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SUPERIOR COURT OF THE STATE OF WASHINGTON
COUNTY OF SNOHOMISH

LEONARD and JEANNE HALVERSON,)
 husband and wife, et al.,)
 Plaintiff,)

vs.) 93-2-05201-2

SKAGIT COUNTY, a municipal)
 corporation,)
 Defendant.)

-----)

SKAGIT COUNTY, a municipal)
 corporation,)
 3rd Party Plf.,)

vs.)

STATE OF WASHINGTON,)
 3rd Party Deft.)

Deposition Upon Oral Examination of
ANTHONY MELONE, Ph.D.

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December 4, 1995
 1301 Fifth Avenue, Suite 2929
 Seattle, Washington
 JULIE C. OSWALD, CSR #299-06, COURT REPORTER

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APPEARANCES

FOR THE PLAINTIFF: CARL H. HAGENS
 Hagens & Berman
 Attorney at Law
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 Seattle, Washington 98101

FOR THE DEFENDANT: DAVID R. MAJOR
 SKAGIT COUNTY Keller Rohrback
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Seattle, Washington
9:10 a.m.

ANTHONY MELONE, Ph.D.: Being first duly sworn by the Notary Public on oath testified as follows:

E X A M I N A T I O N

BY MR. HAGENS:
Q. Will you state your name and residence address for the record, please.
A. Anthony Melone. I live at 11913 Northeast 168th Street in Bothell, Washington.
Q. By whom are you employed?
A. KCM, Inc.
Q. What is KCM, Inc.?
A. An engineering consulting firm, engineering, planning and scientist.
Q. When were you first retained by Skagit County in this matter?
A. I believe it was about two and a half years ago. I don't recall the exact date.
Q. Who contacted you?
A. Dave Major. Actually in thinking about it, its three years ago.

Q. Did he explain to you the nature of your retention?
A. Yes.

4 Q. Would you describe that, please?
5 A. There was a suit brought regarding flood issues
6 on the Skagit River, and I was retained to
7 assist them in providing technical expertise.
8 Q. What type of technical expertise?
9 A. In the area of hydraulic engineering.
10 Q. By the way, you've given depositions before, I'm
11 sure; is that correct?
12 A. I have not given a recorded deposition.
13 Q. Is that right?
14 A. That's true.
15 Q. Have you ever testified in court before?
16 A. No, I have not.
17 Q. So you haven't been qualified as an expert
18 witness before in a court proceeding?
19 A. What do you mean by "qualified as an expert
20 witness"?
21 Q. Being sworn in as a --
22 A. I have not been sworn in as a witness.
23 Q. I will just tell you my ground rules. I'm sure
24 counsel has spoken to you a bit before the
25 deposition. If I should ask you a question that

0006

1 you don't understand, which I'm very capable of
2 doing, sometimes I don't understand them, tell
3 me so and don't attempt to answer. If I use an
4 expression or term that you don't understand,
5 tell me so and I will try to use another one,
6 okay?
7 A. Uh-huh.
8 Q. If you answer yes, I'm going to assume you
9 understand the question unless you tell me you
10 don't.
11 MR. MAJOR: He is not going to enter into
12 any agreements with you. You can explain the
13 procedure. He is not here to make agreements
14 with counsel.
15 Q. I'm not asking for any agreements.
16 If you don't understand a question or term
17 I use, I do expect you to tell me so. Otherwise
18 I will assume that you understand it.
19 What was the nature of the technical
20 assistance you were going to provide Skagit
21 County?
22 A. Technical assistance as required and as
23 requested.
24 Q. What was your financial arrangement with Skagit
25 County?

0007

1 A. We bill for time.
2 Q. What is your hourly rate?
3 A. I do not recall.
4 Q. Do you know what it is today?
5 A. I know approximately it's about \$33.80 an hour.

6 Q. You are a civil engineer, as I understand it?
7 A. Yes, I am.
8 Q. Could you give me a little bit of background --
9 I don't know anything about civil engineers, and
10 I'm sure Dave will confirm that. Would you tell
11 me what training, if any, you have with respect
12 to hydrological activities in the engineering
13 field.
14 A. I've worked as a consultant since 1975, so over
15 20 years in the consulting business, almost
16 exclusively in the general area of hydraulic
17 hydrologic engineering, water resources.
18 Project types that I've worked on through that
19 have been all-encompassing in that area from
20 hydrologic modeling, hydraulic modeling,
21 floodplain management, flood hazard management,
22 sediment transport, flood warning, flood
23 investigations, storm water investigations from
24 all aspects of the hydrologic cycle.
25 Q. Is there any formal education associated with
0008 the hydrological field of civil engineering?
1 A. Yes. Certainly if we go way back in time as an
2 undergraduate, there is some level of
3 specialization. Most of mine was in flood
4 mechanics, hydrology, hydraulics. As a graduate
5 student it certainly becomes more specialized.
6 As a masters program, I specialized in a
7 hydraulic curriculum, and the same for my Ph.D.
8 program.
9 Q. By the way, how do you want to be addressed?
10 A. Tony.
11 MR. MAJOR: Expert is good.
12 Q. Let's stick with Tony.
13 Let me tell you what I've done here this
14 morning. Maybe I don't have them all, I've
15 tried to get them all, all the various
16 declarations you've given in either the federal
17 or state case. What I thought we would do is go
18 through thosetoday and go on from there.
19 (Marked Deposition Exhibit 1.)
20 Q. By the way, Tony, did you bring -- you were
21 subpoenaed to be here today, and I think counsel
22 accepted subpoena for you. Did you bring all
23 your work records and analyses and what-not with
24 you this morning for your deposition?
25
0009
1 A. Yes, I have.
2 Q. Did you also bring your company's billing
3 records?
4 A. Yes, I have.
5 Q. Let's take a look at what's been marked
6 Exhibit 1. Am I correct that this is the first
7 declaration that you gave in the various

8 litigation involving the levee system up there
9 in Skagit County?
10 A. I believe it is.
11 Q. You gave this in December of 1992, if I'm not
12 mistaken; is that right?
13 A. That appears to be correct.
14 Q. Had you done any hydraulic modeling before you
15 prepared this particular declaration?
16 A. No, I did not.
17 Q. You have since; is that correct?
18 A. That's correct.
19 Q. Take a look at page 2 -- by the way, this is
20 your declaration, is it not?
21 MR. MAJOR: Asked and answered, Carl.
22 Q. If it's asked and answered, I won't ask it
23 again.
24 Take a look at paragraph 4, Mr. Melone --
25 Tony.
0010
1 A. Paragraph 4?
2 Q. Yes.
3 A. Okay.
4 Q. In there you said "Based upon the available
5 data, it does not appear the 1990 flood levels
6 on the Skagit River near Johnson's Farm and
7 Sterling Road were any higher than would have
8 resulted if the same flood event had occurred in
9 the mid '70s."
10 MR. MAJOR: Objection to the form of the
11 question. You dropped a "that."
12 Q. With a "that" in there.
13 What available data were you referring to
14 in this declaration, or this paragraph?
15 A. I believe it was the -- my recollection is it
16 was the high watermarks I had from the 1975
17 flood and the high watermarks I had at that time
18 for the 1990 flood.
19 Q. Where did you obtain those high watermarks?
20 A. The 1975 high watermarks I believe were out of
21 the Corps of Engineers 1979 technical
22 memorandum.
23 The 1990 high watermarks were I believe
24 provided to me by Keller Rohrback.
25 Q. Who at Keller Rohrback?
0011
1 A. I wouldn't know just who at Keller Rohrback
2 provided me those numbers.
3 Q. What form did the high watermarks take as they
4 were provided to you by Keller Rohrback?
5 A. I recall some of them I believe were in
6 depositions. Others I really don't know the
7 form they came to me in -- written.
8 Q. Do you have those materials with you today?
9 A. I have the documents that I entered those flood

10 levels on, those I know. I've got some
11 depositions with reference to high watermarks
12 with me today.
13 Q. Is your opinion the same today as it was in
14 December of 1992 with respect to paragraph 4?
15 A. My opinion is the same today, given the same
16 conditions that occurred in 1990, if they would
17 have occurred in 1970 the flood levels would not
18 have been any higher.
19 Q. Let me ask you this: If I understand it, Tony,
20 you engineers measure flows on the basis of
21 cubic feet per second; is that correct?
22 A. That's a common unit.
23 Q. And you measure them at certain locations; is
24 that correct?
25 A. That's correct.

0012

1 Q. What was the cubic feet per second measurement
2 for the 1975 flood versus the 1990 flood?
3 MR. MAJOR: Are you referring to the peak
4 flows?
5 MR. HAGENS: Yes.
6 THE WITNESS: My recollection is that the
7 peak flow measured at the USGS gauge in 1975 was
8 130,000 CFS, and that the peak flow on November
9 25th, 1990 was 152,000 CFS.
10 Q. Where is this US -- what did you call it?
11 A. USGS.
12 Q. -- USGS gauge?
13 A. It's located on what I believe is called the
14 Riverside bridge on the downstream side --
15 downstream from the Riverside bridge.
16 Q. This is Exhibit K to one of your declarations.
17 Help me find that Riverside gauge. I will give
18 you a red pen on Exhibit K. If you would circle
19 it and put an arrow to it and show me where the
20 gauge is. There it is. It's already marked on
21 the map.
22 A. That's the approximate location.
23 Q. So if I understand your opinion correctly, then,
24 is that the 1975 flood with a flow measured at
25 that point of some 22,000 cubic feet per second

0013

1 would have the same impact upon -- that is with
2 the lesser flow of some 22,000 feet per second
3 would have the same impact on Mr. Johnson's farm
4 as the 1990 flood?
5 A. No, I did not say that.
6 Q. In what respect am I wrong?
7 A. You asked me if the 1990 flood would have
8 occurred in 19- -- if the 1990 flood had
9 occurred in 1970, namely the same flood event,
10 would it have been any higher at the Johnsons',
11 and I've said if the 1990 flood had occurred in

12 the mid '70s, the same as it occurred in 1990,
13 the flood levels would have been the same.
14 Q. I see what you are saying. Okay.
15 Take a look at page 3 of your declaration,
16 Exhibit 1, the aerial photographs mentioned, the
17 ones that you have attached to your declaration
18 exhibit, pages 21, 22 and 23, I think they are.
19 Take a look at that. I want to know if these
20 are the aerial exhibits to which you are
21 referring.

22 A. No, I believe I'm referring to the foldout
23 aerial photograph that was attached to this.
24 Q. I think they are in there. I'm asking if those
25 are the aerial views --

0014

1 A. I'm saying I don't believe that's true. I
2 believe it's the area photograph -- the aerial
3 photo that was very similar to this Exhibit K
4 that you showed me. Not exactly the same as
5 Exhibit K, but similar to Exhibit K, that had
6 flood inundations on it that was part of this
7 attached document.

8 What I'm saying is you don't have all the
9 attachments to that document in the exhibit that
10 you handed me.

11 Q. Okay.
12 A. But it was very similar to Exhibit K.
13 Q. Was it based off the same photographic plate; do
14 you recall?

15 A. Yes, it was.
16 Q. Then if you go to page 1 of your summary of
17 Skagit River flood events --

18 A. What page are you on?
19 Q. Page 1. "Summary" it says up at the top of it.
20 This was prepared by you, was it not?

21 A. Yes, it was.
22 Q. I wanted to ask you a little bit about
23 recurrence intervals and return periods. First
24 of all, are they the same thing?

25 A. To my way of thinking they are the same thing.

0015

1 Q. The flood of November 25, 1990 had a return
2 period of what?

3 A. I've never calculated. I have read that the
4 Corps of Engineers estimated it to be about a
5 25-year return period.

6 Q. Do you find the Corps of Engineers reliable in
7 providing you this kind of data?

8 MR. MAJOR: I will object to the form of
9 the question, it's vague and overbroad. To ask
10 him generally that the Army Corps is right about
11 everything that they publish is unworkable.
12 Objection to the form of the question.

13 MR. HAGENS: Unworkable?

14 MR. MAJOR: It's an unfair question.
15 MR. HAGENS: I was asking about the return
16 periods.
17 MR. MAJOR: Are you asking about the
18 25-year return period from 1990?
19 MR. HAGENS: Right.
20 MR. MAJOR: Ask him that. You asked him is
21 the Corps reliable about everything.
22 MR. HAGENS: You want to fight this
23 morning, Dave?
24 MR. MAJOR: I want you to be precise about
25 your questions and not ask mush ball questions.

0016

1 MR. HAGENS: "Mush ball" questions?
2 Q. Do you find the Corps of Engineers generally
3 reliable in calculating their return rates or
4 what's sometimes called their return intervals?
5 A. Yes.
6 Q. It says here in the next to the last paragraph
7 on page 16, this Summary of Skagit River Flood
8 Events, it says "For example, the 10" --
9 A. Tell me where you are reading.
10 Q. The next to the last sentence, second paragraph
11 from the bottom.
12 A. I've got it.
13 Q. It says "For example, the 10-, 50- and 100-year
14 floods have a probability of occurring in any
15 year of 10, 2 and 1 percent respectively," so
16 that a 25-year flood event would have a
17 probability of occurrence in any year of what,
18 Tony?
19 A. 100 divided by 25, so a 4 percent chance of
20 being equal or exceeded in any year.
21 Q. By the way, have you found out what the CFS
22 measured at the USGS gauge that you earlier
23 testified to was for the November 1995 floods?
24 A. Which November 1995 flood?
25 Q. The one that we had here of the 30th, November

0017

1 30th.
2 A. I've seen a provisional estimate of 145,000 CFS.
3 Q. I would like to have you take a look at page 10
4 of this summary. The heading on that page is
5 Water Level Vs. River Flow at Mt. Vernon. The
6 second sentence there, "A concern is whether any
7 physical changes since 1975 would cause 1990
8 flood levels to be higher along the Skagit River
9 near the Nookachamps Creek area."
10 Have you done any work to determine whether
11 there has been any physical changes since 1975
12 that would cause the 1990 levels to be higher
13 along the Skagit River in the Nookachamps Creek
14 area?
15 A. Yes, I have.

16 Q. What work have you done in that regard?
17 A. I examined primarily levee alignments, changes
18 in levee crests, changes in railroad grade,
19 changes in highway grades, changes in railroad
20 bridges, changes in topography, and those are
21 primarily what I looked at.
22 Q. What did you go to for source data to determine
23 if there had been any such changes?
24 A. For the levee information I relied on
25 depositions of the Dike District 12, Pete

0018

1 Walker, I believe, his recollection and records
2 on what has changed in the levees.

3 I looked at railroad grades, and to the
4 best of my knowledge determined that they had
5 not changed.

6 Q. What did you look to to determine whether they
7 had changed or not?

8 A. I did my own survey in 1993, looked at the
9 bridge in 1916, and to the best of my knowledge
10 it hadn't been changed since 1916, without
11 making any formal inquiries on that.

12 Q. Let me stop you there. What do you mean you
13 didn't make any formal inquiries?

14 A. I did not contact the railroad.

15 Q. I was going to ask you if you contacted
16 Burlington Northern or the Great Northern or
17 whatever their name is.

18 A. No, I haven't.

19 Q. So you looked at what the bridge looks like
20 today in comparison to what it was in what,
21 1916; is that correct?

22 A. Yes. Let me say that different. I looked at it
23 today and did not recognize any changes that
24 have occurred recently from which I concluded it
25 had not been changed since 1916.

0019

1 Q. Go ahead. You said you looked at also the
2 topographical data for changes. What
3 topographical data did you go to to determine if
4 there had been any changes?

5 A. I looked at the topographic maps prepared from
6 the Corps of Engineers from 1977, I believe they
7 were. I compared those to aerial photographs to
8 see if there were any major changes in land use
9 that would have caused a significant change in
10 ground levels. That's what I'm calling
11 topography, ground levels. I didn't see any.

12 Q. Let me stop you there. You started first with
13 topographical maps provided by the Corps of
14 Engineers; is that what you said?

15 A. Topo maps made by the Corps of Engineers and
16 provided by the Corps of Engineers.

17 Q. Do you find those generally to be reliable?

18 A. Yes, I do.
19 Q. You compared those with aerial maps; is that
20 correct?
21 A. I compared those with aerial photographs.
22 Q. What periods of time were you comparing between?
23 A. 1977 and 1990.
24 Q. Why did you choose that period?
25 A. 1977 happened to be the topography that was made

0020

1 available to me, and 1990 was the aerial photos
2 most recent to the 1990 flood event.
3 Q. And those are both here with you someplace?
4 A. Yes, they are.
5 Q. Why didn't you go back to the 1930s or '20s to
6 see if there had been topographical changes?
7 A. Because I was most concerned in my initial
8 exercise to look at the 1990 flood, and the most
9 recent topography to that 1990 flood that I
10 found was 1977.

11 Q. You stated in paragraph 4 of your opinion in
12 Exhibit 1 that if the flood had occurred in the
13 mid 1970s it would have been about the same --
14 if the 1990 flood had occurred in the mid '70s
15 the effect would have been about the same as it
16 was in 1990. Am I basically correct?

17 A. All things being the same, the same flood, the
18 same amount in my opinion of the debris buildup
19 on the Burlington Northern bridge, if all of
20 that would have occurred in 1975, we would have
21 gotten the same result of flood levels.

22 Q. Would you have gotten the same result of flood
23 levels in 1908?

24 A. 1908, before the Burlington Northern bridge was
25 built, in 1916, I believe, before the railroad

0021

1 grade was put in by Burlington Northern, before
2 I-5 was put in, before SR-20 was put in by the
3 State and raised, before the Burlington
4 Northern -- Burlington Northern Railroad along
5 SR-20 was put in, before the levees as they
6 currently exist, that have existed as far as I
7 can tell since 1955 in the same alignment, if
8 you take all those out, I believe cumulatively
9 we would have a different situation.

10 Q. Let me stop you there. You've mentioned a
11 number of topographical features that I take it,
12 in your view, in your opinion, would obstruct
13 the flow of water out into Puget Sound.

14 A. Cumulatively I believe they all would have some
15 effect on flow patterns.

16 Q. Do you have an opinion as to whether some of
17 those topographical features have a greater
18 impact on the area where our clients live in the
19 Nookachamps than others?

20 A. No, I do not have an opinion.
21 Q. They all have equal impact?
22 A. No, I didn't say that. I said cumulatively they
23 have an impact. I do not have an opinion as to
24 which of them has the greatest impact.

25 Q. So you don't know if, for instance, if the dikes
0022

1 have a greater impact across from Burlington in
2 Dike District 12 on the people in the
3 Nookachamps then, say, Highway I-5? Is that a
4 correct statement of the scope of your opinion?

5 MR. MAJOR: Object to the form of the
6 question. I've objected. I don't understand
7 the question. If you understand it, answer that
8 question.

9 MR. HAGENS: We have had that agreement.

10 MR. MAJOR: I will remind him if you keep
11 asking questions like that.

12 Q. Do you understand the question, Tony?

13 A. Let me have it read back.

14 Q. Let me try again. He said it isn't a good
15 question, if some of those topographical
16 features that you mentioned will have a greater
17 impact on the people of the Nookachamps than
18 others.

19 I understand what you've said about the
20 cumulative effect of all of them. I'm trying to
21 identify which ones might have a greater effect
22 on the people of the Nookachamps than other
23 topographical features.

24 MR. MAJOR: Carl, in terms of terminology,
25 because you've said if he answered your question

0023
1 you assume that he means what you intended to
2 mean. One of these areas is the Nookachamps.
3 When people say the Nookachamps to me, I think
4 south of the river. Maybe you mean both south
5 and north of the river, but why don't you
6 explain what you mean when you use that term?

7 Q. Do you understand where the plaintiffs reside in
8 this case?

9 A. I understand the area.

10 Q. Do you understand that some of the plaintiffs
11 live north of the river and some of the people
12 live south of the river all the way into the
13 Clear Lake area? Do you understand that?

14 A. Yes, I understand that.

15 Q. I think you've seen drawn maps that encompass
16 all of the people within the Nookachamps, the
17 plaintiffs in this case; isn't that right?

18 A. I don't know that I have drawn a map that's
19 encompassed all of them, but I am familiar with
20 the area.

21 Q. So what I have in mind is that the Nookachamps

22 area, or sometimes called the Nookachamps/Clear
23 Lake area, includes the area in which all the
24 plaintiffs reside. Okay?

25 A. All of the plaintiffs?

0024

1 Q. All of the plaintiffs.

2 MR. MAJOR: Both north and south?

3 MR. HAGENS: Both north and south.

4 Q. With that in mind, let me repeat the question.

5 Are some of the topographical features that
6 you've mentioned, do some of those features have
7 a greater impact on the people of the
8 Nookachamps than others?

9 A. I have done no analysis to isolate which one
10 might have a greater impact. I do agree with
11 your own expert's deposition that cumulatively
12 they have an impact. Combining that with, for
13 example, which we haven't mentioned, the
14 reservoirs in the upper basin that provide flood
15 control, cumulatively maybe the net is zero. I
16 do not know.

17 Q. You do not know what?

18 A. What the isolated impact of each of those would
19 be, what the individual impact of each of those
20 would be. Cumulatively they all have an effect.

21 Q. You've got the red pen there. Can you draw in
22 with the red pen on Exhibit K, what is Exhibit K
23 to your deposition.

24 MR. MAJOR: Are we going to mark this to
25 his deposition?

0025

1 (Marked Deposition Exhibit 2.)

2 Q. With a red pen, Tony, show me the beginning
3 point and the end point of Dike District 12, if
4 you know where they are.

5 MR. MAJOR: At what point in time?
6 Currently?

7 Q. I'm most interested in 1990.

8 A. I do not know the extent of Dike District 12 in
9 1990.

10 Q. Do you know today?

11 A. I do not know where the exact Dike District 12
12 is today.

13 Q. Do you see where it says "Dike District 12" on
14 Exhibit No. 2?

15 A. Right, I see that.

16 Q. You put that in there?

17 A. Yes, I did. I put that in saying that the level
18 is Dike District 12. You asked me what the
19 upstream and downstream extent of Dike District
20 12 is, and I do not know where the jurisdiction
21 officially starts and ends.

