

POLLUTION CONTROL HEARINGS BOARD
STATE OF WASHINGTON

WASHINGTON STATE DAIRY)
FEDERATION, the WASHINGTON)
FARM BUREAU, PUGET)
SOUNDKEEPER ALLIANCE,)
COMMUNITY ASSOCIATION FOR) NO. PCHB No. 17-016(c)
RESTORATION OF THE)
ENVIRONMENT (CARE),)
FRIENDS OF THE TOPPENISH)
CREEK, SIERRA CLUB,)
WATERKEEPER ALLIANCE,)
CENTER FOR FOOD SAFETY,)
and RESOURCES FOR)
SUSTAINABLE COMMUNITIES,)
individual,)
)
Appellants,)
)
vs.)
)
STATE OF WASHINGTON,)
DEPARTMENT OF ECOLOGY,)
)
Respondent.)

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1 BE IT REMEMBERED that on Wednesday, May 23,
2 2018, at 9:00 A.M., at 1111 Israel Road SW, Tumwater,
3 Washington, appeared the above-named witness before Laura L.
4 Stewart, Washington State Certified Court Reporter, residing
5 at Graham, authorized to administer oaths and affirmations
6 pursuant to RCW 5.28.010.

7 WHEREUPON the following proceedings were had,
8 to wit:

9 * * * * *

10 JUDGE FRANCKS: So we are in Day 3 of our hearing.
11 As you may have noticed, we have a new court reporter today.
12 So she's jumping into the middle of this. So let's try to
13 help her out. And if you need anything, just let us know.
14 There's a whole lot of acronyms in this case that people
15 will be throwing around.

16 Okay. Let's go on the record. I said that
17 already. Ms. Redding is on the stand, once again. Mr.
18 Tebbutt is going to finish up his questioning.

19 Is that right?

20 MR. TEBBUTT: Yes. But before I do so, I would
21 like to introduce and offer Exhibit A-74, which is the
22 deposition transcript of Tom Tebb.

23 JUDGE FRANCKS: And you are moving for admittance?

24 MR TEBBUTT: Yes.

25 JUDGE FRANCKS: A-74 is admitted.

1 MS. NICHOLSON: We object to that on relevance
2 grounds, Your Honor.

3 JUDGE FRANCKS: I was listening for an objection,
4 and I didn't hear it. You guys have been quick up to now.
5 Okay. Go ahead.

6 MS. NICHOLSON: This particular deposition has no
7 relevance to the issues before the board. This regards a
8 deposition in the Cow Palace case, and it regards testimony
9 about that Cow Palace case to which neither of our clients
10 was a party, and we don't feel it has any relevance to any
11 of the issues before the court related to cattle.

12 JUDGE FRANCKS: Okay. And I -- this was the topic
13 of a motion in limine. Not the relevance objection, but a
14 different objection. But I have had a chance to look at the
15 deposition, and I am going to allow it.

16 It's got designations by both PSA and Ecology, and
17 I think it -- it's relevant to Issue 7, and the board can
18 give it the weight it deserves, is the way I like to think
19 of this.

20 MR TEBBUTT: So --

21 JUDGE FRANCKS: So with that, A-74 is admitted.

22 MR TEBBUTT: Thank you.

23 (Exhibit A-74 admitted.)

24 MR. TEBBUTT: And along with A-74, there are two
25 exhibits, 68 and 76, which go along with it, which are

1 authenticated by Mr. Tebb in the deposition and are
2 discussed thoroughly in the deposition. So those are also
3 offered for admission.

4 JUDGE FRANCKS: What were the numbers again?

5 MR TEBBUTT: 68 and 76. 68 is the
6 kick-the-can-down-the-road e-mail from Mr. Tebb. And 76 is
7 another one that's relevant to his discussions regarding the
8 CAFO permit.

9 JUDGE FRANCKS: Do we have objections to those?

10 MS. NICHOLSON: We are confused, Your Honor,
11 because I think A-68 had been excluded prior.

12 JUDGE FRANCKS: Well, I think I had not admitted it
13 at that point.

14 MS. HOWARD: Mr. Reck's deposition testimony also
15 has a number of deposition exhibits attached to it. So at
16 this time while we're talking about the Tebb's deposition
17 and those exhibits, if they're going to come in, we should
18 do the same with Mr. Reck, as well. It will save us some
19 time, I think.

20 JUDGE FRANCKS: Are there objections to the
21 exhibits to Mr. Reck?

22 MR TEBBUTT: Yes. Of course. There is an ongoing
23 objection because Mr. Reck was just deposed three or four
24 days ago before this hearing. So anything that comes in
25 with Mr. Reck's deposition, we object to entirely.

1 I'll let Mr. Snyder address this, because he's been
2 the one handling that directly.

3 MR. SNYDER: Judge Francks, in particular, we're
4 objecting to all of the exhibits, but also to the Lawrence
5 Johnson declaration. I understand that you ruled on this
6 previously, and just for preservation of the record, we
7 believe that NRCS fully rescinded its ability to participate
8 in this hearing. That includes the declaration.

9 If you look at the definition of "appearance," as
10 it is used in the CFRs, it includes any written testimony.
11 The declaration is written testimony.

12 JUDGE FRANCKS: But that's not -- that's an exhibit
13 to the Reck deposition?

14 MS. HOWARD: It is, Your Honor.

15 JUDGE FRANCKS: And it is also a separate exhibit;
16 right?

17 MS. HOWARD: It is. And it was also included with
18 our summary judgment briefing. It is a sworn affidavit.
19 And if you look at Mr. Reck's testimony, what we were doing
20 is we were asking him questions about the Johnson
21 declaration and asking him to comment on those particular
22 topics throughout the declaration. Not throughout, but
23 there was a section where he was doing that.

24 MR. SNYDER: As Your Honor knows, when you review
25 the transcript, you'll see that Mr. Reck actually testifies

1 that he provided some of the information for Mr. Lawrence to
2 use -- excuse me -- for Mr. Johnson to use in that
3 declaration.

4 So we feel they can get what they need to get
5 through the Reck deposition, despite there were objections
6 to that, as well.

7 JUDGE FRANCKS: Okay. I think I've heard enough.

8 MR. SNYDER: Thank you, Your Honor.

9 JUDGE FRANCKS: I am going to admit all of the
10 exhibits to both of those depositions. I think they're
11 relevant to the issues that I've talked about. And again,
12 the board will give it the weight it deserves.

13 (Exhibits A-68 and A-76 admitted.)

14 JUDGE FRANCKS: Are you ready to carry on with
15 questioning?

16 MR. TEBBUTT: We are.

17 JUDGE FRANCKS: Excellent. So -- so that means
18 that I've admitted 68 and 76.

19 MR. TEBBUTT: Correct.

20 MS. HOWARD: Do you want the Reck deposition
21 exhibit numbers, as well?

22 JUDGE FRANCKS: Yes. Can we --

23 MS. HOWARD: So one was I-5. I apologize. This is
24 the order that they're in, in the deposition. So I-5 is
25 Phil Reck's resume. R-9 is the Conservation Practice

1 Standard 313. That's Ecology's exhibit.

2 I-13 is also the Conservation Practice Standard.
3 It's the Washington version of that. I-11, which is the
4 declaration of Lawrence Johnson. R-6, which I think we've
5 already admitted. That's Appendix 10D.

6 R-20, which is a Journal of Environmental Quality
7 publication. R-8, which is the History of NRCS Philosophy.
8 It's related to Appendix 10D.

9 I-14, Conservation Practice Standard 520, which is
10 referred to in Conservation Practice Standard 313. And then
11 I-15, which is another Conservation Practice Standard
12 related to liners that is also referred to in 313.

13 R-7 has already been admitted. It's the one we
14 were looking at yesterday that has that Appendix C with the
15 diagram. And then I-16, which is the e-mail from Ms.
16 Bredeweg with NRCS. That was it.

17 JUDGE FRANCKS: Okay. Let me just run through the
18 list quickly. I-5, R-9, I-13, I-11, R-6, R-20, R-8, I-14,
19 I-15, R-7, and I-16.

20 MS. HOWARD: Yes.

21 JUDGE FRANCKS: Those are all admitted.

22 (Exhibits R-6, R-7, R-8, R-9,
23 R-20, I-5, I-11, I-13, I-14,
24 I-15, and I-16 admitted.)

25 JUDGE FRANCKS: Mr. Tebbutt, please proceed.

1 MR TEBBUTT: I had to resist saying "bingo" along
2 there.

3 JUDGE FRANCKS: I had the same thought.

4

5 CROSS-EXAMINATION (Continued)

6 BY MR. TEBBUTT:

7 Q. Good morning, Ms. Redding.

8 A. Good morning.

9 Q. I want to talk to you a little bit, to start off the
10 day, about R-4.

11 And yesterday you testified that you did not
12 believe that the dairies were a predominant source of the
13 nitrogen contamination in the Lower Yakima Valley and the
14 Sumas-Blaine aquifer contamination; correct?

15 A. No. That is not what I stated.

16 Q. Do you remember what you stated?

17 A. Well, I believe that dairies are a source, but we don't
18 have good information to say what is a predominant source.
19 We have a document that I included in the manure and
20 literature review that talked about the contribution from
21 dairies, and we have a draft of a nitrogen availability
22 assessment that's being done in the Lower Yakima that's --
23 that's -- that's still under review. That's not
24 very -- we're -- we're waiting for the findings on that.

25 And the EPA report that said that dairies in the

1 Lower Yakima were a contributor to nitrate contamination in
2 the aquifer.

3 Q. Take a look at page 95 of R-4, please.

4 I would like you to look at -- under where it says,
5 "Potential impacts of groundwater," I would like you to read
6 out loud the very first sentence under that section.

7 A. Under -- in the first paragraph or under --

8 Q. It's the actual page 95.

9 A. But --

10 Q. R-4.

11 A. So you want me to read the last sentence of the first
12 paragraph under, "Potential impacts to groundwater"?

13 Q. Correct.

14 A. Okay. "Research in both the Lower Yakima Valley and
15 the Sumas-Blaine aquifer identify manure as a predominant
16 source of nitrogen loading in these areas."

17 Q. Thank you. Now let's move to A-9.

18 A. Got it.

19 Q. Okay.

20 And this is an e-mail from you to Thomas Mackie
21 dated September 8th, 2016; correct?

22 A. Yes, it is.

23 Q. Would you read the single sentence there, which is the
24 second paragraph of your e-mail to Mr. Mackie?

25 A. Wait. Which --

1 Q. The one that begins with "Maia."

2 A. "Maia wants the permit finalized by December 31st.

3 Bill and Kelly made it clear that they intend to meet this
4 deadline."

5 Q. So is Maia Bellon, who you are referring to?

6 A. Yes.

7 Q. And how often did you talk with Ms. Bellon about the
8 permit?

9 A. Never.

10 Q. How did you get the directive to get the permit out
11 that you're referring to in this e-mail?

12 A. Through Bill Moore.

13 Q. Did she ever tell you or did you ever get word from any
14 of your supervisors whether to include groundwater
15 monitoring in the permit?

16 A. No.

17 Q. Who gave the order not to include groundwater
18 monitoring?

19 A. Nobody gave any order.

20 Q. It was just a -- who made the determination not to
21 include it?

22 A. Well, I think as John testified to, that there was a
23 work group, and there were collaborative sessions where we
24 developed the permit.

25 Q. Right.

1 So who made the decision not to include it?

2 Somebody had to have made a decision.

3 A. I don't believe that we ever had a question before us
4 on do we include groundwater or don't we include groundwater
5 monitoring?

6 Q. Okay.

7 Let's go to A-18, please. Yes.

8 MR. TEBBUTT: I would like to move into evidence
9 A-9, please.

10 JUDGE FRANCKS: A-9 is admitted.

11 (Exhibit A-9 admitted.)

12 BY MR. TEBBUTT:

13 Q. Let's take a look at A-18.

14 A. Okay.

15 Q. These are comments on the draft CAFO general permit by
16 you dated 5/4/2016; correct?

17 A. Correct.

18 Q. I would like you to read the first three-plus lines of
19 A-18 out loud, please.

20 A. "Good job. I know that drafting this permit is a
21 difficult challenge with many competing interests. As a
22 groundwater hydrogeologist, my focus is on groundwater
23 quality protection and providing research and direction that
24 will provide assurance that the groundwater quality
25 standards Chapter 173-200 WAC are met."

1 Q. You can stop there.

2 I want to ask you, what are the competing
3 challenges that you're referring to?

4 A. It's a complex permit with a lot of different pieces
5 that we're trying to address. We're trying to address that
6 land application is done in a manner that protects
7 groundwater quality.

8 We're trying to look at lagoons that are protective
9 of groundwater quality, where we have an opportunity for
10 on-farm changes. So -- and when we're developing a general
11 permit like this --

12 Q. Let me just stop you there. I mean, I'm not asking
13 about the different parts of the permit.

14 When you're referring to "competing interests,"
15 aren't you referring to the different interest groups that
16 are -- are lobbying the agency to do the right thing to
17 protect human health and the environment, or the converse?

18 A. No, I'm not.

19 Q. You're not -- you're referring to the specific parts of
20 the permit itself? Those are the competing interests?

21 A. So let me explain my role a little bit better.

22 Q. No. That's not what I'm asking. I'm asking just about
23 the competing interests.

24 What -- what are you referring to, specifically,
25 what you just testified to are the competing interests?

1 A. The scientific issues. Because I'm a scientist. I'm
2 talking about the scientific issues that are on the table,
3 that are all being considered as going into a general
4 permit.

5 Q. I understand that.

6 Those are the scientific issues, the competing
7 interests that you're referring to in this issue?

8 MS. HOWARD: Objection. Asked and answered.

9 MR. TEBBUTT: I don't believe she's answered it.

10 JUDGE FRANCK: You can ask one more time.

11 BY MR. TEBBUTT:

12 Q. Are the competing interests --

13 A. As I think --

14 Q. Are the competing interests the scientific interests,
15 or are these the political interests that you're referring
16 to here?

17 A. They are not the political interests. That is not my
18 job.

19 Q. So they're the scientific interests? That's what
20 you're referring to?

21 A. As I described the first time I answered this
22 question --

23 Q. Just yes or no, please.

24 A. I already answered the question.

25 Q. All right.

1 Let's take a look at A-12. Have you seen this
2 document before?

3 A. It's an e-mail from John Jennings to Bill Moore. I am
4 not on the distribution list.

5 Q. Right.

6 But my question is, have you seen this document
7 before?

8 A. I don't recall seeing it.

9 Q. Where it says, "Decision rules. What science will be
10 included."

11 A. Correct.

12 Q. Do you agree with the criteria that are set forth there
13 as to what credible data will be used to pose -- to answer
14 questions about the science related to the permit?

15 A. I'm going to read it right now.

16 Q. Yes. Please do.

17 A. So, yes, I read the section on -- do you want me to
18 read the entire --

19 Q. Just to yourself. No. Just that first part. Just the
20 decision rules. What science will be included.

21 A. Yes. That's credible data.

22 Q. So you agree with those statements in A-12, that that's
23 what "credible data" means?

24 A. Correct.

25 MR TEBBUTT: I move the introduction of A-12.

1 MS. BARNEY: Objection. Lack of foundation. She's
2 not on the e-mail. She said she hadn't seen it before.

3 MR TEBBUTT: Before you rule, obviously, she just
4 agreed with the statements in there, that this is part of
5 the policy. The next question is, "Is this the" -- "what
6 you agree is department policy?"

7 MS. BARNEY: Then her testimony is sufficient.

8 MR TEBBUTT: Her testimony should be sufficient,
9 but this document describes in detail -- I could have her
10 read into the record those things, or we could just use this
11 document.

12 JUDGE FRANCKS: I -- because this is more than one
13 page, and we're talking about one particular section, I
14 think I don't want to admit this because I don't think
15 there's enough foundation with this witness.

16 But if you want her to read the part that you were
17 asking her about, that's fine.

18 MR TEBBUTT: Into the record?

19 JUDGE FRANCKS: Yes.

20 MR TEBBUTT: Okay. Let's do that.

21 BY MR. TEBBUTT:

22 Q. Then let's read, starting with, "Decision rules. What
23 science will be included." If you'll start reading that and
24 stop -- just go ahead and start reading, and I'll tell you
25 when I would like you to stop. Okay? Out loud.

1 A. Oh, okay. "Decision rules. What science will be
2 included. Credible data will be used to answer the
3 questions posed about the science. Credible data is" -- and
4 there's three bullets -- "data gathered using sound
5 scientific methodologies. For example, creating hypotheses,
6 testing hypotheses."

7 Second bullet, "Data that has quality control and
8 assurance checks."

9 Third bullet, "Data gathered through methodologies
10 that have been peer reviewed."

11 Q. Okay. That's enough. Thank you.

12 And you agree that that's the -- that's the --
13 Ecology's definition of what credible data means, for
14 purposes of your -- the CAFO science; correct?

15 A. So this may be a paraphrasing of what exactly credible
16 data is. We -- I know we have a directive from the
17 legislature that specifically lines that out, and we have a
18 very specific Ecology policy that was developed on exactly
19 what credible data is.

20 I know it's much longer than three bullet points,
21 so I hesitate to say this is Ecology's policy.

22 Q. Okay. But you don't disagree with anything stated
23 right here; correct?

24 A. No, I do not.

25 Q. Okay. Let's move to A-74, please. A lot of stuff to

1 work with.

2 A. It's hard to get through this binder. Okay.

3 Q. Do you know Tom Tebb?

4 A. Yes, I do.

5 Q. Have you worked with him before?

6 A. Yes, I have.

7 Q. On a lot of different projects?

8 A. Not -- I wouldn't say "a lot."

9 Q. Have you worked with him or talked with him at all in
10 the context of the CAFO permit?

11 A. Yes, I have.

12 Q. And have you read Mr. Tebb's deposition transcript?

13 A. Yes, I have.

14 Q. Do you take issue with any of the statements that Mr.
15 Tebb sets forth in his highlighted testimony?

16 A. In his highlighted testimony?

17 Q. Yes.

18 A. So all the parts of the testimony that -- well, I've
19 read his testimony, and there is -- there is nothing that I
20 disagree with what he said.

21 Q. Okay. Very good.

22 Along those lines, one of the things that Mr. Tebb
23 discussed was -- and this is at pages 64 through 66 of his
24 transcript, if you'd like to move to that. There's a
25 discussion about the USGS report that was done in the Yakima

1 Valley.

2 A. Hang on. You said "64"?

3 Q. 64 to 66. Yes. It's a condensed transcript. So it
4 goes up and down a little bit.

5 A. Yeah. So exactly what is the USGS report that he's
6 referring to?

7 Q. Just go ahead and, you know, take a look at that or
8 refresh your recollection. Go ahead and read it to
9 yourself.

10 A. Okay. So for my clarification, it says, "Did it come
11 out right around this time?" What timeframe is "this"?

12 Q. This is 2014. 2/26/2014.

13 A. It's obvious there's a previous discussion that you're
14 talking about a timeframe. And --

15 Q. Let me just ask --

16 A. -- I know the deposition was 2014. But what is the
17 timeframe that --

18 Q. Let me just ask some questions, and we'll get to this.

19 A. Okay.

20 Q. You're part of the GMWA, you said; right?

21 A. I provide technical support to Ecology. Yes.

22 Q. Right.

23 You read the USGS report that came out as part of
24 this report for the GMWA that discusses how the aquifer in
25 the Lower Yakima Valley is connected to the Yakima River and

1 the Columbia River?

2 A. Can you give me the author and date of that document?

3 Q. I can't right now. No.

4 A. Because that would be helpful for me to know.

5 Q. It was in that timeframe, 2013/2014. John Vaccaro,
6 actually, was the author.

7 A. That's helpful. I've read a lot of the documents that
8 relate to the Lower Yakima Valley. There's an awful lot of
9 them, and it's been a while since I've looked at that. But,
10 yes, I know I've at least looked it over. Yes.

11 Q. Are you familiar with one of the conclusions in that
12 report that the Lower Yakima Valley -- the higher water
13 table, if you will, is hydrologically connected to the
14 Yakima River?

15 A. I would really need to see the report to be able to --

16 Q. All right.

17 A. -- to say for certain.

18 Q. But that's what Mr. Tebb is referring to in his
19 deposition transcript.

20 A. Okay.

21 Q. That's the USGS report.

22 A. Okay.

23 Q. And you don't disagree with anything that Mr. Tebb says
24 there; correct?

25 A. Well, I have a high level of respect for Mr. Tebb.

1 And -- but I can't -- I'm not sure that I can necessarily
2 verify everything that he's testifying to.

3 Q. I'm not asking you to do that.

4 A. Okay.

5 Q. I'm just asking whether you disagree with any -- you
6 already said you don't disagree with any of the statements
7 in his transcript; correct?

8 A. Nothing jumped out at me when I read his deposition --

9 Q. Okay. Thank you.

10 A. -- that anything was -- okay.

11 Q. Let's move back to R-4, please.

12 Before we move off this, how did you work with Mr.
13 Tebb on the CAFO permit?

14 A. So I did not work on the 2006 permit. But I actually
15 had a conversation with Mr. Tebb on -- this past week,
16 because I saw that this was in the list of exhibits. And I
17 called him to say, "Have you been keeping track of what
18 we've been doing on this" -- "with the latest CAFO permit
19 that's been issued?" And he said, "No, I haven't even
20 looked at it."

21 So all I did was say, "Well, I think we've got a
22 lot of protective provisions in there" --

23 Q. That's not my question. My question --

24 A. Oh, I'm sorry.

25 Q. You said earlier that you worked with Mr. Tebb on the

1 CAFO permit.

2 A. No. I don't believe I --

3 MS. BARNEY: Objection. Misstates testimony.

4 MR TEBBUTT: Let me ask it again.

5 BY MR. TEBBUTT:

6 Q. Did you work with Mr. Tebb at all or have any
7 discussions with Mr. Tebb in the development of the CAFO
8 permit that's before this board today?

9 A. No, I did not.

10 Q. Let's move on to R-4, then, please. Let's look at page
11 80 of R-4.

12 A. Okay.

13 Q. If you'll read the bottom sentence out loud, please.
14 Bottom of page 80.

15 A. "Sampling the soil profile at one-depth increments down
16 to the water table provides the best estimate of the total
17 residual soil nitrate, as well as the estimated nitrate load
18 that poses a risk of leaching to groundwater."

19 Q. So you're saying there that you could actually require
20 testing of the entire soil profile from the surface down to
21 the groundwater to see how nitrates move to the groundwater;
22 correct?

23 A. Correct.

24 Q. And that didn't get in the permit, did it?

25 A. No, it is not in there.

1 Q. Okay. Let's move to A-18, please.

2 JUDGE FRANCKS: A-18?

3 MR TEBBUTT: A-18.

4 THE WITNESS: Okay.

5 MR TEBBUTT: Your Honor, just as a housekeeping
6 matter, I would like to move in A-18. I thought maybe I did
7 this morning, but maybe I didn't. A-18.

8 JUDGE FRANCKS: Wasn't that the one we just talked
9 about?

10 MR TEBBUTT: We did. I'm not sure I offered it.
11 According to my team, I didn't offer it.

12 JUDGE FRANCKS: Okay. A-18 is admitted.

13 (Exhibit A-18 admitted.)

14 BY MR. TEBBUTT:

15 Q. Particularly, let's take a look at page 7.

16 A. I did not put the page numbers on this.

17 Q. Yeah. They're on the bottom right.

18 A. Oh, okay. Okay.

19 Q. Do you have that in front of you?

20 A. Yeah, I do.

21 Q. Okay.

22 And Table 7 says that -- for -- under "Risk
23 Level" -- on the left-hand column, the third one says,
24 "High - 30 to 45 parts per million."

25 Correct?

1 A. Yes.

2 Q. It says, "Required action: Reduce manure application
3 by 50 percent."

4 A. Yes.

5 Q. "Eliminate commercial fertilizer applications."

6 A. Yes.

7 Q. And, "Limit applications to growing season, as defined
8 by," dot, dot, dot, "tools"; correct?

9 A. Correct.

10 Q. The permit doesn't require reducing manure application
11 by 50 percent when residual nitrates are 30 to 45 parts per
12 million, does it?

13 A. Can you state that again? Say the question again?

14 MR. TEBBUTT: Would the court reporter mind reading
15 the question back?

16 (Record read.)

17 THE WITNESS: It doesn't have that exact statement
18 in there.

19 BY MR. TEBBUTT:

20 Q. Right.

21 Next one, where it says, "Very high," and that's
22 greater than 45 parts per million.

23 It says under "Required Action," "No manure
24 application or commercial fertilizer application until soil
25 nitrate levels decrease to medium levels."

1 Do you see that?

2 A. I do.

3 Q. That isn't anywhere in the -- in the CAFO permit, is
4 it?

5 A. Actually, it is. It's on this chart here.

6 Q. It doesn't say, "No manure application," does it,
7 anywhere?

8 A. It says, "Stop land application." (Unintelligible)
9 "the field and continue the actions that are required for
10 the other levels."

11 Q. But that's only after three years; right?

12 A. Correct.

13 Q. Right. Not immediately.

14 A. But that's --

15 Q. Not immediately; right?

16 A. You asked if it was in the permit, and it is in the
17 permit.

18 Q. Okay. But the table here, Table -- table on page 7
19 doesn't say, "Wait three years and then stop the
20 application," does it?

21 A. No, it does not.

22 Q. It also says as part of the very high, "Add soil
23 moisture sensors," under, "Recommended actions."

24 Do you see that?

25 A. Yes. I see that.

1 Q. And that's not required in the permit, is it?

2 A. No, it's not.

3 Q. Let's move to R-4, please, again. Let's look at page
4 88. The actual -- where it says "page 88" at the bottom.

5 A. Okay. Got it.

6 Q. These are two tables, Tables 22 and 23, which discuss
7 soil nitrate concentrations and projected concentrations
8 available to leach groundwater in -- to leach the
9 groundwater. One in Eastern Washington, that's Table 22;
10 and Table 23 is for Western Washington.

11 Correct?

12 A. Correct.

13 Q. So if the soil nitrate concentrations are as low as
14 four parts per million in Eastern Washington, that could
15 translate with a .05 foot annual recharge to 11 parts per
16 million of nitrate in groundwater; correct?

17 A. No. That is incorrect.

18 Q. How is that incorrect?

19 A. So what this table does is essentially -- I testified
20 yesterday that we were trying to get a handle on what do the
21 soil nitrate values mean?

22 And the first step was to take the soil that's in
23 the nitrate and mix it with the recharge, essentially, and
24 that is essentially, like, with an onsite sewage system.
25 That would be what would be discharged.

1 So that's what's actually in the soil when it
2 leaves the root zone. That would be the concentration. The
3 discharge. That is not necessarily your impact at
4 groundwater.

5 Q. Right.

6 But that's --

7 A. The rest --

8 Q. Let me --

9 A. -- of the stuff is --

10 Q. Let me stop you there.

11 But that's the amount of nitrate that would be
12 heading down to groundwater. That would be the
13 concentration of nitrate that's headed down to groundwater;
14 correct?

15 A. Correct.

16 Q. So the table continues. And so with soil nitrate at 8
17 parts per million and one foot of annual recharge, you could
18 also get 11 parts per million of nitrate headed to
19 groundwater; correct?

20 A. Wait. State that again.

21 Q. Yes.

22 A. Where are you looking?

23 Q. Table 22. "Eight parts per million. One-foot annual
24 recharge."

25 A. Yes.

1 Q. So again, 11 parts per million of nitrate could be
2 headed to groundwater under that scenario?

3 A. That would be essentially like the effluent
4 concentration.

5 Q. Right.

6 A. That is not an impact -- that is not a groundwater
7 concentration.

8 Q. I understand that. You said that.

9 A. Okay.

10 Q. But that's what's heading to groundwater; correct?
11 That's what you testified to.

12 A. Correct.

13 Q. So the table lays out all of these numbers -- I'm not
14 going to go through every single one of them, but as you get
15 higher in concentration, you get more potential impact to
16 groundwater; correct?

17 A. No. I would not make that statement. What I would say
18 is the effluent concentration is higher.

19 Q. Right. That's headed to groundwater. Effluent
20 concentration in -- in the recharge that's headed to
21 groundwater?

22 A. Well, I'm just trying to be precise with my words.

23 Q. I'm just trying to ask you if -- you know, it's my job
24 to ask the questions. It's your job to answer them.

25 So the material that's headed -- the

1 concentrations -- this is the soil moisture concentrations,
2 if you will; right?

3 A. Right.

4 Q. In the vadose zone?

5 A. Correct.

6 Q. That's the stuff that's headed to groundwater; correct?

7 A. It may head to groundwater.

8 Q. Where else -- does it magically disappear on the way
9 down?

10 A. Well --

11 MS. HOWARD: Objection, Your Honor. Argumentative.

12 JUDGE FRANCKS: I'm going to overrule that
13 objection, but let's take the level down a bit.

14 THE WITNESS: So remembering that these samples are
15 taken in the one- or two-foot level, and oftentimes that's
16 in the root zone. So depending upon where you are in the
17 state and what happens, some of that nitrate may still be
18 available in the root zone.

19 BY MR. TEBBUTT:

20 Q. All right. But once it gets below the root zone, it's
21 destined to go to groundwater; correct?

22 A. Primarily. We've talked about other extenuating
23 circumstances, so that's not an absolute.

24 Q. But in the criminal term, it's more reasonable --
25 beyond a reasonable doubt, isn't it? I mean, there has to

1 be some extraordinary intervening circumstance to prevent
2 that; correct?

3 MS. BARNEY: Objection. Misstates prior testimony.

4 JUDGE FRANCKS: I'm going to sustain that.

5 MR TEBBUTT: I'm asking the question, not trying to
6 rephrase testimony. Just asking the question.

7 JUDGE FRANCKS: I think you're mischaracterizing
8 some of her testimony.

9 MR TEBBUTT: I'm not trying to. I apologize.

10 JUDGE FRANCKS: New question.

11 BY MR. TEBBUTT:

12 Q. So from a scientific perspective, it's far more likely
13 than not that the water that is in the vadose zone is going
14 to reach groundwater at some point; right?

15 A. If it moves below the root zone, yes.

16 Q. Let's go to A-20, please.

17 A. Okay.

18 Q. A-20 is an e-mail from you to Kelsey Dunne dated
19 2/24/17; correct?

20 A. Correct.

21 Q. If you would please read where it starts, "In the
22 fall," in the first paragraph -- about halfway through the
23 first paragraph, and read the rest of the paragraph out
24 loud, please.

25 A. "In the fall, if the sample's going to be collected

1 after significant rainfall, then going deeper makes sense to
2 capture the fraction that is migrating to groundwater. In
3 Western Washington, where there's heavy precipitation, you
4 may even consider having them monitor the entire soil
5 profile in the fall every year. This would give you a sense
6 of nitrogen levels from the land surface down to the water
7 table, or even six feet to determine leaching to groundwater
8 and evaluate if improvements in management are reflected in
9 a reduction of nitrogen loss."

10 Q. And that soil column testing all the way down to
11 groundwater is not in the permit, is it?

12 A. No, it is not.

13 Q. Let's move to R-15, please.

14 MR TEBBUTT: And move A-20, please.

15 JUDGE FRANCKS: A-20's admitted.

16 (Exhibit A-20 admitted.)

17 BY MR. TEBBUTT:

18 Q. Let's take a look at page 94, please, of R-15.

19 JUDGE FRANCKS: Do you have the PDF page, per
20 chance?

21 MR TEBBUTT: Yes, I do, actually. It's 124.

22 JUDGE FRANCKS: Usually they're pretty close.

23 MR TEBBUTT: Doing a little better than yesterday.
24 I didn't have it quite together yesterday. A lot of
25 information to work with.

1 BY MR. TEBBUTT:

2 Q. Do you have that in front of you, Ms. Redding?

3 A. I do.

4 Q. If you would read the first paragraph under where it
5 says, "Monitor to evaluate," please.

6 A. "A program is needed to determine how well current and
7 future manure management practices are working to improve
8 groundwater quality. Because there is no reliable
9 substitute, direct groundwater monitoring using dedicated
10 monitoring wells is a key component of an effectiveness
11 monitoring program.

