

1 would be like based on the five prior years of rain--

2 A. Right.

3 Q. --and temperature and--

4 A. All of the weather parameters, correct.

5 Q. So you warmed it up for five years, got it  
6 in the condition for the soil conditions would look  
7 like in terms of moisture at the start of your study  
8 period, and then what did you do?

9 A. Then I told it to run my period. I mean--

10 Q. Okay.

11 A. --I ran the model.

12 Q. Okay. And were there any other parameters  
13 that you worked with in the model, other than what we  
14 discussed so far?

15 A. Not that I can think of.

16 Q. Okay. So when the model ran, what did it  
17 tell you?

18 A. It told me the number of days. You know, it  
19 provides the data for you on a daily basis, a monthly  
20 basis, a yearly basis. There are about 20 tables  
21 that you can look at that gives outputs from the  
22 model.

23 And to determine discharges, I ran the model  
24 and looked at the yearly average annual results  
25 for--the average annual results from the model. And

1 that's when I was looking at the nutrient content,  
2 the flow, and the actual manure yield from the model.

3 Q. Let's look at page 10 of your expert report,  
4 which is Exhibit 43. Do you have that in front of  
5 you?

6 A. Yes, I do.

7 Q. Is this a summary of the output data from  
8 the APEX model run that you did?

9 A. Yes, it is.

10 Q. Okay. Could you explain to us what we're  
11 looking at here?

12 A. These are the numbers that the APEX model  
13 told me were representative for flow manure yield,  
14 sediment yield, and nutrients that had actually  
15 entered the unnamed tributary.

16 Q. So, for example, looking at the year 2002,  
17 on the left-hand side and the first column in the  
18 left-hand side of Table 2 within page 10 of your  
19 report, after year, it says "PREC." Is that  
20 precipitation?

21 A. Yes, it is.

22 Q. Okay. So would that have been 27 inches of  
23 precip received that year?

24 A. Yes. Correct.

25 Q. And that was based on the data collected

1 from NOAA at the Le Mars site?

2 A. Yes. Correct.

3 Q. Going across that row starting in the year  
4 2002, tell us what all those numbers mean.

5 A. The watershed flow is the runoff. It's the  
6 amount of water that was leaving the land surface and  
7 entering the unnamed tributary from these three  
8 discharge points.

9 Q. Okay. So that 4.9 million gallons of-- Is  
10 it washed, W-S-H-E-D, is that what that stands for,  
11 washed? Watershed?

12 A. Watershed.

13 Q. Is that the flow generated in the entire  
14 watershed we saw in Figure 9--

15 A. Yes.

16 Q. --or is it--

17 A. Yes, it is the flow for the entire  
18 watershed.

19 Q. So that's not just the feedlots?

20 A. Oh, no. No.

21 Q. That's the entire--

22 A. That is the flow from the watershed.

23 Q. Okay.

24 A. The whole watershed.

25 Q. So that's the amount of water one would

1 expect to see on the surface in 2002 in that  
2 watershed depicted in Figure 9?

3 A. Leaving the outlet from that watershed.

4 Q. Okay.

5 A. Right.

6 Q. Okay. The next, we see watershed manure  
7 yield, tons.

8 A. Uh-huh.

9 Q. That's 362. What does that mean?

10 A. That 362 tons of manure was--left the  
11 watershed at the outlet to the unnamed tributary--the  
12 inlet to the unnamed tributary.

13 Q. Okay. So that would have been one of the  
14 three points you mentioned to the north--

15 A. Through all three points combined. That's a  
16 total.

17 Q. Okay. So the model told you that in 2002,  
18 362 tons of manure came off that feedlot and entered  
19 the unnamed tributary?

20 A. Correct.

21 Q. Okay. Moving across?

22 A. Watershed sediment yield, that's the amount  
23 of sediment that left the watershed and migrated into  
24 the unnamed tributary. That's the amount of sediment  
25 from the whole watershed area.

1 Q. Let's stop there for a second. It looks  
2 like, for example, sediment yields appear to vary  
3 widely. We have 32 in 2002, then it drops down to 8,  
4 then it jumps up to 317. Why the great variability  
5 there?

6 A. That's primarily based upon the  
7 precipitation events that occurred in those years.  
8 You'll notice that 2003 had the lowest amount of  
9 precipitation. 2004 had the most. They also had a  
10 large precipitation event that occurred over a  
11 three-day period.

12 I went back and looked at the records  
13 because I was interested in that same thing, as, you  
14 know, why is it so much higher. And, you know, once  
15 you have-- First of all, you know, a large event,  
16 you're going to have a lot more runoff than a small  
17 event.

18 Secondly, a large event that runs three  
19 days, you've got saturated soil conditions, you know,  
20 after the first day of a lot of--of a significant  
21 rainstorm event, and so after that you have  
22 substantially more runoff than you would otherwise.

23 The ground can't accept any more water.  
24 Water can't infiltrate like it could if it hadn't  
25 rained for several days before, so you get a

1 disproportionately large volume of water that runs off  
2 during a major multi-day event.

3 Q. So if you have three inches of rain that  
4 falls in 24 hours, will you get more runoff than if  
5 you have three inches of rain that fall over a month?

6 A. Definitely.

7 Q. Okay. Let's keep moving across. In 2002,  
8 we're now at watershed SED P. What is that?

9 A. Watershed sediment phosphorous. It's the  
10 amount of phosphorous that was attached to sediment  
11 and transported in the runoff with the sediment.

12 Q. And--

13 A. Go ahead.

14 Q. And is that from the entire watershed, that  
15 phosphorous?

16 A. Yes, it is.

17 Q. Okay. Now, what would be the sources of  
18 that phosphorous?

19 A. The sources of the phosphorous would be the  
20 manure from the feedlot, as well as any fertilizer  
21 that was applied to the fields.

22 Q. Okay. And does the model take into account  
23 fertilizer?

24 A. Yes, it does.

25 Q. Does it assume that they're fertilizing

1 their fields?

2 A. Yes, it does.

3 Q. Moving across?

4 A. Watershed soluble P, it's the amount of  
5 phosphorous that's dissolved in the runoff and moves  
6 with the runoff.

7 Then watershed--again, we're back to the  
8 watershed SED N is the amount of nitrogen that's  
9 attached to the sediment and runs off, and watershed  
10 SOL N is the amount that's dissolved and runs off  
11 with the water, nitrogen that runs off with the  
12 water.

13 Q. So I don't think we need to go through each  
14 of the years down through 2006. The numbers, I  
15 think, speak for themselves now.

16 At the bottom, the totals, are just those an  
17 addition of all the numbers above?

18 A. Yes, they are.

19 Q. So looking at Table 2 of page 10 of your  
20 report, where it says "Totals," the second column  
21 under watershed manure yield, it says 2,410. Is that  
22 where you got that number you gave at the beginning  
23 of your testimony today?

24 A. Yes, it is.

25 Q. Okay. And so let's go down-- Before we get

1 to the accuracy of your predictions--I want to talk  
2 about that in just a minute--I'd like to talk about  
3 some of the assumptions that went into your model.

4 We talked about some of them already. For  
5 example, you talked about you assumed 2,000 head of  
6 cattle, even though it's possible there were more,  
7 it's possible there was less, but you assumed 2,000  
8 head throughout the study period.

9 And you also testified that you assumed  
10 there was no runoff from the terraced area to the  
11 west of this facility because you had no information  
12 on that.

13 Did you make any-- And we talked at the  
14 very beginning of your testimony about the difference  
15 between your two reports about scraping.

16 A. Uh-huh.

17 Q. What assumptions did you make on scraping?

18 A. I assumed that it was scraped once every two  
19 weeks.

20 Q. Okay. What does scraping mean?

21 A. It means that they take a piece of equipment  
22 and scrape off the top layer of manure and they  
23 either stockpile it or remove it--

24 Q. Okay.

25 A. --or they land-apply it.



1           And the model could take into account the  
2 land application, but I didn't have any information  
3 on that. I didn't have any information on where it  
4 was being stockpiled, and so I just assumed that it  
5 was totally removed from the system.

6           Q.     So if it were, in fact, stockpiled on site,  
7 would that result in more or less runoff of manure?

8           A.     Assuming that it was stockpiled within the  
9 watershed area that I was modeling, it would  
10 definitely increase the amount of manure yield that  
11 was leaving the watershed.

12          Q.     So this 2,410-ton number you came up with,  
13 does that assume stockpiling occurred within the  
14 watershed or outside the watershed?

15          A.     It assumed that stockpiling occurred outside  
16 of the watershed.

17          Q.     So when you told the model to assume he's  
18 scraping it, you're taking it away?

19          A.     I took it away.

20          Q.     Okay. So if he was, in fact, stockpiling  
21 inside his pen, would this number be high or low,  
22 this 2,410 tons?

23          A.     It would be higher.

24          Q.     The stockpiling would result in a higher  
25 number than this or--

1           A.     Yes.  Because it would be exposed to  
2 precipitation events and exposed to transport by  
3 water.

4           Q.     Okay.  So if you told the model that he was  
5 stockpiling inside the pens, you would have gotten a  
6 bigger number than 2410?

7           A.     Yes, I would have.

8           Q.     So, okay, you made a conservative assumption  
9 that he removed all of his scraped material?

10          A.     Yes, I did.

11          Q.     And when you-- After you got these results,  
12 did you make any attempts to validate them?

13          A.     Yes, I did.

14          Q.     Okay.  Can you describe those for us,  
15 please?

16          A.     I followed the validation procedure that's  
17 outlined in the model manual, Sections 4 and 5 of the  
18 model manual.

19          Q.     This is the APEX model manual?

20          A.     This is the APEX model manual.

21          Q.     How do you go about validating results?

22          A.     If you follow that procedure, you're  
23 really--you're looking at the inputs and outputs and  
24 looking to determine if they're reasonable and doing  
25 checks in terms of some of the parameters to

1 determine if they're reasonable.

2 In my case, the first thing that I looked at  
3 was the manure balance. That's a table that's output  
4 by APEX. And if your model is handling the manure  
5 appropriately, the manure balance should be close to  
6 zero.

7 Q. And why would that be?

8 A. It means that the model has accounted for  
9 all of the manure through the process. If you have  
10 a--if you have a number that's not near zero, it's  
11 either--you know, it's just not accounting for  
12 everything. It's either assuming that, you know,  
13 more is there than it is or something, you know.  
14 It's just not in balance.

15 Q. So I don't understand. What's balancing  
16 here for the purposes of the manure?

17 A. Well, at the end of a run, you're gonna have  
18 so much-- You know, if you have cows generating  
19 manure every day, you're gonna have so much generated  
20 per day and per year, and either--it's either all  
21 gonna sit there and you're going to have that total  
22 amount of manure sitting in the feedlot at the end of  
23 the year, or you're gonna have some of it that was  
24 removed, you know, for reasons runoff picked it up  
25 and took it out or it was scraped.

1           So you're looking at--

2           Q.     So if the cows deposited 100 tons, you would  
3 expect to see either 100 tons on the lot or 80 tons  
4 on the lot and 20 tons downstream, something like  
5 that?

6           A.     That's correct.

7           Q.     Okay.

8           A.     That's the idea, yeah.

9           Q.     That's your manure--

10          A.     It's conserved.

11          Q.     Now, let's go back to scraping for just a  
12 second. If a farmer scrapes on, say, Monday, just  
13 hypothetically, and doesn't scrape again for two  
14 weeks, and the cows--there's cows present the entire  
15 time, would you expect to see manure building up each  
16 day through those--that two weeks until he scrapes  
17 again?

18          A.     Yes, I would.

19          Q.     Okay. Do you know, based-- What is does  
20 the literature say about the standards for scraping?

21          A.     In the Great Plains region, feedlots are  
22 typically scraped 90--at an interval of 90 or to 180  
23 days, 90 to 180 days. That's out of a paper that was  
24 written on the APEX model and feedlots by Jimmy  
25 Williams and others, et al.

1 Q. Who is Mr. Williams?

2 A. Mr. Williams is the developer of the model.

3 Q. Okay. And so when they developed this  
4 model, they assumed scraping occurred every 90 to 180  
5 days, was it? I'm sorry. 90 to 180 days; is that  
6 what you said?

7 A. When they built the model, you could scrape  
8 as many times, any interval you wanted, but that  
9 paper was just referencing a study that was done  
10 to--and in that study, that was the assumption that  
11 they used because that was the data they had, that it  
12 was typically scraped every 90 to 180 days.

13 Q. Okay.

14 A. So--

15 Q. And where did you come up with every  
16 two-week figure for scraping?

17 A. I was told that number by EPA. I asked  
18 Steve.

19 Q. Okay. And Steve told you that--Mr. Pollard  
20 told you that--

21 A. Yes.

22 Q. --Mr. Vos scrapes every two weeks?

23 A. Yes, he did.

24 Q. So going back to my hypothetical, scraping  
25 occurs on Monday, would there be-- Is scraping

1 perfect, by the way; do you know? Does it remove 100  
2 percent of the manure?

3 A. It would have to dig deep to--to remove 100  
4 percent of it. Because this manure decomposes on the  
5 surface, and scrapers go across the surface, and they  
6 kind of-- They're not 100 percent effective. You'd  
7 have to remove all of the soil to make them--for it  
8 to be 100 percent effective.

9 Q. So they remove, safe to say, the big  
10 chunks--

11 A. Right.

12 Q. --on the surface?

13 So remove a lot of the manure on Day 1. On  
14 Tuesday, the cows are there. They're there Monday  
15 too. Is the manure building back up now each day?