22 Q. Do you know where the dikes themselves end?

23 A. Yes, I do.

24 Q. Why don't you put a red mark and the word "end"
25 where the dikes end.
0026

1 A. The dike, as constructed at the upstream end, we
2 have got a railroad grade at this point that
3 serves as a dike. It comes into the road here,
4 which I believe --

5 Q. I'm just interested in where the constructed
6 mounds are, not where some railroad bed is.
7 MR. MAJOR: Carl, you asked him where the
8 dike is. You asked him whether he has an
9 opinion of the diking effect that is operated by
10 Dike District 12.
11 MR. HAGENS: Are you taking a position that
12 the railroad bed is part of the diking district?
13 MR. MAJOR: I'm not an expert. The people
14 who have testified say that they are within the
15 dike district geographical boundaries and that
16 that serves as a dike, and that is apparently
17 what the witness is saying.
18 MR. HAGENS: Do you need to help him out in
19 this deposition?
20 MR. MAJOR: I'm trying to get some fair
21 questions, Carl.

22 Q. I'm interested in where the northern terminus is
23 of the dike system as it is maintained by the
24 diking district, if you know. If you don't
25 know, that's interesting, but I would like to
0027

1 know where the northern terminus is.
2 A. I think I have commented that I do not know
3 where the dike under the jurisdiction of Dike
4 District 12 ends on the upstream end, and where
5 the other dikes or levees such as provided by
6 the road and provided by the railroad -- I don't
7 know where the jurisdiction ends. That's why
8 I'm answering the question as starting upstream
9 the railroad grade along here functioning as a
10 dike into the road functioning as a dike, and
11 then starting about this point with the road is
12 where there is a built-up levee. It starts
13 here --

14 Q. Why don't you put "end of built-up levee." Can
15 you do that for me?
16 A. Let's call it the "trapezoidal fill levee."
17 Q. How about "built-up levee"? No juror is going to
18 understand that.
19 A. The road is certainly built up. It's no
20 different. It just happens to be a road. How
21 about if we say "tie-in of levee to road levee"?
22 Q. Do you know if this road is, in fact, the levee?
23 A. It certainly functions as a levee.
24 Q. I didn't ask you that. I asked you if you knew
25 it was a levee that was something built by a

0028

1 levee district.
2 MR. MAJOR: You asked him the question and
3 now you want to argue with him. Objection,
4 asked and answered.
5 Q. So you don't know whether that portion is
6 maintained by the levee?
7 A. If that road that serves as a levee is actually
8 a Dike District 12 levee, I do not know.
9 Q. Do you know if this portion south, immediately
10 south of what you've got there as the end is a
11 maintained and built-up levee by a dike
12 district?
13 A. I believe that is constructed by the dike
14 district.
15 Q. Where is Gages Slough? Will you show me?
16 A. Gages Slough is labeled here on this exhibit.
17 Q. Can you show me where it runs? I have a little
18 trouble making it out, Tony.
19 A. My understanding from looking at this air
20 photograph is where I'm marking it through here.
21 Q. Where does it continue on south; do you know?
22 A. No, I never looked at that.
23 Q. What are you going to write on this?
24 A. I thought we agreed I was going to write
25 something about tie-in of that levee to the road

0029

1 levee.
2 Q. You can put "end of levee, beginning of road,"
3 how is that?
4 MR. MAJOR: Let him mark it the way he
5 wants to mark it. Don't use his words just to
6 make him happy. It's your deposition.
7 THE WITNESS: I'm going to say "tie-in" --
8 MR. HAGENS: Then let me conduct it.
9 THE WITNESS: "Tie-in to road levee."
10 Q. Let me ask you, is the road that you mentioned
11 that comes along here -- I think you said there
12 is a railroad?
13 A. Yes, a railroad grade, I believe it's Burlington
14 Northern Railroad grade.
15 Q. Is that as high in grade as the constructed
16 levee here?
17 A. No, it's lower in grade.
18 Q. How much lower in grade is it?
19 A. I don't know.
20 Q. So you are the engineer and you don't know how
21 much higher in grade it is either, do you?
22 A. What's the question?
23 Q. Do you know how much higher the land grade
24 around it is?
25 A. I know it's higher by a couple feet of the

0030

1 surrounding ground.

2 Q. Let's put "a couple feet." We will use this red
3 pen. Do you want to put on here "a couple feet"
4 on this road? Mark the road you are talking
5 about and put "2 feet."

6 MR. MAJOR: It doesn't make any sense to
7 have him write in a couple of feet as
8 informative at all unless you have him write in
9 the whole explanation of what he is saying.

10 THE WITNESS: I will write in "higher than
11 adjacent ground."

12 Q. Go ahead.

13 A. "Railroad grade is higher than adjacent ground."

14 Q. Quote, and lower than the dike, correct, the
15 constructed dike?

16 A. Which dike?

17 Q. The top of the dike that you earlier
18 identified. You've got "end" here.

19 A. It is lower than the road dike and the
20 constructed dike.

21 Q. The best of your knowledge is that this roadbed
22 that you said functions as a dike functions as a
23 dike to the extent of two feet; is that about
24 right?

25 A. I did not say the roadbed, I said the crest

0031

1 elevation of the rails themselves are higher
2 than the adjacent ground.

3 Q. You didn't say "two feet" a couple moments ago?

4 A. I said "a couple of feet." I don't believe I
5 said "two feet."

6 Q. You don't know how many feet then?

7 A. I said "a couple of feet."

8 Q. How many is "a couple of feet"?

9 A. It depends on where you locate it. If you look
10 at the grade on this railroad grade you will see
11 at least for the numbers that are there 41.6 to
12 42.2, so a 41 to a 42 so the railroad grade is
13 changing, so the height, it would depend on what
14 exact location we were talking about. We would
15 take a railroad grade and we would take a topo
16 map and compare the two elevations and then we
17 would know.

18 Q. But you don't know sitting here?

19 A. With only looking at this map, it does not have
20 topographic data on it, it's impossible to know.

21 Q. You can't give me your definition of a couple of
22 feet?

23 A. I've already given you a couple of feet.

24 Q. How high are the constructed dikes that protect
25 the Burlington area; do you know? Have you

0032

1 studied that at all?

2 A. I know the approximate crest elevations of those
3 dikes.

4 Q. What is that?
5 A. I believe that they are in the order of 42 or
6 43 feet. It varies along the river, so again,
7 we would have to pick out some survey
8 information and show me a point and we could
9 pick off that elevation.
10 Q. The remaining, though, is between 42 and 43?
11 A. I'm not comfortable with that.
12 Q. What documents do you need to review over
13 here -- you've brought about five box loads of
14 documents -- to tell me what the approximate
15 range of height is of the dikes protecting
16 Burlington?
17 A. I would look at a summary of the survey
18 information.
19 Q. Why don't you go see if you can find it and tell
20 me what it is.

21 (Discussion off the record.)

22 THE WITNESS: A quick look at the survey
23 information tells me the crest elevations, the
24 lowest crest elevation is about elevation 40 as
25 we approach -- at some point, I didn't locate it
0033

1 exactly, but at some point as we approach the
2 Burlington Northern bridge, as we go upstream
3 towards this tie-in with the road dike it
4 approaches, I think it's about 45 and a half is
5 a number I've seen, so a quick review of the
6 survey shows that approximate range. 40 at the
7 lower end near Burlington Northern, up as high
8 as what I say was 45 and a half. I didn't look
9 at every point.
10 Q. And that's measured from where to where, from
11 the top of the dike?
12 A. It's an elevation of the top of the dike.
13 Q. So this is 45 feet above mean sea level then?
14 A. Yes.
15 Q. How high from the grade level are the dikes? Do
16 you know that?
17 A. From the natural ground elevation?
18 Q. From the natural ground.
19 A. No, I do not know that.
20 Q. When you said it was a couple feet here, this
21 road, Highway 20, which you claim operates as a
22 dike --
23 A. No, I've never said that.
24 Q. What did you say?
25 A. I said the railroad grade.

0034
1 Q. Excuse me, the railroad grade is a couple feet.
2 What did you mean by a "couple feet," above
3 what?
4 A. Above, as I noted in my note there, above the
5 adjacent ground.

6 Q. So how many feet above the adjacent ground are
7 the dikes south and east of Burlington?
8 A. Again, this aerial photo we are looking at does
9 not have ground elevations on it. The only way
10 we would know that is to compare a crest
11 elevation on a topo map to ground elevations at
12 a point.
13 Q. Did you bring any documents here that would
14 allow you to do that?
15 A. Yes.
16 Q. How long would that take? I don't want to do
17 that now.
18 A. It would be easier if you picked a point for me
19 and said "tell me at this point."
20 Q. Let's do it up by the northern terminus of
21 Burlington.
22 A. Okay.
23 Q. Excuse me, of Dike District 12, the constructed
24 dikes. Okay?
25 A. Okay. I almost need a magnifying glass.

0035

1 Q. I could probably look for one, if you are
2 serious.
3 A. I am serious. This is a reduced copy. Maybe
4 someone can see better than I can.
5 Q. Let's put that off and we will come back to the
6 question. Maybe there is another document in
7 there that you could resort to that you might be
8 able to read easier over the lunch hour or
9 something.
10 What I'm trying to get, Tony, is a sense of
11 the difference in height between the constructed
12 dikes and the railroad grade.
13 A. I understand. My point is let's get a topo map
14 and compare the two.
15 Q. I started this line of questioning because I'm
16 trying to find out if you can determine to what
17 extent these obstructions that you've
18 identified, the railroad right-of-way northeast
19 of Burlington and the little roadway that you
20 mentioned that functions as a dike and the
21 actual constructed dike itself, to what extent
22 those areas impact in isolation the flooding
23 that occurs in the Nookachamps during
24 significant flood events. So can you tell me
25 whether the dikes which you claim are higher

0036

1 than the roadbed have a bigger effect on
2 flooding in the Nookachamps area than say the
3 railroad grade?

4 MR. MAJOR: Objection to the form of the
5 question.

6 THE WITNESS: I have no opinion on that.

7 Q. You have no opinion on that?

8 A. As I've stated before, I have not investigated
9 the individual contributions of changes to flow
10 patterns of all of the structures I've
11 identified. I have agreed with you that
12 cumulatively they have an effect. I have done
13 no analysis or thinking about whatsoever if we
14 took one of them out and left all the others in,
15 what the impact would be.

16 Q. Why is that? If you know this case has to do
17 with the dikes, which the plaintiffs claim in
18 large measure are controlled by Skagit County,
19 why haven't you looked at the extent that they
20 contribute to the flooding that occurs in the
21 Nookachamps area?

22 A. Because I think we have agreed on that point.
23 As Dr. Mutter has said in his deposition,
24 cumulatively the impacts of all of these
25 structures, the Burlington Northern bridge, the

0037

1 grade, the dikes, the highway, they have a
2 cumulative impact, and I have agreed with that.

3 Q. Now answer my question. Why haven't you
4 undertaken to try to find out to what extent the
5 Dike District 12 dikes might in isolation
6 contribute to the flooding in the Nookachamps?

7 A. I think the history of that is when I started on
8 this case, the question that I believe you had
9 put on the table is that subsequent to the 1979
10 Corps of Engineers report a number of changes
11 have occurred on the river that caused an
12 increase in flooding, which I think is much of
13 what I've got in Exhibit 1 that we have looked
14 at, that showed that none of those -- probably
15 none of them or hardly any of them have been
16 implemented, therefore in terms of your initial
17 claim, none of those activities had occurred.
18 We looked as far back as 1979 to respond to
19 that.

20 Subsequent to that we asked ourselves the
21 question, well, how far back do we have to go
22 before we see any change in this valley, or to
23 some structure that may have an impact? To
24 which we went back to 1955 and based on the
25 information that I was able to come up with, I

0038

1 have concluded that nothing has occurred from
2 1955, more than 40 years ago, to change the
3 flood scenario in this valley. So we had
4 established that in our thinking.

5 Then our thinking I think took -- that is a
6 milestone. We approached this from the other
7 time scale of, well, starting in the late 1800s
8 we had a number of farmers and dike districts
9 begin to put up dikes. We had railroads come in

10 here and begin to put up railroads, each one of
11 which began to have an effect on flow patterns.
12 At one time there was even another railroad
13 behind what is now the Dike District 12 levee
14 that went across there that has since been
15 removed. All of those things have an impact,
16 the railroad, the highways, the dike districts,
17 the farmers.

18 We had dams that got built in the upper
19 basin for flood control, all of which leading up
20 to 1955 have had an impact, at which point we
21 agreed with you and thought there --

22 Q. So you think that this lawsuit, as counsel has
23 told you then, has to do with the cumulative
24 effect of all of these, and we don't really care
25 much about the contributory effect of the dike

0039

1 district?

2 MR. MAJOR: I will object to the form of
3 the question, it's argumentative and it's
4 improper. There has been no foundation as to
5 the claim that he is directed by counsel to
6 respond in that way.

7 Q. What do you understand plaintiffs' claims to be?

8 A. Can you re-ask the first question here?

9 Q. Yes. What do you understand plaintiffs' claims
10 to be?

11 MR. MAJOR: At this point?

12 MR. HAGENS: At this point.

13 THE WITNESS: That activities that have
14 taken place in this valley have impacted flood
15 levels in the Nookachamps Creek area.

16 Q. And the principal and only activities that the
17 plaintiffs have looked at have been the diking
18 district, that is the dikes along the Skagit
19 River between Burlington all the way down to the
20 mouth of the river?

21 MR. MAJOR: Are you representing that that
22 is the nature of the complaint?

23 MR. HAGENS: Let me rephrase it.

24 Q. Do you know if the plaintiffs are suing the
25 Burlington Northern Railroad Company?

0040

1 A. I'm not aware that you are.

2 Q. Do you know if the plaintiffs are suing the
3 State of Washington for any interstate highway
4 obstruction?

5 A. I'm not aware that you are.

6 Q. Do you know if the plaintiffs are suing, in
7 fact, any dike districts here in Snohomish
8 County?

9 A. I'm not aware that you are.

10 MR. MAJOR: This is Skagit County.

11 Q. Skagit County. Correct that, Julie.

12 A. I'm not aware of any.
13 Q. Have you read the complaint?
14 A. I've read the complaint.
15 Q. Does it say that Highway 20 is causing the
16 plaintiffs problems?
17 A. I'm not aware if it does or does not.
18 Q. Are you aware if it says the Burlington Northern
19 bridge is causing the plaintiffs problems?
20 A. I don't believe that I've read that.
21 Q. You have read where the plaintiffs claim that
22 the dikes along the right side of the Skagit
23 River from their northern terminus all the way
24 to the end are causing the plaintiffs problems.
25 You have read that, haven't you?

0041

1 A. The northern terminus being where?
2 Q. The constructed dike where you put it.
3 A. Down to where?
4 Q. Past Mt. Vernon, that's for sure. You do know
5 that to be the case, don't you?
6 A. If you are stating that that is what your claim
7 is, without having to refresh my memory, I will
8 only concur. If that's what you are stating it
9 says, that's what it must say.
10 Q. But you understand that we are focusing on the
11 dikes.
12 A. I understand that you had focused on all of
13 the -- while you have not named, at least again
14 my layman's or expert's understanding that you
15 have not named Burlington Northern Railroad
16 bridge grade, the highway department, or dike
17 districts, that you have presented expert
18 opinions that all of them cumulatively have an
19 impact. So I agree with you.
20 Q. I'm not sure -- don't bother to agree with me.
21 Agreement with me ain't going to do you any
22 good.
23 I want to know whether or not you think
24 that this lawsuit also includes the Burlington
25 Northern. Is that what you are saying?

0042

1 MR. MAJOR: I will object to the form of
2 the question. If you are going to quiz him on
3 what the lawsuit is about, you are asking for a
4 legal conclusion. You have established what you
5 want to establish and you've made your point.
6 Don't quiz him on legal aspects because he is
7 not a lawyer.
8 Q. I will tell you that we are principally in this
9 lawsuit focused on the dikes. I don't believe
10 you will find any claims against Burlington
11 Northern or the State of Washington, which sits
12 right at the end of the table here. Okay?
13 A. Fine.

14 Q. I'm telling you that we are looking at the dikes
15 in Skagit County.

16 Now, that being so -- you have a model, I
17 understand; is that correct?

18 A. Yes, I do.

19 Q. Have you done any modeling that simulates what
20 the dikes cause in the way of flooding in the
21 Nookachamps area during significant events,
22 leaving out the others, the railroad grade next
23 to Highway 20, the Burlington Northern bridge,
24 and other topographical features?

25 A. No, I have not.

0043

1 Q. Has somebody told you not to do that?

2 A. No one has asked me to do that, and I think I
3 have explained the sequence of events that led
4 to that conclusion, given that we agreed with
5 you. I agree with you. I agree with your
6 expert, that cumulatively all of these
7 structures have had an impact.

8 Q. You don't think our expert --

9 A. I have not isolated Dike District 12 nor have I
10 attempted to isolate the benefits of flood
11 control from the upstream reservoirs. There is
12 a very -- as your expert, Dr. Mutter has said,
13 there are a lot of physical and civil works that
14 have impacted this. They all come together to
15 have an impact. I have not tried to isolate the
16 flood control reservoirs from any other civil
17 works that have been done in the valley.

18 Q. You don't think that Dr. Mutter has attempted to
19 isolate the contribution of the flooding in the
20 Nookachamps area because of the dikes along the
21 right side there of the Skagit River?

22 A. You will have to tell me what Dr. Mutter has
23 done.

24 Q. You haven't reviewed his declarations?

25 A. I have reviewed his declarations.

0044

1 Q. You don't see where he says that the dikes are
2 causing floods in the Nookachamps area up to
3 four feet? You haven't seen that?

4 A. I have seen that.

5 Q. Does he say that the Burlington Northern bridge
6 is causing that flooding? He says the dikes,
7 doesn't he?

8 A. I believe he has attempted to address that
9 question. I guess other questions I've put on
10 the table are --

11 Q. I'm not asking what other questions you've put
12 on the table. I'm asking whether you understand
13 what Dr. Mutter has said.

14 A. I understand that he has looked at that
15 question.

16 Q. And you have not; is that right?
17 A. I have not looked at that question. I have
18 agreed with you and Dr. Mutter that they
19 cumulatively have an effect.
20 Q. But this lawsuit doesn't even address the
21 question of the cumulative effect of these, it
22 addresses the effect of what the dike's
23 contribution is. You do understand that, do you
24 not?
25 A. I understand that.

0045
1 Q. But that's not something you've looked at; isn't
2 that correct?
3 A. I have not looked at the isolated case of the
4 wholesale removal of levees. The risk of doing
5 that is historically there have been -- that
6 aren't even there today -- other levees behind
7 Dike District 12 that farmers have built.
8 Q. We will get on to that in a minute.
9 A. There are previous railroad grades that went
10 across there. It's probably a little
11 superficial just to remove that dike and change
12 nothing else, and say that's the impact of that
13 dike.
14 Q. I will move to strike the nonresponsive portions
15 of the witness' testimony.
16 What is the purpose of modeling, as you
17 understood it, hydrological models?
18 A. Modeling reproduces a field situation that
19 allows you to do simulations of other hydraulic
20 conditions.
21 Q. You do the modeling to determine the effects of
22 certain topographical features, isn't that one
23 purpose you can use modeling for?
24 A. Say that again, please.
25 Q. The purpose of modeling is to determine

0046
1 potential effects of various topographical
2 features, at least that's one purpose of
3 modeling; am I correct so far?
4 A. It could be used for that.
5 Q. But you haven't used your modeling system to
6 determine what the effect would be of, say, for
7 instance, just removing the dikes there around
8 Burlington? Is that a correct statement?
9 A. You have already asked that and I said I have
10 not done that.
11 Q. Is your modeling capable of doing that?
12 A. A model could do that.
13 Q. How much work would it take to do that?
14 A. A considerable amount of work.
15 Q. What do you mean, "a considerable amount of
16 work"?
17 A. A couple weeks worth of work.

18 Q. Do you know if you expect to do that?
19 A. I do not know.
20 Q. In the materials you've brought with you today
21 do you have a description of what your model is
22 and how it was constructed and what data went
23 into it?
24 A. In various locations. I do not have a summary
25 report that describes the modeling effort, or a
0047
1 summary memo.
2 Q. Let me see if I understand one thing you did try
3 to isolate. Did you try to isolate the impact
4 of the Burlington Northern bridge on flooding in
5 the Nookachamps?
6 A. We did a number of things with the Burlington
7 Northern bridge, one of which was to look at --
8 my recollection is we looked at a case of no
9 bridge at all impacts on the 1990 flood, the
10 1990 flood with a bridge and no debris blockage,
11 and we looked at the 1990 flood with debris
12 blockage.
13 Q. So you did try to isolate the effect of the
14 Burlington Northern bridge; is that correct?
15 A. I wouldn't categorize it as isolating the effect
16 of the bridge, I would categorize it as we had
17 observed flood levels in 1990 and we could not
18 reproduce those flood levels in 1990 without
19 putting in debris blockage of the bridge, so
20 that is the main reason that we went through the
21 different permutations on the bridge, in order
22 to reproduce the flood levels that occurred in
23 1990.
24 Q. Forget the isolation, you focused on trying to
25 determine what the impact of the bridge was, at
0048
1 least for a portion of your work; isn't that
2 correct?
3 MR. MAJOR: Object to the form of the
4 question.
5 A. As a portion of the work we looked at the bridge
6 the same as we looked at the entire basin.
7 Q. But a portion of your work focused on the
8 effects of debris captured by the Burlington
9 Northern bridge during the floods of 1990; isn't
10 that a fair statement?
11 A. That is correct.
12 Q. But you didn't focus any of your work on the
13 effects of the levees opposite Burlington on the
14 Nookachamps area during 1990; isn't that also an
15 accurate statement?
16 A. As I've said here a minute ago, the reason for
17 looking at the Burlington Northern bridge is
18 what we call the calibration of a model, which
19 is better said as creating a model that

20 reproduced observed flood levels. Given that we
21 did not have to make any changes to the Dike
22 District 12 dikes to reproduce those flood
23 levels, there would be no reason to look at Dike
24 District 12.

25 Q. So the answer to my question is you didn't look
0049 into the impacts of Dike District 12 but you did
1 as to the bridge, is that correct, for the 1990
2 floods?
3

4 MR. MAJOR: Object to the form of the
5 question, argumentative.

6 THE WITNESS: Can you ask it again, please?

7 Q. You did look into the effect of the debris
8 caught on the Burlington Northern bridge in
9 1990, you looked at the effect of that, but you
10 didn't look or focus on the effect of Dike
11 District 12 dikes operating in the Nookachamps?
12 Is that an accurate statement, yes or no?

13 A. No.

14 Q. In what respect is it not accurate?

15 MR. MAJOR: I object to the form of the
16 question.

17 THE WITNESS: The answer is no. We looked
18 at Dike District 12 in the sense that it was
19 included in the model as a structure in place.
20 With the structure in place it reproduced the
21 flood levels that were observed.