12 "Although groundwater monitoring is the only way to
13 determine the amount or the concentration of nitrate that
14 actually reaches the water table, soil nitrate monitoring in
15 the fall is a necessary tool for on-farm nutrient
16 management.

17 "If conducted with limitations in mind, soil
18 nitrate monitoring can also serve as a screening tool for
19 closer inspection of groundwater conditions."

20 Q. You can stop there. Thank you.

21 Let's move to R-4 again, please. Page 82, please.

22 A. Okay.

23 Q. If you would read under the "Summary" the first
24 paragraph, please.

25 A. "The majority of researchers agree that groundwater

1 monitoring is the only way to definitively determine impacts
2 to groundwater quality from residual soil nitrate.
3 Monitoring other media, such as soils, can indicate whether
4 manure management practices need to be adjusted, but it
5 cannot conclusively determine the extent of impact to
6 groundwater quality."

7 Q. Stop there and then read the fourth paragraph under the
8 "Summary," please.

9 A. "Groundwater monitoring provides a direct assessment of
10 impact to groundwater quality from land uses and is an
11 important tool for determining how effective manure
12 management practices are being implemented, and thus
13 minimizing impacts to groundwater.

14 "Groundwater monitoring is also an effective
15 verification tool used to help abatement and transport of
16 nitrate in the subsurface."

17 Q. Thank you.

18 Now let's take a look at page 103.

19 A. Okay.

20 Q. If you would read, please, under, "Groundwater
21 monitoring," the first paragraph.

22 A. "Animal feeding operations, AFOs, that apply manure to
23 crops as part of their treatment system can adversely
24 impact groundwater. Groundwater monitoring is the most
25 reliable and direct means of measuring impacts to

1 groundwater from manure applications.

2 "Soil samples provide limited evaluation to
3 evaluate nutrient management practices. They can indicate
4 over application of manure, current available nitrate
5 concentrations in the soil, and effectiveness of management
6 practices.

7 "However, soil nitrates is not a direct or reliable
8 indicator of impacts to groundwater quality."

9 Q. Thank you.

10 Is that it?

11 A. Did you want me to continue reading?

12 Q. You're done with that paragraph; right?

13 A. Yes.

14 Q. Okay. Thank you.

15 Let's move to A-21, please. Okay?

16 A. Okay.

17 Q. A-21 is -- did you draft A-21?

18 A. No. I did not.

19 Q. Are the handwritten notes on A-21 yours?

20 A. Yes, they are.

21 Q. On the second page of A-21, you have a statement at the
22 bottom. Can you read that out loud, please, in your
23 handwriting?

24 A. "Used in other states"?

25 Q. No. Where it starts "GW."

1 A. "GW," which is groundwater monitoring, "is standard for
2 industrial facilities."

3 Q. Is that "is used in other states" part of that?

4 A. Well, they're two separate thoughts?

5 Q. They are? Okay.

6 So what's used in other states? What does that
7 refer to in this document?

8 A. This is from 2016. I'm not quite -- I'm not entirely
9 sure I remember.

10 Q. Isn't that relating to groundwater monitoring?

11 A. It could be, but I'm not positive.

12 Q. Okay.

13 MR. TEBBUTT: Your Honor, I would move A-21 into
14 evidence.

15 JUDGE FRANCKS: A-21 is admitted.

16 (Exhibit A-21 admitted.)

17 BY MR. TEBBUTT:

18 Q. Ms. Redding, earlier -- or yesterday we talked about
19 AKART and various permeabilities for lagoons, but I want to
20 ask you some more questions about that.

21 You mentioned AKART for new or refurbished lagoons
22 was ten to the minus six -- one times 10 to the minus six
23 centimeters per second, without regard for manure sealing.

24 Is that a fair characterization?

25 A. Yes.

1 Q. Is that recommendation found in your manure and
2 groundwater literature review? I'd suggest maybe you take a
3 look, to make things quicker, at R-4, page 66.

4 A. So on page 66 I don't have recommendations.

5 Q. Okay. Let's look down at the bottom.

6 A. This is -- this is a summary of what's in the
7 literature.

8 Q. Okay.

9 A. And there's a very limited section in the
10 recommendations that are in the back of the document.

11 Q. Could you read, please, the -- I'm -- read under,
12 "Liner permeability," please. Start reading that.

13 A. "The NRCS 2009(b) recommends an allowable seepage
14 quantity of one times ten to the minus seven centimeters per
15 second based on the historical permeability for clay liners.
16 Ecology, Kimsey 2002" --

17 Q. That's you, by the way, isn't it?

18 A. Yes. That's a previous name of mine. "Appendix C
19 specified that agricultural waste water lagoons have a final
20 maximum liner permeability of one times ten to the minus
21 seven centimeters per second or less."

22 Q. All right. Let's stop there.

23 Why doesn't one times ten to the minus seven
24 centimeters per second appear in the permit as the final
25 maximum liner permeability?

1 A. Because we have -- essentially, that's -- that's the
2 same thing. We have one times ten to the minus six, with
3 one order of magnitude from manure sealing.

4 Q. Okay.

5 So are you saying that manure sealing would result
6 in a full order of magnitude reduction for new or
7 refurbished lagoons?

8 A. Yes. And that's what I testified to yesterday.

9 Q. Do you remember testifying in your deposition that you
10 did not disagree with NRCS that manure sealing may only
11 reduce permeability by one-half order of magnitude?

12 A. I believe I stated that that's what the document
13 stated. I didn't disagree with what was in the document.

14 Q. Right.

15 So you're not disagreeing with them that the
16 permeability might only be reduced by half order of
17 magnitude; correct?

18 A. No. I'm not disagreeing that that's what's written in
19 Appendix 10D. But I think what I stated yesterday in my
20 testimony was I looked at the 2008 Appendix 10D, where they
21 did advocate for one full order of magnitude in 2009.

22 All the references are the same. NRCS did not add
23 any new references that would change that from a full order
24 of magnitude to a half order of magnitude. But they did
25 cite some problems occurring in a few locations nationwide

1 of lagoons based on coarse grain soils.

2 Q. All right.

3 A. That was their basis.

4 Q. Very good.

5 A. I wanted to clarify.

6 Q. You were deposed in this case, were you not?

7 A. Yes, I was.

8 Q. Your deposition took place on July 12, 2017, here in
9 Olympia.

10 Do you recall that?

11 A. I'm not -- I don't recall the actual date off the top
12 of my head. That sounds about right.

13 Q. You were represented by counsel?

14 A. Yes, I was.

15 Q. Ms. Barney?

16 A. Yes.

17 Q. The dairy industry lawyers were present?

18 A. Yes.

19 MR TEBBUTT: Your Honor, I'm opening the original
20 transcript. Sealed. Hermetically sealed. Too well
21 hermetically sealed. It's all tied together. I guess we'll
22 just keep it that way, then.

23 BY MR. TEBBUTT:

24 Q. You were under oath that day; correct?

25 A. Correct.

1 Q. You were asked the following question. My question is,
2 "Does that clarify or does that change your opinion that
3 manure sealing provides approximately an order of magnitude
4 of additional protection?"

5 Your answer, "NRCS is suggesting that an order of
6 magnitude might be too generous, and that maybe a half an
7 order of magnitude would be more appropriate. But it does
8 leave it up to the states for their criteria."

9 Question: "Would you disagree with NRCS there?"

10 Answer: "I'm not disagreeing with them." Question: "Well,
11 in terms of the additional protection that manure sealing
12 would provide, are you disagreeing that it would. It's more
13 along the lines of a half order of magnitude, as opposed to
14 a full order of magnitude?"

15 Answer: "No. I'm not disagreeing with it."

16 A. I believe that's in line with --

17 Q. I didn't ask a question.

18 A. Oh.

19 Q. Next question.

20 What is a half order of magnitude reduction from
21 one times ten to the minus six centimeters per second?

22 It's only halfway to one times ten to the minus
23 seven, isn't it? A half order of magnitude?

24 A. No. No. What it is, is -- so when we say there's one
25 times ten to the minus seven, a difference of a half order

1 of magnitude would be 0.5 times ten to the minus seven.

2 Q. Right. So it would be --

3 A. An order of magnitude is when you add a zero.

4 Q. Right. So it's ten times; right? An order of
5 magnitude is ten times better.

6 A. Correct.

7 Q. We're reducing.

8 A. Correct.

9 Q. So if you're only getting there half the way, you're
10 only getting five times, you're not getting that ten times;
11 correct?

12 A. No. No.

13 Q. That's a half order of magnitude, isn't it?

14 A. No. No. No. It's -- instead of one times ten, it's
15 0.5 times ten.

16 Q. Right. Very good.

17 And to confirm, AKART for existing lagoons is
18 merely that there is two feet of vertical separation;
19 correct?

20 A. Wait just a second. Can you slow down a second? Can
21 you repeat that?

22 Q. AKART for existing lagoons is merely that there is a
23 two-foot vertical separation; correct?

24 A. Correct.

25 Q. And there's no permeability requirements; correct?

1 A. Wait a minute. Just a second.

2 Q. For existing lagoons.

3 A. Oh, wait. No, no, no. For existing lagoons, we have
4 not stated what AKART is.

5 Q. Okay.

6 A. So that's for new and refurbished.

7 Q. And there are no seepage limitations, then, for
8 existing lagoons; correct?

9 A. Correct.

10 MR TEBBUTT: Your Honor, I'll put this under here
11 just for safekeeping. I promise I won't alter it.

12 BY MR. TEBBUTT:

13 Q. Let's take a look at Section S3.

14 JUDGE FRANCKS: Are we still --

15 MR TEBBUTT: R-4. R-4 is the -- no, it's not. R-1
16 is the exhibit, please.

17 JUDGE FRANCKS: What page are we on?

18 MR TEBBUTT: We are at S3, which looks like page
19 12.

20 BY MR. TEBBUTT:

21 Q. S3 of the permit requires that permittees will not
22 cause or contribute to a violation of the groundwater
23 quality standards for nitrate; correct?

24 A. Correct.

25 Q. And so without groundwater monitoring, how will Ecology

1 know whether a permittee's existing lagoon is causing or
2 contributing to a water quality violation?

3 A. It has to do with the way that we've set up with
4 looking at the permeability requirements and the modeling
5 exercise that I talked about yesterday.

6 Q. But you just said there are no permeability
7 requirements for existing lagoons.

8 A. For existing lagoons? Oh. Well, that's why we're
9 using Tech Note 23, is to try to get a handle on existing
10 lagoons. What exactly their conditions are.

11 Q. Right.

12 But isn't the only way to know whether they're
13 impacting groundwater to do groundwater monitoring?

14 A. Correct.

15 Q. How will Ecology know whether a permittee's application
16 fields are causing or contributing to a water quality
17 violation?

18 A. Through the adaptive management matrix.

19 Q. But isn't groundwater monitoring the only way to know
20 for sure?

21 A. Correct.

22 Q. Let's take a look at A-22, please. Specifically, page
23 2. By the way, A-22 is a document written by you, isn't it?

24 A. Correct.

25 Q. Let's take a look at the very top. The introduction.

1 If you would read the first two sentences, please.

2 A. "Groundwater is a valuable and fragile resource which
3 needs to be protected from contamination. More than 60
4 percent of Washington State residents rely on groundwater as
5 their source of drinking water."

6 Q. This document is written in regard to onsite sewage
7 systems; correct?

8 A. Correct.

9 Q. I would like you to also take a look at page 12 of
10 Exhibit 22.

11 Do you have that in front of you?

12 A. Yes.

13 Q. If you would read the first three sentences under,
14 "Options for reducing impacts to groundwater quality,"
15 please.

16 A. "Nitrate nitrogen has a maximum contaminate level, MCL,
17 of 10 milligrams of nitrogen per liter, which is established
18 to protect drinking water. However, the MCL is not always
19 the groundwater protection goal.

20 "Many communities, including Washington State,
21 protect all groundwater as a resource and have regulatory
22 measures which preserve existing high quality groundwater."

23 Q. Right.

24 And these same criteria apply to CAFOs or any other
25 industry that might be polluting; correct?

1 A. That might be discharging. Correct.

2 Q. Right. Let's take a look at R-5?

3 MR. TEBBUTT: Oh, I would like to move into
4 evidence A-22.

5 MS. BARNEY: Objection on the grounds of relevance.

6 MR TEBBUTT: It was just established.

7 MS. BARNEY: No. As Mr. Tebbutt just discussed,
8 this is related to onsite sewage systems. She read into the
9 record what he wanted her to read. There's no reason to
10 submit this entire document.

11 JUDGE FRANCKS: Do you have a response?

12 MR TEBBUTT: Yeah. No. I just laid the foundation
13 that this is -- this is her writing about how groundwater
14 quality can be impacted, and it applies equally to CAFOs as
15 it does all other industries.

16 MS. BARNEY: That has not been established.

17 MR TEBBUTT: It just was through the question. I
18 submit to you that it was.

19 JUDGE FRANCKS: I am going to allow its admission
20 and restate my position that the board will give it the
21 weight it deserves.

22 MR TEBBUTT: As it always does for any document
23 that comes in. Right.

24 (Exhibit A-22 admitted.)

25 BY MR. TEBBUTT:

1 Q. Let's take a look at R-5 again, please. Again, R-5 is
2 a document that you created; correct?

3 A. Correct.

4 Q. Let's take a look at page 9, which in the PDF is page
5 21. I'd like for you to read starting about halfway down
6 that paragraph, "The groundwater quality standards."

7 A. Which paragraph?

8 Q. It's under, "Process." "2.1 Process." Where it says,
9 "The general" -- I'm sorry. "The groundwater quality
10 standards." Starting there.

11 A. "The groundwater quality standards are designed to be
12 preventative in nature and to protect groundwater from
13 contamination."

14 Q. Keep reading, please.

15 A. "The goal of the standards is to maintain existing high
16 quality groundwater and to protect existing and future
17 beneficial uses."

18 Q. All right. You can stop there.

19 On the column to the right, where it says, "The
20 intent of the standards." That first full paragraph. Do
21 you see that? Can you read that out loud, please?

22 A. "The intent of the standards is not to allow
23 degradation of groundwater up to the criteria, but rather,
24 it is intended to protect background water quality to the
25 extent practical."

1 Q. Then I would like you to take a look at page 28 of R-5.

2 JUDGE FRANCKS: What's the PDF page?

3 MR TEBBUTT: 40.

4 BY MR. TEBBUTT:

5 Q. I would like you to read the paragraph that begins,
6 "Unless a facility," please, which is the left-hand column,
7 second full paragraph.

8 A. "Unless a facility can demonstrate site specific
9 characteristics which will degrade or attenuate
10 contaminates, it is assumed that all constituents which are
11 discharged to the environment will eventually migrate to
12 groundwater.

13 "A discharge must comply with the Groundwater
14 Quality Standards at the point of compliance. In most
15 circumstances, dilution by groundwater is not considered an
16 acceptable form of treatment."

17 Q. Thank you.

18 Then I'd like to ask you -- A-11. I would like you
19 to take a look at A-11. This is the preliminary draft of
20 the CAFO general permit.

21 And you have some familiarity with that document,
22 don't you?

23 A. Yes.

24 Q. I'd like you to -- on page 5, under S2.A --

25 A. Yeah.

1 Q. -- the -- read the second sentence of the first
2 paragraph under S2.A, please.

3 A. Second paragraph.

4 Q. Second sentence of the first paragraph.

5 A. Oh, okay. Okay.

6 Q. Beginning "Ecology."

7 A. Okay. "Ecology has determined that if the CAFO has a
8 lagoon that does not have a double geomembrane liner with
9 leak detection system between the liner layers, that it is
10 discharging to groundwater."

11 Q. And you agree with that statement, don't you?

12 A. Correct.

13 Q. Without groundwater monitoring, you won't know what the
14 impacts are to groundwater, will you?

15 A. Correct.

16 MR TEBBUTT: Thank you. Done.

17 JUDGE FRANCKS: Okay. Why don't we take a
18 10-minute break now. So we'll be back at 10:15. We are off
19 the record.

20 (Off the record from 10:04 A.M. to
21 10:15 A.M.)

22 JUDGE FRANCKS: Ms. Howard, are you going to do the
23 questioning?

24 MS. HOWARD: I am, Your Honor.

25 JUDGE FRANCKS: So we're continuing with the

1 testimony of Ms. Redding.

2

3

CROSS-EXAMINATION

4 BY MS. HOWARD:

5 Q. Good morning, Ms. Redding.

6 A. Good morning.

7 Q. Elizabeth Howard here for the Dairy Federation and Farm
8 Bureau. Let's start at, kind of, a more basic level, maybe.

9 So the type of lagoons or waste storage ponds that
10 we're talking about here, what -- what type of ponds are we
11 talking about? What sort of industry are we looking at when
12 we're looking at the type of storage facility that is at
13 issue under this permit?

14 A. So I think Ecology probably uses the term "lagoon"
15 interchangeably with "ponds." But they're for the storage
16 of animal waste.

17 Q. Are there other types of storage lagoons or storage
18 facilities in Washington State?

19 A. Yes, there are.

20 Q. So for purposes of this particular permit, are we only
21 focused on waste storage facilities for animal waste?

22 A. Yes.

23 Q. And is that because this permit is directed at the
24 cattle industry?

25 A. Correct.

1 Q. Are there different types of standards that apply to
2 animal waste storage facilities than there are for other
3 storage facilities for other industries?

4 A. Correct.

5 Q. So let's talk about -- what is it about these storage
6 facilities that actually acts to store what is in the
7 storage pond?

8 A. So do you mean the liner?

9 Q. Yes.

10 A. So there's -- all lagoons are supposed to have a liner,
11 whether it's a geomembrane, the plastic liner, or whether
12 it's a compacted clay liner. They're supposed to have a
13 liner. And in this permit, we talk about the -- we set a
14 permeability requirement for those lagoons.

15 Q. The permeability requirement for the lagoon liners that
16 we're talking about here is this one times ten to the minus
17 six centimeters per second; correct?

18 A. Without consideration of manure sealing, correct.

19 Q. That is reflected in the permit terms specifically;
20 correct?

21 A. Yes.

22 Q. S4.D, if I'm remembering it correctly.

23 A. I would have to verify.

24 Q. Let's do that really quickly. Let's look at R-1.
25 That's on page 13. It's actually S4.B.

1 A. S4.B. Okay.

2 Q. Do you see it there at the bottom of the page?

3 A. Correct.

4 Q. So yesterday you talked about -- let's take a look at,
5 actually, R-17. On page 1 of that -- this is an exhibit
6 that was admitted yesterday. It's the guidance on land
7 treatment of nutrients and waste water with emphasis on
8 nitrogen.

9 On page 1 you were talking about what is AKART, and
10 you talked about that last sentence in that first paragraph.

11 Do you recall that testimony?

12 A. Yes.

13 Q. And you talked about what was most important for AKART
14 for land applications. What's the most important aspect of
15 AKART for the storage lagoons?

16 You listed out three. Preventing, treatment, or
17 control. Which aspects of that are most important from your
18 perspective for the lagoons?

19 A. So for land treatment systems or land application, the
20 second part of that sentence is, "The storage of waste water
21 in properly lined lagoons that's produced in excess of a
22 crop's requirement or outside of the growing season."

23 Q. My question for you -- sorry if that wasn't clear.

24 Yesterday you had said a particular aspect of AKART
25 was important for land application. I'm asking you about

1 what is -- out of those three words which you had listed off
2 yesterday, what are the aspects that's most important for
3 lagoons?

4 A. Okay. So what you're getting at -- so when we're
5 looking at a lagoon design, what's the most important
6 aspect?

7 Q. Yes.

8 A. Yes. Permeability is the most important aspect. But
9 there's other important components that relate to that, as
10 well.

11 Q. How does permeability address the preventing aspect of
12 AKART?

13 A. Well, so the permeability is actually the -- the -- a
14 constituent of the media that allows it to be transmitted
15 through that media. So it's a property of the media. So
16 it's essentially a property of the liner.

17 And so with that, we know how much water or manure
18 is leaking out of the lagoon. Seeping out of the lagoon.
19 So that gives us a basis for what kind of a discharge might
20 occur.

21 Q. And you expect permeability to prevent impacts to
22 groundwater, for example?

23 MR TEBBUTT: Objection. Leading.

24 JUDGE FRANCK: Well, since we're in the world of
25 direct and cross, I think leading can be appropriate. So

1 I'm going to overrule that objection.

2 THE WITNESS: So --

3 MS. HOWARD: Do you want me to restate the
4 question?

5 THE WITNESS: Yes, please.

6 BY MS. HOWARD:

7 Q. Trying to work through the preventing, treatment, and
8 control aspect of AKART, permeability is obviously a term of
9 the permit.

10 How does the permeability term relate to the
11 preventing aspect of AKART?

12 A. Okay. I got you. So pretty much everything has a
13 permeability. And if you put enough head on it, the driving
14 force, you will get movement of water through that.

15 So one of the things that I did back in 1993 was
16 look at what is the permeability of a liner, specifically a
17 Katha liner, and how does that relate to potential impacts
18 to groundwater. I talked about that yesterday.

19 I used a random mock model to look at what would
20 those potential impacts be. Because Ecology wanted to know
21 which -- what -- what are we talking about, ballpark? Or
22 what's reasonable? And we actually determined that one
23 times ten to the minus seven was in line with protecting
24 groundwater, according to the groundwater standards.

25 Q. What specifically about that analysis led you to

1 determine that it would be protective of groundwater?

2 A. Well, looking at the resulting concentrations in
3 groundwater, and -- so it gives us an idea. But it's not a
4 site-specific analysis. It's just a ballpark kind of thing.

5 Q. But you thought that -- I'm going to shortcut and say
6 ten to the minus six -- would actually prevent impact to
7 groundwater?

8 A. Well, it's the combined, ten to the minus six, with the
9 manure sealing. So we're essentially getting one times ten
10 to the minus seven centimeters per second with those two
11 components.

12 Q. Did you consider whether the permeability criteria in
13 the permit would also have a treatment component to it?
14 This is another aspect of AKART.

15 A. No.

16 Q. What about control?

17 A. Well, by restricting how much manure seeps out of the
18 lagoon, you're controlling the discharge.

19 Q. So let's go back and talk about the different types of
20 liners.

21 So can a clay liner achieve a ten to the minus six
22 centimeter square -- I left off the one times ten to the
23 minus six centimeter square permeability?

24 A. Yes. A clay liner can.

25 Q. How did you arrive at that determination?

1 A. Looking at NRCS documents, they -- they've got --
2 especially the Agricultural Waste Management Handbook --
3 we've talked about Appendix 10D. But the whole handbook
4 talks about that. And they give very specific engineering
5 design guidelines for how to construct a lagoon. All the
6 different compaction rates. Things that are way out of my
7 league, because I'm not an engineer. So we -- we typically
8 rely on NRCS for those kinds of things.

9 Q. Let's take a look at Appendix 10D. That's Exhibit R-6.

10 A. Okay.

11 Q. Let's look at page 8. The bottom of the page. I
12 apologize. It may not be the PDF page. I think the PDF
13 page may be 10. Under "Definition of pond liner."

14 You see where it says "compacted clay liner"?

15 A. So what page --

16 Q. So look at page 10D-8 on your left-hand corner. That
17 should help you find it.

18 A. Oh, okay. I got it.

19 Q. On the PDF, it's page 10. Can you read that
20 first -- sorry we're making you do a lot of reading today.

21 Can you look at the first sentence there under,
22 "Compacted clay liner." Could you just read that?

23 A. "Compacted clay liners are relatively impervious layers
24 of compacted soil used to reduce seepage losses to an
25 acceptable level."

1 Q. When we're talking about seepage losses, how does
2 that -- sorry.

3 When we're talking about permeability, how does
4 that relate to seepage losses?

5 A. Permeability is one of the factors that -- that
6 influence -- that's a -- seepage -- the seepage rate is
7 affected by essentially permeability of the liner, the
8 thickness of the liner, the area -- the superficial area of
9 the lagoon, and the hydraulic head. Or in other words, how
10 deep is the manure in the lagoon?

11 So those four factors really go into determining
12 what the -- what the seepage out of a lagoon would be.

13 Q. And this statement here is consistent with your
14 testimony just a few minutes ago, that a compacted clay
15 liner can achieve a certain permeability; is that correct?

16 A. Correct.

17 Q. Let's look at page 10D-2, which I think is probably
18 going to be page 4 in the PDF. Under, "General design
19 conditions" -- again, I apologize. I'm going to make you
20 read here. Can you just read the first three sentences of
21 that.

22 A. Under, "General design considerations"?

23 Q. Yes . Where it starts, "Limiting seepage."

24 A. "Limiting seepage from an agricultural waste storage
25 pond has two primary goals. The first is to prevent any

1 virus or bacteria from migrating out of the storage facility
2 to an aquifer or water source.

3 "The second is to prevent the conversion of ammonia
4 to nitrate in the vadose zone."

5 Q. So again, it appears that the purpose of the clay
6 liner, again -- if it's to limit seepage -- is to have these
7 two affects -- would you agree that those two affects occur
8 when you have a clay liner of the permeability that's
9 required under the permit?

10 A. I'm not sure I can agree with that.

11 Q. What do you disagree with?

12 A. So I've seen one article that talks about coupled
13 nitrification/denitrification under a lagoon, but there were
14 still significant impacts from that lagoon to groundwater
15 with that study.

16 And the -- the virus or bacteria -- I'm concerned
17 about viruses because they're very, very small. They're
18 nanogram -- they're, like, nano -- nanometers. They're
19 very, very small.

20 So I'm -- and I haven't seen studies that have
21 demonstrated that viruses have been removed from a manure
22 storage lagoon. So I -- I can't -- I can't verify that
23 statement.

24 Q. Did you review the deposition transcript of Mr. Reck?

25 A. Yes, I did.

1 Q. Let's look at that for just a moment, if you could.
2 That's Exhibit I-6. Before we do that, actually, I just
3 have a more general question for you.

4 Did you rely upon the NRCS guidance and literature
5 in your literature review?

6 A. Yes.

7 Q. Did you specifically rely on this Appendix 10D in your
8 literature review?

9 A. Yes.

10 Q. Did you also rely on other information from the NRCS in
11 your literature review?

12 A. I must have.

13 Q. There are quite a few cites for the NRCS in your
14 literature review, were there not?

15 A. Yeah. Yeah.

16 Q. Now let's look at Mr. Reck's deposition.

17 If you'll bear with me, I'm going to read some of
18 this. So --

19 A. What page are we on?

20 Q. Let's start on page 32.

21 A. 32 of the deposition, or 32 --

22 Q. Well, it should be 32 of the deposition. What page is
23 that for the PDF?

24 MS. HOWARD: Your Honor, I'm not sure which version
25 you guys have on your screen.

1 JUDGE FRANCKS: We have -- we have the designated
2 one.

3 MS. HOWARD: Okay. So it looks like it's page 30.

4 JUDGE FRANCKS: We just got it recently.

5 MS. HOWARD: Yeah. I'll give you guys a minute to
6 pull that up.

7 JUDGE FRANCKS: Now we're ready.

8 MS. HOWARD: Just bear with me, because I -- sorry.
9 Good to go?

10 JUDGE FRANCKS: Yes. We are good to go.

11 BY MS. HOWARD:

12 Q. Starting on page 11, I'm just going to read through
13 this, so bear with me. Page 32?

14 A. Excuse me. Page 11 or page 32?

15 Q. Page 32, line 11.

16 A. Okay. Got it. Thank you.

17 Q. I seem to have trouble with my numbers. I apologize.

18 So the question. "Okay. So turning back to
19 Appendix 10D, can you, in sort of layman's terms, if you
20 will, put into words what the subject of Appendix 10D is."

21 Appendix 10D is what we were just talking about;
22 correct?

23 A. Correct.

24 Q. "Yes. Appendix 10D covers the design of lined or clay
25 liners for an impoundment, a pond, or a waste storage pond."

1 So question. "If you could just look at -- in your document
2 will be page 3, which is sort of the first page. It says
3 'Introduction' on it. Does that -- does this
4 appendix -- and again, I'm just looking at the first
5 paragraph there -- does it talk about seepage rates from
6 lagoons?"

7 So here I am specifically referring to the same
8 paragraph that we were just looking at.

9 "It does, yes." "And can you just fill us in, if
10 you will, on why seepage is addressed in this Appendix 10D?"

11 So, answer. "Yes. Historically, NRCS, when we
12 have needed to line a waste storage pond or a waste
13 treatment lagoon, you need to set criteria for what the
14 liner needs to be.

15 "What is the -- you know, how -- what is the
16 minimum criteria for that liner. That was set at ten to the
17 minus six centimeters per second, historically, is what we
18 want the liner to achieve over time.

19 "We also knew that when you put in a liner at that
20 hydraulic connectivity, it will -- over time, conductivity
21 will go down because of some manure sealing of the liner.
22 So the hydraulic conductivity was our target for design for
23 clay liners. Compacted liners." Let me just pause there
24 for a minute.

25 You agree with Mr. Reck, that ten to the minus

1 seven centimeters per -- I'm just going to keep on fumbling
2 over that -- per second -- that is actually the same
3 permeability that is in the combined CAFO and the --

4 A. He states ten to the minus six, which is the same as
5 what's in the CAFO general permit.

6 Q. Okay. That was my question. Thank you.

7 So let's continue. "Okay. And more specifically,
8 why were you looking, or why was the NRCS looking at the
9 issue of seepage? Was there some concern about seepage from
10 these impoundments?"

11 "Yes. We -- you -- you line -- you put in a liner
12 underneath a waste storage structure to slow down the
13 seepage out of the waste storage structure and to achieve
14 some other goals, such as filter out pathogens so that
15 pathogens do not -- are not -- do not leak out of the waste
16 storage structure.

17 "You're slowing down the rate of any nutrients that
18 are in the water that will move through the liner. You're
19 slowing the rate of that nutrient down to the point where
20 groundwater will be minimally impacted."

21 "What is it about Appendix 10D, or I guess, if you
22 will, back to 313" -- they're refer to Standard 313 -- "that
23 provides these functions? So let's maybe start with the
24 slowing of pathogens."

25 So again, here, do you understand the transcript to

1 be talking specifically about this issue of viruses or
2 bacteria migrating out of the storage facilities -- let me
3 ask that question a little bit better. Virus or
4 bacterias -- or another term -- pathogens can encapsulate
5 both of those things?

6 A. Pathogens are kind of a generic term for bacteria,
7 viruses, and there's other kinds of larger ones. So
8 there's --

9 Q. Yeah. So that would include -- pathogens includes
10 virus and bacteria?

11 A. Well, it's a generic term.

12 Q. Perfect.

13 Then you asked me to restate the question. We read
14 it back, and then the answer. "A compacted clay liner is a
15 soil that's been -- it's -- it's a mixture of, you know,
16 sand, silt, and high end clay that has been compacted to the
17 point where the particles are very close together, and that
18 slows down the movements of water through the liner.

19 "And the spaces between the particles is so small
20 that no solids can get through the liner. And that -- the
21 fact that no solids can get through the liner effectively
22 filters out all particles, including any microorganisms."

23 So would you say you disagree with Mr. Reck's
24 testimony there about the liner preventing or -- let me make
25 sure I get it correctly -- -- preventing the seepage of

1 microorganisms or pathogens through the liner?

2 A. So I have not seen any literature that specifically
3 addresses viruses, because viruses are very small.

4 That's -- that's one of the things that we were looking for
5 in the literature, was scientific evidence.

6 And Mr. Reck may have experienced, but until I see
7 scientific research that talks specifically about
8 viruses -- because they are so small -- I would have a hard
9 time assuming that they have been filtered out.

10 Q. So you didn't find any literature, but let's look back
11 at what Mr. Reck based Standard 313 and Appendix 10D upon.
12 So that is also in the transcript.

13 Let's -- so let's look at page 21 of the
14 transcript. Here we're talking about Conservation Practice
15 Standard 313.

16 Are you familiar with that standard?

17 A. Yes.

18 Q. Do you have an understanding about how 313 interfaces
19 with Appendix 10D?

20 A. My understanding is Appendix 10D is sort of the how-to.

21 Q. Yes.

22 A. And the -- 313 is sort of the high level -- "This is
23 the performance standard we want you to meet."

24 Q. Right.

25 A. Is that correct?

1 Q. Yes. And I believe that was Mr. Reck's testimony, as
2 well.

3 So here we're asking Mr. Reck to comment on -- I'm
4 just trying not to have to read the whole thing in here. So
5 hold on just a minute.