16 A. Yes, it is.

17 Q. Does the model take that into account?

18 A. Yes, it does. It runs all the calculations  
19 on a daily basis.

20 Q. How do you know how quickly the manure is  
21 building up?

22 A. Because the program uses 9 pounds per day as  
23 the amount of manure that a typical--you know, a  
24 thousand-pound cow generates. And that's dry weight  
25 manure. And that's based on research from the USDA.

1 Q. So on average, and you just multiply that  
2 out by the number of cows, you were assuming 2,000  
3 cows, so you could multiply 2,000 times this average  
4 dry weight manure and come up with a rate in which it  
5 builds up on the lot?

6 A. Yes, I do.

7 Q. Is that what the model did? Did it look  
8 at-- The scraping function you applied, is that what  
9 the model assumed, that manure was building up  
10 between scrapings?

11 A. Oh, yes, it does.

12 Q. Okay.

13 A. It looked at it every day.

14 Q. Okay. Now, going back to your validation,  
15 you said you looked at manure--the manure balance,  
16 for example, and what did the manure balance tell  
17 you?

18 A. The-- Oh, when I ran the model, I checked  
19 the manure balance, and it told me that it was zero.

20 Q. Okay.

21 A. In other words, I knew that the manure  
22 function, you know, the manure accounting was working  
23 in the model. That was the first check that you do.

24 Q. Okay. What other checks did you do or  
25 validations did you do?

1           A.     There are checks for flow and sediment  
2 portions, there's checks for the soil chemistry, you  
3 know, the nutrient chemistry, and there are checks in  
4 terms of yield from the crops.

5           Q.     Uh-huh. Before you talk about any of those,  
6 did you do all four of those things you just  
7 mentioned?

8           A.     I did go through the procedure where you  
9 look at the outputs and determine that they are  
10 appropriate, yes, reasonable.

11          Q.     So all of this validation--these validation  
12 exercises you went through are a way for you to just  
13 double-check that your model is doing what it's  
14 supposed to do and is trustworthy, correct?

15          A.     Correct. If any of the parameters are out  
16 of the normal range, then it's a flag that you might  
17 need to go back and look at what might not have gone  
18 well. But in my case they were all normal. I had  
19 every reason to believe that the model was  
20 functioning the way it was supposed to be  
21 functioning.

22          Q.     Okay. Now, you were about to start talking  
23 about crop yields before I interrupted you. What did  
24 the crop yields validation analysis do?

25          A.     Yeah. That was another check. One of the



1 tables that's output by the model is the crop yield  
2 that you'll expect each year from every crop that you  
3 have out there. In this case, we had corn.

4 And there are two sources of information  
5 that I looked at for that, and one was the  
6 agricultural statistics survey that's out there that  
7 reports the crop yields, specific crop yields, so in  
8 this case the corn crop yield for the state of Iowa  
9 during specific years.

10 So I looked at 2003, '4, '5, and '6 and  
11 found out what crop yield was the average amount for  
12 that year from the region I was looking at.

13 And also I looked at the soil survey, and in  
14 the soil survey they have the same sort of data.  
15 It's terms of bushels per year and it's given by soil  
16 type in a specific county, in my case Woodbury  
17 County.

18 Q. Uh-huh. So--

19 A. So I--

20 Q. --those crop yields you saw, somebody went  
21 out and looked and saw how many bushels of corn were  
22 produced by this particular county in one particular  
23 year; is that right?

24 A. Correct.

25 Q. And then how did you compare that to your

1 model?

2 A. I compared that rate of production to what  
3 the model was predicting would grow in the fields at  
4 the Vos facility.

5 Q. So this model isn't just calculating manure  
6 runoff, it's calculating lots of different things,  
7 isn't it?

8 A. Yes. It calculates the growth and also the  
9 residue that's left over after a crop is done, and it  
10 takes into account how the crop was actually planted  
11 and harvested.

12 Q. So if--

13 A. It runs through the whole process.

14 Q. So this model, APEX model, among other  
15 things, is telling you what yield of corn you would  
16 expect under these environmental conditions at this  
17 site?

18 A. Correct.

19 Q. Okay. And so what that model yielded for  
20 the corn at that site, how did that match up with  
21 what you saw from the independent data collected in  
22 the field?

23 A. They were within 1 percent. And that was a  
24 good indication that I was getting appropriate  
25 results from the model.

1 Q. Okay. When you say appropriate results,  
2 meaning results that--that matched what you see in  
3 the real world?

4 A. Exactly. Was it simulating that natural  
5 environment well? Yes, it was.

6 Q. You talked about what you went through to  
7 validate, and earlier in your testimony you talked  
8 about calibration. What do you mean by calibration?  
9 What does that term mean?

10 A. It's the process of determining whether the  
11 equation's using--the parameters you're putting into  
12 the model, into these equations, is actually  
13 representing the conditions you're seeing in the  
14 natural environment.

15 Q. And does one need to calibrate the APEX  
16 model to make it a trustworthy model?

17 A. No. The APEX model is a process-based  
18 model. It's designed to be run on small, ungauged  
19 water sheds. There are two kinds of models--

20 Q. What do you mean ungauged? What does that  
21 mean?

22 A. It means there are no--there isn't a USGS  
23 flow gauge that's measuring the volume of flow in the  
24 stream system within the watershed or the sediment  
25 yield.

1 Q. So USGS wasn't measuring the amount of flow  
2 in the unnamed tributary next to Mr. Vos' feedlot?

3 A. Correct. And in small agricultural  
4 watersheds, that is, by far, the form, which is why  
5 the USDA developed these models so they had a tool to  
6 use in these areas that were not gauged.

7 Q. Okay.

8 A. And that's the case here, and, as I said  
9 before, the components of these models are all based  
10 on decades of research so that you don't have to have  
11 site-specific information.

12 There are models, there are  
13 definitely--there's a category of models where you  
14 have to have site-specific information. These are  
15 like regression models where they're just  
16 mathematical equations with coefficients that are  
17 meaningless unless you've taken that measurement in  
18 the field and applied it to that specific equation.  
19 That is not the case--that's not the kind of model  
20 that we're using here.

21 Q. Okay. So did you do any field calibration  
22 of this model?

23 A. The only-- No.

24 Q. Okay.

25 A. Not site-specific.

1 Q. And does that in any way undermine the  
2 results that you got from applying this model in this  
3 case?

4 A. No.

5 Q. Is the APEX model designed to be used  
6 without field calibration?

7 A. Yes, it is.

8 Q. Okay. I think we're going to start talking  
9 about the SWAT model. You talked earlier about how  
10 you used two models here; APEX to look at the  
11 watershed from the feedlot down to the unnamed  
12 tributary, then used a separate model, SWAT, from the  
13 unnamed tributary downstream. We'll talk about that  
14 in a second.

15 I'd like to step back for a second and look  
16 at page 16 of your expert report. Do you see that  
17 chart that says, "Graph 1. Precipitation Values -  
18 February 2002 through 2007"?

19 A. Yes.

20 Q. And that runs, I believe, through February  
21 1st, 2007?

22 A. Yes.

23 Q. Could you tell us what those little lines  
24 mean we're looking at there?

25 A. Each line is the magnitude of the

1 precipitation event on a given date.

2 Q. Okay. And based on looking at this, what  
3 are the weather--precipitation cycles look like in  
4 this part of the world?

5 Now, again, is this weather data taken from  
6 the Le Mars station 16 miles away?

7 A. I believe it is, yes.

8 Q. And what does it tell us about weather  
9 patterns in this part of Iowa? What's the rainy  
10 season?

11 A. It looks like spring and summer.

12 Q. And on the vertical axis--

13 A. Summer.

14 Q. On the vertical axis it says "Precip  
15 (inches)," so if I'm reading this correctly, around  
16 August 1st, 2002, there was a precipitation event  
17 that was just in excess of 2 inches. Am I reading  
18 that correctly?

19 A. Yes.

20 Q. Okay. So in this approximately five-year  
21 period that we see on here, what was the largest  
22 precipitation event?

23 A. It was just over 2 1/2 inches, maybe 2.7,  
24 2.8.

25 Q. Were there any precipitation events in the

1 neighborhood of 5 inches?

2 THE ADMINISTRATIVE LAW JUDGE: In the  
3 neighborhood of what?

4 MR. RYAN: Five inches.

5 A. No.

6 BY MR. RYAN:

7 Q. And if there were, would it show up on this  
8 graph?

9 A. Yes.

10 Q. Okay. Let's talk about-- Since we're  
11 talking about rainfall and flows, let's talk about  
12 the SWAT model. What does the SWAT model do and  
13 where did you apply it?

14 A. The SWAT model does the same things,  
15 basically, as the APEX model. It models flow,  
16 sediment yield, and nutrient transport, only it does  
17 it at a larger scale. You can do it for very small  
18 areas, but it's designed to give you those--run those  
19 calculations over larger areas, larger watersheds, up  
20 to basin-size watersheds.

21 Q. Okay. So it's not--unlike the APEX model,  
22 it's not geared towards farm-level analysis?

23 A. You can use it at that scale, but it's  
24 really geared towards large watersheds, yeah.

25 Q. Could you turn to Figure 5, please, in your

1 expert report, which would be page 21 of your expert  
2 report.

3           Could you tell us what this is?

4           A.     This is the digital elevation model, the DEM  
5 that I referred to. The 10-meter DEM is the  
6 background of this figure, and overlaid on that is  
7 the delineation, the watershed delineation, that the  
8 SWAT model produced.

9           Q.     So we see on the extreme right side of the  
10 Figure 5 a blue area. We see another kind of spider-  
11 like blue area on the lower left side advancing to  
12 the northeast. What are those blue areas  
13 representing?

14          A.     Those are stream channels.

15          Q.     And--

16          A.     On the left-hand side, that's Elliot Creek.

17          Q.     Okay.

18          A.     And when it runs straight vertically north  
19 next to the subdrainage area, we're looking at--

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

22                 THE ADMINISTRATIVE LAW JUDGE: Yes. Let's  
23 take a five-minute break.

24                 (Short recess.)

25



1 BY MR. RYAN:

2 Q. Ms. Doty, we were--just before the break we  
3 were starting to talk about Figure 5 from your expert  
4 report. If you could, please, walk around to the  
5 LitePro, because I'm going to ask you some questions  
6 and perhaps have you mark up Figure 5.

7 And there's a zoom function on the lower  
8 right. Do you see that?

9 A. Yes. Zoom in? Do you want--

10 Q. Yes. If you want to zoom in, you can zoom  
11 in. There we go.

12 A. That's pretty cool.

13 Q. So we were talking just before the break  
14 about the blue areas on the right and the left, and  
15 you said those were, I believe, creeks?

16 A. Yes.

17 Q. Now, and I think just before the break you  
18 said that the one on the left was Elliot Creek.  
19 Could you mark Elliot Creek for us, please?

20 A. Yes. It's this one that runs down through  
21 here.

22 Q. Okay.

23 MR. RYAN: And for purposes of  
24 identification, Your Honor, since this is now a  
25 unique exhibit, I would like to move this-- There

1 will be more markings, but so I don't forget, I would  
2 like to move this into evidence as Complainant's  
3 Exhibit 43A.

4 MR. McAFEE: I don't believe I have any  
5 objection, Your Honor, but if we're going to mark on  
6 it some more, shouldn't we wait until the markings  
7 are done? That would seem to me to be--

8 THE ADMINISTRATIVE LAW JUDGE: I think  
9 you're right. So until the markings-- Because-- Or  
10 another way-- Yes. Let's handle it that way. But  
11 if you have an objection as we go through it, you'll  
12 raise it at the time of the marking, correct?

13 MR. McAFEE: I will do that.

14 THE ADMINISTRATIVE LAW JUDGE: So for now,  
15 still for purposes of identification, Ms. Doty is  
16 marking on 43A.

17 BY MR. RYAN:

18 Q. Ms. Doty, could you mark in the lower  
19 left-hand corner of that--excuse me--lower right-hand  
20 corner of that exhibit, just write E-x period 43A.

21 A. Can't see it up there. I kind of blew it  
22 already. I put "C43A" on it.

23 Why isn't it showing up? Oh, there it is.

24 Q. Oh, okay. You already wrote it?

25 A. Should I cross it out?

1 Q. That's okay. That's good enough.

2 A. Okay.

3 Q. So let's go back to Elliot Creek.

4 A. Okay.

5 Q. So you just marked what you have identified  
6 as Elliot Creek on there, and that's kind of the  
7 smudgy blue area on the left-hand side of 43A?

8 A. Correct. You know, this is--this is  
9 elevation data, and the blue areas just indicate the  
10 lowest elevations, and it's a gradient going up from  
11 there.

12 Q. What do the red lines we see-- There's a  
13 number of red lines on 43A. What do those represent?

14 A. This is the watershed boundary that was  
15 delineated in the watershed delineator that's within  
16 the SWAT model. And it represents the watershed for  
17 the unnamed tributary; in other words, all the water  
18 that flows down to this point that enters into Elliot  
19 Creek.

20 Q. Okay. So that would be you just pointed at  
21 right below the E in Elliot Creek where the red lines  
22 reach Elliot Creek; is that correct?

23 A. Yes. That's the outlet to this watershed  
24 area.

25 Q. Okay. Why don't you make a little circle

1 and write "Outlet."

2 A. (Witness complied.)

3 MR. RYAN: And let the record reflect the  
4 witness just made an arrow towards the top of Exhibit  
5 43A where she wrote "WS Boundary."

6 BY MR. RYAN:

7 Q. Does that mean watershed boundary?

8 A. Yes, it does.

9 Q. Now, in the middle upper portion of the  
10 photograph--excuse me--of the Exhibit 43A, we see  
11 some black lines with an identifier saying "Property  
12 Location." Is that Mr. Vos' feedlot?

