7 may answer.

8 A Would you repeat the question, please?

9 Q (By Mr. Dellwo) Merely the timetable of the fish migra-
10 tions, so that we know what period of the year we're
11 talking about.

12 A Well, I believe you would get the spring run chinook
13 up here, summer run, fall run. You'd get summer run
14 steelhead, and winter run steelhead, so that there
15 probably would be adult fish here the year around.
16 Between the salmon and the steelhead, there would be
17 fish here the year around.

18 Q Would this type of fish make their way above the
19 Chamokane Falls?

20 A I doubt very much-- I don't know; I would say not.

21 Q What type of fish would there have been above Chamokane
22 Falls?

23 A At that time, there probably would have been rainbow
24 trout, rainbow and steelhead being the same species,
25 and steelhead being a migratory fish. I believe, rainbow

1 trout would have been up there.

2 Q Would there have been rainbow trout also in the lower
3 stream?

4 A Yes, probably.

5 Q What about the main stem of the river system? Do the
6 non-migratory fish also fill that type of stream? I'm
7 talking about the main river, the Spokane River, as it
8 must have been before the dams were in; would there have
9 been both migratory fish and non-migratory fish?

10 A I would think so.

11 Q What happens in a stream like the Chamokane to the
12 brook trout and the rainbow trout during the wintertime;
13 are they there; are they available?

14 A I believe they're in the stream in the winter.

15 MR. DELLWO: That's all.

16 THE COURT: Mr. Rekofke, would you like to lead
17 off today, since you were last yesterday, on Cross-
18 examination?

19 MR. REKOFKE: Your Honor, I think it's pretty much
20 decided to follow the same sequence.

21 THE COURT: All right. I just didn't want to show
22 any prejudice or preference here. So, Mr. Dufford or
23 Mr. Roe, whoever is going to examine for the Department
24 of Ecology?

25

CROSS-EXAMINATION

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BY MR. DUFFORD:

Q Mr. Navarre, is that correct?

A That's correct.

Q What was the total length of this study period involved in the study that's recorded in this Exhibit 64?

A I believe, I mentioned data in here from the 17th of--
Let me be sure here first. I believe I have data in here from July 17th through about September 30th. I've had thermographs in the stream later than that, in fact, they're still there. Some of the data, I wasn't able to recover, because of high water, so there may possibly be in here some data a little later than September 30th.

Q I believe there is some--

A Well, there is some in October, right. I got some October and November readings of station one. I was able to find the thermographic at station one and station three. The water was too deep on that particular trip, so the chart is still in there with the data on it for that period.

Q What does that data, after the end of September, add to your report? Are any comparisons or analyses in the report based on that additional data?

A I believe the only thing I made mention, that when the

1 air temperatures fall below the water temperatures,
2 that then the water coming from the spring would be
3 warmer than the air and would provide a beneficial
4 effect at that time to the fish, since they are keeping
5 the water a little warmer and near their optimum growth
6 range.

7 Q Are you aware of any other study of this kind, with
8 respect to Chamokane Creek, having been conducted?

9 A Of this type of study?

10 Q Yes.

11 A We've had one person in our office did a flow study
12 report on the White River for the Muckleshoot Tribe.
13 It involved salmon. It was a little different, because
14 they were evaluating the amount of water in the stream
15 that was required for salmon migration upstream, and
16 evaluating the amount of water that was needed for salmon
17 production of the juveniles.

18 Q My question is: Is there any data prior in time with
19 respect to Chamokane Creek that you relied on or used
20 in any way in your report?

21 A No, I don't think so. I think there was maybe some flow
22 information that went back that I received from Mr.
23 Woodward.

24 Q Do you know what kind of water year the period of study,
25 of 1973, was, in general, in this part of the country?

1 A In 1973?

2 Q Yes.

3 A I understand it was a dry year.

4 Q In your view, then, does this study represent conditions
5 in a typical year, or an unusual year, or a worse year,
6 or do you have any analysis of that kind?

7 A No, but the Chamokane Creek, the Lower Chamokane Creek,
8 is wholly dependent upon what the flow from the springs
9 is, in the summertime, because unless they get some
10 additional flow-- Maybe there is some extremely wet
11 years where the stream would flow all the way through,
12 I don't know, but the general information that I ob-
13 tained, it doesn't flow through in the summertime, and
14 all the water comes from the springs.

15 Q Your analysis just related directly to the flows in
16 this particular 1973 study?

17 A That's right. Unfortunately, there is not a spigot up
18 at the springs where we could turn on 30 CFS and study
19 it, and, then, turn the spigot and let 20 CFS come
20 down and study it, and 25, and so on. So, we have to
21 go with what's available.

22 Q During your testimony, you spoke on several occasions
23 about the significance of the 68 degrees, and, I
24 believe you said-- Well, perhaps you could recap that
25 for me, if you don't mind. What is the significance of

1 that number?

2 A I believe this is kind of a breaking point where
3 trout can withstand stress from these rising tempera-
4 tures with their metabolic rates increasing, and it
5 increases five percent for every one degree Fahrenheit,
6 and the heart rate is increasing, the circulatory
7 system is going up. When it reaches 68 degrees, I
8 believe they're getting to a point of stress, and
9 beyond that, the fish, especially those occupying areas
10 where there is current, the stress becomes so great that
11 they cannot maintain their position in that stream, and
12 start moving gradually downstream.

13 Q If a fish is exposed to 68 degrees, isn't there some
14 sort of lag between his exposure to that water tempera-
15 ture and the effect on his body?

16 A They're cold-blooded; they're almost the same tempera-
17 ture. I believe the temperature would adjust, the body
18 temperature would adjust, quite rapidly to the surround-
19 ings of this ambient temperature. What, if any, delay
20 or lag there is, I don't know of any delay, if there is
21 any.

22 Q Well, in the figure 68 degrees, is there built in any
23 particular duration factor? Would you get into that?

24 A I believe there-- When the stress is increasing as
25 the temperature rises to 68 degrees, and it just becomes

1 too much when it goes beyond to maintain position.
2 At least, for some of the fish, not all of them.
3 Q Do you think an instantaneous exposure of a fish to 68
4 degrees would have any harmful effect?
5 A If the temperature is gradually increasing, possibly.
6 If you had taken the fish out of 40-degree water and
7 thrown him in 68, it would distress him quite a bit.
8 Q But if it was in a gradually-increasing situation, what
9 would that be?
10 A In a gradually-increasing situation? I think he's
11 reaching stress. The water flowing over the gill
12 surface area is immediately making that surface area
13 the temperature of the stream, and his blood is just
14 circulating through those cold areas, and is going to
15 have to be that temperature.
16 Q I notice in your Table 1, and this is a report that you
17 recorded maximum, minimum, average temperatures-- Does
18 that give you any information on how often the tempera-
19 ture approached the maximum during the day?
20 A How often?
21 Q Yes, or is that just a single reading that was the
22 highest of the day, where you said maximum?
23 A I think it hit its maximum just once during the day.
24 It might stay at that maximum for a period of time.
25 Q Do you have any idea, or does any of your information

1 show what the period of time might have been?

2 A How long it would stay at that maximum temperature?

3 Q Yes.

4 A No, except in my field notebooks, I've got temperatures,
5 maybe, within half an hour apart which might indicate
6 within that period of time.

7 Q Where you speak of the "average temperature", is that
8 simply an averaging of the maximum and minimum figure?

9 A That's right. That's taking the maximum temperature and
10 the minimum temperature, and adding them together and
11 dividing by two. That's what I call averaging. This is
12 just to compare with the airport temperatures, which are
13 done the same way, which is from the U. S. Weather
14 Bureau records. This is how they obtain averages.

15 Q It doesn't represent, then, a true average temperature
16 over--

17 A No, it's just an averaging of the daily maximum and
18 the daily minimum.

19 Q Does your study show you anything, really, about
20 exposure time of fish to any particular kind of tempera-
21 ture?

22 A Any particular temperature? Yes, I think your curves
23 recorded on the thermographs would give an indication
24 of exposure time. For example, if you--

25 Q What are you referring to now, please?

1 A Well, these are the-- This is on Pages 7 and 8. Now,
2 the solid line-- Probably Page 8 has got more curves
3 and would be a better illustration. If we could ima-
4 gine a line at 68 degrees and you could carry that on
5 across, the amount of time above 68 degrees would be the
6 high part of the curve, and at the bottom of the page
7 is the hours, so you can get, maybe, a relative knowledge
8 by extending the line down to determine the number of
9 hours that it was above 68 degrees.

10 Q Did that kind of information about duration enter into
11 your thinking when you made the analysis that you have
12 here?

13 MR. GERMERAAD: Would you read the question, please?

14 (Question read back by the Court Reporter.)

15 A The fish could withstand stress for shorter durations
16 than they can long durations, but the stress, at least
17 at a setting of 68, and as I said before, maybe during
18 that particular period, they might get moved downstream,
19 maybe just to the next pool area. And so, on the next
20 day, maybe the next hour, eventually they just disappear.

21 Q With respect to the temperatures that you did record,
22 referring you again to Table 1, how many days did you
23 find that the temperature exceeded, as a maximum, 68
24 degrees?

25 A At which station?

1 Q At any station?

2 A Well, at Station 3 we got, on the 18th and 19th, that's
3 two; 26th is three; 27th is four; 28th is five; 29th,
4 30th, 31st, let's see, that's eight; August 1st is nine.
5 It appears to be about nine days total there. At least
6 during that time it was recorded.

7 Q That's right, and what about at Station No. 1?

8 A Station No. 1 was the one closest to the springs.
9 There were no days.

10 Q So, the only places-- Did you take any temperature
11 readings at Station No. 2?

12 A No. I have incidental pocket thermometer temperatures
13 at that station, if you're interested in those.

14 Q Why don't you give us some of that information?

15 A On the 19th--

16 Q Of what month?

17 A --July 19th, and this was a little bit above Station
18 2, it was 63 degrees Fahrenheit. I got this at a point
19 seven miles upstream from the falls. Where Station 2
20 was, I think I determined there was four-tenths of a
21 mile. Let's see, Station 2. Station 2, on August 8,
22 '73, was 62 degrees at 1:45 p.m. I think these may be--

23 Q Excuse me, could you speak a little louder?

24 A I believe those are the only two.

25 Q Is Station 3, then, the only station at which you've

1 ever measured the temperature above 68 degrees during
2 the course of the study?

3 A This is right, only at Station 3. 'Oh, pardon me. I
4 have read temperatures up at the gaging station which
5 were in excess of 68 degrees.

6 Q Let me ask you this: Did you ever make a measurement
7 above the falls?

8 A Nowhere above the falls.

9 Q As I understand it, your study focuses heavily on
10 temperature as a critical parameter in terms of fish
11 habitat. Now, is there anything in your report to
12 indicate that there's any problem up above the falls,
13 as far as temperature?

14 A I don't believe, at least from Station 2 on up, there's
15 too much of a problem, or any problem, as far as
16 temperature is concerned.

17 Q Were you able to identify any other kind of problems
18 up there?

19 A No, I didn't look for any other problems. There is
20 also a limiting factor, what we call a "limiting factor"
21 on any more expansion of the fish population. The
22 stream eventually can just produce so many pounds of
23 fish per acre, and somewhere there's a limiting factor
24 on that population. It might be food, or it might be
25 something else.

1 Q In your Direct testimony, you testified fairly exten-
2 sively about what you did on July 17th, and, again,
3 what you did on August 8, and I notice on both of those
4 days, with respect to the temperature information, Table
5 1 is blank. I wonder if you could--

6 A Is this Table 1?

7 Q Yes. I just wondered why that was the case on the days
8 you were there?

9 A On the 17th? Well, these, you see, this temperature
10 information came off of the continuous recording
11 thermograph. Now, other temperature information was
12 collected using a pocket thermometer at the times I
13 visited the streams, and in various places along the
14 stream. And, these are the only days when they have
15 complete maximum and minimum for.

16 Q I see. Is that attributable to your tape getting
17 snarled up or something after you put the thing in there,
18 in July?

19 A Well, on the-- At Station 1, it recorded fine along to
20 the 27th there, and then it started binding and ripped
21 in half; and at Station 3, the chart unrolled fine until
22 it got down to August 1st, in which it no longer unrolled
23 and recorded temperature.

24 Q You walked the area, didn't you state that?

25 A I walked the area.

1 Q How much of the stream, in terms of distance, do we
2 have from the mouth of the Chamokane to the waterfall?

3 A To the waterfall?

4 Q Yes, how much of a distance is that?

5 A I don't recall the exact distance. If I was giving
6 an estimate, a mile, maybe. I don't know the exact
7 distance. I could only-- A mile, is my guess.

8 Q A mile doesn't seem unreasonable to you?

9 A No, it doesn't.

10 MR. GERMERAAD: Could I have that previous ques-
11 tion and answer re-read, please?

12 (Last two questions and answers read back by
13 the Court Reporter.)

14 Q (By Mr. Dufford) Then, is it fair to say that you
15 report in sum, detail some kind, or in the conclusions
16 reached, in detail, a problem in a one-mile stretch
17 of the Chamokane?

18 A I think it's more applicable to that lower section of
19 the stream. Some falls; maybe, above the falls on down
20 to the mouth. That is the section I would be concerned
21 about.

22 Q Can you tell me a little something about these tempera-
23 ture measuring devices, the continuous recording; could
24 you tell me how that works?

25 A It records the temperature on a chart, just exactly like

1 it is on Table 7, but on a smaller scale; this scale
2 is a little larger. It can record temperatures between,
3 I think it is, 20 degrees and 80 degrees.

4 Q The question I'm really interested in: The stream has
5 a certain width at any particular point, and how do you
6 know that this recording device is telling you what the
7 temperature is in that particular cross-section of the
8 entire stream?

9 A Well, due to the mixing in the riffle areas, the waters
10 in a stream such as this are pretty homothermal. The
11 waters are mixed; the temperature is uniform. I did,
12 in fact, try to determine whether there were temperature
13 differences between the surface of the stream and the
14 bottom of a hole, and to do this, I brought over what
15 we call an "electric thermometer". With the thermometer
16 on the end of a line, we can take the temperature on the
17 surface, lower it a little further, and on down to the
18 bottom, and the meter gives us a reading. When I did
19 this, I found, at Station 3, the temperatures uniform
20 from the top to the bottom, it correlated with my pocket
21 thermometer temperature, and I took the continuous record-
22 ing device out, and it correlated the same. All three
23 instruments read the same temperature.

24 Q Is there any difference, in terms of the accuracy; if
25 you would ascribe to the continuous recorder as opposed

1 to the pocket thermometer?

2 A I thought-- The reason I did this was because I
3 thought there was a possibility, and there was some
4 readings higher with the pocket thermometer than there
5 was on the continuous recording thermometers. This was
6 one reason I went to check this situation out, to see
7 if they were all reading the same, or there were differ-
8 ences. Now, when I did read-- When I discovered this--
9 Well, it was just one or two degrees, but when I did
10 discover this, it was later on in the year, and this
11 could have made a difference. Maybe it was just a--
12 Maybe these continuous reading thermometers were reading
13 a little bit lower; maybe the temperature down there
14 earlier in the year may have been just a little bit
15 warmer; perhaps, the position that the recording thermo-
16 meter lays, the temperature sensing device, if it was
17 laying on the bottom, may have had some influence from
18 the cooler bottom underneath the instrument, and maybe
19 that recorded a little lower temperature; maybe if it
20 turned up-- I wouldn't expect these differences to be
21 but one or two degrees.

22 Q Do you know, from your temperature records, how many
23 days there were at Station 3 during the period of your
24 study when both the temperature exceeded 68 degrees and
25 the flow was above 20 CFS?

1 A Well, I'd have to look that up from the data here.

2 MR. GERMERAAD: Excuse me. Are you asking Mr.
3 Navarre to make a computation now, and give you, then,
4 an answer? I thought you were talking about the time
5 factor, that's all. So, he might want to recheck his
6 first answer.

7 THE COURT: Well, he hasn't answered anything yet.

8 MR. GERMERAAD: Your Honor, I believe he has asked
9 him to make certain comparisons. So, unless there is
10 one table that does this, he is going to have to go
11 back and forth between the tables.

12 THE COURT: I don't know yet.

13 A I will have to go back and forth between tables.

14 MR. DUFFORD: Your Honor, it's very close to noon.
15 Could we break at this point?

16 THE COURT: Can you make those comparisons during
17 the noon recess?

18 A Would you repeat that question one more time?

19 Q (By Mr. Dufford) Yes. The question is: There were a
20 certain number of days when you measured in excess of
21 68 degrees; how many of those days was the flow 20 CFS
22 or above?

23 MR. RUDOLPH: Your Honor, for clarification, and
24 this is primarily for the witness: Do you mean 68 or
25 more, or above 68?

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MR. DUFFORD: More than 68.

MR. RUDOLPH: But that wouldn't be the correct figure, then, consistent with his testimony. I think the figure should be 68 or more, and not above 68.

MR. DUFFORD: Mr. Rudolph, that's the question that I asked.

THE COURT: He has a right to ask it any way he wants, as long as he is making the comparison. You may want to make the other, of course.

You can do that during the noon break. We'll be in recess until 1:30.

(The noon recess taken at this time.)

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Hon. Marshall A. Neill, Judge
Spokane, Washington
Thursday,
March 14, 1974
1:30 P.M.