6 So here -- starting on page 21 of the transcript,
7 line 11, I was asking him a question about developing this
8 standard, and there was -- I was referring to the 313
9 standard. So let's -- "Thank you. I appreciate that
10 clarification. So in developing this standard" -- and
11 again, I'm going to represent to you that I was asking about
12 313 -- "did NRCS look to any particular research to
13 determine the basis for the standard?"

14 "So, yes, "is the answer. "As one of my job
15 responsibilities, I am to stay on top of current literature
16 having to do with our standard. So I am constantly
17 reviewing pertinent literature, as well as we go through an
18 extensive review process, both internal and external, and as
19 a part of the revision cycle."

20 My question. "And would you say that research
21 literature information that you have is the full basis for
22 the standard, or are there -- is -- are there other
23 considerations you take into account in developing the
24 standard?"

25 Answer: "There are other considerations."

1 Question: "What are they?"

2 "Like I said, we go through a process of review
3 with internal engineers who are using the standard at the
4 State level, as well as we put the standard out for revision
5 on the federal register and notify the public that we are
6 revising the standards and take comments, as well as
7 discuss -- have discussions with other professionals, the
8 university professors. I've met with ARS scientists.
9 That's the Agriculture Research Scientists, another branch
10 of the USGS."

11 Question: "Would you say the NRCS's implementation
12 of the standards over the years has been something that you
13 also draw on for purposes of developing or revising the
14 standards?"

15 Answer: "Definitely. NRCS maintains whenever
16 there's a failure of a lagoon, we do extensive reviews of
17 what was the cause of the failure. We have a series -- you
18 know, we basically create an engineering report of what
19 happened. And those reports are provided to the discipline
20 leads for the standards that we need for review and for
21 potential changes to the standard as a result of those
22 failure reports."

23 My question. "And that information is incorporated
24 into your determination about what the standard will be; is
25 that correct?" "That's correct."

1 Sorry. That was a little bit long. But I wanted
2 to confirm, if you will, that there is extensive research,
3 analysis, experience, information, and input that goes into
4 the background of the NRCS standard.

5 So with that in mind, would you say that when Mr.
6 Reck is talking about the impact of these liners, that there
7 is extensive information that goes into his statement that
8 there will not be a seepage of pathogens through the liner?

9 A. I guess my concern is that I'm looking for specific
10 research. I'm looking at -- when he talks about pathogens,
11 that's a generic term. So bacteria are rather large.
12 Viruses are very small. So bacteria might be attenuated,
13 but I have concerns about viruses, which are very, very
14 small.

15 And -- and before I can agree with his statement --
16 no doubt he's done extensive research. I'm not questioning
17 that. But I'm -- I'm questioning what exactly was the
18 specific research on manure lagoons with viruses.

19 Q. But you're not disputing that he did -- that this
20 standard is based on extensive research, literature review,
21 and experience?

22 A. No. I'm not doubting that.

23 Q. Okay.

24 And Appendix 10D does specifically say that one of
25 the goals of the liner is to prevent virus or bacteria from

1 migrating out of the storage facility; correct?

2 A. Correct.

3 Q. Then you were also talking about the second statement
4 back in Appendix 10D. "The storage is to prevent conversion
5 of ammonia to nitrate in the vadose zone." We talked about
6 the vadose zone. Just to make sure everybody's familiar
7 about -- with that term, where is the vadose zone?

8 A. It's the unsaturated zone.

9 Q. Would that be located beneath the lagoon? Would you
10 find that beneath the lagoon?

11 A. So you have the land surface, and you have groundwater,
12 and in between there, is the unsaturated zone. And so the
13 unsaturated zone really -- it depends upon what part -- how
14 much seepage is happening out of the lagoon. Whether
15 it's -- at what point it's saturated and what point it's
16 unsaturated.

17 Q. And that unsaturated zone, again, is the vadose zone?

18 A. Correct. Correct. Sorry.

19 Q. No. That's fine.

20 So let's turn back to Mr. Reck's testimony. You
21 said that you didn't agree with that statement; is that
22 correct?

23 A. What I -- what I stated was because I have concerns
24 about viruses, I would want to see specific research looking
25 at that. And I think his comments are fairly generic.

1 Q. But I'm asking you about this other statement. The
2 statement -- the second purpose of -- for limiting seepage
3 through the liner. Let's look back at Appendix 10D. Sorry
4 if that wasn't clear.

5 A. I'm sorry. I was confused.

6 Q. Right.

7 It says, "The second purpose, if you will, is to
8 prevent the conversion of ammonia to nitrate in the vadose
9 zone." That's another reason for limiting seepage.

10 Do you disagree that that is a purpose for limiting
11 seepage through a liner?

12 A. I don't disagree with that as a purpose.

13 Q. Okay.

14 Would you say that is consistent with Mr. Reck's
15 testimony, that the liner does accomplish that limitation?

16 A. So I can't say adequately. I've stated that I've seen
17 one scientific research article on that. And so one -- I've
18 seen one out of 170 that I reference in my literature
19 review.

20 So I would -- I would want to have a broader base
21 before I can say unequivocally, yes, I agree with that
22 statement.

23 Q. Okay. That's fine.

24 Let's look at where he's talking about that in his
25 declaration. Deposition. Let's turn to page 41 of the

1 deposition, line 11. Here we're actually talking about
2 the -- specifically about the same paragraphs, so it will
3 make it a little easier to follow.

4 My question. "Yes. It says limiting seepage from
5 an agricultural waste storage pond has two primary goals.
6 Do you see those?" "Yes. In that paragraph we were just
7 talking about."

8 "Okay. The first is to prevent any virus or
9 bacteria from migrating out of the storage facility to an
10 aquifer water source. We've already talked about that a
11 bit. And then it says the second is to prevent the
12 conversion of ammonia to nitrate in the vadose zone." I
13 trailed off a lot during this deposition. You'll see that a
14 few times.

15 Okay. Sorry. "In the vadose zone," which I then
16 spelled out.

17 "Can you explain that that second goal, if you
18 will, how -- how limiting seepage relates to the goal of
19 preventing conversion of ammonia to nitrate?" Again, they
20 didn't hear me very well. So let's skip down to line 15,
21 which is the answer.

22 "Yes. In the soil there are microorganisms that
23 will convert ammonia to nitrate in the presence of oxygen.
24 There are also other microbes that, in the absence of oxygen
25 and the presence of nitrate, can convert that nitrate to --

1 eventually to nitrogen gas. That process" -- sorry. "That
2 process -- if you -- what we believe happens when you
3 are -- when the seepage rate is too fast, the thing that you
4 need for microbes to make that conversion, you need the
5 presence of microbes. You need a food source. And then you
6 need the -- you need carbon and you need the nitrogen.

7 "When the seepage rate is too fast, we think the
8 nitrogen gets flushed below the zone where there's microbes
9 too quickly, and the microbes are not able to work on and
10 treat the nitrogen and basically convert it from ammonia to
11 nitrate, and eventually to nitrogen gas. By slowing down
12 that rate you give that zone underneath the liner -- you
13 give the microbes in that zone an opportunity to further
14 treat the nitrogen that moves through the liner in the
15 ammonia form."

16 "And is that process" -- this is my question -- "if
17 you will -- one of the considerations that NRCS takes into
18 account in putting together the CPS Standard 313?"

19 "So, yes, and no. Historically, we didn't know
20 that process that occurred. We knew that putting in a liner
21 at that rate impacted groundwater quality in a positive way.

22 "More recently, research has gone on that helped us
23 to understand, you know, what actually happens microbically
24 in these waste storage ponds."

25 Then I asked him if we could turn to -- let's go

1 ahead and do that for our purposes here -- to R-20. So if
2 you could turn to R-20.

3 So let me ask you, are you familiar with R-20?

4 A. I am.

5 Q. What is this document?

6 A. This is the research article that I mentioned just a
7 few minutes ago, that I had seen one research article that
8 talked about this coupled nitrification/denitrification
9 occurrence underneath a lagoon.

10 Q. What does "coupled nitrification/denitrification" mean?

11 A. So essentially, manure has two primary forms of
12 nitrogen. There's -- there's a bunch of different forms.
13 One of them is organic nitrogen, and one of them is ammonia.
14 Those are the primary forms.

15 In order for ammonia to convert to nitrate, it has
16 to have an aerobic environment. Oxygen. And before the
17 nitrogen -- the nitrate can be denitrified into a gas, it
18 has to have anaerobic conditions.

19 So what they're suggesting in this article that's
20 happening is first you have an aerobic situation that
21 converts it from ammonia to nitrate, and then an anaerobic
22 condition that converts is from nitrate to nitrogen gas.

23 Q. You also discuss that same process in a paper that
24 you've written; correct? You can say, "I don't know."

25 A. Can you -- I -- I discussed the nitrogen cycle in the

1 literature review.

2 Q. Earlier today we were talking about -- let's look
3 at -- well, we have it as I-23. Is that easier to get to,
4 rather than --

5 A. It's right here. Oh, I-23.

6 Q. This is the paper that you wrote estimating potential
7 impacts to groundwater quality from nitrogen loading?

8 A. Yes. For onsite sewage systems, yes.

9 Q. Do you remember talking about a similar sort of process
10 that can occur?

11 A. Yes.

12 Q. So the -- so have you seen that sort of a process
13 occurring in Washington State?

14 A. I haven't done the research specifically to -- where
15 I've noted that.

16 Q. But you talked about in this paper that it's a process
17 that can occur?

18 A. Yes.

19 Q. Is it a process that can occur underneath manure
20 lagoons?

21 A. Well, this is the -- the one study that I've seen
22 that -- that I can recall that talks specifically about
23 manure lagoons.

24 Q. Let's actually look at -- when you say "this study,"
25 you're talking about --

1 A. Baram 20.

2 Q. Baram --

3 A. Baram 12.

4 Q. I'm glad you said that because I'm never quite sure how
5 to pronounce his name.

6 So Baram is the primary author on that?

7 A. Correct.

8 Q. You've read this article?

9 A. I have.

10 Q. Have you read it recently? Are you familiar with its
11 contents?

12 A. I'd say it's been a couple months since I've read this.

13 Q. Let's look at page 7.

14 MR TEBBUTT: Your Honor, I'm going to object to
15 this line of questioning. This is one of those very
16 specific issues that we objected to before. The Baram study
17 was done after all the NRCS 313 stuff was created.

18 So this is expert testimony by Mr. Reck. It's an
19 attempt at expert testimony by Mr. Reck about a post-NRCS
20 313 study that has nothing to do with it. So this is
21 exactly why this stuff should not be coming in through Mr.
22 Reck.

23 MS. HOWARD: Your Honor, when we were asking Mr.
24 Reck about the question -- I can read it a little bit
25 more -- you'll notice that Standard 313, actually, was most

1 recently revised in 2016 or '17, I want to say.

2 So that, obviously, post-dates this 2012 study.

3 And if it's helpful, I can continue to read into the record
4 what he said about the study, and then we can come back to
5 this question.

6 Would that be useful?

7 JUDGE FRANCK: I think I'm going to just allow it.
8 I think that with the revision, I think all of this is
9 relevant.

10 MS. HOWARD: Okay.

11 BY MS. HOWARD:

12 Q. So we're going to give this a shot, Ms. Redding. If
13 you aren't familiar enough with the study, please let me
14 know and we'll move on in our questioning. Okay?

15 Looking back at the Baram article on page 7, that
16 middle paragraph.

17 A. Okay. So the pages are -- start at 1623.

18 Q. It will be 1629 on yours. It's page 7 in the PDF.

19 A. Got it.

20 Q. You see that middle paragraph on the left-hand column?
21 He's talking about examination of different forms of
22 nitrogen. Profiles from other studies on seepage from earth
23 and waste lagoons, and he refers to Ham and DeSutter. Ham
24 and, again, DeSutter, and a few others throughout that
25 paragraph, and a few other variations of those studies.

1 Do you see that there?

2 A. I do.

3 Q. Do you recall, does Baram rely upon those studies, as
4 well, to conclude that coupled nitrification/denitrification
5 occurs under lagoons?

6 A. So he's referencing Ham and DeSutter and Ham. But he's
7 talking about ammonia profiles. And -- wait a minute.
8 so --

9 Q. If you -- so -- that's okay. If you don't know the
10 answer to this question, we can move on, if it's too
11 specific about this particular study.

12 A. I don't know that Ham and Ham and DeSutter actually
13 looked at the coupled nitrification/denitrification
14 phenomenon.

15 Q. But in this paragraph he's explaining how he went back
16 and relooked at those studies, and if you look at the
17 bottom, he says, "Our calculation showed that in all of
18 these studies, regardless of the clay content, greater than
19 90 percent of the end mass was removed."

20 Do you recall reading through this particular
21 paragraph where he's talking about recalculating and
22 relooking at those studies to make that determination?

23 A. I see that.

24 Q. And that it was supportive of his results and
25 conclusions in the study that coupled

1 nitrification/denitrification was occurring beneath lagoons?

2 A. I see that.

3 Q. Okay. And let's look back at Mr. Reck's testimony --
4 his deposition testimony -- where he's talking about the
5 2012 publication, as well. This is back on page 44, line 9.

6 And he says -- I'm sorry. My question. "This
7 document is a 2012 publication from the "Journal of
8 Environmental Quality." Its author is, I think, Baram and
9 others. And it's titled, "Infiltration Mechanisms,
10 Controlled Nitrification/Denitrification Under Dairy Waste
11 Lagoons."

12 I asked him if that was the document he had in
13 front of me -- in front of him. He said, "Yes, it is."

14 "Are you familiar with this?" "Yes. Yes, I am."

15 "And does this particular paper speak to the
16 processes that you were just describing under impoundment
17 structures, liquid waste impoundment structures?"

18 "Yes, it does."

19 "And was this document one of the documents, if you
20 will, that you were referring to when you said you now know
21 or now understand from research more about what's going on
22 underneath impoundment structures built to Standard 313?"

23 And what does he say in response to that? What is
24 his answer? Line 6.

25 A. Oh, okay.

1 Q. I'll let you read for a minute here.

2 A. "This paper and other similar papers like it confirm
3 for us the process that was occurring underneath liners.
4 It -- it describes in more detail what we suspected."

5 Q. And my question was, "Is there any sort of a technical
6 term that you would refer to that process by?" And what
7 does he say?

8 A. "The author in this particular paper refers to it as
9 'coupled nitrification/denitrification process.'"

10 Q. So it does appear from this testimony, at least, that
11 NRCS does have research and studies to support its view that
12 nitrification/denitrification is occurring underneath
13 lagoons.

14 Is that a fair assessment of the testimony?

15 A. Yes.

16 Q. If nitrification/denitrification is occurring under a
17 lagoon, would that mean that some of the nitrates that make
18 their way through the liner, if you will, would not make
19 their way to groundwater?

20 A. Well -- so I do remember reading one -- an article that
21 was talking about denitrification that happens under a
22 lagoon, and they stated that -- this document specifically
23 was looking for conditions where you would find that to test
24 their hypothesis.

25 And while it can reduce the amount of nitrogen,

1 this study actually notes that there was -- I'm trying to
2 look for the concentration. I believe it was something like
3 73 milligrams per liter increase in groundwater.

4 Q. Right. My question is more general for you.

5 My question is --

6 A. Oh, I'm sorry.

7 Q. -- if nitrification/denitrification is occurring under
8 a lagoon, would that mean that nitrates that are seeping out
9 of the -- that they are seeping out of the lagoon, some of
10 those nitrates would not make their way to groundwater.

11 Is that correct, if that process is occurring?

12 A. Correct.

13 Q. So that might be another explanation for why seepage
14 out of a lagoon wouldn't necessarily have a negative impact
15 on groundwater; is that true?

16 A. Correct.

17 Q. So let's talk a little bit more about the NRCS Standard
18 313.

19 Are you aware that that standard -- let me make
20 sure, actually, that it's real clear what Standard 313 is.

21 Is Standard 313 a standard for animal waste
22 lagoons?

23 A. That's my understanding.

24 Q. And it's NRCS's standard. It's their Conservation
25 Practice Standard for animal waste storage lagoons?

1 A. Correct.

2 Q. And I'm going to use the term "lagoon" loosely. I
3 realize it's not precise, but I think that's what we're all
4 referring to when we're talking about these manure storage
5 lagoons or storage treatment.

6 A. Correct.

7 Q. So was Standard 313 the standard that was used for
8 manure lagoons in the 2006 CAFO permit for Washington State?

9 A. I don't know.

10 Q. Let's take a look. This is Exhibit R-18. Look at page
11 21. Page 21 of the document -- I think it's also page 21 of
12 the exhibit on the PDF. We can actually start on page 20.

13 Do you see there the reference under S5, "Waste
14 Storage Facilities"?

15 A. Okay.

16 Q. Sorry. If I'm going too fast, let me know.

17 A. No. I was looking at "Termination of Coverage." So I
18 was a little confused. But I see where it is now.

19 Q. Let's look at the waste storage facility term.

20 A. Okay.

21 Q. S5, page 20. Do you see that there?

22 A. I do.

23 Q. Then actually, if you'll turn to the next page, page
24 21.

25 A. Okay.

1 Q. What does that say for that -- in that first paragraph?

2 A. The top paragraph says, "All new or expanded waste
3 storage facilities constructed after the issuance date of
4 this permit must be sited, designed, and constructed
5 consistent with NRCS Conservation Practice Standard 313 for
6 Washington titled 'Waste Storage Facility.'"

7 Q. So does that appear to require Standard 313 as the
8 standard for waste storage facilities in the 2006 permit?

9 A. Yes.

10 Q. Do you know why Standard 313 wasn't used in the current
11 permits?

12 A. No, I don't.

13 Q. Would you agree that if Standard 313 was included in
14 the 2006 permits, that it would have had to have gone
15 through an AKART analysis?

16 A. You know --

17 MR TEBBUTT: Objection. Foundation.

18 JUDGE FRANCKS: I'm going to overrule that. I
19 think she can answer whether she knows or not.

20 THE WITNESS: I wasn't involved in the development
21 of the 2006 permit. So I can't say what -- how this got in
22 or why it's in or what the process was that it went through.
23 I just can't speak to that.

24 BY MS. HOWARD:

25 Q. As a matter of practice, would a term like this have

1 become a technology component of a permit if it hadn't gone
2 through an AKART analysis?

3 A. Again, I wasn't developing that permit, so I really
4 can't speak to that.

5 Q. In the 2017 permit that you went through in order to
6 determine whether to fit technology into the permit, did you
7 go through an AKART analysis as part of the group developing
8 the permit?

9 A. Well --

10 Q. I think you've already testified that you guys -- that
11 you did evaluate whether technology would be AKART or not
12 before it went into the permit, or at least Mr. Jennings
13 testified to that; correct?

14 MR TEBBUTT: Your Honor, I think the witness should
15 be allowed to answer the first question.

16 BY MS. HOWARD:

17 Q. If you can.

18 A. So can you repeat the question?

19 MS. HOWARD: I don't remember it now.

20 (Record read.)

21 THE WITNESS: I think I was confused on the 2006
22 permit. So for the 2017 permit, yes, there was an AKART
23 analysis done.

24 BY MS. HOWARD:

25 Q. Would it be fair to assume the AKART analysis would

1 have been done when developing the 2006 permit?

2 MS. BARNEY: Objection. The witness already said
3 that she wasn't involved in the 2006.

4 JUDGE FRANCKS: I'm going to sustain that.

5 BY MS. HOWARD:

6 Q. Have you been involved with developing general permits
7 before this particular permit?

8 A. Yes.

9 Q. And as a matter of practice, does Ecology do AKART
10 analysis before it puts a treatment term into a permit?

11 A. So my experience with the permits that I've worked on
12 has been from -- it hasn't been like this holistic, looking
13 at every single piece.

14 I've helped with the water treatment general permit
15 in a very limited way, and with a much earlier version of
16 the CAFO permit back in the 1990s.

17 But specifically, the AKART process, whether it
18 occurred, I couldn't say because my involvement may have
19 been different than what the permit team did.

20 Q. I understand that that is your experience. I'm asking
21 more generally, based upon your experience, is your
22 experience that Ecology goes through an AKART analysis
23 before it puts a treatment term into a permit, in your
24 experience?

25 MR TEBBUTT: Objection. Asked and answered.

1 MS. HOWARD: I think it's a different question. At
2 least I'm trying to make it a different question.

3 JUDGE FRANCKS: It's a different question, but I
4 think this needs to be the last one. Because I think we are
5 covering the same ground. But you can answer that one.

6 THE WITNESS: I would like to defer this to either
7 John Jennings or Bill Moore, who are actually in the Water
8 Quality Program, who actually work with permit development.
9 I think that's a more appropriate question to them.

10 MS. HOWARD: Let's do that so we can move on.

11 BY MS. HOWARD:

12 Q. Would you say that the NRCS standards for lagoons does
13 meet -- is a known standard?

14 A. Yes.

15 Q. Known technology?

16 Would you say that that it is also an attainable
17 standard? Meaning, that it's something that a permit holder
18 is able to do?

19 A. Yes.

20 Q. Would you say that it's also a reasonable standard?

21 A. Yes.

22 Q. Is that the definition of AKART? Is that the
23 definition --

24 A. Those are different -- those are key components
25 in -- in AKART. But --

1 Q. We already talked about the fact that a lagoon liner is
2 also -- addresses the prevention part of AKART; correct?

3 A. Correct.

4 Q. Would you agree that the NRCS standard for lagoons is
5 used across the nation?

6 MR TEBBUTT: Objection. Lack of foundation.

7 MS. HOWARD: I'm just asking for her understanding
8 about this particular point.

9 JUDGE FRANCKS: I'm going to allow her to answer
10 it.

11 THE WITNESS: Yes. That's my understanding.

12 BY MS. HOWARD:

13 Q. When you reviewed Mr. Reck's testimony, is that also
14 what he said?

15 A. Yes. That's what he states.

16 Q. Let's turn to -- let's look at the 313 standard.
17 That's, again, Exhibit R-9. Let's turn to page 3. I'm
18 going to ask you to work off of memory here for just a
19 moment, going back to the permit terms.

20 The permit term has a two-foot vertical separation
21 term regarding liners; is that correct?

22 A. Correct.

23 Q. And that is measured from where? Where is that --
24 where is the two-foot vertical separation measured from?

25 A. That is from the bottom of the outside of the lagoon

1 liner to the top of the water table.

2 Q. Does the NRCS standard, if you know, also have a
3 two-foot separation requirement in it?

4 A. Yes, it does.

5 Q. Let's look at that. This is, again, Exhibit R-9, page
6 3. See the language? It's about two-thirds of the way
7 down. "Design bottom elevation."

8 A. Yes.

9 Q. I'm going to make you read this time, if that's okay.
10 Can you just read that first sentence?

11 A. "Design bottom elevation. Locate the impoundment
12 bottom elevation a minimum of two feet above the seasonal
13 high water table, unless special design features are
14 incorporated that address buoyant forces and how much
15 seepage rate and nonencroachment of the water table by
16 contaminants."

17 Q. Do you understand -- and again, if you need to refer
18 back to Mr. Reck's testimony -- the reason for that two-foot
19 separation in the NRCS standard?

20 A. I believe he cited, predominantly, buoyant forces.

21 Q. Let's look at that really quickly, so we can be more
22 clear about that. Okay. This is page 61, line --

23 A. Wait a minute.

24 Q. I'm sorry. This is Exhibit I-6.

25 A. I've got it sitting in front of me.

1 Q. You're good. No. I'm glad you slowed me down.

2 A. Page 61.

3 Q. Exhibit I-6, page 61, line 20. This is my question.
4 So right below that foundation discussion in Appendix -- or
5 excuse me -- in Standard 313 is a paragraph that starts,
6 "Design bottom elevation." So we're talking about the exact
7 same paragraph here.

8 Do you see that?

9 A. Yes.

10 Q. And if you don't mind, would you read that paragraph,
11 just for ease of the court reporter reporting. And I am not
12 going to repeat that now. So let's skip down to line 11.

13 "Thank you. And I'd like to focus in on the
14 language 'impoundment bottom elevation.'

15 "Can you explain where that is on -- I'm just going
16 to use the term 'lagoon' for simplicity -- where is that
17 located?"

18 "So, yes. That term is -- NRCS uses it, again,
19 where the water stops and the liner begins. So it is the
20 bottom of the water and the impoundment. And let me try
21 this a different way." We then use a visual to have him
22 explain what I talked about with Mr. Jennings yesterday
23 about where that was.

24 And let's skip down. Let's skip down to page 67,
25 line 18. And I apologize. I'm not sure what page this is

1 in the PDF.

2 MS. HOWARD: Are you guys finding this okay? No?
3 Okay. What page is that in the PDF?

4 JUDGE FRANCKS: 66.

5 MS. HOWARD: Page 66. So it's off by a page, then.
6 Line 17. I'm sorry. Line 18.

7 BY MS. HOWARD:

8 Q. Okay. "Looking back at the actual 313 standard itself,
9 the design bottom elevation talks about a minimum of two
10 feet and impoundment being a minimum of two-feet above the
11 seasonal high water table.

12 "What is the purpose for that requirement, if you
13 will, the 313 standard?"

14 To which he answers, "Primarily, the purpose is
15 structural stability of the liner. If the water table is
16 too, high several things can happen. If you have a
17 geomembrane you can get what you call 'hold wails,'" which
18 we confirm was correct, "which is trapped air under the
19 geomembrane.

20 "If you have a clay liner and you have a water
21 table elevation that's higher than the water level in the
22 pond -- for example, when you empty out the pond. If you
23 have a high water table, you can have buoyant forces that
24 can cause basic structural failure of the clay liner.

25 "So first and foremost is structural stability of

1 the liner, and there are a couple of ancillary other
2 than" -- excuse me -- "a couple other ancillary benefits.

3 "Number one, if you have a liner and you have a
4 water table below that liner, it's a clay liner, you will
5 actually see -- you know, you can reduce the seepage rate.
6 Because as water moves down, when you move from a
7 higher -- or slower hydraulic conductivity layer to a higher
8 hydraulic conductivity layer, you will actually have water
9 buildup, and that interface will stop before it moves. So
10 there can be some slowing of the water down. Those are the
11 two primary reasons."

12 So would you agree that Mr. Reck is describing the
13 purpose of the design bottom elevation to be primarily for
14 protection of the structure itself?

15 A. Yes. And I believe that's what I stated. That
16 the -- his -- his definition of the use of the minimum
17 vertical separation is for structural integrity.

18 Q. And the two-foot separation in the permit, is it
19 measured from a different location than where this Standard
20 313 is measured from?

21 A. It is.

22 Q. Okay.

23 And what is sort of the variance of that
24 difference?

25 A. So we're looking at the bottom of the outside of the

1 lagoon. And again, this is for treatment of viruses,
2 because you need that unsaturated zone. And particularly --

3 Q. Pardon me. That's your view of what that purpose is
4 for. That isn't consistent with Mr. Reck's view; correct?

5 A. Correct.

6 Q. As we read earlier?

7 A. Correct.

8 Q. So the two-foot difference just specifically -- I'm
9 trying to get a sense of how the permit standard, given
10 where it's measured from for, the two-foot vertical
11 separation -- what the difference is between that and the
12 NRCS standard, and where the two-foot vertical separation is
13 measured from.

14 So what's kind of the variance in the -- in the
15 spacing, if you will?

16 A. So I think -- I think the concern is that -- so say you
17 have -- if we were to -- to measure from where Mr. Reck says
18 and the NRCS, from where the water stops at the top of the
19 lagoon, and say you have a two-foot liner, you would --

20 Q. I'm asking you -- I'm sorry. It was probably a bad
21 question.

22 But the -- the question I'm asking, so what is the
23 typical size of a clay liner? You talked about this
24 yesterday in your testimony.

25 A. I don't think that I did.

1 Q. Okay. Let's look at that really quickly. Let's look
2 back at Appendix 10D. This is Exhibit R-6. I'm sorry that
3 I'm asking you bad questions. So bear with me just a
4 minute. I would blame it on my eye, if I could. Wrong
5 document. Let's try a different one.

6 A. Okay.

7 Q. I-14. If you could look at page 2. This is an exhibit
8 we entered in earlier. I-14 is the NRCS Conservation
9 Practice Standard 520, and this is for pond sealing or
10 lining compact -- compacted soil treatment.

11 Let's look at page 2. At the top you see Table 1.

12 A. Yes.

13 Q. Have you seen that table before?

14 A. I may have. I don't recall.

15 Q. I thought you had testified yesterday that you had
16 taken a chart from NRCS regarding the liner thickness and it
17 was in your literature review.

18 Do you recall that testimony? No?

19 A. I don't think that this table -- if I stated that, I
20 don't think this is the table I was referring to. But I'm
21 not remembering that statement off the top of my head.

22 Q. Okay.

23 So let's just look at this table, and what is it
24 describing here, Table 1?

25 A. Minimum liner thickness by design storage depth.

1 Q. And what is the variation in liner thickness?

2 A. 12 inches to 24 inches.

3 Q. So would you agree that those are typical sizes for a
4 clay liner under a manure lagoon based on the analysis that
5 you've done for purposes of developing this permit?

6 A. Well, again, I don't know that I quantified what liner
7 thicknesses were in the process of doing the permit
8 development. It states here that the liner thickness is
9 anywhere from one foot to two feet.

10 Q. Okay. So let's say that it is a two-foot clay liner.

11 A. Okay.

12 Q. If we compared the NRCS standard with the State
13 standard for the two-foot vertical separation, how many more
14 feet would existing lagoons have to add in order to meet the
15 State standard?

16 A. Well, this essentially -- like, if we were to assume
17 that the liner thickness was two feet, it would be
18 essentially saying there's no vertical separation between
19 the liner and the top of the water table.

20 Q. Right.

21 So how many feet would you have to add in that
22 particular situation in order to meet the State standard?

23 A. Two feet above unsaturated zone.

24 Q. So in that particular situation, if you had a two-foot
25 clay liner, it would be in compliance with the NRCS

1 standard, but not in compliance with the State standard;
2 correct?

3 A. Well -- and to be clear, the NRCS are guidelines rather
4 than standards.

5 Q. Well, they're called "Conservation Practice Standards,"
6 so I'm using that nomenclature.

7 A. Well, but they're not -- in terms of -- I think there's
8 a difference between a NRCS standard and a State standard,
9 and I think John went over that in his testimony.

10 Q. I understand that. I'm just trying to compare the two
11 right now.

12 A. So there's a difference between what NRCS is saying and
13 what the 2017 general permit for CAFO is saying.

14 Q. And if a clay liner is typically -- let's say -- let's
15 say it's the two foot that we're talking about here, would
16 an existing lagoon -- if it met the NRCS standard,
17 would -- in order to comply now with the State standard,
18 would you have to add an additional two feet in order to
19 meet the two-foot vertical separation required under the
20 permit?

21 A. If there was no vertical separation between the bottom
22 of the lagoon, the liner, and the water table, that would be
23 a direct discharge of manure into groundwater.

24 Q. I understand that's your opinion. But my -- my
25 question --

1 A. Okay. So, yes.

2 Q. -- is simply talking about the structure itself.

3 So under the State standard, you have to have two
4 feet of separation from the bottom of the lagoon liner to
5 ground -- the high groundwater table; correct?

6 A. Correct.

7 Q. Okay.

8 Right now, if under the NRCS standard that is not a
9 requirement -- you have a lagoon right now that meets NRCS
10 standards and that is not the requirement -- correct? We've
11 established that.

12 Is that correct?

13 A. Correct.

14 Q. So if you have to now add on this additional two feet
15 of vertical separation under the CAFO permit, are you not
16 having to he create an additional amount of liner, if you
17 will, or additional amount of soil in your lagoon in order
18 to meet the State standard?

19 A. Well, okay. So I guess I'm thinking that -- I guess
20 I'm thinking that if -- if a lagoon were constructed into
21 the water table, that would be an issue.

22 So there's -- there's -- you're saying if that is
23 the case, would they have to do some modifications in order
24 to create that two foot of unsaturated zone to comply with
25 the permit?

1 Q. Well, does the NRCS standard actually allow you to
2 build a lagoon into the seasonal groundwater table?

3 A. But that's exactly -- if the liner intersects the water
4 table, then that --

5 Q. My question was whether the NRCS standard allows you to
6 build a lagoon into the groundwater table? Yes or no? Do
7 you know?

