

1 MR. RYAN: Yes, which the copy that the
2 witness is now looking at on the LitePro is the one
3 she marked up yesterday, and has been marked as
4 Exhibit 43-A. It's identical to Figure 5.

5 THE ADMINISTRATIVE LAW JUDGE: Yes.

6 MR. McAFEE: May we go off the record?

7 THE ADMINISTRATIVE LAW JUDGE: Yes, we can
8 go off the record.

9 (Discussion off the record.)

10 THE ADMINISTRATIVE LAW JUDGE: So, again,
11 Mr. Ryan, this one was--what was the new number for
12 this? I know it's the same exhibit with some
13 annotations to it. What's the number of this one?

14 MR. RYAN: This one is 43-A, Complainant's
15 43-A, which for the record is the marked-up version
16 of Figure 5 from Exhibit 43.

17 THE ADMINISTRATIVE LAW JUDGE: Yes. Thank
18 you.

19 BY MR. RYAN:

20 Q. Now, Ms. Doty, looking at the--I believe
21 your testimony yesterday was that the--what you have
22 marked there in the upper right-hand corner, UNT,
23 that blue line was the unnamed tributary, and
24 following down the different stream segments, and
25 then we get down to segment 5 and you were testifying

1 a moment ago what the meaning was for the graph
2 segments you looked at in B-2 for segment 5. Could
3 you explain that for us using this diagram, please?

4 A. Yes. Segment 5 is the small watershed area,
5 and it represents the runoff that's coming from the--

6 Q. Ms. Doty, don't mark on it yet, please.

7 A. Sorry. It represents the runoff that's
8 coming down off the subdrainage area into that
9 segment. It doesn't represent the runoff--the actual
10 flow that's already in the channel that's coming from
11 1 on down to the Elliot Creek.

12 Q. Just so we're clear, when we look at the
13 graph in Appendix B-2 of stream segment 5, it's not
14 predicting what's in the actual channel, it's
15 predicting what's coming into the channel?

16 A. Yes, it is.

17 Q. Based on your assessment of the--and is the
18 blue line passing through segment 5? You see up
19 there, that would be the drainage 5, the red 5?

20 A. Yes, it is.

21 Q. The blue line, would that be the low point
22 of the land?

23 A. Yes, it would.

24 Q. So would water drain down to it from the
25 north and from the south?

1 A. Yes.

2 Q. So is that the smallest drainage area on
3 this Figure 5, this Exhibit 43-A?

4 A. Yes, it is.

5 Q. And based on your professional experience,
6 if we had base flow coming in from upstream, and your
7 modelling showed base flow downstream, would you
8 expect to see base flow in segment 5 in the unnamed
9 tributary?

10 A. Yes, I would.

11 Q. Those are all the questions I have for that
12 exhibit. Thank you.

13 MR. RYAN: May I, Your Honor?

14 THE ADMINISTRATIVE LAW JUDGE: Yes.

15 MR. RYAN: Your Honor, may we go off the
16 record for just a moment?

17 THE ADMINISTRATIVE LAW JUDGE: Certainly.

18 (Discussion off the record.)

19 THE ADMINISTRATIVE LAW JUDGE: We'll pick up
20 at ten of two. See you then.

21 (Recess at 12:50 p.m., until 1:50 p.m.)

22

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24

25

1 AFTERNOON SESSION (1:55 p.m.)

2 THE ADMINISTRATIVE LAW JUDGE: So the first
3 order of business is I'm going to return to Mr. Ryan
4 the exhibits which he offered and marked for
5 identification, but which were not admitted per my
6 ruling. That is CX-51, CX-52. And then there was
7 another group of papers. I'm not going to need to
8 identify it because it wasn't brought up by Mr. Ryan.
9 I'm handing back all of that stuff.

10 I assume, counsel, you received those three
11 sets? Excuse me. Sorry. I shouldn't make you reach
12 that far, Mr. Ryan.

13 Okay. With that, we're ready to go again.

14 SANDRA DOTY,
15 resumed her testimony as follows:

16 REDIRECT EXAMINATION (Resumed)

17 BY MR. RYAN:

18 Q. Okay, Ms. Doty, just before the lunch break
19 we were--strike that.

20 During your cross-examination this morning--
21 you might recall some discussion at various points in
22 the cross-examination about the use of the--or the
23 intent of the models, and whether they were intended
24 to be used for the Clean Water Act--proving Clean
25 Water Act violations. Do you recall that testimony?

1 A. Yes, I do.

2 Q. Now, is the purpose--let's break them up.
3 To save time we'll talk about them together, but if
4 you think we need to break them up, tell me and we'll
5 do so.

6 Is the purpose of the APEX model and SWAT
7 model to model runoff and things entrained in runoff?

8 A. Yes, it is.

9 Q. Okay. And is--were they developed with that
10 purpose in mind?

11 A. Yes.

12 Q. And were they-- And that would include
13 assessing the amount of pollutants that might come
14 off of a site?

15 A. Yes.

16 Q. And can we rely on those models as a
17 scientific--can we rely on the results of those
18 models as being scientifically based?

19 A. Yes, we can.

20 Q. Now, you, as a hydrologist, and you've been
21 working in this field for 26 years, have you--does it
22 make any difference to you whether your modelling is
23 being used in a court setting or in a non-court
24 setting?

25 A. No, it doesn't.

1 Q. Do you consider--if you were applying these
2 models in a non-court setting, would you use any more
3 or less rigor than you used in this court setting?

4 A. No, I wouldn't.

5 Q. And I think you've testified before that you
6 consider these results trustworthy?

7 A. Yes.

8 Q. Now, you recall your testimony regarding
9 subarea J. This is referring you to page 9 of your
10 report. Actually, Ms. Doty, please turn to page--to
11 your report, Exhibit 43, to page--to the Figure 9.
12 Do you have that in front of you, Figure 9 on page 25
13 of your expert report, which is Exhibit 43?

14 A. Yes, I do.

15 Q. Okay. And do you recall the testimony
16 regarding the area--subarea J, as in jack, towards
17 the top of the page?

18 A. Yes.

19 Q. And there was some testimony as to whether
20 that was pasture or not. Do you recall that?

21 A. Yes.

22 Q. Now, tell us what difference it makes to
23 have different types of cover? In other words,
24 pasture versus some other kind of cover, what
25 difference can that make?

1 A. Different types of cover can be more or less
2 erosive based on how much cover is there and whether
3 the land is disturbed or left to grow on its own.

4 Q. Okay. And you called that pasture; is that
5 correct?

6 A. Yes.

7 Q. Okay. And is pasture--I think you also said
8 summer meadow. Are those the same thing?

9 A. I was using them, in that context, being the
10 same thing, native grasses growing in a field.

11 Q. Is that considered disturbed soil?

12 A. No.

13 Q. Is water more likely or less likely to run
14 off of undisturbed soil such as a pasture?

15 A. Less likely.

16 Q. So if you called--say, for example, there
17 were soybeans planted in area J. Is it more likely
18 to have runoff, or less likely than pasture?

19 A. More likely to have runoff soybeans.

20 Q. How about corn?

21 A. Yes, more likely.

22 Q. For purposes of this line of questioning, if
23 you're wrong, this isn't pasture, this is soybeans or
24 corn, did you overestimate or underestimate how much
25 runoff would come from subarea J?

1 A. By using a summer meadow I was using a very
2 dense planting scenario, and it would be--it would
3 have less runoff than if it had been a crop like corn
4 or soybeans.

5 Q. So your modelling effort would have
6 underestimated how much came off?

7 A. Yes, that's true.

8 Q. Now, based on your review of the weather
9 data, I think you testified, maybe yesterday,
10 regarding the seasonality of the rains in this part
11 of the world. When is the heaviest part? When is
12 the rain the hardest and the most?

13 A. Summer and sometimes fall.

14 Q. And of the 45 days of discharge that you
15 identified of pollutants to the unnamed tributary,
16 were they mostly in the summer, or were they mostly
17 in the winter, or they kind of spread all over?

18 A. There were very few in the winter. I could
19 go back and figure that out, if you'd like me to, but
20 mostly they were summer, fall, some spring.

21 Q. When one would expect to see more rain?

22 A. Yes.

23 Q. And you also were asked about accounting for
24 snow and snow melt. Do you recall that?

25 A. Yes.

1 Q. And the--and you were asked if it would
2 change your opinion if the snow were being cleared
3 off right after the snowstorms. Do you recall that
4 testimony?

5 A. Yes.

6 Q. Now, is it, in your opinion, if someone were
7 clearing snow from a pen, would the--would any manure
8 that was on the ground before it snowed be entrained
9 in that snow when it's pushed away, pushed aside?

10 A. Some, perhaps.

11 Q. Do you think it would be possible to plow
12 snow without touching the manure underneath?

13 A. No, I don't think it would be.

14 Q. And do you think if--since we have no
15 testimony regarding this yet, we're working on
16 hypotheticals that were given to you, let's assume
17 for sake of argument that he's not--that the
18 owner--that Mr. Vos is not actually picking up the
19 snow and hauling it away, he's just pushing it to the
20 side. Where I come from, when we plow snow, we don't
21 truck it away, we push it off to the side of the
22 driveway.

23 Assume, for sake of argument, that he's
24 plowing his pens, he's pushing it up to the side.
25 Eventually would that snow melt?

1 A. Oh, definitely.

2 Q. And would any pollutants in it enter these
3 subdrainages you looked at?

4 THE ADMINISTRATIVE LAW JUDGE: Subterraneous?

5 MR. RYAN: Subdrainages you looked at.

6 THE ADMINISTRATIVE LAW JUDGE: Subdrainages.

7 A. Yes, assuming it was still located within
8 the watershed area I was modelling.

9 BY MR. RYAN:

10 Q. And if someone--if Mr. Vos-- Along similar
11 lines, where you talk about scraping quite a bit, if
12 you were to scrape the manure off his pens, and if he
13 stockpiled it within the drainage area you looked at
14 under APEX, would that ultimately end up with some
15 pollutants in the creeks?

16 A. Yes.

17 Q. So if he removed it from, let's say, for
18 example, subarea B on Figure 9 of your expert report,
19 and he moved it off to, let's say, for example, the
20 corner of subarea E, would that remove it from the
21 system, or would it end up going downstream?

22 A. It would remain in the system flowing
23 downstream if it was within the watershed boundaries.

24 Q. So only if he scraped, put it in a truck and
25 trucked it away outside this watershed boundary would

1 it not be accounted for?

2 A. That's true.

3 Q. And I believe you said you assumed in your
4 scraping function he, in fact, did that, he trucked
5 it--removed it from the watershed?

6 A. I did assume that.

7 Q. If the testimony--well, if hypothetically he
8 was not trucking it outside the watershed, would that
9 result in an underestimate by you, or an overestimate
10 by you of the amount of manure that would wash out?

11 A. An underestimate.

12 Q. Let's look at Exhibit 46. It's that big fat
13 collection of rainfall data for LeMars.

14 MR. RYAN: Does Your Honor have that page
15 handy, Exhibit 46, LeMars? Would you like me to come
16 up and show you where it's at?

17 THE ADMINISTRATIVE LAW JUDGE: I will find
18 it, thank you. I'm on 46 LeMars. You're going to
19 direct me to a particular page, right?

20 BY MR. RYAN:

21 Q. We spent some time--you spent some time on
22 cross-examination with Mr. McAfee this morning
23 talking about the date of February, I believe it was,
24 18th, 2002; is that correct?

25 A. Yes, it is.

1 Q. Yeah, and--yeah, February 18th, 2002. And
2 your testimony at the time was that the model did not
3 account for, necessarily, the individual days of data
4 from the weather service, but relied on the monthly
5 means. Do you recall that testimony?

6 A. Yes, I do.

7 Q. So let's look at that monthly mean data for
8 February of 2002. And I think you identified that in
9 your cross-examination by actually reading all the
10 numbers across that long line. As you see, is
11 that--the monthly mean data, is that to the right
12 of--the data in Exhibit 46 LeMars, is it to the right
13 of the 2002, 02/28 data?

14 A. Yes, it is.

15 Q. Is it--now, in that right-hand side of the
16 page, the first number is 26.1. Is that the mean
17 temperature?

18 A. Yes, it is.

19 Q. Okay. And then max--the mean max
20 temperature would be the 37.8; am I correct? Am I
21 reading this correctly?

22 A. Yes, you are.

23 Q. Okay. Now, what would the high temperature
24 for the month be?

25 A. The high temperature would be 61 degrees

1 Fahrenheit.

2 Q. What would the low temperature for the month
3 be?

4 A. Minus 9 degrees Fahrenheit.

5 Q. So in the month of February 2002, the data
6 is telling your model that we had very cold days and
7 some pretty warm days; right?

8 A. Correct.

9 Q. Let's look far off to the right, the number
10 9. Do you see that on the far right-hand side of the
11 monthly data for February?

12 A. Yes.

13 Q. What does that 9 stand for?

14 A. That says there was snowfall.

15 Q. Is it 9 inches of snowfall in February of
16 2002?

17 A. I don't see the units under the snowfall,
18 but, yes, I assume it's inches of snowfall.

19 Q. So in the month of February we had 9 inches
20 of snowfall and 61 degree temperatures. Would you
21 expect to see melting under those environmental
22 conditions?

23 A. Yes, I would.

24 Q. Now, you were asked a series of questions on
25 cross-examination this morning regarding whether

1 additional sampling would help your modelling
2 efforts; whether if someone grabbed a sample showing
3 an existence of pollutants, such as manure, elevated
4 nitrogen, whatever, if that would help you. And you
5 were asked the converse question, whether a sample
6 from the creek showing no pollution, would help you
7 or assist you in any way. Do you remember that
8 testimony?

9 A. Yes, I do.

10 Q. Now, if--let's discuss that for a minute.
11 If you were to collect a sample when it were not
12 raining, would you expect to see pollutants from
13 Mr. Vos' feedlot in--let's say in the unnamed
14 tributary? Would you expect to see manure flowing
15 into the unnamed tributary on a day when it was not
16 raining?