MR. GERMERAAD: Your Honor, before Mr. Dufford continues his Cross-examination, just before the Court convened this afternoon, Mr. Swiger, one of the defendants, approached me as to how he could enter an affidavit with the Court stating his position, and I told him I would advise the Court and let him present it to the Court now, or whatever your Honor would like to do. He expressed an opinion that he would like to get back to take care of his other business.

THE COURT: I see no objection to that. Does he have it?

MR. GERMERAAD: Yes, I believe he does.

Mr. Swiger, do you want to wait a second. The Judge may have some questions.

THE COURT: No, that's all right, thank you.

After looking at the affidavit, counsel may want to read that.

MR. CERUTTI: I would, just for a moment, your Honor. We could during Cross-examination, and then we wouldn't hold things up.

THE COURT: You may proceed, Mr. Dufford.

1 (Cross-examination continuing)

2 BY MR. DUFFORD:

3 Q Mr. Navarre, do you recall what we were talking about
4 before the recess?

5 A Yes, and part of the answer to the question is a state-
6 ment I have in the report on Page 6. It's the bottom
7 paragraph, the last paragraph, which reads: "The maxi-
8 mum water temperature (Table 1) recorded at Station 3
9 exceeded maximum temperatures recommended for the well-
10 being of salmonids on nine days during the period July
11 18 through August 1." Now, I have checked those nine
12 days, and of those nine days, seven of the nine days
13 had average daily flows of 20 CFS and below.

14 Q What about the other two?

15 A What was the other two days?

16 Q Yes.

17 A I don't believe I have the other two days written down.

18 MR. GERMERAAD: Your Honor, he didn't ask that
19 question. If he allows the witness time, I'm sure the
20 witness can answer his question.

21 MR. DUFFORD: Your Honor, that is the question
22 I asked.

23 THE COURT: That's what he asked, yes.

24 A On the other two days?

25 Q (By Mr. Dufford) Yes.

1 MR. GERMERAAD: He asked for the total number of
2 days below the temperature, and unless my ears are wrong,
3 he just said "seven".

4 THE COURT: No, he's since asked a separate ques-
5 tion.

6 MR. DUFFORD: It was the other way around, though.
7 I asked him how many days when the temperature was above
8 68, the CFS was 20 or above, or above 20.

9 A Seven of nine days, that average daily flow was 20 CFS
10 or below. It must be the other two days that the flows
11 would be greater.

12 Q On the two days?

13 A Yes. Is that what you're looking for?

14 Q Yes, thank you.

15 Now, Mr. Navarre, in connection with this study
16 that you did, I understood from your Direct testimony
17 that you were actually present at Chamokane Creek, at
18 some point, on July 13th, 17th, August 8th, and
19 September 6th. Were those four days the entirety of
20 the time that you spent on Chamokane Creek?

21 A No, I believe those were the days of my trips from
22 Olympia to Spokane. I'll try to give you the dates I
23 was actually on the creek. There was 7-13, 7-17, 7-18,
24 7-19, August 8th, September 6th, October 17th, October
25 18th, December 12; that's it.

1 Q What were you doing up there in October and December?

2 A I was going to retrieve thermograph information from
3 my thermographs.

4 Q Did you take the tapes off?

5 A The tapes and charts.

6 Q Did you do anything else on those days?

7 A I just observed the stream, nothing specific. Now,
8 what-- Pardon me, what specific date?

9 Q The ones in October and December.

10 A In October? On October 17th, I walked from the Boardman
11 Road to the mouth of the Chamokane. I got here, I
12 observed fewer suckers, but I did observe one group
13 under the bridge. At that time, I--

14 Q Excuse me, fewer than when?

15 A Oh, on previous visits.

16 Q Were these visual observations?

17 A It was just visual observation, looking in the pools.
18 On the 18th, I changed the chart at the upper station.

19 MR. CAMPBELL: If Your Honor please, I wonder if
20 we might ask the witness to speak up?

21 A On the 18th, I changed the chart at Station 1, measured
22 the surface temperature, the temperature at Galbraith
23 Springs, the temperature at the confluence of Galbraith
24 Springs and Chamokane Creek, I took the air temperature,
25 I walked upstream a half mile to observe the stream area

1 up in that section. Also, on the 18th, I talked with
2 the Hatchery manager while I was up there. Did you want
3 me to continue?

4 Q (By Mr. Dufford) No, that's fine. What temperature
5 did you record at Galbraith Springs, then?

6 A At Galbraith Springs on the 18th, the surface temperature--
7 The temperature of Galbraith Springs above the conflu-
8 ence of the Chamokane, now this is where it runs right
9 into the creek, was 49 degrees.

10 Q Well, earlier you were talking about calculations that
11 you made that led you to arrive at a figure of 30
12 cubic feet per second as a recommended minimum flow for
13 the lower reaches of Chamokane Creek. There was in
14 that calculation a figure for the temperature of
15 Galbraith Springs. When did you derive that temperature
16 figure that you used in that calculation?

17 A The temperature of the Springs, of Galbraith Springs,
18 as it comes out of the ground, I assume to be the same
19 as Ford Springs, because it's coming from the same
20 source of water. Now, I didn't-- It was impossible
21 for me to get the temperature as it comes out of the
22 ground because as the water, at the Springs surface--
23 Warmer water is lighter, and so right on the surface
24 of the spring we get a little warmer water, because it's
25 less dense than the actual water as it's emanating from

1 the ground itself. So, we get some heating right on
2 the Springs surface.

3 Q Is the temperature figure for Galbraith Springs that
4 you used in calculating the 30 CFS figure, is that the
5 actual measurement of Galbraith Springs or a measure-
6 ment at what you just referred to as "Ford Springs"?

7 A I used the 47-degree water temperature which I obtained
8 from the Hatchery manager, who has temperatures, I guess
9 he keeps regular temperatures on it, and he told me that
10 the temperature was right at 47, it varies very little.
11 Now, experience in other spring areas, springs coming
12 out of different areas close by, from the same source
13 of water, is the same temperature. So, I did not get
14 the 47 degrees, actually measure the 47 degrees myself.
15 This was the same.

16 Q Does this variation, that is very slight, is this on
17 a year-round basis, is that your understanding?

18 A That's my understanding, yes.

19 Q Would a variation of just a couple of degrees affect
20 your computations, though?

21 A Yes. The difference of the actual water as it comes
22 from the ground, it would, because it would either
23 increase or decrease the temperature difference between
24 the spring source and the lower thermograph station.

25 Q With respect to this calculation, I notice that the

1 recommendation of the report is for the 30 CFS figure.
2 Since that was really the essential thrust of the
3 report, I wonder why you didn't include a method of
4 arriving at that number in the report.

5 A Would you repeat that question, please?

6 Q Why didn't you put how you got 30 CFS in the report;
7 how you figured it out?

8 A Well, I don't think I can explain every little thing
9 that I put in a report in detail. The report would
10 get pretty thick.

11 Q Part of that calculation, which you explained in Direct
12 testimony, is based on flow information, as I understand
13 it, and you used the figure of 22 cubic feet per second.
14 Now, am I correct that that calculation was based on
15 figures derived from one day?

16 A That was the maximum temperature I recorded, the very
17 maximum temperature I recorded during the study period.
18 So, it would be derived on that one day.

19 Q And you took the flow for that one day. Now, is that
20 an average daily flow or instantaneous?

21 A That was the average daily flow as come off the, from
22 U.S.G.S. records.

23 Q You did now, then, take a flow measurement at the same
24 moment that you read the thermometer?

25 A Not at the same moment I read the thermometer. I relied

1 on the U.S.G.S. gauge information.

2 Q But the temperature value of that calculation is based
3 on one instantaneous measurement?

4 A That's correct.

5 Q Since you used the average daily flow as part of that
6 calculation, why didn't it make more sense to use the
7 average temperature of that day with respect to your
8 calculation?

9 A I just don't believe it's logical.

10 Q Could you explain to me what is illogical about it?

11 A Your water temperatures vary much less than your air
12 temperatures, and I don't think you can relate the
13 averages necessarily.

14 Q Well, we're talking about a comparison between water
15 temperature and water flow, aren't we?

16 A Yes.

17 Q What does air temperature have to do with the thing,
18 with the calculation?

19 A Pardon me, maybe I misinterpreted your question. Would
20 you repeat the question?

21 Q Yes. The question was: Since you based your CFS figure
22 on a daily average, I believe it was July 17th--

23 A Right.

24 Q --why didn't you also use the daily average water
25 temperature figure, rather than the maximum in that

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calculation?

A I don't believe that's the logical way to do it. The average flow for that date probably only varies, from the average, only varies a couple of degrees. The average water temperature would have varied 14 degrees.

Q Do you know what the variation was with respect to flows on that day?

A No, I don't know the variation of the flow.

Q Since you did bring up the question of atmospheric temperature, I was interested because I did not understand the relationship of the air temperature, if any, to the calculation that you made as to the July 17th day and the necessity for 30 CFS?

A I misunderstood your question when I was speaking. I don't believe the air temperature-- I did not use air temperatures in the calculation.

Q Directing your attention now to page 18 of your report, which you state demonstrates an inverse relationship between water temperature and stream flow. Is there a component of that graph or the analysis, the way that is drawn, which has something to do with air temperature, or is that simply a comparison of the water--

A (Interrupting) No, it's just a comparison of the maximum water temperature that I recorded compared to the flow record from the U.S.G.S. records.

1 Q Well, on another graph in here, you have some kind of
2 bars that show the temperature data-- This is page 16,
3 figure 4, and likewise page 17, figure 5-- which
4 shows air temperature data at the Spokane Airport?
5 A Yes.
6 Q And my question is: What does that have to do with
7 any of the analyses that you've made in your study?
8 A Well, it just demonstrates that there were hotter days
9 that occurred, and that since water does gain some heat
10 by conduction or from the air, besides solar radiation.
11 Q Let me change the direction of the questions for a
12 moment. Did you find any problem with food production,
13 fish food production, at any of the stations where you
14 analyzed that?
15 A No, I thought the food supply was pretty good.
16 Q But was there any problem at all with any of the pollu-
17 tion parameters that you made?
18 A No.
19 Q Was dissolved oxygen, was it comparable at all of the
20 stations?
21 A Yes.
22 Q Is temperature, then, in your view, really the only
23 critical parameter with respect to the trout habitat?
24 A In my opinion, temperature is a limiting factor.
25 Although I also stated that the reduction of flow

1 between a point of 30, or any reduction of flow, exposes
2 additional areas of the streambed, which is then out of
3 production. So, there is some effect.

4 Q Did you have any way of measuring that effect?

5 A No. As I stated before, although I wish there was a
6 spigot at the springs that I could turn on and off at
7 will and control the flows, there unfortunately was none.

8 Q Let me ask you to look at your fish population sample,
9 table 6 on page 21, and just directing your attention
10 to the information under Station 3, there.

11 A Yes.

12 Q I believe that shows that there was one brown trout
13 obtained, and then a number of other kinds of fish.
14 How would you categorize those other kinds of fish?

15 A Most of these other fish, the suckers, are a scrap fish.
16 They're a bottom-feeder, as opposed to a trout, being a
17 drift-feeder.

18 Q Would those kinds of fish compete with trout for food?

19 A Perhaps to some degree, but primarily the trout feeds
20 on drift organisms and the suckers are feeding on
21 bottom organisms. But, as can be seen from the inverte-
22 brate samples, despite the fact that the suckers were
23 there, the invertebrate samples compared to other areas
24 very favorably. So, there was adequate food supplies
25 there for trout.

1 Q As well as the other kind?

2 A As well as the others.

3 Q Would there be any predation effect from these kinds
4 of fish on trout?

5 A Sculpins probably could prey on trout fry, some very
6 small trout, the suckers would not.

7 Q Is it your opinion, then, that the food competition and
8 predation are not particularly significant as factors
9 on trout habitat at Station 3?

10 A I don't believe they are.

11 Q If you lowered the temperature of the water there so
12 that it never got above 68 degrees, would that have any
13 effect, one way or the other, on those kinds of things;
14 predation and competition for food?

15 A It would depend upon how much lower it was lowered.
16 I mean, you might lower the temperature-- If you want
17 to lower the temperature low enough, it might make un-
18 suitable habitat for the suckers.

19 Q Now, at one point in your Direct testimony, you talked
20 about going into the stream early in the year and figur-
21 ing out what was there, and then going back in later to
22 see if there were fish losses. Would that be the norma
23 way to go about determining whether the population was
24 declining?

25 A Right.

1 Q Was that done?

2 A This was not done in this study, because it was too
3 late in the year before we got started on it to make
4 early population estimates.

5 Q You did some electro fishing, though, at all three of
6 the stations, did you not?

7 A That's correct.

8 Q And did the results of that electro fishing tell you
9 anything about the population, really, of the stream?

10 A As I stated before in my testimony, I do not believe
11 this represents every individual fish within that
12 section of the stream. However, at Station 3, we put
13 considerably more effort into trying to capture every
14 trout in that section of the stream, more effort than
15 we did at the other stations. And, I was not trying to
16 make absolute population estimates, because this is a
17 long, involved procedure, involving marking and recap-
18 turing. I was merely attempting to make a relative
19 comparison of abundance.

20 Q As between the three stations?

21 A Right.

22 Q If you had wanted to conduct a population study, how
23 would that have been made?

24 A I would have went into a mark-and-recapture-type of
25 method, where every time I'd catch a time of fish and

1 re-mark them and go back through and after they had
2 settled down, and recapture another group and see what
3 percentage of unmarks I was getting at various stations.
4 Q Does this information that you did get by electro fish-
5 ing, then, tell you what kind of fish are present, but
6 not how many of them there might be?
7 A Not the exact numbers, no. In fact, we made every
8 attempt to capture every trout that was turned over,
9 or at least recorded. The sculpins and suckers were
10 incidental. We weren't interested in them, we let many
11 of them drift by.
12 Q What does this kind of information taken at three
13 stations tell you about distribution of fish at any
14 places in between the stations?
15 A Oh, I think-- I don't know if you can pick out-- You
16 would have to shock the whole stream to tell exactly
17 how many. I think this indicates what is relative there.
18 If we had shocked more areas, we may have turned up
19 more brook trout, or in other areas, we may have turned
20 up a few more rainbow trout in relation to the number of
21 brown trout.
22 Q Likewise, with reference to your temperature measure-
23 ments, can you make any assumption about temperatures
24 in between the places where the temperature measure-
25 ments were taken?

1 A On that particular day, I was sampling the population?

2 Q No, I'm just talking about the temperatures of the
3 stream. You just had a thermometer in at certain
4 places. What does that tell you about the temperature
5 at the other places?

6 A It doesn't in the thermographs. Now, when I was on site,
7 when I had my pocket thermometer with me, I got lots
8 of temperatures recorded at various portions of the
9 stream, and some of these on the same day.

10 Q In July, August and September, did you ever find that
11 the flow was 30 CFS or more?

12 A I'll rely on my table 3, page 15, which is the gauge
13 height and discharge data for Chamokane Creek for the
14 period July 1, '73, to September 30, 1973. Now, your
15 question was-- Would you repeat that again, please?

16 Q In your period of study, was there ever a discharge of
17 30 CFS or above?

18 A No, I do not see any discharges of 30 CFS or above.

19 Q All right. How many days did you say there was a
20 temperature above 68 degrees in that entire period?

21 A You're asking a different question than you've ever
22 asked before, Mr. Dufford. I don't think you can relate
23 this question to any previous questions you've ever
24 asked. You're talking about different periods and
25 different temperatures.

1 Q No, that's not true. In fact, I'm being repetitious
2 at this point. I've already asked that question, and
3 I will withdraw it if counsel finds it objectionable.

4 MR. GERMERAAD: If you want to ask a new question
5 based on 68 degrees, I have no objection.

6 THE COURT: Are you objecting to the present
7 question, or just commenting on it?

8 MR. GERMERAAD: I'm objecting, Your Honor, because
9 he predicated this question on an earlier question,
10 saying that he had asked this question earlier, and he
11 has not. So, I am objecting to that question in its
12 form. If he wishes to change the form, I would probab-
13 ly have no objection.

14 THE COURT: I'll overrule the objection.

15 A If I recall what I said earlier, I believe I said,
16 "Two."

17 Q I think I have confused you at this point. The question
18 was: During the period July through September, how
19 many days was the temperature over 68 degrees?

20 A July through September.

21 Q And I have asked that question before, and I was just
22 attempting to elicit a comparison.

23 I only have a couple of further questions.
24 Since there were no days when the discharge was 30
25 CFS or above, is it correct to say that you have no way

1 of knowing what the temperature would be at that flow
2 rate?

3 A No, I do not personally have knowledge of what the
4 temperature would be if the flow had been 30 CFS on
5 that day.

6 Q There were no measurements?

7 A There were no measurements.

8 Q Now, in the course of your study, did you find any
9 dead fish?

10 A No.

11 Q Under any temperature regime?

12 A Under any temperature regime, I did not find any dead
13 fish.

14 Q Now, you stated that when you first got into this, you
15 were contacted by the Solicitor's Office in Portland,
16 I believe, is that correct?