22 Q. Maybe one way to get at this is -- I'm not
23 understanding something.

24 (Marked Deposition Exhibit 3.)

25 Q. Have you got Exhibit No. 3 in front of you?
0050

1 A. Yes, I do.

2 Q. This deals with the expected opinions of you,
3 does it not?

4 A. Yes, it does.

5 Q. And you've probably read this before it was
6 submitted; is that accurate or not?

7 A. Yes, I did.

8 Q. To the best of your knowledge does it accurately
9 describe your anticipated opinions in this case?

10 A. To the best of my knowledge it does.

11 Q. Turn to page 10, if you would -- make that page
12 11, I'm sorry, paragraph H.

13 A. Yes.

14 Q. And in here you describe what your hydraulic
15 model shows as to the various depths of water in
16 the Nookachamps area. Then on line 15 you say
17 "Of this water, about 4 to 5 inches was due to
18 debris buildup on the Burlington Northern
19 Railroad bridge." Do you see that?

20 A. Yes.

21 Q. It's true, is it not, that you didn't undertake

22 to determine how much of the flooding in the
23 Nookachamps area on November 25, 1990 was caused
24 by Dike District 12 dikes?

25 MR. MAJOR: Objection, asked and answered.
0051

1 THE WITNESS: Asked and answered.

2 MR. MAJOR: Do you have anything to add to
3 your answer?

4 Q. Is your answer no?

5 MR. MAJOR: You already asked the
6 question. Does he have anything to add to the
7 question?

8 MR. HAGENS: I want a clean answer, or I'm
9 going to call the judge, Dave. I want you to
10 stop interfering. I want a yes or no followed
11 by an explanation.

12 MR. MAJOR: I object to the form of the
13 question. If you want to call the judge, go
14 ahead. It's been asked and answered.

15 Q. Do you have my question in mind?

16 (The record was read back.)

17 THE WITNESS: I don't think we undertook to
18 identify or attribute the flooding to Dike
19 District 12 or to anyone else.

20 Q. You mean the 4 to 5 inches shouldn't be
21 attributed to the Burlington Northern bridge and
22 the debris under it?

23 MR. MAJOR: It says the debris, doesn't it,
24 Carl? It doesn't say the bridge and the debris.

25 MR. HAGENS: This isn't your deposition.

0052
1 MR. MAJOR: Object to the form of the
2 question.

3 THE WITNESS: That's an observation on the
4 results of our analysis. It was not an
5 investigation solely for debris. In the
6 reproducing 1990 flood levels, without debris on
7 the bridge, we could not reproduce or observe
8 flood levels. Putting debris on the bridge we
9 increased flood levels by 4 to 5 inches, which
10 came close to what was observed.

11 Q. By the way, while we are on this point, in
12 Exhibit No. 3, paragraph 8, how far up from the
13 Burlington Northern bridge did this 4 to
14 5 inches of increase in water occur?

15 A. The effect of the debris buildup changes with
16 the river. Just upstream from the bridge, I
17 believe it was a little higher than this, I'm
18 going to say maybe as much as 7 inches, as we
19 got further up the river is my recollection, and
20 as it states here, at some point it was in the
21 order of 4 or 5 inches less impact as you got
22 further upstream.

23 Q. How much was the impact in the Clear Lake area,

24 in your opinion?
25 A. Clear Lake is here?
0053
1 Q. Yes. I'm sorry.
2 A. My recollection is in the order of 4 inches.
3 Q. So you think that the debris at the Burlington
4 Northern bridge -- would you draw that in for
5 me, please? I believe it's here. Just put BNRR
6 bridge.
7 A. I believe this to be the BNRR bridge.
8 Q. Okay. So your opinion is that it had an effect
9 of 4 to 5 inches, even back into the Clear Lake
10 area.
11 A. My recollection is it was in the order of
12 4 inches in that general area off Clear Lake.
13 Q. The peak would be what, 7 inches north of the
14 bridge?
15 A. My recollection is it was up to about 3 inches
16 in the vicinity of the bridge.
17 Q. While we have got this in front of us it says --
18 A. What page again?
19 Q. Page 11. It says "While depths vary, the area
20 covered is similar to past floods."
21 What do you base that opinion on?
22 A. Which line are you reading?
23 Q. Line 16 and 17.
24 A. I base that on a previous submission I had made
25 where on similar aerial photographs we showed
0054
1 the areas of inundation for past floods.
2 Q. Were those areas you showed of inundation for
3 past floods with or without the dike system in
4 Skagit County?
5 A. Some of them were before. Again, from memory, I
6 believe I made a submission from 1815 and
7 another one from 1856. I don't recall what we
8 did in the early 1900s. It showed for extreme
9 floods on the Skagit River this area of the
10 floodplain pre-dikes, pre-railroad,
11 pre-highways, probably, that this was an area
12 that got flooded historically, and I believe
13 that we picked some other floods even in more
14 recent days that showed much the same thing,
15 that from an aerial perspective the area of
16 inundation was similar on the south side of the
17 river.
18 Q. Historically do you know without the dikes
19 whether Burlington and further south Mt. Vernon
20 were also flooded, absent the dikes?
21 A. I would have to think that it would have been
22 flooded. I think it's even mapped as in the
23 floodplain today.
24 Q. So those areas, prior to the erection of the
25 dike, your historical knowledge is that they

0055

1 flooded just like the people in the Nookachamps
2 area; is that correct?

3 A. I wouldn't say they flooded like the Nookachamps
4 Creek area, but I would say that they would have
5 been flooded.

6 Q. Do you know what the flood levels were, that is
7 the depth of the flooding, in the Nookachamps
8 area prior to the erection of the dike? Have
9 you done work that would allow you to tell us
10 that answer?

11 MR. MAJOR: Object to the form of the
12 question.

13 MR. HAGENS: What's the problem with the
14 form?

15 MR. MAJOR: What kind of a flood are you
16 talking about?

17 MR. HAGENS: Use the 1990 flood.

18 Q. Could you tell us, the November 25, 1990
19 flood -- by the way, do you view that as two
20 floods or one flood?

21 A. I look at November 25 as one flood event.

22 Q. Using the November 25 flood event, can you tell
23 us whether the people prior to the erection of
24 the dikes in Skagit County would have had more
25 or less water because of the dikes?

0056

1 A. I think I've already commented on that. I
2 cannot isolate the effect. I have made no
3 attempt to isolate the effect of just Dike
4 District 12. Cumulatively all of those
5 structures --

6 Q. I asked the dikes. I didn't ask cumulative.
7 I'm going to ask you not to give me an answer I
8 didn't ask for.

9 MR. MAJOR: The problem is it seems to me
10 that you are asking him to view the situation as
11 of an earlier time period.

12 MR. HAGENS: Prior to the dikes.

13 MR. MAJOR: You are going back to what
14 date? 18 what?

15 Q. Prior to the dikes. When did the dikes not
16 exist in Skagit County, as far as you are aware
17 of?

18 A. I'm not certain, but if I had to make an
19 estimate, in the latter part of the 1800s.

20 Q. In the latter part of the 1800s -- your
21 testimony is you don't have an opinion as to how
22 deep the flooding was in the Nookachamps versus
23 Burlington and Mt. Vernon areas with the absence
24 of the dike; is that a fair and correct
25 statement?

0057

1 A. That's correct.

2 Q. It's correct, is it not, that any obstruction to
3 river flow, particularly overbank situation, is
4 going to have some kind of situation impact on
5 where the water goes? I'm talking about
6 man-made structures now. Isn't that correct?
7 A. As a generalization I would agree that any
8 structure put there would have an impact on flow
9 patterns, whether it's local, measurable, we
10 would have to get specific.
11 Q. Okay. Let me see if I understand your opinion.
12 You don't have an opinion as to what extent, if
13 any, the dikes may be causing flooding in the
14 Nookachamps area; is that correct? The dikes
15 alone I'm talking about.
16 A. I do not have an opinion on the amount of change
17 in flow patterns that would be attributed solely
18 to Dike District 12.
19 Q. So if Dr. Mutter testifies that the amount of
20 flooding in the Nookachamps area where our
21 plaintiffs live is caused by the levees in
22 Skagit County is up to 4 feet, you wouldn't have
23 anything to dispute him on that; is that a fair
24 statement?

25 MR. MAJOR: Object to the form of the
0058 question. It fails to include all of the
1 testimony that he has had to date.

2 Q. Go ahead.
3 A. I didn't think you finished the question.
4 Q. Let me try it again.
5 If Dr. Mutter testifies that in his opinion
6 that up to 4 feet of the flooding in the
7 Nookachamps on November 25, 1990 was caused by
8 the levee system in Skagit County, it would be
9 correct, is it not, that you don't have any
10 opinion that is contrary to that?

11 MR. MAJOR: Object to the form of the
12 question.

13 THE WITNESS: I do not have an opinion one
14 way or the other on that topic.
15 Q. So you can't say he's wrong or right?
16 A. At this point in time I cannot say whether he is
17 wrong or right.
18 Q. So you have no opinion to offer on that subject;
19 is that correct?
20 A. I have no opinion to offer on the isolated
21 impact of just Dike District 12 on flood
22 levels. As I've indicated, I agree with you --
23 that's fine.

24 MR. HAGENS: Object as to form. I'm going
25 to move to strike any answer hereinafter that is
0059 not responsive to my question. We are going to
1 be here a long time.
2
3

4 THE WITNESS: That's fine with me.
5 MR. MAJOR: You have to permit him to give
6 the answer, not just what you want him to say.
7 Q. Let's go on with this statement here. Tony,
8 have you taken a look at any Corps of Engineers
9 historical documents that describe how the
10 levees in Skagit County impact the Nookachamps
11 area?
12 A. I've looked at the 1979 report, the design
13 memorandum, I believe it's called.
14 Q. Have you looked at any historical documents that
15 the Corps maintains since the '20s or '30s?
16 A. I don't believe I have.
17 Q. Has counsel provided you with all of the
18 historical documents of the Corps of Engineers
19 dating back to the '20s and '30s?
20 MR. MAJOR: What documents do you have in
21 mind, Carl?
22 MR. HAGENS: I'm asking him.
23 THE WITNESS: I do not believe that I have
24 looked at any Corps of Engineers reports from
25 the '20s and '30s.

0060

1 Q. Have you generally found the Corps of Engineers
2 analysis to be accurate in terms of describing
3 the effects of various structures in the
4 floodway on surrounding terrain?
5 MR. MAJOR: Object to the form of the
6 question. Carl, if you've got a question as to
7 a particular document that you want him to opine
8 whether it's accurate or not, why don't you do
9 that? This broad brush is inappropriate.
10 Q. I will give you the Gilbrough exhibits. If you
11 would take a look at Exhibit No. 10.
12 MR. MAJOR: Is that the Stewart report?
13 MR. HAGENS: The famous Stewart report.
14 MR. MAJOR: He is not with the Army Corps.
15 MR. HAGENS: I'm asking if he has seen any
16 of those.
17 Q. Did counsel provide you so that you would be
18 fully informed on this subject with the Stewart
19 report, the hydrological engineer for the Army
20 Corps of Engineers?
21 MR. MAJOR: Objection, he is not from the
22 Army Corps of Engineers.
23 Q. Were you given a copy of the Stewart report?
24 A. I have a copy of this report in my file.
25 Q. Do you understand that this is a report sometime

0061

1 in the 1920s, Tony?
2 A. I have not read this report. I have it in my
3 file.
4 Q. So counsel gave you some reports and you didn't
5 review them?

6 A. I did not read this report.
7 Q. Take a look at page 18, if you will. It's not
8 page 18, the last two digits of the production
9 number are 18.
10 A. You will have to help me out on that one. Okay,
11 I see what you are saying. Okay. 18, did you
12 say?
13 Q. Yes.
14 A. Yes.
15 Q. Do you see there where it says, "The Nookachamps
16 district in its present condition acts as a
17 storage reservoir and thus reduces the flood
18 height in the surrounding and lower districts"?
19 Do you see that?
20 A. Okay.
21 Q. Do you know who Mr. Stewart is?
22 A. No, I do not.
23 Q. Do you have any reason to disagree with him in
24 his characterization of how the Nookachamps
25 operates as a storage reservoir during

0062

1 significant flood events?
2 A. I would probably word it differently.
3 Q. Answer my question. Do you have any reason to
4 disagree with him?
5 A. I can't agree or disagree without knowing the
6 specific situation or instance that we are
7 talking about.
8 Q. Let's talk about historically whether or not --
9 I don't think Mr. Stewart is talking about a
10 specific event, he is talking about historically
11 here. Have you reviewed any of the other Corps
12 historical documents? You have this one. Do
13 you have other Corps documents that reflect that
14 the area has operated as a storage area during
15 significant events?
16 A. Without even reviewing the Corps of Engineers, I
17 think I'm in agreement with that, and we have
18 indicated that on a number of the aerial photos
19 that I've submitted from past floods.

20 As the Skagit River rises, at some point it
21 goes overbank and water flows out into the
22 floodplain. In this particular place the
23 floodplain encompasses the Nookachamps Creek to
24 the south and water flows onto the floodplain
25 when it goes overbank.

0063

1 As it goes into that area it happens that
2 there is some depressional areas, and as water
3 flows over there it flows into those
4 depressional areas, and I wouldn't call it
5 stored on the floodplain. It is in the
6 floodplain and it stays in the floodplain until
7 some time as the river drops and flows from the

8 floodplain. I certainly agree with that. If
9 that's what Mr. Stewart is saying, then I agree
10 with him.
11 Q. Take a look at the second sentence, "The storage
12 reservoir has been of material benefit in the
13 past and has doubtlessly decreased a number of
14 breaks for the larger floods and prevented
15 breaks for the lower floods." Do you see that?
16 A. I see that.
17 Q. Do you have any reason to disagree with
18 Mr. Stewart on that point?
19 A. I have no idea what he is basing that opinion
20 on.
21 Q. I didn't ask you if you had an opinion what he
22 is basing his opinion on. I asked if you had
23 any basis to disagree with him.
24 A. I have no basis to agree or disagree with him.
25 Q. So you can't disagree with him on that point.

0064

1 By the way, did the dikes hold during
2 November of 1990, the system protecting
3 Burlington and Mt. Vernon?
4 A. To the best of my knowledge they did.
5 Q. Did they also hold during the November 30, 1990
6 flood events?
7 A. I'm not aware that there was a flood on November
8 30th.
9 Q. 1995.
10 A. The other day? I have no idea what did or
11 didn't hold on the Skagit River.
12 Q. Do you have an opinion as to where the overbank
13 floodwaters of the Skagit River would go if the
14 levees were not on the right bank protecting
15 Burlington and all the way down to Mt. Vernon?
16 A. I think with or without the levees the overflow
17 of the bank, once it is initiated, would occur
18 exactly the same. Wherever the lowest elevation
19 is on the left bank is where it would first
20 begin to overflow.
21 Q. Now answer my question.

22 Do you have an opinion as to if the levees
23 on the right bank surrounding Burlington were
24 not there, do you know if floodwaters would
25 enter the Burlington and Mt. Vernon areas during

0065

1 significant flood events?
2 A. No, I'm not familiar with the natural ground
3 elevations in that area.
4 Q. You mean to tell me you haven't done enough work
5 to determine whether or not those levees then,
6 in fact, even protect Burlington?
7 A. I am familiar with where those levees are and
8 what their current crest elevations are. I have
9 no reason to investigate the ground elevations.

10 Q. Wait a minute. You mean you don't have any
11 opinion as to whether or not those levees then
12 serve the purpose of protecting along the right
13 bank of the Skagit River in the vicinity of Dike
14 District 12, you have no reason to know whether
15 or not those dikes even operate to protect
16 Burlington during significant flood events? Is
17 that your opinion?

18 A. I didn't think that that's what you asked me. I
19 thought you asked me what the ground elevations
20 were in that area.

21 Q. No, no.

22 A. What did you ask me?

23 Q. Whether or not the dikes in the vicinity of Dike
24 District 12 around Burlington, whether, in fact,
25 those dikes operate during significant flood

0066

1 events to prevent water from draining into
2 Burlington.

3 A. Those dikes operate in that location anytime the
4 flow would be higher than the river banks and
5 would go up against the dike, they would be
6 preventing flow from going through Burlington.

7 Q. If the water didn't flow through Burlington, do
8 you know if that would have any impact on the
9 people on the opposite side of the river who
10 live in the Nookachamps area?

11 A. Like I said, cumulatively it all has an effect.

12 Q. I didn't ask you that, I asked you whether the
13 dikes would have an effect.

14 A. The dikes as part of that cumulative picture
15 would have an effect.

16 Q. Do you have an opinion as to whether it would
17 have the largest effect in comparison to a much
18 lesser or lower, for instance, railroad grade,
19 up there on Highway 20?

20 A. Without doing any analysis I wouldn't know -- I
21 do not have an opinion of the relative
22 contribution of all of the civil works.

23 Q. Even your common sense doesn't let you conclude
24 that a lower structure such as the railroad
25 grade would have a lesser effect on the

0067

1 Nookachamps area than a much higher dike or
2 levee as might exist in Dike District 12?

3 A. I do not have an expert opinion at this time.
4 (Recess.)

5 Q. While we are on Exhibit 3 let's take a moment
6 and review some questions that I have on that.

7 What information do you have about the
8 timing of various -- the construction of the
9 various levees in Skagit County? Have you done
10 any work in that area to determine when exactly
11 and what --

12 A. My focus was mainly 1955 and forward. 1955
13 recognizing that Dike District 12 had a
14 realignment of their levee system. I spent time
15 documenting that. Subsequent to that it was
16 more documentation of has anything else changed
17 since then along that levee.

18 Prior to 1955 I think all my information is
19 anecdotal. Farmers put levees up, they don't
20 know quite where or how high. The Dike District
21 put dikes up, they don't know quite where or how
22 high.

23 Q. So is it fair to say that you have done no
24 historical investigation of improvements to the
25 levee system prior to 1955?

0068

1 A. Correct, prior to just over 40 years ago in 1955
2 I have not.

3 Q. Have you done any historical analysis to
4 determine where and when various levees in
5 Skagit County have failed or broken during
6 significant flood events?

7 A. No, I have not. With one qualifier, just an
8 awareness of the Fir Island levee break in
9 1990. I have not researched it. I have
10 awareness that it occurred.

11 Q. Do you have awareness that there was a levee
12 failure in the 1921 flood of the dikes
13 protecting Burlington?

14 A. No, I'm not aware of that, or which dikes were
15 protecting Burlington in 1921.

16 Q. Do you understand that levee failure has
17 occurred historically since the dikes were
18 built, since the late 1800s it has occurred on
19 occasion in Skagit County?

20 A. I have not researched it, but I'm not surprised
21 if it has happened.

22 Q. So you've done no work to determine where the
23 water would go if there were, in fact, a levee
24 failure anywhere along the levee system in
25 Skagit County; is that correct?

0069

1 A. I have not done any work myself.

2 Q. Are you aware that anybody else has done any
3 work?

4 A. I'm aware that there are flow paths identified
5 that would take water towards Padilla Bay in
6 addition to going towards Skagit Bay.

7 Q. Where are those flow passages? Is that the term
8 you used?

9 A. I'm talking about just the general flow
10 direction. I don't know what specific path it
11 would take.

12 Q. What direction would you understand that it
13 would take in the event of a levee break in the

14 vicinity of Burlington?
15 A. Downgradient from higher to lower topography.
16 Q. Where is the higher topography and where is the
17 lower topography?
18 A. Without looking at a topo map I wouldn't know
19 exactly, but if this is oriented north, it would
20 be in the northwest direction.
21 Q. And you are referring to Exhibit No. 2; is that
22 right?
23 A. Yes, that's what we are calling it.
24 Q. Do you know if Gages Slough was an historical
25 drainage channel during flood events?

0070

1 A. It appears to be.
2 Q. Do you know where Gages Slough outlets, Tony?
3 A. I don't recall where it outlets. I know I've
4 looked at it. I know it's downstream from I-5
5 but I don't know the exact location.
6 Q. Your description of Gages Slough is somewhat
7 east of Interstate 5. Do you know where it goes
8 after that?
9 A. No, I do not.
10 Q. So you've made no effort, have done no study to
11 tell you where Gages Slough might go?
12 A. No.
13 Q. Have you done any historical work in connection
14 with finding out what other projects have been
15 proposed to ameliorate flooding in the Skagit
16 Valley by the Army Corps of Engineers?
17 A. The only improvements that I'm aware of is what
18 was in the '79 memorandum for the area upstream
19 from the Burlington Northern bridge.
20 Q. Have you done any work to attempt to ascertain
21 what improvements have been done to the dikes
22 themselves, Tony, that is any keyways that may
23 have been installed in the dikes to strengthen
24 the dikes between the period 1975 and 1990?
25 A. That is not something I've researched. I

0071

1 focused more on crest elevation. I had no focus
2 on the geotechnical stability -- I'm not a
3 geotechnical engineer, for one, and I have not
4 focused on the geotechnical stability of any
5 structure out there, dike, railroad, house or
6 anything else.
7 Q. Do you know what a keyway is?
8 A. Yes, I do.
9 Q. Have you learned in the course of your
10 investigation and preparation for this case if
11 any keyways have, in fact, been installed
12 anywhere on the Skagit County levee system
13 between the period '75 and 1990?
14 A. All I know is -- at least I believe my source of
15 information is Pete Walker's deposition from the

16 Dike District where he commented in general
17 about maintenance activities through the years.
18 I don't recall if he specifically mentioned
19 keyway projects. Again, it wouldn't surprise me
20 if they have been done, but I can't say that
21 I've investigated it.

22 Q. You used the expression "maintenance." What do
23 you understand maintenance to consist of, Tony?

24 A. I don't know what Pete Walker specifically
25 did --

0072

1 Q. I didn't ask about him, I asked what you
2 considered to be maintenance.

3 A. On what?

4 Q. Of the dike.

5 First of all, do you have any knowledge
6 about how dikes are maintained?

7 A. I have a general engineering knowledge of how
8 dikes are maintained.

9 Q. Can you tell me generally what that knowledge
10 tells you about how dikes are maintained? I'm
11 talking about maintenance now, not improvement,
12 not strengthening, not increasing the size of
13 them, just maintenance of them.

14 A. In the most general sense maintenance of a dike
15 to my way of thinking would be preservation of
16 side slopes, erosion protection by maintaining
17 vegetation, maintaining crest elevations.