8 A. Well, okay. So there's two things here. One, I'm
9 looking at this table that says a liner thickness of two
10 feet. So that conceivably could be you have two feet, and
11 that's your vertical separation to the water table. Then
12 that would be constructed right up to the water table.

13 Does the NRCS say you shouldn't do that? Yes.

14 Q. Thank you. That was my question.

15 A. Okay.

16 Q. Let's put a visual up. Maybe I can ask my question
17 better that way.

18 Let's go to R-7, Appendix C. This is what we were
19 looking at with Mr. Jennings yesterday.

20 A. Okay.

21 Q. That appears to be page 29 in the PDF. So looking at
22 Appendix AC, do you recall this figure from testimony on
23 Monday?

24 A. Yes.

25 Q. Again, the NRCS standard requires a two-foot separation

1 be from Point 1; is that correct?

2 A. So when I read this document --

3 Q. We already established this, I believe, with the
4 testimony on Monday.

5 Is Point 1 the impoundment bottom elevation?

6 A. Point 1 is the bottom of the liquid, the top of the
7 liner. Yes.

8 Q. So and is that what you consider to be the bottom of
9 the lagoon liner?

10 A. No.

11 Q. Where is the bottom of the lagoon liner?

12 A. The small number "2."

13 Q. So when you're measuring the two-foot vertical
14 separation, where are you measuring from under the permit
15 terms?

16 A. From the little "2" down to the top of the water table.

17 Q. So if there is a one-foot clay liner between Point 1
18 and Point 2, would you agree that the State standard is
19 requiring an additional amount of construction in the lagoon
20 in order to make a two-foot vertical separation from what
21 the NRCS standard requires?

22 A. Yes.

23 Q. Thank you. I'm sorry I was not asking a very good
24 question before.

25 Let's look again at the permit terms. Let's look

1 at Part 1, page 36. This condition is S7B.

2 What is this condition for?

3 A. Existing lagoon assessment.

4 Q. What is the assessment that's required for existing
5 lagoons?

6 A. Essentially, we're asking permittees to use the
7 Washington NRCS Technical Note 23 to do an assessment of
8 their existing lagoon.

9 Q. The fourth paragraph down in that section says -- it
10 says what?

11 A. "If the lagoon assessment determines that there are
12 less than two feet of vertical separation from the bottom of
13 the lagoon liner, as measured from the outside of the liner,
14 and the water table, including seasonal high water tables,
15 the permittee has six months from completion of the lagoon
16 assessment to develop a plan to address this deficiency."

17 Q. You can stop there.

18 The lagoon assessment that's listed there, is that
19 developed under Tech Note 23?

20 A. Correct.

21 Q. Let's look at Tech Note 23. I'll get you an exhibit
22 number real quick. R-10. Let's look at -- so it's -- does
23 this one have page numbers on it? Page 22 in my version.

24 Do you have page numbers on the bottom?

25 A. Yes.

1 Q. Here we're looking at Tech Note 23. Can you see the
2 chart on page 22?

3 A. Yes.

4 Q. What does the chart appear to be referring to?

5 A. It's -- the title is, "Waste Storage Pond Practice
6 Standard Compliance Report Form."

7 Q. And the next -- the gray shaded portion of the chart
8 there, what does it say?

9 A. "NRCS Practice Standard 313 Compliance Check."

10 Q. Does it appear that Tech Note 23, then, is relying on
11 NRCS Practice Standard 313 to determine whether a lagoon is
12 in compliance?

13 A. Correct.

14 Q. And Item No. 9 there, can you read -- read that?

15 A. No. 9 is, "Separation distance from waste storage pond
16 bottom and seasonal high groundwater table."

17 Q. So would you agree if you're using the NRCS Standard
18 313 to look for separation between the storage pond bottom
19 and the high groundwater table, would you come up with a
20 different answer as to whether you're in compliance using
21 the 313 standard than you would if you were using the permit
22 standard?

23 A. Yes.

24 Q. But the permit does rely on this particular checklist
25 in order to determine whether or not the lagoon is in

1 compliance; correct?

2 A. Correct.

3 Q. Let's look at Exhibit R-5. If you don't mind turning
4 there, please. We've already talked about this a bit. This
5 was your implementation guidance for groundwater quality
6 standards.

7 A. Okay.

8 Q. Can you turn to page 25 in the document, and I think
9 it's page 40 -- page 37 in the PDF. There at the bottom of
10 that, 4.2.4 -- nope. 4.2.1.4.2 -- you had have fun with
11 numbers on this document, didn't you? Let's see.

12 There at the bottom you make a statement. What's
13 the last sentence there? The last complete sentence.

14 A. Okay. "All liners leak to some extent."

15 Q. Does that mean that all liners cause pollution of
16 groundwater?

17 A. That's not what that sentence says.

18 Q. What's the distinction?

19 A. You can have seepage out of a lagoon. You can have a
20 discharge. But that's different than an impact to
21 groundwater, and then that's also different from pollution
22 of groundwater.

23 Q. So just saying that a lagoon leaks doesn't necessarily
24 mean that a lagoon pollutes.

25 Is that a fair summary of what you just said?

1 A. Correct.

2 Q. And you are the author of this document; correct?

3 A. Correct.

4 Q. When you are evaluating that question about whether
5 liners leak -- if you could just turn to the next couple
6 pages.

7 On page 27, which is page 39 on the PDF, do you see
8 an equation in the middle of that page?

9 A. Yes.

10 Q. What is that equation?

11 A. It's essentially Darcy's law from looking at seepage
12 from a lagoon through the liner.

13 Q. When you were evaluating that question about whether
14 liners leak, did you rely on this particular equation here
15 in this document?

16 A. Yes, I did.

17 Q. We had also talked about a couple of -- well, I think
18 one study, in particular, the Erickson study.

19 Do you recall talking about that yesterday?

20 A. Dennis Erickson?

21 Q. Dennis Erickson.

22 A. Yes.

23 Q. And that was a study of four lagoons, if I remember
24 correctly. Let's turn to that real quickly. I think that's
25 R-11.

1 The results of that study -- again, I think you
2 summarized them yesterday, but just for helping us to keep
3 track here, there were four different lagoons evaluated, and
4 did all of those lagoons cause pollution to groundwater?

5 A. He found that in -- that three of the four lagoons that
6 he studied, that there were impacts to groundwater.

7 Q. Let's look at the chart on page 41 of that document.
8 Page 51 on the PDF. Sorry about that.

9 Do you see the column that says "Leakage Detected"?

10 A. Yes.

11 Q. Out of those lagoons that were evaluated, did all of
12 them have leakage detected?

13 A. No. The Sheridan Dairy in Lewis County did not have
14 leakage detected.

15 Q. The remark right next to that says what?

16 A. "Designed with SCS assistance."

17 Q. Do you know what "SCS" stands for there?

18 A. It was -- it was what was formerly called the "NRCS
19 data." They've changed their name.

20 Q. Was it Soil Conservation Service?

21 A. Yes.

22 Q. The lagoons above that, what was the comment about
23 leakage detected?

24 A. "Leakage detected: Yes."

25 Q. And the column to the right, the remarks there. Do any

1 of those say that those were designed to NRCS standards or
2 SCS standards?

3 A. The -- the remarks are, "Designed and constructed
4 without SCS assistance."

5 Q. Right.

6 And my question was whether -- good point. But the
7 question is really -- I mean, from these remarks, does it
8 appear that any of those lagoons were designed to SCS -- or
9 what are now NRCS standards?

10 MR TEBBUTT: Objection. Calls for speculation.

11 MS. HOWARD: I'm just asking her to look at the
12 statements and tell us what she can discern from those
13 statements.

14 MR TEBBUTT: Pure speculation.

15 MS. HOWARD: I don't think so. She can read those
16 and determine whether or not they say that NRCS standards
17 were used.

18 JUDGE FRANCKS: I'm going to allow her to the best
19 of her ability.

20 THE WITNESS: So there's essentially four different
21 lagoons that were looked at. Or -- or facilities. And one
22 of them had a settling pond and a main lagoon.

23 So the first one, they detected leakage and it was
24 designed and constructed without SCS assistance. The second
25 one, leakage was detected, and it says, "Originally designed

1 with SCS assistance. Lagoon was widened without SCS
2 assistance."

3 Third one, "leakage detected: Yes." It was
4 designed by SCS, but construction was not overseen.

5 BY MS. HOWARD:

6 Q. Again, I realize these are just the remarks in the
7 document. From those remarks, does it appear that these
8 lagoons -- is there any indication from these remarks that
9 those lagoons were designed to SCS or NRCS construction
10 standards?

11 A. It's tough to know with the first two because it says
12 that SCS wasn't involved. The second one says it was
13 involved with the design, but I think there's -- they don't
14 know how exactly it was constructed. So I can't speak to
15 whether or not it was actually designed and constructed that
16 way.

17 Q. There's no affirmative representation here --

18 A. No.

19 Q. -- that it was designed to NRCS standards?

20 A. So I can't speak to that. Then the last one, no
21 leakage was detected, and it was designed with SCS
22 assistance.

23 Q. Okay. Thank you.

24 Earlier today you were asked a question about soil
25 moisture probes and whether those are conditions in the

1 permit, and I believe you said that they are not; is that
2 correct?

3 A. Correct.

4 Q. Do you know why they are not? Is there a particular
5 reason why soil moisture probes are not a condition in the
6 permit as not anything that you looked at?

7 A. I think that the -- what the permit talks about is
8 that's an issue that needs to be addressed. But the permit
9 allows flexibility in how that's done. So we don't
10 specifically state that you have to use a certain method.

11 Q. So if the soil moisture probes would be helpful in
12 complying with the terms of the permit, Ecology would be
13 fine with using that technology?

14 A. Correct.

15 Q. But it's not mandated by the permit?

16 A. Correct.

17 Q. Even without that condition, Ecology would still expect
18 the permit holder to comply with the terms of the permit; is
19 that correct?

20 A. Correct.

21 Q. Yesterday you talked about the acronym as "ARM."

22 What does that stand for?

23 A. Applied Risk Management.

24 Q. You made a statement -- correct me if I get this
25 wrong -- that your concern with that -- or at least one

1 concern -- excuse me -- was that it allowed applications at
2 a time they are at low risk for surface water but high risk
3 for groundwater.

4 Am I getting that correct? Is that what you said?

5 A. Correct.

6 Q. And what's the -- what was the concern with regards to
7 groundwater? What was -- that made it high risk for
8 groundwater.

9 A. So when you've got a storm event, the water's going
10 somewhere. And it's either running off the land, or it's
11 infiltrating into groundwater. So when there's not a crop
12 that's actively taking up a large portion of that, the
13 water's going somewhere.

14 Q. What is it specifically about the ARM protocol that
15 caused you to have the concern about high risk to
16 groundwater at the same time that there was low risk to
17 surface water?

18 A. Okay. So I'm trying to think back. Because this was
19 put in front of me years ago. And actually, I was not part
20 of -- there was a small group of people that were actually
21 specifically involved with the EPA, the USGS, and Whatcom
22 County Conservation District, in terms of reviewing their
23 proposal, and I was not one of those. So I'm sort of
24 struggling to remember the specifics of -- of that.

25 Q. Okay.

1 So ARM is used by the Whatcom Conservation
2 District; is that correct?

3 A. Correct.

4 Q. What do they use it for?

5 A. They use it for finding windows of time to apply manure
6 during essentially the winter months, when normally they
7 wouldn't be applying.

8 Q. Are they doing that as part of the Dairy Nutrient
9 Management Program?

10 A. You know, I can't say off the top of my head.

11 Q. Okay.

12 A. Because, again, my involvement is very limited.

13 Q. Okay.

14 And T-sum 200. We also talked about that a bit
15 yesterday. Is that -- have you seen T-sum 200 used on the
16 east side of the State to determine when to implement
17 applications?

18 A. I'm trying to recall how T-sum 200 came into the
19 permit. Because I know I reviewed it in the literature
20 review. And I don't know if it was -- we had a meeting
21 with -- with industry scientists.

22 I know Larry Johnson from the NRCS was there, and
23 Kevin Lindsey was there. We were talking about -- about a
24 lot of different technical issues. And so I don't know if
25 the T-sum 200 was brought up in that meeting -- I think that

1 was 2016 -- or whether it was brought up in comments that
2 were received on the final draft permit. I'm trying
3 to -- I'm trying to recall.

4 Q. That's okay. My question was maybe a little bit more
5 specific, related to whether you reviewed any information
6 confirming for you that T-sum 200 had been used on the east
7 side of the state for purposes of making decisions about
8 when to apply?

9 A. No. I have no -- no, I have not.

10 Q. Do you recall that issue coming up in discussions when
11 you were developing the permit, that specific consideration
12 about whether T-sum 200 was used on the east side of the
13 state for purposes of making decisions about land
14 applications?

15 A. Well, I believe our discussions were, because it
16 involved temperature units, that it allowed for the
17 variances that you would have on the east side versus west
18 side.

19 So I believe the thought process was, is that does
20 take into account site-specific conditions.

21 Q. And that was your internal discussion?

22 A. Correct.

23 Q. When you talked yesterday -- or you talked about
24 Exhibit R-15. Let's turn to that. That's the Carey and
25 Harrison report.

1 A. R-15?

2 Q. Yes. I'm just having you turn to it so you can recall
3 which document that was.

4 A. Okay.

5 Q. You reviewed this document; correct?

6 A. Correct.

7 Q. It was part of the literature review that you put
8 together for purposes of the permit development?

9 A. Correct.

10 Q. Do you remember in reviewing this document whether
11 there was any discussion about whether the land applications
12 that were being made were being made at agronomic rate?

13 A. So they -- they did talk about whether it was -- the
14 applications were at agronomic rate or --

15 Q. Do you recall if they were?

16 A. They had some years where they were and some years
17 where they weren't.

18 Q. Are you familiar with the process of "mineralization"?

19 A. Yes.

20 Q. What is that?

21 A. So mineralization is a transformation which when you
22 have organic nitrogen, which is fairly immobile, and that's
23 a biologic process where it converts it into ammonium, which
24 is then a plant available form.

25 Q. In the nutrient budgets that are required under the

1 permit, are the permit holders required to take account for
2 mineralization in their N loading and nutrient budget?

3 A. Yes, they are.

4 Q. Let's look at the literature review for just a moment.
5 That's R-4. You probably all have that memorized at this
6 point. If you could look at page 46. The PDF on
7 that -- PDF page is page 48.

8 Is this where you begin your discussion about
9 spring and soil nitrate tests?

10 A. Yes.

11 Q. Here you say the purpose -- can you just read that
12 first sentence of the purpose for the spring soil sampling?
13 I'm sorry. That first paragraph under, "Spring soil nitrate
14 test," the big, blue bold.

15 What does the first sentence in that first
16 paragraph say?

17 A. "Spring soil sampling is used to assess conditions
18 before the growing season and to calculate the application
19 rates based on the crop needs."

20 Q. When exactly are you anticipating that the spring soil
21 sample would occur under the permit terms?

22 A. So it's -- it specifies in the permit when that has to
23 occur.

24 Q. Let's turn to that.

25 A. Yeah.

1 Q. Can you tell me where that is?

2 A. Is that R-1?

3 Q. Yes. R-1. Let me try to get you the page number, as
4 well.

5 A. Is it 18?

6 Q. 18. Yes. Well, that's where it talks about spring
7 soil sampling.

8 Do you see a date in there?

9 A. There is no date for spring soil sampling. It uses the
10 T-sum 200.

11 Q. So in general, when would that be during the year? Do
12 you know?

13 A. So again, T-sum 200 is based on average maximum and
14 average minimum, and as soon as you -- the cumulative heat
15 units -- as soon as you add those up and reach 200, that
16 would be the starting point. And that's site-specific,
17 because it really depends on the temperature.

18 Q. Do you have a sense for when T-sum 200 is normally
19 reached on the west side of the state?

20 A. Off the top of my head, I couldn't say.

21 Q. Okay.

22 Mineralization -- is the extent of mineralization
23 impacted by temperature?

24 A. Yes, it is.

25 Q. So would there be a connection between how much

1 mineralization would have occurred at a particular time
2 based on how warm it has been?

3 A. The research that I've seen talks about it's
4 temperature dependent, but that it continues even in
5 freezing temperatures. So some mineralization is continuing
6 throughout the entire year, but it's definitely -- more is
7 occurring in the warmer -- in warmer temperatures.

8 JUDGE FRANCKS: Ms. Howard, we're approaching the
9 lunch hour. I'm just wondering whether you're close to done
10 or whether we should take a break now?

11 MS. HOWARD: I am actually close to done. So maybe
12 I can just wrap it up with just a couple more questions.

13 JUDGE FRANCKS: That would be fine.

14 BY MS. HOWARD:

15 Q. You talked some about the food processors and that you
16 had done some work with food processors and land application
17 yesterday.

18 You're nodding your head "yes"?

19 A. Correct.

20 Q. Do you remember that?

21 A. Yes.

22 Q. With the food processors that you worked with, did they
23 have a cover crop during the winter months?

24 A. I believe they did. But I --

25 Q. Do you recall what it was? It's okay if you do not.

1 A. Not off the top of my head.

2 Q. Just -- when they were doing winter applications, were
3 they always doing it on a field with a crop? Do you
4 remember, in your experience?

5 A. I can't -- I can't remember off the top of my head.

6 Q. Okay.

7 A. I believe those documents were submitted as part of
8 discovery. So they are -- they're somewhere.

9 Q. All right.

10 With regards to fall soil samples, we talked about
11 that yesterday, as well. And I'm referring to the Sullivan
12 and --

13 A. Cogger.

14 Q. -- Cogger document, which is one of the documents we've
15 admitted. I think it's R-12. Let's look at that, just to
16 make sure we've got that confirmed.

17 A. Yes.

18 Q. You pointed specifically to this document as having an
19 October 1st date.

20 Do you recall that?

21 A. Yes.

22 Q. Did you look at other literature when you were trying
23 to determine a date for when soil -- fall soil sampling
24 should occur in your literature review?

25 A. Yes, I did.

1 Q. Do you recall whether there was any other literature
2 that you looked at that had an October 1st date?

3 A. So there's a report that I cited in the literature
4 review, and I believe it's Barry -- Barry and -- I'm not
5 quite sure who the other authors were. Off the top of my
6 head, I can't remember the date.

7 But he -- he talks about -- I believe it's, like,
8 August 15th through October 1st is when a fall soil nitrate
9 sample should be taken.

10 Q. And do you recall what area of the country he was
11 looking at when he made that recommendation?

12 A. I believe he's out of Western Oregon, also.

13 Q. Let's look at that so we can identify it more
14 specifically. Again, this is R-4.

15 A. So in the "Reference" section, it's Barry, Cogger, and
16 Sullivan.

17 Q. What page are you looking at?

18 A. The "Reference" section on page 105.

19 Q. Just a minute. Let me get there with you.

20 A. Okay. It was developed in the year 2000, and the title
21 is "Fertilizing with Manure," and it was done out of the
22 Washington State University Extension.

23 Q. And this is also the Cogger and Sullivan that were in
24 Exhibit R-12, as well?

25 A. Correct.

1 Q. Again, you're recalling that they had talked about an
2 August to when timeframe?

3 A. I thought it was August 15th to October 1st.

4 Q. Was that also based on trying to get a soil sample
5 prior to the heavy rain?

6 A. It was -- it was trying to get it after maximum crop
7 uptake. I showed the chart yesterday, where you have the
8 peak nitrogen uptake by a crop.

9 It was getting that -- taking it in between --
10 right after peak crop uptake and before heavy rains.

11 Q. So it was trying to have the fall soil sample prior to
12 heavy rains?

13 A. Correct. Correct.

14 Q. Was that the driver on that timeframe for that
15 particular study? Do you recall?

16 A. I think it was the combination of the two. And looking
17 at how -- how do we -- I think the concern was that -- when
18 you take the fall soil nitrate sample is pretty critical.
19 Because if you take it too late, you potentially could miss
20 the nitrate that's in the soil column.

21 And if we're using the -- the fall soil nitrate
22 sample to drive our adaptive management matrix, we need an
23 accurate accounting. So we want to make sure that we're
24 capturing what the true fall residual soil nitrate value is.
25 And that's why, then, we also had the allowance that if you

1 went after the October 1st date, that you could -- you could
2 still collect a sample and be in compliance. We would just
3 ask you to go deeper into the soil. So we would capture
4 anything that maybe had leached.

5 Q. So again, your goal with the fall soil sample is to
6 collect it before there are too heavy of rains so that you
7 can make that analysis; is that correct?

8 A. Correct.

9 Q. Then you also want to make sure that you're collecting
10 a sample that is representative of how much nitrate you have
11 in the soil going into the winter months; is that correct?

12 A. Correct.

13 MS. HOWARD: Your Honor, I think I'm done. Thank
14 you. 12:01.

15 JUDGE FRANCKS: Let's break for lunch. Come back
16 at 1:00, and we will proceed. We are off the record.

17 (Lunch recess.)

18 JUDGE FRANCKS: I think we're ready for board
19 questions of Ms. Redding.

20 MS. BARNEY: Your Honor, Ecology at this point
21 would request a brief redirect.

22 JUDGE FRANCKS: Okay.

23 MR TEBBUTT: Your Honor, there are a few questions
24 I would like to ask based on Industry's direct based on new
25 issues.

1 JUDGE FRANCKS: All right. Ms. Barney and Mr.
2 Tebbutt.

3

4

REDIRECT EXAMINATION

5 BY MS. BARNEY:

6 Q. Good afternoon, Ms. Redding.

7 I think a moment ago you said if someone refers you
8 to the binders again, you're going to get upset. That's
9 going to be me.

10 A. I'm just trying to clean them up.

11 Q. If I can refer you to Exhibit A-20 that you discussed
12 with Mr. Tebbutt a little earlier today.

13 A. Okay. I'm there.

14 Q. Can you tell us again what this exhibit is?

15 A. This is an e-mail from me to Kelsey Dunne, who is in
16 our Waste -- Waste Resources Program. Essentially, our
17 Solid Waste Program.

18 Q. Can you tell us the date of this e-mail?

19 A. This was February 24th, 2017.

20 Q. Was that before or after the CAFO permits were issued?

21 A. It was after.

22 Q. Can I ask you to turn to the top of the second page,
23 please. Sort of the very bottom of the first page, but to
24 the top of the second.

25 Is this the earlier e-mail in this chain?

1 A. Correct. So Kelsey sent me the first e-mail, and then
2 the top portion is my response to Kelsey.

3 Q. Can you tell us the context of the top portion of your
4 response, then?

5 A. So the Waste Resources Program deals with bio solids
6 land application. And Kelsey had seen my manure and
7 groundwater literature review and noticed that there were
8 similarities between other land treatment systems that I had
9 reviewed, like for manure, and what they were dealing with
10 bio solids.

11 So they have a very specific case in Shelton that I
12 believe is going to the PCHB -- or has -- and she was asking
13 for some advice with the context of this.

14 Q. So would that be at the top of the second page, where
15 she says, "This relates to the facility we spoke of last
16 week"?

17 A. Yes.

18 Q. So your discussion there of the depth of sample
19 collection, is that specifically related to that facility?

20 A. Yes, it is. This is -- Waste Resources was issuing an
21 individual permit. This is a land application facility that
22 had been in operation for lots of years. A lot of
23 over-application. And so she was asking my advice about
24 how -- from a land treatment perspective.

25 Q. Thank you.

1 Mr. Tebbutt asked you to read from several
2 different documents, Ecology documents, with regards to the
3 use of groundwater monitoring. And I know you had testified
4 to this yesterday.

5 Could you please remind us, what does groundwater
6 quality monitoring tell us?

7 A. So groundwater monitoring can tell you what's in the
8 groundwater at the time that you take the sample, and it --
9 it's limited in terms of what it can tell you, depending
10 upon the constituent that you sample.

11 Like, if we're only looking at nitrate, it can't
12 tell you the source, and it can't tell you when that nitrate
13 was discharged to the land surface. All it tells you is a
14 concentration in groundwater.

15 Q. So can you give us your understanding of why
16 groundwater monitoring is not in the permit?

17 A. Well, groundwater monitoring -- it's -- it's a complex
18 undertaking, and there's a lot of things that have to be
19 taken into consideration.

20 So, for one, there's that lag time. So we talked
21 about yesterday about what happens at the land surface, and
22 by the time it actually goes through the vadose zone,
23 reaches groundwater, and then in groundwater travels
24 horizontally to the well, that takes a certain amount of
25 time, and that time is based on site-specific

1 characteristics.

2 So if we want to get immediate feedback on what a
3 facility is doing and how they can improve from year to
4 year, groundwater monitoring isn't going to tell us -- or
5 tell the permittee how to improve their manure management
6 practices.

7 Q. Thank you.

8 Then in response to Ms. Howard's questions, she
9 asked you if you relied on NRCS standards in the literature
10 review, and your response was yes.

11 What did you mean by "relied on"?

12 A. Well, we -- we took a look at a lot of NRCS documents,
13 because they do relate to manure management. And so we
14 would be remiss if we didn't look at those documents.

15 But I think what we need in a permit might be
16 different than what NRCS is proposing in one of their
17 guidance documents.

18 So we use that information, and it certainly was
19 used in my literature review. But we didn't necessarily use
20 that as our only basis for developing a permit or permits.

21 Q. Thank you.

22 Just one last question. If you'll look at R-1, the
23 combined permit, on page 36.

24 A. Yes.

25 Q. So this is the section of the permit, S7.B, that's

1 discussing the existing lagoon assessment?

2 A. Yes.

3 Q. If you'll look at the fourth paragraph down, that
4 starts, "If the lagoon assessment determines." I'll just
5 read it.

6 A. Okay.

7 Q. "If the lagoon assessment determines that there are
8 less than two feet of vertical separation from the bottom of
9 the lagoon liner as measured from the outside of the liner
10 and the water table, including seasonally high water tables,
11 the permittee has six months from the completion of the
12 lagoon assessment to develop a plan to address this
13 deficiency." Then it lists some elements the plan must
14 include.

15 So is it your understanding that after a facility
16 completes its Tech 23 assessment, that what's required is a
17 plan?

18 A. Yes.

19 Q. No particular action is dictated at that point;
20 correct?

21 A. Correct.

22 MS. BARNEY: Thank you. That's all I have.

23 JUDGE FRANCKS: Mr. Tebbutt?

24 MR. TEBBUTT: I'll just do it from here. It will
25 be a little simpler. Just a few questions.

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RECROSS-EXAMINATION

BY MR. TEBBUTT:

Q. Ms. Redding, you've read the Erickson expert report in the Cow Palace case. You testified to that earlier; correct?

A. Yes, sir.

Q. So I want to just take a look at A-1. Pull up A-1, please. A-1 is Mr. Erickson's report, in this case, which also has the Cow Palace report attached.

MS. HOWARD: Your Honor, I'm just going to object, and maybe this will be easily addressed, but this doesn't seem to be redirect on any of the questions I asked. I don't recall specifically addressing Cow Palace in any way and Mr. Erickson's report.

MR TEBBUTT: This goes to the questioning about impact to groundwater. This is one of those real-life situations.

Ms. Howard asked about impacts to groundwater. So I just wanted to ask Ms. Redding about real-life impacts to groundwater.

JUDGE FRANCKS: I'm going to allow it. Do you need to go into the expert report to ask it?

MR TEBBUTT: Yes, we do.

JUDGE FRANCKS: Okay.

MR TEBBUTT: But it will be quick.

1 BY MR. TEBBUTT:

2 Q. Let's take a look at Exhibit A-1, page 59, based on the
3 numbers down at the bottom right corner.

4 JUDGE FRANCKS: Do we have a PDF page?

5 MR TEBBUTT: PDF number is 59, strangely enough.

6 BY MR. TEBBUTT:

7 Q. Do you have that in front of you?

8 A. I do.

9 Q. So these numbers -- if we look at the last column for
10 nitrate -- do you see that?

11 A. Um-hmm.

12 Q. Do you see under -- let's just pick, for example,
13 YBD 10.

14 Do you see that? It's about three-quarters of the
15 way down.

16 A. YBD 10?

17 Q. Where it says -- well, that YBD 10.

18 A. Okay.

19 Q. That, I'll represent to you, is one of the monitoring
20 wells.

21 A. Okay.

22 Q. And the nitrate number is 123 parts per million.

23 A. I'm having trouble going across.

24 Q. Yes. I understand. Lots of little stuff.

25 A. Oh. So -- oh. There's a validation code next to that

1 one that says "HTQ." And when I look at the abbreviation,
2 it says "holding time violation."

3 Q. All right. Well, let's pick a different one, then. We
4 can pick a lot of them. Let's pick YBD 14R.

5 Do you see that?

6 A. Yes.

7 Q. That shows at 91.1 parts per million nitrate; right?

8 A. Yes.

9 Q. You wouldn't consider that to be a minimal impact at
10 groundwater, would you?

11 A. No, I would not.

12 Q. Next, you were asked some questions -- we're done with
13 that one for now.

14 A. Okay.

15 Q. Well, in fact, it's more than nine times the safe
16 drinking water standard for nitrate; correct?

17 A. Correct.

18 Q. You were asked some questions by Ms. Howard about
19 nitrification/denitrification under the -- in the Baram
20 study.

21 A. Correct.

22 Q. And you testified, I believe, that nitrification/
23 denitrification is a site-specific type of situation;
24 correct?

25 A. Correct.

1 Q. The Baram study was done in Israel; correct?

2 A. Correct.

3 Q. There is no evidence of any
4 nitrification/denitrification of any significant level in
5 Washington; correct?

6 A. I have not seen any reports to that effect.

7 Q. That there is any significant nitrification/
8 denitrification; correct?

9 A. Correct.

10 Q. And last, let's take a look at R -- second to last --
11 R-11.

12 Do you have R-11, page 47? 57 in the PDF. 47 at
13 the bottom right of the page.

14 A. Okay.

15 Q. These are the recommendations from that study; correct?

16 A. Correct.

17 Q. Where it says -- I'll just read this into the record.
18 It says, "To fill data gaps, the following studies are
19 recommended." Bullet point. "Conduct groundwater
20 monitoring at several SCS designed and constructed ponds to
21 insure that the ponds adequately protect groundwater. Ponds
22 should be located over shallow groundwater, with groundwater
23 velocities of about one foot per day or greater."

24 So the recommendation is even if the facility is
25 built to SCS standards, in order to know whether those ponds

1 are causing contamination, you still need to do groundwater
2 monitoring; correct?

3 MS. HOWARD: Objection, Your Honor. That actually
4 misstates the document here.

5 THE WITNESS: When I read this --

6 JUDGE FRANCKS: Well --

7 THE WITNESS: Sorry.

8 JUDGE FRANCKS: In what way does it misstate?

9 MS. HOWARD: Can you repeat the question again?
10 I'm sorry. There were just -- there was some added words
11 there at the end that were not in the actual bullet point
12 that he was reading. So maybe we could just reread the
13 bullet point. And I apologize.

14 MR. TEBBUTT: Let me just ask the question again to
15 speed things up.

16 BY MR. TEBBUTT:

17 Q. In order to know whether a pond's even built to SCS
18 standards, or contributing to groundwater contamination,
19 this report still recommended the groundwater monitoring be
20 done; correct?

21 A. My -- can I answer?

22 JUDGE FRANCKS: Yes.

23 BY MR. TEBBUTT:

24 Q. Please.

25 A. My read of this is he's recommending additional

1 studies, and it may be to verify how effective the SCS
2 design and as-builts are.

3 Q. Right.

4 A. But it would be a groundwater monitoring study. Is
5 that what --

6 Q. Yes. That's what I was asking, for groundwater
7 monitoring.

8 A. Yes. Correct.

9 Q. Again, you were asked questions about the table, and it
10 said "design SCS standards."

11 Do you remember that?

12 A. Was that from Appendix 10D?

13 Q. No. From this document.

14 A. Oh, yeah. Yeah, yeah, yeah.

15 Q. So those are design, but you don't have anything that
16 says, "We have as-built drawings," do you? Just design?

17 A. It just says "design," and then there was notes about
18 construction was not overseen.

19 Q. Right.

20 A. So --

21 Q. So no as-built information; correct?

22 A. Correct.

23 Q. No engineering stamp saying, "We did this this way"?

24 A. Well, from that table. So I don't know what else is in
25 the report off the top of my head.

1 Q. Then let's go to I-13, page 8, please.

2 A. Hang on.

3 Q. Sure.

4 A. Okay. I-13, page 8.

5 Q. Down towards the bottom of the page it says,
6 "Considerations for Minimizing the Potential of Waste
7 Storage Pond Liner Failure."

