MORNING PROCEEDINGS

(The following occurred on January 8, 1997, at 9:34 a.m., in the presence of the jury.)

THE COURT: Counsel?

RICHARD P. REGAN, called as a witness by the plaintiff, being previously duly sworn on oath, testified further as follows:

THE COURT: Mr. Regan. Be seated, please. Remind you that you remain under oath.

MR. HAGENS: Good morning, Your Honor.

DIRECT EXAMINATION

BY MR. HAGENS:

Q Yesterday we had started to review some of the historical documents reflecting how the Nookachamps behaved as a storage area during significant flood events. And we had gotten through Exhibit No. 1. And now I would like to have you turn to exhibit -- Plaintiff's No. 2 and tell me if you can identify that.

A Exhibit No. 2 is an old Corps of Engineer report entitled "Skagit River Control River Enlargement and Dikes, 1932."

Q And was this one of the documents reviewed for the history of the flooding in the Nookachamps area that you were describing yesterday?

A Yes.

(Plaintiff's Exhibit No. 2 identified.)

MR. HAGENS: Your Honor, we will offer Exhibit No. 2.

(Plaintiff's Exhibit No. 2 identified.)

MR. SMART: No objection, Your Honor.

MR. ANDERSON: No objection, Your Honor.

THE COURT: Two will enter.

(Plaintiff's Exhibit No. 2 admitted into evidence.)

Q (By Mr. Hagens) I wondered if you would --

MR. SMART: Also, we should turn on the TV.

MR. HAGENS: Oh.

THE COURT: Counsel, you're forcing Department 5

slowly, begrudgingly, into the nineties.
MR. HAGENS: Me too, Your Honor.
This is Department 5.
Q (By Mr. Hagens) I wonder if you would put the first -- page that recites, "Skagit River Flood Control Flood Enlargement and Dikes" ...
MR. HAGENS: Your Honor, I would ask that the witness be allowed to highlight these, because these are multipage exhibits. And with the Court's permission, so the jury can find pertinent language, at least that we think is

important to this case.
THE COURT: Counsel?
Are you asking that he be allowed to highlight on the original exhibit?
MR. HAGENS: Yes, Your Honor.
MR. SMART: Well, I guess counsel has already highlighted the portion that he wants to have the jury pay attention to. That is on the screen. I've never heard of highlighting, having a witness alter a document that is in evidence. It just doesn't seem logical, number one, and it's kind of unstandard procedure. And number two, it might call additional attention to the jury.
MR. HAGENS: Your Honor --
MR. SMART: He is allowed to point it out on his own screen, which he is doing right now. And we would expect to do the same.
MR. HAGENS: Your Honor, multipage exhibits, I think, 150 pages. I don't think it's really -- I think the jury should be able to find these exhibits -- only talking about a portion of the exhibits that the plaintiffs think are relevant -- will be taken back to the jury room. That was my suggestion.
MR. ANDERSON: Your Honor, I agree with Mr. Smart. I think it calls undue emphasis and may lead the jury to ignore other portions of the document. I believe the jury is

taking notes. I think they can remember the page number if need be. And they are already recording the testimony to the extent they feel it's important.
THE COURT: I don't think it's permitted to alter original exhibits by highlighting, so I will not allow that.
MR. HAGENS: All right.
Q (By Mr. Hagens) Then if you would, Mr. Regan, if you would read starting with the second paragraph, the bottom, the first sentence. If you would read that into the record, please?
A Where are you at, Carl?
Q You see my finger up there on the screen?
A I can't see that. What page is that now?
Q It's page --
A All right.
In its natural condition the Skagit River, during flood periods, overflowed its banks

and inundated a large portion of the Skagit Valley. This large volume of water overflowed the valley finally reached Puget Sound.

Q Maybe you ought to read the whole paragraph for context purposes.

A not alone through the river channel proper, but through the many sloughs and small drainage channels, found in the area between the Joe Leary slough and the mouth the Skagit River, and through run-off from the flat tributary to Puget Sound. At the present time, the river is partially controlled by dikes that have been constructed by local organizations. These dikes have been constructed without a well developed general plan and are entirely inadequate to handle a flood of major magnitude. During a heavy flood the dikes fail and the water eventually reaches Puget Sound in the same manner as outlined above.

Q Okay.

And then if you would read the next --

THE COURT: Counsel, if I can interrupt for a moment. Is that clear on the screen?

THE JURORS: No, it's not.

THE COURT: Apparently some of the jurors find that it's kind of blurry on the screen. Is there a focus aspect to that?

Q (By Mr. Hagens) I wonder if you would read the next sentence beneath that.

A During a flood in 1932, which reached its maximum on February 28th with a discharge of 158,000 second-feet, as recorded at Concrete gauging station about --

Somebody has crossed out 9. It's not 9. It's quite a few miles above Burlington.

the dikes failed at a point about a quarter of a mile above the Great Northern Railroad bridge and greater portion of the valley to the west and of Burlington was flooded.

Q I wonder if you would go to the very next page. I wondered -- you see the paragraph that starts with -- about the third or fourth up. It says, "The present system does not include..." Do you find sentence?

A Yes, I do.

Q Would you read that to the jury, please?

A The present system does not include a dike on the east bank of the river above the Great Northern Railway bridge near Mount Vernon. The absence of a dike in this section permits an overflow of several

thousand acres in the Nookachamps area during the higher stages of the river. The storage effect of this area has an appreciable favorable effect on the condition of the river below the railroad bridge. Because of this effect all previous reports on the improvement of the Skagit River recommended that this section of the river be not diked. Accordingly, the present estimate contemplates no dike on the east side of the river above the Great Northern Railway bridge.

Q That was 1932?
A That's correct.
Q And has the area ever been diked, to your knowledge?
A No.
Q Okay.
Is this document one of those that you found in the Army Corps of Engineer documents you had seen before in connection with your work in the general design memorandum?
A I've seen this document before, yes.
Q Okay.
I wonder if you would next turn to Exhibit No. 5. It should be in the same book.
Can you just identify it for the record, Mr. Regan?
A Exhibit No. 5 is a letter on the Skagit County letterhead to Colonel E.C. Itschner, District Engineer, 4735 East Marginal Way, Seattle, Washington. Which was at that time -- in fact, is presently -- the office of the Seattle District Corps of Engineers.
Q The letter is from whom?
A Pardon?
Q Who authored the letter?
A The letter was signed by H.O. Walberg, County Road Engineer, and was signed for him by a William R. Whitnal, Designer.

(Plaintiff's Exhibit No. 5 identified.)

MR. HAGENS: We would offer this exhibit, Your Honor.
MR. SMART: No objection, Your Honor.
MR. ANDERSON: No objection, Your Honor.
THE COURT: Thank you. 5 will enter.

(Plaintiff's Exhibit No. 5 admitted into evidence.)

Q (By Mr. Hagens) I wondered if you would take a look at the paragraph marked number one?
A Um-hum.
Q And I wonder if you would read that into the record, please?
A Paragraph number one:
At point A on the graph, gauge height of

25.0, water from the Skagit River begins backing up into the Nookachamps Creek area between Mount Vernon and Sedro Woolley. Since this area is not diked off, the lower lying farms begin to suffer at this point. However, in the case of a rapidly rising

river, this flooding affords a considerable degree of protection to the lower Skagit Valley by absorbing a large amount of the increasing flow. This is evidenced by a flattening-off of the graph line for Burlington and Mount Vernon, and this effect becomes even more pronounced at point B, since by this time several thousand acres of the Nookachamps Valley is under water.

Q Could you explain to the jury how you interpret this business about flattening off of the graph lines.

A I think -- I believe what he is talking about is called a hydrograph. A hydrograph is basically a plot of time against stage -- "stage" being how high the river got against time. For every hour -- half-hour, there would be a point on the graph and it would provide some sort of a curve. And this would -- what he is saying here is that this curve -- when the Nookachamps is flooding, going into flood, water going into the Nookachamps, the curve at Mount Vernon would have a tendency to flatten out. In other words, not go as high.

Q And that is the effect of the Nookachamps area during significant flood event?

A That is correct.

Q And -- okay. I wonder if you would next take a look at No. 7. Can you identify this for the record?

A This is a Corps of Engineers' Memo for Record. Subject: Skagit Flood Control Records, date April 2, 1965, signed by a Mr. Gedney.

Q Do you know him?

A Mr. Gedney was my supervisor at one time.

Q Have you seen this memo before?

A Yes.

Q And what connection had you seen it?

A This was in the files when we were doing the 1990 -- 1979 flood control project

(Plaintiff's Exhibit No. 7 identified.)

MR. HAGENS: I'll offer this exhibit.
MR. SMART: No objection, Your Honor.
MR. ANDERSON: No objection, Your Honor.
THE COURT: 7 will enter.

(Plaintiff's Exhibit No. 7 admitted into evidence.)