17 A I said that the Program Manager was contacted through
18 the Solicitor's Office.

19 Q Did you have any communications with the Solicitor's
20 Office?

21 A Yes.

22 Q In the course of those contacts, was there any reference
23 made to the figure 30 CFS?

24 A I was aware of the figure 30 CFS; I was aware of a
25 figure 20 CFS.

1 Q In what respect were you aware of them?

2 A Well, I saw the figure of 30 CFS in a report by the
3 biologist that had done a study in 1970. I saw the
4 30 CFS figure in a copy of the brief that was filed,
5 if I'm calling it by the proper term. I was aware of
6 a 20 CFS that applied to some type of water application
7 permit.

8 Q Then, in your study, in coming up with the number 30
9 CFS, am I correct in saying that you used figures
10 derived from one particular day, July 17th?

11 A That's right.

12 Q And was that, in your view, a representative day, or
13 was it selected because it was the worst?

14 A It was the most critical day. I think you have to get
15 fish through the most critical days in order to get
16 them through the year.

17 Q Did you make like calculations for any other days?

18 A No, I did not.

19 Q Just that one?

20 A Just that one.

21 Q You speak in your report, in its summary, of the volume
22 of water-- Well, let me rephrase that. You're talking
23 about a quality trout habitat, and am I correct in say-
24 ing that's what you're directing your attention to,
25 conditions that would provide that?

1 A This is what I was asked to do, is determine the flow
2 for quality trout habitat.

3 Q What do you mean by "quality trout habitat"?

4 A A habitat where trout will live and grow throughout the
5 year; they would not be forced out of the stream because
6 of high temperatures or pollution or any other adverse
7 factors.

8 Q Did you make any analysis of what kind of habitat you
9 would have at some figure lower than 30 CFS?

10 A No, I did not.

11 Q Would the fish population be eliminated?

12 A When?

13 Q If the minimum flow were allowed to be less than 30
14 CFS.

15 A I don't know. It would all depend on the water tempera-
16 ture and other factors affecting the fish at that time.

17 Q But, the flows were, in fact, below 30 CFS during your
18 entire study?

19 A That's right.

20 MR. DUFFORD: I believe that's all the questions
21 I have, Your Honor.

22 THE COURT: Mr. Torve?

23 MR. TORVE: Your Honor, I just have a few ques-
24 tions.

25

1 CROSS-EXAMINATION

2 BY MR. TORVE:

3 Q Mr. Navarre, I take it you have no information as to
4 what the population of the stream in the lower reaches
5 were in 1972 or 1971, is that correct?

6 A I do not.

7 Q Do you have any information on which you've based your
8 conclusions as to what had happened to the waters of
9 1971 or 1972 or any prior year?

10 A No, I did not relate to any prior years.

11 Q Let me ask you this: Would storm runoff affect this
12 fish population?

13 A It could, depending on the severity.

14 Q When you look at the fish population, as you did in 1973,
15 is that population there related to what had happened
16 the year before, or the year before that?

17 A I don't know.

18 Q You talk about the fish under stress leaving at one
19 time if the water temperatures there, and if flood
20 conditions do affect it, I assume that what you're look-
21 ing at in '73 might be somehow related to what happened
22 in prior years.

23 A I don't think so. What happens is that, although the
24 fish may leave in summer months, during the winter and
25 cooler months, you could get recruitment from upstream

1 areas. Therefore, fish would be moving into these
2 areas in the springtime or winter, and so by the next
3 spring there might be a lot more fish than were there
4 the previous summer.

5 Q You haven't made any studies as to population studies,
6 anything, other than the two stretches of the river we
7 talked about, right?

8 A At the three sampling stations, that's where I sampled.

9 Q Is there much regeneration from the area above the
10 falls into the lower reaches, of fish?

11 A What do you mean by "regeneration"?

12 Q I mean, you're speaking about in the fall the fish will
13 come into these areas, but are fish from above the
14 falls liable to come back into the area below the falls;
15 the relationship between the two populations?

16 A There could be fish from above the falls drifting down
17 the stream. Is that your question?

18 Q Yes. Now, I take it your conclusions are that the
19 fact you found only one brown trout in the lower reaches,
20 and other scrap fish, is that the temperatures of the
21 water have precluded trout raising there, is that
22 correct?

23 A I believe the temperature is the factor affecting the
24 density of the trout. That means, there was fewer trout
25 there. I believe there were fewer trout in that section

1 of the stream and in upstream areas, and that it was
2 because of temperatures.

3 Q Do you have any studies which you base that on?

4 A No, this is just related to experiences I have had with
5 other streams where we have sampled fish in the spring
6 and sampled them in the fall, and we find that they
7 disappear, and in areas where disappearances could not
8 be attributed to just angling pressure. And, then,
9 they're absent in the late summer, but you go back in
10 the next spring, and the trout are there again.

11 Q I take it you've made no studies, however, as to water
12 temperatures prior to July 17th, is that correct?

13 A Just only the temperature recordings I had on July 13th.

14 Q Did you study any other rivers in this particular area
15 that might be related to the Spokane River as to trout
16 populations?

17 A No, I have not.

18 Q I take it you did not study the Spokane River as far
19 as the trout population might be concerned?

20 A No.

21 Q Or the scrap fish population?

22 A No.

23 Q I notice in your tabulation of your lower area, the
24 comment you make is that you observed many more types
25 of scrap fish?

1 A Types?

2 Q Well, I should clarify that.

3 A I've got "many other suckers and sculpins observed".

4 Q You did not make that comment as to the other areas?

5 A Not suckers; the suckers were restricted below the
6 falls. There were sculpins above the falls and below
7 the falls.

8 Q Now, I take it that the calculations that you made as
9 to determining 30 CFS-- Could you go over that formula
10 that you utilized for the one reading you took on July
11 17th?

12 MR. GERMERAAD: Your Honor, in the interest of time,
13 I am going to lodge an objection, that the previous
14 counsel, for the Department of Ecology, went through
15 this entire line of questioning in detail. If we're
16 to repeat for each witness, to ask the same line of
17 questions, we'll never finish.

18 THE COURT: This is the problem we anticipated in
19 the beginning of the trial, the different defense
20 counsel following the same ground. I do think, counsel,
21 that he did go into his method of arriving at his figure.
22 Now, maybe there was some area you wanted to inquire
23 about.

24 MR. TORVE: Well, I was more concerned specifically
25 with the exact calculations he'd made. I don't think

1 Mr. Dufford had asked him, the formula which he had,
2 and it was passed over rather quickly on Direct and
3 it's not in the study, and sitting at counsel, it's
4 awful hard to pick that question up.

5 THE COURT: All right, you may proceed. We can't
6 be too tight on this.

7 A The maximum water temperature below the Boardman Road
8 Crossing that day was 75 degrees; the temperature of
9 the Springs, 47 degrees; subtract the two and we get
10 28 degrees. Now, if we were to maintain the temperature,
11 if the temperature that day was not to have exceeded 68
12 degrees, we should have had 7 degrees less, or $7/28$,
13 which is equivalent to one-quarter, one-quarter less
14 temperature degrees. Now, the flow on that day in the
15 U.S.G.S. reports was 22 degrees. Pardon me, 22 CFS.
16 And, what I have said, that in order to reduce the
17 temperature by one-fourth, we should have a flow in-
18 crease of the 47-degree water of one-fourth, or one-fourth
19 of 22, which is, what, $5-1/2$. Now, I also said that in
20 order for this formula to work, that that one-quarter
21 water should not have spread out, it should just become
22 deeper in that exact point. But in reality, when you
23 add another quarter of water to a stream, it's going to
24 spread out more. And, so, this is going to result in
25 more surface area of the stream exposed to solar

1 radiation or to the air, which you might gain heat by
2 conduction. And I also said that the air temperatures
3 on that particular day were lower than the historical
4 highs for that particular day. So, that sometime in
5 the future, if this particular day again occurs and the
6 air temperature is up near historical high, we might
7 expect that water to get even warmer than it did on
8 July 17th of '73. So, I have allowed 2-1/2 CFS to
9 compensate for these possibilities; for the possible
10 increase of air temperature, but the definite increase
11 in the area of the stream exposure.

12 Q That comes up in your estimation, 30 CFS?

13 A Thirty CFS.

14 Q Now, on that air temperature in Spokane, where did you
15 get your readings, that these were the highest record-
16 able temperatures between 1881 and 1973?

17 A I got the historical records from the U.S. Weather
18 Bureau.

19 Q Did you take any other period as being representative?
20 Why did you take 1881 to 1973?

21 A That was the period of record.

22 Q That were available?

23 A That were available.

24 Q And did you make any attempt to determine what the
25 probability of their recurring in 1974 or on, or not?

1 A No, I did not make any probability studies.

2 Q So, in effect, the only thing we know about that
3 particular conclusion is that those were recordable
4 highs during that period at one time, one time, accord-
5 ing to history?

6 A One or more, because there's some historical highs that
7 have been equaled in other years, later years.

8 Q But we don't have that in your studies, do we?

9 A Not in the study.

10 Q Now, the table on the provisional, I believe it's the
11 provisional maximum temperature, when it says
12 "provisional", whose provisional are we talking about?

13 A We're talking about the-- Provisional? Well, these
14 were temperatures set out at the time by the Advisory,
15 the National Technical Advisory Committee, and as far
16 as to my knowledge, these have not been changed.

17 Q But I take it these must be pfovisional as far as this
18 particular group is concerned?

19 A This is what they call them, provisional. Whether they
20 have since called them permanent or not, I don't know.

21 Q And they're recommended temperatures, I gather?

22 A Recommended maximum temperatures as being compatible
23 with the wellbeing of various fish in their associated
24 biota.

25 Q Is the term "wellbeing" defined anywhere in those

1 standards; is that term utilized?

2 A I don't recall whether they define the term.

3 Q Let me ask you this: Does your temperature gauge show
4 the extent of the maximum water temperatures on any
5 one day; the length of time that it remained, let's
6 say, at 68 degrees?

7 A I believe this question was asked previously, and if we
8 turn to page 8 and you see where the curves are up at
9 70 or near 70, if you could imagine a line at the 68-
10 degree level and draw it straight across and then relate
11 that amount of curve to the time of day, which I have
12 listed on the bottom of the graph, you may be able to
13 determine the length of time from that.

14 Q I guess what I'm asking is, did you prepare this parti-
15 cular graph?

16 A I prepared this particular graph.

17 Q Was that taken from minute-by-minute trepidations?

18 A This was continuous throughout the course of the day and
19 recorded on the charts. This is a little larger scale
20 than what appeared on the charts, so I had to draw these
21 on, increasing the scale.

22 Q So, these are your freehand representations of what the
23 graph shows?

24 A Freehand, but I used the lines on the charts and I
25 measured the distances. These curves are actually a

1 compilation of many points, of points that I measured
2 when I took the data off the charts. So, they're more
3 accurate than freehand.

4 Q When you did your chart, figure 6 on page 18, I take
5 it that is more of an average of the various figures
6 and then a comparison of the average, is that correct?

7 ATTORNEY: Would you read back the question for
8 me, Mr. Reporter, please?

9 (Reporter reading back the last question.)

10 A No, the water temperature is the maximum temperature
11 recorded at Station 3. The water flow points were taken
12 from the U.S.G.S. flow records as to the flow that they
13 recorded for that date.

14 Q (By Mr. Torve) But the chart is based on daily figures
15 and not hourly figures, is that correct? When you put
16 a point on here, it represents the daily figures?

17 A That's right. It represents the daily maximum water
18 temperature and the, I believe, the average daily flow.

19 Q Mr. Navarre, had you discussed the hypothetical Mr.
20 Dellwo had asked you on the stand before coming into
21 the court?

22 A The hypothetical that Mr. Dellwo asked; which one?

23 Q Relating to the fisheries in ancient times.

24 A This was brought up. I can't recall whether Mr. Dellwo
25 had brought it up or Mr. Rudolph.

1 Q Were you asked a specific hypothetical earlier?

2 A A specific hypothetical? I don't know if it was speci-
3 fic or not.

4 Q I note nothing in the study that you made related to
5 the questions which you were answering relating to what
6 might have been prior to the dams. Did you make any
7 particular study at all of that?

8 A No, I did not.

9 MR. TORVE: I think that's all the questions I
10 have.

11 THE COURT: Mr. Campbell?

12

13

CROSS-EXAMINATION

14 BY MR. CAMPBELL:

15 Q Mr. Navarre, my name is Campbell and I represent one
16 of the individual defendants. You know, your testi-
17 mony this morning sounded to me as if all the fish in
18 the stream would tend to float downstream and be lost
19 when the temperature got to be 68 degrees. Now, that
20 isn't what you meant to imply, is it?

21 A I didn't say all the fish would be. I said that parti-
22 cularly the smaller individuals that are already, that's
23 in the more unfavorable habitat where they have to
24 exert more stress on themselves to maintain their
25 position in the stream, would be the ones to first

1 drift out or be moved.

2 Q So, the answer to my question is really no, isn't it?

3 A That all the fish?

4 Q Yes.

5 A At 68 degrees? No, I don't believe all the fish would

6 be eliminated at 68 degrees.

7 Q You've had a lot of experience in this area. Does 30

8 cubic feet a second flow faster than 20?

9 A Does 30 flow faster?

10 Q Yes, the larger volume?

11 A I don't think significantly.

12 Q Then, I notice on the table on page 21, that you are

13 familiar with, the last sentence says, that the brown

14 trout are the dominant species, or were the dominant

15 species, found in the stream?

16 A That's correct.

17 Q How many types of game fish are there in the Northwest;

18 trout?

19 A How many types of trout?

20 Q Yes.

21 A You have the cutthroat, brook trout, the brown trout,

22 the Dolly Varden (phonetic), the rainbow trout; is that

23 five?

24 Q You did say Eastern Brook, too, didn't you?

25 A Brook trout.

1 Q What types are being raised at the State Fish Hatchery
2 on the reservation?

3 A I'm sorry, I just don't remember. I think I've been
4 told, but I don't remember what they're raising.

5 Q Do you know whether they're raising any brown trout or
6 not there?

7 A I'm not sure whether they're raising brown trout or not.

8 Q Would you agree with me that they're raising just Eastern
9 Brook and rainbow?

10 A I have no knowledge. I couldn't agree or disagree with
11 you.

12 Q All right. If they were raising only the Eastern
13 Brook and rainbow, where do these brown trout come
14 from?

15 A The brown trout is actually an introduced species, and
16 a brown trout is amongst the trout that's in the stream
17 is a better competitor, and I would expect them to be
18 the dominant species inhabiting the stream.

19 Q They're more hardy, then, than these other trout I
20 asked you about, are they?

21 A No, I won't say they're more hardy. In fact, as far
22 as lethal temperatures are concerned, brook trout can
23 tolerate a slightly higher temperature than the brown
24 trout.

25 Q What do you mean by a "better competitor", then?

1 A They're just able to select the habitat or the niche
2 in the stream and kick the other species out, that's
3 all.

4 Q So, if you found more brown trout than the other species,
5 like, that was all you found at Station 2, apparently
6 those trout have lasted through the years, have they
7 not?

8 A The size of the brown trout that I found, I would
9 expect that they would have lasted through the year.

10 Q How does the flooding affect the fish population, like
11 the spring floodings that we have, or, for example, this
12 last winter's flooding?

13 A This last winter's flooding could have had pretty
14 significant effects.

15 Q When the fish get down below the falls, I believe you
16 testified this morning, they can't get back up?

17 A That is correct.

18 Q The brown trout?

19 A That's correct.

20 Q So, if you found a dominance of brown trout at Station
21 2, that is above the falls, isn't it?

22 A That's right.

23 Q And at Station 1, which is even farther upstream, then
24 those fish have been there for some years, have they
25 not?

1 A I would expect the ones at Station 2, from the larger
2 size. Now, the fish at Station 1, at least some of
3 them, were smaller and they may not have been there
4 for years.

5 Q Well, I should say, this species has been here for
6 years?

7 A I would expect so.

8 Q So, they've survived the temperatures, correct?

9 A Yes.

10 Q They've survived the flooding?

11 A Yes.

12 Q And they've survived the fishing that is done on the
13 stream?

14 A Yes.

15 Q Do you know whether the stream is restocked by anyone
16 at this time?

17 A I do not know. As I recall, the Hatchery manager said
18 they used to stock the stream, but I can't-- Well, I
19 know he said definitely that he-- I remember one time
20 he told me about restocking the stream. I don't know
21 if he's stocking the stream currently.

22 Q Nor when it was last stocked?

23 A No, I don't know when it was last stocked.

24 Q You're familiar with the stream, and we've heard a
25 great deal about it the last few days you've been here,

1 but I don't believe we've had any testimony as to the
2 length of the stream from the Matthews (phonetic)
3 Spring area to its confluence with the Spokane. Do
4 you have a figure for that?

5 A The figure I've got, when I run it off the U.S.G.S.
6 quad with my map wheel, was about six and a-half miles
7 from the Ford Bridge down.

8 Q So, then, the area where the main studies were done,
9 below the falls or below the Boardman Bridge, is one-
10 sixth of the length of the stream that we're talking
11 about, is that correct?

12 A If indeed it is one mile from the mouth to the falls,
13 which I think it probably is fairly close.

14 Q It would be--

15 A (Interrupting) It would be one-sixth.

16 Q All right.

17 MR. CAMPBELL: That's all I have, Your Honor.

18 THE COURT: Mr. Tracy?

19

20 CROSS-EXAMINATION

21 BY MR. TRACY:

22 Q I only have one or two questions, Mr. Navarre. You
23 stated on July 17th you took this high reading of 75
24 degrees?