17 A. No, I wouldn't.

18 Q. Why not?

19 A. Because the source is the runoff, and there
20 would be no runoff into the creek at that time.

21 Q. If you collected a sample on a dry day from
22 the unnamed tributary, what would it typically tell
23 you?

24 A. I assume that it would tell me that there
25 was--there was not detected, there were not.

1 pollutants in it.

2 Q. Is it the nature of streams to flow
3 downstream?

4 A. Yes, it is.

5 Q. And is fresh water coming in from upstream
6 of the pollutant source?

7 A. Yes.

8 Q. So if you measure just next to Mr. Vos' farm
9 on a day when it was not raining, or not discharging,
10 would you be measuring the water coming from off-site
11 upstream?

12 A. Yes, I would.

13 MR. RYAN: May I have one minute, Your
14 Honor?

15 THE ADMINISTRATIVE LAW JUDGE: Sure.

16 MR. RYAN: Those are all the questions I
17 have, Your Honor. Thank you.

18 THE ADMINISTRATIVE LAW JUDGE: Okay.
19 Recross?

20 MR. McAFEE: Yes, Your Honor. Thank you.

21 MR. RYAN: Can we go off the record one
22 minute?

23 THE ADMINISTRATIVE LAW JUDGE: Yes, we can
24 go off the record.

25 (Discussion off the record.)

1 THE ADMINISTRATIVE LAW JUDGE: We're back on
2 the record.

3 RE-CROSS-EXAMINATION

4 BY MR. McAFEE:

5 Q. Ms. Doty, I think what I'll do for my
6 recross-examination here is maybe start at the back
7 and move forward since this last exhibit--I don't
8 know if you still have that open looking at the
9 February 18th, 2002, weather data.

10 A. Yes.

11 Q. Do you still have that open?

12 A. Yes, I do.

13 Q. And just for the record, let me make sure
14 I'm properly identifying it. It's Plaintiff's
15 Exhibit 46 LeMars, and, again, it's the weather
16 data. I think Mr. Ryan had you looking at the page
17 with the February 18th, 2002, data on it; is that
18 correct?

19 A. Yes.

20 Q. And you were testifying in response to some
21 questions from Mr. Ryan about the--would you call it
22 the summary data for the month of February?

23 A. Yes.

24 Q. And you testified as to what the numbers
25 mean. And I guess what I want to make sure I

1 understand from this is the model--these are the only
2 numbers, this information as to the mean high and the
3 mean temperature--and what is the 9.0? Is that the
4 total snowfall for the month?

5 A. Yes, it is.

6 Q. Okay. Is that the only information the
7 model gets is that information, those figures that
8 start with 26.1 on the left and 9.0 on the right?

9 A. I can't answer your question--is that the
10 only information it gets? Well, that is the
11 information that it uses when it's determining snow
12 melt.

13 Q. And maybe I didn't ask it-- Is that the
14 only information the model gets, weather information
15 for the month of February, are those figures, from
16 26.1 on the left to 9.0 on the right, is that the
17 extent of the information that the model uses for the
18 weather information for the month of February?

19 A. No, it is not.

20 Q. What other information does it have?

21 A. It has the daily precipitation values that
22 are a part of it, it has solar radiation, humidity.
23 There's one or two more.

24 Q. Okay. So the model knows when that
25 precipitation occurred? That 9.0 snowfall for

1 February, the model knows what days that occurred on?

2 A. Yes, that's correct.

3 Q. And does the model also know the temperature
4 on the specific days for the month?

5 A. It's using the monthly data for the
6 temperatures.

7 Q. Okay. So it doesn't get daily temperatures?

8 A. No. It uses a normal distribution around
9 these means that we've been talking about.

10 Q. Okay. Is there a feature that allows the
11 model to get the daily temperature information?

12 A. Yes, you can input it.

13 Q. But you did not?

14 A. I did not.

15 Q. Is there a reason why you did not?

16 A. I didn't input it because I didn't have it
17 readily available at the time that I was starting the
18 modelling, and so I didn't think it was a sensitive
19 parameter, and I used the data that the database has.

20 Q. Wouldn't it be fairly important to have the
21 daily temperatures available to the model so that the
22 model knows what days the warm weather occurred in
23 relation to when the snowfall occurred, so that the
24 model could be--these are my words--more accurate on
25 when runoff would occur?

1 A. It used the monthly data for temperatures,
2 and it is representative of the conditions, and it
3 would only be important in any way during winter
4 months.

5 Q. Okay. What do you mean by--explain to me
6 what you mean by only important during the winter
7 months?

8 A. The runoff is going to be snow melt when
9 it's above 32 degrees Fahrenheit, and it's only using
10 it to determine if that has occurred.

11 Q. Okay. So during the warm weather months,
12 again, the daily precipitation, which would be rain
13 during anytime--during most of the times when the
14 temperature is above 32 degrees it should be rain,
15 absent those right around 32--and maybe I shouldn't
16 testify to this. Rather than me saying it, but--
17 Let me say it this way: When the precipitation is
18 rain, the model does know exactly what days the rain
19 occurred on?

20 A. Yes, it does.

21 Q. So then the model can--it would not use,
22 like--in the warm weather months, the model would not
23 use a monthly total for rain?

24 A. No, sir.

25 Q. Okay. All right. That helps me understand

1 how the inputs to the model work.

2 During my direct examination--excuse me--my
3 cross-examination this morning, I asked you about the
4 subarea J and the pasture, and I believe Mr. Ryan
5 talked to you briefly about what effect that would
6 have. But I stated on the record I would confirm
7 with you your report on March 25th, and I believe I
8 should do that now just to clarify the record.

9 MR. McAFEE: May we go off the record?

10 THE ADMINISTRATIVE LAW JUDGE: Yes.

11 (Discussion off the record.)

12 THE ADMINISTRATIVE LAW JUDGE: We'll go back
13 on the record.

14 BY MR. McAFEE:

15 Q. Would you please turn to Complainant's
16 Exhibit No. 29.

17 MR. RYAN: What page number, please?

18 MR. McAFEE: I was just going to let her get
19 to the exhibit.

20 BY MR. McAFEE:

21 Q. Page 8 of Exhibit 29. And in the second
22 paragraph there on page 8 of Exhibit 29 would you
23 take a look there at your reference to subarea J.
24 It's about in the middle of that paragraph.

25 A. The northern pasture subarea was designated

1 subarea J.

2 Q. Okay. And then I just want to compare that
3 to your final report, if you would do that with me,
4 please. And that, of course, is Exhibit 43. And
5 that would be page 9 of Exhibit 43.

6 A. Yes.

7 Q. And would you please look at that paragraph
8 to see if that is the same sentence regarding subarea
9 J.

10 A. I believe it is, yes.

11 Q. And so nothing has changed between the two
12 reports?

13 A. No.

14 Q. And the Exhibit 29 was prepared prior to
15 your visit to the site on July 1 of 2008; correct?

16 A. Yes.

17 Q. And I think this morning you were testifying
18 as well as you could from memory that maybe that had
19 changed after your site visit?

20 A. Yes. I honestly don't remember the exact
21 wording in the March 25th report at this point, so I
22 wasn't sure. Yes. Correct.

23 Q. Yes. But you're testifying now, after
24 looking at the two, that your characterization of
25 subarea J being a pasture subarea was originally made

1 in March when you prepared Exhibit 29, and did not
2 change after your visit to the site on July 1st?

3 A. Correct.

4 Q. Okay. Thank you. Now I would like to go
5 back to the--where I'm headed here is Appendix B-2 to
6 Exhibit 43. Do you have that?

7 A. Yes, I do.

8 Q. Would you please turn to page 8. And I
9 believe you testified in response to Mr. Ryan's
10 questions about this that the lower graph, which
11 represents the flow in channel segment 5 in the year
12 2002--and I believe your words were that this is not
13 an anomaly; is that correct? Is that what you
14 testified to?

15 A. I don't remember that phrase, but I might
16 have.

17 Q. Well, the record will reflect what you said.

18 A. Yeah.

19 Q. Is it your testimony that this does
20 not--like, channel segment 5 in this graph, that does
21 not represent what's actually in the unnamed
22 tributary, that's in the--that's what's in--maybe I
23 should let you testify to this. I was looking for
24 the word in my notes here. Did you use the term
25 "sublateral flow"?

1 A. Yes, I did. Should I explain?

2 Q. Yes, please.

3 A. Within each subdrainage area you have runoff
4 during a precipitation event. But also there can be
5 a component of sublateral flow. And so I'm--and you
6 get seepage from sublateral flow, and the model
7 reporting in these figures is reporting that amount
8 of runoff and potentially sublateral flow--there may
9 or may not be that, you know, you have to look at the
10 record--running into--channelized by the drainage at
11 that point in time.

12 Q. So it's my understanding it's your testimony
13 that what is shown here in the flow in channel
14 segment 5 in this graph, or in any other graph in
15 this Appendix B-2, does not show what's in the actual
16 unnamed tributary main channel; am I understanding
17 you correct?

18 A. Yes. It's the flow that ends up in that
19 main channel from the lateral directions. It doesn't
20 account for the cumulative effective flow that's
21 coming in the same way up gradient.

22 Q. And so when we see in this graph, when we
23 see those--what appear to be those zeros for the flow
24 in the months of, it looks like, April and May, are
25 you saying that appears to be correct to you?

1 A. Yes. Yes. I believe that is correct. It's
2 a very small subwatershed area and there might have
3 been a very small amount of runoff that occurred
4 during that period of time.

5 Q. Okay. Then let me direct you to, it looks
6 like, sometime in early to mid-May. There's a line
7 on that graph that goes all the way up to--and I know
8 you testified to this yesterday. It's over the line
9 of ten. Would you tell me what that line represents
10 on the graph? The highest line in that graph, how
11 many gallons per day would that represent?

12 A. Yes. That's ten billion gallons per day.

13 Q. What's the next line? What's the next line
14 up from that on the axis?

15 A. A hundred billion.

16 Q. So that point on that graph is between ten
17 billion and a hundred billion. Could you estimate
18 for me, based on that graph, what you think that
19 number would represent?

20 A. A typographical error in the output file.

21 Q. Okay. But for purposes of the record, could
22 you tell me what number, just looking at the graph,
23 how many gallons per day that point on the graph
24 would represent, to the best of your ability?

25 A. I don't have a calculator here, but if you

1 took the ten billion and divide it by approximately
2 648,000, you'd end up with gallons per day--I mean
3 you'd end up with cfs.

4 Q. What I'm asking you, ma'am, is help me put a
5 number on that point on the graph that is in between
6 ten billion gallons per day and a hundred billion
7 gallons per day. What's your testimony as to what
8 that point on the graph represents based on the
9 numbers on the graph?

10 A. Well, having reviewed the data last night, I
11 understand that that is not--that's a mistake--

12 THE ADMINISTRATIVE LAW JUDGE: Yes, but his
13 question is not that. His question is simply, as I
14 understand what counsel is trying to ask you, not
15 whether it's correct or not, but looking at that
16 graph, if that spike line reached all the way up to
17 the top, then that would be a hundred--what is it? A
18 hundred--the top line is a hundred billion?

19 THE WITNESS: Yeah.

20 THE ADMINISTRATIVE LAW JUDGE: If it's
21 slightly below, you could make an estimate what that
22 is in the range of ten billion to a hundred billion.
23 He's just asking you to give a visual estimate, as I
24 understand your question, counsel, what that would
25 be. We know that's not with precision, but you can

1 make an estimate. I could.

2 A. I would say it's 20 or 30 billion.

3 BY MR. McAFEE:

4 Q. That would be 20 or 30 billion gallons of
5 flow in that channel segment. You testified you
6 believe that is a typographical error?

7 A. Yes. Looking at the data last night, I do
8 believe that.

9 Q. I guess where I'm confused, then, you just
10 testified, as I understand it, where it shows zeros a
11 few days before that, that you would expect to see
12 that, based on this graph.

13 A. Yes. I believe that that small subwatershed
14 area did have points where there was zero flow based
15 on the data I reviewed last night, too.

16 Q. And I don't want to--well, I'll just ask the
17 question.

18 In other words, if I'm understanding your
19 testimony correctly, you believe what it says for
20 when it shows zeros, but we can't believe what it
21 says when it shows 20 to 30 billion gallons of flow
22 rate, gallons per day?

23 A. That's correct. For that particular case I
24 looked at the data and there was an error in that.
25 When I looked at the data output and plotted it, that

1 spike was no longer there in the file that I was
2 looking at. I believe that's an error. That's all
3 I'm saying.

4 Q. Okay.

5 THE ADMINISTRATIVE LAW JUDGE: So would it
6 be fair to state, Ms. Doty, that, really, looking at
7 this bottom graph, that you really couldn't rely on
8 the graph itself? What you had to do was to go back
9 in the evening, last night, and crunch some other
10 numbers, look up some other data, and from that you
11 then concluded that part of the graph seems to be
12 correct, and part of it seems to be incorrect?

13 So the graph itself, you couldn't rely upon
14 looking at this graph for accuracy? You had to go
15 back to this other data, which is not in the record,
16 and from that you concluded the spike was wrong, the
17 spike that you said was maybe 30 billion, right? But
18 the zero, based on this other data, which is not part
19 of the record, you determined was correct; fair
20 enough?

21 THE WITNESS: Yes.

22 BY MR. McAFEE:

23 Q. I want to talk now just a minute about the
24 SWAT model, and you testified that you did not rerun
25 the SWAT model after discovering the errors in the

1 data in Appendix B; is that correct?

2 A. That's correct.

3 Q. Don't you believe it might have been
4 advisable to rerun the SWAT model just to make sure
5 there were no errors that affected your output?

6 A. This data--I'd say no. This data isn't the
7 data that I used. The last run that I used, I went
8 ahead and looked at that data. I have no reason to
9 believe that that data isn't correct. It appears to
10 be correct because it correlated well with the Sioux
11 City precipitation events, and the tables that were
12 associated with the output. So I believe it's
13 correct.

