

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:)
) No. AS 19-002
) (Adjusted standard)
Petition of Emerald Polymer)
Additives, LLC, for an)
Adjusted Standard from 35)
Ill. Adm. Code 304.122(b))

REPORT OF THE PROCEEDINGS held in the above entitled cause before Hearing Officer Carol Webb, called by the Illinois Pollution Control Board, taken by Steven Brickey, CSR, for the State of Illinois, 406 5th Street, Lacon, Illinois, on the 14th day of January, 2020, commencing at the hour of 8:51 a.m.

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A P P E A R A N C E S

MS. CAROL WEBB, Hearing Officer
MS. BRENDA CARTER, Board Member
MR. ANAND RAO, Technical Unit

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1 HEARING OFFICER WEBB: Okay. Let's
2 go ahead and begin. Good morning. My name is
3 Carol Webb and this is the hearing for AS 19-002
4 Petition of Emerald Polymer Additives for an
5 Adjusted Standard from the Total Ammonia-Nitrogen
6 Effluent Standard in 35 Ill. Adm. Code 304.122(b).

7 Joining me today is Board Member
8 Brenda Carter and the Board's Chief Scientist
9 Anand Rao. We also have other Board staff here
10 with us today; attorney advisor Mark Kaminski and
11 environmental scientist Essence Brown.

12 It is January 14th, 2020, and we
13 are beginning a few minutes before 9:00 a.m.
14 There are no members of the public here. However,
15 written public comment may be filed with the
16 Board's clerk by February 14th, 2020. The
17 Pollution Control Board members will make the
18 final decision in this case. My purpose is to
19 conduct the hearing in a neutral and orderly
20 manner so that we have a clear record of the
21 proceedings.

22 This hearing was noticed
23 pursuant to the act and the Board's rules and will
24 be conducted pursuant to the Board's procedural

1 rules at 35 Ill. Adm. Code 101 Subpart F and 104
2 Subpart D.

3 At this time, I'd like to ask
4 the parties to please make their appearances on
5 the record.

6 MR. DIMOND: On behalf of Emerald
7 Polymer Additives, Tom Dimond of Ice Miller, LLP.

8 MS. WEYHING: On behalf of Emerald
9 Polymer Additives, Kelsey Weyhing of Ice Miller,
10 LLP.

11 MR. GRADELESS: On behalf of the
12 Illinois Environmental Protection Agency, Rex
13 Gradeless.

14 MS. ZEIVEL: On behalf of the
15 Illinois EPA, Christine Zeivel.

16 HEARING OFFICER WEBB: Okay. Thank
17 you.

18 Are there any preliminary
19 matters anyone would like to discuss on the
20 record? Okay.

21 Would petitioner like to make an
22 opening statement?

23 MR. DIMOND: We will not make an
24 opening statement. We think we ought to use the

1 hearing time to put our witnesses on.

2 HEARING OFFICER WEBB: Okay. Would
3 the Agency like to make an opening statement?

4 MR. GRADELESS: We would like to
5 reserve our opening statement for our case in
6 chief.

7 HEARING OFFICER WEBB: All right.
8 Petitioner may call its first witness, please.

9 MR. DIMOND: Thank you, Hearing
10 Officer Webb. We call Galen Hathcock to the
11 stand.

12 HEARING OFFICER WEBB: Mr. Hathcock,
13 normally, we have the witness stand right next to
14 you, but I think you're fine where you are.

15 THE WITNESS: Thank you.

16 HEARING OFFICER WEBB: Would the
17 court reporter please swear in the witness.

18 WHEREUPON:

19 GALEN HATHCOCK
20 called as a witness herein, having been first duly
21 sworn, deposeth and saith as follows:

22 D I R E C T E X A M I N A T I O N

23 BY MR. DIMOND:

24 Q. Good morning, Mr. Hathcock. How are

1 **you this morning?**

2 A. Good. Good morning.

3 **Q. Could you state your full name for**
4 **the record?**

5 A. Yes, Galen Hathcock.

6 **Q. Okay. Did you prepare written**
7 **testimony that was pre-filed for this proceeding?**

8 A. Yes, I did.

9 **Q. I'm going to hand you an entire book**
10 **of all the petitioner's hearing exhibits and ask**
11 **you to turn to the tab that is identified there as**
12 **1, which is Petitioner's Hearing Exhibit 1.**

13 (Document marked as Petitioner's
14 **Exhibit No. 1 for**
15 **identification.)**

16 BY MR. DIMOND:

17 **Q. Would you review that document**
18 **briefly?**

19 A. Yes.

20 **Q. And can you identify what that**
21 **document is for the record?**

22 A. This is my written testimony.

23 **Q. Okay. And did you prepare that?**

24 A. Yes.

1 Q. **Did you review it before it was**
2 **filed?**

3 A. Yes.

4 MR. DIMOND: At this time, we would
5 move the admission of Petitioner's Hearing Exhibit
6 1.

7 HEARING OFFICER WEBB: Petitioner's
8 Hearing Exhibit 1 is admitted.

9 MR. GRADELESS: Wait. Can we note
10 an objection, a hearsay objection, this being an
11 out of court statement being used to prove the
12 truth of the matter asserted?

13 HEARING OFFICER WEBB: Would you
14 feel more comfortable if you read it? Can we
15 admit it as if read or would you like him to read
16 it?

17 Will that resolve your
18 objection?

19 MR. GRADELESS: Well, I don't know
20 that -- did the witness say he wrote this
21 statement?

22 HEARING OFFICER WEBB: I don't think
23 he --

24 MR. DIMOND: He said he reviewed it.

1 It is standard procedure in the Board proceedings
2 that the Board asks for testimony to be pre-filed
3 on technical issues. We did that in accordance
4 with the Hearing Officer's order and as long as
5 the witness confirmed that he reviewed it and that
6 it is his testimony, it is accepted as testimony.
7 I don't think a hearsay objection is appropriate.
8 They can ask him a question about anything that is
9 in the written testimony that they want.

10 MR. GRADELESS: The witness has --
11 I'm sorry. May I respond?

12 HEARING OFFICER WEBB: Yes.

13 MR. GRADELESS: The witness hasn't
14 said this is his testimony, that he created this
15 document. It wasn't -- frankly, we don't know
16 whether or not it was created by this witness at
17 all. It's an out of court statement being used to
18 prove the truth of the matter asserted within this
19 document that these statements are true. There is
20 no affidavit. There is no -- it's not been
21 notarized. This witness can come -- can come in
22 and say, you know, I read this document and it
23 appears to be true. It's hearsay. It's textbook
24 hearsay.

1 HEARING OFFICER WEBB: Well, you can
2 cross-examine him on anything in there. I'd like
3 to admit it -- well, he can read it here today,
4 but just for efficiency sake, we have a lot of
5 witnesses to get through, I'd like to admit it
6 into evidence as if read.

7 I'm assuming that -- that
8 Mr. Hathcock has accepted that what is in here is
9 true, but, of course, you can cross-examine him on
10 that.

11 MR. GRADELESS: Yes.

12 HEARING OFFICER WEBB: I'm going to
13 admit the hearing exhibit.

14 MR. DIMOND: And, Hearing Officer
15 Webb, in -- in his written testimony, he also
16 identifies Petitioner's Hearing Exhibit 2,
17 Petitioner's Hearing Exhibit 4, Petitioner's
18 Hearing Exhibit 5, Petitioner's Hearing Exhibit 6,
19 Petitioner's Hearing Exhibit 7 and Petitioner's
20 Hearing Exhibit 8 and so we would move the
21 admission of those -- those exhibits as well which
22 are all identified in the written testimony.

23 HEARING OFFICER WEBB: Do you have
24 any comments?

1 MR. GRADELESS: Yes. These are all
2 hearsay documents. Identifying a document that
3 you've seen the document, these aren't his
4 statements. These are documents written by other
5 people, let's see, for --

6 HEARING OFFICER WEBB: I don't
7 think -- they're not being offered --

8 MR. GRADELESS: Let me go in order.
9 How about I go in order?

10 HEARING OFFICER WEBB: Why don't we.

11 MR. GRADELESS: There's a lot of
12 exhibits.

13 HEARING OFFICER WEBB: Can we
14 introduce them when we get to them, would that
15 help?

16 MR. GRADELESS: Yes.

17 MR. DIMOND: If you want -- if it is
18 the Board's procedure that they would like us to
19 do each one individually, I can go through each
20 one individually, but they're identified in the
21 written testimony. The purpose of admitting them
22 is that they're authenticated. They've all been
23 authenticated by Mr. Hathcock in his written
24 testimony.

1 It's normal Board procedure that
2 if something is identified in the written
3 testimony, it's authenticated and it's admitted
4 into the record and all these -- most of these
5 documents are business records of the company.
6 There is no hearsay objection to them.

7 HEARING OFFICER WEBB: Okay. Well,
8 I don't understand exactly what the objection is
9 to the business records, but I guess when we get
10 to it --

11 MR. GRADELESS: Well, there's been a
12 lack of foundation for that. I mean, we just were
13 told about six or seven exhibits and we're just
14 throwing them into the record at this point.

15 MR. DIMOND: That's not --

16 MR. GRADELESS: It would help me if
17 we did go by each record and I can identify any
18 objections that we may have, but at this point
19 it's difficult to know what exactly --

20 HEARING OFFICER WEBB: We'll do that
21 so the Agency can preserve their objections.
22 Sorry.

23 MR. DIMOND: That's okay.

24 HEARING OFFICER WEBB: We'll go --

1 right now Hearing Exhibit 1 is admitted. Let's
2 start there.

3 BY MR. DIMOND:

4 Q. Mr. Hathcock, I'm going to ask you
5 to turn to the tab in that binder identified as 2.

6 (Document marked as Petitioner's
7 Exhibit No. 2 for
8 identification.)

9 BY MR. DIMOND:

10 Q. There is a document there that is
11 marked as Petitioner's Hearing Exhibit 2.

12 Can you please briefly look at
13 that and, for the record, tell us what that
14 document is?

15 A. Yes, this is test data that we
16 conduct on our effluent from our facility.

17 Q. Okay. And are those reports that
18 are printed out from a database that is maintained
19 by Emerald?

20 A. Yes.

21 Q. What -- what kind of data on the
22 effluent is included on Petitioner's Hearing
23 Exhibit 2?

24 A. For example, I see ammonia levels in

1 mg/L, total suspended solids, total plant effluent
2 rate in gallons per minute, this type of tabical
3 information on the results in the flow rates and
4 components in our wastewater.

5 **Q. What does Emerald use the data that**
6 **is printed out on Petitioner's Hearing Exhibit 2**
7 **for?**

8 A. We use it for reporting to the EPA,
9 of course, and we also use it for internal
10 monitoring and control.

11 **Q. When you say reporting to the EPA,**
12 **would that be for reporting on your monthly DMR**
13 **reports?**

14 A. Exactly.

15 **Q. Okay. What -- if you would look**
16 **through sort of, you know, the entirety of**
17 **Petitioner's Hearing Exhibit 2, what period of**
18 **time does that cover?**

19 A. I see we begin on January 1st, 2013,
20 running continuously it appears through June 30th,
21 2019.

22 **Q. Okay.**

23 MR. DIMOND: We would move the
24 admission of Hearing Exhibit 2.

1 MR. GRADELESS: No objection.

2 HEARING OFFICER WEBB: Petitioner's
3 Hearing Exhibit 2 is admitted.

4 BY MR. DIMOND:

5 Q. I'm going to ask you to turn to the
6 tab in that binder that is identified as 4.

7 (Document marked as Petitioner's
8 Exhibit No. 4 for
9 identification.)

10 BY MR. DIMOND:

11 Q. Can you identify for the record what
12 the documents are in Exhibit -- Petitioner's
13 Hearing Exhibit 4?

14 A. These are reports filed by Emerald
15 Materials to the Illinois EPA regarding ammonia
16 levels.

17 Q. Okay. Are these -- so there are
18 letters in here dated 12/24/07, there is one that
19 is dated May 20th of 2010, although for the record
20 I think that date is wrong, there is one that is
21 dated 12/22/09, another one that is dated January
22 14th of 2010 and then a letter dated December
23 20th, 2011, another letter that is undated, a
24 letter dated December 30th, 2013, one that is

1 dated December 30th, 2014, one dated January 6th,
2 2016, April 27th, 2016, November 30th of 2017, and
3 then April 17th, 2018, is that correct?

4 A. Yes.

5 Q. Okay. Are these all letters and
6 documents that are maintained in the business
7 records of Emerald?

8 A. Yes.

9 Q. Were these submitted to the Agency
10 as part of Emerald's compliance with either the
11 adjusted standard numbered 02-5 or the adjusted
12 standard number AS 13-2?

13 A. Yes.

14 MR. DIMOND: We move the admission
15 of Petitioner's Hearing Exhibit 4.

16 MR. GRADELESS: No objection.

17 HEARING OFFICER WEBB:

18 Petitioner's --

19 MR. GRADELESS: I'm sorry. I'm
20 trying to read through these and maybe we can get
21 through the foundation. I just want to -- I can
22 help -- might be able to help you, Tom, on the
23 foundation for these.

24 We have no objection to 4 or 6

1 at this point.

2 HEARING OFFICER WEBB: Okay. We can
3 go -- can you clarify which date that you did not
4 think was correct?

5 MR. DIMOND: Sure.

6 HEARING OFFICER WEBB: Can you show
7 us where that was?

8 MR. DIMOND: So if you look in
9 Petitioner's Hearing Exhibit 4 on the third page
10 of the exhibit, it has Bates number EP2787. On
11 the right-hand side, the date of the document
12 appears to be May 20th of 2010, but if you look in
13 the body of the document, it's reporting on sample
14 results from 2008. I think somebody just put the
15 wrong date on the letter.

16 HEARING OFFICER WEBB: What should
17 it be?

18 MR. DIMOND: I don't know what it
19 should be.

20 HEARING OFFICER WEBB: Okay.

21 MR. DIMOND: I don't know what it
22 should be. I can only tell you --

23 HEARING OFFICER WEBB: Okay.

24 MR. DIMOND: -- the date of the

1 letter just doesn't seem to be consistent with the
2 detail inside the letter.

3 HEARING OFFICER WEBB: Okay. So the
4 Agency has said that they do not have an objection
5 to admitting Exhibit's 4 and 6. So Petitioner's
6 Exhibit 4 and 6 are admitted.

7 MR. DIMOND: Exhibit 5 is of --
8 Mr. Gradeless, Exhibit 5 is of the same nature as
9 Exhibit 6.

10 Does the Agency have an
11 objection to No. 5?

12 MR. GRADELESS: No objection to 5.

13 HEARING OFFICER WEBB: Okay.
14 Petitioner's Exhibit 5 is admitted.

15 (Document marked as Petitioner's
16 Exhibit No. 5-6 for
17 identification.)

18 BY MR. DIMOND:

19 Q. Mr. Hathcock, I'm going to ask you
20 to turn in your book to Tab 7.

21 (Document marked as Petitioner's
22 Exhibit No. 7 for
23 identification.)
24

1 BY MR. DIMOND:

2 Q. Can you identify for the record what
3 is marked as Petitioner's Hearing Exhibit 7?

4 A. This is a summary flowchart of the
5 waste flows in our waste treatment process.

6 Q. When you say the flows in your waste
7 treatment process, you mean at the Emerald Henry
8 plant?

9 A. Yes. I'm sorry. The Emerald Henry
10 plant showing where the flows come into the tanks,
11 the waste treatment, how they flow through the
12 process.

13 MR. DIMOND: We move the admission
14 of Petitioner's Hearing Exhibit 7.

15 MR. GRADELESS: With that
16 foundation, we have no objection and I think our
17 power is not on.

18 (Whereupon, a break was taken
19 after which the following
20 proceedings were had.)

21 HEARING OFFICER WEBB: That was
22 Petitioner's Exhibit 7 we were talking about?

23 MR. GRADELESS: Yes.

24 HEARING OFFICER WEBB: Okay. That's

1 admitted.