25 A That's correct.

1 Q And on that date the average flow was 22 cubic feet
2 per second?

3 A That's correct.

4 Q Now, if the minimum flow on that date had been 17 cubic
5 feet per second and the high temperature had occurred
6 at that time, then your recommendation would be that you
7 would only need 25 cubic feet per second to keep this
8 stream as a natural fish--

9 A (Interrupting) I don't--

10 Q Wouldn't that be correct?

11 A No, I don't believe so, because if the Court should de-
12 cide that 30 CFS is necessary, this would be the flow
13 that would be recorded by a U.S.G.S. gauge, and fluc-
14 tuations during the day above or below this would be
15 expected to occur at that time as well as it did on the
16 17th, due to the evapotranspiration rate.

17 Q Now, the only other question I would like to ask is:
18 Were there any days where there was less than 20, or
19 20 cubic feet per second or less than 20 cubic feet per
20 second, and you had a temperature of less than 68 degrees
21 in the stream? Did you have any days like that?

22 A Less than 20 CFS?

23 Q Twenty or less, and less than 68 degrees as your
24 temperature in the stream?

25 A Less than 68 degrees. I had seven and nine days at an

1 average daily flow of 20 CFS, and below--

2 MR. GERMERAAD: Could you specify a period of time,
3 Mr. Tracy, or this whole period of time?

4 MR. TRACY: Well, his study apparently went from,
5 of the temperature went from, July 1st to September 30,
6 and I would assume that his chart flow went the same
7 length of time.

8 MR. GERMERAAD: He was asked a different question
9 earlier, so if you want him to make a calculation, I'm
10 sure he will.

11 MR. TRACY: Well, I would just ask that he make
12 that calculation and supply it when it's available.

13 A Do you want it later on?

14 Q (By Mr. Tracy) Well, if it would take a lot of time,
15 you can supply it later on.

16 A Maybe you had better repeat the question so I can write
17 it down.

18 Q Well, my question was: Were there any days where there
19 was less than 20 cubic feet per second flow, 20 or less,
20 and the water temperature was less than 68 degrees, that
21 you found in your study?

22 MR. GERMERAAD: Your Honor, I might make an objec-
23 tion. You would be the best one to decide, in your
24 discretion, but most times witnesses are not required
25 to do a lot of additional work and then come back,

1 because that might open the whole witness all over
2 again. And there has to be a limit as to how much you
3 can require a witness to do and bring back into the
4 courtroom, especially when he may be off the stand in
5 a few minutes or a half hour.

6 THE COURT: That's true, but I think, if I under-
7 stand his question, it relates to figure 3 on pages 7
8 and 8. So, you've got the flow chart and water
9 temperature, and I suppose you can--

10 A (Interrupting) Your Honor, this flow chart I've got is
11 from Mr. Woodward's gauge, and it reflects the evapo-
12 transpiration rate, and it would be hard to pick out
13 the average flow from these. I think it would be best
14 done from a table.

15 THE COURT: If you can't answer it from your
16 study, just say so.

17 A It can be answered; it would take a little time.

18 Q (By Mr. Tracy) Well, you can answer it directly from
19 the table?

20 A Oh, yes. The information is in the table.

21 MR. TRACY: That's all the questions I have. Thank
22 you.

23 THE COURT: Mr. Cerutti?

24 MR. GERMERAAD: Excuse me, Your Honor. Than, I
25 assume, since the answer was, "It is available in the

1 table," that Mr. Tracy could make the calculation, and
2 the witness can forget it?

3 THE COURT: Yes, that's what I've got figured out.
4

5 CROSS-EXAMINATION

6 BY MR. CERUTTI:

7 Q Am I correct in understanding, sir, that on the basis
8 of your study, there is only a one-mile section of
9 this creek in which there's any problem as to the
10 quality of the environment of the trout?

11 A I would say that the, from the mouth up to the falls
12 and possibly a little way above that, is the part of
13 most concern, concerning temperatures. As far as
14 reduced flow is concerned, the whole creek, because
15 of the exposed wide perimeter of the area caused by
16 reduced flow is of concern.

17 Q I'm afraid I don't understand the qualification to your
18 answer. You say the reduced flow is of greater concern?
19 Do you mean that a large river can hold more fish than
20 a small creek, is that it?

21 A It depends upon the stream. We generally, in terms
22 of the fish production, we term it in pounds-per-acre,
23 or pounds-per-surface-acre. If the stream were larger,
24 it would produce more fish.

25 Q From your experience and knowledge as to this matter,

1 can I safely assume there is nothing we can do to bring
2 back the steelhead or the salmon?

3 A Nothing we can do?

4 Q That you're aware of?

5 A That I'm aware of. To where, bring back the steelhead
6 or salmon to where?

7 Q Bring them back to the mouth of the Chamokane Creek,
8 assuming that they were ever there in the first place.

9 A I think we'd have to do a heck of a lot of trucking.

10 MR. CERUTTI: Thank you. I have nothing further,
11 Your Honor.

12 THE COURT: Mr. Rekofke?

13

14

CROSS-EXAMINATION

15 BY MR. REKOFKE:

16 Q Mr. Navarre, you mentioned, I think, earlier in your
17 Direct Examination that some sort of a study, one-page
18 study or something, that was made in 1970 or 1971?

19 A That's correct.

20 Q Do you have that with you?

21 A I believe I have it in my briefcase.

22 THE COURT: Didn't he testify he did not use that?

23 MR. RUDOLPH: Could I have just a minute. I think
24 it's on file. May I ask the witness a question, Your
25 Honor?

1 THE COURT: Yes.

2 MR. RUDOLPH: Do you remember who that's by?

3 A I believe that was by Braden Pillow, the biologist.

4 MR. RUDOLPH: That was filed with the Court a long

5 time ago; 3-1-74-2.

6 ATTORNEY: There has been a change in that number.

7 THE CLERK OF THE COURT: 3-1-74-2 Is now Plaintiff's

8 38.

9 Q (By Mr. Rekofke) Apparently, this was a different

10 study, I gather, from the content.

11 A I believe it was just a very brief study in, maybe,

12 just a one-day trip, I'm not sure.

13 Q Mr. Navarre, you were first requested to conduct this

14 study sometime last year, sometime in 1973. When was

15 that, more precisely?

16 A I believe it was sometime in April.

17 Q Of 1973, and who requested you, specifically?

18 A Mr. James Heckman (phonetic), our program manager of

19 the Northwest Fisheries program.

20 Q He's your immediate supervisor, is he?

21 A He's my immediate supervisor.

22 Q And that's over where, in Olympia?

23 A Tumwater, right outside of Olympia.

24 Q Okay. Then, you went up to the Chamokane, I believe,

25 the first time, in July, July 13, 1973?

1 A That's correct.

2 Q That's the first time, apparently, you'd ever seen it?

3 A That's right.

4 Q Prior to that time, July 13, 1973, who did you discuss
5 this matter with?

6 A Prior to--

7 Q July 13, 1973, yes; besides the gentleman who commis-
8 sioned you to do the work in the first place?

9 A I had talked to Mr. Jim Coon of the Regional Solicitor's
10 office.

11 Q Did he discuss the facts of this case with you?

12 A He told me some things about the case. I can't recall
13 what he told me.

14 Q Did you discuss at that time this 30-second-feet matter?

15 A He gave me a copy of the brief, or whatever it is, that
16 had the 30 CFS in it.

17 Q In other words, before you ever made your study, and as
18 you've testified to here in court, you were aware of
19 this, apparently, requirement of this 30 second feet
20 being established?

21 MR. GERMERAAD: Your Honor, I object to the use
22 of the word "requirement" in that question.

23 THE COURT: He can phrase the question as he likes.

24 A I was aware that 30 CFS was being asked as a minimum
25 flow.

1 Q (By Mr. Rekofke) Then, your studies, that you've
2 testified to here, by means of your studies, you were,
3 of course, attempting to justify that particular figure?
4 MR. GERMERAAD: Your Honor, I would object to that
5 as an improper question.
6 THE COURT: Overruled.
7 A The figure compared to both what was in the brief and
8 on the report, the written-- By the other biologist.
9 Q (By Mr. Rekofke) By what?
10 A By the other biologist. The short biological report
11 that was done in '70, I believe.
12 Q In other words, when you started out, you knew the
13 ultimate goal you had in mind?
14 A No. Well, I knew what was asked for, but I didn't know
15 what might be required.
16 Q I see. But your study was done in contemplation of this
17 litigation, was it not?
18 A I was asked to do the study, and knew the information
19 would be used in the litigation, or, at least, it might
20 be used in litigation.
21 Q And discussed it with counsel. You apparently had some
22 other reports indicating this 30-second-foot figure.
23 Any other persons you discussed this with prior to the
24 time you made your examination?
25 A Oh, just people in the office, I think, talked about it

1 a little bit.

2 Q And discussed the figure of 30 second feet, I suppose,
3 along with everything else, in connection with this
4 project you were undertaking?

5 A It might have been mentioned, I don't recall.

6 Q I see. I'm not going into the computations, I agree
7 with counsel for the Government that it has been gone
8 into a couple of times, but when did you first make
9 your calculations, in point of time?

10 A I waited until I had all the data in.

11 Q When was that?

12 A And was writing the report.

13 Q When was that?

14 A When did I start compiling the draft?

15 Q Yes.

16 A Sometime in the fall of '73. I was compiling data as
17 I went along in some of these charts. By the time I
18 actually made the calculations and put a recommendation
19 in the report, it was in, you know, the late stages of
20 the report; December, maybe.

21 Q Your actual going onto the site started July 13th, but
22 you did keep, apparently, some devices up there up
23 until sometime in November?

24 A In fact, the devices are still there. I just haven't
25 been able to recover them yet.

1 Q Apparently the device at Station 3, for some reason,
2 terminated about October 15th?

3 A That's because of high water, and I couldn't recover it.
4 Actually, I intended to keep the data just right on up
5 to trial time, if possible, but I just couldn't get over
6 to recover the thermograph, and when I did come over,
7 the water was too high.

8 Q I see. I would gather from your testimony previously
9 that your only connection with the Chamokane Creek was
10 during the summer and fall of 1973, is that correct?

11 A That's correct.

12 Q And the last time you were there, apparently, was some-
13 time in December?

14 A I believe that's about correct.

15 Q And, so, you are not familiar with any of the conditions
16 up there anytime before July 13th, 1973?

17 A I had never seen the creek before July 13, '73.

18 Q You have never lived in this area, have you? When I
19 say "this area", I mean in the Spokane area.

20 A No, I have not.

21 Q Were you aware of last summer being rather a dry year,
22 or were you aware of that?

23 A I understood it to be a dry year.

24 Q Let me ask you this: All the trout that you collected
25 at all of the locations in Chamokane Creek were in

1 excellent condition?

2 A They appeared to be in good condition.

3 Q Well, I was just reading your report. It says, "excel-

4 lent condition".

5 A Good to excellent condition.

6 Q So, apparently, if the temperature did get above 68,

7 apparently it wasn't bothering very much.

8 A Well, at least, the one fish that I did take in the

9 Station No. 3 where the temperature was getting above

10 68 degrees, he was in good condition and apparently

11 doing all right.

12 Q Would you expect, if these flows as they are recorded on

13 the gauges which appear in your report and with tempera-

14 tures going up above 68 on a number of occasions, some

15 detrimental effect on those fish?

16 A I think the fish that the temperature has a detrimental

17 effect on left the stream.

18 Q Oh, they went down the river?

19 A I think when they become stressed that they just cannot

20 maintain themselves in the stream.

21 Q Why do they go downstream where it's warmer rather than

22 upstream where it's cooler.

23 A When a fish is stressed, he isn't about to try to fight

24 his way up a riffle.

25 Q I see. So, he kind of goes along with the current?

1 A He is kind of swept down.

2 Q You've testified that temperature is a factor. What are
3 the other factors?

4 A Water chemistry, food supply, velocity of the stream,
5 competition for other species that would be competing
6 for the same food and space.

7 Q All of those, I guess, are pretty good.

8 A They all appear good.

9 Q And this particular formula, in determining 30 second
10 feet, is this a method or formula that is recognized
11 in your line of work, or is this something that you
12 have developed?

13 MR. GERMERAAD: Your Honor, I was going to rely
14 on Mr. Rekofke's promise that he wasn't going to go
15 into the formula, since it's already been gone into
16 three times.

17 THE COURT: He's going to ask now whether this
18 was his own formula or something that's the standard
19 in the industry.

20 MR. GERMERAAD: I'll withdraw any objection, Your
21 Honor.

22 A It's kind of a modification of a formula. In logging
23 studies, for example, where they are doing clear
24 cutting on one branch of the stream and you've got
25 another branch of the stream that isn't clear cut, where

1 the water temperature won't change, but up here, where
2 they clear cut, you expect water temperature changes.
3 So, we use formulae to direct relationship, direct
4 mixing, where the two streams come together, we would
5 predict the temperatures on downstream from that point.
6 Q (By Mr. Rekofke) So, if I understand your answer, it's
7 your modification of some sort of fairly good formula?
8 A Yes, that's my opinion.
9 Q I see. So, would you call it the "Navarre formula"?
10 A If you wish.
11 Q I'm not going to go into the computation. Do you have
12 them written down somewhere?
13 A The formula?
14 Q No, the actual computations that you made in your book
15 or your report.
16 A I had written them down on scraps of paper when I was
17 figuring it up when I was doing the report.
18 Q You don't have them in the field notes?
19 A No, they ended up in the round file.
20 Q So, the actual computations that you used are nowhere
21 to be found?
22 A That's correct.
23 Q Now, this report is dated February, 1974, Exhibit 64.
24 Is that when you completed it, February, 1974?
25 A No, I completed it a little earlier. We always date

1 our completed reports at the time that the signatures
2 go on before running them off, and this report has got
3 the signature also of my other regional supervisor of
4 the division. So we have to allow a delay in time from
5 any given time, and so we try to date it for the month
6 that the report was signed.

7 Q At what temperature-- I guess no one has asked this,
8 maybe you can help me out-- What temperature would
9 trout, brown trout, perish or asphyxiate or whatever
10 trout do when it gets too warm?

11 A Letal temperature for brown trout is 25.-- Now, I don't
12 have the temperature for brown trout. I've got it for
13 brook and rainbow, and I didn't write down the tempera-
14 ture for brown, which was slightly less than the brook.
15 This would be between 76 and 77. Could I qualify that
16 one more? This, of course, if the trout is, if the
17 temperature is that, I mean, we couldn't just take him
18 from 50 degrees and dump him into this temperature and
19 expect him to live. He has to be acclimated slowly.

20 Q Yes, I think you testified to that this morning.

21 A Yes, I just wanted to qualify my answer.

22 Q Incidentally, I was just going through this report and
23 I found, perhaps you probably found the same thing,
24 apparently 12 days between July 18 and October 15 that
25 the maximum temperature was 68 degrees or above. I

1 mean, you can count it, I guess, during the recess if
2 you want, but does that sound about right to you?
3 A Yes, that sounds about right.
4 Q And, apparently, the average temperature on any of those
5 days from July 18 to October 15, never exceeded, or, as
6 a matter of fact, was below 68 degrees?
7 A The average temperature?
8 Q Average.
9 A At Station 3?
10 Q Yes.
11 A The average temperature, which I took from adding the
12 maximum and minimum and dividing by two, no, I don't
13 see anyplace here where that average exceeds 68 degrees.
14 Q The highest average, as far as I can tell from your
15 report, is about 64 1/2 degrees?
16 A That could be right.
17 MR. REKOFKE: Thank you.
18 THE COURT: I think this is a good time to take
19 the afternoon recess. We'll take about 10 minutes.
20 (A 10-minute recess was taken
21 at this time.)
22 THE COURT: Is there further Cross-examination of
23 this witness?
24 MR. REKOFKE: No, Your Honor.
25 THE COURT: All right, Redirect.

1 REDIRECT EXAMINATION

2 BY MR. GERMERAAD:

3 Q Usually, when is the highest temperature of water
4 recorded, during what periods of time during the day?

5 A In the late afternoon.

6 Q The temperatures of the water, would they be more
7 critical during certain seasons of the year than others?

8 A The warmest temperatures, the hot temperatures, would
9 be more critical in the summer.

10 Q Because that is when the hot temperatures would be more
11 likely to occur?

12 A That's when they're more likely to occur.

13 Q Although this seems an obvious question, I would like
14 it in the record. The air temperature changes from day
15 to day, does it not?

16 A That's correct.

17 Q And, I believe, you mentioned two factors that heat the
18 water, and would you please tell us what those two
19 factors are?

20 A The primary source is from solar radiation, and the
21 water would also receive some heat through conduction.

22 Q This is conduction from the warm air, ambient tempera-
23 ture of the air?

24 A That's correct. There is a possibility that if it's
25 running over a stream bed, and if for some reason it

1 happens to be warmer, they could receive some warming
2 from convection.

3 Q Is this the case in Chamokane, to your knowledge?

4 A No, but it could be the case if the flow was suddenly
5 increased or something like this, that would pick up
6 heat from the additional area that is exposed to air
7 temperatures.

8 Q Would it be an accurate statement if I were to summarize
9 in part your conclusion, that if we had 30 CFS of flows,
10 the water temperature in Lower Chamokane would probably
11 not exceed 68 degrees?