14 Q. And, again, you saw no need to rerun the
15 model?

16 A. No, I didn't.

17 MR. McAFEE: I have no further questions,
18 Your Honor.

19 THE ADMINISTRATIVE LAW JUDGE: Okay.

20 Mr. Ryan?

21 FURTHER REDIRECT EXAMINATION

22 BY MR. RYAN:

23 Q. Just a couple, Ms. Doty. On these graphs
24 we just discussed on this stream segment 5, looking
25 at the bottom of page 8 of Exhibit--of Appendix B-2

1 to Exhibit 43, your expert report--we were just
2 talking about that. Do you have that in front of
3 you?

4 A. Yes, I do.

5 Q. I think you testified earlier that drainage
6 area 5 was the smallest drainage area in the
7 watershed you looked at?

8 A. Yes, it is.

9 Q. Would it make any sense to you, as a
10 hydrologist, to see 20 to 30 billion gallons per day
11 of runoff coming off that small watershed?

12 A. No, it wouldn't.

13 Q. At the same time would it make any sense to
14 you, as a hydrologist, to see zero in some months?

15 A. Yes, it would.

16 Q. Now, in fact, do you have Complainant's
17 Exhibit 52 in front of you?

18 MR. McAFEE: Excuse me, Your Honor--

19 MR. RYAN: This is one that was not admitted
20 into evidence, but we were going to discuss further
21 on redirect. It's directly relevant to your recross.

22 THE ADMINISTRATIVE LAW JUDGE: No. I
23 sustained the objection to not allowing Exhibit 52.

24 MR. RYAN: I thought you said into evidence,
25 Your Honor. I was going to ask her a question

1 regarding--we've already had extensive testimony that
2 she reran the numbers last night, and I just wanted
3 to verify--okay. Thank you, Your Honor.

4 BY MR. RYAN:

5 Q. Regarding the need to rerun the SWAT model,
6 which was the last line of questioning you had on
7 recross, the--tell us what the data we see in B-1
8 represents. Is that the data that went into making
9 your run on the SWAT model, or is it what supposedly
10 came out of the SWAT model?

11 A. It came out of the SWAT model but not
12 directly.

13 Q. When you say "not directly," what do you
14 mean?

15 A. What came out of the SWAT model was then put
16 into an Excel spreadsheet and manipulated there to
17 get it in the format that is appropriate for
18 establishing flow rate versus the date for this
19 graph.

20 Q. So what we see in Appendix B-1 to Exhibit
21 43, did you push a button on the SWAT model and say,
22 "print this"?

23 A. No, I did not.

24 Q. Is there such a button or command you can
25 give to the SWAT model to say "print all the data,

1 all the output data"?

2 A. Yes, there is.

3 Q. How big would that be if you gave it that
4 command?

5 A. Tens of megabytes.

6 Q. Hundreds of pages? Tens of pages?

7 A. Oh, hundreds of pages.

8 Q. Would it show more than we see here on
9 Appendix B-1?

10 A. Yes, it would.

11 Q. So if--what we're looking at on Appendix
12 B-1, I think it's your testimony that this is--in
13 Exhibit 43, this is not reflective of what the SWAT
14 model--last run of the SWAT model you did; is that
15 right?

16 A. That's correct.

17 Q. So asking you the question that counsel
18 asked you a minute ago, given that this is output
19 data, would it make any sense to rerun the SWAT model
20 to reflect what the real output data should be?

21 A. No.

22 MR. RYAN: I have no further questions, Your
23 Honor.

24 MR. McAFEE: I have no further questions,
25 Your Honor.

1 THE ADMINISTRATIVE LAW JUDGE: Okay. It's
2 over, Ms. Doty. Thank you. You can head back to
3 Colorado. Thank you for your testimony.

4 THE WITNESS: Thank you.

5 THE ADMINISTRATIVE LAW JUDGE: I take it
6 that--she's going home, so is there any need to have
7 her stay? I'm asking counsel for Respondent. No?
8 You're shaking your head no?

9 MR. McAFEE: I'll be glad to answer on the
10 record. No, there's no need. We've had plenty of
11 opportunity to conduct our examination.

12 THE ADMINISTRATIVE LAW JUDGE: Okay.

13 MR. RYAN: Your Honor, we are reserving the
14 right to call her as a rebuttal witness. They have a
15 hydrologist who will be testifying.

16 THE ADMINISTRATIVE LAW JUDGE: So she's
17 going to be having a tentative reservation to fly
18 back here at a moment's notice?

19 MR. RYAN: Or she'll be staying.

20 THE ADMINISTRATIVE LAW JUDGE: I was under
21 the impression--that's fine.

22 MR. RYAN: Your Honor, since she is not a
23 fact witness, she's an expert witness, may she be
24 allowed to sit and observe the proceedings, certainly
25 observe the expert testimony of their expert?

1 THE ADMINISTRATIVE LAW JUDGE: Do you have a
2 comment, Mr. McAfee?

3 MR. McAFEE: Your Honor, I object to that.
4 I didn't bring our expert witness in to hear her
5 testimony, and I would expect the same of her, not
6 being present for our expert.

7 THE ADMINISTRATIVE LAW JUDGE: I agree.
8 That's the way it's going to be, Mr. Ryan. I'm
9 sorry. You'll be able to, in framing any questions,
10 ask her to assume that thus and so is the situation
11 and get her opinion. But I think it's unwise to have
12 people listening to other people's testimony
13 generally.

14 MR. RYAN: Your Honor, may we take a quick
15 break here so I can make sure my next witness is
16 available?

17 THE ADMINISTRATIVE LAW JUDGE: Absolutely.

18 MR. RYAN: He's been sitting around for
19 quite some time.

20 THE ADMINISTRATIVE LAW JUDGE: So we'll go
21 off the record.

22 MR. RYAN: May we have a five-minute break
23 now?

24 THE ADMINISTRATIVE LAW JUDGE: Absolutely.
25 Yes.

1 (Short recess.)

2 THE ADMINISTRATIVE LAW JUDGE: We'll go on
3 the record.

4 MR. RYAN: I would like to call Jonathan
5 Shefftz, please.

6 THE ADMINISTRATIVE LAW JUDGE: Good
7 afternoon. Raise your right hand.

8 JONATHAN S. SHEFFTZ,
9 called as a witness by the Complainant, being first
10 duly sworn by the Administrative Law Judge, was
11 examined and testified as follows:

12 THE ADMINISTRATIVE LAW JUDGE: Have a seat,
13 sir, and state your name and then spell it for us,
14 please.

15 THE WITNESS: Jonathan S. Shefftz. The last
16 name is spelled S-h-e-f-f-t-z.

17 DIRECT EXAMINATION

18 BY MR. RYAN:

19 Q. Mr. Shefftz, where are you presently
20 employed?

21 A. I'm a self-employed independent consultant.

22 Q. And where were you previously employed?

23 A. Previously I was employed by Industrial
24 Economics, Incorporated, from 1992 until spring of
25 2006.

1 Q. Can you tell me a little bit about
2 Industrial Economics?

3 A. Industrial Economics, or IEc for short, is a
4 consulting firm founded in 1981 with about 100
5 employees providing economic analysis and
6 environmental analysis services to a mixture of
7 public and private sector clients. I'm also working
8 for EPA under a subcontract with IEc on this case.

9 Q. Is your current work as an independent
10 consultant along the same lines as your work at
11 Industrial Economics?

12 A. Yes. While at IEc I worked on, essentially,
13 applied financial economic analysis in the context of
14 litigation disputes, environmental enforcement, and
15 public policy decisions. And since moving out of the
16 Boston area and becoming an independent consultant,
17 my work has remained pretty much the same.

18 Q. Can you briefly summarize your educational
19 background for us.

20 A. I have an undergraduate degree in economics
21 and political economy from Amherst College, and
22 master's degree in public policy from Harvard
23 University.

24 Q. Are you a member of any professional
25 societies?

1 A. Yes; a member of the National Association
2 for Forensic Economics, the Government Finance
3 Officers Association, the Eastern Economics
4 Association, and the Western Economics Association.

5 Q. Are there any other activities related to
6 your consulting practice?

7 A. I've served as a manuscript referee for the
8 *Journal of Forensic Economics*. I'm currently serving
9 as a course liaison for the engineering economic
10 decision-making course at the University of
11 Massachusetts, Amherst, where my duties essentially
12 comprise giving guest lectures and assisting in the
13 students' long-term research projects. I'm also the
14 vice-chair of the planning board in the town of
15 Amherst where I reside.

16 Q. Have you been published before?

17 A. Yes. I've published three articles, one on
18 EPA's economic benefit, practices, and policies;
19 another on so-called wrongful profits in the context
20 of economic benefits; and a third in a peer-reviewed
21 journal on taxation considerations in commercial
22 damages cases.

23 Q. You just mentioned economic benefit. What's
24 the point of calculating an economic benefit?

25 A. Although I'm not a lawyer, my understanding

1 is that EPA penalty policies comprise two main
2 components, the first being economic benefit under
3 which a penalty should not be set; and the second
4 being the gravity component which is added to the
5 economic benefit component.

6 Q. Describe your experience for doing economic
7 benefit calculations for us.

8 A. I've worked in this field since 1992. Most
9 of my experience stems from performing calculations
10 in settlement and for the U.S. EPA, Department of
11 Justice, state environmental agencies, and attorneys
12 general, not-for-profit litigators, and other private
13 parties.

14 I've also worked on the EPA BEN computer
15 model. I developed the current Windows version of
16 the model in 1998. I've been involved in revisions
17 to it since then. I've taught training courses on
18 the model on many occasions, both state and federal
19 staff, and I've also assisted in staffing and
20 supervising and consulting to the help line that U.S.
21 EPA maintains both for federal and state users of the
22 model.

23 Q. Could you tell us approximately how many
24 economic benefit calculations you've done in your
25 career?

1 A. I can't give you a precise number, but I've
2 been named as an expert in many dozens of cases,
3 worked on many hundreds of cases, and as a result
4 probably performed thousands of calculations by now.

5 Q. Have you testified as an expert before?

6 A. Yes. I've testified either in deposition or
7 at hearing or trial I think about 26 times, or
8 something like that.

9 Q. Would that include any EPA administrative
10 actions, such as the one here?

11 A. That included five administrative hearings,
12 one being *In the Matter of Ekco/Glaco*, one *In the*
13 *Matter of Rising Sun*, and then three were variations
14 on cases that involved Vico Construction.

15 MR. RYAN: Your Honor, I would move at this
16 time to have Mr. Shefftz recognized as an expert
17 witness in financial analysis and calculation of
18 economic benefit.

19 MR. McAFEE: No objection.

20 THE ADMINISTRATIVE LAW JUDGE: Okay. And he
21 is so designated.

22 BY MR. RYAN:

23 Q. Mr. Shefftz, are you familiar with the Vos
24 case?

25 A. Yes, I am.

1 Q. And how so?

2 A. I was retained by EPA to provide an expert
3 report on Respondent's economic benefit from the
4 alleged pollution control noncompliance.

5 Q. And could you--there's a series of binders
6 in front of you. Could you turn to Exhibit 47.

7 A. Yes.

8 Q. And do you recognize Exhibit 47?

9 A. Without inspecting every single word on
10 every single page, it appears to be a copy of my
11 expert report in this case, along with the attached
12 CV.

13 Q. Did you, in analyzing the economic benefit
14 in this case, did you reach a result?

15 A. Yes.

16 Q. What was it?

17 A. Yes, I did. Based on modelling the
18 pollution control expenditures as being avoided
19 entirely, the economic benefit is about 196,000. If
20 the control measures are put in place by the end of
21 this year, the economic benefit is about \$65,000.

22 Q. Okay. Let's step back and talk about the
23 economic benefit theory for a bit. How is a
24 noncomplying company financially better off in
25 economic benefit terms?

1 A. This can arise out of--three ways. One is
2 that required expenditures are avoided entirely; one
3 is that the--the second is that the savings arise by
4 the expenditures merely being delayed rather than
5 avoided; a third goes beyond the mere delay or
6 avoidance costs. So, in other words, the economic
7 benefit is based on analyzing what the company's
8 profit would have been had it been in compliance, and
9 then comparing that to what the profit actually was
10 out of compliance.

11 When we looked just at delayed and/or
12 avoided expenditures, we're taking a shortcut,
13 analyzing only those expenditures and setting
14 everything also about those two states of the world
15 equal. So that third category is basically when that
16 simplifying treatment doesn't apply.

17 Q. You mentioned just a moment ago "company."
18 Would you analyze a facility, such as Mr. Voş'
19 feedlot operation, any differently than you would a
20 company?

21 A. Economic benefit, the analysis can vary by
22 entity depending on certain things like tax rates.
23 But, in general, economic benefit, regardless of
24 whether it's a municipality, even a federal facility,
25 a not-for-profit, or a very small feedlot like this,

1 which I understand is organized as a sole
2 proprietorship--I haven't had confirmation of that--
3 either way it's the same analysis, looking at the
4 money that would have been made, or what the overall
5 cost would have been for being in compliance versus
6 the actual state of the world.

7 Q. Can you describe your theory of economic
8 benefit in this case?

9 A. So here what I'm doing is the economic
10 benefit represents the financial gains from not being
11 in compliance. And the idea is that money that
12 should have been spent on compliance was, instead,
13 available for, perhaps, other profit-making ventures,
14 it simply could have been returned to the owner, or
15 financing costs to pay for the environmental
16 structures were avoided.

17 And going along with that, it's very
18 important to note the time value of money. And so
19 money should have been spent at some point in the
20 past. It has not been spent yet. Even if it is
21 spent, there is a difference between money spent in
22 the past, money spent today, and money spent in the
23 future.

24 Q. So is it correct that the Respondent was
25 able to keep ahold of the money he would have

1 otherwise spent on control equipment and use it over
2 time?

3 A. Sure. That's one way of thinking of it.
4 Money was available for purposes other than
5 environmental controls.

6 Q. How did you calculate economic benefit here?

7 A. Here, like in all cases, I used standard
8 financial analysis and cash flow and present value
9 techniques. So all I'm doing is I'm applying the
10 same techniques I would use in, say, a commercial
11 damages analysis, or just when a company is making
12 internal decisions, looking at different investment
13 alternatives, or even the course I'm currently
14 assisting with at the University of Massachusetts,
15 looking at, for these students' research projects,
16 some entity trying to make a decision, looking at
17 different alternatives and seeing what the
18 differences are between them.