18 Q. Do you know if levees or dikes are maintained by
19 mowing them, for instance?

20 A. I do not know how Dike District 12 maintains
21 their dikes, but I would say in the most general
22 sense if somebody had vegetation, depending on
23 what that vegetation is, they may know or they
24 may not know.

25 Q. Have you looked at the Skagit County

0073

1 comprehensive flood management plan?

2 A. Probably about three years ago I remember
3 looking at it. I have not looked at it in
4 probably three years.

5 Q. And you, yourself, have been involved in a
6 number of developments of comprehensive flood
7 plans, if I understand it; is that correct?

8 A. That is correct.

9 Q. Why are those comprehensive flood plans prepared
10 by local and county governments; do you know?

11 A. I think we refer to them more as flood hazard
12 management plans. They are put together so that
13 when a flood occurs, to minimize the hazards
14 associated with that flood.

15 Q. Do you know if those plans are necessary in
16 order to obtain flood grants or FCAP assistance
17 from the State of Washington?

18 A. My understanding specifically with the FCAP
19 program is that there are two parts to it. One
20 is a maintenance program. In order to get a
21 maintenance program, the Department of Ecology
22 wants to see a flood hazard management plan in
23 place before they allocate those funds. That is
24 my understanding. That is the current standing
25 of the FCAP program, as I understand it.

0074

1 Q. You said there were two reasons. What's the
2 other?

3 A. The other one was to do comprehensive plans and
4 the second one was to do maintenance.

5 Q. What do you mean?

6 A. Comprehensive flood hazard management plans was
7 one activity funded through FCAP. The second
8 activity funded through FCAP is maintenance of
9 projects.

10 Q. What about actual construction of projects? Do
11 you have to have a flood management plan to
12 actually construct levees?

13 A. I'm not an expert on --

14 MS. MURPHY: I'm going to object to asking
15 this expert what his opinion is on what the
16 State covers. He is free to give his own
17 opinion, but that's not necessarily factual in
18 terms of what the state program covers.

19 MR. HAGENS: Did you have a chance to take
20 a look at his references, Carol? You might see
21 that he was involved in preparation of a number
22 of those plans. I'm trying to understand what
23 the limited scope of his knowledge is in that
24 regard.

25 MS. MURPHY: I understand that.

0075

1 Q. Do you understand that local county governments
2 have to prepare a comprehensive plan in order to
3 be eligible for state grants?

4 A. Eligible for which state grants?

5 Q. State of Washington grants.

6 A. Grants from where?

7 Q. The State of Washington, to do work on the dikes
8 of one kind or another.

9 MR. MAJOR: Object to the form of the
10 question.

11 Q. Go ahead.

12 A. I think I'm going to answer the original
13 question. One was to provide flood hazard --
14 grants for flood hazard management plans.

15 Subsequent to that I believe in the FCAP
16 program it does not fund the construction of new
17 structures but does provide for the maintenance
18 of existing structures, is my understanding.

19 Q. Have you reviewed those statutes or regulatory

20 requirements?
21 A. I have reviewed the FCAP RCW and WAC.
22 Q. And it is your testimony that it provides for
23 maintenance, but nothing else, then?
24 A. My recollection is that it provides for
25 maintenance, not for new construction.
0076
1 Q. How does it deal with improvements as opposed to
2 maintenance?
3 MR. MAJOR: Do I understand, Carl, that
4 your question is focused on what has occurred in
5 the last decade as opposed to the prior 60 years
6 of state regulations of dikes?
7 Q. Do you have my question in mind?
8 MR. MAJOR: I think it would be fair to
9 give us the timing reference.
10 Q. Currently.
11 A. Currently in the FCAP program, while I'm
12 uncertain, my understanding is that it would
13 provide for improvements and would come under
14 maintenance.
15 Q. So the State of Washington, as you understand
16 it, makes no distinction between maintenance and
17 improvements?
18 A. I am not an expert nor am I extremely
19 knowledgeable of that. I do not know if they do
20 not make any distinction, but I've indicated
21 that it is my understanding that under the FCAP
22 program improvements in maintenance are covered
23 by that program. I'm not saying that they are
24 the same.
25 Q. Have you ever made an application on behalf of
0077
1 any levee, diking district, county or local
2 government, for an FCAP grant?
3 A. Yes.
4 Q. Have you done it more than once?
5 A. Have I prepared an FCAP application?
6 Q. Yes.
7 A. I have assisted municipalities and cities with
8 the preparation of a grant. I have never
9 submitted a grant on behalf of a county. I've
10 helped them with wording on grant applications.
11 Q. Over what period of time have you done that?
12 A. Primarily over the last four years.
13 Q. Is that because the program didn't exist except
14 in the last four years, in its current form,
15 anyway?
16 A. No, it's more where migrator activity with the
17 program has been in the last four years.
18 Q. Have you assisted any local government with an
19 FCAP application relating to either the
20 improvement or maintenance of any levees in the
21 State of Washington?

22 A. I don't believe so.
23 Q. So it would be fair to say that you have not
24 assisted, then, any local government entity in
25 preparing an FCAP application with respect to
0078
1 the maintenance or improvement of a levee in any
2 particular area of the State of Washington; is
3 that correct?
4 A. I do not believe that I have.
5 Q. So it would be correct to say that you have no
6 personal experience in that area? Is that also
7 correct?
8 A. No personal experience in preparing FCAP grant
9 applications for the maintenance of levees, I do
10 not believe that I've done that.
11 Q. In the course of preparing your opinions are you
12 aware of any work that has been undertaken on
13 the Skagit County levees to prevent levee
14 collapse?
15 A. I am not aware of any but I have not
16 investigated it, researched it, or focused any
17 attention on maintenance or geotechnical
18 analysis of the levees. I have only focused my
19 attention on levee alignment and crest height.
20 Q. In that regard have you done any surveying of
21 the actual heights of the levees, or are you
22 just relying on somebody else's data?
23 A. I had the levees surveyed in 1993.
24 Q. Were you able to come up with a report that
25 indicated what the levee heights were in 1993?
0079
1 A. Say that again. Did I what?
2 Q. Did you generate some kind of report or graph or
3 diagram that shows the levee heights in 1993?
4 A. The survey information is in the file.
5 Q. Now answer my question. Is any of that survey
6 information summarized in any usable fashion so
7 I can take a look at a chart and determine from
8 it what the levee heights were, according to
9 your survey?
10 A. Yes.
11 Q. Let's make that item number 2, if you could put
12 that aside. During the lunch hour we will take
13 a look at it.
14 That told you what the levee heights were
15 in 1993; is that correct?
16 A. That is correct.
17 Q. Is it also correct that you don't know what work
18 was done on the levees at what particular point
19 in time to get those levees to those heights?
20 Is that a fair and accurate statement?
21 A. No, it's not accurate.
22 Q. In what way is it inaccurate?
23 A. It's inaccurate for two reasons. One, anecdotal

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from the deposition of the Dike District
commissioner that they have not undertaken any

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maintenance activities to raise the levee.
The second one is I have the design height
elevations of the new '55, 1955 dike that showed
the design crest elevation, and I compared the
design, not the as-constructed, but the design
heights of 1955 to what they currently are
today. That is for the new construction of the
Dike District 12 dike. The Burlington Northern
Railroad grade, I surveyed that in 1993 and took
it to be unchanged in time.

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- Q. You used a lot of words there. You took the
design height of the levee that was built in
1955 in Dike District 12; is that correct?
- A. Correct.
- Q. What was that design height?
- A. It varies with location. It slopes as it goes
up the river.
- Q. You then subsequently surveyed that; is that
correct?
- A. That's correct.
- Q. Did you find that the survey showed that the
dike was at that design level, less than that
design level, or higher than that design level?
- A. Yes, yes, and yes.
- Q. Depending where on the levee; is that right?

0081

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- A. My recollection is that there were 37 points
that we surveyed in 1993. Some locations, just
for those -- some locations I believe went up to
about 1.2 feet lower than design height. Some
locations were 1.4 feet higher. That was the
maximum range.
- The average of all the 37 points was about
4/10 of a foot higher than the design elevation
for 1955.
- Q. Were you able to determine when that 4/10 of a
foot was obtained?
- A. No. I only had two pieces of information, a
design height for '55 and a survey in '93, and
as I said, it was a design elevation. What had
actually got constructed, for all I know, it was
plus or minus a half a foot at the time it was
constructed. All I have is what it was meant to
be in 1955.
- Q. Versus its current configuration in '93?
- A. Yes.
- Q. Let's talk a little bit about your numerical
modeling. What program have you developed in
that regard? Is it a two-dimensional model?
- A. We didn't develop the model. We used a publicly
available model. The acronym is FESWMS.

0082

- 1 Q. And that is an acronym for what?
2 A. I think it's Finite Element Simulation Model --
3 WS, what is WS? Finite Element Surface Water
4 Modeling System.
5 Q. Did you prepare a report which describes that
6 modeling program?
7 A. We have not prepared a summary report of our
8 modeling efforts.
9 Q. Why not?
10 A. No one has asked for a summary report. Also
11 because it's not final until it's final.
12 Q. What does that mean?
13 A. That means if we think of something tomorrow
14 that we would like to do, we would do more
15 modeling.
16 Q. Its FESWMS?
17 A. WMS, okay.
18 Q. Do you know if anybody besides yourself has done
19 any modeling on this program?
20 A. Using the model FESWMS?
21 Q. Using your model.
22 A. The model is not our model. The model was
23 created by a modeler that is available to
24 engineers to use.
25 Q. Do you know if anybody else in your firm has

0083

- 1 done any modeling, besides you?
2 A. FESWMS modeling?
3 Q. FESWMS modeling.
4 A. Yes.
5 Q. Who was that?
6 A. In our firm who does --
7 Q. No, in connection with this retention.
8 A. On this project?
9 Q. Yes.
10 A. I have a modeler that works with me under my
11 direction.
12 Q. What is his or her name?
13 A. Greg Gaaslan.
14 Q. Do you supervise him?
15 A. Yes, I do.
16 Q. You tell him what to do and what not to do; is
17 that right?
18 A. Yes, I do.
19 Q. Have you asked him to do any modeling in an
20 effort to isolate the amount of water in the
21 Nookachamps area during significant flood events
22 caused by the levees in Skagit County?
23 A. No, I have not.
24 Q. Do you know if he has done so on his own?
25 A. I don't believe that he has on his own.

0084

- 1 Q. Now, this FESWMS program, can you describe

2 generally what it does?
3 A. It is a model that reproduces flows of all
4 kinds, in this case a flood flow, and will
5 simulate that flood so that we would have flood
6 elevations at various locations on the river.
7 Q. Do I take it you have to put certain data into
8 the model in order to obtain the results of the
9 simulation?
10 A. That's correct.
11 Q. And the types of data you have to put in are
12 topographical features; isn't that correct?
13 A. That's correct.
14 Q. You have to put in flood flows and CFS; is that
15 correct?
16 A. Yes.
17 Q. What are the other things that you have to put
18 in there?
19 A. In the general sense of topography, I will
20 generalize that as geometry of the river
21 section, and we put in flood flows and we put in
22 at some point in the model a known flood level
23 for that flood flow. Then we put in what's
24 generally referred to as roughness factors for
25 that section of the river that simulates or

0085

1 represents how much resistance to flow there is
2 as the flood moves downriver.
3 Q. How do you simulate the configuration of the
4 bottom of the river?
5 A. The bottom being?
6 Q. The depth of the channel, the surface of the
7 channel, things of that nature.
8 A. From the survey information -- when we say
9 topography, topography is ground elevations.
10 The bottom of a river is just a ground elevation
11 and it is below water. We then put in all the
12 elevations of the ground.
13 Q. What other information goes into this model that
14 you haven't already enumerated to me?
15 A. In a general sense geometry, which is
16 topography, and floods and water levels and
17 resistance to flow.
18 Q. So if there was a bend in the river, this model
19 would take that into account, is that correct,
20 in terms of resistance?
21 A. In terms of flow pattern; yes.
22 Q. When you ran your model to determine, for
23 instance, how much the Burlington Northern
24 bridge may have contributed to the flood of
25 November 25, 1990, you ran it with the

0086

1 topography as you understood it to exist in
2 November of 1990; is that correct?
3 A. That's correct.

4 Q. Have you ever run it with a topography other
5 than as you understood it to exist in 1990?
6 A. I don't believe we have.
7 Q. Did you simulate any historical events?
8 A. 1990 is an historical event.
9 Q. I understand, but 1975, did you simulate it?
10 A. Yes, we did.
11 Q. Did you do that to check whether or not your
12 model was performing accurately in relation to
13 actual flood elevations or markings that may
14 have been found in various areas of the county?
15 A. I think we did 1975 as just a second exercise to
16 reproduce a second flood event. Again, I think
17 the first claim that was put before me was
18 changes from 1979, so it was initially thought,
19 well, let's do '75 and let's do 1990 and see
20 what changed.
21 Q. Did you then attempt to simulate the flood of
22 1975?
23 A. Yes, I did.
24 Q. Using the flow rates of the 1975 flood; is that
25 correct?

0087

1 A. That's correct.
2 Q. Did you verify in the simulation that the flood
3 levels reached the various markings within the
4 Nookachamps area, or other areas of Skagit
5 County, so as to assure you that the output of
6 the model was accurate when compared to the
7 various flood elevations that had been
8 identified within the county?
9 A. My recollection of what we did with 1975 is
10 reproduced flood levels along the river that
11 were available from the Corps of Engineers 1979
12 report. I don't believe that there were flood
13 elevations from '75 available in the Nookachamps
14 Creek area. In putting together our 1975 model
15 we reproduced the flood process file that the
16 Corps of Engineers had produced for 1975.
17 Q. So your assurance that this model was operating
18 correctly was not because of flood gauge
19 readings, but only because it conformed to the
20 same output that the Corps of Engineers had
21 obtained; is that correct?
22 A. That's half correct. The Corps of Engineers
23 modeling was based on observed flood levels. I
24 obtained the observed 1975 flood levels from the
25 Corps of Engineers report. They reproduced the

0088

1 '75 flood levels. We reproduced the '75 flood
2 levels.
3 Q. All I'm trying to get at here, Tony, is your
4 model did, as best as you could determine,
5 accurately reproduce or simulate the 1975 flood

6 event; is that right?
7 A. That's correct.
8 Q. Do you have any knowledge as to when a levee
9 collapse is likely to occur?
10 A. I have no way of predicting that.
11 Q. So you as a hydrological engineer don't know
12 under what circumstances a levee, such as the
13 kinds that are built in Skagit County and the
14 vicinity of Dike District 12, are likely to
15 fail; is that correct?
16 A. As a hydraulic engineer I do not have the
17 geotechnical expertise to assess the
18 geotechnical stability of levees.
19 Q. As a hydrological engineer you have not studied
20 then how seepage can cause a failure of a levee;
21 is that correct?
22 A. I am certainly not an expert in that field.
23 Q. And you have not studied in that area?
24 A. I have not studied in that area.
25 Q. Do you know if levees are built out of different

0089

1 material, that is as part of your hydrological
2 training any kind of introduction to the type of
3 material that levees are built from?
4 A. A specific levee, or if I was to open a textbook
5 and say how should we design a levee? I don't
6 understand what you are asking me.
7 Q. When I went to college we had a course on
8 introduction to literature, and they gave me a
9 wide variety of literature to read and I didn't
10 become expert in any of it but I had to read it
11 all. All right?
12 A. Okay.
13 Q. If you are going to be an engineer, I'm trying
14 to understand if they give you a book that says
15 here's levees, here is what they can be made out
16 of, an overview or survey course that gives you
17 some understanding of the materials that can be
18 used to construct the levee. Do you have any
19 background in that at all?
20 A. Yes, I do. I have a background, as you say, at
21 a student level, not as a practicing
22 geotechnical engineer.
23 Q. That's all I'm looking for.
24 A. Fine.
25 Q. So you know then that levees can be built out of

0090

1 different materials; is that correct? They can
2 be cement, steel, I don't know, you tell me.
3 I've never read one of these survey books.
4 A. If you are asking can you have a concrete levee,
5 yes. Can you have a steel one, yes.
6 Q. That's all I was trying to get at.
7 Do you know how Skagit County's levee

8 system compares to other levees in the State of
9 Washington in terms of magnitude in size and
10 length and height?
11 A. In terms of size and length and height, no.
12 Q. Do you know of any levee system in the State of
13 Washington that has more miles of levees than
14 Skagit County?
15 A. That would probably be the one question that I
16 do not know the answer to that. I'm familiar
17 with some levee systems on some rivers.
18 Lengths, I have no idea how the Skagit would be,
19 to another river.
20 Q. What about levee heights? Do you have any
21 understanding of levee heights on other reaches
22 or stretches of rivers in the State of
23 Washington?
24 A. Yes, I have knowledge of levees on other rivers
25 in the state.
0091
1 Q. The heights of them?
2 A. No. I acknowledge that levees exist on other
3 rivers.
4 Q. My question had to do with the height of those
5 levees. Do you have any knowledge of how the
6 Skagit levees compare heightwise measured from
7 the adjacent land, as you've said in the past,
8 to other levees that might exist in the State of
9 Washington?
10 A. Can I ask a question?
11 Q. Sure, absolutely.
12 A. Are we talking about a level height based on a
13 return period, or an elevation difference
14 relative to local ground?
15 Q. Elevation difference.
16 A. I'm not familiar with all the levees throughout
17 the state. I would expect that there are
18 probably some smaller than the Skagit and some
19 bigger than the Skagit.
20 Q. But you really don't know?
21 A. No.
22 Q. What about return levels? Is that something
23 that you have some knowledge about?
24 A. The same answer. There are levees in the state
25 to higher levels and some that are at smaller
0092
1 levels.
2 Q. Which ones are to a higher level?
3 A. I'm not certain, but I believe that, say the
4 Green River levees are to a higher flood level.
5 I believe, but I'm not certain.
6 Q. It's not something you studied so you don't
7 really know?
8 A. No, but I come across it.
9 Q. How confident are you that they are?

10 A. 50/50. Just as likely to be as not to be.
11 Q. Other than the Green River, are there any
12 others?
13 A. I don't have knowledge of all the rivers in the
14 state.
15 Q. Do you have any knowledge as to under what
16 circumstance a levee collapse is likely to
17 occur?
18 A. None whatsoever. Again, from geotechnical
19 stability, no, I would not know.
20 Q. Based upon your knowledge as a hydrological
21 engineer, if a levee collapse were to occur in
22 the vicinity of Burlington, would you expect
23 that that would have an impact in terms of flood
24 level reductions in the Nookachamps area?
25 A. I believe that it would.

0093

1 Q. Would you believe that it would reduce the level
2 of flooding in the Nookachamps area?
3 A. I don't know if it would be measurable, but I
4 believe conceptually that there would be an
5 impact, and the reason that I hedge on that, the
6 closer you are to, in this case, a break or any
7 other diversion, even intentional, the
8 difference would be greater closer to it. And
9 as you got further away it would be less.
10 Conceptually in the Nookachamps area, I would
11 expect a difference. How much or how
12 measurable, I don't know.
13 Q. To some extent would that depend upon the size
14 of the break and the CFS running at the time, I
15 take it; is that correct?
16 A. I would think so.
17 Q. Is it also correct that some of the ground
18 elevation in the Burlington area is lower in
19 elevation than some of the ground elevations you
20 find in the Nookachamps/Clear Lake area?
21 (The record was read back.)
22 MR. MAJOR: I will object to the form of
23 the question. I don't know if you are looking
24 for the lowest points or whether some are or
25 some aren't.

0094

1 Q. Can you make a generalization? Let's start with
2 that. Can you make a generalization that
3 Burlington's elevation on a ground level basis
4 downtown is lower than, say, -- who is that
5 farmer? -- Ken Johnson's farm property?
6 A. Can you point out Ken Johnson's farm?
7 Q. You are the one that identified his farm as a
8 key indicator. Let's see if we can find it in
9 your declaration.
10 A. I can answer the question without knowing.
11 Q. Go ahead.

12 A. The answer is we would pull a topo map out, pull
13 out two elevations, and it would be a simple
14 matter of comparing the two. I don't know what
15 the elevations are at Ken Johnson's farm. I
16 know there are depressional areas in the
17 Nookachamps area. Whether those areas are lower
18 than Burlington, I do not know. It would be a
19 simple matter of looking on a topo map and
20 comparing the two numbers.

21 Q. Can you make any generalizations as to the
22 elevation of the Burlington area versus the
23 elevation of the Nookachamps area in terms of
24 which has the greater elevation and which the
25 lesser elevation?

0095

1 A. A generalization is as we are going down the
2 river, and if we are going down the river, I
3 would expect as we went down the river ground
4 elevation would be less. It's point by point
5 whether we compared a depressional area in the
6 Nookachamps to some area in Burlington. I don't
7 know what would be higher or lower.

8 Q. So as a generalization it's accurate to say,
9 based upon your knowledge of the Skagit Valley,
10 that the further you go downriver the lower the
11 elevation? Is that an accurate statement?

12 A. I would agree with that.

13 Q. Do you have with you a topographical map that
14 you relied upon in doing your modeling?

15 A. Yes, I do.

16 Q. Would you mind getting that out for us and we
17 can take a look at it. Would it help us answer
18 the question on ground elevations?

19 A. Yes, it probably would.

20 Q. Maybe for the record, you can tell me what this
21 is. I don't want to make this whole thing an
22 exhibit.

23 A. This is the 1977 Corps of Engineer topographic
24 map that we reduced to a scale to be the same --
25 actually we made it the same scale as the USGS

0096

1 quad map so that we could overlay the two so
2 that we had information in areas where, as you
3 can see, the Corps of Engineer coverage ended
4 and that we extended with USGS coverage. This
5 is Corps of Engineers and this is USGS where
6 it's taped over the top.

7 Q. Okay.

8 Where are the elevation readings?

9 A. On this. This is where I was needing the
10 magnifying glass. These are spot elevations and
11 contour elevations. On the USGS we would just
12 have contours. I don't see any spot elevations.