Q (By Mr. Hagens) I wondered if you would read the first

paragraph of this exhibit into evidence, Mr. Regan?
A On the evening of 29 March, Colonel Holbrook and I attended an evening meeting which included an assemblage of the 42 persons interested in flood control improvements in the Skagit River basin. A list of persons attending the meeting is attached hereto. Colonel Holbrook described the general planning for the Skagit River basin and referred to the Skagit River report on levee and channel improvement now under review by the Division Engineer. He also outlined general aspects of proposed future studies in the Skagit River basin. He emphasized the necessity for local corporation and support. I presented additional details of planning on our proposed studies of the Nookachamp Creek area. Following these presentations, there was a question and answer period. The following representative inquiries were discussed:
Q Would you read the first question and the answer?
A The first question:
If you levee off the Nookachamp Creek area, how can you be assure that it will be available when we require it in a flood emergency?
The answer:
The right to flood would be made a legal part of the agreement turning over the project to local interests to operate. The right to flood this type of project has been utilized many times in flood control projects of the Mississippi River.
Q Do you know if they ever did obtain a so-called "right to flood"?
A There was no project --
MR. SMART: I'll object to the form of the question, Your Honor, unless he identifies who he is talking about when he says "they." This memo, as I understand, refers to an army corps meeting.
Q (By Mr. Hagens) Did anybody, to your knowledge, ever acquire the right to flood in the Nookachamps area, so far as you are aware?
A Not to my --
MR. SMART: Objection. It calls for a legal conclusion.
MR. HAGENS: I don't believe it calls for a legal conclusion. Do you know if there was any such arrangement that was ever arranged or negotiated, Your Honor.
MR. SMART: I also object without foundation, Your Honor. This witness has not testified at all to what

knowledge he has with respect to legal rights concerning either the dike --

THE COURT: I'll sustain the objection on the basis of foundation.

Q (By Mr. Hagens) Mr. Regan, in reviewing the documents, did you come across any documents that reflected whether or not the Corps of Engineers, Skagit County or anybody else had ever obtained or undertaken to acquire any right to flood the Nookachamps area?
A Not to my knowledge.
Q Okay.

MR. SMART: I'll move to strike, Your Honor. He didn't respond to the question.

THE COURT: No, it was responsive. The question was: Did he uncover any documents that reflect the fact that any governmental agency had obtained a right to flood, and he said in his review of the documents he didn't encounter such a document. That is the essence of the answer. So that's fine. It will stand.

Q (By Mr. Hagens) Now, if you will take a look at the third page of the exhibit. I think it's the list of attendees. Have you got that in front of you?
A Yes.
Q Do you see the name Lloyd Johnson?
A Yes. About fifth from the top.
Q Okay.

And what was his capacity, as you understood it, in 1965?

A He was representing Skagit County, as it's saying here, he was the county engineer at the time.
Q What about Mr. Walker? Do you see his name on the list there?
A Yes. Pete Walker. Right.
Q Yes?
A He is representing Diking District No. 12.
Q And Ruth Wylie. Have you ever -- do you see that name on there?
A Here it is right here.
Q Is her capacity shown on the exhibit?
A It says county something or other. It's not very plain here.
Q Do you know if she was a county commissioner at one time?
A I don't know.
Q The next exhibit I would like to have you take a look at is Exhibit 30. Can you identify this for the record?
A Yes. This is a letter to a Mr. A.H. Hogeland, Chief Engineer, St. Paul, Minnesota. Dated from Seattle, Washington, September 26, 1922. Written by Oscar S. Bowen, Assistant Chief Engineer. And encloses a report entitled "Proposed Flood Control Skagit River," which is authored by Robert Herzog, assistant engineer, Great Northern Railroad Company.

(Plaintiff's Exhibit No. 30

identified.)

MR. HAGENS: We'll offer 30, Your Honor.

MR. SMART: No objection, Your Honor.
MR. ANDERSON: No objection, Your Honor,.
THE COURT: 30 will enter.
(Plaintiff's Exhibit No. 30 admitted into evidence.)

Q (By Mr. Hagens) Okay.
I would like to have you read the last sentence in the first paragraph.
A Okay.
I am enclosing Mr. Herzog's report, together with two blueprints referred to in the report.
Q If you would read the next two sentences, please?
A You will note that we have a very serious condition to contend with, much more serious than I had anticipated, especially as to the large quantity of water. The breaking of the dikes during extreme water conditions has always relieved the situation at our bridge number 36 and I never realized the total discharge to be as great as it is. The information --
Q That is fine. I would like to have you then go to the last paragraph, second sentence.
A Okay.

Q Starts, "If the present dikes ..."
A I'm having trouble finding --
Q If you will read the second sentence in the last paragraph.
A In the present dikes should be raised and strengthened so that they would hold against floodwaters, there is no room between the dikes to pass the water under our present bridge. The bridge would have to be raised considerably if we should construct another long opening near Burlington for the passing of floodwaters.
Q If you would look at the second page of that exhibit. And the second paragraph there starting out with, "The county commissioners..." You see that?
A Yes.
Q I wonder if you would read that, please.
A The county commissioners are very much interested in the work that we have been doing and I think it would be a good idea to give them a copy of Mr. Herzog's report.
Q Okay.
Then I wonder if we can go to the report itself. And if you would turn to page 3 at the top. Actually, you better

start on page 2 at the bottom.
A Okay.

Q The last sentence there.
A Okay.
Q If you would start with that sentence and move on to the top of page 3.
A Do you want me to start at the top of that last paragraph --
Q No, just the last sentence, please. "During flood discharge..." I think it says.
A During flood discharge of the river, this area becomes covered with water from five to fifteen feet deep, forming a large storage basin capable of absorbing the discharge of 150,000 second-feet for five hours.
Q And do you recall what area he was referring to there?
A He is referring to the area now called the Nookachamps.
Q And if you would then continue to read on?
A Okay.
Q "As the discharge of river..."
A As the discharge of river at the Northern Pacific bridge increases, the river channel proper and bridge number 36 beyond becomes less and capable to take care of it.
Q "Becomes less and less capable," does it read?
A Excuse me.
Becomes less and less capable to take care of it, the ten square miles of land become

flooded, the hydraulic grade decreases, decreasing the discharge, the stage of the water at bridge number 36 rises until it reaches the heretofore critical elevation of 134.7, when up to 1921 at least, the dikes upstream from bridge 36 broke discharging the stored water, thereby relieving the situation at the bridge proper.
Q All right.
And how would the break downstream relieve the pressure on the bridge, as he describes?
A Allows the water surface downstream from the bridge, which had been between levees, to escape from the levees, flowing out into the floodplain, giving the river a bigger area to flow, thus reducing the stage of the river.
Q I wonder if you would turn to page 4, then. The top two paragraphs. If you would read those, if you would.
A There have also been many breaks in the dikes downstream from bridge 36, although the river in that section carries considerably less water, with the same general result of relieving the situation in the channel proper, but, the breaks upstream are more disastrous to railroad property as

well as to the lands to the west and north.

Before the dikes and the railroad were built, the county was covered with heavy timber and the floods spread slowly and more or less evenly over the whole area, depositing the silt which is the cause of the fertility the lower Skagit Valley. The river receded in the same manner and the land was none the worse two it as long as the buildings were put above high watermark.

Q Thank you.
Want to put that aside, Mr. Regan.
Now, I would like to have you turn to Exhibit No. 123.
A Not in this book.
Q Is this one of the documents that you reviewed in connection with your history or literature search in connection with the river?
A I have seen this document, yes.
Q Okay.
And would you just describe it for the record, please.
A It's a letter from Skagit County Board of County Commissioners, December 28, 1990. Colonel Hilton Hunter, Seattle District Corps of Engineers

(Plaintiff's Exhibit No. 123 identified.)

MR. HAGENS: We'd offer this exhibit into evidence.

A Signed by three county commissioners: W.W. Vaux, Ruth Wylie and Robbie Robinson.

MR. SMART: No objection, Your Honor.
MR. ANDERSON: No objection, Your Honor.
THE COURT: All right. 123 will enter.

(Plaintiff's Exhibit No. 123 admitted into evidence.)

Q (By Mr. Hagens) I wonder if you would read the first two paragraphs of the letter.
A This is in response to the recent flooding in Skagit County and discussions with your staff concerning a long-term solution to our flood problems.

We are interested in renewing a study to increase the flood protection for Skagit County. Unless we upgrade the level of protection, our system will continue to be vulnerable against the larger floods. Accordingly, Skagit County requests the U.S. Army Corps of Engineers to conduct a reconnaissance study of all of the viable alternatives with a recommendation as to the positive and negative aspects of the

alternatives, and which one would be the most feasible.

Q This was signed by, again, whom?
A All three county commissioners.
Q Was this a common practice, that the county would request certain types of assistance from the Army Corps of Engineers?
A That's correct.
Q And would the Corps of Engineers typically provide that request if they could get the authority?
A If the authority was available, the Corps of Engineers would respond to a request like this.

THE COURT: Actually, counsel, excuse me. On that point, would you mind very much if I asked Mr. Regan just a quick question? You can follow up, counsel, if you want.

Just as a lay person, and because it's going to become part of this case, what is the mission of the Army Corps of Engineers. Why do they exist? What do they do?

A The basic mission of the Army Corps of Engineers is flood control and navigation. And it has been -- flood control and navigation projects have to be authorized by congress and funded by congress. And the Corps of Engineers does the engineering feasibility studies and construction, so forth, for those types of projects.