19 So what I do is I compare complying in a
20 timely and full manner versus what actually ensued.
21 And then once I've laid out the costs and cash flows
22 associated with those two different alternatives, I
23 have to first adjust it for inflation, adjust it for
24 taxation, and then adjust it for that time value of
25 money I discussed before. Because if we take dollars

1 from different years and add them together, it's
2 somewhat comparable to doing the same thing with
3 currencies of different countries. Mathematically we
4 could add together, say, U.S. dollars and euros, but
5 it really wouldn't have any meaning.

6 So in order to compare these in a sensible
7 way, what we need to do is adjust dollars from
8 different years to present values as of some common
9 date and then they can sensibly be compared to each
10 other, so the total of the present value of the
11 scenario with on-time full compliance can be compared
12 to what actually ensued, and then the difference
13 between them is equal to the economic benefit.

14 Q. Let's look at a real simple example here to
15 kind of break this down. Let's assume that a
16 noncomplying facility feedlot could have installed a
17 piece of equipment for a dollar in 2000. How does
18 that calculate? How does that benefit over time?

19 A. The first thing that has to be done, if
20 we're just looking at a dollar that was avoided back
21 in 2000, and here we are in 2008, is that dollar
22 needs to be adjusted for its tax deductibility. So
23 just like when you're trying to determine how much a
24 mortgage is really going to cost you, and you can
25 deduct the interest payments on your mortgage from

1 your taxable income, here, if, let's say, the
2 marginal tax rate is 40 percent, that dollar becomes
3 only 60 cents.

4 Next we need to bring that dollar forward to
5 the present. So a pretty typical cost of capital,
6 pretty close to what the generic value is in the BEN
7 computer model, is about 9 percent these days. So
8 that 60 cents in 2000 is compounded forward to 2008.
9 It becomes about \$1.20.

10 So essentially first that dollar became
11 smaller because of the tax consequences, and then
12 adjusting for the time value of money, it became
13 bigger.

14 Q. You mentioned 9 percent is the typical cost
15 of capital rate. What did you actually use in this
16 case?

17 A. Here in this case I used the Ibbotson
18 Associates Cost of Capital Yearbook to look up the
19 value for the meat products in the industry codes.
20 And over the period of noncompliance that worked out
21 to an average of significantly lower, 7.7 percent.

22 Q. So going back to our hypothetical, the 60
23 cents, bringing it forward, if that were not a
24 dollar, but, say, a hundred thousand dollars, how
25 would that compute out?

1 A. Basically the same ratio would apply. So in
2 the first example, a dollar became a dollar-twenty.
3 If it was a hundred thousand dollars in the first
4 place, then it would become about \$120,000.

5 Q. So looking back to the year 2000 in this
6 hypothetical, if a feedlot were looking at an
7 expenditure of a hundred thousand dollars, is it
8 worth more, then, down the road to have not spent it
9 in 2000, or if they have to, say, ultimately spend it
10 in 2008?

11 A. Right. So if you took that, say, hundred
12 thousand dollars in 2000, it would be bigger in 2008
13 because of inflation, but it wouldn't be \$120,000.
14 It would be somewhere between 100,000 and 120,000,
15 and also reduced for taxation. And so the economic
16 benefit would be equal to the difference of those
17 figures.

18 Q. Let's back off from our hypothetical and
19 talk about this case specifically. What numbers did
20 you look at in this case? Feel free to refer to your
21 expert report if you feel it's necessary.

22 THE ADMINISTRATIVE LAW JUDGE: Keep your
23 voice up.

24 MR. RYAN: I'm sorry, Your Honor.

25 A. If you want to follow along, in this case on

1 the bottom of page 5, I used the *Beef Feedlot Systems*
2 *Manual* published by Iowa State University. And there
3 I took the figures in Table 10 of the Appendix
4 entitled "The Initial Investment for System 1,
5 Earthen Lot with Windbreak." There were three
6 components there for the initial capital investment.

7 Q. Can we stop for a minute, Mr. Shefftz? Did
8 you say we're at the bottom of page 5 of your expert
9 report?

10 A. Yes.

11 Q. Where it says "Cost Estimates"?

12 A. Yes.

13 Q. Okay. Thank you.

14 A. And so that was composed of \$50,000 for
15 engineering, 90,000 for construction, and \$75,000 for
16 irrigation. I also included 5 percent of that 75,000
17 irrigation figure, 3,750, for annual repairs. And
18 then there was a replacement at the end--replacement
19 cycle at the end of 25 years as specified by Table
20 15, which included the figures for the useful life of
21 these structures.

22 Q. Let's go to that report. Could you
23 please, in your notebook in front of you, turn to
24 Exhibit 32?

25 A. Yes.

1 Q. And that should be the *Beef Feedlot Systems*
2 *Manual* from Iowa State University. Do you see that?

3 A. Yes.

4 Q. Would you turn to page 19, please, the
5 Appendix Table 10?

6 A. Yes.

7 Q. Is that the same Table 10 you're referencing
8 on page 5 under "Cost Estimates" in your expert report?

9 A. Yes.

10 Q. Okay. Now, looking at--there's a whole
11 series of rows and columns there. At the very bottom
12 of the page 19 of Exhibit 32, the second to the
13 bottom line says "Total," and it has a number of
14 numbers, and one is \$187,010. Is that for a lot that
15 has 750 head?

16 A. That figure you're looking at, yes. Not the
17 figure I used.

18 Q. And the next number over would be \$547,910.
19 Is that for the total cost for 1,500 head?

20 A. Right. That's the total cost for the
21 initial investment. Once again, not the number I
22 used.

23 Q. Which number did you use, then?

24 A. The number I used is the subtotal in the row
25 one up from that, for the environmental structures.

1 So facilities and equipment, that did not enter into
2 my calculations at all.

3 Q. So is the number you used \$215,000?

4 A. Yes, just the \$215,000 subtotal there for
5 the environmental structures.

6 Q. Okay. So you used that number, and then
7 what did you do with it?

8 A. So if you turn to the final page of my
9 report--or the final numbered page of my report
10 before the resume, on page 8 it has a rather dense
11 table--and I apologize for the font. If I knew how
12 it was going to be reproduced, I would have tried to
13 make it a little more legible. But this shows the
14 calculations, and what I did with that 215,000
15 figure--

16 Q. Is that in the upper left-hand corner of the
17 chart on page 8 of your report?

18 A. Right. So the column that says "Original
19 Cost Estimate," and the row that says "Initial Cost,"
20 you'll see the 215,000 figure.

21 Q. That's right out of Table 10 of Exhibit 32?

22 A. That's correct.

23 Q. Tell us how you got to your economic
24 benefits results starting with this \$215,000 initial
25 cost.

1 A. The first thing I have to do is that's from
2 a document that was produced in 2006. Now,
3 noncompliance, I understand in this case, physically
4 is alleged to date back to, if I recall correctly,
5 1991. But because of the statute of limitations, I
6 conservatively took the economic benefit back to only
7 August 2002, five years before the filing of the
8 complaint, is my understanding.

9 Q. Can we stop there for just a minute?

10 A. Yes.

11 Q. you say you started the economic benefit
12 numbers calculation, then, five years ago; is that
13 correct?

14 A. That's right.

15 Q. Now, if hypothetically Mr. Vos was out of
16 compliance with the Clean Water Act longer than that
17 five years, would he actually have a greater economic
18 benefit as a result?

19 A. Yes. The economic benefit would be much
20 larger both because the--looking at the costs I have
21 here both because the annual--annually recurring
22 repair cost, the irrigation system would have been
23 avoided over a much longer period of time, and having
24 to--the present value of having to put in the
25 environmental structures over a decade earlier would

1 have had a much higher value and, therefore, the
2 economic benefit would be much higher.

3 Q. Going back to your analysis for the last
4 five years only, what did you do next?

5 A. Okay. So I have these cost estimates from
6 the manual, but that's as of 2006. Had compliance
7 occurred in 2002, because of inflation, it would have
8 cost less. So I have some calculations here.
9 Instead of using the constant inflation rate over
10 time, to be more precise I have monthly values from
11 what's called the Construction Cost Index from the
12 publication *Engineering News Record*. So just like
13 you might hear about on the nightly news about how
14 the Consumer Price Index has gone up so much over the
15 past month, this is a more specialized index that
16 more closely tracks costs for, like, the
17 environmental structures in this case.

18 So after I performed the inflation
19 adjustments to figure out what the out-of-pocket
20 costs, so to speak, would have been back then, I take
21 into account the tax consequences using, to be
22 conservative, a very high tax rate, the highest
23 possible marginal combined tax rate, U.S. and Iowa
24 combined.

25 Q. Why is that conservative, using the highest

1 tax rate?

2 A. The higher the tax rate--the higher the tax
3 rate, the lower the after-tax cost of compliance.
4 All else being equal, the lower the cost of
5 compliance, the lower the economic benefit. So even
6 if Respondent was paying a marginal tax rate much
7 lower than this, then, therefore, the actual
8 after-tax cost would have been higher, and,
9 therefore, the economic benefit figures would be much
10 higher than in my report. But lacking any
11 information on Respondent's detailed tax finances, I
12 just conservatively used the highest tax rate
13 possible.

14 Q. So by using the highest tax rate possible
15 are you essentially giving the Respondent the benefit
16 of the doubt?

17 A. Yes. It's biasing the economic benefit
18 result downward.

19 Q. Okay.

20 A. In addition to the tax rate, I also chose
21 the most rapid depreciation schedule possible. Even
22 though these environmental structures have a useful
23 life of 25 years, according to the Beef Manual, I
24 used a relatively rapid depreciation schedule over a
25 seven-year period just in case, for tax purposes,

1 they really might have been able to depreciate that
2 quickly. Once again, that lowers the economic
3 benefit.

4 And I also took account of the fact that the
5 special depreciation schedules were available. As of
6 2002, congressional legislature encouraged investment
7 then. Whether something like this really would have
8 qualified, I don't know for sure, but to be
9 conservative, I applied that faster schedule which
10 also biases the economic benefit downward.

11 So then once I've finished with these
12 inflation and taxation adjustments, then I have
13 dollars as of these different years. As I said
14 before, I have to adjust them for the time value of
15 money. And so I use a present value factor that's
16 based upon that annual 7.7 percent rate.

17 And then to figure out what the economic
18 benefit is if all these costs are avoided--

19 Q. Where are we on this chart right now, page
20 8?

21 A. Sorry. We're now on the final column, and
22 you see some of the headings above that say "Present
23 Values using 7.7 percent, and at September 1st,
24 2008."

25 When I wrote this report in mid-August,

1 September 1st was the first day of the following
2 month. Now we're in the middle of September. I
3 also, once we get down to that section, I give
4 figures on how this economic benefit can be brought
5 forward from month to month recalculating,
6 essentially, the definition of when the present is.

7 Q. So what's the significance of that September
8 1st, 2008, date?

9 A. It was simply roughly at the time of my
10 report.

11 Q. Okay. Go ahead.

12 A. So focusing on that final column where I
13 have the result in dollar terms--and, once again, I
14 apologize for the poor print quality here--there's a
15 line that says if all compliance costs are avoided,
16 then total economic benefit is equal to about
17 196,000. So that's adding up the present values of
18 putting in place the environmental structures in
19 2002, and then paying for the irrigation system
20 repair costs over the intervening period, up until
21 February 2007, when I understand the feedlot came
22 into compliance by lowering its head count.

23 Q. So in simple terms, if Mr. Vos never
24 constructs these controls, and he's found to be
25 governed by the Clean Water Act, in other words he's

1 required to have these controls, then this would be
2 his economic benefit?

3 A. Yes, if he never takes any other measures to
4 come into compliance.

5 But then, alternatively, if these controls
6 are to be put in place by about the end of this year,
7 I calculated what the economic benefit would be for
8 that.

9 So you can see I have the delayed costs down
10 below. So that 215,000, now instead of getting
11 smaller, it gets bigger because of the inflation
12 adjustments since the manual from 2006--the costs are
13 going to be higher at the end of 2008. So if you
14 look at the fine print--once again I apologize for
15 the poor legibility of this, but the 215,000 becomes
16 about 235,000.

17 Q. Where is the 235,000?

18 A. If you look at the row that says "Delayed
19 Costs," and then you follow it across, the 215,000,
20 there are some--there's a monthly value for the
21 Construction Cost Index, and then in the fourth
22 column that has numbers in it, there's a 235,000.

23 Q. Would that be under the "Inflation Adjusted
24 Cost"?

25 A. That's correct.

1 Q. Just so I understand, if he were to go out
2 and build it today, based on these 2006 costs we find
3 in the manual, Exhibit 32, it wouldn't be 215,000, it
4 would be 235,000?

5 A. Roughly speaking. If those costs in the
6 manual are reasonably indicative of the cost that
7 would be incurred at this particular feedlot, and if
8 inflation over this two-year period for structures
9 like this has been pretty similar to the Construction
10 Cost Index, then that's a good estimate of what it
11 would cost now.

12 Q. Go ahead and proceed.

13 A. So then I go through the same calculations
14 for the present value of that, and I subtract that
15 from the previous figure for the economic benefit,
16 and also add onto that a measure of the--what it
17 would cost to replace this equipment earlier had it
18 been installed at an earlier point in time.

19 Since even if this equipment is put in
20 place--I'm sorry--these structures are put in place
21 in 2008 as compared to 2002, they're still in better
22 condition than they would have been in 2002. There's
23 more of their useful life left. So with those
24 adjustments, the final result is 65,000 as compared
25 to \$196,000.

1 Q. And that would be reflected in the final
2 column in approximately the middle of that chart on
3 page 8 of your expert report?

4 A. Yes.

5 Q. Is the actual number \$64,965?

6 A. Yes, if we take it to the exact dollar.

7 And then earlier I said that this table also
8 has calculations that show how these figures increase
9 over time if the penalty is paid at some point in the
10 future as opposed to right now, as of when these
11 figures are calculated. And so for the avoided cost
12 scenario with the economic benefit of about \$196,000
13 increases at a rate of about \$1,200 per month, and
14 the \$65,000 figure increases at a rate of about \$400
15 per month.