12 MR. REKOFKE: I'm going to object to this, Your
13 Honor. This question is leading.

14 THE COURT: I'll let him answer. It is leading,
15 but I think we'll get to it quicker that way.

16 A I believe at 30 CFS the temperatures would remain at
17 68 or below in the summer.

18 Q (By Mr. Germeraad) Would the relationships that you
19 have established between stream flow and temperature
20 of water in the stream apply to other years under
21 similar conditions?

22 A If all other conditions were similar, the flow, the air
23 temperature, winds, solar radiation, and all other
24 factors influencing the heating of the stream, it should
25 be the same.

1 Q If a person were to draw a reasonable deduction or
2 conclusion from your report, he could apply, could he
3 not, those conclusions or deductions as to other years?
4 A I believe he could.
5 Q Would you please get up from the stand and go over to
6 Plaintiff's Exhibit 10, which is on the board.
7 A (Does so.)
8 Q The square blocks on Plaintiff's 10 are section marks,
9 are they not?
10 A They appear to be so.
11 Q And in reference to Plaintiff's 10, what would be the
12 length of Chamokane Creek from its mouth at the Spokane
13 River to the location of Chamokane Falls?
14 A In a direct line between the mouth and the falls, it
15 appears that it might be a mile and a-half, but the
16 meanders occurring in the stream, it could be probably
17 a little bit longer than that.
18 Q On Cross-examination, I believe Mr. Rekofke asked you
19 about being aware of certain other stream flow measure-
20 ments. I believe you stated that one you were aware of
21 was 20 CFS. If it wasn't Mr. Rekofke's question, it
22 was one of defendants' counsel. Do you know, was that
23 a study conducted by a State or federal agency which
24 came up with the 20-CFS figure?
25 A I saw the 20 CFS, 20 cubic feet per second, in a letter

1 signed by Mr. Biggs (phonetic), then-Director of the
2 Game Department, stating that that was the flow,
3 minimum flow that should be retained. I think it had
4 reference to a water right permit or water use permit.

5 Q The study which you did of the Chamokane Creek, stream
6 and its fishery resources, does this study also relate
7 to the overall purpose of the entire Northwest
8 Fisheries program?

9 A Yes, it does, because the function of the Northwest
10 Fisheries program is to provide this type of technical
11 assistance to Indian tribes. It's what we're paid to
12 do.

13 MR. GERMERAAD: I'm pausing, Your Honor, to find
14 a particular exhibit.

15 Q (By Mr. Germeraad) Mr. Navarre, I asked the bailiff
16 to hand you a copy of Mr. Smithpeter's file. This is
17 a State file for one of the defendants in the case, and
18 I believe the State has filed all these previously with
19 the Court. Do you find in that file a letter which you
20 earlier referred to?

21 A I believe that this is it.

22 Q Is this the letter that you were referring to as the
23 1969 letter from Mr. John Biggs.

24 A I think this is where I got the, saw the 20 CFS figure
25 mentioned.

1 Q Would you read into the record, please, the second
2 paragraph of that letter?

3 A "Chamokane Creek is one of the best unspoiled trout
4 streams in this portion of the State. It flows through
5 an undeveloped area, such as, no housing, minimum
6 agriculture, logging, mining, et cetera. It contains
7 an excellent riffle-and-pool ratio which has and con-
8 tinues to be conducive to maintaining outstanding
9 spawning and rearing areas for trout."

10 Q Thank you. Have you made other inquiries as to the
11 reputation of Chamokane Creek as a trout fishery?

12 A Yes, I have.

13 Q What is that reputation?

14 A I understand that it's--

15 MR. REKOFKE: I'm going to object. I don't see
16 what relation there is to that question and answer.

17 THE COURT: I'll have to sustain the objection.
18 This didn't come out on Cross.

19 MR. GERMERAAD: I'll withdraw that question, Your
20 Honor.

21 Q (By Mr. Germeraad) Were you in court when Mr. Walter
22 Woodward stated that from his studies the base flow
23 of Chamokane Creek over the period of time 1960 to 1970
24 was 30 CFS?

25 A I heard the 30 CFS mentioned. What the exact period was,

1 I don't recall.

2 Q Did you also hear as to a certain period of time; I
3 think the record would reflect that this would be 1931
4 to 1970, that the average flow would be 33 CFS?

5 A Again, as I recall, I heard the 33, but I don't recall
6 the period.

7 Q Assuming that the figure given by Mr. Walt Woodward is
8 correct, that is the flow of 30 CFS over the period of
9 time 1960 to 1970, what relationship does that have, do
10 you think, to the opinion of Mr. Biggs expressed in this
11 letter as to the reputation of Chamokane Creek as a
12 trout fishery?

13 MR. TORVE: I object to that, Your Honor. How
14 could he know what is in Mr. Biggs' mind in regards
15 to that? There is no showing Mr. Biggs knew of any
16 of the calculations Mr. Woodward had or even would
17 agree with him. I assume that he probably wouldn't
18 agree.

19 MR. REKOFKE: I further object, Your Honor, on
20 the grounds it's not proper Redirect. I'm not aware
21 of any defendants' bringing in this particular matter
22 on Cross-examination.

23 MR. GERMERAAD: I would like to explain the rela-
24 tionship to the Cross-examination, Your Honor: I believe
25 there were several lines of questioning by different

1 counsel that would imply that because this study was
2 conducted during only one year, it had no relationship
3 to what might have occurred in other years, and a line
4 of questioning that because there was not a flow of 30
5 CFS measured last summer, that a figure of 30 CFS would
6 be coming just out of the thin air, and I think my
7 question relates to both of these lines of questioning
8 that were asked in Cross-examination, Your Honor.

9 THE COURT: Read back the question, Mr. Reporter.

10 (Reporter reading back the last
11 question.)

12 THE COURT: He may answer.

13 A I don't know if the witness understands the question.
14 Could you possibly rephrase it?

15 Q (By Mr. Germeraad) If you have a flow, if you assume
16 a flow of 30 CFS, and assume that flow of 30 CFS on an
17 average did exist at that time, would having a good
18 water flow at that period of time, in conjunction with
19 the other characteristics described by Mr. Biggs in that
20 letter, lead you to conclude that this area would be a
21 good trout fishery?

22 A At 30 CFS, I think it would be a good trout fishery, and
23 from the letter, it states it was a good trout fishery.

24 Q Is the 30 CFS recommendation for a minimum stream flow
25 that you expressed in your report your best professional

1 judgment?

2 A That's the best figure I could come up with.

3 Q Have you, in any way, testified to a figure you do not
4 believe it?

5 MR. REKOFKE: I'm going to object to this.

6 THE COURT: That question is all right. He was
7 attacked on it on Cross-examination.

8 MR. REKOFKE: In answer, it's self-serving.

9 MR. GERMERAAD: Your questions were self-serving
10 for your purpose.

11 MR. REKOFKE: I presume, the witness is, I guess,
12 supposed to be presumed to be telling the truth. In
13 addition, this is an attempt to rehabilitate the witness
14 in some fashion, and I object, Your Honor; it's improper.

15 THE COURT: You may answer.

16 Q Could I please have the question again.
17 (Reporter reading back the last
18 question.)

19 A No, I have not testified to a figure which I do not
20 believe in.

21 MR. GERMERAAD: No further questions, Your Honor.

22 THE COURT: Any further questions of this witness?

23 MR. DUFFORD: I would like to ask a couple.
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RE-CROSS-EXAMINATION

BY MR. DUFFORD:

Q In the Redirect Examination, reference was made to the Northwest Fishery program. When did that program become applicable to this part of the State?

A It became applicable and was formed in the spring of 1973. Before that time, we had a biologist in the regional office in Portland--

Q That answers my question. Have you, in fact, then had extensive experience with the watersheds in this part of the State?

A No, I have not.

Q With reference to Mr. Biggs letter of August 22nd, 1969. I believe you have it before you, do you not?

A Yes, I do.

Q Since you read the second paragraph, I wonder if you would read the last paragraph?

A Certainly. "We believe that in order to perpetuate this valuable fishery, a minimum flow of 20 CFS be established. Therefore, these two departments wish to recommend that the above-referenced application be approved providing that all diversions for consumptive water use ceases when the flow of Chamokane Creek falls below 20 CFS as measured immediately below the applicant's point of diversion."

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MR. DUFFORD: Thank you.

THE COURT: Are there any further questions?

RECROSS-EXAMINATION

BY MR. CERUTTI:

Q Sir, I wonder if you would step back over to the Plaintiff's Exhibit No. 10.

A (Does so.)

Q Using the same method that you did to calculate the distance from the mouth of the river up to the falls, I wonder if you can tell me the distance of Chamokane Creek from the falls up to the place where it begins to run.

A Somewhere around five miles, and that would take in all along the springs.

MR. CERUTTI: Thank you. I have nothing further, Your Honor.

MR. CAMPBELL: If Your Honor please. Is this letter from Mr. Biggs that he's read in evidence?

MR. GERMERAAD: It isn't. I assume that at some point in time, the State would ask that all the files that it had on file would be--

THE COURT: It was filed with the other materials, but I don't know what you gentlemen have done about those other exhibits.

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ATTORNEY: I would move that it be marked as an exhibit and admitted at this time.

MR. GERMERAAD: Would it be better for the State to have a copy of that marked so the file would remain intact?

MR. DUFFORD: Yes. We have a carbon copy of it here.

MR. GERMERAAD: As long as we note that the original in the file did have two signatures, and this-- I wonder if we just couldn't Xerox this and enter it later. There are some differences on it, the lack of signatures and who carbon copies go to, that are different, and there are written pencil marks at the top.

THE COURT: I can't see that that makes any difference.

MR. GERMERAAD: Well, as long as it's on the record that it's slightly changed and the original was signed.

MR. TORVE: Your Honor, I think the point being that if he read from this, this is the document that ought to go into evidence because he utilized it for cross purposes.

MR. RUDOLPH: He read from that one, Mr. Torve.

THE COURT: That's 65?

1 THE CLERK OF THE COURT: Yes.

2 THE COURT: Plaintiff's 65 will be admitted.

3 (Thereupon, Plaintiff's Exhibit 65, was received

4 in evidence.)

5 THE COURT: I might call to counsel's attention

6 that my records don't show the Redback (phonetic) report

7 has ever been offered as an exhibit yet; 64?

8 MR. GERMERAAD: Your Honor, thank you. I would

9 move its admission.

10 THE COURT: I assume there's no objection, since

11 everybody has used it. Plaintiff's 64 is admitted.

12 (Thereupon, Plaintiff's Exhibit 64 was received in

13 evidence.)

14 THE COURT: You may step down, Mr. Navarre.

15 Thank you.

16 MR. DUFFORD: Could we have a brief recess to

17 confer between counsel, Your Honor?

18 THE COURT: Fine, if it's necessary.

19 MR. RUDOLPH: We had had a discussion with Mr.

20 Dufford and Mr. Roe concerning the State's witness

21 coming out of order at this time; their fish biologist.

22 The idea being if he testified at this time, then Mr.

23 Navarre could be available to hear him for possible

24 rebuttal and not have to stay until the defendants'

25 case, and I had thought that was agreeable. Is there

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something further you wanted to confer about, Wick?

MR. ROE: What we were going to ask for, Your Honor, is about five minutes to figure out whether we really wanted to call Mr. Simon--

THE COURT: We'll take a five-minute recess while you reorganize.

(A five-minute recess was taken at this time.)

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MR. RUDOLPH: Call Mr. Harvey, please, Your Honor.

MARLAN D. HARVEY,

being first duly sworn, testified on behalf of the plaintiff
as follows:

THE CLERK OF THE COURT: Would you please state
your full name to the Court, spelling your last name?

A My name is Marlan D. Harvey, H-a-r-v-e-y.

COURT REPORTER: Marlan is M-a-r-l-i-n?

A Marlan, M-a-r-l-a-n.

DIRECT EXAMINATION

BY MR. RUDOLPH:

Q Would you state your present address, Mr. Harvey?

A 1413 Monte Vista, Pocatella, Idaho.

Q By whom are you employed?

A Bureau of Indian Affairs.

Q What is your present work assignment?

A Employed as a soil scientist on the Fort Hall Indian
Reservation.

Q How long have you been down there?

A About two years.

Q As a soil scientist, did you have a particular specialty
within that profession?

A My job says classification in mapping.

1 Q That's soil classification in mapping?

2 A Yes.

3 Q What is your education background?

4 A I have a B.S. Degree in Agronomy in Soils from Brigham
5 Young University in Provo, Utah.

6 Q Did you commence work following your graduation in the
7 soil field?

8 A Yes.

9 Q Tell us your work experience.

10 A I was employed by the Soil Conservation Service of the
11 USDA for one year, and I went to work for the Bureau of
12 Indian Affairs, and I have been with them about 18 years.

13 Q And what has been the nature of your work, then, with
14 the Bureau of Indian Affairs?

15 A Mostly land classification and soil mapping and soil
16 interpretation and other duties as assigned.

17 Q Do you belong to any professional organizations?

18 A Not at the present time. I have belonged to the Soil
19 Scientists Society of America for about 15 years, and
20 the Western Society of Soil Scientists.

21 Q Is there a national organization which works with
22 standard soil classifications?

23 A Yes, we have a National Cooperative Survey, which is
24 headed by the Soil Conservation Service. They are the
25 leaders in soil classification work.

1 Q What does that organization do?

2 A They set up standards for the land classification and
3 soil survey in the United States.

4 Q Have you participated in the work of that organization?

5 A Yes, I have.

6 Q And describe briefly in what manner you have partici-
7 pated and to what extent you have become familiar with
8 the standards developed by that organization?

9 A Each year, each state, under the leadership of the U.S.
10 Department of Agriculture, conducts a Soil Survey Work
11 Planning Conference, and all interested organizations
12 are invited to participate in this conference, and new
13 technology are discussed, and decided whether, what
14 standards are going to be implemented, what standards
15 are going to be changed, and the plans for the soil
16 survey and land classification work within each state.

17 Q Were you active within that organization during the
18 decade of the 1960's?

19 A Yes, I was.

20 Q Were you requested at some time in the past to conduct
21 a soil inventory on the Spokane Indian Reservation?

22 A Yes, I was.

23 Q And were you assigned to that task?

24 A Yes.

25 Q By whom?

1 A To be area soil scientist in the Bureau of Indian
2 Affairs office in Portland.

3 Q Do you remember the year you commenced the performance
4 of that soil inventory?

5 A Yes, it was 1964.

6 Q How long did you spend in taking the information,
7 overall?

8 A About three years.

9 Q Describe for us, again relatively briefly, how you
10 performed the inventory?

11 A We get together with, and cooperate with, the Soil
12 Conservation Service, and the university, the State
13 University, and work up a legend from past experience
14 that has been conducted in the state and in the
15 surrounding areas on the reservation, and then we go
16 out in the field and use necessary implements to examine
17 soil profiles and all the necessary examinations of the
18 soil, so that we're sure in our own minds we have all
19 the information necessary, and a direct examination of
20 the soils, and in addition to this, we take representa-
21 tive samples of soil and send them to the laboratory
22 for complete laboratory analysis, and all of this
23 information is recorded on photographs and in soil
24 legends, and notes, et cetera.

25 Q Now, are you describing this as something you actually

1 did on the Spokane Indian Reservation?

2 A Yes, that's right.

3 Q Did you, in fact, take soil samples?

4 A Yes.

5 Q These tools which you mentioned, what are some of those?

6 A Mostly spades and augers; backhoes, once in a while.

7 Q Did you have any basic working material that you worked

8 from in order to give you a mapping pattern?

9 A We use all the information we can possibly get; geolo-

10 gy information, meteorology, and others that I can't

11 recall right now.

12 Q Do you take aerial photos of the lands you're classi-

13 fying, or how do you approach that?

14 A The aerial photos are provided.

15 Q Did you have aerial photos here?

16 A Yes.

17 Q The sampling process, is this uniform?

18 A Yes.

19 Q That is, do you take the same number of samples on each

20 tract of land, or will this vary?

21 A It will vary according to the quality of the land.

22 Q In the classification which you did following the

23 sampling, whose standards did you use?

24 A The standards set up by the National Cooperative Soil

25 Survey.

1 Q And did you at that time, and when you finished, in three
2 years, did you set forth a written record, or, on these
3 aerial photos, I should add: On these aerial photos,
4 would these aerial photos be the result of your
5 classification?

6 A Yes.

7 Q Do you have at least some of those here?

8 A Yes, there are.

9 MR. RUDOLPH: Could you put the sticker on the
10 back? That would be Plaintiff's--

11 THE CLERK OF THE COURT: Sixty-six.

12 MR. RUDOLPH: --66. Your Honor, I might state the
13 reason for that: We were going to ask, if possible,
14 after the exhibit has been used, if the Clerk would
15 make a copy of it and substitute the copy for the
16 original, so it could be withdrawn, and would ask your
17 permission, and counsels', for that to be done.

18 THE COURT: Any objection?

19 MR. DUFFORD: Fine.

20 MR. TORVE: None.

21 THE COURT: This is 66?

22 THE CLERK OF THE COURT: 66.

23 (Thereupon, Plaintiff's Exhibit 66 was marked for
24 identification.)

25 MR. CAMPBELL: Well, I might ask, Your Honor,

1 counsel, do you have a series of these you're going to
2 introduce?