THE COURT: This is obviously something of long-standing in American history. The corps has been a part of the development in the west since its inception, has it not?

A I was with the Corps of Engineers -- the Corps of Engineers had their 100th birthday, so they are over a hundred years old now.

THE COURT: I'm not going to poke my nose in your case very often. I think that is a general underlying premise, if you will, in this case, that the corps is already involved in so much of what we discussed that I would like to have an idea of what they are doing out there.

MR. HAGENS: Sure.

Q (By Mr. Hagens) Okay.

And do you know if, in response to this request, whether or not, in your document review, whether or not such a reconnaissance report was ever prepared by the Army Corps of Engineers?

A I was not with the corps at this period. I retired in '88. Although I have seen a reconnaissance report dated after this letter, so it must have been in response to this letter.
Q And you reviewed that report in connection with your testimony?
A Yes.
Q Could you take a look at Exhibit No. 33? Could you identify this for the record, please?
A This is a draft of the reconnaissance report, Skagit River, Washington Flood Damage Reduction Study, dated April 1993.

Q Who is this prepared by?
A U.S. Army Corps of Engineers, Seattle District.
Q Was this in response to Exhibit 123 that requested such a report?
A It appears to be.
Q Okay.

(Plaintiff's Exhibit No. 33 identified.)

MR. HAGENS: We would offer 33.
MR. SMART: No objection, Your Honor.
MR. ANDERSON: No objection, Your Honor.
THE COURT: 33 will enter.
(Plaintiff's Exhibit No. 33 admitted into evidence.)

Q (By Mr. Hagens) Take a moment and go through this. I'm going to start with the very first page, the executive summary. Do you have that in front of you?
A Yes.
Q Would you read the second sentence, first paragraph.
A This reconnaissance study finds that an economically feasible solution exists for flood damage reduction in the Skagit Basin. This --
MR. SMART: I'm going to object because he asked him to read the first paragraph. That is the second paragraph.
MR. HAGENS: I'm sorry. That was a mistake. I meant the second sentence, first paragraph, where it says, "The primary purpose..."
A Okay. I'm sorry.
The primary purpose of the study was to determine if there is a federal interest in pursuing feasibility-level flood damage reduction studies in the Skagit Basin in Skagit County, Washington.
Q Okay.
And if you take a look at the second page, please. And do you see the sentence that starts out with "The local sponsor"?
A Yes.
Q Would you just read that into the record, please.
A The local sponsor, Skagit County, favors this plan as a basis for further evaluation and consideration of other alternatives in the subsequent feasibility phase.
Q What did you understand the plan to be there, exactly?
A This was levee improvements and various locations of levee overtopping -- overtopping structures. In other words, allow the levee to overtop in several prescribed areas.

Q What were they evaluating? Exactly what was the Corps of Engineers evaluating in this report?
A Basically, if there is a federal interest and -- to flood control.
Q If you take a look at page 2 of the exhibit. Designated page 2 at the bottom of the page. I wondered if you would just read the first sentence on the top page there. It says, "In the valley below Sedro Woolley"?
A In the valley below Sedro Woolley, the maximum safe channel capacity varies from 100,000 to 146,000 cfs.
Q And what was the flood level in November of 19 -- November 24, 25, 1995?
A That was 154,000.
Q Okay.
You can put that aside. We'll go on to another page here.
I wonder if you would turn to page 23, if can you find it.
A Okay.
Q Do you have that in front of you?
A Yes.
Q Do you see the second sentence starting with "Between Mount Vernon and Sedro Woolley"?
A Yes.

Between Mount Vernon and Sedro Woolley, a large area is being used as storage, primarily in the Nookachamps Creek basin along the left overbank of the Skagit River.
Q And would you read the first sentence as well?
A For very high river flows at Mount Vernon (over 146,000 cfs) a portion of the Skagit River in this reach can overflow along the right bank and escape out of the system through Burlington to the Samish River and Samish Bay.
Q Okay.
And did you review the historical records reflect that that had happened in the past?
A Happened many times, yes.
Q And then if you would turn to page 34. Do you see the discharge-frequency data table that is there?
A That's right.
Q And could you tell the jury what that is all about?
A Okay. This is a table that talks about the Skagit River near Concrete, the gauge at Concrete; Skagit River near Sedro Woolley, the gauge at Sedro Woolley; and the Skagit River near Mount Vernon, the gauge at Mount Vernon. It lists four hypothetical floods: Ten-year flood, the 25-year flood, the

50-year flood, and the 100-year flood. And it shows discharges at each of these gauge locations for each of those

hypothetical floods.
Q Though Sedro Woolley is actually upstream from -- upstream from Mount Vernon?
A It's upstream from Mount Vernon.
Q Can you explain why it has more cfs than the flow, actually, at Mount Vernon?
A Two reasons. One reason being water going into the Nookachamps valley. The second reason being water escaping into the Samish valley on the right bank, on the north side.
Q That would be at the larger events?
A On the larger events. And this, of course, would assume no flood-fighting effort.
Q If you would take a look at page 97. You have that in front of you?
A Yes.
Q Would you take a look at the fourth paragraph down?
A Right.
Q And I wonder if you could read that to the jury.
A A study to determine if an alternative with a higher protection level for the control sections and a levee across the mouth of the Nookachamps area is feasible.
Q Do you believe if that was -- Strike that.

Do you know if it was ever determined to be feasible to dike off any area of the Nookachamps in any of the documents you reviewed reflect that?
A Yes. The July 1979 general design memo showed some diking in the Nookachamps valley. It did not show diking off the entire Nookachamps valley.
Q Do you know if it was ever determined whether or not it would be feasible to dike off -- I'm talking about your document review -- feasible to dike off the Nookachamps area?
A No.
MR. SMART: I'll object to the form of the question, Your Honor. Relating that question to this document is highly confusing because this is discussing whether there is going to be a study to determine an alternative with a higher protection level. So asking him the question, "Has anybody done it in connection with this document?" that is completely confusing. This document says that there might be such a study. So if he asks him the question just, has anybody done it, that it is one thing. If you ask him the question whether this document addresses that, that is another thing. But to connect the two together is highly confusing and misleading to the jury.
THE COURT: Overruled.
Q (By Mr. Hagens) And your answer was then?
A I don't believe a study of that has ever shown anything to be

feasible to dike off the entire Nookachamps.
Q Put this one aside.
I'd ask you to turn to Exhibit No. 57.
A Not in either one of these books.

Q I'm sorry.
Can you identify this for the record?
A This is a record of the proceedings of the Skagit County Board of County Commissioners, Tuesday, January 2nd, 1979.
Q And if you would go to the last page. Does it reflect who signed the minutes as well as an auditor's seal, clerk of the Board of County Commissioners' seal?
A Signed by all three commissioners: Norris, Mansfield and Howard something. I can't read the signature. And it's sealed by a Euella Henry, Skagit County Auditor, and ex-officio clerk of county commissioners.
(Plaintiff's Exhibit No. 57 identified.)

MR. HAGENS: We'll offer this exhibit.
MR. SMART: No objection, Your Honor.
MR. ANDERSON: No objection, Your Honor.
THE COURT: 57 will enter.
(Plaintiff's Exhibit No. 57 admitted into evidence.)

Q (By Mr. Hagens) If you would turn to page 4 of the exhibit. Before we go into this, give you a little background.

You were involved in the 1979 lower levee project; is that correct? Or incorrect?
A That's correct, yes.
Q And that was -- was that part of the general design memorandum activities that you were involved in?
A That's the same thing.
Q And was that -- we're going to come back to that. The date of this January 2nd, 1978, was that at or about the time of the --
A January 2nd, 1979.
Q Excuse me. '79. Hum.
Was that the -- about the time that the -- there was a public discussion going on in the county over whether or not this project should be undertaken?
A Right. The general design memo, Corps of Engineers' general design memo came out in July of 1979. There was quite a bit of discussion going on in the county after that.
Q Okay.
So let's take a look then, if you will, at the fourth page of the exhibit first. And do you see where it says "Discussion, Lower Levee Project"? You see up here where it says "Discussion, Lower Levee Project," the heading?
A Page 4 you are talking?
Q Yes, sir.
A Okay.

Q Does that indicate who the participants are at this, at least with respect to the discussion on the lower levee project?
A Talk about a group of residents from various areas in Skagit County met with the board to discuss the lower levee

project. Chairman Miller first called upon the county engineer, Gene Sampley for comments.

Q And who did you understand Mr. Sampley to be?

A He is county engineer at that time.

Q And then if you would turn to page 5. And if you would take a look at the paragraph that talks about -- paragraph talks about "Gene brought out the point that the president has a proclamation..." Do you see that?

A Yes. It says Gene --

Q I don't want you to read that. I want you to read the next paragraph after that. "There are some alternatives in the Nookachamps area..." Do you see that sentence? Would you read that into the record, please?

A There are some alternatives in the Nookachamps area that might be of benefit to Clear Lake. However, when it is all said and done the system needs the Nookachamps. If the dikes go to the Nookachamps the storage capability has been traditionally there would be no longer available.

Q That's good enough. Thank you.