13 A. Yes, it is.

14 Q. And is that to scale with the rest of the  
15 topography that's shown here?

16 A. Yes, it is.

17 Q. So the red lines are--the outer red lines  
18 are the watershed boundary. What are the inner red  
19 lines representing?

20 A. Those are subdrainage areas within the  
21 watershed. So for each reach, you have an area that  
22 drains into that reach, and that's what those  
23 interior lines show you.

24 Q. When you say "reach," you mean reach of  
25 water body, such as the unnamed tributary?

1 A. Correct.

2 Q. Is the unnamed tributary visible in Exhibit  
3 43A?

4 A. Yes, it is.

5 Q. And where is it?

6 A. It's this blue line right here.

7 Q. So at the upper right-hand corner terminus  
8 of that blue line, could you put an arrow and write  
9 in "UNT," for unnamed tributary?

10 A. From the--

11 Q. Yes.

12 A. Right there?

13 Q. That's correct.

14 A. (Witness complied.)

15 Q. That where the arrow is with UNT, is that  
16 the head water of the unnamed tributary?

17 A. Yes, it is.

18 Q. And that will be just to the north of  
19 Mr. Vos' feedlot?

20 A. Yes, it is.

21 Q. And does that blue line extend down to its  
22 confluence with Elliot Creek, where you wrote  
23 "Outlet"?

24 A. Yes, it does.

25 Q. Okay. Now, does that flow through-- This

1 water entering the unnamed tributary right near where  
2 you put your arrow for UNT, would that water make its  
3 way into Elliot Creek?

4 A. Yes, it would. It's continuous flow path.

5 Q. Okay. So looking again on the uppermost  
6 subdrainage area which you've just identified around  
7 your markings for the unnamed tributary, there's a  
8 red one and there's a blue one. What do those two  
9 No. 1s mean?

10 A. The blue 1 indicates the reach number.

11 Q. Okay.

12 A. And the red 1 indicates the subdrainage area  
13 number.

14 Q. So will all of the water falling out of the  
15 sky in subdrainage area No. 1 enter the reach of the  
16 unnamed tributary that's marked as blue No. 1?

17 A. Yes, it does.

18 THE ADMINISTRATIVE LAW JUDGE: That's a  
19 what? Marked what was the last thing you said?

20 MR. RYAN: As a blue No. 1.

21 THE ADMINISTRATIVE LAW JUDGE: Okay.

22 BY MR. RYAN:

23 Q. Would that be the same for all of these  
24 subdrainages we looked at here?

25 A. Yes. That's correct.

1 Q. Now, is this similar to what you did in the  
2 APEX model in that you broke up the larger area into  
3 smaller areas that have some identifying  
4 characteristic?

5 A. Yes, I did.

6 Q. Okay. And why did you do that?

7 A. In the APEX model?

8 Q. No. No. Here, for your SWAT model  
9 application.

10 A. The SWAT model works just like the APEX  
11 model where you define subdrainage areas and then  
12 you--in the SWAT model you define them even further  
13 as HRUs, which are just the same thing as I did in  
14 the APEX model, meaning you have to define areas of  
15 unique soil and land cover.

16 And this is the first step in the process.  
17 It determines all the flow, subdrainage areas, and  
18 then within those areas, it defines all the areas of  
19 unique soil type and land cover.

20 Q. What's an HRU?

21 A. It's another acronym.

22 Q. Okay.

23 A. By definition, it is a unique soil type and  
24 land cover area as defined and actually generated  
25 automatically by the model. Homogeneous resource

1 area.

2 Q. Or unit?

3 A. Unit.

4 Q. Now, looking at Exhibit 43A, any water  
5 falling out of the sky within the watershed boundary,  
6 in other words, inside the outermost red line, where  
7 would that water go?

8 A. To Elliot Creek.

9 Q. So--

10 A. Unless it was absorbed by the soil or  
11 evaporated or, you know, if it made it through into  
12 the stream system it would go to Elliot Creek.

13 Q. So none of the--any of the water falling out  
14 of the sky would go to any other creek system other  
15 than Elliot Creek within this outer red line on 43A?

16 A. That's correct.

17 Q. So when you ran the SWAT model, you were  
18 attempting to do what?

19 A. I wanted to determine how many days per year  
20 there was flow in the unnamed tributary.

21 Q. And what did the SWAT model tell you?

22 A. It told me that there was flow in the  
23 unnamed tributary all year-round between 2002 and  
24 2006, 2007.

25 Q. I'm done with Exhibit 43A for now. If you'd



1 like to take your seat and turn the machine off  
2 quickly, if you can, so Mr. McAfee can see, or I  
3 will.

4           Could you turn, please, in your expert  
5 report--can we please turn to what would be the back  
6 of your expert report. These pages are not numbered.  
7 It's after all the tables and numbers, Appendix B-2  
8 of your expert report. It's right near the back and  
9 it's a series of graphs with lots of black.

10           THE ADMINISTRATIVE LAW JUDGE: B-2, you  
11 said?

12           MR. RYAN: B as in boy 2.

13           THE ADMINISTRATIVE LAW JUDGE: Okay. Did  
14 you find that?

15           THE WITNESS: Yes, I did. Would you like  
16 help?

17           THE ADMINISTRATIVE LAW JUDGE: No. I was  
18 asking if you needed help.

19           THE WITNESS: I'm good.

20 BY MR. RYAN:

21           Q. B-2 is an appendix to Exhibit 43. Looking  
22 at the first page of Appendix B-2, the first graph  
23 says, "Flow in Channel Segment 1." What is Channel  
24 Segment 1?

25           A. On the diagram that we just looked at, there

1 were two 1's, and one was the reach number and one  
2 was the subdrainage area number. That is Channel  
3 Segment 1, the reach number.

4 Q. Okay. So if I recall correctly, there's  
5 Channel Segment 1 on the unnamed tributary was the  
6 headwater down to just below the feedlot.

7 A. Correct.

8 Q. So we're looking now at the first graph on  
9 Appendix B-2 of your expert report. Is this showing  
10 the flow in that reach, that one very specific reach  
11 of the unnamed tributary?

12 A. Yes, it is. For the year 2002.

13 Q. Okay. And what does that graph tell us?

14 A. It tells us that there was flow in it on a  
15 daily basis. The flow was at least, you know, 100  
16 gallons per day, but higher, definitely higher,  
17 through the summer and the fall of that year.

18 Q. Okay. So the next graph down on page 1 of  
19 Appendix B-2 is flow--same thing, flow in Channel  
20 Segment 1, but year 2003. Again, does that tell us  
21 there was flow throughout the year?

22 A. Yes, it does.

23 Q. And just so we're clear on these graphs,  
24 wherever it's black, does that indicate that water  
25 was present?

1 A. Yes, it does.

2 Q. And then page 2 of Exhibit B-2--excuse  
3 me--Appendix B-2 to Exhibit 43, that's from your same  
4 segment, that year, 2004, and next one is 2005. So  
5 are these-- And I believe on the top of page 6 we  
6 show the year 2006.

7 So is it the first five graphs on pages 1  
8 through 3 of Appendix B-2--do those represent the  
9 flow in the Channel Segment 1 of the unnamed  
10 tributary for the first--for the period 2002 through  
11 2006?

12 A. Yes, it does.

13 Q. Now, did you do this for all of the segments  
14 of the unnamed tributary?

15 A. I did.

16 Q. Okay. And what did--in summary, what do  
17 they tell you?

18 A. They tell me that there was flow in the  
19 channel most every day of the year.

20 Q. For the period 2002 through 2006?

21 A. Correct.

22 Q. Would you-- How would you-- From a  
23 hydrology standpoint, how would you term the unnamed  
24 tributary? Would it be a perennial stream, would it  
25 be an intermittent stream or ephemeral stream?

1 A. I would call it perennial.

2 Q. I think you testified earlier that the USGS  
3 map you reviewed showed the unnamed tributary on it;  
4 is that correct?

5 A. Yes, it did.

6 Q. How was it depicted on the USGS map?

7 A. It's a solid blue line, which on a USGS map,  
8 that means it's perennial.

9 Q. And based on your personal observations of  
10 the unnamed tributary, do you have any reason to  
11 doubt the USGS classification or the SWAT model  
12 results that you generated?

13 A. No, I don't. It looks like an established  
14 stream. It was flowing when I was there. It had  
15 definite banks and bed and water.

16 THE ADMINISTRATIVE LAW JUDGE: And what?

17 THE WITNESS: Water, definitely.

18 THE ADMINISTRATIVE LAW JUDGE: Water. You  
19 just trailed off at the end.

20 THE WITNESS: Sorry.

21 BY MR. RYAN:

22 Q. I just want to go back, clean up one small  
23 point I made, and then I think I'm done with  
24 you--done for--

25 A. He's done me in.

1 Q. Done for the day with my direct.

2 We talked back about the APEX model and we  
3 looked at the results of discharges from the various  
4 subwatersheds, and I'd like to refer you to the  
5 results table at the back of your expert report,  
6 which would be on page 10 of your expert report.

7 Do you recall your testimony regarding that?  
8 And looking at the fourth column in Table 2 on page  
9 10 of your expert report, which is watershed manure  
10 yield, we spent some time talking about that.

11 We also talked about the phosphorous and the  
12 nitrogen, and I think you said the phosphorous and  
13 the nitrogen could be coming from manure or it could  
14 be coming from fertilizer. Do you recall that?

15 A. Yes, I did say that.

16 Q. Now, is there--other than the feedlot, is  
17 there any source of manure that would have  
18 contributed to this 2,410 tons of discharge of  
19 manure?

20 A. No.

21 Q. So it would have come solely from the  
22 feedlot?

23 A. Yes, it would have.

24 Q. Now, to finish this up, let's talk about  
25 Section 3.6 of your report on page 10, the "Accuracy

1 Of The Predictions."

2 Do you see that section?

3 A. Yes, I do.

4 Q. Okay. And you spent some time talking at  
5 the beginning of your testimony about how trustworthy  
6 these models are, and here you've spent some time  
7 discussing the accuracy of the predictions this model  
8 made in this case.

9 Let's look at the third to the last sentence  
10 under Section 3.6. And I'll read it. It says,  
11 "Therefore, to be conservative, it is assumed that  
12 the APEX simulation results are only within plus or  
13 minus 50 percent of the reported values."

14 Do you see that sentence?

15 A. I do.

16 Q. Okay. Now, you say to be conservative. Why  
17 is that conservative to say plus or minus 50 percent?

18 A. I would expect the results to be better than  
19 that, but I would expect them to be within that  
20 range, 50 percent or--you know, the results to  
21 fluctuate by 50 percent or less, you know. It's an  
22 outer bound. I would expect the results to be within  
23 about 50 percent or less.

24 Q. Let's use some figures for--as examples.  
25 Taking, for example, the 2,410 tons of manure that

1 the model predicted would come off of the feedlot  
2 into the unnamed tributary, if that is a plus or  
3 minus 50 percent figure, is it possible that it is as  
4 low as 1,205 tons but as high as 3,615 tons?

5 A. Yes, it is.

6 Q. Okay. Is it equally possible that it's  
7 underestimating as it is overestimating?

8 A. Yes.

9 Q. So this 2,410 tons would be in the middle  
10 between that range?

11 A. Correct.

12 Q. And you stated just a moment ago--you  
13 testified just a moment ago that you would expect the  
14 results to be more accurate than this plus or minus  
15 50 percent. Why do you say that?

16 A. Just based on the validation studies that  
17 are out in the literature. There have been hundreds  
18 of studies done or at least a hundred studies done on  
19 these models, and a lot of them did do validation,  
20 and their results are good, they're reasonable, and  
21 they're typically, you know, less than 50 percent.  
22 They're typically more in the 20 percent range.

23 Q. Okay. And based on the validation work you  
24 did with your model run here in this case, do you  
25 feel like--is it your opinion that the error rate was

1 less than plus or minus 50 percent?

2 A. I think it--yes, it's definitely within that  
3 range.

4 Q. Now, you also opined within the report on  
5 the front page, and you can also--one can also see it  
6 here on page 10 of your report, in that last sentence  
7 right above Table 2, it says, "The APEX simulation  
8 results predict discharges during 45 storm events."

9 Do you see that?

10 THE ADMINISTRATIVE LAW JUDGE: Point that  
11 out to me again where you referred Ms. Doty to.

12 MR. RYAN: It's on page 10, the last  
13 sentence just above Table 2.

14 THE ADMINISTRATIVE LAW JUDGE: Okay.

15 BY MR. RYAN:

16 Q. Do you see that, Ms. Doty?

17 A. Yes, I do.

18 Q. Would you expect that prediction of  
19 discharges to the unnamed tributary containing  
20 pollutants to also be subject to that plus or minus  
21 50 percent confidence range?

22 A. I'm sorry. Can you repeat that? I guess  
23 I'm tired.

24 Q. That's fine. Under Section 3.6, you talk  
25 about the plus-minus 50 percent.



1 A. Right.

2 Q. And we talked about that in the context of,  
3 for example, the 2,410 tons of manure.

4 A. Right.

5 Q. Would you also expect-- And how that could  
6 fluctuate, at 50 percent, between 1,200,  
7 approximately, tons and 3,600 tons?

8 A. Correct.

9 Q. Would you expect the number of days of  
10 discharge to also fluctuate like that?

11 A. No. That is the quantity of manure that  
12 I--that the model is predicting will get to the  
13 unnamed tributary.

14 Q. This is the 2,410 tons?

15 A. Correct. You know, so--

16 Q. Okay. So is it your testimony that the 45  
17 days you predicted of discharge to the unnamed  
18 tributary is 45 days and not plus or minus something?