8 Do you see that?

9 A. Yes.

10 Q. It says, "Avoid using sites with categories listed
11 below, unless no reasonable alternatives exist." First
12 bullet point, "Underlying aquifer is at a shadow depth and
13 is not confined." And the second one, "Aquifer is a
14 domestic water supply."

15 These conditions exist in the Sumas-Blaine; right?

16 MS. BARNEY: I'm going to interpose an objection
17 here. This document was not referenced before. This is the
18 NRCS 313 standard for July 2017.

19 The previously used document was the May 2016
20 version. So this was not referenced in Ms. Howard's direct
21 examination.

22 MR TEBBUTT: I think it was. I think I-13 was in.
23 It's what was used. We're using the same document.

24 MS. BARNEY: No, it wasn't.

25 MR TEBBUTT: What -- what did I get wrong?

1 MS. BARNEY: This is also NRCS Standard 313, but
2 it's a different date. So this is the Washington-specific
3 one that's dated July 2017.

4 MR TEBBUTT: So this is the updated version, then?

5 MS. BARNEY: Correct. It's the Washington State
6 specific one. Not an updated national one.

7 MR TEBBUTT: So this is different than -- oh, you
8 gave us a different -- you substituted a new one or --

9 MS. BARNEY: No. What she used earlier was the one
10 from Ecology's exhibits, which is R-9.

11 MR TEBBUTT: Okay. Well, this is the Washington
12 313 standards; right?

13 JUDGE FRANCK: Right. But this is redirect. So
14 it needs to be based on what she was asking to begin with.

15 MR TEBBUTT: She was asked about 313. That's -- Ms.
16 Howard spent a whole bunch of time on that.

17 JUDGE FRANCK: But let's look at the exhibit that
18 she was shown, unless there's some reason you need a new
19 exhibit.

20 MS. BARNEY: It's R-9.

21 BY MR. TEBBUTT:

22 Q. Let me just ask it this way.

23 The aquifer in the Sumas-Blaine area is used for
24 drinking water for thousands of people; correct?

25 A. Correct.

1 Q. So that aquifer is a domestic water supply; correct?

2 A. Correct.

3 Q. Same with the Lower Yakima Valley. The aquifer in the
4 Lower Yakima Valley is a domestic water supply; correct?

5 A. Correct.

6 Q. So in order to determine whether manure is a likely
7 source of nitrate, there are other parameters that you can
8 test for, as well, to correlate manure with other
9 constituents; correct?

10 A. Correct.

11 Q. And there's a whole lot of them; correct?

12 A. Correct.

13 Q. Like chlorides, for instance, would be one?

14 A. Yes.

15 Q. Bacteria would be another one?

16 A. Correct.

17 Q. Pharmaceuticals?

18 A. Correct.

19 Q. Hormones?

20 A. Correct.

21 MR TEBBUTT: That's all I have. Thanks.

22 JUDGE FRANCKS: So board questions?

23 MS. MARCHIORO: I'm trying to get a sense of
24 interplay between Washington's water quality laws and the
25 NRCS specification. Why don't you look at R-10.

1 THE WITNESS: Okay.

2 MS. MARCHIORO: So that looks like it's --

3 MR TEBBUTT: Board Member McGowan, would you mind
4 using the microphone so we can all hear?

5 MS. MARCHIORO: No. I just wanted to have a little
6 confab.

7 THE WITNESS: I can hear her just fine.

8 MS. MARCHIORO: R-10. So -- do you have it?

9 THE WITNESS: Yes.

10 MS. MARCHIORO: I was trying to figure out -- you
11 testified about this document, and it looks like it's a
12 Washington-specific NRCS tech note; is that right?

13 THE WITNESS: Correct.

14 MS. MARCHIORO: So NRCS comes up with ones for
15 different states or regions? Is that how it works?

16 THE WITNESS: So NRCS has, like, national standards
17 and national guidance, and then the individual states can
18 come up with their own thing for actually enhanced -- be
19 more stringent in their own documents.

20 MS. MARCHIORO: So that maybe answers my question a
21 little bit.

22 If you want to look on page 1, the second
23 paragraph, it says, "The NRCS assessment should not be
24 construed to provide any regulatory certainty from State
25 regulatory agencies. State of Washington laws and rules

1 prohibit pollution of waters of the state, including
2 groundwater. The state requires a permit for discharge of
3 waste water to waters of the state. This document does not
4 supersede these requirements."

5 So I'm trying to understand -- discussing all of
6 these NRCS documents, how that particular -- in your
7 understanding, how that particular paragraph is pinpointed.

8 THE WITNESS: Well, I think the -- that -- that
9 paragraph is an important paragraph. Because if we -- no
10 matter if you're doing this, we can't violate water quality
11 standards in Washington State.

12 Ecology is -- was trying to find a tool that was
13 available and was well-known to actually do these lagoon
14 assessments to try and get a handle on how are they
15 constructed? Are there deficiencies? And get a better idea
16 just across the state, what is the state of these lagoons?
17 Because we don't know.

18 And so when you look at the permit, it's really
19 used as an assessment tool, rather than a compliance tool.

20 MS. MARCHIORO: So in terms of the -- the location
21 where -- the measurement of the two foot, that's -- the
22 design standards for NRCS, their design standard says use
23 the bottom of the liquid --

24 THE WITNESS: Correct.

25 MS. MARCHIORO: -- but Ecology for the assessment

1 is saying measure from the bottom of the liner.

2 Is that right?

3 THE WITNESS: That's right. And our concern -- and
4 this goes back to -- there's an issue paper that we wrote
5 specifically commenting to NRCS -- it's in the literature
6 review -- about construction of manure lagoons below the
7 seasonal high water table. And we lay out there that we
8 want to see a minimum of two feet of vertical separation per
9 pathogen removal.

10 So my understanding from Bill Reck's deposition is
11 that primarily their two feet -- they made -- they may
12 define that differently than we do. We're looking for ours
13 for treatment of pathogens, and they may be looking at it as
14 sort of a -- looking primarily for the buoyant forces and
15 the structural engineering integrity of the liner.

16 MS. MARCHIORO: Do you know, are -- are dairies in
17 Washington required to comply with NRCS tech notes or
18 standards? Are they under a requirement, or are those just
19 guidance for them when they're operating their facility?

20 THE WITNESS: It's guidance.

21 MS. MARCHIORO: In your -- you were asked about Mr.
22 Erickson's study, R-11, and there were some notes -- you
23 don't need to look at it to remember this -- whether there
24 was leakage in three of the four and whether they had worked
25 with SCS, the predecessor to NRCS.

1 In your experience, does the Soil Conservation
2 Service or the NRCS need to be involved in designing a
3 lagoon, or can you just go and hire an engineer who is
4 qualified to come up with a design and then go ahead and
5 construct it?

6 THE WITNESS: There are consultants that do that
7 exact thing. What -- I mean, there's -- there should be
8 more detail about exactly what -- how are these lagoons
9 constructed. I would find that more helpful.

10 In fact, I'm not sure that's not in this document.
11 I just don't recall seeing it. But that would be very
12 helpful information to know. What are the specific
13 conditions that we saw leakage, that we saw impacts to
14 groundwater quality.

15 MS. MARCHIORO: In talking about the pathogens,
16 would you consider a liner a filter?

17 THE WITNESS: I would, actually. And so that's why
18 I think that the bacteria -- that might actually get
19 filtered out. But the viruses are very, very small. And I
20 do have concerns about those getting through a liner of ten
21 to the minus seven centimeters per second permeability .

22 And I've done work with viruses in the past. And I
23 know that all it takes is -- it's a very low number of
24 viruses -- like one -- to infect someone.

25 And once they're in groundwater, they can move a

1 long distance. They remain viable. They remain infectious,
2 I guess, to humans for a long time.

3 So that's -- that's where we have concern with the
4 minimum vertical separation and just wanted to make sure
5 that we're -- we're creating a system that we account for
6 something like that.

7 MS. MARCHIORO: In terms of -- I'm familiar with
8 some non-dairy lagoons, in terms of ways to treat what's in
9 the lagoon. Aeration, flocculent.

10 Is there anything that's available in a dairy
11 context that can address the phosphorus, nitrogen, whatever
12 the contaminant is of most concern prior to leaching into
13 the soil or being spread on -- seeping into the soil or
14 being spread?

15 THE WITNESS: I think that the simple answer is no.
16 The -- the treatment technology that's a -- like a municipal
17 waste water treatment plant would use are pretty expensive,
18 and I don't know if that I've heard of any of those being
19 used at a dairy lagoon, but I can't say for sure.

20 MS. MARCHIORO: You were asked -- I'm going to have
21 you go to R-20. That was that tech note -- technical report
22 from Baram.

23 THE WITNESS: Um-hmm.

24 MS. MARCHIORO: And you were asked about page 1629.
25 We talked about -- in the context of getting to that

1 document, you were asked about nitrogen removal under a
2 lagoon.

3 Do you remember that?

4 THE WITNESS: Yes.

5 MS. MARCHIORO: How would you determine if that was
6 actually happening?

7 THE WITNESS: The nitrate from the lagoon?

8 MS. MARCHIORO: Yes.

9 THE WITNESS: You would have to do some kind of
10 monitoring. Whether it's soil monitoring -- which is hard
11 to do under a lagoon -- and, again, groundwater monitoring.
12 But again, that's hard to do under a lagoon. And off the
13 top of my head, I can't -- I'd have to go back and reread
14 this paper to find out exactly what they were looking at.

15 MS. MARCHIORO: Just out of curiosity, in terms of
16 the EPA studying of the Yakima Valley -- Lower Yakima Valley
17 aquifers, what other sources are there in addition to the
18 dairies that have been identified?

19 THE WITNESS: They looked at commercial fertilizer
20 use on agricultural fields. They also identified on-site
21 sewage systems as a source. Maybe they classified that one
22 as a probable or potential source.

23 I know they basically looked at all the different
24 sources. I can't remember if they looked at atmospheric
25 deposition.

1 MS. MARCHIORO: Then finally, in terms of the
2 permeability requirement, the one times ten to the minus six
3 centimeters per second, how is that tested so you know
4 whether your lagoon is actually doing that?

5 THE WITNESS: So it really has to be done -- well,
6 there's actually a couple ways. You can -- the best way is
7 it's tested when you install the lagoon.

8 The other way is you can -- you could empty the
9 lagoon and take a core. But then you'd compromise the
10 lagoon.

11 And then a third way is you do a water and mass
12 balance on the lagoon. But the -- but that requires a lot
13 of -- sort of very precise instrumentation, because the
14 differences that you might see over a day are very, very
15 small.

16 So you have to be able to capture that on a very
17 exact basis in order to actually determine, like, what are
18 your inputs, what are your outputs, what's going up from
19 evaporation.

20 So that's -- that's a tough thing to do, and you'd
21 have to have a lot of expensive equipment. But people have
22 done it.

23 MS. MARCHIORO: In terms of -- say you're going to
24 put in a new lagoon. Is there a -- you're going to use
25 a -- either amended soil with clay or a clay liner. Is

1 there a design thickness that would then generate the ten to
2 the minus six?

3 THE WITNESS: Well, we're -- how -- we have certain
4 flexibility in the permit. We said, "This is what we want
5 the permeability to be." So if whatever they need to do to
6 make that -- the compaction and the thickness in order to
7 get that, that's up to them. So we're trying not to be too
8 prescriptive and give them flexibility.

9 MS. MARCHIORO: So that could be a synthetic liner
10 as opposed to a clay liner?

11 THE WITNESS: It could.

12 MS. MARCHIORO: That's all I have. Thank you.

13 JUDGE FRANCKS: Ms. Brown?

14 MS. BROWN: I just have a couple.

15 I think you said sometime in the last day that
16 there isn't AKART for existing lagoons.

17 Did you say that?

18 THE WITNESS: Yes, I did say that.

19 MS. BROWN: Can you tell me a little bit more about
20 that?

21 THE WITNESS: So my understanding, from previous
22 permits, is we don't -- because we don't have a good -- we
23 didn't have a lot of facility to cover the permit, we don't
24 really know what the state of those lagoons are.

25 We've heard anecdotal information from different

1 sources saying it's either good or it's bad, but we really
2 don't know.

3 And so what this Tech Note 23 in this assessment is
4 trying to do is get a handle on how are these lagoons
5 constructed, and then also to try and prioritize, like,
6 which ones are the worst ones? And then maybe work with
7 them to -- you know, in the future, work with them to try
8 and make improvements.

9 But trying to get a handle on it -- if we don't
10 know that information, it's -- it's kind of a challenge. We
11 might know it from one specific facility, but that -- this
12 is a general permit, and it's designed to apply to all the
13 facilities statewide. So it's tough to make real
14 prescriptive requirements that apply to everybody. So we
15 want to be cautious about what we're putting in the general
16 permit.

17 MS. BROWN: Does that mean, then, that there
18 aren't -- I think you also said there aren't seepage limits
19 on the existing lagoons.

20 Is that right?

21 THE WITNESS: Correct.

22 MS. BROWN: I know maybe you weren't too involved
23 with the 2006 permit, but do you know what the requirements
24 were for lagoons in 2006?

25 THE WITNESS: So we looked at that earlier, and it

1 refers to the NRCS Practice Standard 313.

2 MS. BROWN: Okay.

3 THE WITNESS: But it does not -- it does not give a
4 permeability.

5 MS. BROWN: Okay.

6 The last one is, you mentioned several times
7 viruses.

8 THE WITNESS: Um-hmm.

9 MS. BROWN: And I'm just trying to understand how
10 viruses would be in this context. Like, for a CAFO.

11 THE WITNESS: So any animal is -- their waste
12 contains bacteria, viruses. And so whether we're looking at
13 an onsite sewage system, or whether we're looking at a
14 manure lagoon, they're present. And bacteria's different
15 because it's larger, and it can get filtered out. But
16 viruses are very, very small.

17 MS. BROWN: Are these viruses that would affect
18 humans?

19 THE WITNESS: Yes.

20 MS. BROWN: Great. Thank you.

21 JUDGE FRANCKS: Mr. Wise?

22 MR. WISE: Good afternoon.

23 THE WITNESS: Hi.

24 MR. WISE: I'm just trying to get a better feeling
25 for what happens to nitrogen and phosphorus when it gets in

1 the soil.

2 I understand the plants, the crops, or whatever's
3 growing there will uptake a certain amount of the nitrogen
4 as it passes through.

5 Do they take in phosphorus, as well?

6 THE WITNESS: Yes, they do.

7 MR. WISE: So some of it is pulled out by the
8 plants. If it gets down below the root layer, does the soil
9 itself bind with any of these chemicals?

10 THE WITNESS: So, yes. Phosphorus pretty much
11 binds in the soil. So it's -- it's uncommon for us to see
12 phosphorus in groundwater. We -- it's more we're concerned
13 in terms of when it's in runoff, going to surface water.
14 But that's why we've included it in the -- the nutrient
15 budget, so that we're looking at both nitrogen and
16 phosphorus.

17 And so if there -- if they reach their limit with
18 phosphorus before they do with nitrate, they have to either
19 stop application or find some other fertilizer source that
20 doesn't have phosphorus. So it's in the budgeting portion
21 of the permit.

22 MR. WISE: Okay.

23 Are there any microorganisms that would take up any
24 of these chemicals in that soil there?

25 THE WITNESS: So the nitrogen cycle is what -- what

1 gets land applied is typically in the form of organic
2 nitrogen and ammonia. So the conversion of -- of the
3 organic nitrogen to ammonia to nitrate uses microbes. It's
4 a biological function that happens. But they're converting
5 it rather than utilizing the --

6 MR. WISE: This is that nitrification --

7 THE WITNESS: Exactly.

8 MR. WISE: -- you were talking about?

9 THE WITNESS: You rely on those microbes to help
10 with the process, but they're not actually using the
11 nitrogen.

12 MR. WISE: You also mentioned that the vadose zone
13 would -- the pathogens would die in that zone, or that would
14 filter them out somehow.

15 What happens to them in that zone?

16 THE WITNESS: So the unsaturated zone is
17 unsaturated. And viruses like cold, wet climates. So if
18 they're in an area where they will dry out and get stuck,
19 like in the vadose zone, they will die off.

20 MR. WISE: Okay. So essentially, they just dry out
21 and get stuck there?

22 THE WITNESS: Yeah. Yeah.

23 MR. WISE: I think I asked about this before, but
24 I'm still struggling with it.

25 Say a person is doing a lagoon assessment. How are

1 they going to know where the water table is? How deep it
2 is?

3 THE WITNESS: So there's -- there's wells in the
4 area, and you could look at well logs that Ecology has
5 online, or you could actually go to a nearby well and take a
6 water level measurement.

7 There is also -- I believe it's in Appendix
8 10D -- or maybe just in the Chapter 10 of the Animal Waste
9 Management Practices Handbook from the NRCS -- that talks
10 about looking at soils.

11 So you can determine if you had a water table
12 that's come up by things like modeling in the soils. So you
13 can do a visual observation and say, you know, "Water's been
14 here, so we need to" -- "we think that water will come back
15 up, like, say, in the wintertime." So that's another visual
16 way that they can determine the seasonal high water table.

17 MR. WISE: So I mean, they would, like, see that
18 when they dig the hole or something?

19 THE WITNESS: Yes.

20 MR. WISE: They would see the mottling on the
21 sides?

22 THE WITNESS: Exactly.

23 MR. WISE: Okay. And once you found the water
24 table, there's supposed to be this two-foot zone up to the
25 bottom of the -- of the liner.

1 How do they know how deep the liner is? How do
2 they get that two-foot distance measured once they found the
3 water table?

4 THE WITNESS: So that really would have to go to
5 the as-built, knowing exactly what -- when you put your
6 lagoon in, where it's located. Where your water table is.
7 How thick your lagoon is.

8 MR. WISE: So they'd have to, like, keep some sort
9 of record of how deep it was and how much clay they put in
10 the bottom or whatever?

11 THE WITNESS: Correct. And that's part of the
12 problem with the existing lagoons, is we don't know how many
13 facilities have these records.

14 MR. WISE: Okay. I just wanted to ask a couple
15 questions about the land treatment concept.

16 I guess that's essentially taking the manure and
17 spreading it out on the fields. And I understand that
18 that -- you try to achieve a rate that won't, sort of,
19 overwhelm the plants taking it up.

20 Right?

21 THE WITNESS: Correct.

22 MR. WISE: And if you exceed that, you run the risk
23 of having some leaching into the groundwater?

24 THE WITNESS: Correct.

25 MR. WISE: And the excess manure, I guess that's

1 what the lagoons are for, is to store that?

2 THE WITNESS: Exactly.

3 MR. WISE: And is that -- that's the agronomic rate
4 that you were talking about?

5 THE WITNESS: Correct. We want to make sure that
6 they're applying just enough to keep the crop viable,
7 growing, but we also want them to be mindful of putting on
8 too much that there's leaching to groundwater.

9 So it's kind of a fine line, what we're looking
10 for. And that's why we don't use the term "agronomic rate,"
11 because some people -- their definition of agronomic rate is
12 maximized yield. That's not Ecology's definition of
13 agronomic rate.

14 So we just found it would be better to use the term
15 "application rate," and then be clear about what we're
16 looking for.

17 MR. WISE: Thank you very much.

18 THE WITNESS: Okay.

19 JUDGE FRANCKS: Questions based on the board
20 questions?

21 MS. BARNEY: Nothing from Ecology.

22 JUDGE FRANCKS: Mr. Tebbutt?

23 MR. TEBBUTT: Yes. I have a few.

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FURTHER RECROSS-EXAMINATION

BY MR. TEBBUTT:

Q. Let's start in reverse order of Mr. Wise's questions.

You said one of the things that you could rely on to determine depth to groundwater was use of existing wells; correct?

A. Yes.

Q. So -- but people -- if the water table is at five feet and somebody's installing a well to drink from, they're not going to stop at five feet. They're going to go to a deeper aquifer, aren't they?

A. Not necessarily.

Q. You think people are going to drink at the top of the first water table they experience?

A. So public water supply wells are constructed differently than private domestic wells. Private domestic wells -- typically, they look for the first water and they might go a little bit below.

But when you're taking a water level measurement, you're seeing what level the water rises to. So even if it's screened lower, you can tell where the water level is based on taking a water level measurement.

Q. But you would have to actually go into the well to look at it; right?

A. Yeah. And that's easy enough to do.

1 Q. Right.

2 But you wouldn't want to drink from a well that's
3 tapped into a five -- you know, an aquifer that's five feet
4 below the surface, would you?

5 A. There's a lot of people that do.

6 Q. But you don't want to, do you, because of the increased
7 risk of harm from bacteria and viruses and such moving down
8 to those shallow water tables? Especially where there's
9 manure.

10 You wouldn't recommend somebody doing that,
11 drinking from that?

12 A. It's not my recommendation. And we -- we don't
13 tell --

14 Q. I'm not saying it's a recommendation. I'm just saying,
15 as a professional hydrogeologist, you wouldn't recommend
16 people drink from that, would you?

17 A. Well, private domestic wells, most people do -- we
18 don't regulate them. Department of Health --

19 Q. That's not my question.

20 You wouldn't recommend that you drink from a well
21 that's put into a five-foot water table, would you?

22 MS. HOWARD: Objection. Relevance. And I think
23 this has strayed beyond the questions.

24 JUDGE FRANCK: I'm going to sustain that
25 objection.

1 BY MR. TEBBUTT:

2 Q. Board Member Brown asked you -- confirmed there is no
3 AKART for existing lagoons, but the permit authorizes
4 discharge from existing lagoons; correct?

5 A. Correct.

6 Q. You also said that you would work with them in the
7 future -- meaning, the dairies -- for -- have them do an
8 assessment of their lagoons and that you'd work with them in
9 the future.

10 Right?

11 A. Correct.

12 Q. You've already testified that you read Mr. Tebb's
13 testimony; correct?

14 A. Correct.

15 Q. And one of the things that he testified about was a
16 memo that he wrote where he talked about the 2009 Court of
17 Appeals decision and how that decision was just kicking the
18 can down the road further for Ecology; correct?

19 A. I read that e-mail.

20 Q. Right.

21 And isn't what you just suggested, that you'll work
22 with dairies in the future just another form of kicking the
23 can down the road further?

24 MS. BARNEY: Objection. Argumentative.

25 JUDGE FRANCKS: I'm going to overrule the objection

1 and let her answer it.

2 THE WITNESS: No. I don't see this as kicking the
3 can down the road at all. I see Ecology actively working to
4 address something that may or may not be a problem.

5 BY MR. TEBBUTT:

6 Q. But you already know that the facilities are
7 discharging?

8 A. Correct.

9 Q. And you know that water goes down to groundwater?

10 A. Correct.

11 Q. So you already know there's a problem, don't you?

12 A. A discharge does not equate to a problem.

13 Q. Okay.

14 A. You can have a discharge and still meet the groundwater
15 quality standards.

16 Q. Right.

17 A. That's why it's additionally authorized discharge.

18 Q. Even without AKART?

19 A. Even without AKART.

20 Q. And then lastly, remember -- well, two things.

21 Board Member Marchioro asked you about R-20 and how
22 you would detect leakage from a lagoon. And you said you
23 couldn't. It's very difficult to put a monitoring well
24 under a lagoon.

25 No. 2, there's two ways you could do that. You

1 could angle a well under a lagoon, couldn't you?

2 Hydrogeologically?

3 A. You could.

4 Q. But you could also put a well just slightly downgrade
5 and determine what's coming from that lagoon, couldn't you?

6 A. Yes.

7 MS. HOWARD: Objection, Your Honor. Lacks
8 foundation.

9 JUDGE FRANCK: I'm going to overrule it.

10 BY MR. TEBBUTT:

11 Q. And lastly, Board Member Marchioro asked you about a
12 liner acting as kind of a filter.

13 If the filter is saturated -- the liner is
14 saturated because it's in the groundwater table, then that
15 filter -- the chance of pathogens transferring through that
16 filter increases; correct?

17 A. I don't believe that's true.

18 Q. So -- all right.

19 Let me ask it in the context of the two-foot
20 filter. The two-foot separation from the bottom of the
21 lagoon to groundwater. That's -- that's the standard that
22 you have; correct?

23 A. Correct.

24 Q. And so if that two-foot area between the bottom of the
25 lagoon and the water table is saturated, that would increase

1 the risk of pathogens transferring, wouldn't it?

2 A. So if it was no longer an unsaturated zone, but it was
3 two feet of saturated zone, would the pathogens migrate to
4 groundwater?

5 Q. Aren't they more likely to migrate to groundwater?

6 A. If it's saturated, yes.

7 Q. And if part of that two-foot minimum separation were to
8 be saturated, then the risk of pathogen transfer goes up, as
9 well, doesn't it?

10 A. Correct.

11 MR TEBBUTT: That's all I have. Thanks.

12 JUDGE FRANCKS: Ms. Howard?

13 MS. HOWARD: I have a few. Thank you.

14

15 RE CROSS-EXAMINATION

16 BY MS. HOWARD:

17 Q. So one of the questions we were talking about are NRCS
18 guidance, and what -- what are they for and how do they
19 relate.

20 So are you aware of any other state agency in the
21 State of Washington that does actually require compliance
22 with NRCS guidance?

23 A. Requires compliance?

24 Q. Yes. Uses NRCS guidance as part of their criteria for
25 implementing a program.

1 A. No. I -- I don't -- I'm not familiar. I can't answer
2 that, I guess is what I'm saying.

3 Q. Are you aware that the NRCS guidance is a required
4 prerequisite in order to get federal funds? That you have
5 to follow that guidance in order to get federal funds?

6 A. I have heard that before.

7 Q. Did you -- when you reviewed Mr. Reck's testimony, do
8 you recall the portion of his testimony that talked about
9 the fact that there is no other similar animal waste lagoon
10 storage standard -- comparable standard in the nation?

11 A. Yes, I believe he states that.

12 Q. You talked about viruses. Are you -- is your testimony
13 that bovine viruses will transmit to humans?

14 A. So what limited research that I have seen identifies
15 discharges from a manure lagoon or animal waste practices
16 viruses from those practices as a threat to public health.
17 They did not specifically talk about lagoon standards. So
18 it's -- so that's -- that's what I've seen.

19 Q. I don't mean this to be rude, but are you a
20 microbiologist?

21 A. No, I'm not. I have done a study -- when I worked in
22 Arizona, I worked with one of the world experts, Chuck Berva
23 out of University of Arizona. He helped me do a study
24 looking at viruses in drinking water.

25 Q. Were you studying bovine viruses?

1 A. No, I was -- not specifically bovine viruses. We were
2 studying viruses.

3 Q. And that was -- just -- my question was just
4 specifically related to bovine viruses, which is what we
5 would expect to see in a manure lagoon; correct? "Bovine,"
6 meaning cows.

7 A. What I'm not clear about is because there's some
8 bacteria, and there's some viruses that are -- can come
9 from -- from both animal sources and human sources.

10 So when you say "bovine viruses," it may be common
11 to humans, also.

12 Q. But you don't know?

13 A. Off the top of my head, no.

14 Q. So when you were looking at this issue about viruses,
15 you weren't necessarily distinguishing a concern between
16 viruses that would be coming from animals and viruses that
17 might actually have an impact on humans. You didn't
18 actually do that analysis?

19 A. No. I -- like I said, one of the studies that I looked
20 at identified animal waste as a threat to groundwater. And
21 so in my mind, if bovine viruses were completely different
22 than human viruses, that would not have been in that
23 article.

24 Q. And then one other question -- I think we just need to
25 clarify this.

1 So the studies that you relied upon to make the
2 recommendation about separation, this two-foot vertical
3 separation, were any of those studies, studies that look
4 specifically at the issue about whether or not animal waste
5 lagoons would filter viruses?

6 A. No.

7 MS. HOWARD: Okay. Those are all my questions.
8 Thank you.

9 JUDGE FRANCK: Ms. Redding, you are completed.
10 You are excused. Thank you very much.

11 (WITNESS EXCUSED.)

12 JUDGE FRANCK: Mr. Tebbutt, where do we go from
13 here with a witness? With a live witness? With a telephone
14 witness? With a video witness?

15 MR TEBBUTT: We have a live witness. Ms. Kinn will
16 introduce the next witness.

17 JUDGE FRANCK: The court reporter is going to
18 swear you in.

19 * * * * *

20 SUE JOERGER, having been duly sworn by
21 the court reporter, testified as
22 follows:

23 JUDGE FRANCK: Proceed when you're ready.

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DIRECT EXAMINATION

BY MS. KINN:

Q. Good afternoon, Ms. Joerger. As you know, my name is Katelyn Kinn, counsel for Puget Soundkeeper.

Can you hear me?

A. Yes.

Q. Please state your full name and spell it for the record.

A. My name is Sue Joerger. Last name is spelled J-O-E-R-G-E-R.

Q. What is your occupation?

A. I'm the field director at Puget Soundkeeper.

Q. What does that role involve?

A. So my job is make sure that the Clean Water Act is enforced on the ground. So that involves traveling by boat or by vehicle to track down -- to look -- document illegal pollution and identify sources of pollution.

Q. Do you ever report those pollution concerns to authorities?

A. Yes. I -- if I see a pollution event, I document with photographs, and then I will contact either the Department of Ecology, local governments, like a county office, or oftentimes, a city office, depending upon the relevance. Coast Guard, as well. So I do report to the regulatory agencies.

1 Q. How long have you been in this particular role?

2 A. I have been in the role of field director since March
3 of 2015. So a little over three years.

4 Q. Prior to assuming this role, what was your experience
5 with monitoring pollution around Puget Sound?

6 A. I was the executive director and Puget Soundkeeper for
7 the Puget Soundkeeper Alliance from 1999 to 2009. And then
8 I -- and during that time, I did hundreds of pollution
9 detection patrols around Puget Sound.

10 I've also started volunteering back at
11 Soundkeeper -- I couldn't stay away -- in 2012, and in 2013
12 and 2014, I was -- got on contract to do field
13 investigations, and then rejoined the staff in 2015.

14 Q. How many hours would you say you have spent in the
15 field monitoring pollution sources?

16 A. Thousands. Thousands.

17 Q. Are you familiar with a place in Puget Sound called
18 Padilla Bay?

19 A. Yes, I am. It's a bay -- if you're not familiar with
20 it -- that's east of Anacortes and Guemes Island.

21 Q. Is this place important to the health of Puget Sound?

22 A. Yes. It's identified as one of the largest eel grass
23 meadows in the lower 48 states, and I think on the West
24 Coast, it's the second larger eel grass meadow. So it's
25 very important.

1 Eel grass, as you probably know, is important for
2 general salmon, herring, and crabs. Padilla Bay is also a
3 fantastic water fowl over-wintering site, and there's a lot
4 of migratory birds that pass through there in the winter.
5 It's great bird watching.

6 Q. Is there any shellfish harvest from Padilla Bay?

7 A. Yes. My understanding is that there is a small
8 commercial farm called Padilla Farms up in the northeast
9 corner of the bay, just below Samish Island.

10 And then there used to be a recreational shellfish
11 harvest there, as well, from Bay View State Park, as well as
12 March Point. East along the beach shore of March Point.
13 But those have been closed because of bacterial
14 contamination.

15 Q. Who closed those?

16 A. I believe the Department of Health is in charge of
17 closing or opening beaches.

18 Q. To your understanding, based on the Department of
19 Health and their notices to you, what was wrong with the
20 bacterial levels?

21 A. They were --

22 JUDGE FRANCKS: Let me just interrupt for a second.
23 There's no photographs without permission in front of me.
24 So if you want to have photographs, you need to ask me ahead
25 of time. Thank you. Please proceed.

1 BY MS. KINN:

2 Q. Based on what you read from the Department of Health
3 notices as to why shellfish was closed, what's wrong with
4 the bacterial levels?