Then if you would take a look at page 6. Do you have that in front of you?

A Yes.

Q Do you see where it mentions Barbara Austin in the third paragraph up?

A Yes.

Q Would you read that paragraph and the one following it, together?

A Barbara Austin, a Nookachamps resident, asked several questions. She wished to know what amount of water there actually was in the 1951 flood. The dikes broke so no one knows for sure. She wondered if someone could calculate how much water there would have been if the dikes had not broken. Secondly, the Nookachamps area gets water from the runoff of the hills in the Clear Lake area even before it comes from the river. Barbara asked if her area gets water from Mount Vernon or Sedro Woolley. Everyone said that the 1975 flooding was not as bad as the 1951 flood, but she had just as much water. Then, there is the question of what the dikes really do.

Q Let's stop right there.

As part of the 1979 lower levee project and the general design memorandum, did the Army Corps of Engineers undertake to measure what the existing dikes were doing or not doing in terms of flood effect in the Nookachamps?

A No.

Q What did they undertake to measure as part of it?

A We undertook to determine what the effects would be in the Nookachamps with the new levees in place.
Q Okay.
Then if you would go on and read -- First, well, it says Don Nelson. Who did you understand him to that?
A Don Nelson. I know Don Nelson. He was what they call the Skagit County flood engineer.
Q Would you read the response? I mean not response. The next paragraph down.
A It says:

> Don Nelson replied he had discussed the 1951 floodwater with the corps. They have stated it was impossible to calculate because the dikes above Great Northern Railroad bridge has changed between 1951 and 1975 and the river conditions were not the same, the relationship was lost.

Q Do you understand what he is talking about there?
A Not really.

Q Okay.
Is it impossible to calculate the effect of the existing levees on the flooding in the Nookachamps in or about January of 1979?
A No.
Q In fact, your firm has done it; isn't that right?
A Yes.
Q Okay.
You can put that aside.
Come back to some more documents in a moment, but I wanted to move on.
Before we leave this subject, I wanted to ask you, did you find any historical documents said that the -- in the archives of the Corps of Engineers or elsewhere that indicated that the Nookachamps area didn't act as storage area during significant flood events?
A No, everything I've read -- I think I stated it yesterday -- I looked at twelve different documents that started back in 1922 and went to 1993 covering a period of 70 years. And every one of them said valuable storage -- for a degree of protection to the lower Skagit River, or something similar to that.
Q The documents that you saw, were these documents that were in the Army Corps of Engineers' files, or where did you get most of those?

A Seven of those documents, the Corps of Engineers' documents. The rest are U.S. Geological Survey, Skagit County letter, Skagit County commissioners' meetings, Skagit County comprehensive flood control management plan.
Q And now, with respect to the history of flooding in the Nookachamps area, did your review reflect any pattern or history of flooding in the Nookachamps area?
A It occurs often. It occurs any time the river goes into a

reasonable flood. It appears someplace around 80, 85,000 cfs on the river proper that water will start backing into the Nookachamps area.

Q And did you -- Strike that.

In the last, say, 50 years, have you been able to determine how many times the Skagit River has gone overbank?

A I have a chart that I would like to put up that shows that.

Q How did you prepare the chart?

A The chart was prepared from the data base of the U.S. Geological Survey. We have access to that data base on our computers. It's actually taking that data and putting it into a chart.

Q Is this the chart you prepared?

A That's correct.

Q And this all comes from the --

A All comes from the U.S. Geological Survey data base.

Q All right.

Is that data that hydraulic engineers, people in your field, typically rely upon?

A Rely upon this kind of data all the time.

MR. SMART: I take it you want to mark it.

MR. HAGENS: Yes.

MR. SMART: Can I voir dire?

THE COURT: Yes.

VOIR DIRE EXAMINATION

BY MR. SMART:

Q Mr. Regan, you said that you collected information on the various times when the Skagit River would flood the Nookachamps, and it was your understanding that it flooded whenever the Skagit River exceeded a flow of 80 to 85,000 cfs; that is correct?

A Someplace in that neighborhood, yes.

Q Have you ever measured that yourself?

A No.

MR. HAGENS: This has nothing to do with the chart.

MR. SMART: Did you -- but it does.

THE COURT: Go ahead.

Q (By Mr Smart) Is that the right bank or the left bank that you're saying is flooded and exceeded when the river flow exceeds 80 to 85,000 cfs?

A The Nookachamps is on the left bank.

Q Did you ever make a study to determine whether or not there was a difference in terms of when the Skagit River escaped its right bank or its left bank?

A No.

Q Thank you.

One other point. They are not the same elevation, are they, the right bank and left bank?

A That's right. But no, they are not exactly the same elevations.

MR. SMART: Thank you.

(Plaintiff's Exhibit No. 200

identified.)

MR. HAGENS: We would offer Exhibit 200, Your Honor.

MR. SMART: No objection, Your Honor.

MR. ANDERSON: No objection, Your Honor.

THE COURT: 200 will enter.

(Plaintiff's Exhibit No. 200 admitted into evidence.)

THE COURT: Again, just for description purposes, Mr. Regan, would you tell us what's in it? Would you just describe what that is? How you did that chart?

A This is a chart of the three gauges we've been talking about, discharge of the three different gauges: the Mount Vernon gauge, the Sedro Woolley gauge and the Concrete gauge. It is peak for each year, except for the 1990, which has two peaks. 1990 shows two peaks on that chart.

Other than that -- and the data base has been -- all the floods below 75,000 have been taken out. Otherwise, the list would be down on the floor someplace. They were not pertinent to the chart.

THE COURT: All right.

MR. SMART: One housekeeping matter, Your Honor. It's my understanding it is being offered for illustrative purposes only.

MR. HAGENS: No. It's a summary of the flooding history, Your Honor. We offer it for that. Flooding over 80,000, Your Honor.

MR. SMART: Document is prepared by the witness, Your Honor.

MR. HAGENS: It's a summary, Your Honor, of an expert.

THE COURT: I understand it's a summary of anticipated testimony that might be taken in this case. Summary of his review of documents.

MR. HAGENS: Yes, Your Honor.

THE COURT: Already established repeatedly by your documents. So I admit it for whatever purpose.

DIRECT EXAMINATION

BY MR. HAGENS:

Q Would you come over here, Mr. Regan, and tell the jury what this exhibit is again.

A What we have here is the Skagit River floods at Concrete greater than 75,000. I looked at 75,000 because it was easy to take out the numbers, the whole 75,000. That doesn't mean that is where the flooding starts in all portions of the valley. As you go further upstream, 75,000 is out of the banks more frequently than when you get down in the valley, Nookachamps-Sedro Woolley area. However, for illustrative purposes, I said everything above 75,000, which is about a three-year event.

THE COURT: Actually, counsel, if you could move it back. Not for my purposes at all. Move it back just a little bit and then angle it more this way. The jurors at the very end have to sort of crane over to see it.

A All right. This starts back in 1907. Stuart reported floods before that. There was no gauges in and his work. Was based upon talking with residents and the Indians and so forth. It was found there were some very huge floods. This was one of them here. 260,000 cfs, very huge flood. There was another one here, 1918, another 220,000. 1921, 240,000 cfs. There was no gauge at the time. He based that upon high watermarks and information he could gather. And probably in the ball park.

Starting at around 1920 -- early twenties, 25-year. Starting to be pretty much records at Concrete. Every year there was a peak. Like I said, '25 and '27. 1926 I took out of it. There wasn't any flood. That was to keep the list from going down on the floor and beyond.

We have starting now at 1924, we had floods that exceeded 75,000. 34 times in 70 years. About once every other year. That happened. At Concrete. The Sedro Woolley gauge was in back in the early 1900s through 1922. It was discontinued for a long period of time, and then it was put back in for a short period of time. It was put back in basically through this era here to give some correlation between the Concrete gauge -- excuse me -- Sedro Woolley gauge and the Mount Vernon gauge. Once they realized Mount Vernon was a pretty good gauge, they took it out, so there is not much record down there.

But looking at the Mount Vernon gauge record here, in this period of record here, sixteen times the river has gone over 80,000. That's about once every three to four years that happens. About once every three to four years on the average, people in the Nookachamps see water going into the Nookachamps area.

Q Okay. And I notice that you have a footnote down here. Flood mark USGS note.

A In the 1990 flood, the big flood in -- 11-25-1990 flood, the big peak, the 152,000 cfs at Concrete gauge a stage of 37.7 feet. Although in the record it says this is from a flood mark. In other words, it's not from a gauge. The gauge was inoperative for some reason. So this could be plus or minus something. They didn't state how much.

MR. SMART: Could I object, just for the purpose of clarifying. I think the witness misspoke himself. He said Concrete, but he was pointing to the chart at Mount Vernon.

A I'm sorry.

THE COURT: You are referring to the Mount Vernon?

A Yes.

MR. ANDERSON: Your Honor, I also noted the witness stated it's 37.7. I think the chart reflects 37.37.

A I think that is what I said.