2 BY MR. DIMOND:

3 Q. Mr. Hathcock, I'm going to ask you
4 to turn to the tab in that binder that's marked as
5 8.

6 (Document marked as Petitioner's
7 Exhibit No. 8 for
8 identification.)

9 BY MR. DIMOND:

10 Q. Could you identify for the record
11 what the documents are -- the group of documents
12 are that are identified as Petitioner's Hearing
13 Exhibit 8?

14 A. These are reports to the Illinois
15 EPA regarding monitoring results including lab
16 data from PDC Labs as backup.

17 Q. Okay. And were these submitted to
18 the Agency by Emerald?

19 A. Yes.

20 Q. The type of lab data that's included
21 as attachments to the letter, are those what is
22 known as Whole Effluent Toxicity tests?

23 A. Yes.

24 Q. And Petitioner's Hearing Exhibit 8,

1 if I'm looking at it correctly, so there is one
2 letter with a lab report dated September 23rd,
3 2011, is that correct?

4 A. Correct.

5 Q. And then there is another letter
6 from Emerald to Illinois EPA dated November 4th,
7 2011, is that correct?

8 A. I'm looking for that one still.
9 Hold on a second, please.

10 Q. EP2870.

11 A. November 4th, 2011, yes.

12 Q. And then the next letter is dated
13 February 27th, 2012, is that correct?

14 A. Yes.

15 Q. And if we page on, the next letter
16 is dated November 7th, 2017?

17 A. Yes.

18 Q. The next letter is dated November
19 3rd, 2017, is that correct?

20 A. One moment, please. Yes.

21 Q. Continuing through the exhibit, the
22 next letter is dated April 18th, 2019, correct?

23 A. Yes.

24 Q. Is that your signature at the bottom

1 of the letter?

2 A. Yes, it is.

3 Q. So were you -- by this time, you
4 were employed at the plant?

5 A. Yes.

6 Q. And were you responsible for
7 submitting these kinds of documents to Illinois
8 EPA?

9 A. I was responsible for ensuring that
10 they did -- that they happened. Others completed
11 the work behind them.

12 Q. Okay. If we continue turning pages,
13 I believe the last letter in this group exhibit is
14 dated October 28th, 2019, correct?

15 A. Yes.

16 Q. And is that also your signature on
17 that letter?

18 A. Yes, it is.

19 Q. Why does Emerald submit the Whole
20 Effluent Toxicity test to Illinois EPA?

21 A. To identify whether there are any
22 toxic issues with wastewater beyond the mixing
23 zone as our wastewater flows into the Illinois
24 River.

1 **Q. Is it a requirement of the plant's**
2 **permit that you submit this data to Illinois EPA?**

3 A. Yes.

4 MR. DIMOND: We move the admission
5 of Petitioner's Hearing Exhibit 8.

6 MR. GRADELESS: No objection.

7 HEARING OFFICER WEBB: Petitioner's
8 Exhibit 8 is admitted.

9 BY MR. DIMOND:

10 **Q. And then, Mr. Hathcock, I'm going to**
11 **ask you to turn to the tab in the binder No. 13.**

12 (Document marked as Petitioner's
13 Exhibit No. 13 for
14 identification.)

15 BY MR. DIMOND:

16 **Q. Could you look through the pages of**
17 **Petitioner's Hearing Exhibit 13 and describe those**
18 **for the record.**

19 A. Yes, this is our test data, as we
20 call it our DMR support data, starting July 1st of
21 2019 going through December 31st of 2019. This is
22 the same data, but more updated than we reviewed
23 before.

24 **Q. So is -- is -- is this a printout of**

1 data that is maintained in a database by Emerald?

2 A. Yes, it is.

3 Q. And is this printout of the same
4 nature as what is in Petitioner's Hearing Exhibit
5 2?

6 A. Yes.

7 MR. DIMOND: We move the admission
8 of Petitioner's Hearing Exhibit 13.

9 MR. GRADELESS: No objection.

10 HEARING OFFICER WEBB: Petitioner's
11 Exhibit 13 is admitted.

12 BY MR. DIMOND:

13 Q. So, Mr. Hathcock, I'm going to ask
14 you to flip back to the beginning of the binder to
15 Petitioner's Hearing Exhibit 1, your written
16 testimony.

17 Is there any portion of that
18 written testimony that needs to be corrected?

19 A. There is a statement about tank
20 capacity I believe I may have misstated.

21 Q. Okay. Can I direct -- I'd ask you
22 to turn to Paragraph 32.

23 A. Yes.

24 Q. Okay. And why don't -- you know,

1 **just for the record so that this will be easy to**
2 **understand on the record, why don't you read the**
3 **first couple of sentences of Paragraph 32 into the**
4 **record.**

5 A. Very good. "After primary
6 clarification, the wastewater is sent to activated
7 sludge treatment for biological treatment in what
8 we call biotreaters. The biotreaters are tanks
9 that range in size from 270,000 gallons to roughly
10 1.4 million gallons and contain biomass to degrade
11 the organic material in the wastewater."

12 **Q. So what is it about those two**
13 **sentences that you need to correct?**

14 A. The tank capacity is not quite
15 right.

16 **Q. Okay. What -- what is -- how many**
17 **biotreater tanks does the facility have in**
18 **existence?**

19 A. We have four.

20 **Q. Okay. And what's -- starting at the**
21 **smallest and going up to the largest, roughly what**
22 **is the capacity of those four tanks?**

23 A. 360,000 gallons, 360,000, 440,000
24 and the large tank is 1.4 million.

1 Q. Okay. Is there anything else in
2 your written testimony that upon further review
3 that you've identified that you need to correct?

4 A. I believe it's accurate.

5 Q. In your written testimony, you
6 indicate that Emerald employs roughly 66 employees
7 at the Henry plant, are any of those employees
8 members of a union?

9 A. Yes, they are.

10 Q. What is the union that represents
11 those employees?

12 A. The Teamsters.

13 Q. And approximately how many of the 66
14 employees are represented by the Teamsters?

15 A. Approximately, 30 at this time.

16 Q. Your written testimony also
17 indicates that the volume of the Henry plant
18 discharge has decreased overall since the early
19 2010's.

20 A. Yes.

21 Q. Does Emerald evaluate ways to reduce
22 water usage and, thereby, reduce the flow of
23 wastewater from the plant?

24 A. We are continually looking at ways

1 to improve on our wastewater performance and that
2 would include water reduction as well.

3 **Q. Do you have any specific projects**
4 **that are targeted at water reduction at this time?**

5 A. We are mostly focused on waste
6 reduction, but we're always looking for ways to
7 reduce water use.

8 **Q. If you had a project that reduced**
9 **water usage, what impact, if any, would that have**
10 **on the ammonia discharge?**

11 A. It would not affect the total pounds
12 loading. It could affect the concentration.

13 **Q. How could it affect the**
14 **concentration?**

15 A. If we reduce the gallons of water,
16 we could, in fact, increase the concentration.

17 **Q. In the Agency's -- the Agency --**
18 **you're aware that the Agency filed a**
19 **recommendation in this proceeding?**

20 A. Mm-hmm.

21 **Q. Have -- have you reviewed it at**
22 **least at a high level?**

23 A. Yes, a high level.

24 **Q. One of the things that the Agency**

1 recommended, they demanded that Emerald
2 reconfigure its activated sludge biotreaters that
3 are currently out of service to provide tertiary
4 nitrification treatment after the secondary
5 clarifier, do you recall that suggestion?

6 A. Yes, I do.

7 Q. Is that a viable, long-term strategy
8 for the Henry plant that Emerald operates?

9 A. I don't think it is.

10 MR. GRADELESS: Objection.
11 Speculation.

12 HEARING OFFICER WEBB: You can
13 answer it.

14 MR. DIMOND: He is -- he is the site
15 director. Who would know better than he does?

16 HEARING OFFICER WEBB: Overruled.

17 BY THE WITNESS:

18 A. I don't think it's a viable,
19 long-term solution.

20 BY MR. DIMOND:

21 Q. Why don't you think it's a viable,
22 long-term solution?

23 A. Because the three small tanks we're
24 taking out of service their capacity approximately

1 equals the 1.4 million gallon large tank that is
2 currently in service. I have a multiyear plan to
3 refurbish those three tanks so that we can take
4 our large tank out of service for major
5 maintenance, which will be a four to six-month
6 operation when we do it. It's mission critical to
7 have a functioning wastewater system in that
8 plant. We can't be without a wastewater tank
9 biotreater for that duration.

10 **Q. So the 1.4 million gallon biotreater**
11 **tank that is currently in service --**

12 A. Yes.

13 **Q. -- what sort of pollutants does that**
14 **help treat in the wastewater before it's**
15 **discharged?**

16 A. That digests BOD, COD and treats our
17 wastewater. All flows go through that tank.

18 **Q. Okay. The three biotreaters that**
19 **are out of service, does the plant need to**
20 **refurbish those so that it has redundant capacity**
21 **for the treatment of BOD and COD and the other**
22 **pollutants that you mentioned?**

23 A. It would be necessary when the large
24 tank is out of service.

1 Q. Okay. Is -- when -- when you take
2 that large tank, the 1.4 million gallon tank, out
3 of service to do the kind of repairs that you were
4 doing, is that something you can do during one of
5 your annual outages?

6 A. No.

7 Q. Why not?

8 A. It would take too long to make that
9 change. We may start the project during an annual
10 outage. We would not be able to finish it.

11 Q. How long -- the typical annual
12 outage that you have, typically how long does that
13 last?

14 A. Depending on the work being done,
15 five to ten days.

16 Q. Okay. And how long would it take to
17 do the repairs to the 1.4 million gallon tank?

18 A. Depending on what we find, it could
19 be four to six months.

20 Q. I want to shift your focus a little
21 bit now.

22 Today, tell me about how many
23 products, different products, does Emerald make at
24 the Henry plant?

1 A. We make ten separate products.

2 Q. I know that you've got sort of
3 abbreviated names that you use --

4 A. Yes.

5 Q. -- for a lot of those products that
6 stand for long, complicated chemical names.

7 A. Yes.

8 Q. Spare us the long, complicated
9 chemical names.

10 Can you tell us the names of
11 those ten products and since everybody is going to
12 be furiously scribbling this down, could you sort
13 of go slow?

14 A. Yes, very good. In our plant, we
15 make a product that we shorten the name to BBTS,
16 Cure-rite or C-18, 3114, MBDS, OBTS, 50% MBT,
17 X-15, Vanlube, Stalite and a product called 9317.

18 Q. Very good. Now, of those ten
19 products, how many of those use the chemical MBT
20 as a basic building block for the end product?

21 A. The Mercaptobenzothiazole, or MBT,
22 is used in four products; BBTS, MBDS, OBTS and 50%
23 MBT.

24 Q. I know this is in your written

1 testimony, but for the benefit of those who may
2 not have fully read it, what's the significance of
3 MBT for the wastewater treatment plant at the
4 Henry plant?

5 A. It inhibits nitrification.

6 Q. Nitrification that would reduce
7 ammonia in the discharge?

8 A. Yes, it is.

9 Q. By volume, not by the number of
10 products, but by volume, let's look at 2018.

11 By volume, roughly how much of
12 Emerald's production was those four products that
13 rely on MBT?

14 A. Approximately, 70%.

15 Q. In 2019, what was roughly the
16 percentage that relied upon MBT?

17 A. It was reduced to about 50%.

18 Q. And what were the factors that
19 caused that reduction in 2019?

20 A. In 2019, it was just a slowdown in
21 sales due to outside market forces.

22 Q. I'm now going to direct your
23 attention to Exhibit 14 in the -- in the binder.

24 MR. DIMOND: And I will note for the

1 record, your Honor, we have not moved the
2 admission of Exhibit 14 yet. We will move the
3 exhibit -- admission of that exhibit with our next
4 witness Mr. Flippin.

5 HEARING OFFICER WEBB: Okay.

6 (Document marked as Petitioner's
7 Exhibit No. 14 for
8 identification.)

9 BY MR. DIMOND:

10 Q. So, as I said, I'm going to ask you
11 to look at Exhibit 14 and even though you didn't
12 prepare this document, you know, can you just
13 describe for the record, in general terms, what
14 Exhibit 14 is and what it summarizes?

15 A. It is a summary by month and year of
16 our daily maximum and monthly average ammonia
17 effluent.

18 Q. Okay. So that's the -- that's the
19 data for the effluent in the Emerald plant?

20 A. Correct.

21 Q. And that -- so this would be a
22 summary of the detailed data that's included in
23 Exhibit's 2 and 13?

24 A. Yes.

1 Q. So, again, I know this is in your
2 written testimony, but just for the benefit of
3 those sitting here today, when did you begin your
4 employment with Emerald?

5 A. May of 2017.

6 Q. Okay. So that was your
7 introduction -- when you became introduced to the
8 Henry plant?

9 A. Yes.

10 Q. So just -- just for comparative
11 purposes starting from May 2017, can you sort of
12 look at the ammonia data, the ammonia effluent
13 data, that is reflected on Exhibit 14 --

14 A. Mm-hmm.

15 Q. -- and just sort of describe what
16 the trends are from 2017 through 2018?

17 A. Very good. In 2017, since I arrived
18 at the Emerald site, just to pick an average
19 looking at the data we're running approximately 85
20 mg/L as a daily maximum and as we shifted into
21 2018 a volume -- a product that uses a great deal
22 of MBT it shifted up to -- 100 to 110 mg/L.

23 Q. What's that product that uses a lot
24 of MBT?

1 A. BBTS.

2 Q. Is that -- is that -- in most years,
3 is that the highest volume product that the plant
4 manufactures?

5 A. Yes, it is.

6 Q. Is the -- in general, historically,
7 is the amount of -- is -- well, let me strike the
8 word amount.

9 Is the concentration of ammonia
10 in the effluent discharge positively correlated
11 with the level of production at the plant?

12 A. Yes, it does. It proximally
13 correlates.

14 Q. Was -- you were at the plant at the
15 time from May -- if you look at May of 2017
16 through December of 2017 and you compare the
17 production levels at the plant during that period
18 of time to the months in 2018, was the production
19 higher in 2018?

20 A. Yes.

21 Q. Was the production of BBTS higher in
22 2018 than it was in 2017?

23 A. Yes, it was.

24 Q. Was -- was 2018 a record year for

1 the level of production of BBTS?

2 A. Yes, it was.

3 Q. Was it -- was it a record year in
4 terms of overall production of all products from
5 the plant?

6 A. No, only BBTS.

7 Q. So how -- you've only been at the
8 plant since May of 2017.

9 How do you know what the
10 historic production levels were?

11 A. We simply have accounting data that
12 tells us those production records.

13 Q. So you've -- you've described to us
14 the trends in the ammonia effluent data in 2017
15 and 2018. I sort of asked you to flip to the last
16 page of Exhibit 14.

17 As we enter into 2019, what was
18 the trend with the ammonia concentration in the
19 effluent?

20 A. It began in January at 94 mg/L,
21 which is slightly less than we saw through most of
22 2018, but December of '18 into the first quarter
23 of '19 we see a step down and then I see a drop
24 over the rest of the year.

1 Q. When you say the rest of the year,
2 you mean the rest of 2019?

3 A. The rest of 2019, yes.

4 Q. In the first three months of 2019,
5 what happened to the volume of production of BBTS?

6 A. We were not at record level pace,
7 but we were still high volumes and then it began
8 to fall off midyear.

9 Q. Okay. And has the -- has the
10 production level of BBTS continued to decrease
11 throughout 2019?

12 A. Yes, it has.

13 Q. Did you manufacture any BBTS in
14 December?

15 A. We made 40,000 pounds in December.

16 Q. What would you make in a typical
17 month?

18 A. 1.1 million.

19 Q. Is that -- how much did you make
20 in -- if you can remember, do you remember what
21 you made in the highest month in 2018?