16 Q. So in a general sense, economic benefit is
17 looking at the money that the noncomplier has in his
18 pocket, so to speak, from not building a piece of
19 equipment, and what it's worth to him today. Is that
20 correct, generally speaking?

21 A. Yeah, that's a quick summary.

22 Q. So the date he disgorges that money from his
23 pocket would be the penalty payment date?

24 A. That's right.

25 Q. Until he disgorges that economic benefit for

1 noncompliance, the economic benefits continue to
2 accrue in his favor?

3 A. That's right. I should note, as I said
4 earlier, the compliance dates that I use in my
5 calculations also play a big role. The irrigation
6 system repair costs, those are cut off at February of
7 2007 when the facility did come into compliance. And
8 the delayed costs of the \$215,000 for the
9 environmental structures, I modelled that as being
10 projected to be completed at the end of this year.

11 So putting in those dates, as opposed to
12 dates further in the future, has a big impact on
13 stopping that economic benefit. But then once that
14 economic benefit is calculated, it does continue to
15 grow, depending on what our definition of the present
16 is for the present value calculations.

17 MR. RYAN: I have no further questions, Your
18 Honor.

19 THE ADMINISTRATIVE LAW JUDGE: Okay. You
20 need a minute, or are you ready to launch right into
21 this?

22 MR. McAFEE: I think I'll go ahead and
23 start.

24 THE ADMINISTRATIVE LAW JUDGE: Okay.

25

CROSS-EXAMINATION

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BY MR. McAFEE:

Q. Good afternoon, Mr. Shefftz. Did I pronounce your name correctly?

A. Yes.

Q. All right. Thank you. I'm Eldon McAfee. I represent the Respondent, Lowell Vos, and I want to go through some of this with you to make sure we understand how this has been calculated. And some of my questions may be pretty basic, but, again, we need to get to the bottom of this to determine how you've calculated your economic benefit analysis here.

And I guess I'll start with some background on you. I won't get into your resume and qualifications other than to ask you have you ever conducted an economic benefit analysis on a feedlot before?

A. Yes...

Q. Okay. Could you tell me when and for what purpose or purposes?

A. There have been a lot.

Q. Okay.

A. I don't want to repeat my qualifications, but I have been doing these calculations since 1992.

Q. On feedlots?

1 A. Feedlots--you know, every now and then I get
2 a case for a new industry that I've never worked on
3 before, sometimes a product that I never even knew
4 existed, but feedlots, for better or for worse, are
5 something that we see quite a bit.

6 Q. When you say "we"-- Let me ask you, are
7 those cases you've worked on, are those related to
8 EPA actions?

9 A. EPA, Department of Justice, state EPAs, and
10 state attorneys general, and not-for-profit
11 litigators, yes.

12 Q. Again, regarding feedlots?

13 A. Yes, quite a few.

14 Q. Okay. You've not been to Lowell Vos'
15 feedlot, I take it?

16 A. I have not.

17 Q. I take it it is not necessary for you to
18 physically view a feedlot, or any other business, to
19 conduct this analysis?

20 A. In this case I did not think that a site
21 visit was necessary.

22 Q. Okay. I guess one of the things I want to
23 understand is how the increased costs of the
24 construction costs are figured into your analysis. I
25 think it's a pretty basic assumption that you're

1 assuming Lowell should have built these facilities
2 in--what date, again?

3 A. It's based on the statute of limitations
4 cut-off, so it's August 2002.

5 Q. Okay. And, obviously, and I think you've
6 testified to this, the cost of building those today,
7 using the date of December 31 of 2008, as you have
8 here, is higher; is that correct?

9 A. Yes, unless there's some highly unusual
10 circumstance where somehow there's been some
11 technological innovation, or perhaps the cost of
12 specific material has gone down. Sometimes I see
13 things like that in products or services that tend to
14 follow, perhaps, local conditions, things like
15 hazardous waste disposal that don't follow general
16 inflationary trends. But something like this, it
17 seems like the Construction Cost Index would be a
18 reasonable fit.

19 Q. For someone like me, and others, we would
20 say, well, the fact that he did not build, if he was
21 required to build in August of 2002, and doesn't
22 build until December 31 of 2008, that there may not
23 be any economic benefit to waiting that long because
24 the costs--the fuel costs, et cetera, going up as
25 much as they have lately, that there may not be any

1 economic benefit. Is that all factored into your
2 analysis here?

3 A. Yes. If you look at--again, I apologize for
4 how this printed up as an exhibit, but my estimate
5 for how much it would have cost in 2002 is \$185,000.
6 My estimate for how much it would have cost in 2008
7 is about \$235,000. So that takes into account the
8 inflationary increases over that period.

9 All else being equal, if inflation is
10 higher, that reduces the economic benefit. If
11 inflation is lower, that increases the economic
12 benefit. So the key factor is that spread between
13 inflation and the time value of money.

14 Q. Could you help me? I see the \$235,856 figure.
15 Is that the one you're saying is today's cost?

16 A. Yes, roughly speaking.

17 Q. Where is the 185?

18 A. The very first row going across.

19 Q. Okay. Very first row--I apologize.

20 A. Very first row, fourth column with numbers
21 under the--the same column.

22 Q. I see it.

23 A. To give an example, once we had--when we
24 were working on some cases that involved a more
25 industrial process machinery, you know, pieces of

1 control equipment that had large components of steel
2 in them, and there is a period in the U.S. economy
3 when steel prices were just going up at an
4 astoundingly high level, that would significantly
5 reduce some economic benefit figures to almost
6 nothing just because the cost of compliance out-of-
7 pocket had gone up much faster than anything else in
8 the economy. So it really would have paid to do it
9 earlier to take advantage of it, and there's some
10 elements of that here.

11 For example, the special tax break that I
12 had mentioned with accelerated depreciation was
13 available back in 2002 following the September 11th
14 tragedy, but eventually that was phased out and it's
15 no longer available now. So things like that do
16 dampen the economic benefit, or partially offset it.

17 Q. So Mr. Vos' costs to build now, when it
18 comes to December 31, 2008, if those were higher than
19 \$235,000, then his--your economic benefit analysis
20 would not reflect that?

21 A. You also need to look at what the cost would
22 have been in 2002. In other words, let's say both of
23 those figures in reality would have been 10 percent
24 higher than what I have here. So in that case that
25 would--well, that would slightly--that would slightly

1 increase the economic benefit. If both those figures
2 were five percent lower, it would slightly decrease
3 the economic benefit. If it was a fixed amount, if
4 each figure was \$20,000 lower, that would change it.
5 It all depends on the relationship between those two
6 dates.

7 Q. Again, let's turn, then, to--what if Mr. Vos
8 has already paid some of the costs of construction?
9 You have engineering costs built into this, I assume,
10 through the ISU *Beef Systems Manual*?

11 A. That's correct.

12 Q. I believe I saw a number on page 19 of the
13 *Beef Systems Manual*--let me check that exhibit
14 number.

15 MR. RYAN: 32.

16 MR. McAFEE: Thank you.

17 BY MR. McAFEE:

18 Q. Exhibit 32 on page 19 lists engineering
19 costs of \$50,000. Is your model assuming he has not
20 paid those?

21 A. That's right.

22 Q. So if he has, in fact, paid engineering
23 costs already, just hasn't constructed, that would
24 affect your analysis?

25 A. That's correct.

1 Q. And how would that--you'd have to know that
2 date as to when he paid it because that would, in
3 effect, have stopped the benefit of not paying that
4 cost; is that right?

5 A. Exactly.

6 Q. I now want to talk a little bit about the
7 dates of noncompliance. You started the date of
8 noncompliance, again, on the statute of limitation
9 date, which is on page 5. You've listed August 14th,
10 2002. Is there a way--well, let me ask you first, if
11 that date of noncompliance were several years later,
12 let's say four years later, for instance--I'll just
13 ask you this as a hypothetical--that would,
14 obviously, change your calculations quite a bit; is
15 that right?

16 A. Yes.

17 Q. All right. There will be some testimony in
18 this case, which has not been entered of record yet,
19 so we'll have to use it as a hypothetical, but a
20 program where arguably--and I, on behalf of Mr. Vos,
21 will be making this argument to the Court--that he
22 was not out of compliance, if at all, of course, but
23 not out of compliance until April 1 of 2006 when a
24 program called the Iowa Plan ended.

25 So if that were the date, beginning of

1 noncompliance, April 1 of 2006, and then you have
2 February 19, 2007, as the date when he reduced his
3 head counts to come into compliance, that would be
4 just short of a year of noncompliance, right,
5 roughly?

6 A. Yeah. About ten months, yeah.

7 Q. Is there some way from your table, like
8 these monthly increases, can those be used to do an
9 analysis, or figure out what would your figure be for
10 ten months of noncompliance?

11 A. It's something that, you know, doing some
12 typing on my computer I could figure out very
13 quickly, but by looking at this table and trying to
14 do calculations in my head, not really, but it would
15 be drastically reduced.

16 Q. Is there a way--I understand you're not at
17 your computer.

18 A. I'm sorry. I misspoke. The delayed
19 economic benefit would be drastically reduced. The
20 avoided economic benefit would be significantly
21 reduced, but it would still be substantial.

22 Q. Okay. Let's talk about the delayed cost.
23 Turning to page 8 of your report, you have there a
24 monthly increase--talking about delayed costs,
25 again--of \$404 per month; is that correct?

1 A. That's correct.

2 Q. What I'm trying to get at, just sitting on
3 the stand as you are today without your computer in
4 front of you, can we use that \$404 a month to in any
5 way determine what the economic benefit would be for
6 ten months, not compliant from April 1 of '06 to--

7 A. Sorry. It's just a math thing. It just
8 doesn't work that way. That figure is applying to
9 \$65,000 being brought forward from month to month.

10 Just to give you a flavor, if you want to
11 know what this would entail, if you have this only
12 about ten- month noncompliance period, basically
13 these dates change. So if you're only interested in
14 the delayed costs, the spread between the dates when
15 the money should have been spent and when it was
16 actually spent, it's less than a year, so the
17 differential gets a lot smaller. And then, also, the
18 avoided annual costs, you have only ten months of
19 those instead of almost five years. So that was a
20 fairly small cost to begin with.

21 Although it's a little bit speculative for
22 me to say this, I'm pretty sure with only a ten-
23 month noncompliance period, the delayed economic
24 benefit would be quite small. The avoided economic
25 benefit, though, would still be substantial.

1 Q. For the delayed--and I'm just asking for
2 estimates from you, and I realize they're very rough.
3 Can you give me a dollar estimate? You said quite
4 small. I'm just looking for a ball park.

5 A. I wish I could. I love doing
6 recalculations. Clients call me up on the phone all
7 the time and ask me to recalculate things. I love
8 doing that. I love numbers, what can I say?

9 All I can say is now it's 65,000, and
10 although--unfortunately, these things don't work
11 quite proportionally, but it's based upon a
12 noncompliance period, you know, from August of 2002
13 to February of 2007, and then the delayed costs, you
14 know, to December 2008, kind of averaging out the five
15 or so years, you know. When you take five or six
16 years and you cut it down to less than one year, you
17 know, can you sort of say it's equal to one-fifth or
18 one-sixth? Sort of. It gives you a very rough idea.

19 I will say, I'm pretty confident it would be
20 less than half that figure there, and it might even
21 be more like a quarter of it. It's getting really
22 speculative. And although these things are not
23 complicated to do with a spreadsheet, to try to do
24 them in my head, I can't give you a more precise
25 answer than that.

1 Q. I'm not trying to be unfair to you, I'm just
2 looking for a ball park, and maybe I'm being unfair
3 to ask for a ball park. You said maybe a fourth--I
4 don't want to mischaracterize what you said.

5 A. Although some things surprise me sometimes
6 when I run it through a spreadsheet and take into
7 account all the taxation and inflation
8 considerations, you know, looking at it here, I'm
9 pretty confident it would be less than half of that
10 \$65,000, and I'm fairly confident, you know,
11 somewhere--a quarter of that \$65,000 figure is in the
12 ball park, so to speak.

13 But, once again, it's something easy,
14 relatively, to do in a spreadsheet, at least for me,
15 at least, but hard for me sitting here on the stand
16 in my head.

17 Q. I understand. I think you've done very
18 well, I just wanted to get a ball park.

19 I do want to confirm one thing. Does your
20 economic benefit analysis, it does take into account
21 the lost income, the fact that--I need to clarify
22 better. I mean for lost income, first of all, when
23 Mr. Vos reduced to less than a thousand head, you
24 stopped your delayed cost analysis at that point;
25 right?

1 A. I stopped the irrigation costs that were
2 being--the irrigation repair cost being incurred each
3 year.

4 Q. Okay. All right. Let's take the scenario
5 if Mr. Vos never builds, never constructs anything,
6 and he would--to do that and not have the EPA on his
7 door constantly, he would have to be at less than a
8 thousand head to do that. Does your model take that
9 into account, if he never constructs--and your number
10 is much higher if he never constructs--he must stay
11 under a thousand head to be in compliance, does your
12 model take that into account?

13 A. I did not have sufficient information to do
14 that. If the feedlot was to forever stay under a
15 thousand, then I would need to have information on
16 what level it was at before, and then detailed
17 information on the incremental costs and incremental
18 revenue, and, therefore, incremental profit
19 associated with the additional head. And I know I
20 just said "incremental" three times in a row, but
21 it's an important distinction because the concern is
22 not the overall profit level, but that profit
23 associated just with those incrementals, those
24 additional head of cattle.

25 So it requires a lot more information to do

1 that than what I have here. Not just a different
2 type of information, but a lot more information
3 because I need to know what costs are fixed costs; in
4 other words, they don't vary depending on the number
5 of head, and the same thing with revenues. Sometimes
6 it's hard to split those things out.

7 So as an example, this type of analysis--
8 recently I was looking at an asphalt plant, a lot
9 different, I know, than raising cattle. But the
10 issue there was the company had exceeded its permit
11 limit and produced more than it should have. So I
12 had very detailed information on each facility for
13 each month's production, breaking out costs. So I
14 was able to identify which costs were proportional to
15 the level of production. I could scale those back
16 accordingly, and then figure out what the revenue had
17 been on a per time basis. That's an example of how
18 that kind of calculation would work.