Q (By Mr. Hagens) All right.
A The chart geological survey reported 37.37 feet on the Mount Vernon gauge, although the footnote of that data says it's from a flood mark; indicating what I said, the gauge was not operating. Someone went in the field and then looked and see some flood marks around on the bank or whatever and the surveyor goes in and came up with an estimate.
The rest of them -- there was one other which was for the early flood in 1990. The 11-10 at Concrete, the same footnote, invasion of 40.2. It was also stated that it was from flood marks. These are the only two I could find that were basically from flood marks, except what I talked to you about these very large here.

Q (By Mr. Hagens) Do they actually go out to the river when it's swollen and measure at flood time Mr. Regan?
A No, not a common practice.
Q How would you characterize then the history of flooding of the Skagit River above this 75 cfs?
A It recurs frequently.
Q And did you find any records that reflected or showed how the -- No, strike that -- where the water went when there was no levees in the county?
A There is an old Corps of Engineer map which I brought a copy of that kind of indicates where water went.
Q Okay.
I'll ask to you identify that. Can you tell the Court what Exhibit No. 201 is, without showing it to the jury?
A Yes. Exhibit No. 201 is called the index map. Skagit River from mouth to the town of Sedro, Washington. Done in March and April of 1897, by the Corps of Engineers, done by a Harry Taylor, Captain, Corps of Engineers.
MR. SMART: May I voir dire the witness, please?
THE COURT: Yes.
VOIR DIRE EXAMINATION
BY MR. SMART:
Q Sir, is it part of your work that you perform any independent tests to verify the information shown on this map?
A No, I did not.

Q Okay.
Where did you get the map?
A I've seen -- it was a whole series of these maps. This is an index map of the series, and they are in the files at the Corps of Engineers. I have seen them a number of times. That particular one was brought out in the discovery, I believe. That particular copy. But I've seen those many times.
Q You obviously weren't around in 1897.
A Obviously.
Q Correct?
A Neither of us.
MR. HAGENS: Neither were you.
MR. SMART: I've been around a lot less longer than

you have, Carl.
MR. HAGENS: Well, that's true.
Q (By Mr. Smart) And I take it that all of the geological features in Skagit County have changed since 1887.
A I suspect they have changed significantly.
Q So there is no way, since you haven't done any work, to determine whether or not this information is correct?
MR. HAGENS: Object to the form of the question. It's a historic document. How could he possibly have gone back to -- nobody around.
THE COURT: I'll allow the question.

A State the question again.
Q (By Mr. Smart) There is no way for you to determine whether or not the information in this document is accurate at this point; is that correct?
A No, other than some of the geological features are similar to what is there today. Where the river flows, yes. Similar.
Q I understand that. But since you didn't test it and since you have no way of checking whether or not these geological features where what they say they were, you can't tell us whether they are accurate.
A No. But I have no reason to believe it's inaccurate.
MR. HAGENS: Do you have any reason to believe it's inaccurate?
A No.
MR. SMART: This witness can't testify it's accurate. I object.
MR. HAGENS: Nobody is going to be able to testify to these ancient documents, Your Honor.
MR. ANDERSON: I have no objection, Your Honor.
THE COURT: 201 will be admitted. It goes to the weight as opposed to the admissibility. The jury will make a determination as to what weight or effect should be given to the document.

(Plaintiff's Exhibit No. 201 evidence.)

FURTHER DIRECT EXAMINATION

BY MR. HAGENS:
Q Do you want to come up here, Mr. Regan, and explain to the jury -- this one -- may move this a little closer. It will be little a hard to see if we don't.
THE COURT: All I had suggested before was that logistically you had it angled in such a way this way that it was very difficult for the jurors at the end to see it. So if you make it more -- turn it so that it's really facing the jury more completely. That is all that I was concerned about. You still have it.
MR. HAGENS: I don't want to obstruct the court reporter.
THE COURT: I understand that. You need to keep

that in mind as well. That is true.
MR. HAGENS: Maybe you will have to speak up a little more loudly for the court reporter.
Q (By Mr. Hagens) Go ahead then, Mr. Regan.
A What we have here is probably -- probably is the first map that was ever done of the Skagit River in any detail. This being an index map. In other words, it's showing the real detailed maps -- it's shown in squares here. This square here represents sheet six. There are a whole series of these

that are blown up this size. This kind of gives you an overview of the entire Skagit from Sedro Woolley. Burlington, at that time, was a little dot over here. Around Avon then. Mount Vernon shows a little bit of a town here. Slough down through here. Going into the various tributaries. Great Northern Railroad ran across the valley to the north.
Q Even in eighteen --
A -- '97? Yes.
Also another railroad that ran from basically west to east. It was called the Seattle Northern Railroad. This railroad line is still in. I don't know if it goes down here or not. But I know this portion of it is in. There are a number of features on here that are no longer on the -- no longer features in the valley now.
This drainage slough here is no longer there. This slough down through here, which is called Day Slough -- it doesn't connect any longer. It's just a little drainage swale down through there now.
There has been some major changes up in this area where the river has cut through these sinus portion of the channel. The Nookachamps valley is back in here. Burlington is now built all over this area. Mount Vernon is built all over this area here.
What it did show on here, though, these shaded areas to

the north and west of Burlington and Mount Vernon all over called marshes. Olympia Marsh. This one here is called Beaver Marsh. Nowadays those would be called wetlands. Wetland's where water goes in at times, sits, flows back out, is usually connected. One connected to the main river. Indicating to me that these areas here received water frequently in this era.
Q And this era would have been what in terms of the existence of levees?
A Probably very few levees involved in this time. There was some, like we stated earlier on, the levees were built -- didn't provide much protection. They were built not to any real plan. They blew frequently.
Q Do you see any marsh areas in what we characterize as the Nookachamps area?
A No. It doesn't show marsh down there. The maps don't really go down into the Nookachamps area. So there may have been no survey at that time, since these maps don't show all of it.

Q That's all we have. Thank you.
Now, you talked about the number of times rivers flooded in the past. I would like to talk a little bit about whether it is likely to recur in the future; that is, flooding of the Nookachamps, Skagit River in the future.
A No reason why it won't.
Q Okay.

Do hydraulic engineers determine the likelihood of recurrence of flooding?
A That is part of the business, yes.
Q Can you tell the jury how you do that?
A Basically, projection of what has happened in the past based upon the records that we just showed, the geological survey records, mathematical procedures that you go through to determine what is call a frequency curve. And from that frequency curve, we can relate to a percent chance of a certain discharge occurring in any one year.
Q Can you give the jury an example of a percent chance?
A Okay.
Q What a 50-year event, what a 25-year event might mean.
A It's unfortunate that this term "event" -- 100-year event, 50-year event, 25-year event, has ever come into existence because it means nothing. The 100-year event means you have a one percent chance in any one year of having a, you know, hundred-year flood, a one percent chance, like rolling the dice, a one percent chance of something happening. A 50-year, a two percent chance. A 25-year flood, a four percent chance that you are going to have it in any one year.
Q Just dividing 25 into 100; is that correct?
A That's correct.
Q Let's talk about what the events of 1990 and 1995 were rated. Was the event -- do you recall if the event of

November 11, 1990 was rated?
A They are all --
MR. SMART: Your Honor, I have an objection unless there is a foundational question as to rated by whom. The initial line of questioning was did he do it or did hydraulic engineers do it. And it's unclear at this point whether this is something Mr. Regan did or someone else did.
THE COURT: I'll sustain the objection.
Q (By Mr. Hagens) Was the November 11, 1990, flood rated, to your knowledge?
A Corps of Engineers rated it, I believe geological survey. Everybody throws out ratings when something like that happens.
Q Do you recall what the rating was by the Corps of Engineers?
A Well, right after the flood happened, it was big scattering of ratings. Then as things calmed down and people started looking at it in more detail, it came out around 25- to 30-year flood.
Q Which event are you talking about, the large flood, the 19 -- November 25th flood? Was the November 11th flood rated by

the Corps of Engineers?
A I don't remember the corps actually putting out a document, and I didn't see one, I don't believe. But I was able to go into the Corps of Engineers' rating frequency curve with a discharge the geological survey has published and came up

with a frequency about the 12 -- 12, 13-year flood.
Q What about the November 30th, 1995, event? Was that rated by the Corps of Engineers, or were you able to rate that?
A I did the same thing as I did for the earlier ones. Looking at the corps' frequency curve and came up with about a 12-year event, I believe.
MR. HAGENS: Before I start another subject, I'm wondering if it might be appropriate, or do you want me to continue on?
THE COURT: Why don't we go until eleven.
MR. HAGENS: Sure.
Q (By Mr. Hagens) Let's talk a little bit about what a levee is. Talked about history. Now, let's talk a little bit about what levees do and how they are constructed. You might tell the jury generally what levees are.
A Okay. A levee is basically a dam that parallels a water course, keeping water from escaping from the riverside to a landward side. Long, continuous pile of material, usually, 99 percent of the times, it's an impervious or clay, sandy clay-type, gravel, on the embankment.
Q Okay.
And at my request, have you prepared an illustration of how levees work?
A Well, I prepared an example exhibit that shows what happens when levees are put onto a river, yes.