13 Q. Is says BM34. Do you have any idea what that

14 tells us?
15 A. Benchmark elevation 34.
16 Q. 34 feet above mean sea level?
17 A. I believe that's right.
18 Q. Are there any benchmark elevation markers in the
19 Nookachamps area that you can maybe find?
20 A. There are all these spot elevations. I don't
21 know if someone has better eyes than I do. I
22 can read there is a 29, 26.
23 Q. You are looking around the Nookachamps, one of
24 the areas in the Nookachamps; is that right?
25 A. Yes. There is Nookachamps Creek. 24. Feel

0097

1 free to read some off. I'm having trouble
2 reading them at this scale. Other than the spot
3 elevations we do have contours. Here is a
4 30-foot contour. These are all contours, I just
5 can't read the numbers on them.
6 Q. What is a benchmark elevation? Can you tell me
7 that?
8 A. A benchmark elevation in general is a location
9 where a surveyor went out and put something in
10 the ground, what we would generally refer to as
11 a monument. They have established a permanent
12 location, gave it an elevation, so that forever
13 after in the future if you need to go survey in
14 that general area you can start at that
15 benchmark.
16 Q. Here is Mt. Vernon. I see a BM22. Would that
17 be benchmark 22 feet at that location?
18 A. I believe that would be; yes.
19 Q. Here is a BM161. Is there a hill there, maybe?
20 A. It looks like it is going right up the hill.
21 There is a contour, 100. It appears to be going
22 up the hill there.
23 Q. Oh, I see. I don't think I have any more
24 questions on that.

25 Now, we have seen some photographs that

0098

1 have been used by defense counsel to portray the
2 flood area in 1975, and I think even earlier
3 events. Did you have some hand in preparing
4 those?
5 A. I did prepare those.
6 Q. Are they here today?
7 A. Copies of them.
8 Q. May I see them, please, if you've got them with
9 you?
10 MR. MAJOR: Are they photos or drawings?
11 MR. HAGENS: Off the record.
12 (Discussion off the record.)
13 MR. HAGENS: I'm not going to make copies.
14 I don't think we have the equipment to make
15 copies of these.

16 MR. MAJOR: You've got copies, Carl. They
17 are in connection with the summary judgment
18 motion in the federal case to dismiss.

19 (Discussion off the record.)

20 Q. I'm not going to make copies of these.

21 A. You have copies of them.

22 Q. I guess we do. I appreciate counsel helping me
23 with that.

24 You've done approximate flood inundation
25 maps for various events; is that correct?

0099

1 A. That's correct.

2 Q. I'm trying to understand, the hatched areas on
3 these maps are areas that were not flooded
4 during the particular event simulated; is that
5 correct?

6 A. That's correct.

7 Q. Am I wrong there? What did I get wrong?

8 MR. MAJOR: You referred to simulated. If
9 that has some significance, you should re-ask
10 it.

11 THE WITNESS: Maybe I need the question
12 re-asked.

13 Q. Strike that.

14 What are the hatch areas? Tell me what
15 those are.

16 A. Purely for your eye when you are looking at this
17 map to say on this side of the line it wasn't
18 flooded, meaning this crosshatched area, and on
19 this side it was flooded. It's purely there for
20 illustration to give your eye something to pick
21 up on.

22 Q. Were these the products of your model?

23 A. No, they were not.

24 Q. How did you know where to draw the lines?

25 A. The process is, for example, to take a flood

0100

1 flow, a flood level upstream, take a flood level
2 downstream, use those flood levels, you go to a
3 topographic map and you say well, if the flood
4 was this high, how far would it go out before it
5 hit that elevation on the topo map. To be
6 illustrative, if this flood elevation is 40,
7 everything if you went this way that was lower
8 than elevation 40 on the topo map would be under
9 water.

10 Q. And at the 40 point where would it stop being
11 under water?

12 A. When you got to 40 it would stop being under
13 water. If this was 40 and we went across here,
14 all of these would be lower than 40 under water,
15 higher than 40 above water.

16 Q. Why did you not draw any crosshatch of
17 nonflooded areas north of the Skagit River?

18 A. I believe when these were prepared a couple
19 years ago the question that was being addressed
20 was flooding in the Nookachamps Creek area south
21 of the river, and the question that was being
22 addressed is that these areas are part of the
23 floodplain, have always been flooded by
24 historical events, even before the construction
25 of any levees -- in this case even before the

0101

1 construction of the Burlington Northern bridge,
2 that extreme floods on the Skagit have always
3 inundated this area.

4 Q. And that would be true for Mt. Vernon as well
5 historically, is it not?

6 A. What would be true?

7 Q. During extreme flood events they would be
8 flooded as well; isn't that correct?

9 A. I would imagine.

10 Q. And the maps you've drawn give us no idea how
11 deep the water is, it's just the area; is that
12 correct?

13 A. There is no topographic information. The depth
14 would be comparison of a flood level and ground
15 elevation, and that flood level would vary with
16 location -- the flood depth would vary with
17 location.

18 Q. So we don't know from this map whether the water
19 is in Mrs. Sorrell's house or not in her house;
20 is that right?

21 MR. MAJOR: Object to the form of the
22 question.

23 Q. Do we know that information from this map?

24 A. This map gives area that was flooded, it does
25 not give depth of flooding.

0102

1 Q. And that's true for all the maps?

2 A. That's true for all of the maps.

3 Q. These maps are not computer driven, then, they
4 are done by your staff using elevations; is that
5 correct?

6 A. That is done by staff through the process that I
7 mentioned before, taking a flood level,
8 comparing it to ground elevations, determining
9 whether it's above water or under water.

10 Q. Would your model allow you to make these maps as
11 well?

12 A. Which maps? No, this is not an output. It's
13 not a graph or it's not an output. It's an
14 overlay that we do with the aerial photographs.

15 Can we print something out like that that
16 says this is our computer results?

17 Q. Right. What we understand from these various
18 flood inundation maps of various events is that
19 the area with the levees is in their

20 configuration as they were dating back, you say
21 to 1815; is that right?
22 A. That's my recollection of what the earliest
23 was. There is an 1815. That's my recollection.
24 Q. I'm trying to figure the earliest and latest.
25 A. I think this was 1815. I don't know what the
0103 latest one is there.
1 Q. 1950 is the earliest flood event you've
2 attempted to chart; is that right?
3 A. That's correct.
4 Q. And October 18, 1975 is the latest event that
5 you attempted to chart; is that correct?
6 A. No, we did the 1990, which is contained in, I
7 guess, the first exhibit that you showed me
8 today.
9 Q. With hatch marks and the like?
10 A. I think it had a different type of hatch mark,
11 but yes.
12 Q. Do you know what the configuration of the levees
13 were in 1815?
14 A. I have no documentation and I believe there were
15 not any levees anecdotal. From what I have read
16 there were no levees as far as back as 1815.
17 Q. So this map then, the 1815 map, shows the
18 flooded area as Burlington; is that correct?
19 A. No, we only mapped the south side of the river
20 for the purpose of this.
21 Q. It shows flooding in portions of Mt. Vernon; is
22 that right? That's south of the river, isn't
23 it?
24 A. It only shows flooding in the area south of the
0104 river, Nookachamps Creek general area for the
1 reason that I have explained a few minutes ago,
2 and it probably did not go any further
3 downstream than the end of that line.
4 Q. You are talking about the line on the 1815
5 chart --
6 A. That is the extent of what we plotted on the
7 map. We did not plot anything having to do with
8 floods further downstream.
9 Q. You would agree with me that it flooded in
10 Mt. Vernon, even according to your own map, in
11 the vicinity of south of the Burlington Northern
12 bridge -- southwest; is that correct?
13 A. It appears in 1815 at a flow of 400,000 CFS that
14 that area south of the river between the
15 Burlington Northern bridge and I-5 flooded at
16 that time.
17 Q. Do you think that these maps are at all
18 misleading in the sense that they don't show the
19 flooding in the Burlington area?
20 A. For the purpose that they were prepared, it's
21

22
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24
25

not misleading at all.
Q. You wouldn't want to use this at trial? You wouldn't want the jury thinking that Burlington wouldn't flood during 1815, would you?

0105

1 MR. MAJOR: Object to the form of the
2 question. It's argumentative. He explained the
3 purpose.

4 THE WITNESS: If I explained the purpose, I
5 think it would be obvious to anyone why the map
6 shows what they do.

7 Q. You don't think that it might be misleading not
8 to suggest by the map that Burlington wouldn't
9 flood during an event of the kind that's
10 depicted here in 1815?

11 MR. MAJOR: What are we doing here? You
12 are being argumentative. You have asked him the
13 same question four times. Let's move on.

14 Q. Can I have an answer to the question?

15 A. If I prepared a map of all the area that was
16 flooded in 1815, I'm sure it would be clear to
17 everyone this is not a map of all the flooding
18 that occurred in 1815, and based on that I
19 believe it's clear.

20 Q. Where on these maps does it say it shows
21 flooding just south of Skagit River so the
22 reader would know that that's the case?

23 A. As I've indicated, these have been submitted.
24 These are not the exact copies of what was
25 submitted. The latest version that we gave to

0106

1 Keller Rohrback within the past month has a note
2 on it that says "flooding shown only on south
3 side of river."

4 Q. Are those here today?

5 A. I do not believe I have a copy with that note on
6 it. It was submitted in the last few weeks.

7 Q. Is that a note you are thinking of putting on?

8 A. It was on the copy that was submitted.

9 Q. Did any of your work involve analyzing the
10 effects of the Skagit County levees on flood
11 levels at any particular plaintiff's property?

12 A. No.

13 Q. So you can't, from the work you've done,
14 determine what effect, if any, the levees did or
15 didn't have on any particular plaintiff's
16 property; is that correct?

17 A. That is correct. I did not make any effort to
18 isolate the sole effect of levees.

19 Q. Would your modeling system allow you to do that?

20 A. Yes. I think you asked that earlier.

21 Q. Pardon me?

22 A. You asked that earlier.

23 Q. Okay. I think I asked it in a little bit

24

different context.

25

Do you know if the county has any kind of

0107

1

flow modeling program?

2

A. I'm not aware that the county does.

3

Q. Have you spoken with any of the representatives of Skagit County?

4

5

A. Having to do with the work that I'm doing, no.

6

I speak with representatives of Skagit County

7

that I run into at meetings, but I have not

8

spoken to them about this project. I will say

9

that differently. I've been in contact with

10

Dave Brookings who has provided some information

11

to me, but we have not spoken about what I'm

12

doing or what any of the results are.

13

Q. What information has Mr. Brookings provided to you?

14

15

A. All I can remember he provided to me was some

16

survey of some 1990 high watermarks, and I

17

recall him giving me some information on the

18

emergency action that was taken on State Route

19

20 at the overflow so that I could understand

20

that better.

21

Q. What information did he give you in that regard?

22

A. I asked him if he could tell me when the

23

emergency action was taken during the November

24

1990 flood -- November 25th, 1990 flood, if he

25

can indicate to me what was done and when it was

0108

1

done.

2

Q. Did he give you that information?

3

A. He gave me some of that information.

4

Q. Did he give it to you in any written form?

5

A. Yes, he did.

6

Q. What written form did that take?

7

A. I believe that I sent him an air photograph and

8

asked him to mark on it approximately where

9

material was placed.

10

Q. Did he give you the dimensions of the material

11

that was placed?

12

A. I don't believe that he did.

13

Q. Have you got that air photograph with his

14

description of where the material was placed

15

with you today?

16

A. Yes, I do.

17

Q. Would you agree with me that as the flood levels

18

increase the potential damage to the plaintiffs

19

in the Nookachamps area is likely to increase?

20

A. I would say it depends on who we are talking

21

about, where their property is, and what

22

elevation they are at, and what elevation their

23

home is at, and what efforts they have

24

undertaken to floodproof their homes previously.

25

Q. Would you agree that the higher the flood levels

0109

1 the greater potential for damage to people in
2 that flood?

3 A. No, I do not agree with that.

4 Q. What work have you done to support your opinion
5 that there is no relationship between the two?

6 A. I have not done any work on it.

7 To respond to that, if a person's house was
8 floodproofed, then I guess it doesn't matter how
9 high the flood gets. If a person's property is
10 above the flood level, I guess it doesn't matter
11 how high the flood gets.

12 Q. So you don't see then generally any relationship
13 between flood levels and potential damage?

14 A. No, I didn't say that. I said it depends on
15 which property we are talking about, where they
16 are at, and what floodproofing techniques they
17 have taken previously.

18 Q. Let me ask this generalized question: Do you
19 have any knowledge of any relationship between
20 flood levels and potential damage?

21 A. In areas where properties are not floodproofed,
22 where properties have been built in high hazard
23 flood areas, I would say that higher flood
24 levels would create more damage for those
25 individuals.

0110

1 Q. Have you done any work as part of your
2 engagement by Skagit County to attempt to
3 ascertain to what extent, if any, people living
4 in the Nookachamps area, as I've described it
5 earlier, have been alerted or notified by Skagit
6 County or any other governmental entity of the
7 potential flood hazard of living in the
8 Nookachamps area? Have you done any work along
9 those lines?

10 A. I have not done any independent analysis of
11 that. I have not investigated that other than
12 there are FEMA maps available for regulating the
13 floodplain that shows where floodplain limits
14 are.

15 Q. What do you understand a FEMA map discloses?

16 A. A FEMA map discloses flood levels for different
17 return period floods.

18 Q. Like the 100-year event, the 50-year event?

19 A. That's correct.

20 Q. How is it expressed in the flood map, do you
21 know, the FEMA flood map, if I'm calling it the
22 right thing?

23 A. It's expressed in a couple ways. The FEMA flood
24 maps show flood elevations for that 100-year
25 flood.

0111

1 Q. Do you have any FEMA maps amongst the materials

2 you've brought today?
3 A. Yes, I do.
4 Q. As you sit here today do you have any knowledge
5 how FEMA maps may or may not enter into any real
6 estate transaction that might have occurred in
7 the Nookachamps area?
8 A. I'm not an expert in FEMA policy, but in
9 general, if you apply for a mortgage, it's my
10 understanding that the mortgage company will
11 investigate as to whether you are on a
12 floodplain or not, and therefore whether you are
13 required to get floodplain insurance as part of
14 getting that mortgage.
15 Q. What is a floodplain?
16 A. A floodplain, as FEMA defines it, is that area
17 that is under water during a flood with a return
18 period of 100 years.
19 Q. Am I correct that that would mean that
20 Burlington and Mt. Vernon are both in the
21 floodplain as well as other areas of the
22 Nookachamps?
23 A. We would have to look at FEMA floodplain maps.
24 Certainly the area that you pointed out the
25 elevation at 160 in Mt. Vernon I don't believe

0112

1 would be in the floodplain.
2 Q. Did I point out an elevation of 160 in
3 Mt. Vernon? What about downtown Mt. Vernon
4 where the courthouse is?
5 A. I have not investigated anything downstream from
6 the USGS gauge. We could pull the FEMA maps out
7 and you could answer it. I have not looked at
8 it previously.
9 Q. You say you have the FEMA maps. Let me ask you
10 a few more questions and we will break for
11 lunch. Have you done any work in connection to
12 familiarize yourself with the permit process
13 that exists up in Skagit County during 1990?

14 MR. MAJOR: Object to the form of the
15 question.

16 THE WITNESS: No, I have not spent any time
17 investigating that.

18 Q. Have you yourself been involved in helping any
19 local governments prepare Shoreline Management
20 Act checklists for projects in the vicinity of
21 rivers?
22 A. Yes.
23 Q. How many of those have you done?
24 A. I have no idea.
25 Q. A lot of them? Is that what you are telling me?

0113

1 A. No, not a lot. As we have projects, we
2 sometimes work with our clients to obtain those
3 permits -- to help them obtain those permits.

4 Q. What kind of a permit are you talking about?
5 A. You asked me about shoreline permits.
6 Q. Have you done any shoreline permitting
7 applications with respect to any work on any
8 levees outside of Skagit County?
9 A. I do not believe so.
10 Q. Have you done any work with respect to any
11 shoreline management applications inside Skagit
12 County, with respect to work on levees?
13 A. I do not believe so.
14 Q. Have you done any review of the budgets of
15 Skagit County for flood control, flood
16 improvement, flood maintenance programs to the
17 extent they may exist in Skagit County?
18 A. No, I've never looked at that.
19 Q. So it would be accurate to state that you don't
20 know the extent to which Skagit County has used
21 funds to improve, maintain or work on the dikes?
22 A. No, I have no knowledge.
23 Q. Do you know of Dike District 20 and Drainage
24 District 20?
25 A. Whether there are two different ones, I don't
0114

1 know, but I'm familiar with the 20 part.
2 Q. Let's take them one at a time. Do you know
3 where Dike District 20 is?
4 A. In general, on the south side of the river.
5 Q. If I gave you a pen, could you generally
6 surround the area?
7 A. No, I could not.
8 Q. Have you seen any dikes or levees in Dike
9 District 20?
10 A. The only levees that I have seen would be on the
11 East Nookachamps Creek, which I believe is Dike
12 District 20.
13 Q. If I gave you a pen, could you show me where
14 those levees are?
15 A. Probably not. Not from memory.
16 Q. When you say you saw those, are these something
17 that you went out and physically observed?
18 A. It's something that I drove by on Highway 9 and
19 noticed there.
20 Q. As part of your engagement; is that right?
21 A. No, I have not done any specific analysis on
22 those levees other than I observed that they
23 were there.
24 Q. How many times have you been to Skagit County in
25 connection with this engagement?

0115
1 A. Numerous. I'm going to say 10 to 20.
2 Q. How many times have you driven around the
3 Nookachamps area of those 10 to 20 times?
4 A. In each instance I didn't drive all of the
5 area. In some instances I just went to part of

6 the area. The number of times that I have
7 driven all around that area are probably less
8 than 10.
9 Q. Do you have any appreciation of the dimensions
10 of the levees in Dike District 20 in the
11 Nookachamps area?
12 A. Not from memory. This would be off topo maps, I
13 suppose.
14 Q. So as you sit here today you couldn't, using
15 your memory, give me any estimation of their
16 dimensions; is that right?
17 A. Not a reliable one, no, other than driving by
18 and noticing that there were some there.
19 Q. Have you done any work to determine whether or
20 not dikes could be erected on the left bank of
21 the Skagit River looking downriver?
22 A. Have I done any --
23 Q. Yes. I'm talking about north of the Burlington
24 Northern bridge.
25 A. I have not done any analysis of that.

0116

1 Q. Do you have any opinion that relates to that?
2 A. Without having analyzed it I do not have an
3 opinion.
4 Q. You can't testify one way or the other whether
5 it would be feasible to erect dikes on the left
6 side of the Skagit River looking south down to
7 the Burlington Northern bridge; is that correct?
8 A. No, that's not correct. In a physical sense I
9 don't think there is anything that would prevent
10 someone from going out there and building a
11 levee. Whether you would want to do that and
12 what its impacts would be, I have not analyzed,
13 contemplated or thought about. If you wanted to
14 take a truck out and do it, I'm sure it could be
15 done.
16 Q. In other words, you are saying you don't know of
17 any physical prohibition that would prevent
18 somebody from physically raising a dike along
19 the left bank of the Skagit River; is that
20 correct?
21 A. If done properly and if provided for whatever
22 other design constraints there would be on that,
23 it physically can be done. Whether you would
24 want to do it or not --
25 Q. Okay. Have you seen anything that discusses the

0117

1 desirability of doing that, other than the Corps
2 of Engineer reports?
3 A. I believe the only place I've seen it is in the
4 1979 Corps of Engineer reports.
5 Q. What is your recollection of what it says about
6 diking the left bank of the Skagit River?
7 A. I will have to say that that memory is three

8 years old. My recollection is that it can be
9 done. The major obstacle would be providing for
10 drainage and outflow of water from the outside
11 of the levee away from the river.

12 Q. You mean from the Nookachamps area?

13 A. From the Nookachamps to get it through that
14 levee, is my recollection, of one of the design
15 constraints on doing that.

16 Q. Is it your recollection that the Corps of
17 Engineers was actually proposing that levees be
18 built on the left bank of the Skagit River or
19 off the left side of the Skagit River?

20 A. The report says what it says. I don't recall
21 what their recommendation was.

22 Q. Do you know if the dikes at the northerly end
23 here of what you have indicated as Dike
24 District 12 on Exhibit 2, do you know if their
25 elevations are less high than dikes downriver

0118

1 towards Fir Island? Do you know one way or
2 another?

3 A. I have not investigated anything downstream of
4 our study area, which ends approximately at the
5 Burlington Northern bridge.

6 Q. I think you said that the dikes going downstream
7 go from a 40-foot elevation to a
8 45-and-a-half-foot elevation at the Burlington
9 Northern bridge; is that correct?

10 A. That's correct. In a quick look at this area,
11 that probably ballpark the numbers pretty well.

12 Q. Do you know if that increase, that
13 5-and-a-half-foot increase mode is continued
14 throughout down the Skagit River?

15 A. I have not looked at any levees downstream, like
16 I say.

17 Q. Have you done a thorough enough historical
18 analysis to understand what the dikes or berms
19 built in the 1850s were for? Were they for
20 protecting against winter floods or spring
21 floods when the crops were in?

22 A. I don't recall investigating the purpose of
23 those levees. What I have seen is generalized
24 reports that indicated that there were levees
25 constructed. The purposes, the heights, the

0119

1 locations, I do not know.

2 Q. Have you seen the letter from Oscar Bowen to
3 A.H. Hogeland, chief engineer in Saint Paul,
4 Minnesota, dated September 26, 1992, and the
5 enclosed report?

6 MR. MAJOR: Are you going to make that an
7 exhibit?

8 THE WITNESS: It's 1922. I believe you
9 said "1992."

10

MR. HAGENS: Excuse me.

11

THE WITNESS: I don't believe that I have seen this.

12

(Marked Deposition Exhibit 4.)

13

Q. Take a minute to look through that. There is an attached report.

14

15

A. It does not look familiar to me. I don't recall seeing it.

16

17

Q. Have you generally found the Corps of Engineers reports, when it discusses historical flooding circumstances, to be accurate or inaccurate?

18

19

20

MR. MAJOR: I will object again to the form of that question, and I'm wondering whether you are representing that this is a Corps of Engineer document.

21

22

23

24

MR. HAGENS: No, no, I'm not.

25

0120

1

MR. MAJOR: Object to the form of the

2

question.

3

Q. Do you understand my question?

4

A. I understand the question. I have no reason to believe that the Corps of Engineers does not do good work.

5

6

Q. Have you made an effort to search for historical documents such as Exhibit 4?

7

8

A. No, we have not researched anything prior to more than 40 years ago, 1955, when the dike was realigned in 1955. As I've indicated, the anecdotal information that I have, of various levees, I did not research it, and I didn't have reason to research it before that.

9

10

11

12

13

14

Q. Might it not be helpful if one was trying to isolate the effect of the levee system in Skagit County, particularly as it exists around Burlington and Mt. Vernon, to determine what that -- if you are interested in that effect and the people in the Nookachamps, might it not be helpful to see what the flooding may have been like in those areas when the levees weren't there by going back to historical documents and seeing if there was any discussion of that?