19 A. Correct. The volume of manure that would  
20 have been discharged on any one of those 45 days  
21 could be plus or minus 50 percent.

22 Q. Okay. But the days themselves would not  
23 fluctuate?

24 A. No.

25 MR. RYAN: Okay. I have no further

1 questions, Your Honor.

2 THE ADMINISTRATIVE LAW JUDGE: Okay. And I  
3 want to give you-- Do you want five minutes, I would  
4 think, to-- Okay.

5 But before we do that, I just have one  
6 question to make sure I understand, Ms. Doty, your  
7 testimony.

8 Because as a nonscientist, I'm a little bit  
9 surprised. Referring back to what Mr. Ryan just  
10 referred to, you are saying, am I correct, that when  
11 you come to Section 3.6 of your report, "Accuracy Of  
12 The Predictions," at page 10, that you effectively  
13 acknowledge that the results that you come up with,  
14 they could be off by as much as 49 percent of the  
15 predicted values one way or the other? It could be  
16 up to being wrong by 49 percent; is that right?

17 THE WITNESS: That's correct.

18 THE ADMINISTRATIVE LAW JUDGE: And that's  
19 considered to be, at least in this field, good enough  
20 in terms of accuracy that the community says, "Yep,  
21 we don't really require greater accuracy than being  
22 off by 49 percent"?

23 THE WITNESS: That's correct. This is a  
24 natural system, and it's pretty complex in terms of  
25 the processes that are occurring within it. And it's

1 also heterogeneity that plays into it.

2 THE ADMINISTRATIVE LAW JUDGE: Heterogeneity  
3 is-- Tell me about that.

4 THE WITNESS: So soil is not uniform from  
5 spot to spot. You're going to have a little  
6 variation in the amount of clay, a little variation  
7 in the amount of the course material associated with  
8 it.

9 And discharges, you know, are very--how much  
10 energy it takes to pick up particles is very  
11 important. And if you have a little area that has  
12 course particles in it at 10 percent greater than a  
13 little spot next to it, more is going to be eroded  
14 out of that spot next to it.

15 But, you know, we don't--these models don't  
16 evaluate it at that small scale. It's averaging.  
17 And when you start to talk about averaging over  
18 larger areas, you know, you start to talk about error  
19 associated with it because you can't predict what is  
20 happening at every particular spot within watershed.

21 THE ADMINISTRATIVE LAW JUDGE: But I take  
22 it, because this is your field, that an error rate of  
23 up to 49 percent is considered to be acceptable?

24 THE WITNESS: Yes, it is.

25 THE ADMINISTRATIVE LAW JUDGE: And can you

1 tell me, is there any other--do you know of any  
2 other--of your own experience and training, of any  
3 other field that says that an error rate of 49  
4 percent is--that's acceptable in the world of science  
5 for predictions?

6 Our local weather forecaster is off by 49  
7 percent routinely back in Washington, but--

8 THE WITNESS: And everywhere.

9 THE ADMINISTRATIVE LAW JUDGE: But, I mean,  
10 I'm just curious, because I had never been faced with  
11 this before, with a number that high.

12 So do you know of any other-- Is there  
13 something else you can point to and say, "Well, in  
14 this field also, they have an error rate of 49  
15 percent, 60 percent"?

16 THE WITNESS: You know what, I've spent my  
17 whole life studying the natural sciences, and, you  
18 know, in groundwater flow, when you're talking about  
19 fractured rock, you know, you're talking about orders  
20 of magnitude in terms of predicting permeabilities,  
21 you know, measurements, if you're good within an  
22 order of magnitude, you're doing really well.

23 And that can translate to substantial  
24 variations in terms of error or bounds. It's just we  
25 aren't-- It's not like determining the properties of

1 steel. It's really, you know, it's all fractured and  
2 changing from spot to spot, so...

3 THE ADMINISTRATIVE LAW JUDGE: Okay.

4 THE WITNESS: We're talking averages.

5 THE ADMINISTRATIVE LAW JUDGE: Okay. Thank  
6 you. You're welcome to take a break and stretch, if  
7 you like. We're going to take five minutes.

8 Is that enough for you, Mr. McAfee?

9 MR. McAFEE: Yes, it is, Your Honor.

10 THE ADMINISTRATIVE LAW JUDGE: We'll take a  
11 five-minute break.

12 (Short recess.)

13 MR. RYAN: Your Honor, I would like, at this  
14 time, to move Complainant's Exhibit 43A into  
15 evidence.

16 THE ADMINISTRATIVE LAW JUDGE: And hearing  
17 no objection--

18 MR. McAFEE: No objection, Your Honor.

19 THE ADMINISTRATIVE LAW JUDGE: --it's  
20 admitted. 43A is in.

21 (Complainant's Exhibit 43A  
22 was received in evidence.)

23 THE ADMINISTRATIVE LAW JUDGE: We'll go off  
24 the record.

25 (Discussion off the record.)

1 THE ADMINISTRATIVE LAW JUDGE: Mr. McAfee,  
2 are you ready for your cross-examination?

3 MR. McAFEE: Yes, I am, Your Honor. Thank  
4 you.

5 THE ADMINISTRATIVE LAW JUDGE: Okay.

6 CROSS-EXAMINATION

7 BY MR. McAFEE:

8 Q. Ms. Doty, I'm Eldon McAfee, and I'm  
9 representing the respondent in this case, Lowell Vos,  
10 who is seated next to me.

11 I believe you met Lowell on July 1st?

12 A. Yes, I did.

13 Q. Okay. When you were at Mr. Vos' feedlot on  
14 July 1st, how many other feedlots had you ever been  
15 to?

16 A. Oh, probably a dozen.

17 Q. And for what reason would you have been at  
18 those other feedlots?

19 A. I--I've been doing these types of  
20 investigations at other facilities as a subcontractor  
21 to EPA or contractor to EPA, other CAFO sites.

22 Q. So you have performed this same sort of  
23 work; that is, modeling for EPA, in other cases  
24 involving feedlots?

25 A. Yes, I have.

1 Q. Okay. And were they enforcement actions  
2 like this one?

3 A. It was under the enforcement contract.

4 Q. Okay. And how many, again, have you done?

5 A. Well, these types of analyses of other--

6 Q. Feedlots, yes.

7 A. --feedlots?

8 At other feedlots or other CAFO sites that  
9 deal with the same thing, manure in concentrated  
10 forms or, you know, piles and confined animals and  
11 manure?

12 Q. Well, let's take both. Mr. Vos' feedlot is  
13 an open feedlot, as you well know, where the animals  
14 are outside, and, obviously, the lot where the manure  
15 is outside. That's what I'm primarily interested  
16 in. How many of those have you done?

17 A. I'd have to go back and-- To give you an  
18 exact number, I'd have to go back and look at the  
19 projects I've done, but, you know, I'd say at least  
20 five.

21 Q. In the others you referred to, were they--  
22 And give me just a general idea. Were they  
23 different--were they cattle operations or--

24 A. Dairy cows.

25 Q. Okay. And so maybe a little different

1 housing system?

2 A. Every facility looks a little bit different,  
3 you know, from housing perspectives, from storage  
4 perspectives.

5 Q. And did you use the same modeling procedure  
6 there as you used here?

7 A. I used-- Yes. Well, I used TR-55 at the  
8 dairy that I'm thinking of off the top. I've used  
9 SWAT at other facilities.

10 Q. And what about APEX?

11 A. I haven't used APEX at other facilities.

12 THE ADMINISTRATIVE LAW JUDGE: You have not?

13 THE WITNESS: I have not.

14 THE ADMINISTRATIVE LAW JUDGE: Okay.

15 THE WITNESS: This form of the code just  
16 came out. Well, it's an interface that I'm referring  
17 to in APEX, and I started using that about a year  
18 ago.

19 BY MR. McAFEE:

20 Q. So to make sure I understand you, then, the  
21 Lowell Vos Feedlot is the first feedlot that you've  
22 used the APEX model on in this manner?

23 A. Yes.

24 Q. Okay. Had you used the APEX model before at  
25 all?



1           A.     Not WinAPEX, no. APEX. Prior to WinAPEX,  
2 didn't have an interface with a GIS system, and so  
3 when they put it in that format, I started to use it,  
4 and that just happened a year ago.

5           Q.     You are using the term WinAPEX?

6           A.     Right. That's what they call this version  
7 of the code, W-i-n-A-P-E-X.

8           Q.     Does that stand for Windows or--

9           A.     I don't know if they shortened it from  
10 Windows, but it certainly could.

11          Q.     Okay. And when you say the code, what code  
12 are you referring to?

13          A.     That's the software package, what I'm  
14 talking about a code.

15          Q.     Okay. We attorneys sometimes have a  
16 different meaning or think the code means something  
17 different.

18          A.     Yeah.

19          Q.     You're not referring to a legal document of  
20 any kind?

21          A.     No, sir.

22          Q.     I guess what I'd like to do is kind of move  
23 right into your model, and I'm going to go at it at a  
24 little different direction. As I understood your  
25 testimony, well, of course, you did testify to the

1 SWAT model last, right, how you used the SWAT model;  
2 is that correct?

3 A. That's correct.

4 Q. And is the output from the SWAT model used  
5 at all in APEX?

6 A. No.

7 Q. So the APEX model is independent of SWAT; is  
8 that correct?

9 A. That's correct.

10 Q. Okay. But you need to use both of them to  
11 determine if there has been a discharge of pollutants  
12 to--

13 A. No, sir. I didn't use both of them to  
14 determine that.

15 Q. What did you use SWAT for?

16 A. I used SWAT to assess whether there was flow  
17 in the unnamed tributary.

18 Q. Okay.

19 A. And that's all I used it for.

20 Q. And what does it tell us, pertaining to this  
21 case, whether there is flow in the unnamed tributary  
22 or not?

23 A. It tells me whether that's a perennial  
24 stream or an intermittent stream and how often there  
25 is flow in that stream. And if it's perennial and

1 discharges are getting into that stream, then I can  
2 assume that they--because they've already been  
3 picked--the particles have already been picked up,  
4 they're trained in the water, it's concentrated flow,  
5 that that flow--and that flow is continuous down to  
6 Elliot Creek, that the particles are also making it  
7 down to Elliot Creek.

8 Q. Okay. So if I understand correctly, then,  
9 what SWAT tells us is that if something, a pollutant,  
10 gets into the unnamed tributary, the SWAT model tells  
11 us whether there is continuous flow on all days of  
12 the year to get it to Elliot Creek?

13 A. It does-- Yes. It told me that it was a  
14 perennial system and that there was flow and that it  
15 would go all the way down to Elliot Creek.

16 Q. So the output from the SWAT model would tell  
17 us something about whether--as in this case, where  
18 the EPA is alleging that my client's feedlot  
19 discharged to Elliot Creek, the SWAT model does help  
20 determine that, right?

21 A. Yes, it does.

22 Q. Okay. And, again, I just want to make sure  
23 I understand. If I understand it right, APEX model  
24 takes it, so to speak, from the feedlot to the  
25 unnamed tributary, and then the SWAT model picks up

1 from there?

2 A. That's correct.

3 Q. Okay. If we could, let's go to your report.  
4 You have that there?

5 A. Yes, I do.

6 Q. Okay. And I believe that's Exhibit No. 46;  
7 am I correct?

8 A. 43? I have Exhibit 43.

9 Q. Okay. Pardon me. It's Exhibit 43. I  
10 believe all your tables are 46, maybe. I'm sorry.  
11 So it's Exhibit 43.

12 And I guess I want to start with we spent a  
13 lot of time--"we" being, I guess, the Court's time in  
14 direct examination by Mr. Ryan--we spent a fair  
15 amount of time talking about scraping; is that right?

16 A. Yes.

17 Q. And you testified as to how that impacted.  
18 That was a calculation in the APEX model; is that  
19 right?

20 A. Yes, it was.

21 Q. Okay. And on page 9 of your report, you  
22 state that based on--and I believe you testified  
23 today that based on information provided to you by  
24 EPA, you inputted once every two weeks, right?

25 A. Yes, I did.

1 Q. And that is the difference between your  
2 previous version of the model and then this one?  
3 That was the only difference, right?

4 A. Yes.

5 Q. Okay. What if that-- And maybe you can't  
6 tell me exactly what would happen here, but what if  
7 that were once per week instead of twice per week,  
8 instead of once every two weeks, it was once per  
9 week?

10 A. That's tricky.

11 Q. Sorry.

12 A. Yes. I ran a sensitivity study to determine  
13 the answer to that.

14 Q. Uh-huh.

15 A. That meant that I ran the model with  
16 identical parameters except that I varied the  
17 interval at which the scraping occurred. I ran it  
18 where it was scraped once a week, once every other  
19 week, once every third week, and once every fourth  
20 week. And I saw a--I saw a difference in the total  
21 amount of manure that was transported down to Elliot  
22 Creek--I mean down to the unnamed tributary.

23 If it was scraped-- And the amount of  
24 manure that was transported down to the unnamed  
25 tributary increased when the scraping was less

1 frequent. They were reasonable in that regard.

2 And the results between a week and two weeks  
3 was a change of 11 tons, so I saw that instead of  
4 2,410--2,410 tons of manure being transported down to  
5 the unnamed tributary, when the feedlot was scraped  
6 every week, I saw 11 tons less than that being  
7 transported down.

8 Q. And was there any difference in the number  
9 of discharges?

10 A. I didn't look at that.

11 Q. Okay. And the record in this case-- The  
12 reason I ask that question, and forgive me, if you  
13 would look at Exhibit 15-- Do you have that there  
14 in--

15 A. I do have it, I'm sure.

16 Q. And I'm not going to spend a lot of time  
17 with it, just a brief question.

18 Okay. On Exhibit 15, if you would go to the  
19 second page of that exhibit, this is a form-- And  
20 please take your time to take a look at it if you  
21 need to. This is an inspection form completed by the  
22 Iowa Department of Natural Resources on June 25th of  
23 2003.