19 Q. I want to make sure I understand. Under
20 your analysis, if he does not build--of course that's
21 much higher, the economic benefit. And does that
22 assume that he will return to production at over a
23 thousand head, if he does not build?

24 A. It's not taking into account the distinction
25 between that. I mentioned in the report on page--the

1 top of page 5 I have a reference to that. So--I
2 mean, alternatively the economic benefit can be done
3 by saying that back in 2002 the head count should
4 have been reduced to that, and then information we
5 need, not just current information, but going back in
6 time as to how cost and revenues varied and were
7 linked to the head count.

8 Q. I need one clarification here. Again,
9 you've stopped some of your calculation, anyway, at
10 February 19th, 2007, when he reduced to less than a
11 thousand head; right?

12 A. That's correct.

13 Q. And what I'm not quite following, and you
14 might have explained it, but you may have to lead me
15 through it again, is why does the cost, if he never
16 constructs, go up so much if that is the date he came
17 into compliance, and if he stayed at that date? Are
18 you telling me that's the information you don't have?

19 A. I'm sorry. I just wasn't quite following
20 you. You might have said that fine.

21 Q. Probably the way I asked the question. In
22 your analysis you've stopped--I'm using the term
23 "stopped"--some of the economic benefit on February
24 19th of 2007, when he reduced to less than a thousand
25 head, which brought him into compliance; right?

1 A. Right. Into legal compliance, right.

2 Q. You stopped some of your economic
3 benefit--the economic benefit he received, that
4 stopped as of that date, some of it; right?

5 A. Right. I'm stopping the avoided costs for
6 the irrigation system repair rate.

7 Q. The other costs continued?

8 A. Right. The delayed cost is not modelled as
9 being incurred until the end of this year.

10 Q. What I'm not--maybe you've answered it. I
11 want you to help me confirm that. Maybe if--with
12 that date in mind, and if he never constructs and
13 stays below a thousand head, I'm having trouble
14 understanding why the benefit is so high. Is that
15 the information you don't have that you say you need?

16 A. Well, if you're saying that he's never going
17 to instruct--construct, but is going to permanently
18 stay below a thousand head, then that becomes the
19 more accurate compliance scenario. And although this
20 can be used as a proxy for it, I would want to know
21 what the incremental profit was associated with those
22 additional head of cattle that essentially should
23 have been foregone over the entire noncompliance
24 period, and that would probably be a better measure
25 of the economic benefit.

1 Q. And so those numbers aren't here?

2 A. I lack--I love doing these calculations, but
3 I don't know what the exact head count was over time.
4 And although it's possible to look up average figures
5 for profit per cattle, you know, something like that
6 varies so much from feedlot to feedlot.

7 Q. I understand. Let's turn to the scenario if
8 he does construct. He's at less than a thousand head
9 right now, and your analysis here, does it assume
10 that he stays at a thousand head until December 31,
11 2008, and then constructs?

12 A. Essentially, yes.

13 MR. McAFEE: Okay. I don't have any further
14 questions, Your Honor.

15 THE ADMINISTRATIVE LAW JUDGE: Thank you.

16 Mr. Ryan?

17 REDIRECT EXAMINATION

18 BY MR. RYAN:

19 Q. On that last theme of head count, I believe
20 you testified that in order to do a proper analysis
21 for staying in compliance by remaining forever under
22 one thousand head, you'd have to look at the per head
23 profit for the entire period of noncompliance. Is
24 that what you stated?

25 A. The incremental--I know I keep using that

1 word, but it's very important. Not just taking the
2 total profit for the feedlot and dividing by the
3 number of head, but looking at the profit, the
4 incremental profit that's gained from how many head
5 put the feedlot over the thousand head limit.

6 Q. So, for example, if the lot had 2,000--to
7 pick round numbers, the lot had 2,000 head over the
8 last five years, and now has 1,000 head that reduced--
9 so they're producing 1,000 head less. And let's
10 assume for this hypothetical that the profit per head
11 is \$100, just to pick a round number. That will be
12 \$20,000--that would be reduced by 1,000 head times
13 \$100 per head, that would be \$20,000 per year reduced
14 profit. Is that a fair analysis--way to look at it?

15 A. I think you multiply a hundred dollars times--

16 Q. Two thousand--one thousand, excuse me. I'm
17 a lawyer, I don't know math.

18 A. That's okay.

19 Q. \$100 per head times 1,000 head would be a
20 hundred thousand dollars.

21 A. Right. A hundred dollars per head times a
22 thousand head, \$100,000, depending upon--I don't
23 exactly know what the production cycle, so to speak,
24 is for rearing a calf and bringing it to slaughter,
25 but that would need to be accounted for, too.

1 Q. So let's assume there is one production cycle
2 per year. If there are two production cycle per year, it
3 would be double that. So let's assume one each year.
4 For the last five years the feedlot owner is producing
5 1,000 less head in order to stay under the limit. So
6 that would be \$100,000 a year for five years. So
7 would that be \$500,000 in profit that he made but he
8 should not have made over the last five years?

9 A. Roughly speaking, \$500,000 in profit, and
10 then we have to go through that--basically that same
11 exercise we went through earlier, with the one dollar
12 in avoided costs, except here it's profit that has to
13 be converted to after-tax basis and then brought
14 forward at the same time value of money. So first it
15 gets smaller, and then it gets bigger.

16 So in this--in the scenario you've described
17 there, complying by permanently staying under that
18 limit, is far more costly than implementing
19 control--environmental control measures.

20 Q. And we would have to look at the profit that
21 he did in fact gain over the last five years in
22 looking forward to this noncompliant scenario of
23 permanently staying under a thousand head; is that
24 correct?

25 A. Going out into the future, that's not

1 something that was done improperly, so we're just
2 looking at the noncompliance period.

3 Q. Right. Now, on cross you were asked about
4 the 2006 costs that were in Exhibit 32, and that was
5 the Iowa State beef cattle study that we talked
6 about. You used the number 215,000, and you were
7 asked if that number were bigger--let's assume for
8 sake of argument that \$215,000 underestimates how
9 much Mr. Vos would have spent five years ago to come
10 into compliance, or in 1991, for that matter. If you
11 were asked if that number was bigger, what effect
12 would that have on the overall economic benefit? Can
13 you briefly summarize what would happen if that
14 number grew?

15 Let's assume, for sake of argument, that
16 Mr. Vos couldn't have done this for \$215,000 in 2006
17 dollars. Let's assume it cost him \$300,000. What
18 effect would that have?

19 A. Basically it's proportional to the
20 relationship between those two numbers. So, in other
21 words, to keep it a little bit more simple, if that
22 215, if, say, that Iowa feedlot had been redrafted
23 and focused--and the Iowa Manual had been redrafted
24 to focus specifically on this feedlot and they
25 decided it was \$430,000, exactly twice as much, then

1 the economic benefit would be exactly twice as much.

2 Earlier I was asked to perform some numbers
3 in my head, which is hard to do. But when we're just
4 talking about all the compliance cost figures
5 increasing by a certain percentage, the economic
6 benefit increases by the same percentage.

7 Q. If this \$215,000 is low by 30 percent, would
8 the ultimate economic benefit be low by 30 percent,
9 roughly speaking?

10 A. That's correct.

11 MR. RYAN: I have no further questions, Your
12 Honor.

13 THE ADMINISTRATIVE LAW JUDGE: Okay.
14 Mr. McAfee, anything?

15 MR. McAFEE: I believe just one question.

16 RE CROSS EXAMINATION

17 BY MR. McAFEE:

18 Q. Did I hear you correctly-- I believe you
19 made the statement, in response to a question from
20 Mr. Ryan about staying under a thousand head,
21 something about it would be far more costly than
22 building the structures. Did I hear that right, or
23 did I misunderstand you?

24 A. That was under the scenario where the
25 incremental profit per head is \$100. And what I

1 meant by "costly" was foregone profit. So I'm kind
2 of talking economic speech there. The concept of
3 opportunity cost.

4 So if there's an action that a company has
5 to take that even if it doesn't require writing a
6 check to someone in the form of a cost, it reduces
7 profit, then that's what I meant by more costly.

8 Q. Did I understand that correctly, staying
9 under a thousand head would be far more costly to
10 Mr. Vos than building the structures? Is that what
11 you meant?

12 A. If it was \$100 per head and you had one full
13 cycle of cattle each year.

14 MR. McAFEE: I just wanted to make sure I
15 understood. Thank you. I have no further questions.

16 MR. RYAN: I have one more question.

17 FURTHER REDIRECT EXAMINATION

18 BY MR. RYAN:

19 Q. If it were more costly, this hypothetical
20 \$500,000 to Mr. Vos, would that result in a larger
21 economic benefit, or a smaller economic benefit?

22 A. That's what I meant by more costly. In
23 terms of the economic benefit, the foregone profit
24 would be much higher.

25 In other words, when I say there's an

1 economic benefit, X amount of dollars, even based
2 upon avoided and delayed pollution control costs,
3 that's essentially saying that's what the cost of
4 compliance ultimately is by complying on time, it's
5 that economic benefit.

6 So here, if reducing the head count would
7 have entailed foregoing that much profit, it's more
8 costly in that sense; and, therefore, what I mean by
9 that is the economic benefit is, therefore, much
10 higher.

11 MR. RYAN: I have no further questions, Your
12 Honor.

13 MR. McAFEE: I have no further questions,
14 Your Honor.

15 THE ADMINISTRATIVE LAW JUDGE: Okay. Thank
16 you for your testimony.

17 (Witness excused.)

18 THE ADMINISTRATIVE LAW JUDGE: We'll take a
19 five-minute break. Then the next witness will be?

20 MR. BREEDLOVE: Bryan Hayes from the Iowa
21 Department of Natural Resources will be our next
22 witness.

23 THE ADMINISTRATIVE LAW JUDGE: Okay. See
24 you back in five minutes.

25 (Short recess.)

1 THE ADMINISTRATIVE LAW JUDGE: We'll go back
2 on the record.

3 Go ahead, Mr. Breedlove.

4 MR. BREEDLOVE: The Environmental Protection
5 Agency calls Bryan Hayes with the Iowa Department of
6 Natural Resources.

7 THE ADMINISTRATIVE LAW JUDGE: Okay. Hi,
8 Mr. Hayes. Raise your right hand, please.

9 BRYAN THOMAS HAYES,
10 called as a witness by the Complainant, being first
11 duly sworn by the Administrative Law Judge, was
12 examined and testified as follows:

13 THE ADMINISTRATIVE LAW JUDGE: Okay. What
14 we'd like you to do is state your name and spell it
15 for the court reporter.

16 THE WITNESS: Bryan Thomas Hayes; B-r-y-a-n,
17 T-h-o-m-a-s, H-a-y-e-s.

18 THE ADMINISTRATIVE LAW JUDGE: Okay,
19 Mr. Breedlove.

20 MR. BREEDLOVE: Thank you, Your Honor.

21 DIRECT EXAMINATION

22 BY MR. BREEDLOVE:

23 Q. Mr. Hayes, can you please provide us with
24 your educational background.

25 A. I graduated from Iowa State University in

1 the fall of 1985 with a bachelor of science degree in
2 fish and wildlife biology.

3 Q. And who do you work for?

4 A. I work for the Iowa Department of Natural
5 Resources.

6 Q. How long have you worked for IDNR?

7 A. For 21 years.

8 Q. What area of IDNR--within what area of IDNR
9 do you work for?

10 A. I work for the fishery section.

11 Q. How long have you worked for the fishery
12 section?

13 A. For 21 years.

14 Q. What is your current position?

15 A. I'm a fishery biologist.

16 Q. How long have you been in this position?

17 A. For nine years.

18 Q. Previous to your current position?

19 A. I was a natural resources technician for 12
20 years.

21 Q. And prior to that?

22 A. Prior to that I'd worked some seasonal
23 positions while attending college.

24 Q. What are your duties in your current
25 position?

1 A. I cover a ten-county area managing fish
2 populations in the waters of the state.

3 Q. And what type of work did you do in your
4 previous positions?

5 A. As a natural resources technician, also
6 worked in--on managing fish populations, but maybe
7 not necessarily in a leadership role. In the fishery
8 section we tend to work in two-person teams, a
9 biologist and a technician. So...

10 Q. In your current position, what are your
11 typical duties? What do you do?

12 A. Manage fish populations in public waters.
13 This involves lakes, streams, rivers. It involves a
14 whole host of things. It can involve stocking fish,
15 when needed. We do monitor some water quality, we
16 work to improve water quality. We do a lot of public
17 relations work, promoting fishing.

18 So it can involve a whole host of things.
19 But what we're getting at is trying to provide the
20 best fishery resources we can for the people in the
21 State of Iowa.

22 Q. Your duties include assessing streams?

23 A. Yes, it does.

24 Q. What's involved in assessing a stream?

25 A. Well, we go out and sample streams. We've

1 been inventorying streams a number of years in Iowa
2 trying to find out what's in them. A lot of these
3 streams have not been inventoried for 25 years. And
4 by an inventory, I mean we go out and look and see
5 what kind of species are there and at what abundance.

6 We also do some physical habitat
7 measurements just to provide some, you know, current
8 data on what the habitat is like so if they repeat
9 this in another 25 years, we can look and see what's
10 changed.

11 Q. Have you ever performed any investigations
12 following up on fish kills?

13 A. Yes, I have.

14 Q. What's--how many fish kills have you
15 responded to?

16 A. Oh, probably 25, or so.

17 Q. Do you also perform routine investigations
18 looking at diversity and populations of streams?

19 A. Yes, I have. In the 21 years I've probably
20 done 200 of those.

21 Q. Have most of those stream assessments been
22 on Iowa streams?

23 A. All of them have been.

24 Q. And, typically, what type of streams are you
25 assessing? Large? Small? Please describe what you

1 typically work on.