15

16

17

18

19

20

21

22

23

24

MR. MAJOR: Objection to the form of the

25

0121

1

question.

2

THE WITNESS: If I was interested in what happened 70 years ago, that would be part of the puzzle.

3

4

Q. While we have got this exhibit in front of us, Exhibit 4, let's take a minute. Take a look at the second paragraph there.

5

6

7

A. Which page?

8

Q. The first page.

9

A. Okay.

10

Q. The second sentence, it says "The breaking of

11

12 the dikes during extreme water conditions has
13 always relieved the situation at our bridge 36,
14 and I never realized the total discharge to be
15 as great as it is." Do you see that?

16 A. Uh-huh.

17 Q. Is it conceptually correct, from an engineering
18 standpoint, that breaks in dikes may operate to
19 relieve extreme water conditions?

20 A. Just expanding on how I answered that the last
21 time you asked, yes, a breach in a levee would
22 certainly locally have its greatest impact. As
23 you got further away from the dike, less
24 impact. Yes, I agree.

25 Q. Take a look at page 2. It talks about, in the

0122

1 last paragraph, it talks about areas to the
2 north and east of the Burlington Northern
3 bridge.

4 A. You have to show me where you are reading. Just
5 point.

6 Q. Maybe it's the third page. It's the fourth
7 page, excuse me. It's page 2 of the report, not
8 the letter. Take a look at the last paragraph
9 there, it discusses --

10 MR. MAJOR: Who is the author of the
11 report?

12 MS. MURPHY: It's signed Herzog, H.A.

13 Q. Do you know who a Robert Herzog is?

14 A. No, I do not.

15 Q. Anyway, sticking with this Herzog report --

16 MR. MAJOR: Do you have any idea what the
17 date of the report is?

18 MR. HAGENS: All I know is it was
19 transmitted on or about September 26, 1922.

20 Q. I'm interested in page 2, if you can ever get
21 there.

22 MR. MAJOR: It's after lunch. We are
23 getting hungry. We have this document.

24 MS. MURPHY: We can't let Carol go without
25 lunch.

0123

1 Q. He describes the area, which I believe to be the
2 Nookachamps, as north of the bridge and east of
3 the bridge, and then he goes on, the last
4 sentence there on page 2 it says "During flood
5 discharge of the river this area becomes covered
6 with water" --

7 A. Slow down.

8 Q. The last line on page 2 of the report.

9 A. Can you point to it and I can find it?

10 Q. Sure.

11 "During flood discharge of the river, this
12 area becomes covered with water from 5 feet to
13 15 feet deep, forming a large storage basin

14 capable of absorbing the discharge of 150 sec.
15 ft. for five hours, if no water were drawn out
16 at bridge #36."

17 MS. MURPHY: You skipped the thousand
18 part. You said "150."

19 MR. HAGENS: I meant 150,000.

20 Q. Anyway, you've seen other reports, have you not,
21 Mr. Melone, that indicate that thousands of
22 acres of cubic feet are stored in the
23 Nookachamps area during significant flood
24 events?

25 A. I think that was the essence of our aerial

0124

1 photos that I showed you -- or that you showed
2 me. When we get to high flood events and the
3 water can no longer be contained in the channel,
4 it overflows onto the floodplain.

5 Q. Well, the floodplain in the Nookachamps, it
6 doesn't overflow in the floodplain in Burlington
7 or Mt. Vernon, does it?

8 A. In 1990 it overflowed into the Nookachamps Creek
9 area.

10 Q. And it didn't overflow into the Burlington
11 floodplain or Mt. Vernon floodplain, did it?

12 A. I do not know what it did in Mt. Vernon. It did
13 not flow into Burlington, to the best of my
14 knowledge.

15 Q. Take a look at page 4 of the report, the second
16 paragraph.

17 A. Starting with?

18 Q. "Before."

19 "Before the dikes and the railroad were
20 built, the county was covered with heavy timber
21 and the flood spread slowly and more or less
22 evenly over the whole area." Do you see that?

23 A. Uh-huh.

24 Q. Do you have any reason to dispute that?

25 A. No, I do not.

0125

1 MR. HAGENS: That's all I have.
2 (Lunch recess taken at 12:20 p.m.)
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0126

AFTERNOON SESSION

1:40 p.m.

EXAMINATION (Continued)

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0127

BY MR. HAGENS:

- Q. I notice four boxes here and a bunch of charts, and God knows what else. We haven't had a chance to look at these yet, but I see some videotapes. Can you tell me generally what those are?
- A. Videos taken by others from aircraft, I believe, during different times of the 1990 flood. I think they are mostly 1990.
- Q. And then you have a tape here. Do you know what this is?
- A. Yes, that's a computer tape of the computer files of our modeling.
- Q. Then you have a bunch of pictures here. This says "debris" on it.
- A. Yes.
- Q. How did you come by these pictures?
- A. Most of those I took, and someone on my staff took.
- Q. The debris are all 1994 pictures. Why is that?
- A. Because when the debris built up on the Burlington Northern bridge this past December I went down and observed it.
- Q. Who told you it was building up down there so you could observe it?
- A. It was in the newspapers, on the radio.
- Q. And no lawyer contacted you for that purpose?
- A. It was probably brought to my attention through the same reason, they had heard it on the radio.
- Q. Then there are pictures of like people's homes and things. Do you know what those are?
- A. If you showed me the photo I could tell you. Most of them are probably just general photos around the valley.
- Q. Is this some kind of culvert? I'm just trying to understand generally what you have here.
- A. Yes, that's property, a nursery on the southeast side of the floodplain.
- Q. How did you come to get those pictures?

18 A. I took those photographs.
19 Q. Were you invited inside, or did you walk inside?
20 A. I had permission to be on the property.
21 Q. Who gave you that permission?
22 A. I probably obtained it through my client here.
23 Q. How do these pictures that I've just shown you
24 relate to your opinion?
25 A. Opinion on what?
0128
1 Q. On anything in this case.
2 A. Those were areas that were flooded in 1990, and
3 I went and looked at them at a time when they
4 weren't being flooded. It's the same as driving
5 in any part of the valley, to observe the
6 floodplain.
7 Q. Then we have a three-ring binder. These are
8 just some of the items. I'm trying to
9 understand what's all here. This shows
10 sections, elevations and station graphs. Can
11 you tell me what you are graphing here?
12 A. What those are are plotted cross-sections of the
13 river channel at various locations between I
14 believe the USGS gauge and Highway 9 near
15 Sedro-Woolley. You would have to count them
16 up. I don't recall the number. It may be like
17 12, seems to stick in my mind.
18 Q. So this is actually the channel that the river
19 runs in?
20 A. Correct.
21 Q. What do these charts tell you?
22 A. Those charts tell me how the river bed has
23 changed in the river. If you could read to me
24 the years there, between a survey that was
25 conducted in 1977 and one in 1993.
0129
1 Q. Have you found that it's changed in any
2 significant respect?
3 A. In my opinion not in a significant respect.
4 Q. One of the questions I had, you told me that
5 your hourly rate was 33.80 an hour.
6 A. I answered maybe a different question. The
7 hourly rate based on that rate is \$114.92.
8 Q. How did it go from 33.80 --
9 A. 33.80 is salary versus billing rate.
10 Q. Your billing rate then is what?
11 A. \$114.92.
12 Q. Has it always been that rate?
13 A. It has increased probably each year I've been on
14 the project to reflect changes in salary.
15 Q. Is the 114 the current rate then?
16 A. I believe that is the current rate as of today.
17 Q. Does that rate go up for trial testimony?
18 A. No, it does not.
19 Q. Do you have any idea how much your firm has

20 billed Skagit County in total to this point in
21 time, or as of its last billing?
22 A. No, I don't.
23 Q. Are those records here someplace?
24 A. Yes, they are.
25 Q. Could I take a look at them? Actually, let's go
0130
1 off the record for a second here.
2 (Discussion off the record.)
3 Q. I'm trying to get an understanding of what these
4 maps tell us and don't tell us. Okay, Tony?
5 A. I will tell you what I know.
6 Q. Tell me what these FEMA maps told you and how,
7 if at all, you included them in your opinion.
8 A. I will answer the second part first, no, the
9 FEMA parts would not be used in my opinion.
10 Q. Then what do the FEMA maps tell you or don't
11 tell you?
12 A. The FEMA maps tell me the area that the
13 organization FEMA has designated as areas that
14 would be inundated by floods during a 100-year
15 return period flood.
16 Q. How are these maps used by anybody; do you know?
17 A. They were primarily prepared for flood insurance
18 purposes, more for the purpose that I explained
19 earlier where it's used mostly in terms of if
20 you are getting mortgage for your property, the
21 mortgage agents or the lending agency would look
22 at this map to determine whether you were in a
23 flood hazard area.
24 Q. What is a "flood hazard area"?
25 A. An area that would be inundated by a flood with
0131
1 a 100-year return period.
2 Q. Do you know how this information -- you say the
3 banks will use it?
4 A. Lending institutions primarily use it, and I
5 believe agencies. Building permit divisions of
6 counties and cities would also look at it in
7 terms of issuing a building permit.
8 Q. Anybody else?
9 A. Oh, I'm sure there are others. I'm sure a lot
10 of them use them. As far as what they were
11 prepared for, those are the primary reasons that
12 they are prepared.
13 Q. You can come on back. Bring those other
14 materials down here, the flood crest materials.
15 A. Okay.
16 Q. Explain generally what you have by way of flood
17 crest data.
18 A. We had a survey firm go out and survey the crest
19 of the existing dikes where they would go along
20 this crest and take -- I don't know the various
21 intervals, but take an elevation of the top of

22 the crest and then move along on that and take
23 another elevation.

24 Q. Do you know how far apart those shootings were?
25 A. It varied. Surveyors in general, the less
0132
1 change between points the longer distance they
2 will use before taking another location, and the
3 more change between locations the closer they
4 will take them. Some of them are randomly going
5 down here. I see 100 feet, 60 feet, I see 250
6 feet.

7 Q. That's distance between sitings?
8 A. Distance between points; yes.
9 Q. Am I correct that those survey shots were taken
10 from the Burlington Northern bridge north?
11 A. They were taken from I-5 upstream.
12 Q. Using Exhibit 2, from I-5 upstream, ending
13 where?
14 A. I believe -- I will have to check. It appears
15 where it tied into East Lafayette Road, which I
16 believe is what we were calling earlier the
17 tie-in point to the road dike.
18 Q. You can put those aside, just so I know where
19 they are.
20 MR. MAJOR: Maybe they should go back where
21 they were. You can put a mark or sticky in
22 there or something.
23 Q. What's the other map you have there?
24 A. It shows the same, where the dike is and where
25 the survey started and ended.
0133
1 Q. So this is a map that shows --
2 A. -- what I just described to you.
3 Q. You can put that aside. We have covered those
4 points.
5 Go back to Exhibit No. 3, page 2, line 23,
6 where it shows C parentheses, it says "Whether
7 man-made structures built" -- it uses the
8 expression "Where the man-made structure is
9 built." Isn't it true that you don't know who
10 built those structures, you personally don't
11 know?
12 A. I know who built those structures in the sense
13 of, if we say the Burlington Northern Railroad,
14 I don't think it's too big of a stretch to say
15 Burlington Northern built them. If we are
16 talking about levees, I don't think it's too
17 much of a stretch to say farmers or dike
18 districts built them. If we are talking about
19 roads, it's not too much of a stretch to say the
20 state or federal highway built the roads.
21 Q. Or county, if they are county roads?
22 A. A county road by the county, a state road by the
23 state.

24 Q. But am I correct that you did no work to
25 determine who built what in Skagit County?
0134

1 Other than the bridge, which I think is a
2 conclusion of yours, you've done no
3 investigation to determine who built what?
4 A. That's correct.
5 Q. Then on page 3, you use the expression "debris
6 blockage."
7 A. Where are we reading?
8 Q. Line 2.
9 A. Yes.
10 Q. How did you come up with the dimensions or
11 description of the amount or quantity of debris
12 that was blocking the Burlington Northern bridge
13 on November 25 of 1990?
14 A. Again, we talked earlier about how we put a
15 model together, and one of the first things you
16 do on a model then is to demonstrate that your
17 model reproduces observed flood levels. In
18 order to reproduce the flood levels from 1990,
19 particularly upstream from the bridge and for
20 some distance, we had to simulate blockage of
21 that bridge opening in order to get a high
22 enough flood level to reproduce what was
23 observed in 1990. That's part of the answer.
24 The second part of the answer, I did not
25 see debris in 1990. I heard reference to it
0135

1 through depositions, but I have not actually
2 measured the debris nor am I aware of any
3 photographs that showed it.
4 Q. That was going to be my next question.
5 So you just made adjustments to your model
6 until you had the effect that corresponded to
7 the 1990 floods; is that correct?
8 A. That is correct.
9 Q. Then on item F it says "Whether the levee
10 failure at Fir Island -- strike that.
11 Before we move off the debris subject, is
12 it correct, as Dr. Mutter has testified -- you
13 read his deposition, did you not?
14 A. Yes, I did.
15 Q. -- that if debris is in that area of the bridge,
16 Burlington Northern bridge, and obstructing the
17 surface, that you may induce a scouring effect
18 around the piers of the bridge where it meets,
19 what do you call, the channel floor of the
20 river?
21 A. That's possible.
22 Q. You are knowledgeable of that phenomenon?
23 A. Yes, I am.
24 Q. So you would agree with him that there will be a
25 scouring effect?

0136

- 1 A. I agree that there could have been additional
2 scour through that bridge opening.
3 Q. Are you aware that one of the piers failed in
4 1996, November 30th?
5 A. Earlier in November, and I think it was 1995.
6 Q. 1995.
7 A. I saw a little bit of the news coverage on that.
8 Q. Are you aware of any of the work that was done
9 in the river that might increase scour around
10 the base of the piers prior to the November 1995
11 partial collapse?
12 A. I'm not aware of any.
13 Q. Are you aware of any debris in the stream that
14 might have caused --
15 A. I'm aware that there was very large debris
16 buildup on that bridge. Again, I don't remember
17 what the dates were here in November, but the
18 first November flood of '95. Again, I didn't
19 see it, just a little bit of news coverage that
20 showed a very large debris buildup. I saw the
21 one in '94 and it seemed to be a similar kind of
22 debris buildup. I don't know if it was bigger
23 or smaller.
24 Q. Is that the kind of debris buildup that would
25 cause a scour effect around one of the piers?

0137

- 1 A. I would expect that it could.
2 Q. Would you agree that the pier that failed indeed
3 had a large buildup of debris around it?
4 A. I didn't see it. To the extent that there was a
5 debris buildup, and if that's one of the piers
6 it was around. I don't know what piers the
7 debris buildup was around.
8 Q. Is that a potentially suspect cause, in your
9 opinion, that is the debris buildup around the
10 pier, ultimately resulting in scour around the
11 base of the pier, that might cause the pier to
12 fail?
13 A. I would agree with that.
14 Q. Going to line 11 on page 3, Tony, you say the
15 Nookachamps Creek area has always been a natural
16 storage area. Do you see that?
17 A. Yes, I see that.
18 Q. Is that true for the city of Burlington and
19 Mt. Vernon, if the levees weren't there, that
20 they too would be a natural storage area for
21 significant flood events?
22 A. I wouldn't categorize it as a storage event, but
23 as I've agreed with you previously, it would be
24 a flow path going through there.

25

0138

- 1 I think a subtle difference between the two
is the Nookachamps Creek has depressional areas

2 that water fills in. I don't know if Burlington
3 does. If they did, water would be stored as it
4 passes through. I agree with you, Burlington
5 would be a flow path.

6 Q. And to the extent that it had depression areas,
7 it would be some kind of a holding area for the
8 flood path; is that not right?

9 A. That's a big if.

10 Q. Do you have any reason to think that it does or
11 does not have depressions in it?

12 A. It appears not to be the depressional area that
13 the Nookachamps Creek area is.

14 Q. Have you looked?

15 A. No, I haven't.

16 Q. So you really don't know if it has any; is that
17 right?

18 A. That's why I say it's a big if.

19 Q. On line 21 it says, "Beginning in the 1880s
20 farmers began to build dikes." I wanted to ask
21 you -- strike that.

22 Do you know if Skagit County in fact owns
23 any section of the dikes in Skagit County?

24 A. I'm not aware if they do or do not.

25 Q. That's not something you've looked into it?

0139

1 A. No, I have not looked into ownership of the
2 dikes.

3 Q. When you said here on line 21 that "Beginning in
4 the 1880s farmers began to build dikes," you are
5 not implying that they owned the property or the
6 property on which the dikes were built?

7 A. I do not know who owns the dikes.

8 Q. Then on this question of water, surface water
9 runoff in the Nookachamps, particularly the East
10 Nookachamps area, I noticed in one of your
11 declarations there was a discussion of that and
12 suggestion -- correct me if I'm wrong here --
13 that indeed the surface water runoff in the
14 Clear Lake/East Nookachamps area would in all
15 likelihood precede the crest of flooding events
16 during major flood events on the Skagit River;
17 is that correct?

18 A. Actually I believe Dr. Mutter said that, and I
19 agree.

20 Q. Then on page 4, line 22 and 23 you have a
21 sentence that says "The water overtopping the
22 south or left bank of the Skagit River is
23 properly characterized as surface water and is
24 not riparian water or water within the channel
25 of the Skagit River."

0140

1 By "surface water" do you mean diffuse
2 uncollected rainwater like happens on a parking
3 lot?

4 A. No. By "surface water" I mean water that's
5 moving above ground, however it's moving in the
6 river, whatever its source.
7 Q. You don't think that the water then that floods
8 into the Nookachamps area is overbank Skagit
9 River water but something else; is that right?
10 A. No, I think I've said a number of times today,
11 as the river increases in flood height and
12 overflows the bank, that floodwater will flow
13 onto the floodplain and into the depressional
14 areas of the Nookachamps Creek.
15 Q. But you don't mean to characterize that water
16 that flows over and into the Nookachamps area as
17 surface water, do you?
18 A. I would call it surface water. I will define
19 the term. Surface water as opposed to
20 subsurface water that would be moving through
21 the ground. Surface water meaning above the
22 ground.
23 Q. But to be distinguished from diffuse rainwater
24 such as might fall in a parking lot; is that
25 correct?

0141

1 A. It's all surface water, whether it's rain that
2 falls on to that area, whether it's local
3 drainage, or overflow from the Skagit River. It
4 combines to form surface water.
5 Q. You don't see a difference then between diffuse
6 surface water like falling on a parking lot and
7 the kind that goes out of a riverbank during a
8 flood?
9 A. In what way?
10 Q. I'm asking if you see a difference in the two.
11 A. It's all surface water.
12 Q. Of course, water is all wet too. That doesn't
13 tell us much. I'm interested in the origin.
14 A. You asked me the difference. If you want to ask
15 the origin, then ask the origin.
16 Q. Is the origin of the water that goes into the
17 Nookachamps from the Skagit River?
18 A. The origin of the river in the Nookachamps Creek
19 is a combination of floodwaters that overflow
20 the banks from the Skagit River and flow into
21 the Nookachamps, which is in a floodplain area.
22 It includes runoff in the Nookachamps Creek
23 itself. It includes rainwater that falls
24 directly onto that area.
25 Q. As to the flooding that occurs in the

0142

1 Nookachamps, have you been able to again
2 distinguish what portion of the flooding that
3 occurs in the Nookachamps is a result of water
4 that's gone out of the riverbanks on the Skagit
5 River versus what is actually rainwater, and

6 what was the other source did you say?
7 A. Water that flowed in from Nookachamps Creek
8 itself. The flooding there is a combination of
9 them. Primarily it would be a Skagit River
10 floodwater sequence.

11 As you pointed out in your first question,
12 the first flooding would occur from Nookachamps
13 Creek itself as creek water, and subsequent to
14 that the overflow from the Skagit River which
15 would be a greater contribution of water.

16 Q. The Nookachamps Creek, you've heard testimony, I
17 think you mentioned in one of your declarations,
18 it actually reverses flow in significant flood
19 events; isn't that correct?

20 A. Not in the area that you pointed to.

21 Q. Show me with your finger the area.

22 A. It reverses flow in this area, the East
23 Nookachamps area.

24 Q. Here is a blue pen. Let's try to be versatile
25 here. Show me --

0143

1 A. It's difficult to see on this air photo, but
2 wherever the Nookachamps Creek is.

3 Q. That's Exhibit 2.

4 What is the normal flow?

5 A. Downgradient from higher elevations to lower
6 elevations.

7 Q. Which arrow would that be?

8 A. The one pointing downstream on East
9 Nookachamps. I will call this downstream. Is
10 "DS" all right?

11 Q. Sure. The other arrow, why don't you call that
12 upstream; okay?

13 A. Okay.

14 Q. This photo isn't particularly good. Could you
15 show me a little bit better where the
16 Nookachamps goes?

17 A. This is a poor quality reproduction. It appears
18 to be here. I will dash this a little bit. I
19 will put a question mark here. Plus or minus,
20 that looks to be the general area.

21 Q. And that's the area where it reverses flow?

22 A. Starting about there.

23 Q. How far east does it stay reversed; do you know?

24 A. No. This water that flows up will expand out
25 from where it goes when it gets to the top.

0144

1 Q. Expand out to the Clear Lake and Beaver Lake
2 area?

3 A. Yes.

4 Q. Turn to page 6. You describe the piers on the
5 Burlington Northern bridge as being
6 "hydraulically inefficient." Do you see that?

7 A. Where are you reading?

8 Q. Page 6, line 9. You describe those piers as
9 being hydraulically inefficient. Is that a
10 fancy word for they obstruct the flow?
11 A. Yes, they obstruct the flow.
12 Q. Then on line 20, the same page, you note that
13 the 1955 dikes owned by District 12 were
14 realigned.
15 A. Correct.
16 Q. Am I correct that by "realigned" you mean they
17 were moved closer to the river; is that correct?
18 A. No, they really create new levees where none
19 previously existed.
20 Q. Were those closer --
21 A. It's not closer because they didn't exist there
22 previously.
23 Q. Show me where you understand that work to have
24 been done.
25 A. It is in probably one of my other declarations,

0145

1 but as best as I can recall the previous levee
2 continued up this way. I don't know from memory
3 where it ended. This was pre 1955. This was
4 post 1955.