24 And if you go to page 2, about two-thirds of  
25 the way down, on page-- Well, it's not numbered page

1 2, actually, it says page 12 of 27 at the bottom.  
2 But about two-thirds of the way down the page, it  
3 says--under "Manure Handling Methods," it states  
4 "Manure Solids Scraping," "Yes," and then the term  
5 one week is written in there.

6 And that, evidently, was what-- And there  
7 will be further testimony on this following yours,  
8 but that is what the Iowa Department of Natural  
9 Resources determined at that time that Mr. Vos was  
10 scraping his lots, was once per week.

11 MR. RYAN: Objection, Your Honor. It  
12 mischaracterizes what it says. It says one week  
13 times per year. That's vague.

14 THE ADMINISTRATIVE LAW JUDGE: Do you want  
15 to rephrase that?

16 MR. McAFEE: Sure.

17 BY MR. McAFEE:

18 Q. Do you see where it says "Frequency of  
19 Removal," one week times per year?

20 A. Yes, I do.

21 Q. Okay. For purposes of my question to you,  
22 and I can't ask you anything other than what it says  
23 here, but if that were to mean one week--you know,  
24 scraping once per week, would that be--you've  
25 testified what that would mean to your model; is that

1 correct?

2 A. Yes.

3 Q. Okay.

4 A. That the model was not very sensitive to the  
5 amount of time that it was scraped and that there  
6 would still be significant discharges to the unnamed  
7 tributary.

8 Q. Yes. But it would be different than what  
9 you--an assumption you made in the model; is that  
10 correct?

11 That you made the assumption of scraping  
12 every other week; is that correct?

13 A. Yes, I did. In the report that I have,  
14 right.

15 Q. And you also testified that you did not make  
16 any determination as to what effect scraping once per  
17 week would have on the number of discharges that you  
18 found in your report; is that correct?

19 A. I--I did the sensitivity study to determine  
20 that is what you're asking me? No--

21 Q. What I'm asking is I believe you testified  
22 that you looked at the decrease in the number of tons  
23 of manure--

24 A. Right.

25 Q. --but that you did not look at the number of



1 discharges, how that would be affected by scraping  
2 once per week?

3 A. The number of days that it discharged?

4 Q. Correct.

5 A. Yes. I didn't--I didn't look at that.

6 Q. Okay. Thank you.

7 Would the model also take into account  
8 something like when cattle in a feedlot are often  
9 bedded down with cornstalks, et cetera, so where,  
10 like, in the winter months they sleep they have  
11 bedding, and if that-- For purposes of my question,  
12 let's assume that results in more manure being  
13 deposited in the bedding. Did you take anything like  
14 that into account in your model?

15 A. No. I used manure as a layer, and that was  
16 over fallow ground.

17 Q. And by fallow ground, you mean bare?

18 A. Bare.

19 Q. And I believe the model, as I see in your  
20 report, it assumes an even distribution?

21 A. No. What you do is you tell it the number  
22 of cattle, and you have cattle in the individual  
23 pens--

24 Q. Uh-huh.

25 A. --so you have the number of cattle that you

1 have in the pens is actually assumed to be  
2 proportional to the area within those pens. But then  
3 the model also moves those cattle around between pen  
4 and pen. It's just an approach that it uses.

5 Q. Okay. I want to come back to that. But  
6 let's assume within the pen, does the model assume an  
7 even distribution of the manure within the pen by the  
8 cattle that are in that pen?

9 A. I assume it does.

10 Q. Okay. So something--a management practice  
11 that would alter that would not be a variable that  
12 the model took into account in your case?

13 A. No.

14 Q. Okay. Or a management practice that  
15 affected the--I believe what you're terming as fallow  
16 ground, that maybe provided a ground cover, that  
17 would not be anything the model took into account; is  
18 that correct?

19 A. That's correct.

20 Q. Okay. In the model as you ran it, you,  
21 again, provided the assumption that scraping was done  
22 once every other week. And that would be just when  
23 you put it into the model, it would just do it--start  
24 at the beginning of the year and every other week it  
25 would assume a scraping was done; is that right?

1 A. Correct.

2 Q. If-- Well, and I believe you testified  
3 that, of course, the model assumes, then, that manure  
4 is being accumulated right after the scraping up  
5 until the period when the next scraping is done; is  
6 that right?

7 A. Yes.

8 Q. Okay. Wouldn't it matter to the model when  
9 that--a precipitation event occurs relative to  
10 scraping? For example, if a precipitation event that  
11 would cause runoff occurs right after a scraping,  
12 wouldn't there be less runoff than if that  
13 precipitation event occurs, say, on Day 13, right  
14 before the next scraping?

15 A. Yes, the timing of the precipitation events  
16 would make a difference.

17 Q. So if a feedlot operator such as Mr. Vos  
18 timed his scrapings, if he-- If rain was predicted,  
19 if heavy rain was predicted, and he scraped right  
20 before the predicted rain and, in fact, the rain  
21 occurred, that wouldn't be anything your model could  
22 take into account either, could it?

23 A. It would if that happened to fall in the  
24 14-day interval.

25 Q. But otherwise it couldn't take it into

1 account?

2 A. No. I-- No.

3 Q. Okay.

4 A. I don't think so.

5 Q. So like, for instance, if, on Day 13--and  
6 scraping was to occur on Day 14, but on Day 13 there  
7 was a heavy rain predicted and Mr. Vos came in on day  
8 12 and scraped, your model wouldn't be able to take  
9 that into account?

10 A. On one particular event that you're  
11 referring to?

12 Q. Yes.

13 A. I haven't tried to run it in a mode like  
14 that. I don't know.

15 Q. And in this case, as you ran the model here  
16 and determined the number of discharges you did, you  
17 didn't take anything like that into account?

18 A. No. I gave it a 14-day interval.

19 Q. Okay. I'd like to go to your report, then,  
20 to page 4. The last paragraph on page 4 discusses  
21 empirical models and process-based; is that correct?

22 A. Yes.

23 Q. All right. And I'm sure I'm in over my head  
24 here, but I'll give it a shot, okay? Empirical  
25 models are models that need specific lab and field

1 data; is that correct?

2 A. Yes, they are.

3 Q. Okay. And then the process-based models are  
4 what you've testified, such as APEX; is that  
5 process--

6 A. Yes.

7 Q. What part of the modeling you did in this  
8 case was empirical-based? Was any part of it  
9 empirical-based?

10 A. No. That's in there because some of the  
11 equations that were originally derived back from  
12 data, you know, from USDA research back from these  
13 test plots, you could call those base--you could call  
14 them empirical just based on the fact that they  
15 are--they are not based strictly on first principles  
16 of physics. They take into account data that was  
17 collected in the field.

18 And those equations have--you know, have  
19 been used and validated for the last 50, 60 years,  
20 and so they're still being used, and they're still  
21 being included in the models, and they're the most  
22 reliable thing we have.

23 THE ADMINISTRATIVE LAW JUDGE: But I would  
24 like you to ask that question again just for--because  
25 the answer was fairly complex and dealt with other

1 aspects that didn't really, from my estimation,  
2 specifically answer your question.

3 So would you repeat that, please, for the  
4 benefit of me, if no one else?

5 MR. McAFEE: I would be glad to, Your Honor,  
6 and I was, I think, going to do the same thing. I'll  
7 ask it.

8 BY MR. McAFEE:

9 Q. My question was, for the modeling you did in  
10 this case, what part of that modeling was  
11 empirical-based?

12 A. I'm not sure how to answer it differently,  
13 so I'm pausing. I'm not-- I'm thinking, but I'm not  
14 sure how to answer it differently.

15 THE ADMINISTRATIVE LAW JUDGE: Let me ask  
16 you, wouldn't it be fair to say none? And why not?  
17 Other than that history that you told us about, I  
18 mean, if it was empirically-based, give us an example  
19 of some empirical numbers that you plugged into this.

20 THE WITNESS: Oh, no. I didn't-- It is a  
21 process-based model. I didn't plug in any numbers,  
22 and no one has to plug in any numbers into formulas,  
23 coefficients that were empirically-based.

24 All of the science that they've been doing  
25 in this area has an empirical component to it. The

1 processes are not--these equations aren't strictly  
2 derived from first principles, they--because of the  
3 variation in the material being used.

4           So the original equations, like the USLE,  
5 universal soil loss equation, uses field data to  
6 determine the components of the equation, and that's  
7 what I'm referring to when I talk about empirical  
8 equations in here.

9 BY MR. McAFEE:

10           Q.    I just want to understand. The discussion  
11 you have on page 4 refers to specific lab and field  
12 data, and I assume what you're meaning there would be  
13 particular to something like the Lowell Vos site, and  
14 you didn't have any of that data for this case,  
15 right?

16           A.    No. I didn't need any of that data because  
17 that research has all been done for the last 50  
18 years, and those--those mathematical equations were  
19 developed, calibrated, and validated.

20                   There are other models where you actually  
21 create the coefficients in those equations based on  
22 the data that you're collecting at the site. That's  
23 not what I used. That's not what was done here.

24                   If I had used that type of mathematical  
25 equation at the site, I would have had to collect the

1 field data in order to determine the coefficients and  
2 constants associated with that particular equation.  
3 That's been done-- You know, that was done 50 years  
4 ago and is tried and true, and we don't do that  
5 anymore for these types of models.

6 Q. But that information you have in what I  
7 understand to be a process-based model is not  
8 specific to the Lowell Vos site; is that correct?

9 A. No. It's specific to the physical  
10 characteristics of the Lowell Vos site. It's  
11 specific to these slope conditions, these types of  
12 land use conditions, and these types of soil  
13 conditions and weather conditions as well.

14 Q. Okay. Then I just want to make sure I  
15 understand from this paragraph you have in your  
16 report, is any part of what you did for the Lowell  
17 Vos modeling an empirical-based modeling process?

18 A. No. No, it's not.

19 Q. Okay.

20 A. I'm sorry. No, it's not.

21 Q. Probably my not understanding it, but that's  
22 what we're here to do.

23 A. Okay.

24 Q. For a particular situation, such as the  
25 Lowell Vos Feedlot, is empirical-based modeling more



1 accurate than process-based modeling?

2 A. To be accurate, as accurate as these-- It's  
3 not more accurate. To be as accurate as these types  
4 of models we're using, you have to have at least 20  
5 or 30 years of data. That would be 20, 30 years of  
6 flow gauging on a daily basis and sediment gauging on  
7 a daily basis and nutrient gauging on a daily basis.  
8 You have to have that much to come up with something  
9 that's statistically representative of a condition at  
10 the site, you know, at this site or any site.

11 Q. I believe my question was if you had that  
12 information for an empirical-based model, would it be  
13 more accurate than a process-based model?

14 A. I have no reason to believe it would.

15 Q. Okay. Even though it would be site-specific  
16 data versus the data used in a process-based model?

17 A. It would depend on the quantity of data as  
18 well. You always talk about quantity of data and  
19 quality of data, and if you only have one point  
20 within this little subwatershed, you don't have the  
21 quality of data that would make it any better than  
22 what the USDA has done in their research over the  
23 last 50 years.

24 Q. Let's talk about that a little bit. You  
25 used the NRCS soil survey; is that correct?

1 A. Yes.

2 Q. And that soil survey, do you know exactly  
3 how those are done?

4 A. Yes. I don't know-- "Exactly" is a little  
5 bit scary. I know the process they go through to  
6 come up with those numbers.

7 Q. And would you agree for any particular farm  
8 those soil surveys may not be entirely accurate as to  
9 the soils that are actually on that farm and where  
10 they are located?

11 A. There's variation in soil from location to  
12 location. From 5 feet away to here, there is  
13 variation in soil conditions.

14 The approach they use is to send people out  
15 who are extremely trained--well trained in evaluating  
16 soils, and they do their evaluation, and then they  
17 collect samples and they send them to the lab and  
18 they do an analysis there and they characterize a  
19 given soil condition in a location. But they always  
20 give a range of, you know, clay and silt and sand.

21 Q. But, again, I believe my question was would  
22 you agree that even though soil surveys can't be 100  
23 percent accurate as to a particular farm--

24 A. That's correct.

25 Q. Okay. And I believe you also testified on

1 direct examination that how--you know, I believe it  
2 was when you were talking about the variability of  
3 accuracy that soil conditions, et cetera, are very  
4 important and can cause this variability; is that  
5 right?

6 A. Soil conditions are variable? I did-- Yes.

7 Q. And that can, if I remember your testimony  
8 correctly--and if I'm not, please correct me--

9 A. Uh-huh.

10 Q. --but that can contribute to the 50 percent  
11 plus or minus variability?

12 A. Yes. That's correct.

13 Q. All right. I think what I want to do now is  
14 get into an area that I don't believe you--about your  
15 report that I don't believe you testified to on  
16 direct, and it has to do with the SWAT model and  
17 Appendix B.

18 Now, you testified as to Appendix B-2, but I  
19 want to make sure I understand Appendix B--it would  
20 be Appendix B-1, okay? And I believe that starts on  
21 page 42 of Exhibit 43.

22 Do you have that there?

23 A. Yes, I do.

24 Q. Okay. In Appendix B-1, which is the next  
25 page, and these pages--well, they have their own

1 numbers--we have a series of tables; is that correct?