2 A. We call them HUC 12 streams.

3 THE ADMINISTRATIVE LAW JUDGE: What are they
4 called, sir?

5 THE WITNESS: HUC 12. That's hydrologic
6 unit code, H-U-C.

7 THE ADMINISTRATIVE LAW JUDGE: Thank you.

8 A. The whole country's divided up into regions,
9 and then subdivided again, and subdivided again. And
10 eventually you get down to this hydrologic unit code.
11 And a HUC 12 is a small enough stream that it's
12 wadeable, is what we're looking at. We're looking
13 for streams we can wade in, we don't need a boat, we
14 don't need a barge. So HUC 12s are wadeable streams
15 in Iowa--well, they're all across the state.

16 A HUC 12, there's an individual number
17 associated with that watershed, so anybody in the
18 country can see that code and determine which
19 watershed you are in and whether it drained to the
20 Missouri River or the Mississippi, and that kind of
21 thing. So we sample small wadeable streams.

22 BY MR. BREEDLOVE:

23 Q. Of the 200, or so, stream assessments that
24 you've performed, what percentage would you say are
25 on small wadeable streams?

1 A. Probably about 80 percent of them, I would
2 say. I have done, you know, survey work on larger
3 rivers and nonwadeable streams.

4 Q. But the majority of your work is on small--

5 A. The majority of the stream work has been in
6 wadeable streams, the smaller HUC 12 streams.

7 Q. Have you ever testified before?

8 A. No, I haven't.

9 Q. How's it going? Are you all right?

10 A. It's fine.

11 MR. BREEDLOVE: Your Honor, at this time I
12 would like to move to qualify Mr. Hayes as an expert
13 in stream assessments of aquatic life in Iowa
14 streams.

15 MR. McAFEE: No objection, Your Honor.

16 THE ADMINISTRATIVE LAW JUDGE: He's
17 designated. By the way, because I wasn't paying as
18 close attention as I should have, you said
19 "wadeable." They can wade in and not be above X
20 number of feet? What's the definition of wadeable?

21 THE WITNESS: We put on chest waders, and we
22 won't find water deeper than our chest waders. So...

23 THE ADMINISTRATIVE LAW JUDGE: Okay.

24 Thanks.

25 MR. BREEDLOVE: Your Honor, can I get my

1 glass of water?

2 THE ADMINISTRATIVE LAW JUDGE: Sure.

3 BY MR. BREEDLOVE:

4 Q. MR. Hayes, are you familiar with Elliot
5 Creek?

6 A. Yes, I am.

7 Q. Are you familiar with the unnamed tributary
8 that feeds into Elliot Creek on Mr. Vos' feedlot?

9 A. Yes.

10 Q. How are you familiar with that stream?

11 A. I did some fishery survey work there this
12 past August, August 5th, to be exact, 2008.

13 Q. So what sort of work did you do on that
14 stream?

15 A. We went in there and sampled fish in three
16 500-foot segments of Elliot Creek, two of them in
17 Elliot Creek, and one in the unnamed tributary.

18 MR. BREEDLOVE: Your Honor, I'd like to use
19 the LitePro so we can go ahead and designate where he
20 sampled.

21 THE ADMINISTRATIVE LAW JUDGE: Sure.

22 MR. BREEDLOVE: Mr. Pollard, can you turn
23 that on for me?

24 Your Honor, I have Complainant's Exhibit
25 43-C--or 43-A. I'm just wondering where I should--

1 MR. RYAN: Put it up with the other
2 exhibits.

3 BY MR. BREEDLOVE:

4 Q. Mr. Hayes, when this warms up, with the
5 Judge's permission, we can mark it up.

6 THE ADMINISTRATIVE LAW JUDGE: When he tells
7 you to go up there, he'll tell you to mark on it.

8 MR. BREEDLOVE: Your Honor, may he approach?

9 THE ADMINISTRATIVE LAW JUDGE: Yes.
10 Absolutely.

11 Go ahead, Mr. Hayes.

12 BY MR. BREEDLOVE:

13 Q. So, Mr. Hayes, when did you perform this
14 assessment?

15 A. August 5th, 2008.

16 Q. This was on Elliot Creek, and an unnamed
17 tributary to Elliot Creek?

18 A. Yes.

19 Q. Was water present in Elliot Creek when you
20 were there?

21 A. Yes, it was.

22 Q. Was it present in the unnamed tributary?

23 A. It was present and flowing.

24 Q. On the map you have in front of you, could
25 you please designate the section of the stream that

1 you sampled on Elliot Creek?

2 A. We sampled a 500-foot segment in this
3 region, and then--

4 Q. Yeah, if you could go ahead and mark right
5 on there.

6 A. Sample one?

7 Q. Lower.

8 A. Lower Elliot.

9 THE ADMINISTRATIVE LAW JUDGE: While he's
10 doing this, Mr. Breedlove, I know this is going to be
11 a separate numbered exhibit, but I assume that this
12 is also in the exhibit book. You want to give me a
13 number?

14 MR. BREEDLOVE: Yes, Your Honor. I believe
15 it's Complainant's Exhibit No. 6. We've used this
16 document to mark up before, and if I recall, we're on
17 Complainant's Exhibit 51 at this point--

18 MR. RYAN: 53. 51 and 52 were not admitted.

19 MR. BREEDLOVE: Complainant's Exhibit 53.

20 THE ADMINISTRATIVE LAW JUDGE: For now this
21 would be 6?

22 MR. BREEDLOVE: That's correct, Your Honor.
23 That would be not 6 Pollard, it would be the unmarked
24 version.

25 THE ADMINISTRATIVE LAW JUDGE: Okay.

1 MR. BREEDLOVE: Let the record reflect
2 Mr. Hayes has placed three designations on the map
3 that will be Complainant's Exhibit 53, one mark
4 locating the lower Elliot Creek portion that he
5 sampled, another marking the upper Elliot Creek
6 section that he sampled, and also a section for the
7 unnamed tributary.

8 Can you see okay, Eldon?

9 MR. McAFEE: Yes.

10 BY MR. BREEDLOVE:

11 Q. Mr. Hayes, I'd like you to tell me a little
12 bit about this sampling trip. What all is involved
13 with your sampling? What is your protocol?

14 A. We have a standard sampling procedure that
15 we follow. This was set up in 2005. It was based on
16 some work that our Water Resources Section was doing,
17 and in 2005 we standardized so everybody across the
18 state was doing their stream samples the same.

19 So we followed our standard stream
20 protocols. Those protocols call for doing a minimum
21 500 feet. If it's a bigger stream, you do 40 stream
22 widths. You take a stream width, multiply it by 40,
23 and then that determines your length of sample.

24 So basically if the stream is less than 12
25 feet wide, you're going to do the minimum 500 feet,

1 and that's what we did in this case.

2 Q. On all three sections?

3 A. On all three sections. The sampling gear we
4 use is a backpack electrofishing unit. This is
5 battery-powered, carried on your back. It's got a
6 wand that acts as a cathode, and a tail that drags in
7 the stream that acts as an anode..

8 THE ADMINISTRATIVE LAW JUDGE: You're not
9 going to tell me what I think you're going to tell
10 me. Are you telling me you kill the fish?

11 THE WITNESS: It shocks them. It stuns them
12 and allows you to capture them. We're setting up an
13 electrical field in the stream that stuns and
14 captures fish, and they recover from it.

15 THE ADMINISTRATIVE LAW JUDGE: As far as you
16 know?

17 THE WITNESS: Most recover from it.

18 THE ADMINISTRATIVE LAW JUDGE: And they're
19 less depressed?

20 THE WITNESS: We don't know that.

21 A. Anyway, we electrofish to collect our
22 samples. We've got dip nets, two people walking in
23 the stream, one carrying a bucket, the other with the
24 backpack, collecting fish and transporting them back
25 to a bucket to hold them in.

1 BY MR. BREEDLOVE:

2 Q. Do you block the two ends so fish don't move
3 in or out?

4 A. Yes, we do. We put in a block net at the
5 lower end of the sample, a block net at the upper
6 end, and then we set a tub up in the middle with
7 aeration. There's an air stone in it so when we get
8 to about 250 feet, we can empty our buckets, and then
9 continue and finish with the 500-foot sample.

10 Q. Without harming the fish?

11 A. You can't hold them in a bucket forever. So
12 we're sampling a 500-foot stretch, we're looking at
13 the species present, the number of fish species
14 present, and also the number--the abundance of each
15 of those species.

16 Q. Did you do the same sampling--did you
17 implement the same sampling protocol for each of the
18 three sections?

19 A. Yes, I did.

20 Q. Let's dive right in. Let's talk about what
21 you found on lower Elliot Creek.

22 A. On lower Elliot Creek in the 500-foot sample
23 we captured 17 fish. 12 of them are fathead minnows,
24 and the rest were creek chubs.

25 THE ADMINISTRATIVE LAW JUDGE: Creek what?

1 THE WITNESS: Creek chubs.

2 A. So we saw two species and 17 fish.

3 BY MR. BREEDLOVE:

4 Q. What were you expecting to find?

5 A. Well, typically we see upward around 200
6 fish in a 500-foot segment. In that Elliot Creek,
7 that lower Elliot Creek, we got through the first 100
8 feet of it and hadn't picked up a fish yet. And so
9 we started looking at our gear. Is our backpack
10 shocker working? And there's meters on it that
11 record volts and amps. If you're not picking any
12 fish up--and typically you know right away your
13 gear's working, you're collecting fish. But the gear
14 was working properly, we were putting out the
15 targeted volts and amps, we just weren't seeing very
16 many fish.

17 Q. How did what you found in this stream
18 compare to what you--compared to the 200 sampling
19 events you've taken part in?

20 A. This stream was very low in diversity with
21 only two species, and very low in abundance. We, as
22 I said, we typically see around 200 fish in a
23 500-foot segment.

24 There was some sampling work done in the
25 northwest part of the state on these HUC 12s that

1 represents 34 streams in northwest Iowa, and the
2 range from those 34 streams, I think the low end was
3 166 fish in a 500-foot segment. On the upper end of
4 one of those HUC 12 samples from northwest Iowa was
5 well over 2,000.

6 Q. Now, the sampling that you're referencing of
7 the northwest studies, is that the Northwest
8 Fisheries--Stream Fishery Index, 2006 and 2007?

9 A. Yes.

10 Q. That's Complainant's Exhibits 44 and 45.
11 Would you like to take a look at those?

12 A. Yes, that's what I was referring to was
13 those assessments.

14 Q. So how many streams in those two exhibits,
15 in the 2006 and 2007 fisheries inventory, how many
16 streams did they survey?

17 A. These documents represent 34 streams in
18 northwest Iowa. And as I said, there's a range of
19 abundance from 160 fish up to 2,000. The number of
20 species, the fewest species they found in one of
21 these surveys was six, and the most was 21.

22 Q. And how many did you find in Elliot Creek?

23 A. Two.

24 Q. How many fish--what was on the low end of
25 the fisheries index, the number of fish that had been

1 identified?

2 THE ADMINISTRATIVE LAW JUDGE: Species you
3 mean? Six he said.

4 MR. BREEDLOVE: The population, the
5 population found in the 2006-2007 inventories.

6 A. The low end was 166.

7 BY MR. BREEDLOVE:

8 Q. You found--

9 A. Two.

10 Q. --two species? How many number did you
11 find?

12 A. Oh, excuse me. 17.

13 Q. Seventeen? Now, the streams that are
14 investigated as a part of these inventories, are they
15 comparable to Elliot Creek?

16 A. Yes, they are. They're HUC 12 streams.

17 Q. Okay. So they're wadeable, fishable?

18 A. They're wadeables.

19 Q. Excuse me. Wadeables.

20 Now let's move on to discuss the upper
21 Elliot Creek survey you did. Now, what did you find
22 there?

23 A. Upper Elliot Creek we found similar to lower
24 Elliot Creek. We found two species and low numbers.
25 I think we found, like, only seven fish up there.

1 But one thing we did find up in the upper Elliot
2 Creek that we did not find in the lower section was
3 the presence of crayfish, an invertebrate. And I
4 routinely make notes on my data sheets of things like
5 invertebrates, because like fish, they're also an
6 indicator of what's going on in the environment, and
7 they indicate quality or lack of quality.

8 Q. So how many crayfish did you find in upper
9 Elliot Creek?

10 A. We found 20.

11 Q. How many did you find in lower Elliot Creek?

12 A. We didn't find any in lower Elliot Creek.

13 Q. What does that indicate regarding the water
14 quality between the two sections?

15 A. It indicates a difference, a difference in
16 the water quality in the upper Elliot Creek.

17 Q. Now, "difference," elaborate on difference.
18 Is it better water quality if crayfish are present?

19 A. The presence of crayfish in that upper
20 stretch indicates better water quality up there. The
21 lack of crayfish in that lower is a reflection of
22 poor water quality.

23 Q. Let me ask you this, then: If the water
24 quality is better in upper Elliot Creek, why did you
25 not find more fish there?

1 A. In these--there's migration of fish in and
2 out of these tributary streams all the time. Some of
3 the seasonal migration, where you've got fish moving
4 up these tributary streams in the spring--the fish
5 use these tributary streams as nursery areas. And so
6 they'll move up these tributary streams when flows
7 return in the spring. The reverse is true in the
8 fall, when the fish will move down the tributary
9 streams into bigger tributaries or rivers over
10 winter.

11 At some point in Elliot Creek, the resident
12 fish population has been wiped out. And with
13 the--what appears to be going on is we no longer have
14 resident fish. And there's some--excuse me--and
15 there's some sort of barrier to fish movement because
16 fish are not able to move back up in there. That
17 barrier--there's no physical barrier, like a dam, but
18 there can be a chemical barrier if you have a stream
19 that has poor water quality.

20 If the stream is polluted, it will act as a
21 chemical barrier. The species of fish we found in
22 there, the creek chub, they're the most tolerant
23 species we have. They're the most widely distributed
24 and most tolerant.

25 Flathead minnows are used as bait fish

1 because they can live in a bait bucket, where a
2 shiner and other fish like that will quickly die in a
3 bait bucket. Fathead minnows are the toughest fish
4 and we find them in a lot of different places.
5 You'll find them in some of the worse water quality,
6 where other fish can't live.