5 A. The bacterial levels were too high for human health.
6 So you'll get sick if you eat the shellfish.

7 Q. Why would these areas have high levels of bacteria?

8 A. There's many potential sources there. I think we
9 discussed them. But -- today -- but draining into the bay,
10 there are a number of very large dairy operations.

11 MS. HOWARD: Your Honor, I'm going to object. I
12 think we did raise this issue in our motion in limine, and
13 we did object, in particular, to the relevance of this
14 testimony as it pertains to the permit terms.

15 Specifically, I recall that Puget Soundkeeper
16 represented in their opposition to our motion in limine that
17 they were, one, not going to offer Ms. Joerger as an expert
18 witness. And they also did not intend to elicit testimony
19 from her, other than about surface water discharges.

20 And again, I just want to be thoughtful of the time
21 here. Our objection is on the relevance, and -- and whether
22 or not this testimony actually relates to the issues before
23 the board.

24 MS. KINN: Ms. Joerger is being offered as a fact
25 witness, Your Honor, and at this point I'm simply providing

1 some background and building foundation for questions that
2 she will answer next as to surface water discharges aligned
3 with Issue 10 of the environmental health case.

4 JUDGE FRANCKS: I'm going to allow it. But, yes,
5 she needs to be a fact witness. It needs to relate to the
6 issues.

7 MS. KINN: Thank you.

8 BY MS. KINN:

9 Q. So what are your thoughts about the bacteria issues and
10 how they might affect you?

11 A. Well, I wouldn't eat shellfish from many regions of
12 Puget Sound because I would be afraid I would get sick.

13 Q. What waterways flow into Padilla Bay?

14 A. There's a number of waterways. Starting from the north
15 end, there's Joe Leary Slough. Then there's No Name Slough.
16 Indian Slough, but sometimes it's referred to as "Big Indian
17 Slough." Telegraph Slough, and the Swinomish Channel
18 Slough.

19 Q. Do you monitor Joe Leary for pollution discharges?

20 A. I have.

21 Q. What flows into Joe Leary Slough?

22 A. Joe Leary Slough has a number of ditches and waterways
23 that flow into it. It used to be wetland, and so I think
24 there's just -- it's quite a network now of ditches.

25 Q. Based purely on what you have observed in the field,

1 what land areas drain to these ditches?

2 A. There's -- if you start at the headwaters and -- off to
3 the east, there's a number of dairies. Then it moves into
4 agricultural land. Some homes. And then cattle operations,
5 blueberry fields, to Padilla Bay.

6 Q. How long have you been observing Joe Leary Slough?

7 A. I first became aware of Joe Leary Slough in 2010.

8 Q. Is Joe Leary Slough salmon habitat?

9 A. Yes, it is.

10 MS. HOWARD: Objection, Your Honor, again. This
11 really is going beyond the scope of what a fact witness
12 would normally testify to. Testifying as to whether
13 something is salmon habitat or not is something you would
14 normally ask of a fishery biologist or State agency that
15 would have some knowledge about that.

16 JUDGE FRANCKS: I'm going to sustain that. It
17 needs to be her personal knowledge.

18 BY MS. KINN:

19 Q. Do you sometimes take photographs when you're in the
20 field?

21 A. I do. I take a lot of photographs.

22 Q. Is this one of those photos?

23 A. Yes, it is.

24 Q. Did you take this on or about April 17th of 2018?

25 A. Yes, I did.

1 Q. From where?

2 A. I'm standing on Chilberg Road, which is near Con -- La
3 Conner in Skagit County, and I'm looking north, and this is
4 a drainage ditch that drains to Joe Leary Slough. And in
5 that drain to the ditch, on the left-hand side, is a white
6 pipe referred to as a "tile drain."

7 Q. Do you see tile drains often in the field?

8 A. I do. Sometimes they are not as clear as that one, or
9 as new looking as that one. Sometimes they're broken off
10 and covered in vegetation.

11 Q. Are they sometimes, obviously, draining dairy
12 operations?

13 A. Yes. I have seen that.

14 Q. Is this a true and accurate depiction of what you saw
15 on April 17th, 2018?

16 A. Yes, it is.

17 MS. KINN: Your Honor, I would like to move Exhibit
18 A-50 into evidence.

19 JUDGE FRANCKS: Which number?

20 MS. KINN: A-50.

21 MS. NICHOLSON: Objection, Your Honor.

22 JUDGE FRANCKS: Yes. Go ahead.

23 MS. NICHOLSON: The prejudicial value of this type
24 of photograph does not outweigh the lack of relevance of
25 this to the permit terms.

1 How does this relate to the issues before the
2 board? She sees a -- what she's claiming is a tile drain,
3 but we don't know that, and she doesn't know that. And
4 she's saying that that is leaking water into this ditch.
5 But how does that relate to the statewide CAFO permit and
6 those issues before the board?

7 MS. KINN: Your Honor, this photo is offered purely
8 for illustrative purposes to help the board members better
9 envision what a tile drain might look like. We're not
10 actually alleging particular discharges from this specific
11 tile drain.

12 MS. HOWARD: You also haven't established a basis
13 for how she would know that this is actually a tile drain.
14 This isn't her property. It isn't her farm. So we actually
15 haven't laid the foundation for that either. So I'm going
16 to object on relevance and foundation.

17 JUDGE FRANCKS: Can you ask her some foundational
18 questions?

19 BY MS. KINN:

20 Q. Have you seen, over your course of 20, 30 years'
21 experience observing pollution in the field all around the
22 Puget Sound, various types of conveyances into surface
23 water?

24 A. Yes, I have.

25 Q. How many different types?

1 A. All kinds of types. Pipes, catch basins, pipes, PVC
2 pipes.

3 Q. Have you worked closely with engineers and had them
4 explain to you what different types of conveyances are so
5 you know what type to look for?

6 A. Yes. I've been on site visits on numerous -- over a
7 hundred lawsuits over the years where we were on site,
8 looking at all sorts of pollution conveyance systems. So
9 I'm very familiar.

10 Q. Is this the type of an outfall that would be consistent
11 with a large municipal storm water outfall?

12 A. It's different, but it's -- it's a pipe that's draining
13 water into a water body. So it -- it's -- it's in -- whether
14 it's a municipal pipe or a pipe from an -- an agricultural
15 field, it's a pipe draining water into surface water.

16 Q. Are other types of drainage conveyances to surface
17 water generally constructed of white PVC plastic like this
18 one in the photo is?

19 A. I have seen others, yes. Duwamish River.

20 Q. Would the appearance and size of this pipe lead you to
21 believe that it is a tile drain?

22 A. Yes, I would. Because it's a smaller pipe rather
23 than a -- like a giant storm water pipe or overflow pipe.

24 Q. Would its depth from the surface of the land lead you
25 to believe that it's a tile drain as opposed to some other

1 pipe?

2 A. By "depth," you mean the height?

3 Q. Yes.

4 A. Yes. Absolutely.

5 MS. KINN: I would move for entry of Exhibit A-50.

6 MS. NICHOLSON: We would renew our objection, Your
7 Honor. Again, you cannot tell and she cannot tell where the
8 other end of that pipe is, and she cannot establish that
9 that is a tile drain pipe.

10 JUDGE FRANCKS: Okay. I -- first of all, I just
11 want to remind counsel that one person -- one attorney for
12 each party is going to be able to object at a time.

13 MS. NICHOLSON: Sorry, Your Honor.

14 JUDGE FRANCKS: I am going to allow this for
15 illustrative purposes, but this is -- we need to keep in
16 mind the issues in this case relate to the permit.

17 MS. KINN: Certainly, Your Honor. Thank you.

18 JUDGE FRANCKS: A-50 is admitted.

19 (Exhibit A-50 admitted.)

20 BY MS. KINN:

21 Q. Ms. Joerger, do you ever take samples of discharges
22 from tile drains when you are in the field?

23 A. Yes.

24 JUDGE FRANCKS: Ms. Kinn, will you tell us as you
25 go along what exhibit you are looking at so we can look at

1 it?

2 MS. KINN: Sure. We are looking at Exhibit A-29.

3 BY MS. KINN:

4 Q. Is this a photo taken of you, Ms. Joerger, on or about
5 March 6th of 2013?

6 A. Yes.

7 Q. Where were you here?

8 A. I am standing on the edge of Gear Road, which is just
9 north of Burlington in Skagit County.

10 Q. What does this photo depict you doing?

11 A. So I have a long pole. My hands are gloved, and there
12 is a tile drain at -- by the end of the long pole, that I
13 had seen running water out of and came back with sampling
14 equipment.

15 There's a small bottle at the end of the pole that
16 you can't see. And I took a water sample from this tile
17 drain.

18 Q. What type of property is this drain coming out of?

19 A. This is the -- the property behind there is a dairy
20 farm.

21 Q. Can you actually see the tile drain in this photo?

22 A. You cannot. It's tucked into the vegetation. But you
23 could see it pouring like a little waterfall out of there.

24 Q. Where does the water that you can see in the ditch in
25 the photo flow to?

1 A. So if you follow the ditch to the left, it goes under
2 the railroad tracks. It's the Old Highway 99, right by I-5,
3 and it intersects with Joe Leary Slough.

4 Q. How do you know that?

5 A. You can drive right along it and see it. You can also
6 confirm it with satellite photos.

7 MS. KINN: Your Honor, I would move to admit A-29
8 into evidence.

9 MS. HOWARD: Your Honor, same objections as before.
10 Standing objection, I guess, on relevance.

11 MS. KINN: The relevance of this photo will become
12 apparent with the next line of questions.

13 JUDGE FRANCKS: Okay. I'm going to allow it.

14 MS. KINN: Thank you, Your Honor.

15 JUDGE FRANCKS: A-29 is admitted.

16 (Exhibit A-29 admitted.)

17 BY MS. KINN:

18 Q. Ms. Joerger, did you, in fact, collect a sample on this
19 day?

20 A. I did, yes.

21 Q. A sample of the water that you saw discharging from
22 this tile drain at this dairy operation?

23 A. Yes. I did sample that.

24 Q. What did you do with that sample?

25 A. I -- I took it to Fremont Analytical Labs in Seattle,

1 transporting it on ice, as required, in a cooler, and got it
2 to the -- to the -- Fremont Analytical in time -- within two
3 hours.

4 Q. Were you trained by that lab in how to collect that
5 sample?

6 A. Yes, I was.

7 Q. Did you follow that protocol?

8 A. Yes, I did.

9 MS. KINN: Your Honor, we are now pulling up
10 Exhibit A-27.

11 MS. HOWARD: Your Honor, the same objection here.
12 I guess I'm just having a hard time understanding how
13 sampling and -- and the water samples are related to the
14 permit terms. So again, another objection on relevancy
15 grounds.

16 JUDGE FRANCKS: That objection I'm going to sustain
17 because I think this is outside of her personal knowledge.
18 And I think it was clear in the motions in limine that we
19 were going to limit this to Ms. Joerger's actual personal
20 knowledge of these things.

21 And I think I've been pretty lenient with this.
22 But this is beyond the scope of the permit terms, which are
23 the issues that are before the court today.

24 MS. KINN: The discharges of bacteria coming from a
25 dairy operation into surface water would be squarely within

1 Issue 10, though.

2 JUDGE FRANCKS: Issue 10 is whether -- is it not
3 whether surface water discharge monitoring should be
4 happening under the permit?

5 MS. KINN: Yes.

6 JUDGE FRANCKS: So she can talk about how she
7 thinks that surface water -- there's some problem. But the
8 lab results from 2013 are not related to the 2017 permit.

9 MS. KINN: Okay. I can move along, Your Honor.
10 But I am simply trying to illustrate facts known by Ms.
11 Joerger about the discharges that she has observed for many
12 years in the field and the impacts of those discharges on
13 the community that we seek to represent.

14 JUDGE FRANCKS: Okay. There's a line. And this is
15 beyond the -- my line.

16 BY MS. KINN:

17 Q. Do you recognize this photo, Ms. Joerger?

18 A. Yes.

19 MS. KINN: This is Exhibit A-33, Your Honor.

20 BY MS. KINN:

21 Q. Who took this photo?

22 A. I took this photo.

23 Q. Was it taken on or about October 13th of 2013?

24 A. It was October 31st. Halloween.

25 Q. 31st.

1 Does this accurately depict what you saw on that
2 day?

3 A. Yes, it does.

4 Q. What does it show?

5 A. I'm standing at the end of Green Road. This is, again,
6 north of Burlington. And this is -- we talked a lot today
7 about manure application to ground. This is a -- what's
8 called a "big gun," and it's pumping -- there's manure from
9 a lagoon, and it's being spread on a grassy field.

10 And you can see that the -- where the manure has
11 been spread, both in the foreground and where the actual
12 spray is going is -- is extremely covered in manure.

13 Q. What month is this?

14 A. This is October 31st. It had been raining and was
15 predicted to rain.

16 Q. Where is Joe Leary Slough in comparison to where you're
17 standing?

18 A. Joe Leary -- I had to really zoom in on this. But Joe
19 Leary is in the -- is in the foreground. And my concern
20 with this photo is that the volume of manure laying on the
21 field at the beginning of the rainy season was going to move
22 into Joe Leary Slough.

23 MS. HOWARD: Your Honor, we're going to object to
24 that testimony. And, again, this line of questioning.
25 There's been no correlation between this testimony and the

1 actual permit terms, and I'm struggling with how a photo at
2 one dairy, on one day, four years before the permit was
3 actually issued, has any relevance to the permit terms
4 itself. So, again, an objection on relevancy grounds.

5 JUDGE FRANCKS: I am -- I'm going to allow it. And
6 I -- I'm going to allow a little bit of leeway to
7 demonstrate what the concerns are with the -- with PSA and
8 the various appellants. But I do think the board is going
9 to give it the weight it deserves.

10 MS. KINN: Thank you, Your Honor.

11 BY MS. KINN:

12 Q. What concerns --

13 JUDGE FRANCKS: So A-33 is admitted.

14 MS. KINN: Thank you.

15 (Exhibit A-33 admitted.)

16 MS. KINN: We are now opening Exhibit A-41.

17 Another photo.

18 BY MS. KINN:

19 Q. Ms. Joerger, do you recognize this photo?

20 A. Yes, I do.

21 Q. Is this a photo that you took in April of this year,
22 2018, just last month?

23 A. Yes. April 11th.

24 Q. Where were you standing when you took this photo?

25 A. I'm standing on Kelleher Road, which is north of the

1 City of Burlington, and I'm looking kind of to the
2 southeast.

3 Q. What does this photo depict?

4 A. Okay. So in the foreground is vegetation around Thomas
5 Creek, and it indicates there's a -- you can see a manure
6 hose that's attached to what's called a "manure injector."

7 You can see a little bit of puddles on the surface
8 of the -- of the soil, and very little vegetation.

9 Q. Is this a true and correct depiction of what you saw
10 that day?

11 A. Yes, it is.

12 Q. Do you know the name of the dairy farm that was
13 conducting this operation?

14 A. Yes, I do.

15 Q. What is the name?

16 A. It is DeBoer Dairy.

17 Q. Do you know about how many cows DeBoer has?

18 A. I believe they have over a thousand cows.

19 Q. What concerned you about this photo?

20 A. I was concerned that there was no vegetation at the
21 time that there was -- that the manure was being injected.
22 I was also concerned about the -- the puddles on the surface
23 of -- of the water and whether there would be any transport
24 of bacteria.

25 Q. Into Joe Leary Slough?

1 A. Into Joe Leary Slough.

2 MS. HOWARD: Your Honor, I'm sorry. Objection.
3 Again, Ms. Joerger is not here to testify as an expert. We
4 have not established that she would have the ability to make
5 that determination and so, again, I'm going to object as
6 this being well outside the scope of the testimony that she
7 was intended to offer today.

8 MS. KINN: Your Honor, this evidence illustrates
9 that the current permits in the no pollution prevention plan
10 requirements are inadequate, leaving people like Ms. Joerger
11 in Washington to sometimes guess about what they're seeing.

12 But given all the information known to us by the
13 agency and by this permit, this does not seem to be in
14 compliance, allowed, or -- the community and the waterways
15 are not protected from activities like this because the
16 permit is inadequate. And that's exactly why environmental
17 counsel have appealed and are here this week.

18 MS. HOWARD: We have stipulated to standing in this
19 case. We're not objecting to whether they have standing to
20 bring their appeal.

21 But again, my concern here is that we're --
22 testimony is being offered where there hasn't been the type
23 of foundation that is necessary to be laid in order to make
24 a determination about whether the permit terms are adequate
25 or even if the permit terms were applied here or not.

1 So again, we're really far, far away from a fact
2 witness type of testimony.

3 JUDGE FRANCKS: I'm going to sustain the objection
4 to the extent that the witness is making some conclusions
5 about whether the permit is being complied with. Because
6 this -- it's a -- it's hard to see from the photo what's
7 happening.

8 I -- I am happy to have her testify about what she
9 saw and what she took a picture of. But I think the
10 conclusions that she's drawing are beyond a fact witness.

11 MS. KINN: Understood. Thank you, Your Honor. We
12 are pulling up Exhibit A-43 at this time.

13 JUDGE FRANCKS: So I excluded A-41.

14 BY MS. KINN:

15 Q. Do you recognize this photo?

16 A. Yes, I do.

17 Q. Did you take this on or about March 28th of this year,
18 2018?

19 A. Yes, I did.

20 Q. What does it show?

21 A. It shows a manure injector with a hose attached to it
22 on a bare field, with water puddled on the ground and water
23 in a ditch.

24 JUDGE FRANCKS: What number are we on? I'm sorry.

25 MS. KINN: A-43.

1 BY MS. KINN:

2 Q. And from where were you standing when you took this
3 photo?

4 A. I am standing on Hickox Road, which is between -- south
5 of Mt. Vernon and north of Conway.

6 Q. Do you see a ditch in that photo?

7 A. Yes. There's a ditch that's in the foreground.

8 Q. Where does that ditch lead to?

9 A. That ditch -- if you look at the line of trees in the
10 back, that's the location of the Skagit River, and there's a
11 dike along that, and I've traced that ditch using satellite
12 photos and my vehicle to -- to the Skagit River.

13 Q. Does this photo concern you?

14 A. Yes. Yes. I was concerned because of the amount of
15 volume of water and the bare ground on which the manure was
16 being injected.

17 MS. KINN: Your Honor, I would move to admit
18 Exhibit A-43 as illustrative of this fact witness, Sue
19 Joerger's, observations in the field.

20 MS. HOWARD: We'll object, again, based on
21 relevance and foundation.

22 JUDGE FRANCKS: I'm going to admit A-43.

23 MS. KINN: Thank you, Your Honor.

24 (Exhibit A-43 admitted.)

25 BY MS. KINN:

1 Q. Ms. Joerger, aside from what you've observed in terms
2 of the spreading of manure onto areas of land, are there
3 any other areas of CAFOs that concern you in terms of
4 pollution?

5 A. Yes. I'm concerned about manure lagoon failure. I
6 was -- visited Sunnyside, Washington, where I was shown
7 houses where a manure -- that were downstream when a manure
8 lagoon failed. I'm concerned about pumping of -- of water
9 into waterways and also production.

10 MS. KINN: Your Honor, we're pulling up Exhibit
11 A-46 for reference.

12 BY MS. KINN:

13 Q. Do you recognize this photo?

14 A. Yes, I do.

15 Q. Did you take this in November of 2014?

16 A. 2013, yes.

17 Q. What does this photo show?

18 A. This is a little heifer operation with cows eating on
19 one side and defecating on the other side. A significant
20 amount of rain water puddled on the -- on the ground. In
21 the foreground is a drainage ditch that leads directly to
22 Thomas Creek, which flows into Samish Bay, where there's a
23 number of commercial shellfish and -- operations.

24 And my concern here was that with the significant
25 rainfall at this time, that -- that some of the feed and

1 manure could be transported into the ditch.

2 Q. Can you explain to us where the puddle is that you're
3 seeing between the heifers and the ditch?

4 A. It's the shiny -- the shiny --

5 Q. Kind of right in the middle, where the road bends?

6 A. Yeah.

7 Q. Have you seen water coming down into the ditch from
8 areas like this?

9 A. From areas like this, or this area?

10 Q. Areas like this --

11 A. Yes.

12 Q. -- in general.

13 A. I have seen that. Yes.

14 Q. How do you know that this ditch leads to Thomas Creek?

15 A. You can drive right along it and stop on the bridge and
16 look back and see the -- the pipe.

17 Q. How many feeding operations like this have you
18 observed?

19 A. There's -- I've looked at most every dairy in Western
20 Washington, and a number in the Yakima area, and there are
21 many open feeding areas.

22 Q. Is this a typical example of what you might see?

23 A. Yes.

24 MS. KINN: Your Honor, I would move to admit A-46
25 into evidence.

1 MS. HOWARD: Same objections. Relevance,
2 foundation, and some of that actually was going beyond the
3 scope of a fact witness, as well.

4 JUDGE FRANCKS: I'm going to admit A-46.

5 MS. KINN: Thank you, Your Honor.

6 (Exhibit A-46 admitted.)

7 MS. KINN: We're now pulling up A-47.

8 BY MS. KINN:

9 Q. Do you recognize this photo?

10 A. Yes, I do.

11 Q. What does this show?

12 A. This shows another animal -- covered animal feeding
13 operation. And the -- the structures on the left are where
14 the cows are kept. And this is -- I took this photo because
15 I saw water running off from the barn area and the area in
16 front of that, and was concerned about any transport of
17 manure from the facility into the ditch, which goes
18 horizontal across the -- the photo there, and eventually
19 drains to the Skagit River.

20 Q. You took this photo; right?

21 A. I did. I took that on April 17th.

22 Q. Of this year?

23 A. 2018. Yes. This spring.

24 Q. Were you able to stand and clearly watch that trickle
25 of water go from that area into the ditch?

1 A. Yes.

2 Q. Do you know the name of this dairy?

3 A. I do.

4 MS. HOWARD: Objection, Your Honor. Relevance. I
5 don't think we need to put the name of the dairy into the
6 record. It's not relevant to the CAFO permit.

7 MS. KINN: We're happy to leave names out if that's
8 what the board and Your Honor prefers. We were just trying
9 to connect this directly to the permit terms, which is what
10 I thought Ms. Howard was making a necessity in terms of
11 relevance, which we can do.

12 MS. HOWARD: Again, I would just say that the dairy
13 name is not relevant to that issue.

14 JUDGE FRANCKS: I'm going to sustain that part of
15 the objection. So we don't need to use dairy names. But I
16 do think it's important that Ms. Joerger was the person
17 taking the picture and can tell us where it is.

18 MS. KINN: Thank you, Your Honor.

19 BY MS. KINN:

20 Q. Where does this ditch lead?

21 A. This ditch -- I'm standing on Beaver Marsh Road, which
22 is near Rexville. Little town of Rexville. Rexville store.
23 And -- and it does -- it leads to the Skagit River.

24 Q. How do you know that?

25 A. I've studied where the ditches run along the road, as

1 well as satellite photos that show the connections.

2 MS. KINN: Your Honor, I would move to admit A-47
3 into evidence.

4 MS. HOWARD: Same objections. Relevance.

5 JUDGE FRANCKS: I'm going to admit A-47.

6 MS. KINN: Thank you.

7 (Exhibit A-47 admitted.)

8 MS. KINN: We're now pulling up A-39.

9 BY MS. KINN:

10 Q. Ms. Joerger, do you recognize this photo?

11 A. Yes, I do.

12 Q. Did you take this in April of 2018?

13 A. Yes. I took it on April 17th.

14 Q. Where were you standing when you took this?

15 A. I was standing on Chilberg Road and sort of looking to
16 the northwest. And this is near La Conner.

17 Q. What does this photo depict?

18 A. This is a tractor pulling some kind of machine --
19 pumping machine that was running at the time. You could
20 hear it running. And there's a white hose that goes into
21 some kind of muddy puddle or attached to something in the
22 ditch there, and there's another hose that is where
23 the -- the darker hose where the water is going out.

24 So this was running, and it attracted my attention.
25 I was on my bicycle at the time.

1 Q. Based purely on what you observed on this day when you
2 took this photo, what was happening on the land on this
3 which was occurring?

4 A. Well, it -- it -- there was just a lot of water on the
5 land. There had been a considerable amount of rain, and it
6 was puddled. And -- and I was concerned because the hose
7 was -- was where the -- what they were pumping and where
8 they were pumping it to.

9 Q. Was this a dairy operation?

10 A. Yes. This is a dairy.

11 MS. KINN: We're opening A-38. They kind of
12 interconnect.

13 BY MS. KINN:

14 Q. Ms. Joerger, do you recognize this photo?

15 A. Yes. I took this on the same day. It's just, like,
16 one frame over from the equipment that you just saw, also on
17 Chilberg Road.

18 Q. Thank you.

19 What does this show?

20 A. Well, if you could -- it's hard to see from -- with the
21 lights on here, but the hose wanders across the field, and
22 then there's a dike in the distance, and that is a channel
23 that leads to the Swinomish Channel. There's a waterway
24 there. And you can see the hose actually go up over the
25 dike and -- and -- yeah.

1 Q. How do you know there was anything in this hose?

2 A. Well, the hose is what they call "charged," because
3 it's full. If it had nothing in it, it would be flat.

4 So -- and the pump was also running.

5 Q. How do you know that ditch that the other end of the
6 hose is in goes to the Swinomish Channel?

7 A. I confirmed it by looking at aerial photos of the --
8 satellite photos.

9 MS. KINN: Your Honor, I move to admit A-38 and
10 A-39.

11 MS. HOWARD: Objection, Your Honor, on relevance.
12 Again, we -- we have no idea what this tractor is doing. We
13 don't know what the conditions of this field are.

14 So we could have had a heavy rainstorm the day
15 before, and we just -- we have no foundation for how
16 this -- these photos are actually relevant to any of the
17 permit terms.

18 JUDGE FRANCKS: I'm going to sustain that
19 objection. I think there's a lot of speculation in that
20 description of what is happening. So I'm going to exclude
21 A-38 and A-39.

22 BY MS. KINN:

23 Q. Did you report what you saw in April 2017 as depicted
24 in those photos to anyone?

25 A. Yes. I reported it to the Department of Ecology's

1 Earth's Reporting System for the Northwest Regional Office.
2 It's a paper form that you fill out online, and I also
3 included these photos.

4 Q. And then what happened?

5 A. Nothing. And then I contacted the Department of
6 Ecology and asked who had been assigned to do the inspection
7 of the site, and found out it was given to Kyrre Flege who
8 is an inspector for the Department of Agriculture.

9 So I -- I can't remember -- I e-mailed or called
10 Kyrre and asked him what the follow up was on the situation.

11 MS. KINN: We're pulling up Exhibit A-45, Your
12 Honor.

13 BY MS. KINN:

14 Q. If you scroll to the second page of this exhibit, Ms.
15 Joerger, is that your e-mail to Mr. Flege in which you
16 inquired about several pollution discharge incidents that
17 you had reported?

18 A. Yes.

19 Q. If you scroll up to the first page, did Mr. Flege
20 provide you the response in the first paragraph of that
21 e-mail as to the photos that were just shown?

22 A. Yes.

23 Q. Can you read his response, omitting the name of the
24 dairy operation, please?

25 A. I would, if I could --

1 Q. I'm sorry. Please turn to A-45 in the binder.

2 A. "I contacted the dairy and let them know that this was
3 likely a violation of state water quality laws, specifically,
4 the criteria for salmonid spawning, rearing and migration,
5 with turbidity in mind. This is not something that we have
6 done much enforcement with in the past, but is certainly
7 something to keep an eye on. I'm visiting the farm tomorrow
8 afternoon to discuss it further. Still under investigation.
9 Enforcement decision pending. Great photos, by the way."

10 Q. What was your impression of Mr. Flege's response?

11 A. I was -- I was excited, actually. I've worked with
12 other Department of Agriculture inspectors in the past --

13 MS. HOWARD: Your Honor, objection. Again, this is
14 so, so far beyond the scope of this hearing at this point.
15 Enforcement, reporting enforcement, concerns about
16 enforcement, well, well beyond the scope of the issues
17 before the board.

18 JUDGE FRANCK: I think we are on the edge of
19 relevance, but I'm going to let you go a little bit further.

20 MS. KINN: Thank you.

21 BY MS. KINN:

22 Q. Were you surprised that Mr. Flege didn't bring up the
23 CAFO permit in his response?

24 A. I was -- I was surprised that he didn't -- that he
25 actually responded. So I didn't have any expectation

1 about --

2 Q. And he affirmed it was a pollution issue of concern?

3 A. Yes.

4 MS. KINN: Your Honor, I would move to admit A-45.

5 MS. HOWARD: Objection, Your Honor. Relevance.

6 It's based upon hearsay, as well. So I guess that's a

7 foundation objection, as well.

8 JUDGE FRANCKS: So in our board, we can take
9 hearsay evidence if it's information that's based on
10 something a reasonably prudent person would rely upon.

11 I don't think this raises to that level. So I'm
12 going to not admit it at the moment.

13 MS. KINN: Your Honor --

14 JUDGE FRANCKS: Especially because there are a
15 number of other things that are discussed in that e-mail.

16 MS. KINN: I believe this e-mail is a public
17 record, having coming from a Washington Department of
18 Agriculture employee to Ms. Joerger. It's a matter of
19 public record, which would make it admissible.

20 JUDGE FRANCKS: Here's what we're going to do.
21 It's 2:30. So it's a good time for our 10-minute break.
22 I'm going to reserve ruling on this, and I will rule on it
23 when I get back.

24 (Off the record from 2:34 P.M.
25 to 2:50 P.M.)

1 JUDGE FRANCKS: We were talking about --

2 MS. HOWARD: Your Honor, we're going to withdraw
3 our objection. This is Exhibit 45.

4 JUDGE FRANCKS: 45.

5 MS. HOWARD: We'll withdraw our objection to this
6 document.

7 JUDGE FRANCKS: All right, then. 45 is admitted.

8 MS. KINN: Thank you, Your Honor.

9 (Exhibit A-45 admitted.)

10 MS. KINN: Your Honor, I have in my hand several
11 copies of a document that was not on the list because
12 Soundkeeper just received it only recently.

13 It is a Department of Ecology publication that came
14 out in the last couple weeks that we just received, and I
15 would like the opportunity to ask Ms. Joerger a couple of
16 questions about it.

17 JUDGE FRANCKS: Do we have objections to this? Has
18 everybody seen it?

19 MS. HOWARD: We did. We got it Saturday, maybe.

20 MS. KINN: Friday.

21 MS. HOWARD: Pretty late in the day on Friday.
22 It's well outside of the time limit of when exhibits were
23 due. And again, we have some relevancy objections, as well.

24 MS. BARNEY: Ecology's objections are based on
25 relevance.

1 MS. KINN: I think the exhibit speaks for itself.

2 MS. HOWARD: Your Honor, we're going to object to
3 it as a demonstrative exhibit, too, if that's what we're
4 discussing now, because of the lateness of time and
5 relevancy.

6 JUDGE FRANCKS: How many pages is it?

7 MS. KINN: Two. Very quick.

8 MS. HOWARD: The document that we received was
9 about 40 pages. So this is not the same document.

10 MS. KINN: This is an excerpt. This is the cover
11 and a relevant page of a 38-page document of high-resolution
12 photos taken by Department of Ecology. So again, this would
13 be aerial photos all around Puget Sound. It's a monitoring
14 program that Ecology administers.

15 JUDGE FRANCKS: And does it have something to do
16 with this permit?

17 MS. KINN: It does. And the question that Ms.
18 Joerger just answered. It shows an aerial depiction of the
19 very ditch into the Swinomish Canal that Ms. Joerger was
20 showing photos of and e-mailing Mr. Flege about it, and it
21 shows the appearance of the water coming out of the ditch
22 and what it did to Swinomish Canal.

23 Department of Ecology happened to take this photo
24 the exact day after Ms. Joerger documented what she
25 documented happening at that site.

1 MS. HOWARD: And this would go, again, also well
2 outside of the scope of what a fact witness would be
3 testifying to, looking at a Department of Ecology photograph
4 and trying to interpret what that photo means. Further
5 grounds for objection.

6 JUDGE FRANCKS: I am going to sustain the
7 objection. I -- there's a limit to how many late-produced
8 documents you can have in the case, and if -- if you haven't
9 gotten everyone's buy off, then I don't see the relevance of
10 this. So I'm going to exclude that.