2 A. Yes, we do.

3 Q. Are these the numbers that were used to  
4 generate the graphs in Appendix B-2?

5 A. Yes, I believe so.

6 Q. Okay. And as I understood your testimony--  
7 Well, let me back up.

8 Appendix B-1 uses the term "Reach 1," and  
9 then you go a little further and there's "Reach 3,"  
10 et cetera. And tell me about the numbers that are in  
11 each-- Say on page 1 here of Appendix B-1, tell me  
12 what these numbers mean.

13 A. Well, you have the dates, so you see each  
14 day of the year. And then you have Q, which is  
15 runoff, discharge, in gallons per day. So it's the  
16 amount of water that's flowing in the stream channel  
17 on that day.

18 THE ADMINISTRATIVE LAW JUDGE: And so just  
19 to help us out for a clearer record, why don't you  
20 read what you see there for the first day.

21 THE WITNESS: Okay.

22 THE ADMINISTRATIVE LAW JUDGE: You're  
23 talking about what year?

24 THE WITNESS: January 1st, 2002.

25 THE ADMINISTRATIVE LAW JUDGE: Uh-huh.

1 THE WITNESS: 14,429 gallons per day.

2 THE ADMINISTRATIVE LAW JUDGE: Thank you.

3 BY MR. McAFEE:

4 Q. And, Ms. Doty, would that-- If you go to  
5 page 21, and I don't want to make you do a lot of--  
6 Hold on to that page, if you would, with your finger  
7 or something, because we'll be back.

8 But if you go to page 21 of the report,  
9 which is Figure 5--

10 A. Figure 5? I think that's right here.

11 Q. Can you get it there? Thank you.

12 A. Okay.

13 Q. And does Figure 5 show Reach 1 as you  
14 previously testified to?

15 A. Yes, it does.

16 Q. Okay. So this table that starts on page 1  
17 of Appendix B-1 would correlate to this area that's  
18 marked on Figure 5 as Reach 1, correct?

19 A. Yes.

20 Q. Now, you leaf back a few pages in Appendix  
21 B-1, and you come to page 7, and there it begins with  
22 Reach 3.

23 A. Correct.

24 Q. Where is Reach 2?

25 A. Reach 2 is the little tributary to the south

1 of the feedlot. These--this flow that I'm looking at  
2 is just in the reaches that go down to Elliott Creek  
3 directly. I'm not--I didn't print out the flow data  
4 for the tributaries to the unnamed tributary.

5 Q. Okay.

6 A. And that's why you don't see Reach 2 in the  
7 report.

8 Q. Okay. So Reach 2 is not included, but all  
9 of the other reaches are, I believe, except there's  
10 several others that aren't to the south of the  
11 feedlot; is that right?

12 A. Right. There are several tributaries to the  
13 south, and those reaches are not included in this.  
14 Well, just in the printout. It is in the model.

15 Q. Oh, okay.

16 A. I just--I was just determining that there  
17 was flow in the unnamed tributary, and that flow in  
18 the unnamed tributary would be Reaches 1, 3, 4, and  
19 8.

20 Q. Okay. I may have to catch up with you. 1,  
21 3, 4. I believe 5 is included--

22 A. Uh-huh.

23 Q. --and 8?

24 Now, these reaches have different  
25 characteristics; is that right? That's why they are

1 different--that's why they are separated into  
2 different subareas?

3 A. Yes. You have a different subarea every  
4 time a tributary turns up, so, yes, they're isolating  
5 the different reaches.

6 Q. And so should these numbers, these table  
7 numbers, be different for each reach?

8 A. You mean they shouldn't all be Appendix B-1?  
9 Or I'm not sure what you're trying to ask me there.  
10 I'm sorry.

11 Q. Well, what I'm trying to determine is for  
12 the figure for January 1 of 2002 for Reach 1, will it  
13 be different or should it be different than for the  
14 figure for January 1 of 2002 for Reach 5?

15 A. The figure?

16 Q. Yes. The flow rate.

17 A. Oh, the flow rate? Should the flow rate be  
18 different?

19 Q. Yes.

20 A. For each one of the--

21 Q. The reaches.

22 A. I guess--I guess I don't understand the  
23 question.

24 Q. Okay.

25 A. I'm not with you. I'm sorry.

1 Q. All right. I'm sorry. Take Reach 8--

2 A. Take Reach 8, okay.

3 Q. --from Figure 5. Look at Figure 5, if you  
4 would, please.

5 A. Uh-huh.

6 Q. Reach 8 is down at the bottom, so to speak,  
7 of the unnamed tributary, right?

8 A. Right.

9 Q. And if these are gallons per day of flow in  
10 Reach 8-- Is that right?

11 A. Uh-huh.

12 Q. --wouldn't that--that would be more than the  
13 gallons per day up in Reach 1, is that right, or  
14 wouldn't it be different?

15 A. You know, it does depend on how the model is  
16 reporting that, whether they're reporting it as the  
17 amount of flow within the unnamed tributary, but  
18 yeah. I have to look at that to see why.

19 Q. Well, the reason I'm asking is--and I want  
20 you to look at these--the numbers for each one of  
21 those reaches in Appendix B-1, as far as I looked,  
22 are identical.

23 For instance, if we go from-- And you're  
24 welcome-- I'll give you plenty of time to look at  
25 it, ma'am.



1 A. Yeah.

2 Q. But, for instance, for the record, right now  
3 we show on page 1 of Appendix B-1, on January 1 of  
4 2002, that number is 14,429. If we go to Reach 3,  
5 which is on page 7, that number is 14,429. If we go  
6 to Reach 4, which is on page 13, that number is  
7 14,429. If we go to Reach 5, which is on page 19,  
8 that number is 14,429. And to Reach 8, that number  
9 for January 1st of 2002 is 14,429.

10 A. I'm with you. Yeah.

11 Q. Okay. And I believe, and I'd like you to--  
12 I mean, this document will be in the record, but I'd  
13 like you to take all the time you need, but I've  
14 looked at them, and I'm pretty sure you'll find every  
15 number in each reach is identical.

16 A. That has to be a printout issue. It has to  
17 be.

18 Q. Okay.

19 THE ADMINISTRATIVE LAW JUDGE: What do you  
20 mean it has to be?

21 THE WITNESS: Well, I was looking at the--

22 THE ADMINISTRATIVE LAW JUDGE: You mean it  
23 has to be a mistake?

24 THE WITNESS: Yeah. Well, yeah. This can't  
25 be. What I'm looking at is on the flow in Channel

1 Segment 1 for 2002.

2 THE ADMINISTRATIVE LAW JUDGE: Well, if  
3 you're going to refer to specific pages, you're going  
4 to have to tell us which page you're looking at.

5 THE WITNESS: Right.

6 THE ADMINISTRATIVE LAW JUDGE: But--but the  
7 bottom line here, at least at this point, is that--

8 THE WITNESS: It doesn't seem like--

9 THE ADMINISTRATIVE LAW JUDGE: --you're  
10 agreeing with Mr. McAfee that these numbers in this  
11 appendix, they just can't be right? That's what you  
12 said, isn't it? Is that fair?

13 Is that fair characterization?

14 THE WITNESS: I'd really like to look at it  
15 a little bit more, because I'm--

16 THE ADMINISTRATIVE LAW JUDGE: Well, did you  
17 say earlier, though, when you noted that all these  
18 numbers are the same, no matter what reach, did you  
19 at least say then that that can't be correct?

20 THE WITNESS: Yes. Yeah. I just have to  
21 examine it and figure out what's going on, and I  
22 can't-- I don't know what's going on.

23 BY MR. McAFEE:

24 Q. Okay. And maybe you can't say whether this  
25 would affect the output of what your SWAT modeling

1 has determined.

2 A. Oh, this is not direct output from the SWAT  
3 model. This is a summary that was generated. So  
4 what I have to do is go back and look at the output  
5 from the SWAT model and determine if this summary was  
6 printed appropriately. And I need to look at it a  
7 little bit further to see, more than what you're  
8 saying, whether the tables are right or wrong.

9 Q. Sure. But what are these numbers used for  
10 that come out of Appendix B-1 in the SWAT model?  
11 What are they used for in your conclusions?

12 A. All they're used for is to determine whether  
13 there is flow in that channel segment. That's all  
14 they're used for.

15 Q. Okay. Are they used to generate Appendix  
16 B-2, the graphs?

17 A. These tables? No.

18 Q. Okay. Let's look at Appendix B-2, if we  
19 could, please.

20 Appendix B-2. Are you ready for me to ask  
21 you a few questions?

22 A. Uh-huh.

23 Q. I thought maybe you were--

24 A. I am really interested in the numbers. I'm  
25 sorry. I was trying to flip back and forth.

1 Q. In Appendix B-2, what we have are graphs,  
2 and it has dates on the bottom axis; is that-- I  
3 forget my geometry or whatever.

4 A. The X axis.

5 Q. X is the horizontal axis, okay, and the Y is  
6 the vertical axis.

7 The Y axis then has flow rate gallons per  
8 day; is that right?

9 A. Yes, it does.

10 Q. And as I look at Appendix B-1, the table we  
11 just talked about, that has dates and gallons per  
12 day, so I guess I want to make sure I understand,  
13 were these graphs generated from the numbers in  
14 Appendix B-1?

15 A. This was--this is summary data from the  
16 model that was put into an Excel spreadsheet.

17 Q. Uh-huh.

18 A. And this was done separately-- Appendix B-1  
19 and B-2 were done separately, two different files.

20 Q. Okay. And I will tell you I've looked at  
21 them and the graphs. If the numbers were taken  
22 directly from Appendix B-1 to generate the graphs in  
23 Appendix B-2, then the graphs would be identical, and  
24 they're not.

25 A. They would be. And, no, they are generated

1 from different files, different summary files.

2 Q. Okay. I guess I'm still having a little  
3 trouble.

4 A. Okay. This is a post-processing issue here.

5 Q. What is the purpose of Appendix B-1, though?

6 A. It's just a summary that shows you the rates  
7 of flow on a daily basis. That's the only purpose of  
8 it is to say that on a certain day there was a  
9 certain flow rate.

10 Q. Okay. And what is the purpose of Appendix  
11 B-2?

12 A. It's just a more visual approach to show you  
13 the trends and the flow rates. It's the purpose to  
14 do that.

15 Q. Is it similar to the purpose of Appendix  
16 B-1?

17 A. Yes.

18 Q. Okay. On direct examination, I believe you  
19 were asked and you answered that, you know, what  
20 this--the black area represents, of course. I  
21 believe it shows there was flow in the unnamed  
22 tributary pretty much year-round; is that-- I  
23 believe that was your testimony.

24 A. Yes.

25 Q. Okay. But go to page 9--again, we're on

1 page 9 of Appendix B-2--and go to the bottom graph,  
2 and this is for the year 2004 in Channel Segment 5,  
3 which I believe is the same as Reach 5, right?

4 A. Yes.

5 Q. And if you look during various times in  
6 April and May of 2004 and June and also in March, I  
7 believe, does the graph not show zeros?

8 A. Yes, it does.

9 Q. Okay. Would that mean no flow in that  
10 unnamed tributary on those days?

11 A. Yes, it would.

12 Q. And, okay, so that would mean zero gallons  
13 per day?

14 A. That's correct.

15 Q. Okay. And would the same be true for the  
16 flow in Channel Segment 5 in the year 2003, the top  
17 chart?

18 A. Yes.

19 Q. And, in fairness, the record will speak for  
20 itself, but we're looking there--when I say "the  
21 same," we're showing it looks primarily, and maybe  
22 the month of May or, I guess, April, depending on  
23 where the line is marking the May 1st, but there are  
24 some zeros showing there also, correct?

25 A. Correct.

1 Q. And flip back one page to page 8, and I  
2 believe they're in the bottom graph for Channel  
3 Segment 5 in year 2002, there are zeros there also.

4 A. Yes.

5 Q. While we're on that graph, there's a line  
6 that reaches up to--I believe it's more than 10  
7 million gallons per day flow rate. Oh, it would be  
8 what, maybe-- It's in the month of May, I believe.  
9 Do you see that?

10 A. Yes.

11 Q. Is that possible to have more than 10  
12 million gallons a day in that unnamed tributary when  
13 it was zero a few days before?

14 A. If you had a major storm event, yes.

15 Q. Okay. How would we determine that from the  
16 data you have? Would that be in your rainfall data?

17 A. Yes, it would.

18 Q. Okay. Where would we go to find that?  
19 Would that number Exhibit 46?

20 A. That's in the program.

21 Q. But the program used the Le Mars weather  
22 data, right?

23 A. Yes.

24 Q. Okay. I believe we have that. That's in  
25 Exhibit 46, I believe.

1 A. Oh, really?

2 Q. Could we look at that?

3 Not to interrupt you, Ms. Doty, before--

4 Well, go ahead and locate that. I want to go back to

5 I may have misstated a number on page 8 of your

6 graph, of Appendix B-2.

7 I'm sorry. I've got you going different

8 directions here. Can we go back to page 8 of

9 Appendix B-2?

10 A. Okay.

11 Q. And that number, I--I believe I referred to

12 it as 10 million gallons per day flow rate. Did I

13 read that number correct in the graph, or is it 10

14 billion?

15 A. It's 10 billion.

16 Q. Okay. So that would be 10 billion gallons

17 of water per day through that unnamed tributary on

18 that day?

19 A. Uh-huh.

20 Q. Okay.

21 THE ADMINISTRATIVE LAW JUDGE: You can't say

22 uh-huh.

23 THE WITNESS: Yes. Sorry.

24 BY MR. McAFEE:

25 Q. Let's, if we can, locate this information in



1 Exhibit 46 for the weather information for that day.

2 A. I don't know what day it is.

3 Q. Well, I will be glad to-- I think I can  
4 help you locate it here. The first set of data in  
5 Exhibit 46 is the Le Mars data. And forgive me, I  
6 need to locate my--

7 THE ADMINISTRATIVE LAW JUDGE: And, counsel,  
8 just refresh my recollection. The Le Mars data, was  
9 that the closest weather station to the site? Is  
10 that what your understanding is from the testimony?