5 Q. Why don't you put "pre 1955" on the line you
6 drew so we can get a document showing this. Put
7 "post 1955." What did you put on there?

8 A. "Approximate."

9 Q. Yes, we know these aren't exact.

10 Do you have any idea what the cost of that
11 was to either Skagit County or the diking
12 districts?

13 A. I have no idea what the cost of that was.

14 Q. Did that entail then moving the dike, to the
15 extent it was moved and not a new dike created,
16 closer to the river or further away from the
17 river, the 1955 realignment?

18 MR. MAJOR: Didn't he previously testify
19 that the way he sees it it wasn't moved at all?
20 It was created then.

21 Q. The old dike was left in its current form?

22 A. My understanding is that the materials from the
23 old dike were used to build the new dike.

24 Q. You don't see that then as using those materials
25 and moving them closer to the river to erect a

0146

1 new dike?

2 A. No, I see it as there was no dike and now there
3 is one.

4 Q. I see what you are saying. Do you know if prior
5 to the change of the dike, if the river ever
6 used to flood up to the old dike, the pre 1955
7 dike? Do you know one way or the other whether
8 or not that happened?

9 A. I do not know. I did not research that.

10 Q. Did anybody tell you whether it did or not?
11 A. I haven't asked. I haven't inquired about what
12 happened there pre 1955.
13 Q. As a hydrological engineer would you expect that
14 the levees during significant flood events, that
15 water would come out of the Skagit River and
16 touch up against those pre 1955 levees?
17 A. For an extreme enough flood I would expect that
18 to happen.
19 Q. Do you know what prompted the moving of that
20 dike?
21 A. I do not know any of the records or the thinking
22 that went into the moving of that dike.
23 Q. You have not studied it?
24 A. I have not investigated it.
25 Q. Do you know that there was a significant event

0147

1 in 1951, though; is that correct?
2 A. If that was the year -- I believe that was 1951.
3 Q. Do you recall in '51 whether any water entered
4 the City of Burlington?
5 A. No, I did not research the 1951 flood at all.
6 Q. So you don't know whether there was any break or
7 water in Burlington in 1951?
8 A. I do not know.
9 Q. Did you read Mr. Mapes' deposition?
10 A. I don't recall if I have or not.
11 Q. Do you have those design drawings for the 1955
12 realignment, as you call it, amongst the
13 materials you've produced today?
14 A. Yes, they are.
15 Q. Turn to page 7, line 19 and 20. You speak about
16 a range of 1.24 feet lower than in 1955 to 1.42
17 feet higher than 1955. That's the range that you
18 describe of the crest elevations that you
19 earlier testified about; isn't that right?
20 A. Correct.
21 Q. My question is: These are averages, are they
22 not?
23 A. No, the greatest that any one of those 37
24 surveyed points varied from 1955, the greatest
25 is one point was 1.24 lower and the other

0148

1 extreme was 1.42 feet higher. The average of
2 the 37 points was .47 feet higher. Each of
3 those --
4 Q. I see. That's what I want to understand. I
5 wasn't understanding whether this 1.42 feet
6 higher was an average or was the maximum
7 differential.
8 A. With a maximum survey of 37 different points.
9 Q. Turn to page 8. I wonder if you can put in
10 maybe a little bit more understandable terms the
11 two sentences that start on line 5 of page 8

12 talking about, "the railroad tracks and grade
13 has been incorporated into and joined to the
14 flood control structures maintained and owned by
15 Diking District 12."

16 First of all, what area are you talking
17 about?

18 A. This area which is an extension to the north of
19 the Burlington Northern right-of-way, the
20 tracks.

21 Q. Put one of those arrows or something around it
22 that identifies the area where there is a
23 joinder. How would you characterize it?

24 A. The Burlington Northern dike/Dike District
25 dike.

0149

1 Q. What happened there? Can you put in layman's
2 language what happened? Are you saying no dike
3 district owned this, the Burlington Northern
4 built this levee here?

5 A. I will translate the first part. The Dike
6 District 12 levee comes down and ties into the
7 railroad embankment at that location, so then
8 the railroad embankment serves as the levee over
9 this last stretch.

10 Q. Do you know who owns the railroad grade there at
11 that point that you circled?

12 A. I do not know who owns the railroad grade. I am
13 aware that they have an agreement with Dike
14 District 12 to maintain that embankment as part
15 of their dike.

16 Q. You mean a written agreement of some kind?

17 A. Yes.

18 Q. Have you seen it?

19 A. Yes, I have. I doubt if that one is amongst my
20 documents.

21 MR. MAJOR: Do you want to know where it
22 is?

23 MR. HAGENS: Yes.

24 MR. MAJOR: Burlington Northern's motion to
25 be dismissed, it's in response to that.

0150

1 THE WITNESS: I will say it may be within
2 my files.

3 Q. Do you know if the agreement allows Dike
4 District 12 or Skagit County to do any
5 strengthening work in that area you've called
6 Burlington Northern --

7 MR. MAJOR: I will object to the form of
8 the question. You are intending to make these
9 things compound by making the Dike District and
10 Skagit County synonymous, and it needs to be
11 treated separately. I object to the compound
12 nature of the question.

13 THE WITNESS: I need the question repeated,

14 please.
15 Q. Do you know if the agreement permits any local
16 governmental entity to strengthen the so-called
17 Burlington Northern levee section that you've
18 drawn there?
19 A. My recollection is in that agreement that Dike
20 District 12 will do maintenance on that, but
21 beyond that I don't recall -- I don't even know
22 if it was spelled out what that means, but it
23 was with the Dike District, was my
24 understanding.
25 Q. Have you done any study to determine to what
0151 extent Dike District 12 has any permanent
1 employees or engineers to assist them in design?
2
3 A. I do not know.
4 Q. So you don't know if they have any employees or
5 not?
6 A. I do not know.
7 Q. Do you know what their operating budget is?
8 A. I have no idea.
9 Q. Do you know where they get their money?
10 A. I have no idea.
11 Q. Do you know if they even have their own
12 checkbook?
13 A. I do not know.
14 Q. Do you know if they even have their own
15 stationery?
16 A. I do not know.
17 Q. This section you've drawn about 1600 feet long,
18 is that what you estimate it to be?
19 A. Yes.
20 Q. I'm talking about the BNRR levee.
21 A. Yes.
22 MR. MAJOR: Is that to scale?
23 THE WITNESS: It appears to be.
24 Q. Then you say on line 20, page 8, "The railroad
25 and levees prevent waters from flowing to the
0152 northwest towards Padilla Bay."
1 What levees and railroad section are you
2 talking about preventing waters from flowing to
3 the northwest towards Padilla Bay? Do you see
4 that?
5
6 A. Yes, I see that. I guess that applies to all of
7 the railroad right-of-way that has elevated
8 track and fill and all of the levees would
9 prevent water from flowing to the northwest
10 towards Padilla Bay.
11 Q. You mean the levees and the railroad track would
12 prevent water from draining towards Padilla Bay;
13 is that right?
14 A. All of the railroad track and roads and dikes
15 would prevent water from flowing towards Padilla

16 Bay.
17 Q. Have you come across in your analysis of the
18 flooding of November of 1990 documents that
19 reflect certain activities along Highway 20?
20 A. Yes, I've asked my own questions about
21 Highway 20.
22 Q. What's your understanding based upon your
23 investigation of what happened on Highway 20
24 during the flood events of 1990?
25 A. During the November 25th flood of 1990 my
0153
1 understanding is that sometime in the late
2 afternoon of the 24th, early evening, an
3 emergency action fill was placed on State Route
4 20. I do not know who placed the fill or
5 exactly who authorized the fill. I do know that
6 it was placed there.
7 As the flood rose, continued to rise for
8 another probably 13 hours after that fill was
9 placed, the flood levels rose both higher than
10 the fill that was placed, and because the fill
11 was placed over a limited length, it went around
12 the fill, so it went over and around the fill
13 that was considered to be an emergency action at
14 that location.
15 Q. What would you call that work that was done on
16 Highway 20 during that period of time? Would
17 you call it a temporary dike? Reinforcing?
18 What would you characterize it as?
19 A. All of the above sounds good.
20 Q. There was only two up above. I never had a
21 question in college that only had two
22 alternatives in it.
23 A. It was placed on the highway; yes.
24 Q. Show me where your understanding is that that
25 occurred.
0154
1 A. In a very rough way, the lowest point --
2 actually this is pretty good. The lowest point
3 is here on Route 20. Then it went out -- in my
4 investigations I never did find anyone that knew
5 exactly how far it went out.
6 Q. Draw an arrow to someplace off the map so people
7 can know exactly what that is. Call it
8 "temporary dike" or whatever you want to call
9 it.
10 A. "SR-20 emergency action." I will say "length
11 and height unknown."
12 Q. Do you have an opinion as to whether or not that
13 caused any enhancement of the flooding into the
14 Nookachamps area as I've earlier described?
15 A. To use one of your terms, as a generalization,
16 as a concept, the impact of that is one would be
17 a little greater, closer to the area than it

18 would be further away. Conceptually its role
19 would be to cause some increase similar to what
20 I said. Whether it's measurable or not, I don't
21 know. The concept I agree with. As a
22 generalization and a concept, yes.

23 Q. What was the source of your knowledge about,
24 what do you call it, "emergency action"
25 something?

0155

1 A. "SR-20 emergency action, length and height
2 unknown."

3 Q. What was the source of your information for what
4 information you do have about that?

5 A. It was given to me verbally by -- I believe it
6 was Cliff Butler at the time was a county
7 employee who relayed to me -- I even think that
8 he wasn't there himself, but he relayed to me
9 what occurred.

10 Q. He was a county employee, Keith Butler?

11 A. Cliff Butler. As I said, my recollection is
12 that he was not involved in this, he was
13 relating to me what occurred.

14 Q. This isn't something that you've undertaken to
15 find out who put it there?

16 A. No.

17 Q. You haven't tried to identify the effect of it
18 either, have you?

19 A. I have modeled that scenario.

20 Q. What does your model tell you about the effect?

21 A. The model tells me, as best I can recollect,
22 again the effect being a little bit greater,
23 close to the overflow and less further away, my
24 recollection is that it was in the order of
25 4/100s of a foot close to SR-20 and in the order

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1 of 2/100s of a foot further away.

2 Q. When you say closer at 4/100s of a foot, and
3 further away 2/100s of a foot, what do you mean
4 by close in, within like how far?

5 A. I can't recall all of the modeling results, but
6 I would say a local area, if we are looking at
7 this scale, within 2,000 feet, half a mile,
8 within a half a mile.

9 Q. It would have the effect of 4/100s?

10 A. Uh-huh.

11 Q. And beyond that it would have an effect of
12 2/100s?

13 A. It decreased, my recollection is, by the time we
14 got to the other side of the valley.

15 Q. Where would the other side of the valley be?

16 A. What I will call the Clear Lake area, generally
17 referred to as the Clear Lake area. That would
18 be the effect if the berm had completely closed
19 off.

20 Q. That's while it wasn't overtopped or the water
21 wasn't going around it; is that correct?
22 A. Almost correct. It's as if it really was made
23 high enough and it did prevent all the overflow.
24 Q. To be able to make that calculation of 4/100s
25 close in and 2/100s further out, you had to

0157

1 assume some dimensions of this temporary SR-20
2 emergency action activity; right?

3 A. No. You don't have to assume anything. We
4 surveyed that area. SR-20 in that area is lower
5 than the railroad in that area, so what controls
6 the water level is the railroad. Having that
7 survey information in a modeling sense as you
8 put those elevations in, and then as the water
9 rises any of those elevations that are lower
10 than that flood level, water is going over, and
11 any railroad track elevations that are higher,
12 water is not going over. There are no
13 assumptions. It's entering the actual
14 elevations of the railroad track.

15 Q. So your model then assumes that the railroad
16 right-of-way was sufficiently impervious to
17 essentially keep the water from proceeding
18 through to the highway which is north of the
19 railroad track; isn't that right?

20 A. That's correct, that the water went over the
21 railroad tracks, is the way that was simulated,
22 as an overflow over the railroad tracks, which
23 are higher than SR-20.

24 Q. In point of fact, if I'm not mistaken, didn't
25 the railroad tracks allow water to at least seep

0158

1 underneath them at that point?

2 A. If there is one, I did not investigate that. I
3 don't know what -- if it was, I would imagine it
4 was a very, very, very small part of the water
5 going through there.

6 Q. If the railroad right-of-way is higher than
7 Highway 20 --

8 A. Correct.

9 Q. -- is that your understanding?

10 A. That's not my understanding, that's fact.

11 Q. If that's a fact, then what would be the need to
12 even put any temporary diking on Highway 20; do
13 you know?

14 A. Convenience of access is probably the reason.

15 Q. Convenient of access of what?

16 A. To being able to dump material on Highway 20 is
17 easier than dumping material on the railroad.

18 Q. But if the railroad was impervious --

19 A. I said it was overtopped. The railroad was
20 overtopped.

21 Q. Oh, I see. It was higher but it was overtopped?

22 A. Right. The railroad was higher than the highway
23 and the flood is higher than both.
24 Q. Is there some kind of a culvert between the
25 railroad grade and the highway, to your
0159
1 knowledge?
2 A. I'm told there used to be a culvert. I'm told
3 that it was plugged up, I don't know when. I
4 did go out there and search for it and couldn't
5 find it, plugged up or otherwise.
6 Q. It filled up, in other words?
7 A. Yes. I did hear there was one, anecdotal. I
8 did here that at some point it was plugged up,
9 and third, I went out to find it and couldn't
10 find it one way or the other.
11 Q. Did you learn anything else about Gages Slough
12 being plugged up as part of your investigation?
13 A. No, I didn't do anything further than look at
14 that overflow location at SR-20.
15 Q. Do you know if they sandbagged on Highway 20
16 during the November 1995 floods that occurred?
17 A. I have no knowledge of what went on last week
18 during the flooding.
19 Q. To determine the effect of this SR-20 emergency
20 action how high, if at all, did you raise the
21 railroad right-of-way as part of your model?
22 A. In order to simulate blockage?
23 Q. Right.
24 A. My recollection is that the flood elevations
25 there during the flood were around 41.6, plus or
0160
1 minus, so we would have raised it higher than
2 41.6.
3 Q. Do you know how much higher?
4 A. It doesn't matter. Once it's higher than 41.6
5 it doesn't get overtopped. It doesn't matter if
6 it's 41.8 or whatever.
7 Q. I see what you're saying.
8 On page 11 of your opinion, Exhibit No. 3,
9 line 5, paragraph small G in parentheses, "The
10 levee failure of Fir Island did not lower flood
11 levels in the Nookachamps Creek area." Do you
12 see that?
13 A. Yes, I do.
14 Q. First of all, what is your understanding of when
15 the break on the Fir Island levees occurred
16 during November of 1990?
17 A. What was that?
18 Q. What is your understanding of when the breaks
19 occurred?
20 A. Two in the afternoon on the 24th of November, is
21 what I recall.
22 Q. What's the source of that information?
23 A. It was a Corps of Engineers report. I do not

24 recall which one.
25 Q. Do you understand how large the break was?
0161
1 A. I know very little about the break other than
2 news coverage.
3 Q. Was it more than a foot in width?
4 A. I would expect it would be more than a foot.
5 Q. Was a quarter mile of it wiped out; do you know?
6 A. I don't know. I've never seen a photo of it and
7 I've never researched it.
8 Q. If you don't know what the size of the failure
9 was, how can you conclude that it had no
10 consequence or effect upon flood levels in the
11 Nookachamps area?
12 A. I looked at the USGS river level data at the
13 USGS gauge near Riverside Drive, and by looking
14 at that record, in my opinion, if there would
15 have been an effect on the river levels at that
16 site, it would have showed up in those data
17 records, in those water level records. When I
18 looked at that record -- when I say "showed up,"
19 the very least I would expect is a little break
20 in the record.
21 Q. Break in what sense, you mean gone down?
22 A. Gone down, gone up, fluctuated. I would expect
23 some fluctuation that had an effect, an event
24 occurred that had an effect at that location.
25 Q. How long after the break at Fir Island would you
0162
1 expect that fluctuation to be noticeable at the
2 USGS gauge that you used?
3 A. I don't know enough about the river dynamics
4 downstream as I have not investigated anything
5 downstream, but I examined the record for the
6 entire flood hydrograph and did not notice any
7 fluctuation in the water level that I might
8 attribute to a change to something happening
9 downstream.
10 Q. What gauges did you look at?
11 A. I looked at the USGS gauge. As I said, if there
12 was an effect on the flood level here, it would
13 show up on that reporting water levels. In my
14 opinion, the way it would show up is some
15 fluctuation of the water level at that site. I
16 have not observed any.
17 Q. How long after the break would you expect to see
18 such a fluctuation, or do you have an opinion on
19 that?
20 A. I said I do not know the dynamics of the lower
21 river, if there was an effect. I have not
22 uncovered any effect.
23 Q. But you don't know the dynamics sufficiently
24 well to know what to look for; isn't that true?
25 A. No, I do not need to know the dynamics. I need

0163

1 to observe the recorded water level at that
2 location, which I have done.

3 Q. Your review of those recorded water levels leads
4 you to believe that there is no discernible
5 effect or relationship between the failure of
6 the dikes at Fir Island in 1990 and the water
7 levels at the U.S. Geological Survey gauge in
8 Mt. Vernon; is that correct?

9 A. That's correct, the USGS gauge at Riverside
10 Drive.

11 Q. One question I did have is, you say that this
12 break occurred sometime in the afternoon of the
13 24th.

14 A. Yes.

15 Q. 2:00 p.m., I think you said.

16 A. That's what I remember reading.

17 Q. Do you know when the flood peaked?

18 A. November 25th, I believe, about 11:00 in the
19 morning.

20 Q. Do you know the sequence of the failure of the
21 Fir Island break? Do you know to what extent it
22 broke on the 24th, and may have further
23 deteriorated in the hours after that?

24 A. No, I have not investigated the Fir Island break
25 in any way.

0164

1 Q. When you reviewed the gauge at Riverside, did
2 you review it with an eye to seeing if there was
3 any fluctuation on November 25th, 1990?

4 A. Yes.

5 Q. And you found none; is that correct?

6 A. I didn't observe any.

7 Q. Would you agree that to the extent that the
8 Nookachamps area during significant flood events
9 contains overbank floodwaters, it takes off
10 pressure on the Skagit County levee system from
11 Burlington on down through Mt. Vernon?

12 MR. MAJOR: Object to the form of the
13 question, improper hypothetical.

14 THE WITNESS: Nor do I understand the
15 question.

16 Q. During significant flood events you've
17 identified that waters overbank the Skagit River
18 and flow into the Nookachamps area; correct?

19 A. Yes.

20 Q. My question is: Does that reduce the pressure
21 on the levee system opposite Burlington and in
22 or about Mt. Vernon? To the extent that water
23 is stored in here, hundreds of thousands of
24 acres of feet are stored here and they are not
25 forced through the system in Burlington and

0165

1 Mt. Vernon. Do you understand my question?

2 A. I don't think I understand the question, but I
3 will try and answer what I think the question
4 is.
5 Q. Tell me what you think the question is. I may
6 not have worded it properly.
7 MR. MAJOR: Don't form your own question.
8 MR. HAGENS: I'm trying to find out what
9 you think the question is so I know if we are on
10 the same page.
11 Q. I want to know what you think the question is.
12 MR. MAJOR: If you have an idea.
13 A. The question I'm going to answer is what's the
14 pressure on Dike District 12 levees, and the
15 answer to that question is the pressure on that
16 is related to the height of the water on that
17 levee. It's what I would call a hydrostatic
18 pressure.
19 Q. And to the extent that the height on those
20 levees is reduced because floodwaters are in the
21 Nookachamps and not up against the dikes, would
22 you say that that reduces the pressure and
23 likelihood of failure of dikes located in the
24 vicinity of Dike District 12?
25 MR. MAJOR: Object to the form of the

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1 question.
2 THE WITNESS: I don't understand the
3 question.
4 Q. If the water isn't as high as it might be, if
5 the water wasn't over here in the Nookachamps
6 area, would that reduce the likelihood of
7 failure of Dike District 12 dikes and relieve
8 pressure on Dike District 12 dikes so that they
9 are more capable of withstanding floods?
10 A. I have to ask a question to answer the question.
11 Are you saying that floodwaters in the
12 floodplain here affect flood levels on the Dike
13 District 12? Is that what you are saying?
14 Q. Yes, exactly.
15 A. I guess you would have to convince me that
16 that's the case.
17 Q. What do you mean? You mean if water is --
18 instead of in the Nookachamps area it's forced
19 up against those dikes, you don't have an
20 opinion as to whether those dikes would be under
21 a greater hydrostatic pressure than if the water
22 was in the Nookachamps?
23 A. The flood levels upstream do not control the
24 flood levels downstream, is what I'm saying.
25 Q. The flood levels upstream don't control the

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1 levels downstream? So then the Baker Dam and
2 Ross Dam, those don't have any impact on flood
3 levels downstream? Is that what you are telling

4

me?

5

A. No, I believe we are talking apples and oranges. If you put a stored reservoir that prevented water from coming down a river such as the upstream dams, that has flood levels because you have retained water.

6

7

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9

10

Q. You are saying that the flooding of the Nookachamps doesn't at least hold significant quantities, at least 100,000 acres of water, during significant flood events in Skagit County?

11

12

13

14

15

A. I don't know if it's 100,000 acres, I've never calculated it, but if that's what it is, water goes into that area as the Skagit River flood levels rise, and the Skagit River flood levels rise as well as the flood levels here rise based on the whole hydrodynamics of this reach of the river.

16

17

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19

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22

Q. My only question is to the extent that the water up against -- the hydrostatic pressure up against these dikes is reduced or diminished because floodwaters are going in the

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24

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1

Nookachamps, wouldn't you agree with me that that was in effect then relieving to some extent the pressure on the dikes located in Dike District 12?

2

3

4

5

MR. MAJOR: Object to the form of the question.

6

7

THE WITNESS: I'm having trouble with the question. For some reason it's not computing in my mind here what you are asking me. The same elevation on Dike District 12, however the flood level got to that elevation, will have the same force and pressure on that levee.

8

9

10

11

12

13

Q. I understand that. What you are telling me is that a gallon of water is going to weigh X amount no matter when it gets there. Isn't that what you are saying? It's going to have a certain amount of hydrostatic pressure on the dike?

14

15

16

17

18

19

A. Right. That's what I'm saying.

20

21

Q. What I'm getting at is this: You've read the Corps of Engineer documents that talk about the Nookachamps area providing a benefit in terms of storage water during significant flood events; isn't that accurate?