22 A. Approximately 1.1 -- almost 1.2
23 million actually.

24 Q. So you've talked about overall BBTS

1 **production declining?**

2 A. Mm-hmm.

3 **Q. Has -- has total production of all**
4 **products declined?**

5 A. Yes, it's also slowed down in other
6 products as well.

7 **Q. In January of 2019, is the plant**
8 **going to be manufacturing any BBTS?**

9 A. Unfortunately, at this point, the
10 answer is no.

11 HEARING OFFICER WEBB: January 2020?

12 MR. DIMOND: Yes.

13 HEARING OFFICER WEBB: You said
14 2019.

15 MR. DIMOND: Did I say 2019?

16 THE WITNESS: I interpreted '20.

17 MR. DIMOND: Thank you, Hearing
18 Officer Webb.

19 MS. ZEIVEL: Can we repeat the
20 question and answer for clarity?

21 MR. DIMOND: Sure.

22 BY MR. DIMOND:

23 **Q. In January of 2020, how much BBTS do**
24 **you anticipate the plant is going to manufacture?**

1 A. We're anticipating zero.

2 Q. So you don't have any outstanding
3 orders to fill for January 2020?

4 A. They are shipping out of inventory.

5 Q. So now I want to -- you can flip
6 away from 14. I want to turn you back to Exhibit
7 13.

8 A. All right.

9 Q. I particularly want you to look at
10 what's identified as Page 2 of 6 of Exhibit 13.
11 You've told us that this is the daily monitoring
12 data that is printed out from a database that
13 Emerald maintains. I want to look particularly at
14 there is a period of time from August 11th to --
15 if I can read the dates across correctly here, to
16 August 17th where there doesn't seem to be any
17 data at all, why -- why is that?

18 A. The plant was shut down during that
19 time for the annual outage.

20 Q. Now, when you say the plant was shut
21 down, was that just the Emerald side of the plant?

22 A. No, both sides Emerald and Mexichem.

23 Q. Okay. So during that five or six
24 days, was the plant discharging any wastewater?

1 A. No, it was not.

2 Q. And so that's why there is no data
3 for that period of time?

4 A. Correct.

5 Q. So -- and I know this is a little
6 difficult because the headings didn't print out on
7 every page, but if you look at that column, if you
8 look back at Page 1 and see what column has the
9 daily ammonia data in it, after you -- after the
10 plant started back up on roughly August 18th, can
11 you describe the trend in the ammonia
12 concentration data?

13 A. Yes, the concentration was lower
14 than it had been in, say, six months prior, but we
15 started off in the 40 to 60 range mg/L.

16 Q. And so that trend starts back at the
17 end of August, continues into September, what
18 happened to the ammonia effluent data towards the
19 end of September?

20 A. It dramatically dropped.

21 Q. Okay. So what are some of the
22 values that you see at the end of September?

23 A. 0.3.

24 Q. Is -- when it reads 0.3, is that

1 **what you put in when the sample report actually**
2 **says less than 0.3?**

3 A. Yes, my understanding is that is the
4 detection level based on the testing methods
5 available.

6 Q. Okay. And so it drops to -- it's
7 recorded in your database as 0.3 towards the end
8 of September.

9 How does that trend continue
10 throughout the rest of the year?

11 A. It continues to be very low. We did
12 see a period where the ammonia rose back up to 30,
13 35.

14 Q. What -- what are the dates of that?

15 A. That would be in November, say, 5th
16 through November 13th for approximately a week and
17 then it dropped back again to 0.3 for the rest of
18 November.

19 Q. Okay. And then what about in
20 December?

21 A. In December, we also started at 0.3
22 and we had a high of 16 in one day and it dropped
23 back to 0.3.

24 Q. Okay. It looks like -- what was the

1 reading -- what was the measurement on it looks
2 like December 11th?

3 A. December 11th was 10.

4 Q. Okay. So from September through the
5 end of the year, the measurements were quite low
6 with a few -- a few areas -- a few weeks or days
7 where it was higher?

8 A. Yes.

9 Q. When you became aware of those
10 results, did you understand why they had occurred?

11 A. I did not.

12 Q. Did you think that somehow the
13 wastewater treatment plant was achieving
14 nitrification?

15 A. That was one of several
16 possibilities, yes.

17 Q. Did any of your staff have an
18 explanation for why that had occurred?

19 A. No, they did not.

20 Q. When you noticed these results, what
21 did you do?

22 A. I asked our process group both in
23 conjunction with our research and development to
24 go to work and figure out how we can re-create it

1 and control it to achieve those results.

2 Q. Now, in your written testimony, you
3 talk about a continuous process improvement team.

4 A. Yes.

5 Q. Is that -- is that the group or one
6 of the groups of people that you asked to work on
7 this?

8 A. Yes, it is.

9 Q. So what are the elements of the plan
10 that the plant is currently pursuing to see if you
11 can re-create these results?

12 A. Our focus currently is on
13 controlling the MBT in our wastewater. We are
14 looking at source reduction at the processes as
15 opposed to end-of-pipe solutions out by the river
16 with the goal of efficiently and effectively
17 controlling it in each process.

18 Q. Okay. So we talked about the four
19 different products that use MBT, is it -- is it a
20 different process for each product?

21 A. Yes, they are similar chemistries,
22 but yet there are differences which may make the
23 actual solution to each one slightly different.

24 Q. The work that you and the continuous

1 **improvement team have done to date, has it focused**
2 **on one of those four products?**

3 A. Based on the data we have when we
4 launched this project, we started increasing and
5 changing the focus of our data. So we were
6 monitoring MBT concentration coming from each
7 process, we have identified the largest sources
8 and immediately went to work on the two largest
9 sources, BBTS and OBTS, and we've made dramatic
10 improvements in the BBTS to date.

11 **Q. Okay. So can you describe for the**
12 **Board what you've been able to achieve with regard**
13 **to BBTS?**

14 A. Yes, with process revision and
15 changes in the equilibrium of the process in how
16 it is controlled, we have been able to reduce the
17 amount of BBTS particulate and we have been able
18 to reduce the MBT concentration leaving that
19 process.

20 **Q. Okay. Have you -- have you been**
21 **able to make similar modifications yet with regard**
22 **to OBTS?**

23 A. Not yet.

24 **Q. What's -- what further work do you**

1 **have to do with regard to OBTS?**

2 A. The continuous improvement team has
3 some ideas they're working on. We have done some
4 baseline work and we are still working on some
5 automation and controls as well as a few other
6 techniques. They're still working on that
7 problem.

8 Q. The changes that you made to the
9 BBTS process that reduce the amount of MBT that's
10 getting into the wastewater, did those have any
11 significant capital costs attached to them?

12 A. No.

13 Q. Now, have you started working on any
14 changes to the 50% MBT process?

15 A. Yes, we started looking at that as
16 well.

17 Q. But have you actually made any
18 changes yet?

19 A. Not yet.

20 Q. Okay. I think the other product was
21 MBDS.

22 Have you yet identified any
23 changes to that process that would reduce MBT
24 getting into the wastewater?

1 A. MBDS is a lower volume product and
2 in our initial survey it indicated less MBT
3 leaving that process. So we prioritized it to be
4 the last one we'll look at.

5 **Q. But you haven't made any changes to**
6 **the MBDS process yet?**

7 A. No.

8 **Q. So backtracking as you sit here**
9 **today, do you even yet have an explanation for why**
10 **you started getting the extremely low results for**
11 **ammonia towards the end of September of 2019?**

12 A. We've seen the reduction in
13 production volume which has as we said before
14 seems to have a very close correlation with
15 ammonia levels in our waste treatment. Based on
16 years of reporting from Mr. Flippin, we -- as
17 we're looking at this data felt that it must be
18 related to the MBT levels. So that's why we
19 started our focus on testing the effluent from
20 each stream at that time.

21 **Q. But do you really have an**
22 **explanation for -- I mean, even with production**
23 **being down, do you have an explanation for why you**
24 **got such low results on the ammonia in the**

1 effluent in late September, October, November of
2 2019?

3 A. Not 100%.

4 Q. Based on your experience as the site
5 director for the Emerald -- for the Emerald Henry
6 plant, are the effluent sample results for 2019
7 representative of a reasonable maximum operating
8 scenario for the plant?

9 A. No, they're not.

10 Q. If, hopefully when, production
11 levels of BBTS and the other products return to
12 the levels that the plant had in 2018, what do you
13 expect is going to happen to the concentration of
14 ammonia in the effluent?

15 A. I would anticipate it would go back
16 up again due to the increased volume.

17 Q. So even with these modifications
18 that you've made to the BBTS process, have you
19 been able to eliminate all of the MBT that gets
20 into the wastewater system?

21 A. No, but we have fairly significantly
22 reduced it.

23 Q. Okay. So you've reduced it fairly
24 significantly, but you're also -- you're also

1 right now producing at very, very low levels,
2 right?

3 A. Correct.

4 Q. Does -- as you understand it, does
5 MBT have a threshold at which it inhibits
6 nitrification?

7 A. I understand three parts per million
8 is that threshold.

9 Q. Now, parts per million --

10 A. Sorry.

11 Q. -- does that transfer to mg/L?

12 A. Yes, it does.

13 MR. DIMOND: That's all the
14 questions I have, your Honor.

15 HEARING OFFICER WEBB: Thank you.
16 Your witness.

17 C R O S S E X A M I N A T I O N

18 BY MR. GRADELESS:

19 Q. Good morning, Mr. Hathcock.

20 A. Good morning.

21 Q. Good to see you again. You just
22 talked about levels, production levels, decreasing
23 in the summer of 2018 and 2019, is that correct?

24 A. They decreased end of 2019.

1 Q. The end of 2019. Right. It's also
2 true that the Henry plant made changes to the BBTS
3 process in the summer of 2018 --

4 A. Yes.

5 Q. -- and 2019? That significantly
6 reduced the loss of BBTS into the wastewater,
7 isn't that correct?

8 A. We did that -- the first project to
9 reduce BBTS was in the early fall of 2018.

10 Q. And it was those process changes
11 that reduced the loss of BBTS into your waste
12 stream, isn't that correct?

13 A. Yes, correct.

14 Q. You also mentioned tankage?

15 A. Mm-hmm.

16 Q. The last adjusted standard case you
17 had -- the Henry plant had two tanks that were
18 working, right, biotreaters?

19 A. I'm not absolutely sure what was
20 working at that time.

21 Q. Okay.

22 A. I don't know.

23 Q. Fair. We can look that up.

24 But, nonetheless, now you only

1 have one tank that is working?

2 A. Correct.

3 Q. And that was five years ago?

4 A. Okay.

5 Q. Now, you talked about -- you became
6 the site director on May 1st, 2017?

7 A. Right.

8 Q. When you first arrived, you were
9 informed that working -- that you were working
10 within your adjusted standard limits, the Henry
11 plant was working within their adjusted standard
12 limits, and your life continued on and you worked
13 on other challenges, is that right?

14 A. Yes.

15 Q. Now, you work at the Henry, Illinois
16 plant, right?

17 A. Yes.

18 Q. And the owner of that plant is the
19 petitioner in this case?

20 A. Yes.

21 Q. But you work -- you're paid by
22 Emerald Performance Materials?

23 A. Yes.

24 Q. And that is not the petitioner in

1 **this case?**

2 A. Okay. I'm sorry. We have a
3 corporate structure Emerald Performance Materials
4 and there is a division Emerald Polymer -- Polymer
5 Additives.

6 **Q. Right.**

7 A. I'm not clear on the question.

8 **Q. Your paycheck comes from Emerald
9 Performance Materials?**

10 A. Yes.

11 **Q. Emerald Performance Materials pays
12 the bills of the Henry plant?**

13 MR. DIMOND: Objection. Foundation.

14 HEARING OFFICER WEBB: Overruled.

15 BY MR. GRADELESS:

16 **Q. Mr. Hathcock, Emerald Performance
17 Materials pays the bills at the Henry plant?**

18 A. That is my understanding. I am not
19 in corporate finance. My job is to make sure the
20 Henry plant runs effectively.

21 **Q. And you're the site director?**

22 A. Yes.

23 **Q. Okay. And you don't know how the
24 bills are paid at the Henry plant?**

1 A. We are owned by a corporate entity
2 and, I'm sorry, I know we submit purchase orders.
3 We have corporate controls. I talk to people who
4 make sure the bills get paid. My job is to make
5 sure we're taking care of things like this.

6 **Q. Okay.**

7 A. I'm sorry. I don't have a good
8 answer for you.

9 **Q. No, that's okay. But you**
10 **supervise -- you're a supervisor and you supervise**
11 **process engineers, is that right?**

12 A. Yes.

13 **Q. Those process engineers are in**
14 **charge of economic performance in other -- to make**
15 **sure the plant runs efficiently, right?**

16 A. Yes.

17 **Q. And you would agree that Emerald**
18 **Performance Materials is supportive of things that**
19 **you need done, you call them up and they get them**
20 **done, is that right?**

21 A. They are supportive for a
22 well-founded case and good science and good
23 engineering.

24 **Q. And you've actually never sent the**

1 **alternatives to Emerald Performance Materials,**
2 **have you?**

3 MR. DIMOND: Objection. Vague.

4 HEARING OFFICER WEBB: Sent the
5 what?

6 MR. GRADELESS: Excuse me. My --

7 HEARING OFFICER WEBB: That's okay.

8 BY MR. GRADELESS:

9 **Q. You've never sent alternatives**
10 **considered in this case to Emerald Performance**
11 **Materials, treatment alternatives?**

12 MR. DIMOND: I just think it's vague
13 as to what the treatment alternatives are that he
14 is referring to.

15 MR. GRADELESS: If he doesn't know,
16 I can --

17 BY THE WITNESS:

18 A. Are we talking -- my question back
19 then is, are we talking about specifically the
20 recommendations that you asked for that
21 Mr. Flippin provided estimates on?

22 BY MR. GRADELESS:

23 **Q. Correct.**

24 A. It's been discussed, but myself and

1 others are pursuing source reductions as a much
2 more technically effective way and financially
3 effective way to achieve the same results and
4 possibly better.

5 **Q. You've never sent Mr. Flippin's**
6 **report to Emerald Performance Materials?**

7 A. I'm sure that somebody -- I have
8 sent -- I've discussed this with my boss. I don't
9 believe I have sent the report directly to him,
10 but we have discussed the findings and discussed
11 options.

12 **Q. Who is your boss?**

13 A. A gentleman named Jan Eland.

14 **Q. And who is Mr. Eland employed by?**

15 MR. DIMOND: Objection. Foundation.

16 HEARING OFFICER WEBB: Well, I'm not
17 sure what kind of foundation -- employed by?
18 Well, you can answer it. Overruled.

19 BY THE WITNESS:

20 A. We have a European arm and Mr. Eland
21 works -- is based out of that European arm of the
22 company. So he could be -- his paycheck could be
23 Emerald Europe, Emerald --

24 HEARING OFFICER WEBB: You're not

1 sure?

2 THE WITNESS: I'm not sure.

3 MR. GRADELESS: Okay.

4 BY THE WITNESS:

5 A. Again, we're a segment of an
6 organization.

7 BY MR. GRADELESS:

8 Q. And you've never given Mr. Flippin's
9 report to Mexichem, have you?

10 A. We have discussed aspects of it with
11 Mexichem.

12 Q. Have you given Mr. Flippin's report
13 to Mexichem?

14 A. No.

15 Q. You mentioned in September -- in
16 August you saw low ammonia levels?

17 A. Mm-hmm.

18 Q. And that surprised you?

19 A. Yeah, it did.

20 Q. Because it was contrary to the
21 records and the reports that you had previously
22 read?

23 MR. DIMOND: Objection. Foundation
24 as to -- vagueness as to what reports.

1 HEARING OFFICER WEBB: Yeah, I don't
2 know what reports.

3 MR. GRADELESS: That's fair.

4 BY MR. GRADELESS:

5 Q. But that surprised you because --
6 why did that surprise you?

7 A. It was lower than anticipated.

8 Q. Okay. And it was lower than
9 anticipated because you never thought it was
10 possible, is that right?

11 A. I didn't personally think it was
12 possible.

13 Q. Okay.

14 A. I can't speak for others.

15 Q. And your basis for that is because
16 you read reports, right?

17 A. Correct.

18 Q. And those reports were written by
19 the previous site directors at the Henry facility?

20 MR. DIMOND: Objection. Again, it's
21 vague as to what reports Mr. Gradeless is
22 referring to.

23 HEARING OFFICER WEBB: Sustained.

24

1 BY MR. GRADELESS:

2 Q. You -- you didn't have the
3 knowledge -- or you believed that ammonia
4 reductions could not happen at the Henry facility,
5 is that right?