11 Was it marked?

12 MS. KINN: No. It would be marked --

13 JUDGE FRANCKS: So it wasn't on your list. Okay.

14 MS. KINN: I would return to Exhibit A-27 for a
15 moment. Your Honor, I would like to make an offer of proof
16 as to this lab report from Fremont Analytics. A-27.

17 If Ms. Joerger is allowed to testify to this, we
18 would show that tile drains, in fact, discharge in a manner
19 that causes pollution in surface water, which is very much
20 in issue in this case. It's wrapped into Issue 10.

21 The board has already heard testimony that tile
22 drains are not monitored or controlled by this permit, even
23 though they constitute discharges.

24 JUDGE FRANCKS: I've already excluded the lab
25 report. I think that's beyond the relevance of the issues

1 in this case. So I don't think that's necessary.

2 MS. KINN: That concludes my questions.

3 JUDGE FRANCKS: So, Ms. Joerger, other people get
4 to ask you questions now.

5 THE WITNESS: Great.

6 JUDGE FRANCKS: So who is going next?

7 MS. BARNEY: Me.

8

9

CROSS-EXAMINATION

10 BY MS. BARNEY:

11 Q. Hello. My name is Phyllis Barney. I'm representing
12 the Department of Ecology. Can we turn back to Exhibit
13 A-33.

14 So, Ms. Joerger, I think earlier you testified to
15 this as a practice that you observed and photographed?

16 A. Yes.

17 Q. Are you familiar with the 2017 CAFO permit?

18 A. No.

19 Q. So can you tell us if this facility -- I understand
20 that this dates back to 2013.

21 Can you tell us if this facility was under the
22 previous form of the permit -- the 2006 permit?

23 A. This dairy's not under a CAFO permit.

24 Q. In terms of what practices are appropriate or what
25 practices are found in the 2017 CAFO permit, you said you

1 weren't familiar with the permits. You can't speak to
2 whether those practices were being applied at this
3 particular facility?

4 A. This was 2013, and what I observed was -- I -- is an
5 excessive amount of manure being spread on a grassy field so
6 that it's covered up -- obscured during the rainy season.
7 And I don't believe that's the best management practice.

8 Q. Can we look at Exhibit A-39, please.

9 I believe you testified that you observed that just
10 recently, April of this year?

11 A. Yes, I did.

12 Q. Is this facility a facility that you are aware that is
13 under the CAFO permit?

14 A. I do not believe it's under -- there are very few
15 dairies under the CAFO permit. So this is not -- it is not
16 under the CAFO permit.

17 Q. Again, because you stated that you're not familiar with
18 the CAFO permit, you couldn't describe to us whether or not
19 this facility has applied any of the land application best
20 management practices?

21 A. I don't know if it's applied or not. This was the
22 first time I observed this facility with any kind of
23 operation going on.

24 Q. Thank you.

25 MS. BARNEY: A-45 is the ERTS report we were just

1 discussing?

2 JUDGE FRANCKS: Yes.

3 BY MS. BARNEY:

4 Q. Take a quick look at that.

5 I believe you testified, when Ms. Kinn asked you,
6 after you made these ERTS reports what happened, and you
7 said nothing. And then you said you then contacted Ecology,
8 who in turn, put you in touch with the WSDA inspector?

9 A. Correct.

10 Q. This information that you received from the inspector,
11 do you interpret this as still -- that nothing was done on
12 the basis of your ERTS report?

13 A. No. My comment on nothing was done was that Ecology
14 did not get back to me on who was assigned to do the
15 inspection, what the ERTS number was, and that I had to
16 contact Ecology to find out what happened to my pollution
17 report.

18 Q. Have you been back in touch with Washington State
19 Department of Agriculture since this e-mail that is this
20 exhibit?

21 A. I e-mailed Kyrre to say, "Thank you," and let me know
22 how he followed up on each of those, and I have not heard
23 back from him.

24 MS. BARNEY: Thank you. That's all Ecology has.

25 JUDGE FRANCKS: Ms. Howard?

1 MS. HOWARD: Yes, thank you, Your Honor.

2

3

CROSS-EXAMINATION

4 BY MS. HOWARD:

5 Q. Let's stay on Exhibit 45, if you don't mind. Do you
6 have that in front of you?

7 A. I will reopen the book. I do now.

8 Q. Perfect. Thank you.

9 So it looks to me like on Exhibit 45 there are five
10 different ERTS reports that are at issue; is that correct?

11 A. That's correct.

12 Q. Were those reports that you made?

13 A. Yes.

14 Q. Were those reports reflected in any of the -- connected
15 to any of the photographs that we saw today?

16 A. Let's see. Yes.

17 Q. Which ones are those?

18 A. I'm just reading through again, just to make sure.

19 Q. No problem. Take your time.

20 A. So I believe there are -- in addition to the first one,
21 that there are three other ones.

22 Q. Which ones were those?

23 A. The -- the second one, the third one, and the last one.

24 Q. Okay.

25 The first one here, do you recall which photographs

1 those were? I'm sorry. I'm not able to get that connection
2 from your testimony.

3 A. It was -- I don't have the photo references. But it
4 was the one where the water was being pumped by machinery
5 from the field, over the ditch, into the Swinomish Channel.

6 Q. Can you read the last two sentences of the paragraph
7 related to that one? Sorry. The last -- the second and
8 third to last sentences of that paragraph.

9 A. "This is not something that we have done much
10 enforcement with in the past but is certainly something to
11 keep an eye on."

12 Q. Then the next -- actually, the next two sentences.
13 Thank you.

14 A. "I'm visiting the farm tomorrow afternoon to discuss
15 further. Still under" -- "under investigation. Enforcement
16 pending."

17 Q. "Enforcement decision pending."

18 So it does appear that the Department of
19 Agriculture was following up on your concerns?

20 A. Yes.

21 Q. And they were considering whether to issue an
22 enforcement decision or not?

23 A. That's how I read that, yes.

24 Q. Okay. Let's look at the next paragraph. Which
25 photograph does that particular one refer to?

1 A. I believe that was the one that was excluded. That
2 was -- I don't have a way to tell which photograph.

3 Q. They are actually in the binder right there in front of
4 you. The exhibits are.

5 A. Which exhibit would that be?

6 Q. I'm not sure.

7 A. I don't know where they are. So someone will have to
8 tell me.

9 Q. It should be in your binders. This is A-39 and A-38.

10 A. Sorry. I'm not as familiar with the binding system.

11 Q. No problem.

12 A. Again, tell me which number.

13 Q. I am not sure. Because you indicated that these were
14 linked to some of your photos, but I don't know which ones.
15 So you'll have to tell me which photos these correspond to.

16 A. Where would I find the photos?

17 Q. They're the photos that we just looked through. So the
18 exhibits are A -- so those photos begin at A-33.

19 A. A-33. All right. Thank you.

20 Q. You bet. Sorry. I'll try to be more helpful. It
21 looks to me like --

22 A. A-33. Well, this is not -- this is --

23 Q. So I think from your -- the exhibit list that we have
24 here, it might start around A-38. Because those appear to
25 be April photos and March photos of this year.

1 A. So ask me what your question is again. I've kind of
2 gotten lost in what we're trying to do here.

3 Q. No problem.

4 So do these photos correspond with the ERTS report
5 that's being -- or the ERTS issue that's being discussed in
6 paragraph 2 of this April --

7 A. No. That's from ERTS -- the first ERTS. 680759.
8 Those are the photos from that.

9 Q. Okay.

10 Now let's -- then if we could find the photos that
11 correspond to the second ERTS in this e-mail. Are you not
12 finding them?

13 A. I am not finding them.

14 Q. Okay.

15 A. I can describe the photo. It was manure injection off
16 of Kelleher Road.

17 Q. Okay. That will work. Let's just go with that so we
18 can keep on moving.

19 A. Okay. I'm sorry.

20 Q. No. That's okay. No problem.

21 Do you see the second line there, where -- is it
22 Kyrre? Am I saying that correctly?

23 A. I don't know if I'm saying --

24 Q. Kyrre Flege?

25 A. I'm not sure if I'm saying it correctly.

1 Q. Department of Agriculture says, "We've been watching
2 that area closely because of some high counts observed on
3 Kelleher Road which drains to Thomas Creek."

4 Then the line underneath that it says, "I've found
5 that the dairy made a safe application to that area with no
6 evidence of discharge, including subsurface injection,
7 generous setbacks from waterways, and disking edges before
8 application."

9 Do you see that paragraph?

10 A. Yes.

11 Q. So it appeared that the Department of Ag did do an
12 investigation and found that was actually a safe
13 application.

14 Is that your understanding of this e-mail?

15 A. That is my understanding.

16 Q. Look at the third paragraph. ERTS 680760 is being
17 referred to here.

18 Did you provide photos of that, as well?

19 A. Yes. That was the red barn photo with the discharge
20 from the production area.

21 Q. Perfect. So A-47.

22 A. Um-hmm.

23 Q. You see, again, in the middle there where she
24 writes -- or he. I'm not sure.

25 A. It's a he.

1 Q. -- "While it looks risky from the road, that area is
2 managed pretty carefully."

3 Do you see that language there?

4 A. I see that language.

5 Q. So again, it would appear that the Department of
6 Agriculture did look into this issue and came to a different
7 conclusion than you did, at least?

8 A. I don't believe --

9 Q. I'm asking you for -- Department of Agriculture, what
10 they're saying here.

11 A. I understand what they're saying, but I say looking at
12 that does not tell me anything about whether there's
13 bacteria in that discharge.

14 Q. They came to a different conclusion than you did; is
15 that correct?

16 A. Well, I don't know that looking at -- looking at water
17 can tell you whether there's pollution or not.

18 Q. But they came to a different conclusion than you did;
19 is that correct?

20 A. I --

21 Q. You're disagreeing with the language on the --

22 A. No. I'm not disagreeing with the language.

23 Q. Thank you.

24 Then the next paragraph down -- ERTS 679726. Did
25 you also provide photos on that today?

1 A. Not today, no.

2 Q. The last paragraph or second to last paragraph. Pardon
3 me.

4 A. Yes. I provided photos. That was the -- bare earth
5 photo from Hickox Road.

6 Q. Thank you.

7 And again, do you see the sentence about a third of
8 the way down that starts, "This is an interesting one
9 because of the time of the application, weather was good and
10 it may not have been an issue"?

11 A. I also see that it says, "My sampling and investigation
12 of 4/10 indicated that there had been a discharge a few days
13 prior."

14 Q. Right. But with regards --

15 A. This was still under investigation with the enforcement
16 decision pending.

17 Q. So they were investigating the issue?

18 A. Yes.

19 Q. And they were following up on it?

20 A. Yes. Correct.

21 Q. But with regards to the report that you made, they
22 indicated that they didn't -- they thought it might not have
23 been an issue?

24 A. Based on the dairy saying that the application occurred
25 on March 15th.

1 Q. That information isn't in this e-mail, is it?

2 A. It's right there. It says, "It turns out the
3 application occurred on 3/15." So this follow up was nearly
4 a month later.

5 Q. Okay.

6 When you took the photos here today, did you take
7 account for rainfall within the timeframe when you took the
8 photos?

9 A. I did note when it was raining and when it hadn't been
10 raining, yes.

11 MS. HOWARD: I have no further questions, Your
12 Honor. Thank you.

13 JUDGE FRANCKS: Any redirect?

14 MS. KINN: Yes, Your Honor.

15

16 REDIRECT EXAMINATION

17 BY MS. KINN:

18 Q. I'm going to turn to Exhibit A-33, please, Ms. Joerger.
19 Ms. Barney asked you about this photograph just a minute
20 ago; right?

21 A. Yes.

22 Q. Is your impression that this facility should be covered
23 by a CAFO permit?

24 MS. HOWARD: Objection, Your Honor. Calls for
25 expert witness testimony or certainly technical testimony.

1 JUDGE FRANCKS: I'm going to sustain that.

2 BY MS. KINN:

3 Q. Ms. Joerger, have you observed discharges from this
4 dairy operation of surface water?

5 A. Yes, I have.

6 Q. Has an agency covered this facility by a permit, to
7 date?

8 A. No, it has not.

9 Q. Even though you've reported those discharges to that
10 agency?

11 A. Yes.

12 MS. BARNEY: Objection. Relevance.

13 MS. KINN: Your Honor, we heard yesterday from an
14 agency employee that in terms of how they evaluate whether a
15 discharge occurs, one of the items they depend on is reports
16 from the community. Mr. Jennings told us that yesterday.
17 Reports often come from people exactly like Ms. Joerger just
18 testified about.

19 JUDGE FRANCKS: But how does this relate to the
20 permit?

21 MS. KINN: The permit covers only a small handful
22 of facilities when there are actually some 500 that
23 potentially discharge. And that many more of those
24 facilities should be covered for the permit to have any
25 effect at all.

1 JUDGE FRANCKS: Which issue is this addressing?

2 MS. KINN: Well, there are elements of many of the
3 issues. I would say Issue 10, that the permit does not
4 adequately protect against discharges to ground and surface
5 water, in violation of state and federal law, because the
6 agency has a permit.

7 It knows there are sites that should be covered by
8 that permit which are discharging and coverage is not being
9 required.

10 MS. BARNEY: Objection. Facts not in evidence.

11 JUDGE FRANCKS: I think that's beyond the relevance
12 of the permit that we're talking -- in terms of the permit
13 that we're talking about today.

14 MS. KINN: For the record, I would reflect that
15 this was directly relevant to an issue that Puget
16 Soundkeeper did not prevail on in summary judgment but which
17 may be heard at some future date. So we'll turn now to
18 A-39.

19 Your Honor, I would remove to admit this photo,
20 given that both Ms. Barney and Ms. Howard asked Ms. Joerger
21 about the photo. I would not quite understand why either of
22 them would ask her about the photo and what it depicts if it
23 was not relevant to the proceedings we're here about today.

24 JUDGE FRANCKS: Well, I excluded it because I
25 thought it was irrelevant. So, no. We're going to keep it

1 excluded.

2 MS. KINN: Even though they asked about it?

3 JUDGE FRANCKS: Yes.

4 BY MS. KINN:

5 Q. Ms. Joerger, what you observed in this photo is clearly
6 a discharge to surface water; is that correct?

7 A. That's correct.

8 MS. HOWARD: Your Honor, objection. It calls for
9 expert witness testimony. We have not laid the foundation
10 for that.

11 MS. KINN: I laid the foundation in my direct
12 examination of Ms. Joerger, and it does not take an expert
13 to see when water is gushing and flowing into surface water.
14 It's very obvious in this case.

15 MS. HOWARD: Again, we have --

16 JUDGE FRANCKS: A, this is a photo that we've
17 excluded. So let's not talk about that anymore.

18 MS. KINN: Your Honor, I would remove to admit this
19 exhibit into evidence, given that both Ms. Barney and Ms.
20 Howard asked about the details and -- never mind.

21 JUDGE FRANCKS: 45. Yeah. So 45 is in.

22 BY MS. KINN:

23 Q. In the third paragraph of this e-mail, Ms. Joerger, Mr.
24 Flege is referring to his response to the incident that you
25 reported depicted in A-47; isn't that right?

1 A. Yes.

2 Q. Isn't it true that nobody from Department of
3 Agriculture was there to observe what you saw that day?

4 A. That's correct. As far as I know.

5 Q. To elaborate just a hair more on what you saw that day,
6 in A-47 you actually saw water trickling down from the
7 puddle in that process area into the ditch that led to
8 surface water; right?

9 A. That's correct.

10 Q. Moving to the fourth paragraph of this e-mail from Mr.
11 Flege, was it your impression that he was -- or anyone from
12 Department of Agriculture was there to observe what you saw
13 that day?

14 A. This is the fourth paragraph?

15 Q. Yes. I'm sorry. The fifth paragraph.

16 A. Fifth paragraph. Okay. Let me -- can you ask the
17 question again?

18 Q. Was it your impression from Mr. Flege, during your
19 e-mail communications and any phone calls you may have had,
20 that anyone from Department of Agriculture was there to
21 observe what you saw that day?

22 A. No.

23 MS. KINN: That's all, Your Honor.

24 JUDGE FRANCKS: Ms. Joerger, now the board members
25 can ask you questions.

1 MS. MARCHIORO: Nothing.

2 MR. WISE: No questions.

3 JUDGE FRANCKS: They don't have any questions. So
4 you are excused. Thank you very much.

5 THE WITNESS: Thank you.

6 (WITNESS EXCUSED.)

7 JUDGE FRANCKS: Mr. Snyder, do we need a
8 five-minute break?

9 MR. SNYDER: Just a minute, Your Honor.

10 MR. TEBBUTT: At this time, Soundkeeper Alliance, et
11 al., move for judgment as a matter of law with regard to --
12 under -- this is under CR 50(a).

13 You've heard repeated testimony from Ms. Redding
14 today that there is no AKART for existing lagoons, which are
15 authorized to discharge pollutants to groundwater under this
16 permit. We have no dispute about that.

17 State law requires AKART for discharges,
18 RCW 90.48.010, the regulation under which the permits are
19 issued. WAC 173-226 requires the application of AKART prior
20 to any discharge into the State's groundwater.

21 WAC 173-226-070(1) states, "Any general permit
22 issued by the Department shall apply and insure compliance
23 with all of the following, whenever applicable.

24 "Technology-based treatment requirements and
25 standards reflecting all known available and reasonable

1 methods and prevention, treatment, and control required
2 under RCW 90.48.010; 90.48.520; 90.52.040; and 90.54.020 may
3 be imposed through any or all of the following methods."

4 That includes, 4, the relevant one here.

5 "Permits issued or reissued by the Department shall
6 be conditioned in such a manner as to authorize only
7 activities that will not cause violations of this chapter."

8 Ecology admits as much in their briefing before the
9 board. Ecology's response PSA's summary judgment motion on
10 page 12.

11 In addition, the State's groundwater quality
12 standards require imposition of AKART. That's WAC
13 173-200-100(3), which reads, "This chapter shall be enforced
14 through all legal, equitable, and other methods available to
15 the department, including but not limited to issuance of
16 state waste discharge permits, other departmental permits,
17 regulatory orders, court actions, review and approval of
18 plans and specifications, evaluation of compliance with all
19 known available and reasonable methods of prevention,
20 control, and treatment of a waste prior to discharge, and
21 pursuit of memorandum of understanding between the
22 department and other regulatory agencies."

23 The evidence before the board is that no AKART is
24 applied to existing lagoons. This is a direct violation of
25 statutory and regulatory law, and it's my understanding that

1 the board makes the decisions on legal issues. And so we
2 put this before the board members, Wise, Brown, and
3 Marchioro. Thank you. Would you like to respond now or
4 shall we hold it for later?

5 JUDGE FRANCKS: Well, would the other parties like
6 to respond?

7 MS. BARNEY: Yes. Ecology has a response.

8 Mr. Jennings' testimony yesterday was that -- he
9 testified yesterday that the entire permit as applied is
10 AKART for CAFOs in the State of Washington. That also is
11 included in our briefing.

12 Ms. Redding's testimony today with regard to AKART
13 for existing lagoons was on this specific issue of
14 permissible -- the performance standard of the ten to the
15 minus six.

16 Part of the requirement of the permit is for the
17 facility to undertake the evaluation that is in Tech Note
18 23. That evaluation is what Ecology is utilizing as a
19 method of control here to try to determine what the status
20 of existing lagoons are.

21 Because there is no information on this, the idea
22 that those lagoons are meeting the same performance standard
23 as a newly constructed lagoon, where there is control over
24 what the permeability would be, is impossible to state at
25 this point.

1 You heard testimony from both Mr. Jennings and Ms.
2 Redding that at this point in time, Ecology does not have
3 the information to ascertain the condition of these lagoons.
4 Ecology's meetings prior to -- in discussions with industry
5 and in discussion with the environmental appellants,
6 their -- Ecology's understanding is that there are a lot of
7 lagoons in operation out there, but there simply is no
8 information available to determine those lagoons' compliance
9 with any particular performance standard at this point.

10 So the permit, as part of the application of AKART,
11 to the -- by the permit as a whole is requiring the
12 evaluation of existing lagoons. And that's the basis where
13 the permit itself is applying AKART. Although there is not
14 a specific performance standard, the same way that there is
15 for -- for new lagoons that are going to be newly
16 constructed.

17 JUDGE FRANCKS: Thank you.

18 Ms. Howard, do you have a response, as well?

19 MS. HOWARD: No, Your Honor, we do not.

20 JUDGE FRANCKS: So I believe we need to take a
21 break, then.

22 MR TEBBUTT: May I just raise two other points in
23 response?

24 JUDGE FRANCKS: In response?

25 MR TEBBUTT: First of all, Ecology can't issue a

1 permit without AKART. They issued a permit, they shouldn't
2 have done that, for existing lagoons. Not all.

3 Secondly, this is in direct response to Board
4 Member Brown's question, where Melanie Redding confirmed for
5 the second, third, or fourth time that there is no AKART for
6 existing lagoons. Thank you.

7 JUDGE FRANCKS: And we will take a break and we'll
8 be back.

9 (Off the record from 3:24 P.M.
10 3:42 P.M.)

11 JUDGE FRANCKS: So the board has considered the
12 motion and the grounds presented and denies the motion. So
13 let's move forward.

14 MR TEBBUTT: That was quick. All right. Well, the
15 environmental appellants call Dave Erickson to the stand,
16 and Mr. Erickson is at the stand.

17 JUDGE FRANCKS: Mr. Erickson, the court reporter
18 will swear you in.

19 * * * * *

20 DAVID ERICKSON, having been duly sworn by
21 the court reporter, testified as
22 follows:

23 //

24 //

25 //

1

DIRECT EXAMINATION

2 BY MR. TEBBUTT:

3 Q. Mr. Erickson, would you state your full name for the
4 record?

5 A. David Erickson.

6 Q. Sir, what state do you reside in?

7 A. Montana.

8 Q. What town?

9 A. Butte, Montana.

10 Q. What's your occupation, sir?

11 A. I'm a hydrogeologist for Water and Environmental
12 Technologies.

13 Q. Tell us a little bit about Water and Environmental
14 Technologies.

15 A. It's an environmental consulting company that I started
16 in 2000. We have about 60 employees now. We operate in
17 about a seven-state area.

18 Q. What kind of work do you do, sir?

19 A. It varies, from civil engineering projects, to
20 environmental permitting, to storm water, mediation, lagoon
21 design, waste water treatment. We've got a very diverse
22 group of engineers and scientists that cover a lot of
23 ground.

24 Q. What types of scientists do you have on staff?

25 A. Biologists, geologists, hydrogeologists, and then

1 multiple engineering disciplines, such as civil,
2 environmental, chemical, mechanical, and hydrogeological
3 engineers.

4 Q. What companies or what entities do you work for,
5 typically?

6 A. It ranges from large industrial clients to -- down to
7 homeowners. We do a lot of work with septic systems and
8 permitting septics. We've got a group that does that.

9 Industry includes coal fire generator plants across
10 the west. Companies like Agrium, that process phosphorus in
11 Silver Springs, Idaho. Multiple mineral companies, like
12 telemining operations. It's varied over the years to
13 encompass a lot of different companies and project types.

14 Q. Where do you live, sir?

15 A. I live outside of Butte, about 15 miles on a ranch.

16 Q. What kind of ranch?

17 A. Beef cattle ranch.

18 Q. How long have you lived there?

19 A. All but -- all but two years of my life.

20 Q. Have you had any dairy cows in your life?

21 A. I have not. My -- my grandparents, great-grandparents
22 moved to Butte as dairy farmers to supply milk to the mines
23 in Butte. That's been a few years ago.

24 Q. Just to avoid cross-examination by a couple of other
25 people, how did we meet, sir?

1 A. About eight years ago you sued a client of mine over a
2 mine site, tailing site in Colorado, and I was brought in to
3 arbitrate that suit.

4 Q. What was the name of that company?

5 A. Pacific Core Energy.

6 Q. Are they -- who are they a subsidiary of?

7 A. Berkshire Hathaway.

8 MR TEBBUTT: Your Honor, at this time I would like
9 to move the resume of Dave Erickson, which is A-3.

10 MS. HOWARD: No objection, Your Honor. I have a
11 really hard time hearing the witness, though.

12 JUDGE FRANCKS: Can you pull that closer to you and
13 speak up?

14 THE WITNESS: All right. Is that better?

15 JUDGE FRANCKS: It's better for me. Can you hear
16 now?

17 MS. HOWARD: Yes, thank you.

18 JUDGE FRANCKS: A-3 is admitted.

19 (Exhibit A-3 admitted.)

20 BY MR. TEBBUTT:

21 Q. Sir, have you done an expert report in this case?

22 A. I have.

23 Q. Let's -- showing you what's been marked as Exhibit A-1.
24 If you need to look at it, there's a binder in front of you
25 you. Is this the expert report that you prepared for this

1 particular case?

2 A. It appears to be, yes.

3 Q. Do you want to look through it real quick and just make
4 sure?

5 A. It looks like it, yes.

6 Q. Inclusive of your expert report are some exhibits;
7 correct?

8 A. Yes.

9 Q. Will you please identify those for the board?

10 A. All of them?

11 Q. I believe there are three exhibits. Is that correct?

12 A. Are they all under A-1, or are they separated?

13 Q. I believe they're all in A-1. Let's just try to speed
14 this up.

15 Attachment 1 to your report is a list of
16 authorities that you relied upon in issuing your opinions.
17 That's page 57. I'm sorry. Page 48.

18 A. Correct.

19 Q. Then that goes on for a couple of pages. Quite a few
20 pages. Then we get into Attachment 2 to your expert report,
21 which is on page 59.

22 Do you see that?

23 A. I do.

24 Q. Tell us what Attachment 2 is, please?

25 A. The groundwater data from the dairy cluster monitoring

1 wells.

2 Q. When you talk about the "dairy cluster," tell us what
3 the dairy cluster is, please.

4 A. So there's a group of five dairies in the Lower Yakima
5 Valley that the EPA identified as a cluster of dairies that
6 they did further investigation on.

7 Q. So for the purposes of this hearing, when we discuss
8 the "cluster dairies," let's define who they are. Who are
9 they by name?

10 A. There's un -- one is the Cow Palace Dairy. There's a
11 Liberty Dairy, a Bosma Dairy and two DeRuyter dairies.

12 Q. Is that George DeRuyter and Sons and D&A Dairy?

13 A. That's correct.

14 Q. And the Bosma and Liberty Dairy are both essentially
15 Bosma dairies, and they're really kind of one operation;
16 correct?

17 A. Yes. They are adjacent to each other. Application
18 fields overlap.

19 Q. And they share manure management; correct?

20 A. Correct.

21 Q. George DeRuyter and Sons and DNA Dairy both share
22 manure management; correct?

23 A. They do, yes.

24 Q. Let's take a look at Attachment 3 at page 96. What's
25 Attachment 3, sir?

1 A. It's my expert report for the Cow Palace litigation.

2 Q. When was that done? I think on the last page it will
3 tell you.

4 A. It's dated September 22nd of 2014.

5 Q. Thank you.

6 This report was one you did for the federal court
7 in the Care and Center for Food Safety versus Cow Palace
8 case; correct?

9 A. Correct.

10 Q. That was in front of Judge Rice in the Eastern District
11 of Washington Federal Court?

12 A. Yes.

13 MR TEBBUTT: Your Honor, at this point I would move
14 A-1 into evidence.

15 MS. HOWARD: Your Honor, we will object,
16 particularly on the relevance ground. As you may recall,
17 this was the subject of our motion in limine, as well.

18 Attachment 3 and portions of the report and the
19 attachment to, as well, relate to the Cow Palace matters and
20 the cluster dairies. Our concern is that it hasn't been
21 established how any of that information is actually relevant
22 to the issues that are on appeal before the board, and in
23 particular, any issues that are -- that remain before the
24 board. I do not believe that has been established yet at
25 this point, either.

1 MR TEBBUTT: Your Honor, I can assure you that this
2 goes to the heart of the matter. This is all about
3 groundwater monitoring. It's the most comprehensive set of
4 information that has been compiled in the State of
5 Washington, perhaps, other than an EPA report that is also
6 the basis for this. And it will all be established through
7 the next, probably, day's worth of testimony of Mr.
8 Erickson.

9 JUDGE FRANCKS: So what's it relevant to?

10 MR TEBBUTT: It's relevant to the groundwater
11 monitoring issue, the lagoons leak, that over application of
12 fields causes contamination of groundwater. That animal
13 pens cause contamination of groundwater. That compost areas
14 constitute another source of contamination of groundwater.
15 It goes to the central issues of the case.

16 These are five of the largest dairies in the state.
17 Cow Palace is considered one of the best in the state, and
18 it was found to cause an imminent substantial endangerment
19 to health and the environment by a federal district court
20 judge, and this court should give great deference to that
21 decision and the discussions that will go on around this.

22 MS. HOWARD: And again, Your Honor, none of those
23 facts are yet in evidence. So at this point, we continue to
24 object on the basis of relevance.

25 JUDGE FRANCKS: Well, I'm going to admit the

1 report, and I'm going to include the attachments, and I
2 assume you'll proceed with things that are relevant to the
3 issues that are before us.

4 MR TEBBUTT: We absolutely will.

5 (Exhibit A-1 admitted.)

6 BY MR. TEBBUTT:

7 Q. Mr. Erickson, are you also familiar with -- I believe
8 you mentioned the EPA report that was done in the Yakima
9 Valley. That was done between the period of about 2010 to
10 2012; correct?

11 A. That's correct.

12 Q. Is that a report that you have studied?

13 A. It is.

14 Q. Is that one that you've relied on in forming your
15 opinions in this case?

16 A. Yes.

17 Q. And it's cited in your Cow Palace report?

18 A. Yes.

19 MR TEBBUTT: Your Honor, at this time I would -- we
20 did not include the EPA report as an exhibit because it is
21 so voluminous. But we would ask this board to take judicial
22 notice of it. It's available on EPA's website. It's been
23 available on EPA's website for some six years now. Counsel
24 has been made aware of that for -- since the beginning of
25 time in this case. That that document is important and

1 relevant to this case. And we would ask the court to take
2 judicial notice of it, as it will be discussed in this case,
3 as well.

4 MS. BARNEY: Ecology objects to that request. It
5 might have been cited in the expert report, but if
6 Soundkeeper wanted it as an exhibit in this case, they could
7 have included it, voluminous or not. We certainly have
8 voluminous exhibits here.

9 MS. HOWARD: Your Honor, we would also object that
10 it does not actually meet the standard under WAC 371-08-510
11 for the material facts that this board can actually take
12 official notice of. And nor does it meet the matters of law
13 that this board is able to take official notice of.

14 JUDGE FRANCKS: It's a report?

15 MR TEBBUTT: It's a report --

16 JUDGE FRANCKS: It's not a reported case?

17 MR TEBBUTT: No. It's a report on the -- done of
18 330 wells in the Lower Yakima Valley. Some 3300 groundwater
19 wells -- well testings of those 330 wells over a period of a
20 number of years, and the conclusions made in it were that
21 the dairies were a significant source of contamination to
22 the groundwater.

23 JUDGE FRANCKS: Well, it's not the type of document
24 that we would take judicial notice of, and I think Ms.
25 Barney's point that you could have added it as an exhibit is

1 well taken. So -- and it is now too late to do that. So
2 I -- I'm not going to take judicial notice of it.

3 MR TEBBUTT: Okay. We think that, too, is
4 improper, in that this board could take judicial notice of
5 that large document.

6 BY MR. TEBBUTT:

7 Q. Sir, have you made general conclusions about whether
8 large CAFOs in the State of Washington are more likely than
9 not causing or contributing to groundwater quality standard
10 violations?

11 A. I have.

12 Q. What is your opinion or conclusion?

13 A. Based on the investigation work that we did at multiple
14 dairies, we found large groundwater plumes, extensive soil
15 contamination, not just of nitrate but of multiple compounds
16 emanating from these facilities.

17 Q. To reach your conclusions, what did you rely on? Let's
18 go through the list.

19 Is the EPA report one of them?

20 A. The EPA report was the base document, because they had
21 done some of the first investigation at and around these
22 sites.

23 The second piece of information would have been the
24 investigation that we completed on all of these sites.

25 Q. Tell the board a little bit more about that particular

1 set of investigations that you did.