Q And does it show how the levees -- illustrate that, I should say, illustrate how levees affect the flow of rivers?
A In a simplistic manner, yes.
Q And do you have that with you?
A Yes, I do.
Q Mr. Regan, this is just a simple illustration, is it not, of how the levees affect the flow in the floodplain?
A That's right.
Q It's designed to help the jury understand --
A That's the only reason for it, yes
(Plaintiff's Exhibit No. 202 identified.)

MR. HAGENS: We would offer Exhibit 202, Your Honor.
MR. SMART: Your Honor, suggest we take our break. We have never seen this document before. And we haven't had an opportunity to evaluate it. Obviously something that -- a great deal of preparation has gone into. We're at a break point, we would like to have a few minutes to evaluate it.
THE COURT: We'll take our morning recess then.
(The following occurred in the

presence of the jury subsequent to morning recess.)

MR. SMART: Your Honor, may I voir dire the witness on the document?

THE COURT: Yes.

VOIR DIRE EXAMINATION

BY MR. SMART:

Q Mr. Regan, when was this document prepared?
A We finished preparing that Monday morning.
Q Monday morning?
A This week.
Q So it's never been provided to us before; is that correct?
A Pardon?
Q It's never been provided to us?
A I don't believe so.
Q And as I understand, the purpose of this document is simply to present a common-sense explanation of how dikes work so that if you have a dike on one side of the river it shows that the water will rise the height of that dike and maybe spread out over a floodplain on the other side?
A Basically. It's to show what happens when you put a dike here and they're on both sides of the river.
Q I take it the purpose of the exhibit is simply to explain to the jury the common-sense aspect, if you have a dike on one side, the water will raise up and flood over on the other side as well.
A That's correct.
Q That is something you knew as long as you worked at the corps?
A As long as I've been a hydraulic engineer.

Q It's a common-sense explanation?
A It's a common-sense explanation.

MR. SMART: I have two problems with the document. Number one, it's preparation recently. Number two, the right bank and the left bank appear to be reversed relative to our situation in this incident. You see that the right bank over here, which is the bank which would be on the Burlington side, would be -- should be the left bank if it was to bear any relationship to our situation.

Maybe ask another question.

Q (By Mr. Smart) Does it not bear any relationship to our situation?
A The left and right bank variation, if you were looking down the river.
Q Yes. And you are showing that there is a floodplain on the right bank, which would be towards Burlington; is that correct?
A That's correct. And that's where it was.
Q And in our situation that we're discussing here in this case, the flooding that you are talking about with the floodplain where the levee doesn't exist is on the left bank over on the Nookachamps side; is that correct?

A That's right.
MR. SMART: Being reversed, Your Honor, I think that might be confusing to the jury.

MR. HAGENS: Well, Your Honor, I think he can point that out.
THE COURT: I'll overrule the objection. That is fine.
(Plaintiff's Exhibit No. 202 admitted into evidence.)

A I don't understand what he is saying.
MR. HAGENS: Offer 203 through 205, Your Honor. If I got all those right.
THE COURT: 202.
MR. HAGENS: 202 through 205.
Miss Scheafer, I wonder if you would just turn this thing around.

FURTHER DIRECT EXAMINATION

BY MR. HAGENS:
Q Mr. Regan, would you come on down here and explain to the jury -- would you tell the jury what Exhibit 202 is?
A 202 is a depiction of a cross-section across the river floodplain, as we talked about yesterday. The floodplain goes from the high bank to the high bank on the opposite side of the valley. In the middle is the river channel, showing the purple-bluish coloration, water. Showing channel flow, showing some buildings in the floodplain. Water in this case looking -- really, looking down the river. The right bank being on the right-hand side of the river and the left bank being on the left-hand. Always describe right and left bank; you are always looking down the river, not looking up the river.
Q What is the next?
A Basically, this is what happens when the river goes into flood. Common knowledge. The river goes into flood, the river surface rises up and floods across the river.
Q That is with or without levees?
A Without levees. This is just a river without any levees in place. The water rises, and it's basically across the valley about the same elevation on one side as it is on the other. This is where it might be somewhat different, but that is normally what happens across the valley; that is, you get flooding the same on both sides.
What happens when you build a levee on one side of the river, put a levee in, protect the right bank, you notice that in the previous illustration this house was not flooding, these houses were flooding. You have taken the water that was in the overbank on the right side, the right bank, and basically you put it on the left bank. In doing so, you have actually raised the water surface somewhat. Other things that go on, but in this analogy backup is the result. What you take out here, you add over here.

Q Let's to go 203.
A Obviously, these people got tired of getting a little extra flooding here because of these people being dry. So they come in and built their own levee. In doing so, they had to build this levee higher. Now you have taken all the water that was here, all the water that was here, and stuck it between two levees. You see what has happened? The river surface went from basically an elevation to just flooding these people to some elevation that just flooded this side to an elevation now which is basically above the top of the buildings.
Q Would this be illustrative of the situation downstream from Burlington Northern bridge?
A That is basically what's going on. And has gone on not only in the Skagit but gone on in many, many rivers.
Q Now, and have you heard of the expression -- Strike that.
Are there benefits and then detriments in erecting levees?
A Definitely. Can be seen by this illustration. The benefit is you don't flood. If you can keep the water between the levees and you don't overtop and you don't break for any number of reasons, the people living landward, the levees are protected from flooding. That is the benefit.
The detriment you see on the second exhibit where you had the levee on one side, sure, people on the right bank there were benefitting, but to the detriment of the person on the left bank being flooded.

Q And have you ever heard the expression "One man's flood control is another man's flood problem"?
A That expression has been mentioned a number of times. And shown quite well with this exhibit.
Q Okay.
Now, from time to time, are you aware of any instances where Skagit County has blown or deliberately taken down any levees?
A Yes.
Q And could you tell the jury under what circumstances that occurred?
A Um, two times this has happened that I've heard of. One being the -- both occurred during the 1990 event. The big flood in 1990. One levee was purposely blown open, blown or removed, or portion of it removed, to allow an area to flood to relieve the water surface on the other side and some distance upstream. You flood a big area, the water surface will come down. This took pressure off from the levees on the other side. This was done down in the lower Skagit -- I think we can point it out
(Plaintiff's Exhibit No. 203 identified.)
Q (By Mr. Hagens) Show you Exhibit 1.
A No.

Q Maybe you can point out where.

A Yes.
Q Was that done according to your review of the records.
A This map shows the mainstream levees on the Skagit. The ones that originally came out of the Corps of Engineers' general design memo of 1979.
Q That is already in evidence?
A Correct. It doesn't show all the levees because there was some that weren't going to improve. A whole bunch of levees down in this area. There is one that is -- circles an island that is called State Game Reserve. That levee, I believe it was, so one of these islands down here. Probably this one. That levee was intentionally opened up to allow that area to flood to relieve pressure on this levee and basically some distance upstream.
Now, also in 1990, a portion of the levee in this area actually breached due to just circumstances. It wasn't breached on purpose. It actually failed.
Q That is called Fir Island?
A That is the Fir Island breach. That allowed water to flow into Fir Island and pond. Since the levee follows along here, it wasn't able to get out. So they went down in here and opened up the levee to allow it to be drained out. So basically, we had a flow through Fir Island from the top to the bottom, very similar to what was shown on the early Corps of Engineers' map. It showed a channel down through there.

Q Okay.
Resume your seat.
A (Witness complying.)
Q Where are levees normally erected, Mr. Regan?
A Well, normally they are erected along side of a river. Being right on the riverbank or set back from the riverbank. It doesn't seem to be any real norm. The preferred practice would be a setback of some distance.
Q That is a term that may come up in the course of the trial. Will you explain to the jury what "setback levee" is?
A Setback means the levee doesn't sit right on the riverbank, right adjacent to the riverbank. It's set back away from the river, back some distance to allow that small portion of the floodplain to convey water down the stream. The further setback, the more area between the levees, the bigger the conveyance to allow water to go downstream.
Q Is there a standard size to levees in terms of heighth and width of the base?
A The heighth is totally dictated by what type of protection you are going to achieve, a 100-year flood protection, a 50-year. Normally they build a levee wide up on the top so you can get out on the levee with trucks to do maintenance, to flood fight, to do repair work.
The top of the levee, 12 feet, 15 feet wide normally. Normally they have side slopes, range all the way between a

101-foot drop to two-foot horizontal slope, or somewhat steeper than that. But never get much steeper than one foot to one-and-a-half foot. The material won't stand much steeper than that.

The height of the levee, then, since you started a top width 12, 15 feet and you have a certain heighth you want to protect against, the bottom width is dictated by how high the levee is, and becomes in some cases, becomes quite wide.

Q Okay.

And you have walked the levees in Skagit County?

A I have walked all the mainline levees on the Skagit.

Q And are you familiar with their heights and various locations?

A They range from down at the lower end down near the bay, five, ten feet some places. Depending upon what the ground is. You get up to the main levees up around north -- upstream from Mount Vernon, they can become 15, 20 feet high.

Q And do these levees tie in any place in any state or county roads?

A The county roads do run along parallel to them. One location where the county road actually becomes part of the levee for a short distance.

Q And what road is that?

A Pardon?

Q What road is that?

A Called Lafayette Road. It's up the very upstream end of the levee that protects Burlington, the Diking District 12 levee.