6 MR. DIMOND: Objection. That
7 misstates his testimony.

8 MR. GRADELESS: I'm asking.

9 BY MR. GRADELESS:

10 Q. When you first arrived at the Henry
11 facility, you didn't believe it was possible for
12 these ammonia reductions, is that right?

13 A. As we stated before, the ammonia
14 levels will follow production levels and we were
15 in a lower production period and yet these numbers
16 at 0.3 were lower than anticipated.

17 Q. Someone told you it wasn't possible,
18 didn't they?

19 MR. DIMOND: Objection. Vague.

20 HEARING OFFICER WEBB: Sustained.

21 BY MR. GRADELESS:

22 Q. So once you started seeing the low
23 ammonia, you started to look where it was coming
24 from, right?

1 A. Yes.

2 Q. That's when you started to look at
3 Mexichem?

4 A. We had been looking at Mexichem
5 previously. They do not produce MBT.

6 Q. Right. And Mexichem contributes
7 ammonia to the Henry plant?

8 A. Yes, they do.

9 Q. Mexichem does not contribute MBT to
10 the Henry plant?

11 A. Correct.

12 Q. You do not treat Mexichem's
13 wastewater prior to mixing it with MBT?

14 A. There is a pretreat process
15 coming -- when Mexichem's effluent comes to us
16 prior to mixing with MBT. There are some steps
17 taken before it mixes with the MBT.

18 Q. And Mexichem is contributing
19 ammonia?

20 A. Yes.

21 Q. Mexichem is contributing nitrogen
22 compounds?

23 A. Yes.

24 Q. And this is before it's mixed with

1 your MBT?

2 A. Correct.

3 Q. And Mexichem pays you to treat their
4 wastewater, don't they?

5 A. Yes.

6 Q. Now, when you started, you mentioned
7 a process improvement team?

8 A. Mm-hmm.

9 Q. That's when you also started looking
10 at your individual processes?

11 A. Right.

12 Q. Okay. That's when you cleaned and
13 swept the secondary clarifier?

14 MR. DIMOND: Objection. Foundation.

15 HEARING OFFICER WEBB: Overruled.

16 Go ahead.

17 BY THE WITNESS:

18 A. The secondary clarifier is really a
19 secondary project. That was really about
20 mechanical work during the outage this past year
21 for mechanical integrity of the sweep arm.

22 BY MR. GRADELESS:

23 Q. But, nonetheless, you've cleaned the
24 secondary clarifier in 2019?

1 A. Yes, we did.

2 Q. You have the ability to calculate
3 the pounds per day of ammonia coming from
4 Mexichem, don't you?

5 A. Yes.

6 Q. You know the flow rate?

7 A. I have that data available.

8 Q. Okay. Now, we have been talking a
9 lot about Mexichem. They're no longer called
10 Mexichem, right?

11 A. No.

12 Q. What is the company now?

13 A. They now call themselves Vestolit.

14 Q. And you know that's a part of
15 another company --

16 A. Yes.

17 Q. -- called Orbia?

18 A. Yes.

19 Q. And you have a services agreement
20 with Vestolit?

21 A. We have an agreement with Mexichem
22 that is evergreen and rolls into the new
23 companies.

24 Q. Fair enough. And that is for the

1 treatment of their waste stream, the treatment of
2 Mexichem's waste stream?

3 A. Yes.

4 Q. And you have shared treatment costs
5 with what I'm going to call Mexichem for ease
6 of --

7 A. Sure, I agree.

8 Q. Since I can't tell what they are,
9 you have shared treatment costs, is that right?

10 A. Yes.

11 Q. If you have to make a large
12 improvement, a capital improvement project, then
13 you would -- that would affect your billing to
14 Mexichem?

15 MR. DIMOND: Objection. Relevance.

16 MR. GRADELESS: Your Honor, this
17 goes to the whole theory on whether or not the
18 treatment alternatives in this case are
19 economically reasonable. They failed to evaluate
20 alternative sources of funding. If there is
21 somebody contributing 40% of the pollution into
22 their facility, they should pay 40% of the cost
23 for a capital improvement project.

24 MR. DIMOND: Hearing Officer Webb --

1 MR. GRADELESS: It's highly
2 relevant.

3 MR. DIMOND: Hearing Officer Webb,
4 it's not relevant who pays for it. As we have
5 consistently maintained throughout this
6 proceeding, economic reasonableness is not judged
7 based on who is paying for something. It's based
8 on as stated in the statute the costs of reducing
9 pollution versus the benefits that derive from it.

10 The Agency is off on this
11 frolicking detour about who pays for what. It
12 doesn't make a difference. Economic
13 reasonableness is judged in the manner in which we
14 have put it forth in this proceeding and the
15 testimony that we have already provided and that
16 we will continue to provide in this proceeding and
17 who pays how much for what doesn't make a
18 difference. The Agency wants to make this case
19 about something that it's not about and that the
20 statute does not authorize the Board to take into
21 consideration.

22 If the Board takes this evidence
23 into consideration, I believe it will be
24 committing reversible error and not only is it

1 reversible error, but it is unprecedented. The
2 Agency has not been able to cite a single case
3 where the Board has ever considered who is paying
4 for a pollution control -- a pollution control
5 activity to determine whether or not something is
6 economically reasonable.

7 They had an opportunity to do it
8 in briefing in the last two or three weeks. They
9 were unable to cite a single case where the Board
10 had ever taken that sort of evidence into
11 consideration.

12 HEARING OFFICER WEBB: Okay.

13 MR. DIMOND: That's why -- that's
14 why it is not relevant.

15 HEARING OFFICER WEBB: Let's save
16 this argument for post-hearing briefs, but I think
17 in the absence of any clear precedent, in my
18 opinion, affordability is relevant to the -- to
19 the issue of economic reasonableness. So I am
20 going to allow some testimony.

21 I don't -- please be -- you
22 know, let's not go off on too many tangents.
23 Let's try to draw a straight line from A to B. Go
24 ahead.

1 BY MR. GRADELESS:

2 Q. I will just try to repeat.

3 MR. DIMOND: I will note a standing
4 objection.

5 HEARING OFFICER WEBB: A standing
6 objection.

7 BY MR. GRADELESS:

8 Q. Now, if you had to make a large
9 capital improvement to your facility, you would
10 expect that that would affect your billing to
11 Mexichem?

12 A. Yes.

13 Q. They would have to pay you more?

14 A. Yes.

15 Q. Now, you've seen nitrification of
16 ammonia within your facility?

17 A. I see what I suspect is
18 nitrification.

19 Q. You have evidence of degradation
20 breakdown of ammonia within the facility?

21 A. Yes, we do.

22 Q. You also believe that it is not a
23 one size -- the possible solution to your ammonia
24 issues are not a one size fits all?

1 MR. DIMOND: Objection. Vague as to
2 what is meant by one size fits all.

3 HEARING OFFICER WEBB: Sustained.

4 MR. GRADELESS: Okay.

5 BY MR. GRADELESS:

6 Q. You believe that part of the ammonia
7 problem can be attributed to the MBT?

8 A. Yes.

9 Q. Your own effluent?

10 A. Yes.

11 Q. Mexichem's effluent?

12 A. Yes.

13 Q. And, therefore, you believe that
14 there is no one solution for this problem?

15 MR. DIMOND: Objection. Vague as to
16 what you mean by one solution.

17 MR. GRADELESS: Let me rephrase.

18 BY MR. GRADELESS:

19 Q. Therefore, you don't believe that
20 one of the treatment alternatives -- one single,
21 solitary treatment alternative at the end of the
22 pipe that Mr. Flippin has analyzed in this case
23 would solve your problem, do you?

24 A. I don't yet know if any one would do

1 the job because, again, we have focused on the
2 beginning of the process where we have seen with
3 some process engineering and chemistry changes we
4 have made large reductions in particulate BBTS and
5 MBT levels leaving our BBTS process.

6 So we are looking at process
7 changes to address this problem and that's my hope
8 is that we can make significant changes in that
9 area and that, you know, \$10 million to \$12
10 million end-of-pipe solutions become unnecessary.

11 **Q. Right. You're looking at multiple**
12 **in-plant treatment processes, is that correct?**

13 A. Treatment implies that the problem
14 is there and you destroy it. What we're actually
15 doing so far is eliminating it due to changing the
16 equilibrium of the chemistry in the processes.

17 **Q. And you've been able to change that**
18 **equilibrium in the processes to the extent where**
19 **you no longer have MBT in your effluent, do you?**

20 A. We have reduced MBT in our effluent.

21 **Q. And there is evidence of it not**
22 **showing up anymore in your effluent, isn't there?**

23 A. We have evidence that it is reduced.

24 **Q. And by reduced, you mean zero?**

1 A. We have historically seen zero at
2 the very end of the system where it discharges to
3 the river. Early in the process we have history
4 of seeing MBT.

5 **Q. Right. So after the secondary**
6 **clarifier, you have evidence of zero MBT?**

7 A. We have seen zero at that level, at
8 that place, yes.

9 **Q. Thank you. You've come to the**
10 **adjusted standard case, you've requested that the**
11 **limit be 140 milligrams per day, is that correct?**

12 A. Yes.

13 **Q. You've requested that it be 1,225**
14 **pounds per day, is that right?**

15 A. Yes.

16 **Q. 110 mg/L for a 30-day average?**

17 A. Correct.

18 **Q. And 631 pounds for a 30-day --**
19 **30-day average, is that correct?**

20 A. Yes.

21 **Q. And that's because you want a**
22 **buffer?**

23 A. Correct.

24 **Q. Because you're hoping -- you're**

1 **hoping production increases?**

2 A. We are.

3 **Q. And you've run no models to support**
4 **those exact numbers, have you?**

5 A. The limited data we have based on
6 the process improvements tells me that we, again,
7 have made some significant improvements and
8 they're heading in the right direction. Until we
9 see production levels increase, it's really hard
10 to model what will happen in that plant site
11 because of the influence of Mexichem's variation
12 in their, you know, stream coming to us,
13 fluctuations in our own stream. As you said
14 before, even though total plant site production
15 volume is down, we made record BBTS last year.
16 Okay. So things are not all equal. They change.

17 Likewise, when we discovered
18 that we could achieve 0.3 mg/L of ammonia, we
19 targeted that improvement process which we've made
20 improvements in. I can't project with all these
21 variables, feedback, recycle loops and the things
22 going on in our waste treatment plant, it's hard
23 to model what will happen until we get a little
24 further along.

1 Q. So back to my question.

2 You have not made any models to
3 come up with a number, have you?

4 A. No.

5 Q. You have not considered breakpoint
6 chlorination within certain parts of your process?

7 MR. DIMOND: Objection. Vague.

8 HEARING OFFICER WEBB: I don't know
9 if it's vague or not.

10 MR. DIMOND: It's -- it's vague
11 as --

12 MR. GRADELESS: I think he knows
13 what I'm getting at, but I can rephrase.

14 MR. DIMOND: It's vague as to where
15 Mr. Gradeless proposes to put the breakpoint
16 chlorination.

17 MR. GRADELESS: I'm talking
18 generally.

19 HEARING OFFICER WEBB: You can
20 answer.

21 BY THE WITNESS:

22 A. The breakpoint chlorination, like
23 tertiary nitrification, like all the other
24 potential solutions that have been reviewed by

1 Mr. Flippin, indicates that they are either
2 technically not feasible, financially not
3 feasible, but -- so, therefore, have I considered
4 them? No. The reason being we're looking at
5 source reduction in our facility.

6 **Q. You're not looking at end-of-pipe**
7 **one size fits all solution?**

8 A. Correct.

9 MR. DIMOND: Objection as to what is
10 meant by one size fits all. It's vague.

11 HEARING OFFICER WEBB: Sustained.

12 BY MR. GRADELESS:

13 **Q. You've not evaluated whether a**
14 **combination of tertiary nitrification and land**
15 **application and granulated active carbon would**
16 **produce the reduced ammonia levels, is that**
17 **correct?**

18 A. Are you asking if we have looked at
19 combining all of those together?

20 **Q. Correct.**

21 A. We have not looked at combining all
22 of those solutions together.

23 **Q. And you have not looked at using**
24 **activated carbon within the -- within your**

1 **internal processes?**

2 MR. DIMOND: Objection. Vague as to
3 what you mean by internal processes.

4 HEARING OFFICER WEBB: What do you
5 mean by internal processes?

6 MR. GRADELESS: I mean, before the
7 end-of-pipe.

8 BY THE WITNESS:

9 A. The activated carbon solution that
10 was recommended by the EPA and reviewed by
11 Mr. Flippin indicates that there is potential
12 reduction opportunities there. I have not looked
13 at activated carbon, per se, to treat the effluent
14 internally. Again, we're finding that we have had
15 very great success in looking at our process ways
16 that we have never looked at before internally.

17 So that's what our focus is
18 there and I would suggest again September of this
19 year is when we found that we had this reduced
20 level of ammonia beyond what we anticipated being
21 possible. So we're a few months into this
22 investigation and project.

23 BY MR. GRADELESS:

24 **Q. And you're willing to look at a**

1 **combination of solutions?**

2 A. It depends on what you consider to
3 be what combinations.

4 **Q. But you're willing to consider**
5 **combinations that would achieve nitrification?**

6 MR. DIMOND: Objection. Asked and
7 answered.

8 HEARING OFFICER WEBB: Answer it one
9 more time.

10 BY THE WITNESS:

11 A. My mind is open to consider
12 alternatives that work. We are looking at most
13 effective solutions which from a technical and
14 financial standpoint means looking at our
15 processes in-house before we look at end-of-pipe
16 solutions.

17 BY MR. GRADELESS:

18 **Q. You don't know when an alternative**
19 **becomes economically prohibitive, do you?**

20 A. I can surmise, but --

21 **Q. But you don't know?**

22 A. That ultimately is a corporate
23 decision based on future value of money and the
24 market.

1 **Q. And that's -- when you say it's a**
2 **corporate decision, that would be Emerald**
3 **Performance Materials' decision?**

4 MR. DIMOND: Objection. Foundation.

5 HEARING OFFICER WEBB: Overruled.

6 BY MR. GRADELESS:

7 **Q. Is that correct?**

8 A. Upper management of Emerald would
9 make that decision.

10 **Q. Okay. And that's the same upper**
11 **management that you have never brought these**
12 **alternatives to, is that correct?**

13 A. I have not brought the report
14 specifically to my CEO. He is aware of
15 alternatives that have been suggested and he is
16 aware of our project which he -- that we're
17 looking at source reduction.

18 **Q. And your CEO is the ultimate**
19 **decisionmaker, right?**

20 A. He would be, yes.

21 **Q. Okay. You testified that there is**
22 **anticipated no more BBTS on January 20th, is that**
23 **correct?**

24 A. I'm sorry. Say that again your

1 question.

2 Q. There is no anticipation of the
3 production of BBTS as of January 2020, is that
4 correct?

5 A. During the month of January.

6 Q. Right. And then you -- and you also
7 believe that the BBTS will affect ammonia levels
8 after January of 2020?

9 A. Because we're anticipating
10 production in February.

11 Q. Okay. So if you engaged in your
12 process improvement -- if you conducted your
13 process improvements that you -- to improve the
14 BBTS and MBT and yet at the same time you would --
15 you expect a return to higher ammonia levels?

16 A. I would expect to return to not as
17 high as they were, say, historically, but they
18 would come up from the 0.3 to some level in
19 between which is very hard to determine or model
20 based on the fact that we have changed underlying
21 performance to the system and it is hard to model
22 until we actually see an increase in production.

23 Q. And those ammonia levels would go up
24 if you're not required to add any type of

1 treatment?

2 A. Can you rephrase that, please?

3 Q. The ammonia levels that you just
4 discussed would only go up then if you're not
5 required to provide any alternative treatment?