7 So we had two tolerant species in here, and
8 those fish are barely hanging on, they're barely
9 making it in there.

10 Q. Why do you feel they're barely hanging on?

11 A. We saw no evidence of any reproduction. The
12 creek chubs were all the same size. There's no small
13 creek chubs. The fathead minnows were all,
14 basically, you know, adult fathead minnows.

15 So no evidence of reproduction, very low
16 numbers, and that upper Elliot Creek, I think there's
17 a barrier to fish movement, that the water--the fish
18 are not able to move into there and repopulate Elliot
19 Creek.

20 Q. So you've stated that there doesn't appear
21 to be any sort of physical barrier. So is it your
22 opinion there is some sort of chemical barrier
23 preventing higher populations and higher diversity in
24 upper Elliot Creek?

25 A. Yes.

1 Q. Is it possible that there is contamination
2 coming from upper Elliot Creek that's causing this?

3 A. Well, the presence of crayfish in upper
4 Elliot Creek is a good sign that it's not coming from
5 up there.

6 Q. Let me ask you this-- Let's go ahead and
7 move on and talk a little bit about what you found in
8 the unnamed tributary. What did you find in that
9 investigation?

10 A. In the unnamed tributary we found no fish.

11 Q. Did that surprise you?

12 A. And no crayfish. Yeah, that surprised me.
13 It's smaller than the main Elliot Creek, but I've
14 sampled fish in streams that size many times.

15 Q. Was there habitat?

16 A. Yes, there was enough depth and enough flow.
17 And by depth, you know, if you've got water up close
18 to your knees and flow, there should be fish there.

19 Q. You spoke a little bit about time of year.
20 How would this time of year--you sampled in August;
21 is that correct?

22 A. Yes.

23 Q. So August--you said fish migrate up and
24 down. What would you expect in August? Is that a
25 low number or a high number, your expectation?

1 A. That should be the high point of the season.
2 We do our sample in July and August because that's
3 when the fish are up in these tributary streams.
4 Typically there's reproduction going on, and it
5 should be a high point in the season.

6 Q. Well, let me ask you this: Is there any
7 chance there was some kind of one-time release that
8 would have killed--would have taken out most of the
9 fish you found there? Is there something like an
10 acute toxic event that might explain what you saw?

11 A. The fish population that I sampled in Elliot
12 Creek looks more like chronic, which is ongoing, it's
13 been there. When an acute--when there's a fish kill
14 caused by an acute event, one-time, there's a
15 pollutant released into the water and it kills fish,
16 the fish, within months, start repopulating that
17 area, they start moving back in.

18 The Iowa DNR did a study a few years ago
19 about fish kill in streams, and the response of the
20 fish after those kills, looking at things like
21 recovery time. And what they found was an acute fish
22 kill will cause a void in the fish population. You
23 kill off some of the fish, or all of the fish in a
24 segment, in a kill zone, it causes a void in the
25 population. The fish response to that void is once

1 the pollutant's removed, is they'll start
2 repopulating that area.

3 THE ADMINISTRATIVE LAW JUDGE: From further
4 downstream? They'll move back up?

5 THE WITNESS: They migrate back up from
6 refuge sites, and that happens within months, once
7 that pollutant is removed.

8 A. When we did that study--

9 BY MR. BREEDLOVE:

10 Q. What study are you referencing?

11 A. The response to fish kill study done by the
12 Iowa DNR.

13 Q. Is this the Stream Fish Kill Follow-Up
14 Assessment?

15 A. Yes.

16 Q. Complainant's Exhibit 49?

17 A. Is that in here?

18 Q. I believe 49--

19 MR. BREEDLOVE: May I approach?

20 THE ADMINISTRATIVE LAW JUDGE: Yes.

21 MR. BREEDLOVE: I just made a liar out of
22 myself.

23 THE ADMINISTRATIVE LAW JUDGE: We don't want
24 to have that on the record.

25 MR. BREEDLOVE: Here you are, Mr. Hayes.

1 It's in this book.

2 Would you like a glass of water?

3 THE WITNESS: I've got one there. Thank
4 you.

5 BY MR. BREEDLOVE:

6 Q. So what did that fish kill follow-up study
7 tell you?

8 A. A couple things I get from this study is,
9 one, that fish populations will recover fairly
10 rapidly after an acute event, within months, and it's
11 kind of Mother Nature's way to fill a void in a
12 population.

13 Also what they found in this study was that
14 the stream that's in that recovery phase, the numbers
15 within that kill zone actually oftentimes are higher
16 than outside of it. Part of that is because there's
17 been fish migrating into that, but there's also, you
18 know--you create that void, and Mother Nature's
19 response is to fill that void. So they actually
20 oftentimes find higher numbers within a kill zone
21 after the pollutant's removed than outside of it.

22 THE ADMINISTRATIVE LAW JUDGE: What's the
23 exhibit number, Mr. Breedlove?

24 MR. BREEDLOVE: I believe it was 49.

25 THE ADMINISTRATIVE LAW JUDGE: Oh, it was

1 49.

2 THE WITNESS: It just wasn't in the book we
3 were looking at.

4 BY MR. BREEDLOVE:

5 Q. Mr. Hayes, let's focus back on the map you
6 had marked. If there had been some sort of recent
7 event that killed the fish in, say, the unnamed
8 tributary, would you have seen greater numbers in the
9 upper Elliot Creek section? Would that have acted as
10 a--what was the term you used earlier?

11 A. A refuge?

12 Q. A refuge.

13 A. Could you repeat the question?

14 Q. If there had been some sort of release, say,
15 throwing out other--hypothetically, other
16 contaminants, say ammonia, or something, would you
17 have seen some sort of release--or threshold up in
18 Elliot Creek? Would you have expected to see more
19 fish? Would there have been refuge areas?

20 A. Yes. That upper Elliot Creek--if there had
21 been a one-time release come down that unnamed
22 tributary, that upper Elliot Creek would act like a
23 refuge.

24 Q. Would the lack of numbers in upper Elliot
25 Creek indicate to you that there hasn't been some

1 sort of acute release of something in the unnamed
2 tributary?

3 A. The lack of numbers kind of points, again,
4 to the chronic problem. The lack of diversity, only
5 seeing creek chubs and fathead minnows, and the low
6 abundance, that points to a chronic problem that's
7 been there and ongoing.

8 There's a void in the fish population in
9 Elliot Creek. I mean, there's room for more fish
10 there and more species. Like--we almost always see
11 white suckers, sand shiners, and back to these
12 northwest Iowa stream inventories, white suckers were
13 in 33 of the 34 streams surveyed, that these
14 documents represent. Sand shiners are common in our
15 samples. There's a void in the fish population in
16 Elliot Creek, but there's been no opportunity for
17 fish to repopulate that, that's why I think we saw
18 low numbers above that.

19 Q. Does the presence of the crayfish eliminate
20 the upper Elliot reach as a source of this chronic
21 contamination?

22 A. The presence of crayfish indicates we have
23 better water up there. The presence of crayfish in
24 that upper Elliot Creek, and the lack of fish in that
25 unnamed tributary, kind of points to that unnamed

1 tributary as the source of the pollutant.

2 Q. Is it possible--there's agricultural row
3 crops all around these streams. Is it possible it's
4 the cropland that's causing this?

5 A. We considered that, but you can't hardly
6 find a watershed in Iowa that doesn't--or a stream in
7 Iowa that doesn't have row crop, agriculture,
8 adjacent to it.

9 Q. Do the streams in the two inventories, the
10 2006 and 2007 inventory, the HUC 12 streams studied
11 in that, did they have row crops around them as well?

12 A. Yes, and I'll point to the 2005-2006. If
13 you look at page 7--or page 6, excuse me--and this is
14 from the Black Hawk Fish Management. And I can read
15 this top--the top of page 6. It says--

16 THE ADMINISTRATIVE LAW JUDGE: Which exhibit
17 are you on, sir?

18 THE WITNESS: I'm on the Stream Fish
19 Inventory, Exhibit 46.

20 THE ADMINISTRATIVE LAW JUDGE: Exhibit 46.
21 Okay.

22 THE WITNESS: The Stream Fish Inventory from
23 the Northwest Fish Management District, July 2005 and
24 September 2006.

25

1 BY MR. BREEDLOVE:

2 Q. Is that 45, Mr. Hayes? Is that 45? Check
3 the front page.

4 A. Exhibit 44, excuse me.

5 MR. McAFEE: Excuse me. What page again?

6 THE WITNESS: Exhibit 44, page 6.

7 A. And if you read that top sentence, "All
8 sites were characterized by bands of non-woody
9 vegetation surrounded by row crop fields and low
10 flows." So to answer your question, the streams in
11 these assessments, Exhibits 44 and 45, have row crop
12 agriculture adjacent to them. Nearly all the 200
13 streams I've sampled, you know, in Iowa have row crop
14 agriculture adjacent to them.

15 BY MR. BREEDLOVE:

16 Q. Mr. Hayes, have you had an opportunity to
17 look at what's up the unnamed tributary further
18 upstream? You're aware Mr. Vos' feedlot is up there?

19 A. I've looked at aerial photos of the entire
20 watershed there.

21 Q. What is your opinion as to the most likely
22 cause of the low fish numbers and low diversity in
23 Elliot Creek and the unnamed tributary?

24 A. The most likely source is that feedlot, is
25 Lowell Vos' feedlot.

1 Q. Just a couple more questions, Mr. Hayes.
2 What contaminants are present in feedlot runoff that
3 impact fish and water quality?

4 A. Well, number one it's ammonia. Ammonia is
5 very toxic to fish and it kills fish.

6 Q. What impact does the organic matter have?

7 A. Organic matter coming off the feedlot, the
8 manure itself, can raise nutrient levels. The
9 organic matter can put a demand on your oxygen and
10 cause a fish kill by losing the oxygen in the stream.
11 But usually coming off a feedlot it's the ammonia
12 that kills the fish.

13 Q. Now, would it surprise you--this is the last
14 question. Would it surprise you that at some times
15 you might find minnows or chubs somewhere along the
16 reach in the unnamed tributary?

17 A. No, it wouldn't. Those fish are migratory.
18 They could easily move up there if they had the
19 opportunity. We didn't find any of that in the
20 unnamed tributary the day I was there sampling.

21 MR. BREEDLOVE: Okay. No further questions,
22 Your Honor.

23 Thank you, Mr. Hayes.

24 THE ADMINISTRATIVE LAW JUDGE: Okay. Ready,
25 Mr. McAfee?

1 MR. McAFEE: Your Honor, may we go off the
2 record for a second?

3 THE ADMINISTRATIVE LAW JUDGE: Sure. Go off
4 the record.

5 (Discussion off the record.)

6 THE ADMINISTRATIVE LAW JUDGE: Back on the
7 record. Let me just note that pursuant to an
8 off-the-record discussion, I ruled that I'm going to
9 give Mr. McAfee some time to better prepare for
10 cross-examination based on some information that he
11 was not fully aware of and first heard of today
12 relative to fish populations and the impact,
13 according to this witness, of flow from Lowell Vos'
14 feedlot. He's going to have this very brief
15 opportunity--it's not a big inconvenience today
16 because we're near the end of the day anyway. It's
17 almost a quarter to 5 p.m.

18 So we'll begin tomorrow morning. I won't be
19 five minutes late, as far as I can tell you right
20 now. I'll try to be a little earlier, if possible.
21 There's some other things I have to do before I get
22 here, but we'll start sharp.

23 MR. RYAN: At 9:30, Your Honor?

24 THE ADMINISTRATIVE LAW JUDGE: Yes. All
25 right?

1 MR. McAFEE: Yes.

2 THE ADMINISTRATIVE LAW JUDGE: All right.
3 Thank you. Have a good evening.

4 By the way, I have to tell you, pursuant to
5 what I tell all these witnesses, you're not to talk
6 about your testimony with anyone, all right? And
7 you'll be under oath tomorrow morning, and we'll try
8 to get you done as soon as reasonably possible.

9 THE WITNESS: Thank you.

10 THE ADMINISTRATIVE LAW JUDGE: Thanks.

11 MR. BREEDLOVE: Your Honor, are we still on
12 the record?

13 THE ADMINISTRATIVE LAW JUDGE: Yes, we are.

14 MR. BREEDLOVE: I believe I erred to move
15 Complainant's exhibit into the record, I'm not sure
16 if I did that. I'd like to make that motion now.

17 THE ADMINISTRATIVE LAW JUDGE: What number
18 is this going to be? We had Mr. Ryan with two
19 numbers we are not--we lost the sequence. So what is
20 it now?

21 MR. BREEDLOVE: I believe it's 53, Your
22 Honor, Complainant's Exhibit 53.

23 THE ADMINISTRATIVE LAW JUDGE: Yes, Mr.
24 Ryan?

25 MR. RYAN: Yes.

1 THE ADMINISTRATIVE LAW JUDGE: Any
2 objection?

3 MR. McAFEE: No objection.

4 THE ADMINISTRATIVE LAW JUDGE: Complainant's
5 Exhibit 53 is admitted.

6 (Complainant's Exhibit 53 was
7 received in evidence.)

8 THE ADMINISTRATIVE LAW JUDGE: Anything else
9 before we call it a night?

10 (No response.)

11 THE ADMINISTRATIVE LAW JUDGE: Good. Have a
12 nice evening. We'll see you tomorrow morning.

13 We'll go off the record.

14 (Recess at 4:45 p.m., until 9:30 a.m.,
15 Thursday, September 18, 2008.)

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C E R T I F I C A T E

1
2 I, the undersigned, a Certified Shorthand
3 Reporter of the State of Iowa, do hereby certify that
4 I acted as the official court reporter at the hearing
5 in the above-entitled matter at the time and place
6 indicated;

7 That I took in shorthand all of the
8 proceedings had at the said time and place and that
9 said shorthand notes were reduced to typewriting
10 under my direction and supervision, and that the
11 foregoing typewritten pages are a full and complete
12 transcript of the shorthand notes so taken.

13 Dated at Des Moines, Iowa, this 26th day of
14 September, 2008.

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16
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18 CERTIFIED SHORTHAND REPORTER