2 A. Based on what we learned from the EPA report and the
3 potential sources of contamination from the dairy, we went
4 on these five dairies and collected soil samples in the
5 pens, in the compost areas, around the lagoons, and in the
6 application fields as part of a field effort that my team
7 took on.

8 We collected literally hundreds of soil samples
9 from all of these locations. They're all documented in my
10 report and in this litigation report.

11 We combined that with -- and I won't have the exact
12 number, but 40-plus monitoring wells around the facility,
13 which we've added 12 in the last -- or 14 in the last two
14 years. And we've collected -- or been part of the team that
15 collects ongoing groundwater monitoring data from all of
16 these sites on a quarterly basis, underneath the direction
17 of the EPA and under a quality assurance plan approved by
18 the EPA.

19 Q. So about how many people from your team -- from your
20 shop were present on the site for the site inspection and
21 sampling that you did in, I believe it was, May of 2014?

22 A. We had -- we had six scientists, total.

23 Q. Okay.

24 A. And two drilling rigs that collected soil samples and
25 water samples.

1 Q. So the drilling rigs, what did you do with the drilling
2 rigs? Let's talk about field sampling first for application
3 fields.

4 What kind of activities did you do? How deep did
5 you go with the equipment? Just describe for the board the
6 kind of equipment that was used and what you did.

7 A. So there was probably 30 different identified fields
8 between the five dairies, and we picked a subset of those
9 fields -- about 10 or 12 -- and at each location we
10 collected 10 samples, 10 feet deep, broke them down into
11 one-foot intervals, composited them and then analyzed them
12 for the nutrient -- nutrients of concern, if you will.

13 Q. What depth did you go down to?

14 A. We went to -- all the way to 10 feet, with all the
15 samples, and then separated them into one-foot intervals so
16 we could see the exact concentrations with each foot in each
17 field.

18 Q. So what did that enable you to do?

19 A. Identify both the concentrations that were still within
20 the root zone of the plants and concentrations that were
21 below the root zone, headed towards water. It gave us a
22 really good breakdown of -- of where the nitrate was in the
23 field, as far as depth.

24 Q. So you tested the nitrate all the way down to the 10
25 feet in the fields?

1 A. Correct.

2 Q. And other constituents, as well?

3 A. Yes.

4 Q. What other constituent?

5 A. Other forms of nitrate, such as ammonia, Kjeldahl,
6 nitrogen, organic nitrogen, phosphorus. And I think there's
7 a few other -- Ph -- just general measurements.

8 Q. Then there are other metals and chlorides and things
9 that were tested, as well?

10 A. I believe so, yes.

11 Q. For today's purposes, we're really focused on nitrate,
12 ammonia, other nitrogen sources and phosphorus. Okay? So
13 we'll focus on those for the purpose of this permit, because
14 those are the most relevant issues.

15 Okay?

16 A. Okay.

17 Q. So you tested fields at all five of the operations?
18 Cluster operations?

19 A. That's correct.

20 Q. And that took about a week to do all that work?

21 A. Yes. We were on site for a week.

22 Q. That was pursuant to the long, drawn out process with
23 the federal court, where the lawyers argued over what the
24 scope of the inspection was, and the court set up the
25 parameters of what that inspection could allow.

1 Is that --

2 MS. HOWARD: Objection, Your Honor. Leading the
3 witness.

4 MR TEBBUTT: Just background.

5 JUDGE FRANCKS: I'm going to allow it, in the
6 interest of time.

7 THE WITNESS: That is true. We started out with
8 the scope. It was pared down by the attorneys, by the
9 judge. We arrived at a final scope, and then provided the
10 documents to the defense attorneys -- the quality assurance
11 project plan, sampling plan, all the information they
12 requested -- and then we did the work. And I have to
13 backtrack a little bit.

14 A bulk of the work was done over a week, but we
15 have been -- we were back at different times to do an
16 additional compost boring or collect some additional samples
17 in locations where we may not have gotten as much data as we
18 would like.

19 BY MR. TEBBUTT:

20 Q. And the attorneys for the dairies were present and the
21 attorneys for the plaintiffs were present?

22 A. Yes. Attorneys and experts for both sides. Video
23 camera crew. There was about 20 people total watching us
24 collecting samples.

25 Q. So you split samples with the industries or the

1 dairies, as well; correct?

2 A. We did.

3 Q. That tells us what you did in the field. What about
4 what inspections did you do of the lagoons?

5 A. A combination of visual inspection and borings around
6 the edge of a couple lagoons. One boring in the middle of
7 one lagoon.

8 Q. Is that --

9 A. We were limited on what the -- the defense would allow.
10 They were concerned about dike stability and a few other
11 issues that kept us off the lagoons and doing the borings
12 that we wanted to do around those.

13 Q. Did you originally want to do some diagonal testing
14 under the lagoons?

15 A. We did. We -- with the sampling equipment we use, we
16 can easily just tilt the mass of the rig and take about a
17 20-degree angle. Get alongside the lagoon and go down and
18 get samples below it, but we were not allowed to do that
19 either.

20 Q. At that time were you allowed to do groundwater
21 monitoring of wells around the lagoons?

22 A. We were not.

23 Q. Okay. Let me stop you there.

24 Had there been a number of wells put in place by
25 EPA already on and around those facilities?

1 A. Yes. EPA had put in probably about 20, 25 wells,
2 total.

3 Q. How did EPA -- if you know, how did EPA get the ability
4 to put those wells on the property? Was it through the
5 administrative order on consent with the dairies?

6 A. I believe it was. A lot of them weren't allowed to be
7 on property. They were in county right-of-way. So there
8 were some on the actual dairy property and some that were
9 not.

10 Q. Some downgrading; some upgrading?

11 A. Correct.

12 Q. So those wells were installed starting when? 2013?

13 A. I think it might have been a little earlier than that.
14 2012 --

15 Q. Okay.

16 A. -- through 2014.

17 Q. Has data been collected from those wells on a regular
18 basis since about 2013?

19 A. Yes, it has.

20 Q. Is that information included in the Cow Palace report,
21 some of that?

22 A. Some of it's in the Cow Palace report, and some of
23 it's, I believe, the second attachment to my expert report
24 in this case.

25 Q. The EPA work that's being done, that's continuing

1 today?

2 A. It is.

3 Q. Under the "AOC," we'll call it?

4 A. Yes. There's two things going on. There's work under
5 the AOC, which is continued groundwater monitoring. Then
6 there's additional work under the consent decree that is
7 additional monitoring of wells that are being sampled by the
8 dairies.

9 Q. And the consent decree you're referring to is the
10 consent decree between Care and Center for Food Safety and
11 the dairies; correct?

12 A. Correct.

13 Q. Is information from the groundwater monitoring wells
14 being collected on a quarterly basis?

15 A. It is. So all the wells were sampled quarterly for a
16 list of analytes, that include nitrate and a lot of major
17 minerals. Water quality parameters so we can learn a lot
18 more about the aquifer and what -- what sources are
19 contributing to the aquifer.

20 Q. Are those -- is that data being collected under a QAPP?

21 A. It is an approved QAPP with EPA.

22 Q. What's a QAPP or a QAPP?

23 A. It's a document that goes into great detail to explain
24 how you're going to collect your samples, how you're going
25 to handle your samples, what analysis you're going to run

1 with your samples.

2 That includes everything from the -- the way you're
3 removing them from the well. What kind of pump you're
4 using, to how you ship them to the lab. In a cooler, with
5 ice at 40 degrees, to what type of preservatives you add to
6 water samples to make sure that the -- the parameters within
7 the sample are preserved until it gets to the lab where they
8 can do analysis.

9 So it's a fairly lengthy document telling EPA how
10 we're going to do it. Then there's usually follow up to say
11 that the sample round met the requirements of the QUAPP.
12 Therefore, the samples are valid.

13 So it's really just a quality assurance/quality
14 control program so that everybody knows you're collecting
15 good quality data that you can make decisions with.

16 Q. Is that the kind of information -- or the QUAPP, is
17 that the kind of quality assurance that is done that would
18 allow you to have, for instance, a peer-reviewed study?

19 A. It is. Yes.

20 Q. What kind of investigation did you do with respect to
21 animal pens?

22 A. We -- we put the drill rig in the animal pens and
23 collected multiple soil samples. I think there's four pen
24 locations that we poked. We did the same as with the
25 fields.

1 We collected data down to 10 feet, and separated
2 those soil samples into one-foot intervals, and then
3 analyzed them for a list of different parameters and
4 contaminants.

5 Q. For compost areas, what kind of investigation did you
6 do?

7 A. During the first go-round, I believe we only did one
8 sampling of the compost areas to about 20 feet. We did the
9 exact same program. Collected soil samples down to 20 feet,
10 separated them into one-foot intervals, and then did the
11 specific analysis of each one-foot interval.

12 Later we came back and did additional compost areas
13 on -- on the other dairies to collect more data.

14 Q. Sir, I'm going to ask you to look at Exhibit A-67 in
15 your binder. It's also up on the screen.

16 Do you recognize this document, sir?

17 A. I do.

18 Q. What is this document?

19 A. So through the EPA, this dairy cluster has to do an
20 annual report that provides EPA with all of the groundwater
21 data, field monitoring data, application data for all five
22 of the dairies.

23 So this is the 2017 annual report for that group of
24 dairies.

25 Q. And that one came just a few weeks ago?

1 A. Correct. March 1st.

2 Q. Is that the same kind of report that has been done for
3 previous years?

4 A. It is. I believe they've been doing it since either
5 '13 or '14.

6 Q. So this is just the most updated version; correct?

7 A. Correct. So all they've done is take the 2016 report,
8 add one more year's worth of data to it, and presented it.

9 Q. So that has all the groundwater monitoring information
10 in it?

11 A. It does.

12 Q. And it has the soil testing information in it?

13 MS. HOWARD: We're going to object on the grounds
14 of foundation. This is a draft report. We haven't
15 established that this gentleman is actually an author of
16 this report.

17 So again, this line of questioning doesn't appear
18 that we've laid a foundation for any of the questions that
19 are being asked at this point. And again, a relevance
20 objection, as well, with regards to this data and how it
21 relates to the permit. Sorry. I'm getting a little more
22 tired.

23 JUDGE FRANCKS: Do you want to lay some more
24 foundation?

25 MR TEBBUTT: That's what I'm doing, Your Honor.

1 BY MR. TEBBUTT:

2 Q. So this report is drafted by the dairies; correct?

3 A. By their consultant, yes.

4 Q. By their consultant, yes.

5 Who is their consultant?

6 A. A company called "Anchor QEA."

7 Q. And that's changed over the years; is that right?

8 A. It has, yes.

9 Q. Who is the prior report done by?

10 A. There's been several. One was a company called "Inland
11 Earth." Before that it was Arcadis.

12 Q. And that was -- the principal who was there was a
13 gentleman by the name of...?

14 A. Kevin Freeman.

15 Q. Right.

16 Mr. Freeman was an expert for the dairies in the
17 litigation; correct?

18 A. That's correct.

19 Q. Is this the type of report that you would normally rely
20 upon for coming to conclusions about the impacts of
21 facilities on the local environment?

22 A. It is, yes.

23 Q. Do you get copies of these documents as they are
24 submitted to the EPA?

25 A. I do.

1 MR TEBBUTT: Your Honor, we would move A-67.

2 MS. HOWARD: Same objections, Your Honor. Again, I
3 just want to point out, this is a draft report. It's not a
4 final report. And we haven't established that he's the
5 author.

6 So to the extent that he's going to be talking
7 about this, I don't understand how he's laid the foundation
8 to be able to talk about the contents of this particular
9 document.

10 MR TEBBUTT: I can spend another five or ten
11 minutes laying foundation, but we don't have forever.

12 MS. BARNEY: Ecology has an additional objection.
13 This is a March 2018 report. Mr. Erickson's report was
14 submitted in 2017. This document -- to the extent it
15 contains old data, perhaps, but certainly more recent
16 data -- could not be -- form the basis for his conclusions
17 that are in his expert report submitted in this case.

18 MR TEBBUTT: It has all the cumulative information,
19 as well, from the groundwater monitoring. Again, I could
20 spend 10 more minutes asking foundational questions. It has
21 the whole history of all the groundwater monitoring
22 information in it. It's submitted to EPA in draft form.

23 EPA has a certain amount of time -- I think I asked
24 Mr. Erickson this -- to review it and say, "Okay, we've got
25 this problem with it, this problem, you need to add this,

1 that, or the other thing to it." But it's basically the
2 information. Nothing major changes in it every year.

3 We could have used the 2016 report. But then we
4 would have got an objection that it was old data. So we
5 have given them the most recent data so we can get this in
6 front of the board and use real fresh data.

7 JUDGE FRANCKS: So this is not a report that he's
8 authored?

9 MR TEBBUTT: That is correct.

10 JUDGE FRANCKS: But it's data that he's relying on
11 in his expert report?

12 MR TEBBUTT: That's correct.

13 JUDGE FRANCKS: But not the newer data?

14 MR TEBBUTT: Well, not for the old report. But I
15 mean, I could ask him the same questions. Has the data
16 changed significantly? I could spend, you know, 10, 15, 20
17 minutes asking those questions. But this is relevant
18 information.

19 It's -- you know, it's directly at issue. It's
20 some of the most comprehensive information in the State of
21 Washington, in the history of the United States, on CAFO
22 contamination.

23 JUDGE FRANCKS: I'm going to allow it, but I think
24 we need to focus.

25 MR TEBBUTT: I'm trying to. But I have to lay a

1 foundation because I'm getting objections about it. So I'm
2 trying to get there.

3 (Exhibit A-67 admitted.)

4 BY MR. TEBBUTT:

5 Q. Mr. Erickson, I would like you to take a look at page
6 186. Sorry. 183, Figure 1.

7 Do you have Figure 1 in front of you, sir?

8 A. I do.

9 Q. What is Figure 1?

10 A. So Figure 1 is the -- the conceptual model of the
11 different sources of contamination at a dairy operation.
12 It's a figure, that while I'm not the author of this report,
13 it's something that we worked on with EPA and Anchor to
14 incorporate in the report.

15 Q. So you've had input into a number of pieces of the
16 report itself?

17 A. Correct.

18 Q. I forgot to ask you. Are you working for any of the
19 dairies now?

20 A. We are currently working for all three dairies.

21 Q. In what capacity? Let's start with Cow Palace.

22 A. At Cow Palace, we are working on the lagoon project, as
23 far as lining their storage lagoons with -- we've completed
24 two of them to date. Another one this year.

25 We're also working on their compost issue in their

1 compost area. Working to decrease the permeability of the
2 soil and increase the sloped or runoff from that area so
3 it's not seeping into the ground.

4 The Bosma and DeRuyter facilities --

5 Q. Let's just go with Bosma. What are you doing for Bosma
6 now?

7 A. Currently working on the compost issues, also.

8 Q. What about DeRuyter?

9 A. Similarly. Compost area. We've closed one area and
10 moved into a better-suited area for compost.

11 Q. In some circumstances, you're actually hired and paid
12 directly by dairies; correct?

13 A. That's correct.

14 Q. And in other circumstances, you are still working for
15 Care, the plaintiffs in the case, as well; correct?

16 A. Yes.

17 Q. So you have a very unique role of being both an expert
18 for Care and technical consultant for the dairies; correct?

19 A. It's challenging.

20 Q. I can only imagine. Actually, I don't have to imagine
21 because I hear about it a lot.

22 So everything that happens at the dairies,
23 essentially, is open to me and it's open to the dairies,
24 correct --

25 A. Correct.

1 Q. -- because of that agreement?

2 A. Yes.

3 Q. So that's with Cow Palace.

4 So any work that you're doing for Bosma is also
5 shared with Care; correct?

6 A. Yes.

7 Q. And you're actually not being paid by DeRuyter to do
8 anything right now, are you?

9 A. We are still working on a few compost issues that he is
10 paying us on.

11 Q. He is? All right. I guess we need to talk more often.

12 So you have input into the information that comes
13 in these annual reports, too; correct?

14 A. Correct. Occasionally, we're involved with the
15 sampling -- soil sample collection or groundwater sample
16 collection, and we do get a chance to review the reports
17 along with the EPA.

18 Q. Let's look a little bit and talk about A-67, page 183,
19 the conceptual model. Let's talk about animal pens.

20 How does animal pens affect, if at all, the issues
21 in this case?

22 A. What -- what Ms. Redding had stated earlier is true.
23 There does appear to be a -- a black layer that is -- that
24 the cows trample on and push into the ground, and it creates
25 a black, almost asphalt-looking material. But it is not

1 impermeable.

2 So if you actually go look at the pens, a lot of
3 the pens have areas that water collects and stands and seeps
4 into the ground. There's always manure present in the
5 ground. So it is a potential source of seepage.

6 There are water troughs. We all know it rains, it
7 snows. So I disagree that the pens are -- shouldn't be
8 addressed, as far as some type of contamination, and we have
9 multiple data from multiple borings that show a lot of
10 variability within each pen, as far as what may be moving
11 towards groundwater.

12 The other thing that we see that's very apparent --
13 the next time you go to a dairy, if you ever get to one, a
14 lot of times the fences look like they're coming up out of
15 the ground. The concrete seals around -- or footings around
16 the metal fences. And after several years, the concrete is
17 sticking out of the ground this high, (Indicating), and
18 that's because every time they come in and grade the pen,
19 they take that top layer off. So that opens up a new area
20 for infiltration.

21 The other thing that we see happen in a lot of
22 pens, instead of going to a compost area, they actually
23 stockpile the wet manure in the pen and let it dry out
24 enough or drain enough so that they can take it to the
25 compost area. So --

1 Q. Let me stop you there.

2 What's the water content of raw manure?

3 A. So raw manure in the pens is about 45 percent water.

4 So it's literally saturated -- fully saturated.

5 Q. Then it's mounded sometimes in the pens; right?

6 A. Correct. They usually -- they usually push it into a
7 mound in a collection area, and then haul it to the compost
8 area.

9 Q. When it goes to the compost area, what's the
10 approximate water content of that material?

11 A. It's highly variable. It depends on the weather. A
12 lot of times when they're trying to move that, they've got
13 snow and early season rain. So it really is still at that
14 45 percent moisture.

15 Q. How would you describe its looks?

16 A. Slop, would be the best way to describe it. It
17 doesn't -- I had some pictures of compost areas where you
18 see these nice, tilled rows. When it first goes out there,
19 it's not a nice, tilled row. It's wet cow manure that just
20 spreads out, with no structure to it whatsoever.

21 Q. So have you sampled -- I believe you said -- you
22 started to talk about this.

23 You sampled below this black layer that you were
24 talking about?

25 A. We have. On multiple occasions.

1 Q. Have you found constituent -- let's start with nitrate
2 and ammonia.

3 Have you found nitrate and ammonia below that black
4 zone that you're talking about?

5 A. We have.

6 Q. At what depths?

7 A. I have to look at the data, specifically, but I believe
8 10 feet, to as deep as we sampled.

9 Q. And so obviously, there are no crops growing there?

10 A. Correct.

11 Q. So the nitrate and ammonia that's there, and the
12 nitrate that gets below that black level, where does it go?

13 A. It drains downward.

14 Q. To where?

15 A. To groundwater.

16 Q. Is there anything that's going to stop it?

17 A. So there's some things that can go on in the
18 subsurface, and you -- I think this question has been tough
19 for everybody to answer. But you need a -- you need head or
20 you need water entering the ground to push that nitrate
21 down.

22 So there are times when -- like in Western
23 Washington, when you have significant rains and snows, where
24 you've got liquid leaching through the ground, picking up
25 the nitrates and carrying it down. As it goes down, it

1 spreads out.

2 So it can hit a level that we call "field
3 capacity," which is about 15 percent moisture, where it
4 quits migrating and it sits there.

5 Then when the next wet season comes or the next
6 rainfall comes, you get another wetting front that comes
7 down and pushes it further down. So it's always migrating
8 in that vadose. But the speed is variable, depending on the
9 head.

10 So it's headed to groundwater. There's not much
11 that could stop it unless you intercept it and pull it out.
12 But it takes time to get there, and it doesn't move
13 necessarily uniformly, in, like, the pens where you have
14 a -- variable saturated conditions.

15 Now, underneath the lagoons is a different story.
16 Q. Yeah. We'll get to that in a little bit. Let's just
17 stick with the pens for now.

18 You've heard discussion -- you sat in the courtroom
19 yesterday and today, correct --

20 A. Correct.

21 Q. -- and you've heard some discussion about driving
22 forces. Water being a driving force. And you just talked
23 about that.

24 Water is a driving force that will move the
25 constituent down to groundwater; correct?

1 A. Correct.

2 Q. In animal pens, what are the sources of water that will
3 drive the manure and nitrates down to the groundwater?

4 A. There's several sources. One is precipitation. Number
5 two is flushing. Quite often they are flushing the runways
6 or the alleyways, and the water spills out of the alleyway
7 onto the ground.

8 Three is the cattle troughs. You go look at a
9 facility, there's always a large, wet area around the
10 troughs where the cows go to water. And the fourth one is
11 urine. Part of the waste is urine, and that's a liquid
12 that's on the ground all the time.

13 Q. The manure itself, is there water in the manure?

14 A. And then the saturation of the manure, yes.

15 Q. Let's -- again, we're just going to try to give some
16 background today. We'll get into the details tomorrow. But
17 I just want to give a background for the board on all these
18 different concepts here for today while we have a little
19 time.

20 Let's look at the compost areas. How do compost
21 areas fit into this conceptual model that we're looking at?

22 A. So the -- the compost area is usually a separate area
23 away from the dairy. They haul the wet manure to this
24 location. They have specialized equipment that -- well, to
25 haul it, there's no specialized equipment. It's just trucks

1 and front end loaders.

2 Once it gets there, they have compost turners.
3 It's a tall piece of equipment with large rubber fingers
4 that turn around and mix this compost, stack it in nice
5 windrows and allow the manure to compost, and we should talk
6 a little bit about what that is.

7 Through natural degradation, manure actually heats
8 up to about 140 degrees and cooks over the summer. Those
9 temperatures kill the pathogens within the manure. And then
10 the -- the action of turning it and composting it breaks it
11 down into finer products or finer pieces.

12 While that's going on, the compost changes from
13 about 45 percent liquid to about 10 or 15 percent liquid.
14 And that's not magic. That happens through two different
15 mechanisms.

16 One is the actual composting action, where it heats
17 up and dries off the moisture and evaporates. The other is
18 through drainage. So whatever is driven off and evaporates,
19 there's more that goes into the ground because of that
20 heating operation and gravity drainage.

21 Q. You mentioned "gravity." Is that a scientific
22 principle that applies to water and the way it moves?

23 A. It is.

24 Q. Explain the process of gravity and how gravity moves
25 water downward.

1 A. Very similar to the apple falling out of the tree.
2 Gravity just is a force that pulls anything with mass
3 towards the center of the earth. It's just like watering
4 your garden or dumping a glass of water where it seeps into
5 the ground. It's --

6 Q. I think we get that concept. I don't know that we need
7 to spend too much time on it.

8 So what else -- is there -- let me ask you this.
9 How many acres of compost area is there at the Cow Palace
10 facility?

11 A. I believe it's about 90 acres, total.

12 Q. What about the Bosma facility? Do you know?

13 A. There's two different compost areas. I think they
14 total about 60 acres, combined.

15 Q. And you've tested the bottoms of some of these areas?

16 A. Correct. We've -- we've sampled, according to what I
17 previously described, soil samples down to about 10 feet.
18 One, I think we went to 20.

19 Q. What did those samples show?

20 A. The --

21 Q. Just in general.

22 A. The first compost area we sampled showed some of the
23 highest nitrates in soil that we'd seen, and it showed a
24 zone at about -- going off memory -- about 15 feet. I think
25 it was 14 feet -- that was very high and wet, that contained

1 a lot of nitrogen. So it was a direct indication that
2 nitrogen was moving down through the soil.

3 Q. So did you see nitrate and ammonia at depth?

4 A. We did. Yes.

5 Q. We'll get into some more of that in the details
6 tomorrow. Let's talk about lagoons.

7 How do lagoons fit into this conceptual model?

8 A. Lagoons are a significant source of contamination,
9 because, one, we're -- on the lagoons we're working on, we
10 haven't seen the actual liner that everybody's talked about
11 for the last couple of days.

12 One of the points that I really want to make is
13 that we keep talking about clay liners. But these
14 aren't -- these are not clay liners. In order to meet
15 this --

16 Q. What are they, then?

17 A. Ten to the minus six standard -- what most of the
18 dairies are doing is just compacting the natural ground. It
19 can be a silt. Silty sand. It can have gravel in it. And
20 it can still meet that ten to the minus six permeability
21 standard.

22 I would like to talk a little bit about scale.
23 Really, the permeability standard ranges from one to ten to
24 the minus twelve. Ten to the minus twelve being the
25 synthetic liner.

1 So we're -- we're really about only halfway into
2 the permeability scale. Actual materials -- like a good
3 clay -- will be ten to the minus nine, ten to the minus ten
4 permeability. So we've heard a lot of talk about clay
5 liners.

6 What we've seen in the field is more like a silt
7 liner or a sandy silt liner. That standard is really just
8 not sufficient for lagoons, where you have anywhere from
9 nine feet of water, which is the NRCS standard, to over 30
10 feet of water in the lagoon.

11 So I think Ms. Redding talked about the head
12 pressure. For every two and a half feet of water, you get
13 one PSI of pressure at the bottom of the lagoon. So with 30
14 feet of water, you're looking at over 15 PSI of pressure on
15 that liner.

16 Q. What's "PSI"?

17 A. Pounds per square inch.

18 Q. Explain what that means in hydrologic terms.

19 A. It -- it's the driving force that pushes that liquid
20 into the ground. If the -- if you're looking at the pens,
21 where you have a puddle that is only a few inches deep, at
22 that point you're really looking at just gravity drainage.
23 You don't have any extra pressure going into the ground.

24 Lagoons, where you've got 30 feet of water on top
25 of that liner, you have a lot of extra pressure driving

1 liquid through that liner.

2 Q. What's the deepest lagoon you've seen in your
3 experience?

4 A. It's 30 feet deep.

5 Q. Which one is that?

6 A. It's one of the lagoons at Cow Palace.

7 Q. Is that one of the new ones that's -- is that one of
8 the new ones at Cow Palace?

9 A. No. That's just an existing lagoon.

10 Q. So that's just an earthen lagoon?

11 A. Correct.

12 Q. Were you in charge of designing a lagoon or lagoons for
13 Cow Palace?

14 A. We are. We're on our third lagoon there.

15 Q. What's the largest volume capacity of a lagoon that
16 you've built for Cow Palace?

17 A. The one we completed last year was 25 million gallons.

18 Q. So what's the top recommended depth of water in that
19 lagoon?

20 A. That lagoon will be 24 feet deep at its max.

21 Q. When it's full?

22 A. When it's full.

23 Q. But it's actually deeper than that; right?

24 A. Correct.

25 Q. Because you're supposed to leave some amount of

1 freeboard between the top and the top of the lagoon?

2 A. Yeah. So part of the design is that you leave enough
3 space in the lagoon to handle a big storm event, so that
4 that storm water can be routed to the lagoon without
5 over-topping, and you leave at least a foot of freeboard
6 for -- if a wind storm comes in and you have wind blowing,
7 the wave action doesn't force the waves -- the water over
8 the top of the lagoon.

9 Q. Let's look at the conceptual model with regard to
10 fields. Crop fields.

11 Can you explain how that conceptual model is
12 relevant to the issues in this permit, please?

13 A. So the -- the liquid waste is stored in the lagoons and
14 then applied to crop fields over the course of the year.
15 There's multiple ways this is applied.

16 We saw some pictures this morning of a big gun.
17 Most of the time it's a pivot on the bigger ones. On the
18 bigger CAFOs.

19 So the -- the lagoon water is mixed with irrigation
20 water and applied to the field. You can see by the
21 conceptual model that there's two different things that
22 happen there as the water enters the ground. It either
23 leaches down below the root zone or the roots uptake that
24 water and nutrients and result in plant growth.

25 Q. If the water -- whether it's irrigation water or manure

1 water -- gets below the root zone, where is it going?

2 A. It's also going down to groundwater.

3 Q. Because of gravity?

4 A. Correct.

5 Q. You heard Ms. Redding testify earlier today about
6 different aspects of potential contamination from CAPOs and
7 the likelihood -- or the loading, I guess, if you will, from
8 each of the sources.

9 Do you remember that testimony?

10 A. I do.

11 Q. In your opinion, what's the highest likely loading
12 source of nitrate to groundwater?

13 A. That's a difficult question, in general, because it
14 depends on the dairy and how it's operated. In situations
15 where you have earthen lagoons in coarse, grain soil, I
16 would -- I would guess that the lagoons are much more
17 significant, as far as the source.

18 In areas where you have over application to the
19 fields and not enough field to handle the load from the
20 dairy, then I would guess that the application fields are
21 probably the predominant source.

22 One of the other things that we looked at in this
23 conceptual model that's shown here is you can see some
24 piping running from the pens to the lagoons, in between the
25 lagoons.

1 One of the things that we did in the dairy cluster
2 is we inspected that piping. It's -- it's the conveyance
3 system for the waste into the lagoons, and what we learned
4 was there was a lot of problems with that piping.

5 So I believe that was a significant source there,
6 because the piping's actually pressurized. If it's leaking
7 underground, nobody knows it's leaking underground. So
8 that's another item shown in that conceptual model.

9 If I had to rank -- rank the -- the potential
10 sources, I would say that the -- in most cases, the
11 application fields are the biggest source, followed by the
12 lagoons.

13 I believe the compost areas are -- are -- would be
14 number three, but they're a bigger source than we think.
15 Followed by the pens being last.

16 Q. But they are all contributing sources to groundwater
17 contamination?

18 A. Correct.

19 Q. Is there any question in your mind that they are?

20 A. All the data that we've collected to date indicates
21 that they're all sources.

22 Q. Let me ask you, just while we're on the piping issue.

23 Do you see anywhere in -- you've read the general
24 permit in this case; correct?

25 A. Correct.

1 Q. Do you see anywhere in the permit that deals at all
2 with the -- the leakage from piping, the infrastructure, at
3 all?

4 A. I do not. No.

5 Q. Do you see anywhere that deals with compost
6 infiltration into groundwater?

7 A. No.

8 Q. Do you see anywhere that deals with the infiltration
9 from animal pens into groundwater?

10 A. I do not.

11 JUDGE FRANCKS: Mr. Tebbutt, might this be a good
12 time to wrap it up?

13 MR TEBBUTT: It would be a good time to call it a
14 day.

15 JUDGE FRANCKS: That's what I was looking at.

16 MR TEBBUTT: With your permission, I think what we
17 would like to do is try to figure out if we can get Dr.
18 Keeney on tomorrow morning.

19 JUDGE FRANCKS: Okay.

20 MR TEBBUTT: Displace Mr. Erickson for a little
21 while, and then bring him back. We'll do our best. And if
22 it doesn't work again, we'll keep going with Mr. Erickson,
23 until we figure it out.

24 JUDGE FRANCKS: That's fine. All right. We are
25 adjourned until tomorrow at 9:00.

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(Proceedings adjourned at 4:45 P.M.)

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C E R T I F I C A T E

I, LAURA L. STEWART, Certified Court Reporter in
and for the State of Washington, residing at Graham, do
hereby certify;

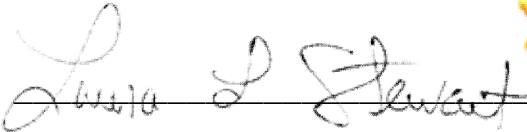
That the foregoing proceedings were taken before me
and thereafter reduced to a typed format under my direction;
that the transcript is a full, true and complete transcript
of said proceedings consisting of pages 410 through 661;

That as a CCR in this state, I am bound by the
Rules of Conduct as Codified in WAC 308-14-130; that court
reporting arrangements and fees in this case are offered to
all parties on equal terms.

That I am not a relative, employee, attorney or
counsel of any party to this action, or relative or employee
of any such attorney or counsel, and I am not financially
interested in the said action or the outcome thereof;

That upon completion of signature, if required, the
original transcript will be securely sealed and the same
served upon the appropriate party.

IN WITNESS WHEREOF, I have hereunto set my hand
this 19th day of June, 2018.



Laura L. Stewart CCR No. 2110