6 A. I'm not actually following the
7 question.

8 Q. Okay.

9 A. Are you asking if not required we
10 won't do anything?

11 Q. Well -- so you indicated you wanted
12 sort of a buffer zone for potential increases in
13 production, right?

14 A. Right.

15 Q. If you treated the stream coming
16 from Mexichem, that would reduce your ammonia
17 levels?

18 A. Mm-hmm.

19 Q. Is that a yes?

20 A. Yes.

21 Q. And those -- therefore, you would
22 have less ammonia levels into your -- in your
23 end-of-pipe?

24 A. I would anticipate that -- like I

1 said previously, last year during the peak
2 production run of BBTS we were running 100, 110
3 parts per mg/L of ammonia. I would anticipate at
4 those same production rates with what we are now
5 doing the levels will be less. I can't model for
6 you or predict for you what they will be.

7 **Q. But if you're required to treat your**
8 **ammonia coming from Mexichem, those levels would**
9 **be even lower?**

10 MR. DIMOND: Objection.

11 BY THE WITNESS:

12 A. I'm not --

13 MR. DIMOND: Objection. It's vague
14 as to what treatment is being suggested on
15 Mexichem's effluent and we need to be clear about
16 when we're talking about effluent, whether we're
17 talking about effluent at the end of the pipe or
18 some other point.

19 MR. GRADELESS: I would offer as an
20 example any one of the 16 treatment alternatives
21 that treat ammonia-nitrogen in the State of
22 Illinois, but specifically we can talk about
23 tertiary nitrification as an example.

24

1 BY MR. GRADELESS:

2 Q. Suppose you were required to use
3 tertiary nitrification to Mexichem's waste stream,
4 that would lower the end-of-pipe ammonia levels in
5 your facility, is that right?

6 MR. DIMOND: Objection. No one has
7 proposed tertiary nitrification on the Mexichem
8 stream alone.

9 MR. GRADELESS: I agree.

10 BY MR. GRADELESS:

11 Q. But as an example.

12 A. To that point, we are not treating
13 ammonia in Mexichem's stream. We are combining it
14 with our process because they were a single
15 combined site for many, many years. So it is
16 co-joint flow that we must deal with.

17 Q. In 2006, Emerald installed a NaSH
18 system to reduce air emissions of hydrogen sulfide
19 by using the exhaust gas stream from MBT
20 production rather than sending the stream to a
21 flare, is that correct?

22 A. Correct.

23 Q. And the cost of that project was \$10
24 million?

1 A. I believe so.

2 **Q. You believe so because that was in**
3 **your pre-filed testimony, right?**

4 A. It was.

5 MR. GRADELESS: At this time, the
6 state has nothing further for this witness.

7 R E D I R E C T E X A M I N A T I O N
8 BY MR. DIMOND:

9 **Q. Mr. Hathcock, Mr. Flippin's -- the**
10 **report -- very bad start. Let me try it again.**

11 One of the reports that
12 **Mr. Flippin has recently prepared on behalf of**
13 **Emerald was delivered to the Agency in roughly**
14 **April of 2018, is that correct?**

15 A. Correct.

16 **Q. Do you remember -- it's not a**
17 **detailed test, but do you remember some of the**
18 **treatment alternatives that were discussed in that**
19 **report by Mr. Flippin?**

20 A. I would not be able to list those
21 off specifically with all the pros, cons and
22 costs, but activated carbon, land application and
23 dilution were certainly a couple of those.

24 **Q. The dilution is the idea of using**

1 the water out of the Illinois River to dilute the
2 effluent?

3 A. Correct.

4 Q. That report that was provided to the
5 Agency in April 2018, was that sent to Emerald
6 Performance Materials' corporate EH&S director?

7 A. I believe so.

8 Q. Okay. Does that person have a name?

9 A. Chris Wrobel.

10 Q. To your knowledge, was Mr. Wrobel
11 deposed in this matter?

12 A. I believe so.

13 Q. So he is somebody at Emerald
14 Performance Materials corporate who received
15 Mr. Flippin's 2018 report, correct?

16 A. Correct.

17 Q. Now, the expert report that
18 Mr. Flippin provided in October of 2019, was that
19 also sent to someone at Emerald Performance
20 Materials corporate?

21 A. Yes.

22 Q. Who was it sent to?

23 A. Mr. Wrobel also.

24 Q. To your knowledge, was it sent to

1 anyone else at Emerald Performance Materials
2 corporate?

3 A. I don't know.

4 Q. Mr. Gradeless asked you some
5 questions about what Mexichem pays for.

6 Are there -- are there services
7 that are provided for the combined plant that
8 Emerald pays Mexichem for?

9 A. Yes.

10 Q. And so what are some of those
11 services?

12 A. For example, steam and electricity.

13 Q. And what do they operate that
14 generates the steam and electricity?

15 A. They -- we bring in electrical power
16 from Ameren. It runs through Mexichem and they
17 distribute to us through a meter. They also run a
18 coal and gas-fired boiler to make steam that we
19 use.

20 Q. Aside from the boiler and the steam
21 and electricity, are there other services that
22 Mexichem charges to Emerald Performance Materials?

23 A. Yes, there are approximately either
24 15 or 18 shared services per agreement from 1993

1 that are used to, you know, handle charging for
2 nitrogen usage, for compressed air, steam,
3 wastewater, processed water.

4 Q. So 15 to 18 different matters
5 that's -- that's in total, some of which are
6 provided by Mexichem to Emerald and some of which
7 are provided by Emerald to Mexichem?

8 A. Correct.

9 Q. Mr. Gradeless asked you some
10 questions about the level of MBT in the effluent,
11 most recently -- now, the secondary clarify --
12 clarify -- tell us for the record where does the
13 secondary clarifier sit in the entire treatment
14 train -- wastewater treatment train at the Emerald
15 plant?

16 A. The secondary clarifier -- from the
17 beginning of the production process, there are
18 several stages and the secondary clarifier is the
19 second to last piece of equipment before discharge
20 to the river.

21 Q. I'm going to ask you to turn to what
22 has been already marked as Petitioner's Hearing
23 Exhibit 7.

24 So this is the block flow

1 diagram. So is -- what -- what comes after the
2 secondary clarifier?

3 A. There is a sand filter.

4 Q. Is the sand filter the last piece of
5 treatment in the wastewater treatment plant?

6 A. Before it goes into the water,
7 correct. In the Illinois River, there is a
8 diffuser.

9 Q. So you do have some sampling data
10 after the secondary clarifier that indicates that
11 there is no MBT left at that process?

12 A. Correct.

13 Q. Is there -- is there some data, say,
14 after 2016 where MBT has been measured in the
15 secondary clarifier?

16 A. I would have to defer to the data,
17 but I don't believe that I've had any MBT readings
18 in the secondary clarifier after 2016, but I would
19 have to defer to the data.

20 Q. Now, the tweaks that you've made to
21 the BBTS process, have those eliminated all of the
22 MBT that comes out of the process -- well, let me
23 strike that.

24 So if we look at block flow

1 diagram -- if we look at Exhibit 7, that's the
2 block flow diagram, the -- the reaction process
3 that generates BBTS, is that shown on this block
4 flow diagram?

5 A. It falls under Emerald production.

6 Q. Okay. And when you -- when you
7 pointed to Exhibit 7, you know, for the record,
8 is -- is that the area to the left of the
9 rectangle that says, "PC tank"?

10 A. Correct.

11 Q. So these reductions in the level of
12 MBT that you're getting by improving the
13 equilibrium of the BBTS process, those are sort of
14 off the chart to the left in terms of Petitioner's
15 Exhibit 7, right?

16 A. Yes.

17 Q. Are you still getting MBT when you
18 manufacture BBTS? Are you still getting MBT that
19 goes into the PC tank?

20 A. Yes, we are.

21 Q. And so are you still going to have
22 MBT in -- when you produce BBTS, do you think
23 you're still going to have MBT in the primary
24 clarifier?

1 A. I would anticipate since it comes
2 from the PC tank there will still be a level in
3 the primary clarifier.

4 Q. Okay. Based on the work that you've
5 done so far and your knowledge of the plant, can
6 you predict that you're going to be able to get
7 the MBT in the primary clarifier that is below the
8 level necessary to allow for nitrification?

9 A. My understanding being three parts
10 per million is the level that we have to achieve I
11 think that's difficult.

12 Q. Now, Mr. Gradeless asked you some
13 questions about modeling.

14 It wasn't clear to me what he
15 was talking about modeling, but the fact -- you
16 said that you hadn't been able to do any modeling,
17 right?

18 A. No.

19 Q. Does that change your testimony that
20 if the levels of production of BBTS and other
21 products that use MBT increase back to 2018 levels
22 that you would expect the concentrations of
23 ammonia in the effluent to increase?

24 A. Without modeling for the data we

1 have, I would anticipate that we would go -- if we
2 went back to those production levels, we would see
3 an increase over current levels.

4 Q. Mr. Gradeless also asked you some
5 questions about combining treatment alternatives.
6 If -- if you've got -- if you've got one
7 treatment -- if you've got one of these end of the
8 pipe treatment alternatives that technically can
9 be made to achieve compliance with the general
10 ammonia effluent standard, is there any reason to
11 implement a second alternative?

12 A. I would say -- I would suggest no.

13 Q. Why is that?

14 A. Because you, frankly, want one
15 solution that works as opposed to multiple
16 solutions that may not work. Again, there is
17 technical and financial aspects to all of these
18 end-of-pipe solutions.

19 MR. DIMOND: That's all the
20 questions I have.

21 HEARING OFFICER WEBB: Okay.
22 Anything further?

23 MR. GRADELESS: Just briefly.
24

1 R E C R O S S E X A M I N A T I O N

2 BY MR. GRADELESS:

3 Q. Mr. Hathcock, you believe that there
4 is no limitation on any combination of
5 alternatives, you have no desire to go in any one
6 direction or the other other than just total
7 economic picture?

8 MR. DIMOND: I'm going to object
9 that the question is compound.

10 HEARING OFFICER WEBB: Yeah, it was
11 a little complicated.

12 MR. GRADELESS: I will break it up.

13 BY THE WITNESS:

14 A. It was complicated.

15 MR. GRADELESS: I will break it up.

16 BY MR. GRADELESS:

17 Q. There is no limitation on any
18 combination of alternatives that you will
19 consider?

20 MR. DIMOND: Objection. Vague.

21 HEARING OFFICER WEBB: Yeah, what
22 limitation are you talking about?

23 MR. GRADELESS: Any limitation
24 whatsoever to consider a combination of any or all

1 of the alternatives.

2 MR. DIMOND: Now, it's compound and
3 vague.

4 HEARING OFFICER WEBB: I don't
5 really understand the question I have to confess.

6 MR. GRADELESS: That's okay.

7 HEARING OFFICER WEBB: I'm sorry.

8 BY MR. GRADELESS:

9 Q. Let me get it -- there's many ways I
10 can -- I will get there.

11 You are willing to consider a
12 combination of the alternatives proposed?

13 MR. DIMOND: Objection as to vague
14 as to what is meant by alternatives.

15 HEARING OFFICER WEBB: What -- what
16 alternatives are you speaking of?

17 MR. GRADELESS: Any and all of them
18 that have been proposed in the history of this
19 entire case.

20 HEARING OFFICER WEBB: Okay.

21 BY THE WITNESS:

22 A. We, of course, are open to
23 consideration starting with technical feasibility.
24 In other words, if it works, we are open to

1 considering the possibility. Like I said before,
2 once we realized that we had an opportunity
3 looking in-house, looking at our MBT in a
4 different way than we have looked at before, we
5 have focused our energy there because I really
6 believe from a technical standpoint you go right
7 to the process where the concentrations are, where
8 the flows are and if we can change the process to
9 effect a positive change there, that is the best
10 solution of all.

11 Okay. That's why we're focused
12 there. And to say solution, I keep hearing from
13 you -- I believe focus on end-of-pipe, not to put
14 words in your mouth, but end-of-pipe solutions.
15 I'm looking at the process improvements.

16 BY MR. GRADELESS:

17 **Q. Exactly. You're looking at the**
18 **process improvements. And have you presented**
19 **those in trying to get the adjusted standard?**

20 A. We are early on in that
21 investigation. I said since we found that we have
22 achieved surprising results in September is when
23 we launched the project to look at the sources and
24 methods to deal with MBT in our process streams.

1 It worked a year ago as you suggested. That was
2 focused on BBTS and we achieved a reduction in MBT
3 also. Right now, we are very specifically focused
4 on MBT.

5 **Q. Have you provided the Board with**
6 **those plans to investigate internal process**
7 **improvements?**

8 A. To this Board?

9 **Q. To this Pollution Control Board,**
10 **yes.**

11 A. I have --

12 MR. DIMOND: Objection. We have in
13 the testimony today.

14 BY THE WITNESS:

15 A. That's where it is.

16 BY MR. GRADELESS:

17 **Q. Have you provided any detailed plans**
18 **on the processes improvements you're talking**
19 **about?**

20 A. I have not provided details because
21 we are still working through those details
22 ourselves.

23 **Q. Okay. You also mentioned some of**
24 **the shared processes that you share with Mexichem**

1 or --

2 A. Yes.

3 Q. -- Vestolit or Orbia, whoever you
4 want to call them.

5 At -- at the end of the day, you
6 don't treat their waste stream for free, do you?

7 A. No.

8 Q. You make a profit?

9 MR. DIMOND: Objection. Misstates
10 his testimony.

11 BY MR. GRADELESS:

12 Q. I'm asking, do you make a profit?

13 HEARING OFFICER WEBB: Overruled.

14 Go ahead.

15 BY THE WITNESS:

16 A. Net zero.

17 BY MR. GRADELESS:

18 Q. Net zero. And why do you say that?

19 A. Because we charge them our cost.

20 Q. You charge them the cost?

21 A. We prorate based on the actual cost
22 of operation of waste treatment, based on the
23 effluent flows versus our flow and there is a
24 calculated prorate.

1 **Q. So they get a benefit from you for**
2 **treating their waste stream?**

3 A. I would not characterize it as a
4 benefit. They pay for -- they pay us to treat
5 their waste stream.

6 **Q. And then you credit back some of the**
7 **shared services?**

8 A. I don't think that quite
9 characterizes the situation. The plant site being
10 originally one combined plant site with one
11 company's control, when it was split -- as I said,
12 steam electricity just to use those two and
13 wastewater, the cost of wastewater operation is
14 reviewed by our accounting and their accounting
15 and there is a calculated split of those costs.

16 Likewise, steam and electricity
17 distribution there is calculated costs and there
18 is a split based on usage. So those facilities,
19 those utility facilities and the costs associated
20 are really at cost for both sides of the facility.

21 **Q. So it breaks out even is what you're**
22 **saying?**

23 A. Each portion nets to zero. I
24 frankly, could not tell you at the moment if at

1 the end of the year we wind up paying them a
2 little more than they pay us and I'm sure that
3 changes anyway from month-to-month.

4 Q. Therefore, it's possible that in any
5 given year they pay you more than you pay them, is
6 that correct?

7 A. Anything is possible.

8 Q. All right. Mexichem doesn't have an
9 adjusted standard, do they?

10 A. No.

11 MR. GRADELESS: Nothing further.

12 HEARING OFFICER WEBB: Anything?

13 MR. DIMOND: I just want to clean up
14 one little thing.

15 HEARING OFFICER WEBB: Okay.

16 FURTHER EXAMINATION

17 BY MR. DIMOND:

18 Q. Mr. Hathcock, if you look at the
19 total cost for the operation of the wastewater
20 treatment plant at the Henry site, does Emerald
21 bill Mexichem more than the total cost for
22 operating the wastewater treatment plant?

23 A. No.

24 Q. So does Emerald bear some portion of

1 the cost of the wastewater treatment plant?

2 A. Absolutely.

3 Q. So you don't make a profit --
4 Emerald does not make a profit on the operation of
5 the wastewater treatment plant, does it?