11 MR. McAFEE: My understanding, Your Honor.  
12 If Ms. Doty would confirm that.

13 THE WITNESS: Yes, it was.

14 MR. McAFEE: Okay.

15 BY MR. McAFEE:

16 Q. If you go to January-- Okay. I'm sorry.  
17 I'm in the wrong place. If you locate it before I  
18 do, Ms. Doty, please go ahead and repeat it. I'm  
19 searching for my information.

20 MR. RYAN: What is it we're looking for?  
21 I'm confused.

22 MR. McAFEE: We're looking for the weather  
23 data for the date that that graph shows 10 billion  
24 gallons of flow rate for one day, that Appendix B-2  
25 shows.

1 MR. RYAN: So what day and month are we  
2 looking for?

3 MR. McAFEE: That's what we're looking for  
4 in the Le Mars data.

5 BY MR. McAFEE:

6 Q. Ms. Doty, which day and month would that be;  
7 can you tell?

8 A. It looks like it's the start of June, but my  
9 numbers are cut off in this exhibit, so I can't tell  
10 the years after 2000.

11 Q. Okay.

12 A. Well, wait. Maybe--

13 Q. Let's look at Exhibit 46, the Le Mars data.  
14 We're looking for May or June of 2002; is that  
15 correct?

16 A. Yes.

17 Q. All right. Let's look at that together.

18 THE ADMINISTRATIVE LAW JUDGE: And just,  
19 counsel, when we find this page or pages, what I'd  
20 like you to do is just have the witness read, say,  
21 the top and bottom line so that--because these are  
22 not numbered, so that anyone who is reviewing this  
23 after I'm done with this case will know they're on  
24 the correct page.

25 MR. McAFEE: Okay, Your Honor. Yeah. I'll

1 be glad to to help clarify this. There's a lot of  
2 numbers here to keep track of.

3 THE ADMINISTRATIVE LAW JUDGE: Right.

4 BY MR. McAFEE:

5 Q. Have you located the weather data for the  
6 month of May in 2002?

7 A. Yes.

8 Q. And it's hard to tell from the graph. Can  
9 you tell about what date that would be?

10 A. It's hard to tell from the graph, I agree  
11 with you.

12 Q. Would it be maybe approximately mid-May?

13 A. Maybe this is a little bit before mid.

14 Q. Okay.

15 A. I don't know. There was a major event on  
16 May 10 and 11 where you had nearly 3 inches of rain.

17 Q. Okay. And in your estimation, would 1.3 and  
18 1.52 inches of rain generate over 10 billion gallons  
19 of flow rate per day in the unnamed tributary?

20 A. I have to it admit that's a lot of flow, but  
21 I'd have to convert it to CFS to think about it.

22 Q. Okay. Do you see any other numbers in that  
23 chart, the graph, the bottom graph on page 8 of  
24 Appendix B-2, that even come close to that number of  
25 over 10 billion gallons per day?

1           A.     Yeah. In 2005, you're at-- No. You're at  
2 10 million. Let's see.

3                     You know, that's just a typo on the graph.  
4 It goes from-- No. It goes from 100,000-- No. I  
5 take that back.

6                     THE ADMINISTRATIVE LAW JUDGE: Let's go off  
7 the record for a minute.

8                     (Discussion off the record.)

9                     MR. McAFEE: Ms. Doty, have we confirmed--  
10 and I'll mark it with a red tab for the Court--that  
11 the precipitation numbers you and I were referring to  
12 and you testified to as being 1.31 and--1.52 inches  
13 on May 11th and 1.31 on May 10, we are now marking  
14 that page for the Court?

15                     THE WITNESS: Yes.

16                     THE ADMINISTRATIVE LAW JUDGE: Thank you.

17                     And, counsel for EPA, you know the page,  
18 we're all on the same page?

19                     Okay. Thank you.

20 BY MR. McAFEE:

21                     Q.     Okay. Ms. Doty, I'd like to now--still  
22 using Appendix B, I have some questions about how  
23 Appendix B numbers correlate with weather data such  
24 as runoff events. And what I want to do is go  
25 through some specific days, such as-- And the reason

1 I'm explaining this to you, if this data is  
2 incorrect, we may be wasting our time, but it's the  
3 only data I have to use, and so I think we need to  
4 proceed with that.

5 And I can tell you, as you have testified  
6 to, that the data for all of the reaches is  
7 identical, so I will just use Reach 1, since it's all  
8 identical, okay?

9 What we're going to do, if you would turn to  
10 page 1 of Appendix B-1 and if you look at January 2,  
11 2002, it shows-- Would you read for me the flow rate  
12 that it shows for that day?

13 A. 100-- I'm on page 1 of B-2; is that  
14 correct?

15 Q. Yes.

16 A. January 2, 195,083.

17 Q. Okay. To get that kind of flow rate, would  
18 there have to be some type of runoff event?

19 We're talking about January 2nd. Would  
20 that-- So in Iowa, normally on January 2nd,  
21 it's--not always, but many times it's cold. You  
22 don't get rain, although you can.

23 And we'll look at the weather data for  
24 January 2nd, 2002, but I guess my question is  
25 wouldn't there have to be some type of runoff event

1 to get that kind of flow rate?

2 A. Yes. Snow melt or runoff.

3 Q. Okay. Here we go again. We have to look at  
4 the weather data for that date. Wouldn't we first  
5 look at the temperature to see what the temperature  
6 was on that day on January 2002?

7 A. Does it have high temperatures?

8 Q. I believe it has-- It's the data you  
9 presented to us. If you go back to Exhibit 46 and  
10 the Le Mars reporting station, and I believe what  
11 we'll do is mark this page like we did with the  
12 previous page.

13 MR. McAFEE: May I approach, Your Honor?

14 THE ADMINISTRATIVE LAW JUDGE: Yes, you may.  
15 And because I don't want to get behind here, I was  
16 unable to locate the figure that Ms. Doty just cited  
17 from Appendix B-1 on page 1 of that.

18 The number I'm looking at for January 2nd,  
19 2002, on Appendix B-1-- Are you talking about the  
20 daily flow rate? No?

21 MR. McAFEE: Yes.

22 THE ADMINISTRATIVE LAW JUDGE: The number I  
23 have is 195,083. Is that what she said?

24 MR. McAFEE: I'm sorry. I thought what--  
25 Is that what you said, ma'am?

1 THE WITNESS: I am going to go back.

2 THE ADMINISTRATIVE LAW JUDGE: Maybe it was  
3 me. Maybe I--you know, late in the day, I missed it,  
4 but--slipped gear.

5 THE WITNESS: 2002; is that where we're at?

6 THE ADMINISTRATIVE LAW JUDGE: That's what  
7 counsel was asking you about. Counsel was asking you  
8 about 1-2, 2002.

9 THE WITNESS: I have 195,083.

10 THE ADMINISTRATIVE LAW JUDGE: Maybe I  
11 misheard you. I'm sorry.

12 Now you're going to mark another page for  
13 me, counsel?

14 MR. McAFEE: Yes, I will.

15 THE ADMINISTRATIVE LAW JUDGE: And you'll be  
16 marking this, again, within Exhibit 45--I mean 46?

17 MR. McAFEE: That's correct. The Le Mars  
18 reporting station data.

19 THE ADMINISTRATIVE LAW JUDGE: Okay.

20 MR. McAFEE: But first, if I could, I'd like  
21 to go through it with the witness.

22 THE ADMINISTRATIVE LAW JUDGE: Yes.

23 MR. McAFEE: Okay. Have you located the  
24 page?

25 THE WITNESS: No. I'm still flipping

1 through the pages. 2002, we're going to January?

2 MR. RYAN: For the record, counsel, what are  
3 we trying to look at right now?

4 MR. McAFEE: We're looking for the weather  
5 information for January 1, 2002, and I'm going to ask  
6 the witness about what weather data there might be  
7 that could correlate with a flow rate of whatever is  
8 in B-1. I won't repeat the number because I don't  
9 have it in front of me.

10 THE ADMINISTRATIVE LAW JUDGE: Do you have  
11 the tabs, the red tabs over there still?

12 MR. McAFEE: Yes, I do.

13 THE ADMINISTRATIVE LAW JUDGE: For this one,  
14 just so I don't--I'm sure I'll be able to figure it  
15 out, but let's mark this Tab 2. You can write on  
16 those things.

17 Do you have a pen?

18 MR. McAFEE: Yes, I do.

19 BY MR. McAFEE:

20 Q. Ms. Doty, have you located January 2, 2002?

21 A. Uh-huh. Yes.

22 Q. Could you tell me--from that data, could you  
23 tell me the maximum and minimum temperature?

24 A. They aren't-- The columns aren't labeled on  
25 the one I have.



1 Q. Well, I believe you'll have to hold your  
2 space there and go back to the first page.

3 A. Okay. So the--after the date, the first  
4 column is maximum temperature and the second column  
5 is minimum temperature?

6 Q. That's the way I read it. I would defer to  
7 you.

8 A. Okay.

9 Q. So what was the maximum temperature?

10 A. 34.

11 Q. On January 2nd of 2002?

12 A. Right. I'm in the wrong year? No. It  
13 says-- I think-- It's hard to read this because it  
14 got kind of messed up in the copying.

15 Q. Well, what I'm reading for January 2nd of  
16 2002 shows a maximum temperature of 16 and a minimum  
17 temperature of negative 4.

18 A. Okay. Must be this. Mine doesn't show--

19 THE ADMINISTRATIVE LAW JUDGE: Why don't you  
20 present counsel the page you're looking at, make sure  
21 it's the same page she's on.

22 MR. McAFEE: Counsel or the witness?

23 MR. RYAN: I've got it here, Your Honor. I  
24 see what you're looking at.

25 THE ADMINISTRATIVE LAW JUDGE: But I'm

1 worried about the witness. I'm sorry.

2 MR. RYAN: I thought you said show it to  
3 counsel.

4 THE ADMINISTRATIVE LAW JUDGE: I meant the  
5 witness. I'm sorry.

6 BY MR. McAFEE:

7 Q. Okay. I'm showing you a page. Do you see  
8 it in yours now?

9 A. Yeah, I see it now.

10 Q. And would you please repeat for the record  
11 what maximum and minimum temperature you see?

12 A. Minus 4, that's the maximum, I assume, in  
13 the first column, and there's nothing in the second  
14 column for minimum. Is that right?

15 Q. Please take a look again at the headings.

16 THE ADMINISTRATIVE LAW JUDGE: While you're  
17 looking at those headings, be sure to tell me whether  
18 we're talking centigrade or Fahrenheit, okay?

19 THE WITNESS: It is Fahrenheit. The first  
20 column I'm looking at has the minus 4 in it. No--  
21 Oh, no. I'm sorry. 16 is the high, and minus 4 is  
22 the low.

23 BY MR. McAFEE:

24 Q. And then I believe you'll see the next  
25 column is blank, and then the next column, what do

1 you see in that column? Do you see a 6?

2 A. Yes.

3 Q. And if you flip to the first page, the  
4 heading over that column is what?

5 A. Daily mean.

6 THE ADMINISTRATIVE LAW JUDGE: Is what?

7 THE WITNESS: Daily mean.

8 THE ADMINISTRATIVE LAW JUDGE: Mean?

9 THE WITNESS: Mean.

10 THE ADMINISTRATIVE LAW JUDGE: Average?

11 MR. McAFEE: M-e-a-n.

12 BY MR. McAFEE:

13 Q. Would that equate to the daily average  
14 temperature?

15 A. Yes.

16 Q. Okay. So based on those temperatures, would  
17 you expect there to be any runoff on that day from  
18 snow melt?

19 A. No.

20 Q. And do you see-- We have to look again at  
21 the headings. Would you please take a look at--flip  
22 back to the first page where the headings are,  
23 please, and the precipitation data is given in  
24 several columns there. Do you see that?

25 A. Yes.

1 Q. Now, can you look back at January 2nd of  
2 2002 and see if it shows any precipitation?

3 A. Rainfall-- No.

4 MR. McAFEE: We will now mark this page that  
5 I have been reading from as--for the Court.

6 THE ADMINISTRATIVE LAW JUDGE: Whatever  
7 other number, just so I don't mix it up with the  
8 first tab. And then what I'm doing on my copy, since  
9 it's my personal copy, I'm annotating it.

10 We're almost at the end of the day.

11 BY MR. McAFEE:

12 Q. I'm showing you on the Court's copy, is this  
13 the correct page to show January 2nd, 2002, for the  
14 information you were looking at?

15 A. Yes.

16 Q. Okay.

17 THE ADMINISTRATIVE LAW JUDGE: Thank you.

18 BY MR. McAFEE:

19 Q. Ms. Doty, I know we've looked at several  
20 numbers here and it's hard to track them back and  
21 forth, but it sure appears that the flow rates are  
22 not matching, at least the one we looked at, and  
23 there are several more that the record will reflect,  
24 based on the exhibits that are in the record.

25 MR. RYAN: Objection. Counsel's testifying

1 here. We have talked about one flow rate data, not  
2 flow rates.

3 THE ADMINISTRATIVE LAW JUDGE: You can ask  
4 her at the end of your question, first of all, "Would  
5 you agree with that characterization?" and then if  
6 you have a follow-up question. In other words, you  
7 can characterize it, and she's free to say no or--and  
8 explain why, all right?

9 MR. McAFEE: Okay.

10 BY MR. McAFEE:

11 Q. First of all, would you agree that for  
12 January 2nd of 2002, that the flow rate in evidence  
13 does not seem to match with the weather data?