3 MR. RUDOLPH: No, I do not, and I was, well, while
4 you are looking at that, I was going to explain to the
5 Court, I do have a series of them, and I do not plan
6 to introduce them, and the one being introduced is
7 purely for purposes of illustration. The others are
8 available for examination, but we did not intend to
9 add to an already large file.

10 MR. CAMPBELL: I think we will all agree the aerial
11 photos were taken of the Indian Reservation.

12 Q (By Mr. Rudolph) Do you have in front of you, Mr.
13 Harvey, a copy of what is entitled, "Classification
14 and Correlation of the Soils of the Spokane Indian
15 Reservation"?

16 A Yes, I do.

17 Q So, as I ask concerning it, you're referring to a copy
18 of it?

19 THE COURT: Where are we on 66? We haven't had a
20 chance to finish examining it.

21 (Inaudible response.)

22 THE COURT: All right, go ahead.

23 Q (By Mr. Rudolph) Now, they're examining 66, which, I'll
24 simply ask you: Describe a little for us what that is.
25 You may not remember the particular land shown in that

1 particular photo, but tell us how you work from those
2 aerial photos?

3 A We, of course, we can identify the physical features
4 on the aerial photo, and know exactly where we are on
5 the ground, and then we examine the soil profile at
6 intervals which we think will give us complete
7 information about the soil, and then we draw lines on
8 the photograph and insert a symbol in those delineations.

9 Q A "symbol" being what, a symbol which designates as it
10 refers to that soil type?

11 A We refer to it as a "mapping unit", and that is generally
12 considered a soil type, yes.

13 Q Would you refer to the first page of what is Exhibit 11,
14 namely that classification book, and I'll ask, are the
15 symbols you just referred to, are those in the left-hand
16 column on page one and subsequent pages of that exhibit,
17 are those the ones you mean?

18 A Yes, those are the mapping units.

19 MR. CAMPBELL: May I interrupt at this time and ask
20 counsel, may we see the others that you weren't going
21 to introduce, the other--

22 MR. RUDOLPH: To be clear, if I was misunderstood
23 as saying those are all of them, they're not; for the
24 entire reservation, there were many more than that, but
25 those represent those right along the west, westerly

1 area of the Chamokane, and does not include those on
2 the Chamokane Bench. Now, those are out at the agency
3 office, but they are not here.

4 MR. CAMPBELL: But we do have larger area photos
5 I have seen of this area?

6 MR. RUDOLPH: Oh, yes.

7 MR. CAMPBELL: But they're the western part of the
8 Reservation without the classifications on them?

9 MR. RUDOLPH: No, this doesn't have the western
10 part of the Reservation.

11 MR. CAMPBELL: Eastern?

12 MR. RUDOLPH: Yes, it does have the eastern, but
13 these aerial photos, the ones, I don't remember the
14 number now--

15 THE CLERK OF THE COURT: Twenty-eight.

16 MR. RUDOLPH: --28, do not have any soil classes
17 on them.

18 Q (By Mr. Rudolph) You were referring to drawing in
19 certain lines. Would you describe a little the type of
20 lines, are they in pattern and rectangular form, or
21 what form do they follow?

22 A This particular area is what we call an alluvial soil
23 that's been deposited by a moving water, and, of course,
24 the lines will follow old preme (phonetic) channels,
25 generally speaking.

1 Q And am I correct, then, that that one, or others, will
2 have a number of loops and variations and so forth?

3 A That's right.

4 Q And am I also correct that in drawing those, you have
5 designated the confines or boundaries of a given soil
6 type?

7 A That's right.

8 Q Now, do you have, or did you complete, in connection
9 with your soil classification and inventory, did you
10 complete similar type aerial photos as 66, of the
11 entire Reservation?

12 A Yes, I did.

13 Q Did this complete your function, then, at that time?

14 A No.

15 Q What else did you do?

16 A Well, I have been called upon to interpret soils for
17 many other purposes.

18 Q You mean those soils on the Spokane Reservation, you mean?

19 A Yes.

20 Q Now, in what form were your findings left in 1967, and
21 when did you come to the preparation of Exhibit 11,
22 which is the classification book?

23 A It's mostly field notes and descriptions, including
24 the exhibits you referred to.

25 Q Would you describe for us, I'm referring to the first

1 page of Exhibit 11, which is dated June, 1970, and
2 states, "The final correlation was prepared by J.
3 Ellsworth Brown after conference from April 6 through
4 10 with Norman C. Donaldson of the Soil Conservation
5 Service and Marlin Harvey of the BIA." Tell us a little
6 what you did in making that correlation and what went
7 on at that conference?

8 A First we all got together and went out in the field and
9 examined typical profiles of each mapping unit, and the
10 Soil Conservation Service having been designated as the
11 leaders in land classification and soil survey, we more
12 or less followed his direction. Mr. Brown is a soil
13 correlator with the Western Regional Technical Service
14 Center of the Soil Conservation Service, and we discussed
15 all of the notes and all of the field data which we had,
16 and came to an agreement about how to group these
17 mapping units into a soil series, and we designated a
18 name for that series.

19 Q And is Exhibit 11, then, the published result of that
20 work?

21 A Yes, it is.

22 Q I see in the three columns throughout the book, symbols,
23 field name, approved name, and in some cases, we have
24 a field name and approved name which is different.
25 Tell us how this happens.

1 A The field name is the one I used at the beginning of
2 the survey, and, well, used it throughout the survey,
3 in fact, in order to eliminate some details cluttering
4 up my thinking, and you'll have to ask that question
5 again, I guess.

6 Q The first line, for example, on page one, gives a
7 symbol and then a field name, "Hagan loamy fine sand",
8 and then an approved name, "Bisbee loamy sand", and that
9 appears to be an approved name for three or four differ-
10 ent categories of soil type. Explain for us this process
11 of how the three of you made that correlation and final
12 result.

13 A Through the discussions that we'd had, we decided the
14 characteristics of the five mapping units, and the--

15 Q Excuse me, did you say "five mapping units"?

16 A Yes.

17 Q Or what words did you use?

18 A Five mapping units are referred to, are classed under
19 Bisbee loamy sand.

20 Q Let me interrupt at that point, and it isn't clear to
21 me, what is a mapping unit?

22 A That is the smallest category which I mapped on the
23 field photographs. That is the soil type.

24 Q That is the smallest soil type you would find on Exhibit
25 66, or any of these other photos?

1 A Yes.

2 Q Any of them?

3 A Yes, that's correct.

4 Q And how many mapping units, overall, are there?

5 A I'm sorry, I don't remember that.

6 Q You said five mapping units.

7 A Oh, in this one named soil series, yes, that's right.

8 Q All right. If I understood you correctly, there are

9 five mapping units under the category of field name,

10 which came out with an approved name of Bisbee loamy

11 sand?

12 A That is correct.

13 Q Now, is that a reduction of five mapping units into one

14 mapping unit?

15 A No.

16 Q Or is this Bisbee loamy sand something else?

17 A Bisbee loamy sand is a soil series name, and the five

18 mapping units will remain as the individual mapping

19 units.

20 Q Is there any further explanation you can give us as to

21 soil series, then?

22 A To answer that, I'd like to read a description of the

23 1957 Year Book of Agriculture, so that I'll be sure to

24 get everything in there: "Soil series is a group of

25 soils that have horizons similar in their depreciating

1 characteristics and arrangement in the soil profile
2 except for the texture of the surface soil and are
3 formed from a particular type of parent material. Soil
4 series is an important category in detailed soil classi-
5 fication."

6 Q You have read--

7 MR. RUDOLPH: May I approach the witness a moment,
8 Your Honor?

9 THE COURT: You may.

10 Q (By Mr. Rudolph) You have read from page 766 of what
11 book did you call it?

12 A 1957 Year Book of Agriculture.

13 Q Very well.

14 MR. RUDOLPH: Could I have, Exhibit, Defendant's
15 1, I think.

16 Q (By Mr. Rudolph) Are you familiar with what is
17 Defendant's Exhibit 1?

18 A Yes, fairly well.

19 Q And is the work which you did in the inventory and
20 preparation of Exhibit 11, is that consistent with
21 whatever standards are promulgated in that book?

22 A I believe them to be, yes.

23 Q Do you likewise believe the results as found in Exhibit
24 11 to be consistent with the standards of the National
25 Soil Survey Conference which you referred to?

1 A Yes.

2 Q Explain to us a little more how the symbols are arrived
3 at, will you?

4 A Yes. My supervisor in the Washington Central Office set
5 forth the symbolization standards for making soil
6 surveys within the Bureau of Indian Affairs.

7 Q And those symbols vary from organization to organization?

8 A They are uniform throughout the Bureau of Indian Affairs.

9 Q Is there a particular meaning to those letters and
10 figures?

11 A Yes, there is.

12 Q As an example, can you tell us what the first symbol,
13 how that would have been arrived at?

14 A 11Q5/AD, The eleven stands for a profile which is deep,
15 over 36 inches, is coarse texture, and rapidly permeable;
16 the Q means that it's formed from sand; the five is an
17 arbitrary designation indicating precipitation; and the
18 AD refers to slope.

19 Q Were you in accord, I mean, there were three of you that
20 came out with Exhibit 11; were you in accord with the
21 final results that are indicated in Exhibit 11?

22 A Yes, generally.

23 Q Where were you assigned at that time within the Bureau?

24 A I was assigned to the Spokane Indian Reservation.

25 Q Did you then cause, under your direction, cause to have

1 prepared a map which would set forth in soil classes,
2 namely Class 1, 2 and so forth, the result of Exhibit 11?

3 A Yes.

4 Q And how did you proceed to have that mapping done, and
5 I'll direct your attention to Exhibit 12 first, which
6 is on the blackboard, or bulletin board, it isn't black.

7 A I provided a draftsman with the aerial photographs and
8 a legend.

9 Q And that legend, consisting of what?

10 A Designating the land classes, which would be superim-
11 posed on the mapping units.

12 Q What determines what soil types go into what land class?

13 A This probably isn't extensive enough, but I'll read this
14 definition of the land capabilities classification, and
15 that's what our classes are, when we refer to it.
16 "Grouping of kinds of soil into special units, sub-
17 classes and classes, according to their capability for
18 intensive use and the treatment required for sustained
19 use."

20 Q I notice Mr. Adolph's name on Exhibit 12, and is he the
21 draftsman that did that task under your direction?

22 A Yes.

23 Q Did you develop the schedule in the legend which you
24 referred to which is designated which approved names or
25 soil types were to go into each specific land class?

1 A Yes.

2 Q Exhibit 12 is on the board upside down. Exhibit 12 has
3 a legend of Class II, Class III, Class IV, VI, VII and
4 VIII. Are those the classes on the legend which you
5 gave to Mr. Adolph?

6 A I believe we just limited the classes to II, III and
7 IV.

8 Q Did you check Mr. Adolph's work when he completed the
9 preparation of the map?

10 A I spot-checked it.

11 Q Have you looked at it again here within the last couple
12 of days?

13 A Yes, I have.

14 Q Does Exhibit 12, which sets forth the location of land
15 classes II, III and IV, faithfully and accurately
16 represent to the best of your knowledge the results of
17 the soil classification and inventory which you had
18 made?

19 A I believe it does reasonably well, yes.

20 Q Have you examined, also, Exhibit 13, which is the map
21 which Mr. Woodward prepared, utilizing Exhibit 12,
22 showing land capabilities below 2500 foot elevation on
23 the Reservation; have you examined that?

24 A Yes, I have.

25 Q And to the best of your knowledge, does that Exhibit 13

1 and that map, does that faithfully and correctly
2 reflect and show the location of the lands which you
3 had designated to be in land classes II, III and IV?
4 A Yes, I believe it does.
5 Q Now, referring to land classes, what classes of land
6 are considered to be in the soil field, considered to
7 be feasibly irrigable?
8 A I don't believe the feasibly irrigable land can be
9 limited to land classes.
10 Q Well, let me ask this--
11 A But I will--
12 Q Excuse me, go ahead.
13 A I'm sure that class II, III and IV can always be
14 considered irrigable.
15 Q In fact, you said it couldn't, wouldn't be limited to that,
16 what do you mean, could you explain that a little more?
17 A I mean other classes of soil can be feasibly irrigated,
18 in my opinion.
19 Q Have you seen other classes of soil being irrigated?
20 A Yes, I have.
21 Q Is there any question as to soils in class II, III and
22 IV, being feasibly irrigable?
23 A No, I believe not.
24 Q When you say "other classes", what classes are you
25 talking about, or how are they designated?

1 A I'm thinking of class VI lands which have been planted
2 to orchards, and the factors which make them class VI
3 is the coarse-textured, gravelly content, low water-
4 holding capacity, and perhaps others.

5 Q Am I correct that generally speaking, that is how the
6 classes were developed, the soils and the lands which
7 are put into class II, III and IV are considered to have
8 the better types of soil?

9 A That's correct.

10 Q And that's how they got there, I take it?

11 A I might add, the area in which I'm working now, we
12 have class VI land, which is class VI because of sand-
13 textured and low water-holding capacity, which is
14 producing the best potatoes in the world.

15 Q Are you familiar with the boundaries of the Spokane
16 Indian Reservation?

17 A Fairly well, yes.

18 Q Are you familiar with the lands which lie to the east
19 of the Chamokane Creek and outside of the Indian
20 Reservation?

21 A Somewhat.

22 Q Have you noted on Exhibit 13, Mr. Woodward's map,
23 certain soil land classes, which are mapped, lying to
24 the east of Chamokane Creek?

25 A Yes, I have.

1 Q Have you had any experience in determining the accuracy
2 of those land classes?

3 A I borrowed the mapping that had been done by the Soil
4 Conservation Service and prepared the map you refer to.

5 Q Do you have an opinion as to the comparability of the
6 soil types and the land classes lying east of Chamokane
7 Creek with those which lie within the Reservation west
8 of Chamokane Creek and which are on the map shown as
9 land classes II, III or IV?

10 A They are very comparable, in my opinion.

11 Q You do have an opinion, and you're stating your opinion
12 now, which is what?

13 A They are comparable.

14 Q Would you or would you not consider the lands within the
15 Reservation you refer to as being of equal productivity
16 with the lands lying to the east of the stream?

17 A Yes.

18 THE COURT: Counsel, I think this is a good place
19 for us to break.

20 MR. RUDOLPH: Very well, Your Honor.

21 THE COURT: So we will be in recess until 9:00
22 a.m. tomorrow.

23 THE BAILIFF: All rise; this court stands adjourned.
24
25

1 Hon. Marshall A. Neill, Judge,
2 Spokane, Washington
3 Friday,
4 March 15, 1974,
5 9:10 A.M.

6 THE COURT: Good morning, gentlemen. Mr. Harvey,
7 I believe, can resume the stand.

8 MR. GERMERAAD: Right. I don't believe the
9 plaintiff has any questions, and although the plaintiff-
10 intervenor is not present at the time, they indicated
11 yesterday they had no further questions and Mr. Harvey
12 would be available for Cross-examination at this time.

13 THE COURT: Very good. Well, do you want to take
14 the same order we had before, or does somebody want to
15 volunteer?

16 Mr. Dufford?

17 CROSS-EXAMINATION

18 BY MR. DUFFORD:

19 Q Mr. Harvey, I believe in your testimony you read us a
20 definition of land capability classification from a
21 Department of Agriculture publication of some kind; is
22 that correct?

23 A Yes, that's correct.

24 Q Does the Bureau of Indian Affairs use the same classi-
25 fication system as the entities of the Department of
Agriculture?

1 A Yes, they do.

2 Q You stated that the classifications contained in your
3 report on this matter were consistent with those found
4 in defendant's Exhibit 1, which is the Soil Conservation
5 Service bulletin on this subject. What, when you said
6 "consistent", are they the same, or is there some
7 difference?

8 A They are reasonably similar. We tried to make them the
9 same.

10 Q Is there any way in which there is a difference?

11 A Just very minor. Individual interpretation.

12 Q In addressing yourself to the matter of these mapping
13 units that are shown on the aerial photographs, you
14 stated there is a uniform system with respect to desig-
15 nation of mapping units throughout the Bureau of Indian
16 Affairs, is that correct?

17 A Yes, that is correct.

18 Q Is there another system used outside of the Bureau of
19 Indian Affairs?

20 A This is just a symbolization that I was referring to.

21 Q I see. Do other entities of the government use other
22 kinds of symbols?

23 A Yes, they do.

24 Q But in some, does the end result differ in any way?

25 A No, the end result would be very much similar.

1 Q Now, in talking about the land classifications them-
2 selves, that's classes I, II, III, IV and so on, you
3 stated that, I think up through class IV, we're talking
4 about feasibly-irrigable classes, is that a fair state-
5 ment?

6 A Yes, class II, III and IV are feasibly irrigable.

7 Q When you say "feasibly irrigable", are you including
8 analysis in that of how one might get water to that
9 soil?

10 A No, not specifically.

11 Q Does the classification simply mean that if water were
12 in some way obtained to put on that soil, it would be
13 productive, according to that classification?

14 A Yes, that is the general thought we have been trying to
15 follow.

16 Q Does your kind of work in making this classification
17 determination, do you have to decide what the duty of
18 water might be on any given parcel of land to grow things?

19 A You mean the amount of water necessary?

20 Q That's right.

21 A Yes, we go along with other disciplines in trying to
22 determine this.

23 Q Would a consideration of what quantity might be needed
24 in a growing season be included in the designation of
25 any particular class?