6 A. No, we do not.

7 MR. DIMOND: That's all I've got.

8 MR. GRADELESS: If I may.

9 HEARING OFFICER WEBB: Okay.

10 FURTHER EXAMINATION

11 BY MR. GRADELESS:

12 Q. I thought at the beginning of your
13 testimony you said you didn't really know the
14 numbers?

15 A. Which numbers?

16 Q. The economic numbers, that you
17 relied on financial people to tell you about
18 numbers.

19 A. That depends on what we're
20 specifically talking about.

21 Q. Okay. So you happened to just know
22 the Mexichem accounting practices very well, but
23 not whether or not, you know, you're receiving --
24 where the funding is coming from Emerald

1 **Performance Materials?**

2 A. Your question previously was -- I
3 believe, and please don't let me put words in your
4 mouth --

5 **Q. Go ahead.**

6 A. -- I believe your question
7 previously was directed towards financial
8 decisions high up in Emerald. This is a plant
9 level accounting issue where we -- again, we do
10 look at the -- we have a plant accountant, a
11 controller. I work with him. He manages it, he
12 handles it, he is very good and I don't have to
13 get involved in the details very much, but I do
14 know for a fact that when we look at operating the
15 waste treatment plant, those costs specifically
16 get split between us and Mexichem. It's a zero
17 sum situation.

18 So is the steam operation,
19 electricity, nitrogen, et cetera, compressed air,
20 all the other utilities. It's -- at the plant
21 level, we're not making -- or attempting to make
22 money off the other. We are, in fact, sharing
23 that information with the other.

24 **Q. And that -- so there is -- when you**

1 **say it's a zero sum -- what did you say a zero --**

2 A. It's a zero sum situation. In other
3 words, we're not charging more than it's costing
4 us.

5 **Q. Right.**

6 A. So whatever it costs us to run that
7 wastewater facility, we split the cost based on
8 calculations that have been established part to
9 Mexichem, part to us. We don't charge them more
10 than it costs us to run the plant.

11 **Q. That's because you have shared**
12 **services, right?**

13 A. We have shared services and we share
14 that information.

15 **Q. So it's like they benefit from the**
16 **waste treatment facility or using your waste**
17 **treatment, you benefit from the shared cost of the**
18 **electricity and other items that you share?**

19 A. It's beneficial in that we don't
20 have to run our own electricity system or boiler
21 for steam and those services.

22 **Q. The costs are offset?**

23 A. Yes.

24 **Q. Okay. And who is the individual**

1 **that you say that you rely on for the financial**
2 **information?**

3 A. Mr. Thomas Newby.

4 **Q. Who is his supervisor?**

5 A. His supervisor is finance in our
6 corporate office.

7 **Q. And I believe if you -- is it Amy**
8 **Harding?**

9 A. Yes.

10 MR. DIMOND: Objection. This goes
11 beyond the scope of redirect.

12 MR. GRADELESS: We can recall him.

13 HEARING OFFICER WEBB: It does, but,
14 yeah, I mean, would you prefer that they recalled
15 him -- I don't know. Let's just do it now for
16 efficiency.

17 MR. DIMOND: Okay.

18 BY MR. GRADELESS:

19 **Q. Mr. Hathcock, his supervisor is Amy**
20 **Harding?**

21 A. Correct.

22 MR. GRADELESS: Nothing further.

23 MR. DIMOND: Done.

24 HEARING OFFICER WEBB: Does -- let's

1 take a five-minute break. Let's take a
2 five-minute break and go off the record.

3 (Whereupon, a break was taken
4 after which the following
5 proceedings were had.)

6 HEARING OFFICER WEBB: All right.
7 We are back on the record and we are continuing
8 with the testimony of Mr. Hathcock.

9 Mr. Hathcock, you are still
10 under oath and now the Board has some questions
11 for you.

12 MR. RAO: Good morning,
13 Mr. Hathcock.

14 THE WITNESS: Good morning.

15 MR. RAO: Starting with your
16 pre-filed testimony Petitioner's Exhibit 1.

17 On Page 3, you mentioned that
18 based on your current efforts and review of prior
19 testimony, you state that source reduction efforts
20 are preferable to end-of-pipe solutions.

21 THE WITNESS: Right.

22 MR. RAO: In this regard, can you
23 please comment how successful Emerald has been
24 over the last 20 years in reducing

1 ammonium-nitrogen discharge by implementing source
2 reduction measures.

3 THE WITNESS: I don't have all the
4 ammonia data immediately at hand. I do know there
5 are a number of source reduction improvements,
6 process improvements, made approximately 20 years
7 ago in the BBTS process. For example, a TBA
8 system, tertiary butyl mean scrubber improvement,
9 the scrubber -- I should say a fluid bed dryer was
10 installed on the BBTS process for drying. So
11 there have been a number of improvements to
12 capture solvents and capture compounds and keep
13 them in the process.

14 MR. RAO: Would it be possible for
15 you to provide the Board with some numeric data in
16 terms of how much reductions you've incurred over
17 the years?

18 THE WITNESS: I know I can provide
19 data of what's happened in the last year in the
20 improvements that we have made. I will look to
21 see what we have available from 20 years ago.

22 MR. RAO: Not 20 years ago. During
23 the last 20 years is what I was saying.

24 THE WITNESS: Okay.

1 MR. RAO: Do you believe these
2 reductions come close to complying with the
3 applicable ammonia-nitrogen effluent standards?

4 THE WITNESS: To date, no, and going
5 forward I'm not sure. I think we have found some
6 things that are very intriguing. I think we have
7 made dramatic improvements, but I don't know yet
8 how low that will allow us to go.

9 MR. RAO: I have two questions about
10 that also. On Page's 4 and 5, you state
11 end-of-pipe solutions will be much more expensive
12 than the cost typically incurred by facilities to
13 achieve ammonia reductions.

14 Could you please clarify whether
15 you're referring to the cost of municipal POTW's
16 or other industrial facilities when you say the
17 cost of treatment is expensive?

18 THE WITNESS: I will say that's a
19 somewhat generalized statement. My point being
20 that process improvements where the highest
21 concentration is not in a 400 gallon per minute
22 flow at waste treatment, but our BBTS process --
23 one part of the process where we are getting the
24 BBTS and MBT into wastewater runs at 40 gallons a

1 minute.

2 So simply by sheer volume we
3 have a much more targeted and small, focused
4 concentration to deal with. So that's why we're
5 looking at that stream which we already made
6 improvements in and now we're looking at others
7 that run at 7 gallons per minute. So 40, 7 versus
8 400 plus. That's why we're looking at the source
9 reduction opportunities.

10 MR. RAO: So are you saying that
11 when you're comparing larger flows like you're
12 comparing apples and oranges or -- because when it
13 comes to cost, the information that you have
14 provided to the Board, you know, is how much it
15 costs for municipal treatment plant in terms of
16 dollars per pound and then you compare it with
17 what it may cost Emerald.

18 So that's why I was trying to
19 get some clarification whether such a comparison
20 is reasonable to make.

21 THE WITNESS: I think it's not
22 entirely reasonable to make a comparison to a
23 municipal treatment facility at all. We make a
24 series of products that are not found in any

1 municipal treatment system and, therefore, you
2 know, the Mercaptobenzothiazole being a primary
3 one of those, so I think comparisons to
4 municipalities are very difficult.

5 MR. RAO: So do you have any other
6 industrial treatment facilities the cost of
7 treatment that could be compared to determine
8 whether what you've estimated is expensive like
9 you said in your testimony?

10 THE WITNESS: That's possible. I
11 would have to defer to Mr. Flippin who is our
12 subject expert on this.

13 MR. RAO: Okay. On Page 5, you
14 state that your team is currently in the process
15 of identifying and quantifying sources of ammonia
16 and TKN that is the Total Kjeldahl Nitrogen and
17 nitrification inhibitors, principally MBT from
18 within various production areas of the plant.

19 You also note once identified,
20 your team will attempt to find solutions to reduce
21 the loss of ammonia, TKN and MBT to wastewater.

22 THE WITNESS: Mm-hmm.

23 MR. RAO: Can you please provide a
24 timeline for completion of this project including

1 timeframes for each significant step of the
2 project?

3 THE WITNESS: A project plan could
4 be laid out. Unfortunately, we are seemingly
5 going into a new territory because as I stated
6 before achieving 0.3 mg/L of ammonia in wastewater
7 was a level that I, at least, did not anticipate
8 was possible. We have now seen that it is. So we
9 are, frankly, into a new paradigm and I can lay
10 out a plan.

11 I have not yet prepared a
12 specific plan to that regard with timetables
13 because the timetable is the hardest part to -- to
14 project simply because as we're gathering data we
15 are making changes, they either work or they don't
16 and we try and look at something a little
17 differently.

18 So -- and also one of our
19 challenges right now is with market changes and
20 challenges going on in the economy we're not
21 running all of our production process. So that
22 makes the baseline effluent different than it was
23 six months ago, certainly different than it was a
24 year ago. It's a moving target.

1 MR. RAO: So would it be possible
2 for you to come up with a plan within the --
3 before the Board decides on this adjusted standard
4 to help the Board what this project entails, what
5 you see as a possible timeline for completion of
6 this project?

7 THE WITNESS: I can prepare a
8 timeline and project plan, but I really could not
9 compare any -- any projected results. Our own
10 activities we control. I really can't speak yet
11 to the level or magnitude of ammonia reduction
12 level that we'll see.

13 MR. RAO: Could you comment on
14 whether this ongoing project should be included as
15 a condition of granting the adjusted standard if
16 the Board decides to grant your request?

17 THE WITNESS: I accept that because
18 it is something we are doing. It's good -- it's
19 good process improvement. We will continue this.

20 MR. RAO: In that case, would it be
21 possible for Emerald to submit language that
22 addresses this product with certain specifications
23 about timelines?

24 MR. DIMOND: I think that's a

1 question better directed to counsel. I think -- I
2 think the difficulty that the Board should
3 understand with that is that when -- when plant
4 engineers undertake projects, they move faster
5 than governmental processes move and they are more
6 adaptable than governmental processes. So the
7 plan that we might -- any plan that we might be
8 able to come up with now and present to you, you
9 know, in the next, say, six to eight weeks will
10 probably be outdated in three months from now and
11 I think this is where it is difficult.

12 I think you earlier asked about
13 whether or not the company has data that can
14 correlate the impact of process changes that have
15 been made to effluent concentrations of ammonia.
16 I feel certain that we do not have such data and I
17 think because -- I think that is because it is --
18 in most instances, I don't believe it's possible
19 to correlate the effects of any process change
20 with the results on the ammonia at the end of the
21 pipe. It's just too complicated a process. This
22 is not like doing a chemical experiment in a
23 laboratory.

24 MR. GRADELESS: Is this an objection

1 or is this -- I'm sorry. I'm just --

2 HEARING OFFICER WEBB: He's
3 answering the question.

4 MR. GRADELESS: I'm just trying to
5 get the process right. I'm confused.

6 MR. DIMOND: I'm -- we will ask
7 internally. I am fairly certain that such data
8 does not exist.

9 MR. RAO: You know where the
10 question is coming from. You said processing is
11 the preferable method to control ammonia-nitrogen
12 and I'm just trying to see if there is anything to
13 help the Board.

14 MR. DIMOND: I understand the reason
15 for the Board's request. If such data was
16 available, I think we would have already provided
17 it to the Board. That's why I believe it doesn't
18 exist, but we'll look.

19 MR. RAO: Okay. Fair enough.

20 On Page 6 of your testimony, you
21 state that -- which Mr. Dimond just said
22 evaluating process improvement effort is difficult
23 because of the variation of production levels,
24 inability to draw cause and effect conclusions

1 based on short-term process changes and also
2 inhibition of nitrification at low concentration
3 of MBT.

4 If you have not already done so,
5 would it be possible for Emerald to provide
6 production levels of the products contributing to
7 ammonia-nitrogen, TKN and MBT in Emerald's process
8 wastewater over the last five to ten years?

9 THE WITNESS: We have that data.

10 MR. RAO: Okay. Regarding cause and
11 effect conclusions, please comment on whether it's
12 possible to implement process changes on a longer
13 term to obtain meaningful or quantifiable
14 productions.

15 THE WITNESS: Some of the process
16 changes we have made in the BBTS process are at
17 this point will be very long-term improvements.
18 Okay. My problem, of course, is that has gone
19 from record production in October 2018 to not
20 producing a single pound in November, one day's
21 worth in December and now zero pounds in January.
22 So that is a very tremendous use change in our
23 baseline.

24 Nevertheless, the improvements

1 we have made have reduced the BBTS effluent which
2 I will have to defer to Mr. Flippin on this. He
3 can provide more accurate information, but I
4 believe that will break down in wastewater into
5 ammonia and certainly into nitrogen compounds and
6 we have reduced the amount of MBT in this product
7 stream simply by changing the equilibrium of the
8 process.

9 So traumatic changes. They are
10 now well-automated, well-controlled and I would
11 forecast they will continue at the same low levels
12 for each pound produced. If we go back to record
13 production again, that will still bring a higher
14 level of wastewater into a higher level of ammonia
15 and MBT into our wastewater.

16 MR. RAO: And just for the record,
17 how would you characterize short-term and
18 long-term process changes?

19 THE WITNESS: It's rather
20 subjective, isn't it?

21 MR. RAO: Yes, just to give us an
22 idea.

23 THE WITNESS: So we're asking my
24 opinion, not really anything more definitive?

1 MR. RAO: Yeah.

2 THE WITNESS: Okay. I would say
3 short-term is anything less than a year.
4 Long-term goes beyond that.

5 MR. RAO: Thank you. Based on your
6 experience and knowledge of Emerald's production
7 processes, is it realistic to expect process
8 improvement changes to reduce MBT levels below the
9 nitrification inhibition threshold of 3 mg/L?

10 THE WITNESS: I don't know yet.
11 When I see -- 3 is what I've read, I've heard that
12 3 mg/L is our target. Therefore, 3 is the goal.
13 Whether we can achieve that goal remains to be
14 seen.

15 MR. RAO: But will you know whether
16 you will be able to reduce it below 3 mg/L
17 sometime in the future, near future?

18 THE WITNESS: I would anticipate
19 long -- that would qualify as a long-term
20 information we would have based on how production
21 volume changes because, again, we've reduced the
22 effluent per the amount of MBT per pound produced.
23 If we go back to higher levels, that will come up.
24 This is true of every product we make. High

1 volumes of production bring higher levels of
2 effluent.

3 MR. RAO: Okay. On Page 6, you
4 state that treatment of polymer chemicals
5 equalization tank wastewater with granular
6 activated carbon, or GAC, to remove MBT was not
7 considered to be technically feasible.

8 In this regard, Mr. Flippin
9 stated that pretreatment of PC/C-18 wastewater
10 utilizing solids separation and GAC would allow
11 the Henry plant to nitrify in an uninhibited
12 manner following removal of MBT from biomass
13 through alkaline washing.

14 Could you please clarify if you
15 meant to say GSA treatment was not economically
16 reasonable or do you still believe it's
17 technically infeasible?

18 MR. DIMOND: Mr. Rao, I'm not clear
19 where you're reading from in his pre-filed
20 testimony.

21 MR. RAO: On Page 6, when he talks
22 about treatment of polymer chemicals equalization
23 tank with granular activity to carbon. He says it
24 was not considered because it was not technically

1 feasible and my question is whether he meant
2 economically unreasonable because I had referred
3 to Mr. Flippin's testimony in Petitioner's Exhibit
4 9 at Page 8 where he says it can work.

5 MR. DIMOND: I think the sentence --
6 the operative sentence is the last sentence of
7 Paragraph 16, which says, "As explained in greater
8 detail in those reports, Emerald did not consider
9 any of those alternatives both technically
10 feasible and economically reasonable."

11 I don't see anywhere in -- I
12 don't see anywhere in Mr. Hathcock's testimony
13 where he says that the granular active carbon is
14 not technically feasible.

15 MR. RAO: Let me see. I may have
16 missed it. I will read from Paragraph 16.

17 MR. DIMOND: Okay.

18 MR. RAO: The alternatives that were
19 evaluated were treatment of polymer chemical
20 equalization tank wastewater with granular
21 activated carbon to remove MBT and the dilution of
22 MBT in primary clarifier effluent with water from
23 Illinois River. Those are the two alternatives
24 that he was talking about and he says both are

1 technically -- did not consider any of those
2 alternatives to be technically feasible. So that
3 applies to both, right?