Q Can you point out on Exhibit 12 --

A It really doesn't show the road itself. But it's in the -- it's right up in this vicinity up here.

Q It ties in; what do you mean?

A Well, Lafayette Road comes along here and goes to the levee a little bit and then continues off the levee. So a short portion that is levee.

Q And how do the Skagit County levees compare in length to our levees in the state, if you know?

A Over 40 miles of mainstream levee on the Skagit, which is a fairly extensive system. This doesn't include the levees that protect from tidal flooding. This is mainstream along side Skagit River. The Snohomish River out here probably has -- in fact it does, it has less miles of levee on the Snohomish Delta. The other levees in the -- in the Puget Sound area, there is no other area that is as extensive as this.

Q You mention the Snohomish County levees. Do you know if any of those levees have been reduced in heighth?

A I don't know of any instance where they ever -- excuse me.

Q Snohomish County?

A Snohomish County. I'm sorry. I thought you said Skagit.

Quite an argument going on, discussions in the Snohomish Delta a few years ago. Got into what the media. Levee

wars. Where one person would build a levee up and people on the other side had to reciprocate in kind, building their levee up. And it was just going up and up, and there was a lot of flooding going on. One side the levees would break on the opposite side from where the stronger levees were built.

So got into an agreement where everybody brought their levees up to the same height, which involved some of the levees having to be brought down do a heighth, yes.

Q All right. Let's talk about what the -- the protection level.

Did your review of these historic documents reflect whether the protection level had gone up or down over time?

A There appears to be a general trend in the protection level of the dikes. General trend from early on when the levees were first built to where they are today, the protection level does increase quite a bit.

Q And did you review a series of documents that related to -- showed the evolving protection level over a period of time?

A I looked at twelve documents that span 60 years of time that indicated that -- showed definitely that the levees seemed to be getting better and better, providing more and more protection.

MR. SMART: Your Honor, by way of foundation, may I ask that the witness identify what the documents are and what this 60-year time period was, please?

THE COURT: All right.

A All right.

Q (By Mr. Hagens) Why don't you start with the time period first?

A Okay. Early 1900s, U.S. Geological survey, a report done in 1961, water supply. Paper talked about numerous levees, breaches upstream and downstream from Mount Vernon, indicating not have good protection. Going on the latest one I reviewed was 1993, Corps of Engineers' damage reduction study, which said the maximum safe capacity of the entire levee system varies between 100,000 and 146,000 --

MR. SMART: I'm just interested in the time period study. He mentioned 60 years. I would like to know which 60 years?

A Oh. Okay. Basically from 1930s to 1993.

Q (By Mr. Hagens) Let's go back and track some of those reports that showed the improving nature of the protection level.

First of all, if you would take a look at Exhibit No. 2, which is already in evidence. Explain to the jury how that relates to the protection level.

A Exhibit 2 is the Skagit River Flood Control River Enlargement in dikes 1932, a report by the Corps of Engineers.

Q Can you explain to the jury what that relates in terms of protection level?

A Okay.

Q That is already in evidence. Just trying to get you to

identify the portion that relates to the --
A It states that the levee is constructed without a well developed plan and were entirely inadequate to handle a major flood. During the 1932 flood, a ten-year event, levees failed a quarter mile upstream from the Burlington Northern Railroad bridge.
Q So that was something less than ten-year protection?
A That was no gauge at Mount Vernon at that time. So it was basically a ten-year event at Concrete.
Q If you take a look at Exhibit No. 91. Can You identify that for the record, please?
A Exhibit 91 is a Skagit County Engineer's Report to the Legislative Interim Committee on Water Resources, July 8, 1966, Mount Vernon, Washington, by Lloyd H. Johnson, Skagit County Road Engineer.

(Plaintiff's Exhibit No. 91 identified.)

MR. HAGENS: We would offer Exhibit 91, Your Honor.
THE COURT: Counsel?
MR. SMART: No objection, Your Honor.

THE COURT: Mr. Anderson?
MR. ANDERSON: No objection, Your Honor.
THE COURT: All right. 91 will enter.

(Plaintiff's Exhibit No. 91 admitted into evidence.)

Q (By Mr. Hagens) Let's start with the first page there. Last two paragraphs, if we could.
A You want me to read that?
Q Hold on a second. I want to get this zoom on.
I wonder if you would read the -- see the second to the last paragraph on the first page?
A Right.
Q I wonder if you would read the last two sentences of that.
A Okay.
Some areas near the mouth of the river were completely surrounded by dikes at an early age.
The paragraph indicates -- talking about 1880s.
In the beginning, the dikes were not very high but were raised to a sufficient elevation to confine minor floods to the river channel.
Q And then if you would read the next sentence.
A Okay.
The 16 existing diking districts, together

with Skagit County and the State Department of Conservation, have to date spent approximately $5,361,504.00 and in the last ten years the average expenditure has been

one-quarter million dollars annually. At the present time, dikes are the best in our history but we still lack comprehensive protection.

Q If you would drop down to the next to the last paragraph where it talks about -- starts with, "The Washington State Department of Conservation..."

A The Washington State -- hold on a second. I'm not sure -- Okay.

Q Yeah. The paragraph that -- the two sentences that start after Washington State Department of Conservation.

A You want me to read from "The Washington State..."

Q Yes.

A The Washington State Department of Conservation, with its expenditures in Skagit County, is primarily responsible for the achievement to date. However, with all our expenditures to date, we still have a dike protection of less than ten years.

Q Okay.

MR. SMART: Your Honor, I think this is a paragraph that, in fairness, should have the whole of it read.

MR. HAGENS: That's fine.

MR. SMART: Keep it in context.

Q (By Mr. Hagens) Would you read --

A It goes on to say:

The accomplishment of the Avon Bypass would increase our protection three-fold to thirty years. Only from adequate assistance from the State of Washington can this project be achieved. The diking and drainage districts have solved only their immediate problems with no comprehensive protection.

Q Okay.

MR. HAGENS: Anything else you want for the record?

MR. SMART: No. I just think maybe the bypass.

MR. HAGENS: I will get to the Avon Bypass.

Q (By Mr. Hagens) Will you tell the jury what the Avon Bypass was so that they have some understanding of what that is all about?

A I could point it out on the chart that is on --

Q Sure.

A Avon Bypass -- I was quite an young engineer at the time, just going to work for the Corps of Engineers. It had been studied before that. It was still in the study phase.

Basically, what it amounts to, was an large structure or water gates that, during a flood, could be opened and dumped into a channel, which basically ran due south and into Padilla Bay. At certain stages on the river these gates would be opened and the river would be diverted through what is called Avon Bypass.

Q And the study was done when, Mr. Regan?
A It had been accomplished over the years. In the forties, fifties, sixties.
One other portion to it which involved widening the channel through this area to get the water to the structure.
Q Okay.
And was that ever built?
A Avon Bypass was never built. Entailed getting a right to flood.
Q It was built, would it take out some of the farm lands in Dike District No. 12?
A Have to be a right to flood -- a channel through there. The idea, the channel would be very wide, shallow, which could be farmed when it was not being used for flooding. And the people would have to agree to a right to flood across there during the time of flooding.
Q Did they ever agree to such a thing, to your knowledge?
A I'm not sure why it died, but I think one of the reasons were the residents in here didn't -- were not too particularly

interested in having the Skagit River running through their back yard.
Q Why don't you get on the stand again.
A (Witness complying.)
Q Next exhibit would be 144. Do you have it there, Mr. Regan?
A No. Which one is it?
Q 144. Can you just identify that?
A This is a Corps of Engineer report dated June 1977, Report on Floods of December 1975 and January 1976.
Q And were you with the corps at this time?
A Yes.
Q And have you seen this report in the past?
A Yes.
(Plaintiff's Exhibit No. 144 identified.)

MR. HAGENS: We'll offer Exhibit No. 144, Your Honor.
MR. SMART: No objection, Your Honor.
MR. ANDERSON: No objection, Your Honor.
THE COURT: All right. 144 will enter.
(Plaintiff's Exhibit No. 144 admitted into evidence.)

Q (By Mr. Hagens) Show the jury what this title page of this is.
A Okay. It's titled "Puget Sound Washington Coastal and

Eastern Slope Cascade River Basins, Washington."
Q Okay.
And this is a publication of who?
A U.S. Army Corps of Engineers, Seattle District.
Q Then if you would go to page 4 of the report. Excuse me. I gave you the wrong page. Page 10 of the report. Do you have

that in front of you?
A Yes.
Q Would you -- do you see paragraph 2A there?
A Yes.
Q Would you read the first sentence in 2A?
A Okay.

> Sixteen diking districts maintain about 56 miles of levee and 39 miles of sea dikes along the lower 21 miles the Skagit and Samish Rivers which affords protection from floodflows from 3- to 14-year recurrence intervals.

Q And that was in what year?
A That was written in '75. Dated 1977, June '77.
Q Put that one down.
I wonder if you would take a look at Exhibit 64.
A 64?
Q 64. Could you identify this for the record?
A It's titled "Inclusion of Gages Slough Under the Jurisdiction of the Skagit County Shoreline Management Master Program, Skagit County Planning Department, February 1983."
Q Is this one of the documents you reviewed in connection with your work in this case?
A That's correct.