22

23

24

25

A. I agree that floodplain storage is very

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1

important in floodplain management.

2

Q. Do you have an opinion or understanding of what the current protection level is of the levees in Skagit County?

3

4

5

A. Downstream from our project site, I do not

6 know. Upstream from the project site, one, I do
7 not know. Two, given that the Corps has
8 indicated the 1990 flood was in the order of a
9 25-year return period, I would say that the
10 return period protection upstream is slightly
11 greater than 25 years.

12 Q. How much greater is "slightly greater"?

13 A. I do not know how high "slightly greater" is.

14 Q. But you believe at a minimum it's 25 and
15 something higher than that; is that correct?

16 A. Yes.

17 Q. By "25" you mean that's the flood event's return
18 frequency, protecting against a flood recurring
19 slightly more than 25 years?

20 A. On an average once every 25 years.

21 Q. And that it has a 4 percent chance of occurring;
22 right?

23 A. In any one year.

24 Q. Did you make any observations of events
25 occurring in November 1995 that influenced or

0170 affected your opinions with respect to this
1 case?

2 A. No.

3 Q. You say you don't know what the flood event's
4 protection level is south of the area you
5 examined which is north of the Burlington
6 bridge?

7 A. Say that again.

8 Q. If I understand you, you are telling me that you
9 don't have opinion as to what the flood event's
10 protection level is south or west of the
11 Burlington Northern bridge?

12 A. Downstream of the Burlington Northern bridge.

13 Q. Why is that?

14 A. Because I focused upstream from the bridge.

15 Q. You've done no work to find out what the
16 protection level is downstream of the Burlington
17 Northern bridge?

18 A. No, I have not.

19 Q. Would the debris problem you've identified at
20 the Burlington Northern bridge as you've
21 simulated in your model have an appreciable
22 effect on the Nookachamps area if the levees
23 were not in existence in November of 1990?

24 A. I haven't analyzed it. I don't know.

0171 Q. You may not know, but do you have a reasonable
1 expectation if the levees weren't there, the
2 debris around the Burlington Northern bridge
3 would have been essentially irrelevant?

4 A. No, I have not analyzed it. As we said many
5 times today, we have got railroad grades, we
6 have got highway grades, we have flood
7

8 protection from the upstream reservoirs. How
9 all that would enter into this complex question
10 you are trying to ask me, I don't know. How
11 things would occur without the dams, without
12 these railroads, I don't know.

13 Q. You haven't undertaken to attempt to isolate or
14 determine what the impact of the levees were in
15 the Nookachamps area during 1990. You also
16 haven't looked at any historical data as to the
17 improvement of the Skagit levee system prior to
18 1955.

19 A. That's correct.

20 Q. You haven't undertaken to look at what the
21 impact of the debris at the Burlington Northern
22 bridge would be without the levee system, that's
23 also correct?

24 A. I sure haven't done that one.

25 Q. And you've made no effort to determine where the
0172 floodwaters would go or what path they would
1 follow absent the Skagit County levee system,
2 that's also true; isn't it?
3

4 A. Prior to the Dike District levee system?
5

6 Q. Right.
7

8 A. The Dike District prior to more than 40 years
9 ago, prior to 1955, I have done no analysis of
10 that.
11

12 Q. What I'm trying to get a handle on, Mr. Melone,
13 is who determined the scope of the work you were
14 to do in this case, you or the attorneys who are
15 not hydrological engineers.
16

17 A. The attorneys instructed me -- asked me
18 questions. I undertook the work to answer those
19 questions.
20

21 Q. So they formed the focus or the scope of the
22 work you were to do in this case; is that
23 correct?
24

25 A. That is correct.
0173

1 Q. If you had to determine the scope of your work
2 in this case, is it a fair statement to say you
3 might have looked at answering some other
4 questions besides the ones the lawyers asked
5 you?
6

7 A. I don't believe so.
8

9 Q. Just a couple more questions.
10 Have you reviewed Dr. Mutter's deposition
11 testimony?
12

13 A. Yes, I have.
14

15 Q. Have you formed any opinions relating to the
16 computer models following review of Dr. Mutter's
17 deposition?
18

19 A. No, I have not.
20

21 Q. Have you looked at his model at all?
22

10 A. I perused his output from the model. I have not
11 looked at it in any detail whatsoever.
12 Q. What conclusions, if any, have you formed after
13 perusing his model output?
14 A. The main one, or the one that jumped out at me
15 initially, was he did not have the opportunity
16 to have good observed flood levels from 1990,
17 which, if he had good, what I will say is
18 observed levels, the same as calibration data,
19 he probably would have calibrated his model
20 differently.
21 Q. Do you believe that his model provides
22 inaccurate output in any respect?
23 A. I would say as a generalization any model that
24 is not calibrated properly, which is the first
25 step, would lead to some question as to any

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1 results that came out of it after that.
2 Q. You say he didn't calibrate it properly or get
3 sufficient data points to calibrate it. How did
4 he calibrate his model any differently than you
5 did?
6 A. I did not say he did not calibrate it properly,
7 I said it does not appear that he had access to
8 enough calibration points, which comes primarily
9 to some of the conclusions we came to on the
10 debris storage at the Burlington Northern
11 bridge, he did not have that, any observed 1990
12 flood levels within a couple miles of the
13 bridge, is my recollection, and that's probably
14 why he did not focus in on the debris question
15 or the debris -- the effect of the debris on
16 flood levels.
17 I'm not saying he did anything improperly
18 in the model, I'm saying he probably just didn't
19 have the opportunity to have enough observed
20 flood levels to calibrate his model.
21 Q. What is an observed flood level?
22 A. An observed flood level is someone marked how
23 high the flood came. With that mark you
24 subsequently go and survey in that allocation.
25 Q. How many survey points did you do in that

0175

1 regard?
2 A. We had three survey points upstream. I don't
3 know the distance. Within, I will say -- I
4 could certainly quantify that better, but I
5 would say within a thousand feet of the bridge
6 three observations, we had one probably within a
7 half a mile to a mile, a little less than a
8 mile.
9 Q. Three observations within what distance?
10 A. Three observations, and again we can go and look
11 at the record and get exact on this, but I will

12 say within a thousand feet of the bridge.
13 Another one, oh, I will say less than a mile,
14 another observation that Dr. Mutter did not have
15 an opportunity to include into his model.

16 Q. Where did you obtain those observation points?

17 A. We went to the field and talked to residents
18 that lived there and asked them to show us how
19 high the water came, and we marked it and
20 subsequently had it surveyed.

21 Q. Do you have the names of those people or
22 locations from which those observations points
23 were taken?

24 A. Yes, they are in the file.

25 Q. Do those people live behind the levee system or
0176

1 in front of the levee system?

2 A. The four that we are talking about here on the
3 left side of the river, looking downstream the
4 left side, which is the opposite side of the
5 river from Dike District 12.

6 Q. When did you get those four observation points?

7 A. It could be a year ago. In the file it has the
8 exact date.

9 Q. Any other criticisms, observations with respect
10 to Dr. Mutter's work that you have?

11 A. In the spirit of criticism I have not looked at
12 it in any detail. I kind of looked at the
13 calibration issue, and probably stopped there.
14 I did look at his procedures for looking at a no
15 levee scenario but I did not critique them, look
16 at his files, or draw any conclusion as to
17 whether -- as you stated earlier, he said at
18 1.4 feet and at another place 2 feet, which I
19 would certainly agree that it would be highly
20 variable, what the effect of all these
21 structures are.

22 Q. He was talking about the levee, though?

23 A. Yes. That's an interesting one, Carl, to take a
24 levee out and say that the flood level would be
25 -- by itself would change a flood situation.

0177

1 I think as you showed me an exhibit before
2 lunch, a forested watershed, which I guess if we
3 go back far enough in time, I suspect that it
4 was forested with no levees, slows water down,
5 it moves a little slower. As it slows water
6 down you get higher flood levels. How you take
7 all that apart and really take a dike out and
8 say -- what you are comparing it to, it doesn't
9 make any sense to take a dike out and say that
10 this is what happened.

11 Q. It might make sense if you are trying to
12 determine what the contributing effect of a
13 levee would be, wouldn't you think, Dr. Melone?

14 A. We would have to define the base case. If the
15 base case was forested, I don't know if there
16 would be a change. If the base case was before
17 the reservoirs, the flood control was put in,
18 and you took a flood event and said what would
19 it be compared to a base case, I think that
20 would make sense to me.

21 Q. Any other observations or criticisms that you
22 haven't told me about?

23 A. As I said, I have not reviewed his files. I
24 have not reviewed it in any level of detail
25 other than observing what information he had to
0178

1 work with, and I've commented on that, and just
2 looked at the procedures that he used.

3 Q. Did you find any deficiency with the procedures
4 he used?

5 A. I don't know how well -- I got the sense that he
6 didn't quite complete his work. He had some
7 initial findings and preliminary findings.

8 Q. Other than that, any other observations about
9 his work?

10 A. Those are just casual observations. If I
11 reviewed it in more detail, I might have more to
12 say on it.

13 Q. Do you know if you intend to?

14 A. I don't know if I intend to.

15 Q. Have you been asked to?

16 A. I haven't been asked to. I haven't been asked
17 not to.

18 Q. I didn't ask you if you had been asked not to, I
19 asked if you had been asked to do it.

20 A. No.

21 Q. Were you asked to assist the County in
22 responding to plaintiffs' first set of requests
23 for admissions to defendant Skagit County in the
24 Snohomish County action?

25 A. I don't know what you mean. Was I asked by the
0179

1 County?

2 Q. Yes, or Keller Rohrback, to assist in preparing
3 responses to the plaintiffs' requests for
4 admissions in this case.

5 A. What does "request for admissions" mean?

6 Q. I will read you one.

7 Request for Admission No. 1, Plaintiff's
8 First Request for Admissions to Defendant Skagit
9 County and Responses Thereto. The Request for
10 Admission 1 reads "Admit that Skagit County
11 levee system during major flood events such as
12 occurred November 1998 diverts significant
13 quantities of Skagit water onto some or all of
14 plaintiffs' property."

15 I believe that's a typo in the date. It

16 should be 1990.
17 A. Okay. What's the question?
18 Q. If you were asked for any input in preparing a
19 response to that.
20 A. I did not formalize a response. I have seen
21 this. I believe that we sat and we had a
22 discussion about it. I don't know if that was
23 one of the points that I made contribution on or
24 not. We had a discussion. I did not formulate
25 any of those responses myself.

0180

1 Q. Do you recall what you said in response, other
2 than the fact of the obvious typo on the date?
3 A. Do you want me to read it?
4 Q. Sure. It's Request for Admission No. 1.
5 A. I do not recall contributing to anything that's
6 contained in the response. I may have been part
7 of that discussion, but I don't think any of
8 this is my contribution.
9 (Marked Deposition Exhibit 5.)
10 Q. Do you have that in front of you? It's
11 Plaintiffs' Rule 26(B)(4) Statement Regarding
12 Expected Opinions of Plaintiffs' Expert
13 Witnesses.
14 A. Yes, I see this, Exhibit 5.
15 Q. Turn to page 2 of that exhibit, line 21. My
16 question is not whether you have any reason --
17 strike that.
18 You have sometimes phrased your answer "I
19 have no reason to agree or not to agree with
20 certain propositions." My question here is
21 simply whether you have any basis or any opinion
22 that's contrary to some of the statements
23 contained in a description of Dr. Mutter's
24 opinions.

25

0181

1 system diverts artificially stored quantities of
2 Skagit River water in the Nookachamps area
3 during significant flood events."
4 Having not studied the contribution of the
5 levee system, the flooding in the Nookachamps
6 area, am I correct that you have no opinion or
7 information that would be contrary to the
8 statement?
9 A. I don't believe a levee system diverts water.
10 Q. My question is: Do you have any information or
11 opinion that is contrary --
12 A. Yes. I do not believe a levee system diverts
13 water.
14 Q. Do you believe it contains water?
15 A. I believe a levee system contains water.
16 Q. Even where there are levees on both sides of the
17 river?

18 A. You asked me if I agree, what my comments were
19 on this, and one is I do not believe this levee
20 system diverts water, nor do I think that water
21 is artificially stored in the Nookachamps area,
22 because we have demonstrated that it has always
23 been floodplain and storage area and flooded
24 even before the age of dikes.

25 Q. But you haven't told us how deep it floods
0182
1 without the dikes or levees, have you?
2 A. I have demonstrated even better than modeling
3 can ever show, I've showed real data.
4 Q. Answer my question. You haven't shown how deep
5 it would be in the Nookachamps if the levees
6 weren't there, have you?
7 A. Yes, I have. I've given you a water level and
8 I've given you a topo map and we spent some time
9 this morning subtracting a ground elevation from
10 a water level gives you a depth, and that depth
11 varies with the location to which you are asking
12 about. The lower the area, the greater the
13 depth. The higher the little hill, the lower
14 the depth.
15 Q. But that doesn't tell us what the level would be
16 if the levees weren't there, does it?
17 A. No. I think we have agreed with you from the
18 beginning --
19 Q. I'm just asking whether you agreed with me or
20 disagreed with me. I'm asking if it shows you
21 what the depth would be if the levees weren't
22 there.
23 A. Ask it again.
24 Q. Those maps that you say show the flooding area,
25 they don't purport to show what the flooding
0183
1 area would be if the levees weren't there, do
2 they?
3 A. They show for each flood what the flood levels
4 were for the conditions that existed at the time
5 of that flood.
6 Q. That is not responsive to my question.
7 A. To respond to the question, some of those floods
8 were periods when there were no dikes that
9 existed, so for that time they represented the
10 flooding for a no-dike scenario.
11 For the time that the dikes went in and the
12 railroad went in and everything else, then they
13 represented a flood level for when the dikes
14 were in.
15 Q. I understand what you are saying, Tony. They
16 don't show what the flooding would be in
17 Burlington and Mt. Vernon without the levees, do
18 they?
19 A. I have done no investigation of Mt. Vernon.

20 I've made no attempt to address any flooding in
21 Burlington.
22 Q. And none of your work has undertaken to quantify
23 the amount of flooding in the Nookachamps area
24 caused by the levees as opposed to other
25 topographical --

0184

1 MR. MAJOR: Asked and answered, objection.
2 A. Incremental flooding?
3 Q. Yes.
4 A. I have done no analysis of the incremental
5 flooding caused by the cumulative effect of the
6 flood control dams on the upper basin and the
7 railroads --
8 Q. I didn't ask you about the dams.
9 A. You asked me if I analyzed incremental flood
10 levels.
11 Q. Right, incremental flood levels caused by the
12 levee system, not by the Ross Dam, not by the
13 railroad grade, not by Highway 20, not by I-5,
14 not by the Burlington Northern Railroad bridge.
15 I'm asking you if you've done any work that
16 would allow you to opine as to what the
17 incremental level flooding events in the
18 Nookachamps area is as a result of the levees.
19 A. The same answer as last time you asked me. No,
20 I have not done that analysis.
21 Q. Then if you would go to page 3, item B, on the
22 top of it it says, "Absent the levee system
23 there would be a decrease in water surface
24 elevations in the Nookachamps area during flood
25 events comparable to that which occurred on

0185

1 November 25, 1990."
2 With that statement you agree; isn't that
3 right?
4 A. I answered that previously prior to 1955, or
5 since the realignment in 1955 -- that's a
6 different question.
7 Q. Try to answer my question.
8 Absent the levee system there would be a
9 decrease in water surface elevations in the
10 Nookachamps area during flood events comparable
11 to that which occurred on November 25, 1990.
12 You would agree with that statement, would you
13 not?
14 A. If we took out the levees, the railroad and
15 everything else, that there would be lower flood
16 levels.
17 Q. This just limits it to the levee system.
18 A. In which case I have done no analysis on that.
19 MR. MAJOR: Hasn't that been defined by
20 Dr. Mutter to include a number of different
21 structures, and that's why this question is

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misleading?

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MR. HAGENS: What do you mean that the levee system includes -- I'm not going to argue with you.

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Q. I am going to ask the witness, would you agree or disagree that taking out the levee system in Skagit County, there would be a decrease in water surface elevations in the Nookachamps area during flood events comparable to that which occurred on November 25, 1990?

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A. Taking out the levee system as defined by Dr. Mutter which included the railroads, the railroad bridge and all the civil structures which he grouped as a levee system would decrease flood levels.

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Q. Do you think that he included I-5 as part of the levee system?

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A. I think his generalization was all civil works including -- I cannot quote him -- all civil works including roads, railroads and dikes.

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Q. So it's your testimony, then, your understanding of Dr. Mutter's opinion, that the Burlington Northern Railroad right-of-way even past the levee, Dike District 12 levees, is part of the levee system; is that correct?

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A. That's my understanding.

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Q. And that's what he testified to?

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A. My understanding was he included all the civil works.

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Q. So if there is a courthouse in here someplace it's a civil works, and it would also -- public works -- and it would also constitute part of the levee system; is that right?

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A. I wouldn't call that part of the levee system. We talked about this previously. Any structure would cause a change in flow path.

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Q. As part of the levee system?

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A. I wouldn't call every structure part of a levee system. I would call it continuous grade functioning as a levee.

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Q. And you think that that's what Dr. Mutter testified to?

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A. I believe that that is what his quote is, the combination of civil works, railroad, highways and dikes served as a levee.

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MR. MAJOR: Let's get it out and we won't have to debate about it.

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Q. Turn to line 20 on that same page -- line 6, I'm sorry. He says here, "Absent the levee system during high water events, the flow of the Skagit River water would inundate historic or original floodplains through Burlington and north

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Mt. Vernon and on occasion would drain in a northwesterly direction to the Samish Valley

1 into Padilla Bay."

2 You would agree with that, would you not?

3 A. I agree with that.

4 Q. Turning to paragraph E, he says, "The degree of
5 flooding caused each plaintiff by the Skagit
6 levee system is depending upon the location and
7 events as much as 4 feet."

8 Since you have done no work to isolate what
9 the impact of the levee system is, you cannot
10 disagree with that, can you?

11 MR. MAJOR: Object to the form of the
12 question.

13 THE WITNESS: I cannot disagree with
14 that -- I can disagree with that.

15 Q. What is it? In the space of five seconds you
16 have gone from you can't disagree to you can
17 disagree. What happened in that five seconds?

18 A. In that five seconds I recalled what I told you
19 about ten minutes ago, if a model is not
20 calibrated properly, the results that came out
21 after that are questionable. Having remembered
22 that in the five seconds I changed my response
23 to that.

24 Q. But you don't know what the impact of the
25 failure, in your judgment, to have sufficient

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1 data points is on the output of the --

2 A. That's correct, I have not done any analysis on
3 that.

4 Q. So you don't know if it's accurate or
5 inaccurate; isn't that correct?

6 A. I know the model is not calibrated as well as,
7 in my opinion, it would have been with the
8 addition of other calibration results. I do not
9 know whether that will change any other
10 conclusions that came out of that work.

11 Q. Do you know if it would change any conclusions,
12 period, if you would go back for more
13 calibration points?

14 A. There is no way to know if it will change until
15 you have a properly calibrated model.

16 Q. So you are guessing --

17 A. I'm not guessing. I'm saying there is no way to
18 know what will change.

19 Q. Absent the calibration, you have no basis --
20 potential calibration problems, you have no
21 basis to disagree with Dr. Mutter's statement,
22 "The degree of flooding caused each plaintiff
23 by the Skagit levee system is depending upon the
24 location and events as much as 4 feet," you have
25 done no work --

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1 A. I have every reason to disagree with it.
2 Q. You have done no work, you cannot disagree with
3 that, except potentially on the calibration
4 basis; is that right?
5 A. Absolutely.
6 MR. MAJOR: I want to clarify the record.
7 When you say you have no reason to disagree, and
8 you say absolutely, are you saying absolutely I
9 can disagree, or absolutely I can't?
10 MR. HAGENS: You can't lead your own
11 witness in that.
12 MR. MAJOR: You've been doing it for three
13 months.
14 MR. HAGENS: You are not getting any
15 clarification on that.
16 MR. MAJOR: I will just do it when we
17 finish. We will take that approach from now on
18 and stop giving you the courtesy of asking
19 questions to clarify the record in the middle of
20 a deposition like you've been doing for the last
21 150 depositions.
22 MR. HAGENS: I don't think I have any more
23 questions. At this point we will have to
24 reserve the right to of course come back and
25 examine you after we have a chance to examine

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1 your materials. I frankly doubt that we will,
2 but I can't say that we won't.
3 THE WITNESS: I'm here.
4 MR. HAGENS: I understand that you are
5 going in for surgery sometime and I don't want
6 to interfere with that. We will try to do it if
7 we have the time perhaps this Saturday or maybe
8 even earlier, depending upon how quickly we can
9 get through the materials that you've kindly
10 produced for us today.
11 I've finished my examination for today. I
12 doubt that we will have anything else.

EXAMINATION

14 BY MR. MAJOR:
15 Q. With respect to your last answer on whether you
16 agree or disagree with E on page 3 of
17 Dr. Mutter's statement, did you intend to say
18 you absolutely agree or disagree?
19 A. What I said and what the question was that I
20 thought I was answering, I absolutely agree that
21 I can -- I absolutely agree that I cannot agree
22 to the 4 feet because he did not have a
23 calibrated model.
24 Q. Is it your understanding that Dr. Mutter's

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1 reference to a levee system includes only Dike

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COUNTY OF KING)

I, the undersigned Notary Public in and for the State of Washington, do hereby certify:

That the annexed and foregoing deposition of each witness named herein was taken stenographically before me and reduced to computerized transcription under my direction;

I further certify that the deposition was submitted to each said witness for examination, reading and signature after the same was transcribed, unless indicated in the record that the parties and each witness waive the signing;

I further certify that all objections made at the time of said examination to my qualifications or the manner of taking the deposition, or to the conduct of any party, have been noted by me upon said deposition;

I further certify that I am not a relative or employee or attorney or counsel of any of the parties to said action, or a relative

or employee of any such attorney or counsel, and that I am not financially interested in the said action or the outcome thereof;

I further certify that each witness before examination was by me duly sworn to testify the truth, the whole truth and nothing but the truth;

I further certify that the deposition is a full, true and correct transcript of my stenographic shorthand notes, including questions and answers, and all objections, motions, and exceptions of counsel made and taken at the time of the foregoing examination;

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal this _____ day of _____, 1995.

Julie C. Oswald
Notary Public in and for the State of Washington, residing at Seattle.