1 A No, I don't believe that.

2 Q In making these classifications, is there any considera-
3 tion given to growing season available where those soils
4 lie?

5 A Yes, there is.

6 Q So, in that respect, well, could you expand on that,
7 and tell me how you take that into consideration?

8 A Just as an example, there are no class I soils on the
9 Reservation, and this is because of the short growing
10 season.

11 Q Then the growing season, the length of the growing
12 season, might cause a classification to be a higher
13 number than otherwise because of the--

14 A That's right, yes.

15 THE COURT: Where does topography fit into this
16 classification, or does it?

17 A Yes, it does. The degree of slope may determine what
18 class of soil this is.

19 Q (By Mr. Dufford) Perhaps you could expand on that a
20 little. If you had the same kind of soil on a flat
21 piece of ground and one, say, that was a 30-degree
22 angle, or something, what would the difference be in
23 the classification?

24 A It may go from class II to class IV, or VI, depending
25 on the degree of slope.

1 Q I see.

2 A Maybe I should say the percent of slope.

3 MR. DUFFORD: I have no further questions.

4 MR. TORVE: A couple of questions, Mr. Harvey.

5

6

CROSS-EXAMINATION

7 BY MR. TORVE:

8 Q I haven't had a chance to go through your report with
9 any particularity, but I gather you had done an initial
10 field examination and come up with some field classifi-
11 cations, is that correct?

12 A Yes.

13 Q Then you met with two people, I gather, who were your
14 superiors?

15 A No, they were with the Department of Agriculture.

16 Q Then, at that point in time, there was adopted other
17 classifications or different terminology for the differ-
18 ent classifications that all three of you discussed, is
19 that a fair statement?

20 A Not different terminology. As I stated before, the
21 Department of Agriculture was given the authority, or
22 the job, of, I want to say "supervising", but leading-
23 out in a soil survey of the whole country, so there
24 would be some degree of uniformity of soil surveys
25 throughout the whole nation, and in order to keep this

1 as uniform as possible, we all get together and try to
2 conform to these standards that are agreed upon, and
3 this is called a correlation of the soil survey, and
4 that is all the publication was that you referred to.

5 MR. TORVE: Could I have Defendant's 1?

6 THE COURT: I don't believe Defendant's 1 has been
7 admitted, has it?

8 THE CLERK OF THE COURT: No.

9 MR. TORVE: No, it hasn't yet.

10 Q (By Mr. Torve) Mr. Harvey, I believe on Direct
11 Examination, you said that, and I'm not quite sure how
12 you put it, but this was consistent with your study, is
13 that correct, or your land classifications?

14 A Yes, we tried to make this as consistent as possible.

15 Q Let me ask you this: On the different type of land
16 classifications, would they be similar to what the
17 definition of land classifications are in this bulletin?

18 A Yes.

19 Q Mr. Harvey, you indicated that one of the, well, let
20 me ask you this, I wasn't too sure what you said; is
21 the length of the growing season material to the land
22 classification?

23 A Yes, it is.

24 Q And those areas that you classified as number II, that
25 lie on the bench, do you know what the growing season is

1 up there?

2 A No, I don't, not precisely.

3 Q Then, if the growing season is material to the land
4 classification, how do you know whether or not; well,
5 let me ask you this, then: Is the classification num-
6 ber II, then, made without taking into consideration
7 the growing season?

8 A No, we took it into consideration, but I can't say the
9 growing season would be exactly 80 days, or 85 days.

10 Q Do you know what kind of crops you can grow up there;
11 did you make any study of that point?

12 A With the experience that farmers have had in other areas
13 on the same kinds of soil, we have some good ideas of
14 what kinds of crops can be grown there, yes.

15 Q Did you make any studies of the land in the Chamokane
16 Basin, or around in this area, to know what might be
17 grown at those types of elevations?

18 A Yes, we made some general.

19 Q General?

20 A Yes.

21 Q Let me ask you this specifically: Could you grow grapes
22 up there on the class II land?

23 A I rather doubt it.

24 Q How about corn?

25 A Yes, I believe so.

1 Q It's your opinion that you could grow corn up in the
2 class II lying at the elevation above 2200?
3 A Oh, above 2200?
4 Q I'm sorry if I misled you. When I mentioned the bench,
5 I think it's been referred to as land that lies above
6 2200.
7 A No, it's my opinion that corn would not be economically
8 feasible.
9 Q Now, I take it that when you indicated that the lands
10 were feasible for irrigation, we're really talking about,
11 in your terminology, the productivity and not necessarily
12 the economics of bringing water to it, is that correct?
13 A Yes.
14 Q And I didn't quite understand what you meant by the
15 relationship or taking into consideration the duty of
16 water on these types of lands; is that included in the
17 classification, or is it something other that you have
18 to bring in otherwise, to know whether you can develop
19 the land?
20 MR. GERMERAAD: Would you re-read the question?
21 (Question read back by the Court Reporter.)
22 MR. RUDOLPH: That's not a very clear question.
23 THE COURT: Rephrase it; I didn't understand it,
24 either.
25 MR. TORVE: I'll rephrase it, Your Honor.

1 Q (By Mr. Torve) In the determination of class II or
2 III or IV lands, is the duty of water part of that
3 analysis?

4 A I still don't know exactly what you mean by "duty"?

5 Q Maybe if I could clarify the terminology I'm using,
6 when I say the "duty of water", the amount of water
7 necessary for a particular type of crop, might be
8 necessary to grow a particular type of crop.

9 A We take into consideration the available water-holding
10 capacity of the soil, is that what you mean?

11 Q Well, what I'm referring to is, how much water corn
12 might need, or alfalfa might need, or some other types
13 of crops.

14 A That is a little beyond, I believe, our land classifi-
15 cation.

16 Q Mr. Harvey, just a couple more questions. In determin-
17 ing where the class II land lying above 2200, did you
18 make any determination whether they were within or
19 without the Chamokane watershed area as shown on Exhibit
20 No. 10?

21 A Yes, I believe that is all within the Chamokane water-
22 shed.

23 Q Did you make any effort to superimpose the watershed
24 limits over and, over and above your classification, to
25 determine actually whether that was true or not?

1 A Yes, we made a reasonable effort to do that.

2 MR. TORVE: Your Honor, I believe that's all the
3 questions I have, but I'd ask that Defendant's 1 now
4 be admitted into evidence.

5 THE COURT: Any objection to Defendant's 1?

6 MR. RUDOLPH: No objection.

7 THE COURT: Defendant's 1 will be admitted.

8 (Thereupon, Defendant's Exhibit 1 was received in
9 evidence.)

10 THE COURT: I think, also, I don't show that that,
11 photograph, Plaintiff's Exhibit 66, has ever been
12 offered.

13 MR. RUDOLPH: May we offer that.

14 THE COURT: Objection?

15 MR. DUFFORD: No objection.

16 MR. TORVE: No objection.

17 THE COURT: Plaintiff's Exhibit 66 is admitted.

18 (Thereupon, Plaintiff's Exhibit 66 was received in
19 evidence.)

20 THE COURT: All right, I guess, Mr. Campbell,
21 you're up.

22 MR. CAMPBELL: We have no Cross, on behalf of Mr.
23 Smithpeter, Your Honor.

24 THE COURT: Mr. Tracy?

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CROSS-EXAMINATION

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BY MR. TRACY:

Q Just one or two questions, Mr. Harvey. You said you did make a study of the lands east of the Chamokane Creek and the lands west of the Chamokane Creek, is that correct?

A No, I didn't make any study of the lands east.

Q So you don't know whether or not the lands east are comparable with the lands west, then?

A I borrowed the information from the Soil Conservation Service, and that's where I got the information to--

Q You don't have any specific knowledge of your own that would lead you to conclude that the lands are comparable; wouldn't that be a correct statement?

A Just within my association with the soil surveyors who did the survey on that side of the creek, and the fact that our surveys have been correlated and the soils have been determined to be the, our mapping, under either, have been determined to be the same.

Q Well, is there number I land on the east side of the Chamokane?

A Is it number I?

Q Is there number I land on the east side of the Chamokane?

MR. RUDOLPH: Excuse me, you mean class I?

A Not that I know of.

1 Q (By Mr. Tracy) So you don't know whether there is or
2 not, then?

3 A I'm not aware of any.

4 MR. TRACY: Okay, thank you.

5 THE COURT: Mr. Cerutti?

6 MR. CERUTTI: No Cross, Your Honor.

7 THE COURT: Mr. Rekofke?

8 MR. REKOFKE: Just a couple of questions, Your
9 Honor.

10

11

CROSS-EXAMINATION

12 BY MR. REKOFKE:

13 Q I think some of this has been alluded to, and I'll try
14 not to be repetitious. As I understand it, if I could
15 have Defendant's Exhibit 1, perhaps Mr. Harvey could
16 have it. These various soil classifications which you
17 testified, there are some differentiating characteristics
18 between the various classes, are there not, Mr. Harvey?

19 A Yes, there are.

20 Q And it's a fact that class II soils have some limita-
21 tions that reduce the choice of plants, or require a
22 moderate conservation practice, isn't that right?

23 A I believe that is correct.

24 Q As you get into class III soils, soils in class III have
25 severe limitations that reduce the choice of plants or

1 require special conservation practices, or both, is
2 that a correct statement?
3 A The term "severe" is relative.
4 Q Well, isn't that what the book says, page 7, Defendant's
5 Exhibit 1?
6 A Yes, it is.
7 Q You're in agreement with that book if I understood you?
8 A Yes, that is correct.
9 Q Soils in class IV have very severe limitations that
10 restrict the choice of the plants, require very careful
11 management, or both, is that also a fair statement?
12 A Yes, um-hum.
13 Q So that all these lands, II, III and IV, on the Spokane
14 Indian Reservation, have some limitation with respect
15 to the choice of plants that might be grown and the
16 manner in which the soil is cared for, is that correct?
17 A That's right.
18 Q Did you make any determination the amounts of lands
19 above the 2200-foot contour?
20 A The amount of lands?
21 Q Yes.
22 A The acreage, no, I did not.
23 Q And, of course, that particular land would be, there would
24 be some limitations on the crops that could be grown
25 because, among other things, the elevation, isn't that

1 right?

2 A Yes, that is correct.

3 Q Would that reflect itself in the classification, that
4 is, the elevation of the land?

5 A Yes.

6 Q And so when you say, and correct me if I'm wrong, when
7 you say that so-many acres are irrigable, what you're
8 saying is that if we can get water up to these
9 particular lands, we can grow some kind of a crop?

10 A Yes, that's correct.

11 Q And, of course, depending upon the type of soil in the
12 elevation, that would depend, of course, upon the type
13 of crop which you could grow, isn't that right?

14 A Yes, I believe that is correct.

15 Q And the cost, for example, of getting the water up to
16 those lands, and perhaps the fertilizer, and other
17 practices that you'd have to engage in, that is, a
18 person who was tilling the soil, could render it
19 economically unfeasible, isn't that right?

20 A It could, yes.

21 Q Yes, you have made no such determination in this case?

22 A No, I haven't.

23 Q Is there some average, Mr. Harvey, as to cost-per-acre
24 when; in other words, when it becomes unfeasible to
25 irrigate; in other words, when the cost of doing this

1 gets to a certain point, is there any particular figure--
2 A I'm, I'm not aware.
3 THE COURT: Just a moment.
4 MR. RUDOLPH: Your Honor, I guess he can specify
5 a point in time, but we're talking about many, many
6 decades, and if you want to project economics into
7 each year in the future, I can, I guess he can go into
8 this, but I just want to point out--
9 MR. REKOFKE: I'm talking about today.
10 MR. RUDOLPH: --but I just point out how impossible
11 it is to try and project an economical, how it is at
12 one point in time.
13 MR. REKOFKE: I'm talking about today, that's what
14 I'm talking about.
15 THE COURT: Well, counsel, the only thing that
16 concerns me, I don't believe this man has stated or is
17 qualified as an expert in economics, but if he wants to
18 try to answer it--
19 MR. REKOFKE: You Honor, the only reason I was
20 asking, if the Court please, because we're talking about
21 feasibility. If it's beyond his field of expertise, all
22 he has to say is just say so and I'll--
23 THE COURT: Proceed.
24 Q (By Mr. Rekofke) Go ahead.
25 A I feel that's beyond my field.

1 Q All right. Your particular survey that you made, and
2 I don't know which exhibit it's in, the map that was
3 ultimately made as a result of your work, you know what
4 we're talking about?

5 A The field sheets.

6 Q The what?

7 A Oh, you mean the classification, land classification?

8 Q That included all of the land on the Indian Reservation,
9 did it?

10 A Yes.

11 Q I see.

12 MR. REKOFKE: I believe that's all I have, of this
13 witness. Thank you.

14 THE COURT: Is there further Cross-examination?
15 (No response.)

16 THE COURT: Any Redirect?

17 MR. RUDOLPH: First, Your Honor, I would like to
18 apologize to you and everyone else for completely for-
19 getting what you said yesterday afternoon about the
20 changed starting time. I've got no other excuse--

21 THE COURT: Very well, we went ahead anyway.

22 MR. REKOFKE: Are we back on Direct, or--

23 THE COURT: Redirect.

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REDIRECT EXAMINATION

BY MR. RUDOLPH:

Q In answer to Mr. Rekofke's questions, you were starting to explain, and then he sort of cut you off, that these expressions of limitations in Exhibit 1 are relative things. Would you go ahead and explain what you were starting to, at that time?

A The terms are relative, in my opinion. This could be a real involved discussion, but--

Q Well, okay, I don't think we need to get into such an involved discussion, but can you tell me, just briefly, what you mean by the term "being relative"; relative to what?

A Well, for instance, we call class IV soil severe, it has severe limitations, and, but, as I pointed out yesterday, we have a class VI soil that was being farmed on the Fort Hall Reservation.

Now, excuse me, the class III soil has severe limitations; class IV is stated as having very severe limitations.

Q All right.

A Now, class VI, that is being farmed on the Fort Hall Reservation. I can't think of any superlative adjectives to use for their limitations on it, but it's more severe than class IV.

1 Q What does class VI say? If class IV is very severe,
2 what does class VI say?

3 A It merely states here it has severe limitations that
4 makes them generally unsuited to cultivation.

5 Q Let me ask a general question, then, are class II, III,
6 IV lands generally considered to be suitable for culti-
7 vation?

8 A Yes.

9 Q Are class II, III and IV lands generally considered to
10 be those classes of lands which can probably and feas-
11 ibly grow crops?

12 A Yes.

13 Q Are they generally considered to be what you would say
14 are good lands?

15 A Yes, I believe so.

16 Q Would the application of water to class II and III and
17 IV lands improve the quality and the quantity of the
18 crops grown thereon?

19 A Yes, I believe that is a correct statement.

20 Q If class II land on the Reservation had a longer growing
21 season, is it possible that some of those lands would
22 have been placed by you in class I?

23 A Yes, it's possible.

24 Q Is it because of the short growing season that you
25 reduced them to class II in some cases?

1 A In some cases, yes.

2 Q You gave an answer to Mr. Rekofke that, I believe, and
3 this was before you expressed that this was really out
4 of your field, but the answer does show that application
5 of water on some of these lands might be economically
6 unfeasible. At what time were you speaking of, in
7 saying what you did?

8 MR. TORVE: I'm going to object to this question;
9 he's already indicated he's not an expert in this, and
10 could not answer the question, and I think to go further
11 on it is going beyond--

12 MR. RUDOLPH: All right, may I ask, then, that the
13 answer and the question be stricken from the record on
14 Mr. Rekofke's examination?

15 THE COURT: I think this man is not qualified in
16 that area. It will be stricken.

17 MR. RUDOLPH: I think I should have been more
18 alert at the time the question was asked, but I wasn't.

19 Q (By Mr. Rudolph) Pertaining to the lands east of the
20 Chamokane Creek, and your familiarity with them, did
21 you make a sufficient review in checking of the
22 classifications made by the Soil Conservation personnel
23 to give you a general knowledge of those soils and the
24 land classes existing there?

25 A Yes, I made a reasonable effort to become acquainted

1 with the--

2 Q Now, give us your comparison, then, with those lands
3 lying immediately east of the Chamokane Creek and those
4 lands lying immediately west of the Chamokane Creek.

5 MR. REKOFKE: I'm going to object to that, Your
6 Honor, on two grounds. First of all, the witness
7 doesn't know, of his own knowledge, as a practical
8 matter, and secondly, it's repetitious, it was gone into
9 yesterday on Direct Examination.

10 THE COURT: Well, no, I think, Mr. Rekofke, you
11 opened that up in Cross-examination, and I think it
12 goes to the weight of what he knows about it, so I'll
13 let him answer it.

14 A I'll have to have that question again.

15 (Question read back by the Court Reporter.)

16 A I don't believe there is any difference whatsoever in
17 the lands on the east side and the west side of Chamokane
18 Creek, with regard to the quality of soil and the land
19 classification.

20 Q (By Mr. Rudolph) You were asked specifically on these
21 lands about 2200 elevation, whether grapes could be
22 grown, I believe you answered no, and whether corn
23 could be grown; let me ask: What are some of the other
24 crops which could be grown?