4 MR. DIMOND: No, it says that we --
5 that the analysis did not consider those
6 alternatives to be both technically feasible and
7 economically unreasonable, meaning neither of
8 those alternatives met both tasks.

9 MR. RAO: Okay. I was trying to
10 make sure that GAC treatment is technically
11 feasible. That's what I wanted to get on the
12 record.

13 MR. DIMOND: Mr. Flippin -- you can
14 ask Mr. Flippin that testimony, but we don't
15 disagree with the conclusion of his report that it
16 is technically feasible.

17 MR. RAO: That's all I just wanted
18 to ask him to clarify.

19 THE WITNESS: I'm sorry. I'm also
20 reading with my statement that we're also looking
21 at combining this with spray irrigation as well
22 due to wintertime conditions in Illinois.

23 MR. RAO: I just want to make sure
24 you didn't think GAC wasn't --

1 THE WITNESS: No.

2 MR. RAO: That's all I wanted to
3 check. All right.

4 On Page 10, you note that
5 ammonia is not a major raw material at either
6 Mexichem or the Henry plant, but it is amines in
7 the wastewater that are converted to ammonia.

8 Does Emerald know how much of
9 the amines in the Henry plant -- I mean, the
10 wastewater treatment plant at Henry plant receives
11 from Mexichem and how much comes from Emerald?

12 THE WITNESS: We do have that data.
13 We have been monitoring nitrogen TKN levels from
14 the Mexichem plant site as well as our own.

15 MR. RAO: Would it be possible to
16 submit it into the record if it has already not
17 been?

18 THE WITNESS: Yes, that would be
19 possible.

20 MR. RAO: On Page 11, you state that
21 Emerald is in the process of bringing additional
22 biotreaters to service to provide redundant
23 capacity.

24 Could you please clarify whether

1 Emerald plans to operate more than one biotreater
2 at the same time to treat primary effluent?

3 THE WITNESS: Based on current
4 knowledge and understanding, this is a backup
5 capability for taking that 1.4 million gallon tank
6 out of service. I'm not aware of any additional
7 benefits of running another biotreater in parallel
8 or in series.

9 My hope and goal with this
10 project to bring these tanks back online is the
11 fact that that 1.4 million gallon has been
12 operating for 25 years and at some point we have
13 to maintain it, empty it and make sure it is
14 functioning as it should and we have to have a
15 tank someplace to handle that capacity while we do
16 that project.

17 MR. RAO: You answered my question.
18 I wanted to know have you ever taken the bigger
19 biotreater out of service?

20 THE WITNESS: That's why I want to
21 have other tanks ready.

22 MR. RAO: On Page 13, you note based
23 on Emerald's current permit that LC50 greater than
24 2.1% effluent is acceptable given Emerald's

1 approved ZID, Z-I-D, and mixing zone.

2 Could you please explain for the
3 record what LC50 represents in context of the
4 Whole Effluent Toxicity test and also explain what
5 LC50 greater than 2.1% means in terms of Emerald's
6 permit.

7 THE WITNESS: No, I'm sorry. If I
8 attempt to give you that definition, I suspect I
9 will get it wrong enough that I defer to
10 Mr. Flippin.

11 MR. RAO: Okay.

12 THE WITNESS: What I do have is our
13 test data that I do note it is indicating that we
14 are -- have acceptable results at the end of the
15 mixing zone.

16 MR. RAO: So I can pose this part of
17 the question to Mr. Flippin?

18 THE WITNESS: Yes.

19 MR. RAO: Okay. Thanks.

20 Comment on whether Emerald's
21 effluent would be considered toxic if Emerald did
22 not have an approved ZID or mixing zone.

23 THE WITNESS: I'm sorry. Can you
24 restate the question, please?

1 MR. RAO: Yeah. You state on Page
2 13 based on Emerald's current permit LC50 greater
3 than 2.1% effluent is acceptable given that
4 Emerald has an approved ZID and mixing zone.

5 THE WITNESS: Yes.

6 MR. RAO: So I'm asking if Emerald
7 did not have a ZID or mixing zone, would the
8 effluent be considered toxic?

9 THE WITNESS: I'm sorry. I don't
10 know offhand what that concentration would be
11 without the mixing zone.

12 MR. RAO: Okay.

13 THE WITNESS: Again, I would defer
14 to Mr. Flippin. He is our expert on that subject.

15 MR. RAO: Okay. I will make a note.

16 Can you clarify whether Emerald
17 would have a ZID and a mixing zone if not for the
18 adjusted standard granted by the Board?

19 THE WITNESS: I can't speculate as
20 to what was done before my arrival. I suspect
21 that it was installed because of the requirements,
22 but I don't know because I wasn't there.

23 MR. RAO: Also, could you please
24 comment on IEPA's assertion that Emerald's LC50

1 result of 3.87%, while technically permissible, is
2 not found in any other Illinois facilities?

3 THE WITNESS: I really can't comment
4 other than the fact that that may be true. I know
5 that we are a unique industrial facility.
6 Correlations to municipal wastewater effluent is a
7 very bad correlation. We make a number of
8 products. We're the sole source in North America
9 at producing. Therefore, our wastewater is
10 different.

11 MR. RAO: Okay. On Page 14, you
12 note that the effluent discharge from the Henry
13 plant has decreased from approximately 0.8 million
14 gallons per day in 2013 to about 0.5 million
15 gallons per day over a 3.5-year period from 2016
16 to 2019.

17 While you attribute this
18 decrease in flow to lower production volumes,
19 Mr. Flippin's testimony indicates production
20 levels were typical -- were at typical levels in
21 2018.

22 Can you please comment on
23 whether the reasons for recent decrease in
24 effluent flow as well as ammonia loadings need to

1 be studied further rather than being just
2 attributed to production levels.

3 THE WITNESS: We are studying it.
4 We are doing that right now. We're looking at --
5 we're measuring the MBT effluent from each process
6 while it's running.

7 MR. RAO: Okay. Regarding changes
8 made to the BBTS process, you state that while
9 changes might improve plant's ammonia discharge,
10 such improvements cannot be relied upon because
11 primary clarifier effluent data indicates MBT
12 levels are -- MBT levels in the effluent are
13 significantly greater than 3 mg/L.

14 Could you please clarify whether
15 Emerald routinely monitors MBT levels in the
16 primary clarifier effluent to determine the impact
17 of BBTS changes on MBT levels?

18 THE WITNESS: Yes, we do monitor the
19 MBT level in the primary clarifier. We have
20 documented reductions and, as I said, we have
21 documented evidence of reduction with the process
22 changes to the BBTS process.

23 MR. RAO: Are such data already in
24 the record?

1 THE WITNESS: We have data. I'm not
2 sure that's in the record.

3 MR. RAO: If not, can you please
4 submit it into the record?

5 THE WITNESS: I believe so.

6 MR. RAO: Thank you. On Page 15,
7 you state the production levels at Henry plant
8 have been significantly lower in 2019 due to
9 market conditions.

10 Can you please elaborate on how
11 much production has decreased in 2019 as compared
12 to years with typical production levels?

13 THE WITNESS: Yes. Being that we
14 make ten separate products, each of which has its
15 own life, if you will, and market demand, the
16 total production in 2018 from the Henry plant
17 based on sales was slightly higher than 2017, but
18 inline with the last five to ten years.

19 There is a high demand of BBTS.
20 That's why we made process changes and
21 improvements and we made record production last
22 year of the BBTS for our facility. Since then,
23 that has dropped off due to the market changes.
24 So at the high level we're fairly consistent where

1 we have been. Individually, the products can
2 change a lot.

3 MR. RAO: And do you expect the
4 current market conditions to be long-term? If
5 not, please explain why you believe that market
6 conditions are going to change in the near future.

7 THE WITNESS: That depends entirely
8 on who you ask.

9 MR. RAO: I'm asking you.

10 THE WITNESS: I've asked others the
11 same question because I need to plan budget and
12 prepare for, you know, what are our engineering
13 projects going to be based on, what's the volume,
14 what improvement, what are our challenges to make
15 a safe and viable site?

16 I think that from the input I
17 have the current conditions are going to remain
18 through most of this year. There is indications
19 of economic softening in the general sense, the
20 American and global economy. Likewise, you hear
21 from others that say, "That's not true. Wall
22 Street is great. Keep right on buying." So it
23 really depends on who you ask.

24 MR. RAO: So you think conditions

1 may change maybe in a year or two?

2 THE WITNESS: I hope so.

3 MR. RAO: You also note that while
4 ammonia-nitrogen discharges lower in the first
5 half of 2019 compared to 2018 and prior years,
6 Emerald was unable to determine if decrease is due
7 to lower production or the BBTS process
8 improvements.

9 So my question is, is it
10 possible to quantify how much of this reduction
11 was due to the decrease in production or due to
12 changes in treatment process?

13 THE WITNESS: That would go back to
14 modeling. I don't think we have yet a good model
15 on prediction of what product lines, what
16 production levels will generate what ammonia
17 levels in wastewater. We do know that MBT being
18 an inhibitor inhibits the breakdown of ammonia
19 into nitrates and nitrite and, therefore, we're
20 focused on reducing the MBT.

21 MR. RAO: Are you undertaking any
22 modeling or efforts to quantify these reductions?

23 THE WITNESS: I think it depends on
24 the definition of modeling. We are certainly

1 analyzing data. We are trying to tie correlations
2 together. We are reducing the MBT because we know
3 that will have a positive impact. We don't know
4 that's the only impact. So with the changes in
5 Mexichem's volume or Vestolit or whoever they are
6 today, we are monitoring those flows to establish
7 a model. So we're attempting to build one.

8 MR. RAO: Okay. If you are, do you
9 have any idea how long it's going to take?

10 THE WITNESS: I do not. In part,
11 because, again, production volume is based on
12 sales and demand change. The underlying model
13 will change as well. We are not a steady state
14 continually making the same product always across
15 the process.

16 MR. RAO: That's all I have. Thank
17 you very much.

18 THE WITNESS: Thank you.

19 HEARING OFFICER WEBB: Okay. If
20 everybody is done -- you're not going to recall
21 Mr. Hathcock, are you?

22 MR. GRADELESS: We are not.

23 HEARING OFFICER WEBB: Okay. Thank
24 you.

1 THE WITNESS: This time I can go?

2 HEARING OFFICER WEBB: This time you
3 may leave.

4 THE WITNESS: Thanks for being
5 patient, everybody.

6 HEARING OFFICER WEBB: Petitioner
7 may call its next witness.

8 MS. WEYHING: Petitioner calls
9 Houston Flippin.

10 HEARING OFFICER WEBB: Okay.
11 Mr. Flippin, you may sit in either chair, I
12 suppose. Whatever is easier.

13 THE WITNESS: Okay. Good.

14 WHEREUPON:

15 THOMAS FLIPPIN
16 called as a witness herein, having been first duly
17 sworn, deposeth and saith as follows:

18 D I R E C T E X A M I N A T I O N

19 BY MS. WEYHING:

20 Q. Mr. Flippin, can you state and spell
21 your full name for the record, please?

22 A. Sure. My name is Thomas Houston
23 Flippin. I go by Houston.

24 Q. Can you please spell your name?

1 A. T-H-O-M-A-S, H-O-U-S-T-O-N,
2 F-L-I-P-P-I-N.

3 **Q. Mr. Flippin, did you prepare written**
4 **testimony that was pre-filed in this proceeding?**

5 A. I did.

6 **Q. I'm handing you this binder.**

7 MS. WEYHING: Thank you, Tom. If
8 you can turn to Tab 9 for me, please. You'll see
9 what was previously marked as Petitioner's Hearing
10 Exhibit 9. Please take a minute to look that
11 over.

12 (Document marked as Petitioner's
13 Exhibit No. 9 for
14 identification.)

15 BY MS. WEYHING:

16 **Q. Do you recognize that document?**

17 A. Yes, it's my written testimony.

18 **Q. Okay. Did you prepare that**
19 **document?**

20 A. I -- I reviewed this document
21 thoroughly and it does, in fact, express my
22 written testimony.

23 **Q. Okay. You reviewed it prior to**
24 **filing?**

1 A. Yes.

2 **Q. So this is a true and accurate copy**
3 **of your written testimony in this proceeding?**

4 A. It is.

5 MS. WEYHING: Your Honor, at this
6 time, we would like to move Exhibit 9 into
7 evidence.

8 MR. GRADELESS: No objection.

9 HEARING OFFICER WEBB: Petitioner's
10 Hearing Exhibit's 9 and 10 are admitted.

11 MS. WEYHING: Thank you.

12 BY MS. WEYHING:

13 **Q. Now, if you can turn to Tab 12 for**
14 **me, please. I apologize Tab 11. Let's start**
15 **there.**

16 (Document marked as Petitioner's
17 Exhibit No. 11 for
18 identification.)

19 BY MS. WEYHING:

20 **Q. Do you recognize this document?**

21 A. Yes, I do.

22 **Q. What is this document?**

23 A. This document is -- it's our April
24 13th, 2018, document entitled "Evaluation of

1 Nitrification Alternatives for Emerald, Henry,
2 Illinois Facility."

3 Q. Okay. And you authenticated this
4 2018 technical memorandum in your pre-filed
5 testimony, correct?

6 A. I did.

7 MS. WEYHING: At this time, Hearing
8 Officer Webb, we move to admit Exhibit 11 into
9 evidence as well.

10 MR. GRADELESS: Does this have the
11 letter on top of it as well?

12 HEARING OFFICER WEBB: The April
13 17th cover letter?

14 MR. GRADELESS: Yeah, the cover
15 letter. I just want to make sure we -- if that
16 has that cover letter.

17 MS. WEYHING: It does have the cover
18 letter.

19 MR. GRADELESS: Okay. No
20 objections.

21 HEARING OFFICER WEBB: Okay.
22 Petitioner's Exhibit 11 is admitted.

23 BY MS. WEYHING:

24 Q. All right. Mr. Flippin, if you can

1 **turn to Tab 12 now.**

2 **(Document marked as Petitioner's**
3 **Exhibit No. 12 for**
4 **identification.)**

5 BY MS. WEYHING:

6 **Q. Take a minute to look this document**
7 **over. Do you recognize this document?**

8 A. I do.

9 **Q. What is this document?**

10 A. It is our letter report, our meaning
11 Brown and Caldwell, our letter report dated
12 October 11th, 2019. The subject is Expert Report
13 and Response to Recommendations of Illinois
14 Environmental Protection Agency of July 19th,
15 2019.

16 **Q. You also authenticate this document**
17 **in your pre-filed testimony?**

18 A. I did.

19 MS. WEYHING: Your Honor, at this
20 time, we move to admit Exhibit 12 into evidence.

21 MR. GRADELESS: No objection.

22 HEARING OFFICER WEBB: Petitioner's
23 Exhibit 12 is admitted.

24

1 BY MS. WEYHING:

2 Q. Now, I'll have you turn to Tab 14,
3 please.

4 (Document marked as Petitioner's
5 Exhibit No. 14 for
6 identification.)

7 BY MS. WEYHING:

8 Q. Do you recognize this document?

9 A. Yes, I do.

10 Q. What is it?

11 A. It is a summary of effluent ammonia
12 expressed in concentration in pounds per day for
13 2013 through 2019, a summary of maximum average
14 and low values on -- on a yearly basis and then on
15 a monthly basis you will see a daily maximum in
16 mg/L in pounds per day and a monthly average in
17 mg/L and pounds per day.

18 Q. Mr. Flippin, did you review how this
19 Petitioner's Hearing Exhibit 14 was prepared?

20 A. I did.

21 Q. How was it prepared?

22 A. Accurately.

23 Q. Okay. How did you review the way
24 that it was prepared?

1 A. I reviewed the DMR records and
2 compared them with the Excel spreadsheet to make
3 sure the data matched and then I verified that the
4 calculations were done correctly.