14 A. Based on the table and the graph?

15 Q. Based on what we just reviewed, which is  
16 information--

17 A. Oh.

18 Q. --that you presented, that you presented as  
19 part of your report, would you agree that that flow  
20 rate doesn't match with the weather data?

21 A. Yes.

22 Q. If there were other dates in the record like  
23 that, which I know we haven't reviewed, but if you  
24 reviewed them and there are other dates like that,  
25 would you agree that those--that information would

1 have an impact on the report that you have generated  
2 regarding flow rates in the unnamed tributary?

3 A. Not necessarily.. This is not direct output  
4 from the model so that the modeling results that I'm  
5 reporting don't necessarily correspond to the graphs  
6 and tables, if there's an error in the graphs and  
7 tables.

8 Q. What do they correspond to?

9 A. The data that was put into the model.

10 Q. And how do we know what data was put into  
11 the model?

12 A. Yeah. In other words, if there was an error  
13 in transcribing that data to an Excel spreadsheet and  
14 then generating the tables from that, that could be  
15 reflected in what we were looking at just now.

16 Q. Okay. I understand that. But how are we to  
17 know what data went into the model? I guess I  
18 assumed what we--

19 A. I know.

20 Q. --were provided was the data that went into  
21 the model.

22 A. No. This is output from the model.

23 Q. I assumed what we provided was output--

24 A. Yeah. It's summarized. Yeah. It's not--  
25 I'd have to go back and look at the direct output

1 from the model to see if it agrees with these graphs.

2 Q. Okay.

3 A. Can I do that?

4 THE ADMINISTRATIVE LAW JUDGE: He gets to  
5 ask questions, and he controls what he wants to hear  
6 from you. Your counsel will have an opportunity  
7 tomorrow for what they call redirect or  
8 rehabilitation of a witness.

9 BY MR. McAFEE:

10 Q. Would you agree that if this data is what  
11 came out of the model, if it was correctly  
12 transcribed--

13 A. Uh-huh.

14 Q. --and I'm saying if, would you agree that  
15 this would affect the results of the model as you  
16 have reported them in your report?

17 A. Would what affect the results of the model;  
18 the temperature or the precipitation, the  
19 precipitation or--

20 Q. Appendix B-1 and B-2--

21 A. Uh-huh.

22 Q. --would you agree that if those numbers are,  
23 in fact, the numbers that were produced by the model  
24 that your conclusions from the model would be  
25 affected by that?

1           A.     Are you saying would the discharges be  
2 different?

3           THE ADMINISTRATIVE LAW JUDGE:   No.   You  
4 don't get to do that.   You can say, "I don't  
5 understand your question," and he can try it again.

6           THE WITNESS:   I don't understand.

7           THE ADMINISTRATIVE LAW JUDGE:   I think-- I  
8 won't say anything.   Go ahead, counsel.

9 BY MR. McAFEE:

10          Q.     Again, I'm simply asking that I understand  
11 you have said that this data, you have testified that  
12 it could be an error in--in maybe assembling the  
13 spreadsheet, I think is what you said; is that right?

14          A.     Uh-huh.

15          Q.     And that it may not actually be the output  
16 from the model.   That's your testimony; is that  
17 correct?

18          A.     It is not the direct output from the model.

19          Q.     Okay.   How would we get the direct output  
20 from the model?

21          A.     I'd have to print that out.   It's something  
22 I could do.

23          Q.     Okay.   What I'm really failing to  
24 understand, and I apologize if it's my fault for not  
25 following you, but how did you come up with this data



1 in Appendixes B-1 and B-2? Where did it come from?

2 A. The data was generated by the model, and it  
3 was put into a flow sheet, into an Excel spreadsheet,  
4 and then the Excel spreadsheet was manipulated to get  
5 rid of all the excess data.

6 These--these models generate the data. It's  
7 26 megabytes of data from a single file. In other  
8 words, they have a lot of different outputs, and they  
9 have--they reported on a daily basis, and it ends up  
10 being the very large amount of data to go through,  
11 and so they were reduced.

12 THE ADMINISTRATIVE LAW JUDGE: Would you ask  
13 your question, though, again, about--you tried  
14 twice--about if the data is incorrect, would that  
15 impact-- Would you restate that?

16 MR. McAFEE: Yes, I would, Your Honor.

17 THE ADMINISTRATIVE LAW JUDGE: It seems to  
18 me to be-- If you can't answer it with a simple,  
19 "Yes, it would affect it," "No, it wouldn't affect  
20 it," just say that you can't answer it and the reason  
21 why, okay, why you can't answer that as a simple  
22 "Yes, it would affect my conclusions" or not.

23 Go ahead.

24 MR. McAFEE: I'll try it again.

25

1 BY MR. McAFEE:

2 Q. My question is if the data in Appendixes B-1  
3 and B-2 is, in fact, the output from the model, if  
4 that is correct that the model generated that data,  
5 as you have summarized it, okay, if that is the case,  
6 would it not impact your conclusions in your report  
7 about the flow in the unnamed tributary?

8 A. The table in the flow graph-- I have to say  
9 yes or no, don't I? And I'm confused. The table in  
10 the flow graphs show the daily discharges from the  
11 model. Are you asking if those numbers were  
12 different would it impact my decision on whether  
13 there was flow in that channel or not?

14 Q. I'll try it again. I'm asking you if the  
15 data in Appendixes B-1 and B-2--

16 A. Uh-huh.

17 Q. --is, in fact, the output from the model, if  
18 that is, in fact, correct, would it not affect your  
19 conclusions you've reached in your report about the  
20 flow in the unnamed tributary?

21 A. The only conclusion I reached in the report  
22 about the unnamed tributary was that there was  
23 flow--was there flow or not flow on a given day, and  
24 if those numbers are correct, then they show that  
25 there was flow on the days that--during the period

1 that we were looking at.

2 Q. But they also showed, at least for several  
3 days, that there was zero flow?

4 A. That's true. That's true. That's true in  
5 Segment 5, I agree with that.

6 Q. And wouldn't that affect your statements in  
7 your report about there being flow, I believe you  
8 said, year-round from the unnamed tributary?

9 A. I would still describe that channel as  
10 perennial.

11 Q. Even though there are days, based on this  
12 information, that there was zero flow?

13 A. Well, yes. I'm going to say yes right now.  
14 Yes. Yes. Because of the fact that we're looking at  
15 Segment 5 that had--didn't have enough days and the  
16 fact that, you know, it wasn't perennial through that  
17 section indicates that they're talking about flow  
18 potentially from a tributary running into that  
19 section instead of the main channel.

20 This shows--this shows separate drainage  
21 areas for each segment moving along the unnamed  
22 tributary, and it's divided out based on tributaries  
23 to the unnamed tributary, and looking at Segment 5,  
24 there must have been a tributary in there that was  
25 creating the data for that segment.

1           Are you following me?

2           Q.    Yeah, I believe so.  Even though--

3           A.    So that if I was tracking the unnamed  
4 tributary from the top down to Elliot Creek, be 1, 3,  
5 4, and 8, and I would be leaving out the segments  
6 that are talking about tributaries to the unnamed  
7 tributary.

8           Q.    But wouldn't that--  My question is wouldn't  
9 that--if Segment 5 has no flow on certain days,  
10 wouldn't that interrupt the flow of the unnamed  
11 tributary to Elliot Creek?

12          A.    Of--  Yes.  Yes.  The unnamed tributary to  
13 the unnamed tributary.

14          Q.    And isn't Segment 5, in fact, below the Vos  
15 feedlot?

16          A.    Yes.  But it's reflecting the flow from a  
17 tributary to the unnamed tributary.

18          Q.    Does it not reflect also the flow in the  
19 segment of the unnamed tributary?

20          A.    No.  I'm saying that it doesn't.

21          Q.    What does--

22          A.    It's reflecting the flow to the unnamed  
23 tributary, just like Section 10 would reflect the  
24 flow to--Section 6 would reflect the flow to the  
25 unnamed tributary.

1 Q. Okay. As I look at Segment 5, I don't see  
2 any-- Well, maybe--

3 A. It's a scale issue, I believe. If I could  
4 zoom in on that right now, I think I would see a  
5 tributary to Section 5 that is creating that as a  
6 separate subdrainage area.

7 Q. Okay. And all I can ask you, ma'am, is what  
8 I can see. It looks like to me--on your map, it  
9 looks like a segment of the unnamed tributary that is  
10 connecting between Reach 4 and Reach 8.

11 A. It does. But I need to-- I'd have to go on  
12 to the GIS system and I'd have to zoom in and I'd see  
13 probably--you know, I would see more of that stream  
14 channel than I can see right now.

15 Q. Okay.

16 A. So it's a scale thing. To make it an 8 1/2-  
17 by-11 conceptualization, I had to go to this type of  
18 scaling. You can't see the details in it.

19 Q. Okay.

20 THE ADMINISTRATIVE LAW JUDGE: We're getting  
21 to the time to wrap it up. I know you want to  
22 continue this tomorrow morning.

23 Let me just ask, to wrap this up--and I  
24 don't mean it at all to wrap up the subject, but just  
25 to wrap it up for the day--Ms. Doty, your report is

1 dated August 11, 2008, right?

2 THE WITNESS: Yes.

3 THE ADMINISTRATIVE LAW JUDGE: You had these  
4 two appendixes attached to your report, right?

5 THE WITNESS: Correct.

6 THE ADMINISTRATIVE LAW JUDGE: And those  
7 appendixes were attached with your direction or  
8 knowledge, or perhaps even directly that you were the  
9 person that attached, for example, Appendix B-1,  
10 correct?

11 THE WITNESS: Correct.

12 THE ADMINISTRATIVE LAW JUDGE: Okay. And so  
13 just randomly looking, if you would, at Appendix B-1,  
14 at page 1-- Can you get that in front of you and  
15 then put under that--hold that page and then look at  
16 page 13?

17 And, of course, counsel for Respondent's  
18 already made this point, but I just picked this out  
19 randomly.

20 If you would look at page 1 and page 13  
21 together, as I can do if you just sort of move the  
22 pages aside, and look at Reach 1 for the year--for  
23 the year 2005, and we look at 1/1/2005, that's for  
24 the year 2005, 1/1/2005, and then you look at Reach 4  
25 on page 13.

1           You agree, do you not, if we look down for  
2 the first--actually, you can go down the whole  
3 column, that those numbers are identical to the  
4 number, there's not one single variation in that  
5 whole column between Reach 4, year 2005, from January  
6 1st, 2005, through February 28, 2005, and when you  
7 look--go back and look at Reach 1 as opposed to Reach  
8 4 for the same year, January 1, 2005, through  
9 February 28, 2005, those numbers are absolutely  
10 identical, correct?

11           THE WITNESS: Yes.

12           THE ADMINISTRATIVE LAW JUDGE: And did you  
13 say earlier that that just can't be right or  
14 something--words to that effect?

15           THE WITNESS: I have to look at it. I am  
16 not sure what's going on until I look at it.

17           THE ADMINISTRATIVE LAW JUDGE: Okay. But,  
18 nevertheless, this was included as part of your  
19 expert report.

20           THE WITNESS: Yes.

21           THE ADMINISTRATIVE LAW JUDGE: Okay. And so  
22 tell me this, because I'm the one that has to figure  
23 out what to do with something like this: It would  
24 seem to me--you can say "I agree" or "No, I don't  
25 agree and here's why"--it seems to me that Appendix

1 B-1 is completely useless for my figuring out  
2 anything about this proceeding, at least as to the  
3 topic of Appendix B-1, the whole thing is of no value  
4 at all because it's beyond suspect, it's--as you say,  
5 it can't be right.

6           So would you agree that this is of no value  
7 at all, this Appendix B-1? And if not, how am I  
8 to--what am I to understand from EPA's position about  
9 applying B-1? What does B-1 tell me as it appears  
10 here?

11           THE WITNESS: I have to look at it in--

12           THE ADMINISTRATIVE LAW JUDGE: But as you're  
13 looking at it right now--

14           THE WITNESS: Yeah.

15           THE ADMINISTRATIVE LAW JUDGE: --you cannot  
16 tell me, in other words, as of right now-- Don't  
17 tell me about where you're going to investigate these  
18 numbers. I'm talking about these numbers as they  
19 appear as an admitted exhibit. Are these numbers of  
20 any value to me in deciding this case as they stand  
21 in this exhibit right now?

22           THE WITNESS: They're only--

23           THE ADMINISTRATIVE LAW JUDGE: What do they  
24 instruct me to--

25           THE WITNESS: They're only there to show the



1 quantity of discharge in the channel on a given day.

2 Is that--

3 THE ADMINISTRATIVE LAW JUDGE: And having  
4 said that, but you say those numbers can't be right.  
5 Didn't you say that?

6 THE WITNESS: I did say that. I have to--I  
7 just have to look at it and figure out what's going  
8 on with it, whether that was an error in the Excel  
9 spreadsheet or whether that's the way the model's  
10 reporting it and I didn't-- I have to go look at  
11 that, that's all.

12 THE ADMINISTRATIVE LAW JUDGE: So as it  
13 stands now, at least, not only is it understandable  
14 that I can't figure it out, at least as of right now,  
15 you can't figure it out either?

16 THE WITNESS: That's correct.

17 THE ADMINISTRATIVE LAW JUDGE: Okay. All  
18 right. We'll pick up tomorrow morning at 9:30. See  
19 you all then. Today's proceeding is closed.

20 (Recess at 4:58 p.m., until 9:30 a.m.,  
21 Wednesday, September 17, 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 23rd day of  
14 September, 2008.

15  
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17   
18 CERTIFIED SHORTHAND REPORTER

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