25 A All small grains can be grown; hay crops.

1 Q In your opinion, what is the bench of the land higher
2 up probably best suited for, what crop?

3 A I would say hay crops.

4 MR. RUDOLPH: I believe that's all I have.

5 THE COURT: Any further questions of the witness?

6 MR. ROE: I would just like to ask one question,
7 Your Honor.

8

9

RECROSS-EXAMINATION

10 BY MR. ROE:

11 Q Did I understand you to say that class IV lands are to
12 be considered good, cultivable lands?

13 A Yes, I think that is a fair statement.

14 Q Are you acquainted with how the Bureau of Reclamation
15 determines what types of lands should be irrigated from
16 federal projects when they deal with the issues of
17 feasibility?

18 A Not specifically, no.

19 Q You're not included with whether they include class IV
20 lands in those?

21 A They have a different system of classification. I don't
22 know that.

23 Q Are you a, a second line of questions: Are you, as I
24 understand it, you're acquainted with the lands in the
25 Chamokane Creek Drainage, as far as the lands you

1 testified were irrigable?

2 A Yes, on the Reservation.

3 Q And you're acquainted with what the United States is
4 claiming irrigable lands in this case?

5 A (Witness hesitates.)

6 Q Is that correct?

7 A Well, generally--

8 Q Let me ask you this question: Are all the lands the
9 United States is claiming in this case located within
10 the Chamokane Creek Drainage, do you know?

11 A I believe that's correct, yes.

12 MR. ROE: Thank you.

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

15 MR. RUDOLPH: For the record, Your Honor, and this
16 is, I think, in order to clear up a possible implica-
17 tion from Mr. Roe's questions, I would ask that unless
18 he has evidence that the Bureau of Reclamation doesn't
19 include class IV as irrigable in their projects, that
20 the implication arising from his question be removed,
21 because I'm specifically aware of the fact that the
22 Bureau does include class II, III and IV lands, and I
23 don't like that implicated in the record, and so, would
24 you clarify that, Mr. Roe, please?

25 MR. ROE: I just asked the question whether he

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knew whether they did or not.

THE COURT: And he said he doesn't, so there is no problem.

MR. RUDOLPH: All right.

(Witness excused.)

MR. RUDOLPH: The next questions, which witness comes next, Your Honor, this came up yesterday--

THE COURT: Yes.

MR. RUDOLPH: --and I didn't know whether they were intending to proceed or whether we should be proceeding with our witness.

MR. TORVE: Your Honor, I had planned to call Mr. Simon for a few questions. Now, I wasn't a party to the agreement at the time he talked to Mr. Roe about having Mr. Simon taken out of order and put on Direct, notwithstanding they had not finished their case. Now, I'm quite willing to go along with that, but only on the condition that it would not prejudice any motions or any rulings on any evidentiary matters, or any other items that might be, that we, or any of the other defendants, might be able to pose on the plaintiff's case; that the presenting of this evidence will not be prejudicial to making a motion to strike their case for failure to prove their cause of action, or any ruling upon evidence that might come out pursuant to other

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witnesses that they put on, which would require striking of their evidence.

MR. RUDOLPH: Speaking for the Tribe, that's understood.

MR. GERMERAAD: I wish Mr. Torve would be a little more specific in his general, all-over about whatever motions he might file not being prejudiced. Are you saying that you might file a motion because you are required to strike something, or you are prejudiced because you are taking Mr. Simon out of order?

MR. TORVE: All I'm saying, Your Honor, is that, at this juncture, it may be possible that there are bases for legal motion for striking the evidence. Frankly, I haven't had an opportunity to review everything in my , what the legal grounds might be, but I don't want to prejudice my ability to do so at the end of their case.

THE COURT: I don't view that as any great problem. I think the problem here is getting the evidence in as expeditiously as possible, so whoever has got a witness who is ready, let's produce him.

MR. TORVE: The State will call Dick Simon to the stand.

MR. GERMERAAD: Could we have that made that the State Department of Natural Resources has called Mr.

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Simon--

THE COURT: Yes.

MR. GERMERAAD: --rather than simply the State of Washington.

THE COURT: All right.

RICHARD R. SIMON,

being first duly sworn, testified on behalf of the plaintiff State Department of Natural Resources, as follows:

THE CLERK OF THE COURT: Please state your full name for the Court, spelling your last name.

A Richard R. Simon, S-i-m-o-n.

DIRECT EXAMINATION

BY MR. TORVE:

Q Mr. Simon, would you state what your present occupation is?

A Pardon me?

Q Would you state what your present occupation is?

A Presently, I'm employed as Regional Fisheries Biologist for the Washington Department of Game, stationed in Spokane.

Q And what area does your duties encompass?

A My area of responsibility includes a 10-county area adjacent to the east boundary of Washington State,

1 including Pend Oreille, Stevens, Ferry, Spokane,
2 Whitman, Lincoln, Garfield, Asotin, Walla Walla and
3 Columbia Counties.

4 Q Can you give the Court a resume of your educational
5 background?

6 A I commenced my college education at Everett Community
7 College, where I started in '63, and I graduated in '65,
8 with a two-year degree. I then went to the University
9 of Washington, where I received, in 1968, a Bachelor of
10 Science in Fisheries Biology from that institution.

11 Q And can you give the Court a resume of your occupations
12 since graduation?

13 A I went to work in 1968, July of 1968, for the Washington
14 Department of Game, stationed in Spokane, as a Fish and
15 Game Technical Aid, functioning as an assistant to the
16 Regional Fisheries Biologist in this area. I held that
17 position for eight months, at which time I was promoted
18 to a Biologist I Aquatic, moved to the Lower Columbia
19 River, to Cathlamet, and there participated in a coopera-
20 tive study on the Lower Columbia, with the Oregon Game
21 Commission. After six months in that position, I was,
22 I accepted a lateral transfer to Walla Walla, where I
23 functioned as a Regional Fish Biologist, although my
24 official position was Biologist I Aquatic, for approxi-
25 mately one year, and then I advanced to a Biologist II

1 Aquatic, for another six or eight months, and even-
2 tually received the full status of Fishery Biologist
3 in Walla Walla. To summarize, I was in Walla Walla
4 functioning as a Regional Fish Biologist for just less
5 than three years, at which time I transferred to the
6 Spokane Region. This was in 1972, in August of 1972,
7 I transferred to Spokane as a Regional Fishery Biologist,
8 and have functioned in that capacity since that time.

9 Q Can you explain to the Court some of the fields of
10 endeavor that a biologist with the Game Department has,
11 what some of your duties are, the studies you might
12 make, and the types of activities you carry on?

13 A There is a variety, a wide variety of activities that
14 a biologist with the Department of Game carries out.
15 Principally, he has, let's refer specifically to a
16 Regional Fish Biologist, and particularly to my situa-
17 tion in Spokane here. I direct the Fisheries Program
18 for this 10-county area, which includes supervision of
19 two Assistant Fish Biologists, supervision of four
20 fish hatcheries and their entire fish culture operation.

21 Specifically, or more specifically, I plan and
22 program and direct research studies of various types
23 that explore and evaluate the results of various
24 management measures that we get into, fish stocking of
25 various types of fish, varieties of fish, the results

1 of those stockings; we, to be a little more specific,
2 to this particular case, we evaluate, by a request of
3 the Department of Ecology, and we investigate and
4 evaluate water right applications; going into the
5 field, making specific measurements on specific
6 streams, and from that information, usually fairly
7 basic field information, we make recommendations as to
8 whether a water right should be issued or not, whether
9 it should be issued with certain provisions, such as
10 low-flow provisions, which, say, after the flow of a
11 stream reaches a particular level, all irrigation must
12 cease, this type of recommendation. We evaluate appli-
13 cations which are made by individual organizations,
14 agencies, contractors, this type of thing, who wish to
15 do some work in streams of the State, or of this area,
16 in my particular case, and evaluate the effect those
17 projects may have on a stream hydraulically, what detri-
18 ments there may be to the fish, we make recommendations
19 to Olympia on those applications as to what steps, what
20 measures can be taken to prevent serious damage to the
21 fishery resource.

22 Q Let me ask you this: In your job, are you concerned
23 with fish habitat and fish culture?

24 A Yes.

25 Q Now, Mr. Simon, have you had an opportunity to review

1 the study made by Mr. Navarre?

2 A Yes, I have.

3 Q And have you been in court and listened to Mr.
4 Navarre's testimony concerning the activities that he
5 carried on, and the studies that he made on Chamokane
6 Creek?

7 A Yes, sir, I have.

8 Q Have you had an opportunity to analyze the results of
9 fish population samples that were taken from Chamokane
10 Creek, and Mr., and listened to Mr. Navarre's testimony
11 concerning his observations during that time?

12 A Yes, sir.

13 Q Specifically in relation to the Lower Chamokane Creek,
14 lying below the falls, are you acquainted with the
15 results of the fish population sample taken by Mr.
16 Navarre, and specifically Station 3?

17 A Yes, sir.

18 Q Could you tell us how you would characterize the results
19 of that sample, in terms of its species and population?

20 A The sample that was taken at Station 3, and as Mr.
21 Navarre has pointed out, it is specifically a sample,
22 and no estimation of the standing population or crop.
23 It appears that there are large populations of what
24 we should call "scrap fish", or undesirable species of
25 fish. Obviously, they found one brown trout, according

1 to the study, and great numbers of suckers, sculpins,
2 and, two types of suckers and sculpins, and that is
3 it, I guess.

4 Q All right.

5 A This indicates there is a fairly substantial popula-
6 tion there of undesirable species. That is what this
7 sample says.

8 Q What, generally, when you have the, that condition
9 present, how does this relate to the culture of a
10 trout population?

11 A This particular type of situation usually precludes
12 establishment of any desirable population.

13 Q Can you explain why?

14 A The various scrap species described here provide a
15 competition factor that, like I say, precludes the
16 development. Now, when I say "competition factor", this
17 must be pointed out, that some of these fish, some of
18 these competing species do not use the same type of
19 food articles, so we can assume possibly they're not
20 competing directly for food. On the other hand, they
21 are competing directly for living space. This is quite
22 important. We have several examples in the immediate
23 areas here where the species you're talking about here,
24 the sculpins and the two species of suckers, and in
25 this case I'm, well, I'd better not enlarge on that,

1 but we have examples where these species are present
2 in waters that are very accessible for trout, although
3 we find no trout there. We feel very strongly the
4 reason there are not trout there is because of these
5 competing species. I cite one example in particular,
6 the Little Spokane River, which is a tributary to the
7 large Spokane, flowing into the Long Lake a short
8 distance out of town here. We have a few trout in that
9 stream. We have a potential of good trout development,
10 with the exception of the fact we do have a large
11 number of competing species, just as we have in the
12 Lower Chamokane.

13 Q Is there any way, in a stream such as the Lower
14 Chamokane, to rid the population of the scrap fish,
15 or are there measures that can be taken which would
16 eliminate these scrap fish and make it a better habitat
17 for trout fish?

18 A In the Lower Chamokane, there would be no way, with the
19 physical parameters we have there at the present time,
20 to eliminate these species. They would reinfest, if
21 they were poisoned out of the lower portion of the
22 Chamokane, there would be nothing to prevent those
23 fish from reinfesting out of the main Spokane River,
24 in that area.

25 THE COURT: Would that be limited to below the

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falls?

A The falls would also be a physical barrier there now that is preventing the upstream migration of those scrap species at the present time, from Mr. Navarre's testimony.

Q (By Mr. Torve) Assuming that the stream, let me ask you this, are there alternative methods by which to establish a fishable condition in the Lower Chamokane, other than natural population?

A There are alternative methods, yes.

Q What would some of those alternate methods be?

A An artificial population of trout could be established there by stocking of legal-sized rainbow in that portion of the stream, or, as a matter of fact, in any body of water, generally speaking. Legal-sized trout could be planted in there. This would create an artificial fishery there, and this could very well be done. Another step that I should bring out here that could be done, a structure possibly could, now, I say possibly, because I surely haven't explored that possibility to any extent at all, but possibly could be established, or installed, at the lower portion of the Chamokane Creek just upstream from the mouth that would prevent in-migration of the scrap species we referred to before, and that, with that structure in

1 place, then our resident population could be
2 established, in there, exclusive of making these legal
3 plants, I suppose.

4 Q Assuming, of course, that a natural population could be
5 cultured in the Lower Chamokane, what effect would a
6 fishery program, sports fishery program, have on that
7 population?

8 A I think it should be made specific there in your
9 question, and I'll answer it that way, that you're
10 speaking now of a native, or resident, population.

11 A Yes, right.

12 A You're not speaking of legal trout. If this portion of
13 the stream was made in some way quite accessible to
14 resident species of trout and resident population of
15 trout in this, let's call it a mile and a-half, as Mr.
16 Navarre pointed out on the map, there certainly would
17 be a great possibility that that population could not
18 be established and self-sustaining if there was any
19 development, or any attention called to it. A stream
20 with a fish population, and all the ecological necessi-
21 ties that are there to form it. It's a very fragile
22 situation. If you would put a concentrated number of
23 fishermen on that, say, mile and a-half of stream, on
24 a native population, or a natural population, a resident
25 population, it probably would be eliminated, if not

1 reduced to an undesirable level as far as the fishing
2 has gone.

3 Q What would be the alternative, then, to maintain a high
4 level of fishing opportunity, if I could put it that
5 way?

6 A The only alternative there, if a development was made
7 and attention called to that portion of the stream, the
8 only alternative would be to just sit there with a
9 planting truck and keep putting fish in, and then you
10 could have an artificial fishery that way.

11 Q Has that type of program been instituted in other areas,
12 to your knowledge?

13 A Yes, that type of program has been carried out. In fact,
14 probably on Chamokane Creek at one time. This was the
15 management plan for Chamokane Creek. The Washington
16 State Department of Game, for many years, planted legal-
17 size rainbow in Chamokane Creek and created this artifi-
18 cial situation, and it has been pointed out, quite
19 graphically, by at least one in-depth study in Montana
20 that this is certainly a poor management practice. It
21 eliminates, over a period of time, it eliminates the
22 native population and the resident population from that
23 stream, and if you stop planting your legal-size rainbow
24 in there, you end up with nothing. Two factors are in
25 play in this type of situation: The large numbers of

1 hatchery legal fish that are stocked in those streams
2 compete very directly with the resident population, and
3 very successfully they compete, and particularly pro-
4 bably for living space. The native or resident popula-
5 tion, if they're driven from the area and you have
6 nothing left but the legal fish planted. Another factor
7 that eliminates the native population is the fact that
8 by planting, and if planting is made, it is usually,
9 there is usually attention called to this portion of
10 the stream, and when this happens, of course, fishermen
11 will concentrate in that area and they will be catching
12 not only planted fish, but those native fish that may
13 be there. So, in essence, the resident species of fish
14 of Chamokane, hypothetically, would be eliminated if
15 legal fish were planted in that creek for a number of
16 years.

17 MR. TORVE: I think that's all the questions I
18 have, Your Honor.

19 THE COURT: Well, I guess we treat the rest as
20 Cross. I'm not sure how the defendants-- I guess we
21 can go back to where we started before. Mr. Dufford,
22 do you have questions of this witness?

23 MR. DUFFORD: No, Your Honor.

24 MR. CAMPBELL: Before you ask, no, Your Honor.

25 THE COURT: Mr. Rekofke?

1 MR. REKOFKE: I'll pass for the moment, Your Honor.

2 THE COURT: Mr. Tracy?

3 MR. TRACY: No, Your Honor.

4 THE COURT: Mr. Cerutti?

5 MR. CERUTTI: Just a couple, please, Your Honor.

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CROSS-EXAMINATION

8 BY MR. CERUTTI:

9 Q Mr. Simon, I'd like to direct your attention to what
10 was previously referred to as the "Navarre formula",
11 the formula by which Mr. Navarre developed his
12 recommendation of 30 cubic feet per second flow in the
13 lower mile of the Chamokane. Are you familiar with,
14 and do you remember, that testimony?

15 A Yes, sir, I do.

16 Q And I want to ask you just briefly about that formula;
17 maybe you would help me first, to be sure I understand.
18 Is it your understanding that the computation is $7/28$
19 or one-fourth, times the 22 cubic feet per second--

20 A That's--

21 Q --that supports the recommendation?

22 A That's correct.

23 Q What is your understanding of $7/28$, as to how that was
24 derived?

25 A Just a minute. Excuse me, just a minute, maybe I'd

1 better take a closer look here. Can I clarify my last
2 statement where I said "yes"?

3 Q Please do.

4 A I believe you asked me if the computation were $7/28$
5 times 22?

6 Q Yes, that was my question.

7 A Was that what you asked me; that is not the computation,
8 no.

9 Q What is the computation?

10 A The computation is $7/28$, I'm sorry, I'm sorry, you're
11 right, it's $7/28$, or one-quarter, times 22.

12 Q Thank you, sir. And what is the seven, the numerator
13 in the fraction, then, what does that represent?

14 A The seven represents one-quarter in the differential in
15 temperature between the spring and the measurement that
16 was made downstream. In this case, his computation was
17 47, the difference between 47 and 75.

18 Q Now, excuse me, that would be 28, would it not?

19 A I said "one-quarter" of the differential is seven.

20 Q Am I correct in understanding that the fraction used
21 here, $7/28$, is derived in part from the difference
22 between the hottest temperature ever recorded and the
23 ideal temperature, in other words, 75 minus 68?

24 A That's correct.

25 Q My question--