(Plaintiff's Exhibit No. 64 identified.)

MR. HAGENS: Your Honor, we would offer Plaintiff's Exhibit No. 64.
MR. SMART: By my count, Your Honor, this is well over twelve documents. The witness earlier testified that he reviewed twelve documents. That is why I asked for the list of what the twelve were earlier.
Can I have that, please? He has identified is not a historical document. Like to know what the documents were that he reviewed.
MR. HAGENS: Well, Your Honor, I'm just asking about this exhibit. If he wants to cross-examine him, he can do so.
THE COURT: That's fine. That is improper questioning at this point in time.
You may proceed.
MR. HAGENS: We'll offer Exhibit 64 then, Your Honor.
THE COURT: 64 is admitted.

(Plaintiff's Exhibit No. 64 admitted into evidence.)

Q (By Mr. Hagens) Okay. Let's put this up on the screen here so the jury can see it. And that is -- can you just identify what is the front page there, the caption of the document.
A Yeah. Like I said, it was the "Inclusion of Gages Slough

Under the Jurisdiction of the Skagit County Shoreline Management Master Program, Skagit County Planning Department, February 1983."

Q Now, if you would take a look at page 3 of the exhibit. And I would like to have you read the top sentence there, if you would.

A On paragraph 5. Top sentence it says:

> A majority of the Skagit River between Mount Vernon and Sedro Woolley is diked to prevent flooding. These dikes, according to the County Flood Engineer, vary in the degree of elevation from 15- to 100-year flood protection.

Q Okay.

And while we're on that exhibit, I wonder if you would read the last sentence there that starts out, "In cases of historic flooding"?

A

> In cases of historic flooding, the latest being 1951, floodwaters were across Highway 20 northeast of Burlington and Gages Slough functioned as a floodwater conveyance system.

Q Let's talk about Gages Slough. Where is that located; do you know?

A Gages Slough runs along the right bank, basically through the outskirts of Burlington. I can point it out on the map.

Q Sure. If you would. Referring to Exhibit 199.

A Gages Slough isn't shown on the exhibit, but it starts up in this area and wanders on down through Burlington through about here. In fact, I believe that is probably what -- no. Yeah, I think that is probably what this crooked line is here. Probably Gages Slough. At one time it was a portion of the Skagit River. It no longer functions as a main system now.

Q When you say "conveyance system," what do you mean?

A Water doesn't flow freely down river as it would flow -- I mean down Gages Slough as it would flow down the Skagit River.

Q Why is that?

A Gage Slough -- goes across the end of it up here. Any water that does collect in it, it has been -- plugged, so to speak, grown up with bushes. Maintained as water course. Highway 99, old 99 runs across it, which is actually on fill with some small culverts in it. Basically, Gages Slough has been plugged up to a point where it won't pass any water to speak of, other than just local drainage.

Q Who plugged it; do you know?

A Diking District 12 built this levee up in here. That was part of it. And Highway 99 crossing, that was done in the sixties. Lloyd Johnson was county engineer at the time. I know for --

MR. SMART: I object, Your Honor. The question was who did it. He identified a state highway, Highway 99. If

he knows who did it, then he should testify to that. The question is who.

A I believe it was the county.

MR. SMART: County built Highway 99?

A I didn't say that.

MR. HAGENS: Can you let him finish his answer, Your Honor.

THE COURT: Yes. Go ahead.

Q (By Mr. Hagens) You were about to testify who had plugged the --

A I know that Lloyd Johnson was the county road engineer at the time, was in the Corps of Engineer office talking about the fill and replacement of a bridge that needed to be replaced because of its age.

Q How did that affect the flow in the slough, Gages Slough?

A Blocked the flow. Idea of the fill was that if floodwaters did get in there, the fill would fail. However, the levee in the upstream headwater don't get in too well.

Q If you will resume your seat. I just have one more of these exhibits to do.

Take a look at Exhibit No. 145, please, Mr. Regan. Would you identify that for the record?

A This is the U.S. Army Corps of Engineers, Seattle District document, Flood Summary Report, Nooksack, Skagit and Snohomish River Basins, November 1990 events.

(Plaintiff's Exhibit No. 145 identified.)

Q (By Mr. Hagens) Okay.

And this is one of the reports you reviewed in connection with your firm's work in this engagement?

A That's true.

MR. HAGENS: Your Honor, we would offer Exhibit 145.

MR. SMART: No objection, Your Honor.

MR. ANDERSON: No objection, Your Honor.

THE COURT: All right. 145 will enter.

(Plaintiff's Exhibit No. 145 admitted into evidence.)

Q (By Mr. Hagens) I wonder if you would take a look at table number three attached to that exhibit.

MR. SMART: What page?

MR. HAGENS: Table 3.

Q (By Mr. Hagens) Tell the jury what this table --

A Table 3.

Q -- is about.

A Titled "Hydrologic Data for Northwest Washington Basins, Veterans' Day Flood, 8 - 12 November 1990." Lists on the left-hand hand side column basin, stream location. Proceeding from left to right, a column of USGS I.D., meaning the identification number of the gauge. The next column is a

river mile where the gauge is located, how many miles upstream from the mouth. The drainage area at the gauge location. The event day and hour. Then the next column is the peak stage in feet. The next column is a peak flow in cf, cubic feet per second. The next column is --

Q Stop there. The return period.

A That is the frequency.

Q I think that is -- well, you might go ahead with the balance of the columns.

A The next column towards the right is a zero major damage in feet. In other words, how high does the water have to get before any damage occurs. If it goes above that, then you have damage.

Q And the -- okay.

A Okay. The next one is -- having trouble with the abbreviation. Hours above zero damage. How long in hours was the river above the zero damage point.

Q And that was the November 8 to 12, 1990 event?

A 8 to 12.

Q Excuse me. November 8 to 12.

Let's take a look at table 4, if you would.

A Okay. It's the same table, saying the same things, except for the 21 through 26 November, 1990 flood.

Q Okay.

And under the return period here, it has it measured at Mount Vernon as what?

A Forty.

Q Was that the original estimation?

A That was the original estimate.

Q Did any of the levees break around Mount Vernon or Burlington?

A No. The only break that occurred was the Fir Island break.

Q Okay.

And what does that tell you then in terms of the protection level at that particular point in time?

A It tells me that the levees upstream from Mount Vernon, at least passed the 40-year flood.

Q Put that aside.

A Okay.

Q Now, I want you to explain to the jury what kinds of projects or things have to be done to the levees to get them to the increased protection level that you have just portrayed to the jury.

A There are a number of things you do. One thing is obvious. You make the levees strong enough so they don't breach. A breach means blowout of the levee, the water blowout of the levee into the protected area. Without doing anything else, you make it strong enough for that height.

Another thing is you make it strong enough and higher. Gives you an increased level of protection. You protect the levee -- riverside of the levee so it doesn't erode out and fail from an erosion situation, the river eroding material

off the levee. So these three type of things will increase the level of protection.
Q Let's use a little terminology here. Jury gets an understanding of what a keyway is.
A Okay. That is another thing. You want to use the chart?
Q Just tell them first. And maybe we'll get on to the chart.
A A keyway basically cuts off the water from flowing underneath the levee. The ground water when you have a water on the riverside being high and -- on the levee and no water on the opposite side, the water has a tendency to seep under the levee. And a keyway is basically a curtain, a trench that is dug with a curtain of impervious material, clay-type material, a material that the water won't run through very easily. It keeps the water from seeping under the levee.
Q And let's tell the jury a little bit about what a riprap project might be.
A Riprap is basically rock put on the levee face on the riverbank to retard erosion.
Q What about fill projects or ballast projects?
A Fill is raising -- raising the levee up. To fill in the top of the levee. To do so if you want to keep the same top width, since the sides are sloping, you've got to increase the levee width. So you fill, but you have to increase the levee width to keep the same top widths.
And ballast is a word that is used in road construction, a type of surface, a crushed rock-type surface, usually a ballast surface.
Q Have you prepared an illustration of each of those types of projects together with any other projects that you reviewed in connection with the improvement of the levee system on the Skagit River?
A We do have an illustration on one page, kind of illustrates each one of these conditions.
Q Showing you 206. Just an illustration of the types of projects that you reviewed in connection with the improvement. Levee protection level in Skagit County?
A That's correct.
Q And it's just to depict what?
A Just depicts each type of improvement that I had seen during my review of the type of projects that have been done.

THE COURT: Actually, counsel, it's time for the noon recess. You can review that during the break.
Ladies and Gentlemen, we do have two matters set at one o'clock. So we will be trying to start at approximately 1:30, close to 1:30 as we can.
Again discharge you for lunch. Please do not discuss this case among yourself or anyone else, remain in the hearing of anyone else so discussing the case. Remember, of course, as we discussed yesterday and will again probably innumerable times between now and then, it's essential to the concept of a fair trial that we not discuss the case with anyone or have any attempt to determine any of the facts in

the case other than from the witness stand in this case.

With that, be back in the jury room at 1:25. We'll do our very best to start approximately at 1:30.

Thank you.

(Noon recess was taken at 12:02 p.m.)