5 **Q. So you verified the formulas?**

6 A. I verified the formulas.

7 **Q. And does this document accurately**
8 **verify the DMR's in Petitioner's Hearing Exhibit's**
9 **2 and 13?**

10 A. It accurately summarizes the DMR's
11 from 2013 to 2019.

12 **Q. Great.**

13 MS. WEYHING: Hearing Officer Webb,
14 at this time, we move to admit Exhibit 14 into
15 evidence.

16 MR. GRADELESS: No objection.

17 HEARING OFFICER WEBB: Petitioner's
18 Exhibit 14 is admitted.

19 MS. WEYHING: Thank you. And, at
20 this point, Emerald also tenders Mr. Flippin as an
21 expert on the design and operation of wastewater
22 treatment systems and the design and operation of
23 treatment systems to nitrify ammonia-nitrogen in
24 wastewater.

1 MR. GRADELESS: No objection.

2 HEARING OFFICER WEBB: Mr. Flippin
3 is an expert witness.

4 MS. WEYHING: Thank you.

5 BY MS. WEYHING:

6 Q. All right. Mr. Flippin, can you
7 estimate for me how many different wastewater
8 treatment operations you have reviewed during your
9 career?

10 A. Hundreds.

11 Q. And in your experience and opinion,
12 how does the complexity of Emerald's Henry plant
13 compare to the other wastewater treatment plants
14 you've worked on?

15 A. By far, one of the more complex.

16 Q. Why is that?

17 A. The product mix that the Henry plant
18 makes are materials used in rubber and plastic
19 manufacturing. They're used to accelerate the
20 production of these materials, the formation of
21 these materials and they're used to actually make
22 these materials stand the test of time and for
23 rubber and plastic to stand the test of time, it
24 has to resist biodegradation and this plant

1 provides biological treatment.

2 So you have the conundrum of
3 biological treatment being the best available
4 treatment technology for this category while
5 treating what components that are intended to
6 resist biodegradation.

7 **Q. Okay. But you did consider**
8 **alternatives in your written testimony and**
9 **reports, correct?**

10 A. I did.

11 **Q. Those were alternatives for reducing**
12 **the ammonia-nitrogen in the effluent?**

13 A. They were.

14 **Q. Are the alternatives you considered**
15 **generic alternatives that could be applied to any**
16 **plant?**

17 A. They could be applied to any plant
18 that needs to remove ammonia. They were
19 tailored -- tailored to this plant based on what
20 we had learned in prior evaluations.

21 **Q. Okay. So in your April 2018 and**
22 **October 2018 expert reports, I counted eight**
23 **different treatment alternatives that you studied,**
24 **is that correct?**

1 A. In those, yes.

2 **Q. Did you consider applying any of**
3 **those alternatives in combinations in order to**
4 **achieve compliance with the general effluent**
5 **standard?**

6 A. We did. And did we consider
7 combining them? We did. Did we combine them? We
8 did not.

9 **Q. Okay. In your opinion, would it**
10 **make technical sense or economic sense to apply**
11 **any of the alternatives in combination with one or**
12 **more other alternative?**

13 A. It -- it would have only made the
14 unit cost of the ammonia treatment higher.

15 **Q. Why is that?**

16 A. If you -- if you combine treatment
17 alternatives, you are building two separate
18 treatment systems. So you have two capital
19 projects. If you build two different treatment
20 systems, you're operating two different treatment
21 systems to achieve the same goal.

22 So you're incurring both capital
23 and operating costs to achieve a fraction of the
24 removal. So you've got two systems being operated

1 instead of one. The -- we saw no economy being
2 generated in that.

3 **Q. In your opinion, would it make**
4 **technical or economic sense to combine tertiary**
5 **nitrification with breakpoint chlorination and**
6 **spray irrigation, for example?**

7 A. The only -- spray irrigation only
8 works when the ground is not frozen. So there is
9 three months of the year that you couldn't
10 honestly use spray irrigation. So during that
11 component of the year, you can use something else.
12 If you use that something else that is being used
13 three months of the year and your other is being
14 used nine months of the year, you end up with a
15 more costly alternative because you, again, had to
16 build two capital cost alternatives and that
17 capital cost is sunk while you're not operating
18 it.

19 **Q. What about combining the breakpoint**
20 **chlorination and tertiary nitrification, in your**
21 **opinion, does that make any sense?**

22 A. It does not because they both
23 address effluent ammonia.

24 **Q. Okay. You just stated that the**

1 **spray irrigation would only achieve compliance a**
2 **certain percentage of the time. How much?**

3 A. It wouldn't achieve compliance with
4 the standard any of the time because it -- given
5 the acreage that is available on an annual average
6 basis, only 22% of the effluent ammonia load would
7 be reduced.

8 **Q. In your opinion, does it make sense**
9 **to combine that alternative with any of the other**
10 **alternatives?**

11 A. Not if the purpose is to arrive at
12 an economically viable alternative.

13 **Q. And why not?**

14 A. Because that alternative land
15 application, quite candidly, had one of the
16 highest costs on a dollars per pound of ammonia
17 removed. So it was really one of the less
18 economically attractive alternatives by itself.
19 The ones that you would have combined it with to
20 work the other three months they had also an
21 economically unattractive answer as well.

22 **Q. I do want to talk about the**
23 **economics of the alternatives that you studied for**
24 **a minute.**

1 **Can you explain just in general**
2 **terms the steps you took to evaluate the costs to**
3 **Emerald of the alternatives that you studied in**
4 **2018 and 2019?**

5 A. Sure. There were three costs we
6 looked at. One was capital cost, two was annual
7 operating and maintenance costs, and three was
8 present worth cost.

9 **Q. Starting with capital costs, how did**
10 **you calculate those?**

11 A. We started with a waste load, a
12 designed waste load, and from that designed waste
13 load we used generally accepted principles and
14 practices for sizing equipment such as tertiary
15 nitrification, alkaline stripping, breakpoint
16 chlorination, ion exchange, land application. We
17 used those. That generated the sizes of equipment
18 we needed and the types of equipment we needed and
19 then once we had the size -- the types and sizes
20 of equipment we got equipment cost estimates from
21 vendors who supplied that type of equipment.

22 We then took those equipment
23 cost estimates and oriented our construction cost
24 estimators to the site about where utilities were,

1 about the availability of utilities, about what
2 the site constraints were for being able to build
3 on the property and they took that material using
4 AACE principles at a Class 4 process design
5 development and generated a Class 5 cost estimate.

6 **Q. Okay. What is a Class 5 cost**
7 **estimate?**

8 HEARING OFFICER WEBB: May I
9 interrupt a moment? There were some acronyms that
10 we wanted to ask about. What is AAC?

11 THE WITNESS: AACE. Association for
12 the Advancement of Cost Engineering --

13 MR. RAO: Thank you.

14 THE WITNESS: -- is that one.
15 That's one --

16 MR. RAO: Just for the record.

17 THE WITNESS: That's one that our
18 construction cost estimators bore on to and follow
19 those guidelines.

20 HEARING OFFICER WEBB: Thank you.
21 Go ahead.

22 BY MS. WEYHING:

23 **Q. Thank you. I just asked, could you**
24 **explain to us what a Class 5 cost estimate is?**

1 A. Sure. A Class 5 cost estimate is --
2 is defined as a conceptual level cost estimate.
3 It's normally representative of approximately a 2%
4 of an entire design completion and the accuracy of
5 that cost estimate is typically minus 50% to plus
6 100%. A Class 4 estimate, if I may --

7 **Q. That's fine.**

8 A. A Class 4 estimate is anywhere from
9 2% to 15% of the total engineering being completed
10 and that cost estimate is -- is minus 30% to plus
11 50% in its accuracy. You'll see in the design --
12 in our documents, you will see a level of detail
13 more commensurate with a Class 4 than a Class 5.
14 We call these estimates Class 5 because we
15 certainly don't want to overpromise. Our
16 estimates are more akin to what others would call
17 a Class 4.

18 **Q. Okay. Let's move on to the second**
19 **category. That's operating costs.**

20 A. Okay. Operating costs.

21 **Q. How did you calculate those?**

22 A. Using standard principles and
23 practices, we calculated the chemical costs
24 associated with each of the ammonia removal steps.

1 For example, on alkaline stripping, you have to
2 know how much caustic it takes to rise -- raise
3 the pH to a level you can strip the ammonia. We
4 literally quantified how much that was using
5 titration curves.

6 We then on breakpoint
7 chlorination you have to quantify how much
8 chlorine is needed to achieve the ammonia
9 reduction. We actually tested that and got how
10 much ammonia was needed. Then when you do
11 breakpoint chlorination, it destroys alkalinity.
12 We then calculate how much cost we would have to
13 add back to replace the destroyed alkalinity. So
14 we actually did test work.

15 It was actual test work used to
16 develop these chemical costs to chemical
17 quantities and then we went out and got unit costs
18 for the chemicals. That allowed us to get
19 chemical costs. The equipment that we sized
20 previously you heard me talk about, we know what
21 the electrical demand is of that equipment. So
22 when we got there, the electrical consumption, it
23 took the Henry plant electrical cost to get that.
24 So to the best of our knowledge, we developed an

1 annual O&M cost.

2 **Q. Okay. What was the third category**
3 **of cost that you estimated?**

4 A. It's net present value.

5 **Q. How did you do that?**

6 A. Sure. If you know -- the question
7 we ask is for a -- for the design life of the
8 facility and design life being -- we're using the
9 definition of design life being one in which the
10 facility should be expected to operate with only
11 minor maintenance costs, not equipment replacement
12 costs.

13 During that period of time which
14 we defined as 10 years, how much money has to be
15 held today so that you can buy the facility, build
16 it and fund its operation for the next 10 years?
17 That's what we called our net present value cost.

18 **Q. Okay. Then once you had your**
19 **estimates, then what did you do?**

20 A. We took the annual O&M costs, the
21 annual operation and maintenance cost, and that
22 was in the denominator and then in the
23 numerator -- sorry. In the numerator was the
24 annual operating and maintenance cost, and in the

1 denominator was the pounds of ammonia removed in a
2 given year.

3 We divided those costs by the
4 pounds removed in a year and got dollars per pound
5 of ammonia removed strictly related to operation
6 and maintenance costs.

7 Then we took the net present
8 value and said, "This is how much money I have to
9 have today to build and fund operations for 10
10 years. Over this 10-year period, how many pounds
11 of ammonia am I going to remove?" So we divided
12 the net present value in dollars by the 10 years
13 worth of ammonia removal to get dollars per pound
14 of ammonia removed, net present value.

15 **Q. And then what did you use as sort of**
16 **a yardstick to see whether your estimated costs**
17 **for the alternatives at Henry plant were**
18 **economically reasonable?**

19 A. We used the NACWA median cost for
20 surcharge of ammonia-nitrogen. Now, NACWA stands
21 for the National Association of Clean Water
22 Agencies.

23 **Q. Mr. Flippin, what was that median**
24 **cost?**

1 A. \$1.50 per pound of ammonia removed.

2 **Q. How would NACWA come up with that**
3 **number?**

4 A. The way NACWA does it -- first of
5 all, it is a member organization of utilities that
6 provide water and waste water treatment services
7 to both municipal and industrial customers and
8 they do -- they do a survey periodically where
9 they ask their member organizations to define for
10 them what is their surcharge, for example,
11 ammonia-nitrogen and those agencies go in and do
12 their own set of calculation to look at what --
13 what costs do they incur in treating each extra
14 pound of ammonia over and above the base load of
15 ammonia that comes in with domestic sewage.

16 **Q. So if the median reported by NACWA**
17 **was about \$1.50 per pound, what was the highest**
18 **amount reported by NACWA?**

19 A. \$5 per pound.

20 **Q. Based on your experience, does that**
21 **\$5 per pound figure seem reliable?**

22 A. It didn't.

23 **Q. Why not?**

24 A. It didn't for several reasons. One

1 is the -- when the member agencies are allowed to
2 calculate what their surcharge costs are, there is
3 not a direct formula that says you must follow
4 this protocol and include these particular factors
5 and not those particular factors. There is not a
6 definitive protocol by which they have to go
7 through and calculate the answer.

8 So the reason we chose the
9 median value is because some are going to count
10 more -- are going to count factors that others
11 didn't count and then some are going to forget to
12 count factors they should have counted and so
13 to -- to even it out and to level it out, we
14 picked the 50th percentile, or the median, to get
15 what we believed to be a reasonable cost.

16 Now, we sanity check that number
17 with -- there is a parameter called Total Kjeldahl
18 Nitrogen, also known as TKN. Total Kjeldahl
19 Nitrogen is the sum of organic nitrogen plus
20 ammonia-nitrogen. So at the Henry plant in their
21 final effluent, Total Kjeldahl Nitrogen and
22 ammonia-nitrogen are essentially equivalent. So
23 we asked what was the NACWA surcharge for TKN.

24 They published that and their

1 peak value that they listed was \$1.65 per pound of
2 TKN which made the \$1.50 per pound of ammonia, if
3 anything, seem overstated. So we believe that
4 \$1.50 per pound of ammonia was ample to recover
5 the -- for them to cover their costs of ammonia
6 treatment.

7 **Q. Okay.**

8 A. I thought that was a reasonable
9 estimate.

10 **Q. Okay. The values reported in the**
11 **NACWA survey are surcharges.**

12 **How would that be different -- a**
13 **surcharge be different than a cost estimate?**

14 A. A surcharge -- a surcharge requires
15 a cost estimate be made and so a surcharge, in
16 essence, is a cost estimate of what it costs for
17 that entity to treat each pound of extra ammonia
18 or each pound of extra TKN.

19 **Q. The Agency submitted a**
20 **recommendation in this case -- in this proceeding,**
21 **did you review their recommendation?**

22 A. I did.

23 **Q. They suggested that the experience**
24 **of petroleum refineries controlling ammonia in the**

1 wastewater discharge might be comparable to the
2 Henry plant.

3 Have you ever done any ammonia
4 reduction work at a petroleum refinery?

5 A. I have.

6 Q. How many petroleum refineries?

7 A. Approximately, 20.

8 Q. In your opinion and experience, is
9 controlling ammonia in the wastewater discharge of
10 a petroleum refinery comparable to Henry plant?

11 A. It is not.

12 Q. Why not?

13 A. Ammonia refineries, just like
14 municipalities, have the benefit that they're able
15 to remove their ammonia through single stage
16 nitrification. In other words, the same equipment
17 used to remove BOD is also removing ammonia at the
18 same time and that's why you get the economic
19 efficiency of single stage nitrification which is
20 not a reliable process for the Emerald plant and,
21 thus, the Emerald plant doesn't get the benefit
22 from the economically reasonable alternative
23 available to most.

24 Q. Why can't Emerald -- why can't

1 **Emerald engage in single stage nitrification?**

2 A. Principally, MBT and there may be
3 other factors, but MBT is the one we know about.

4 **Q. Mr. Flippin, one of the alternatives**
5 **you investigated was breakpoint chlorination?**

6 A. Yes.

7 **Q. Where did you propose to apply**
8 **breakpoint chlorination in the Henry plant**
9 **process?**

10 A. After secondary clarification.

11 **Q. Why?**

12 A. In order to make it most
13 economically reasonable. If I had applied it
14 upstream in the production plant, let's say on the
15 PC tank discharge or even in the PC process,
16 chlorination not only oxidizes ammonia, but it
17 also oxidizes COD and it also oxidizes organic
18 nitrogen. So I tried to -- we intentionally chose
19 to apply it to a point where we had the fewest
20 competing reactions for the chlorine and,
21 therefore, we got the minimum chlorine dose we
22 could apply to achieve the ammonia reduction we
23 were trying to achieve.

24 **Q. So did you apply breakpoint**

1 chlorination at the most cost-effective location
2 at the Henry plant?

3 A. We did.

4 Q. In your report, you indicated that
5 breakpoint chlorination would require additional
6 study because the treatment process might form
7 chlorination bi-products, correct?

8 A. That's true.

9 Q. Can you explain what you mean by
10 that?

11 A. Yes, glad to. Even in drinking
12 water treatment, even groundwater river water,
13 when cities do drinking water treatment, they are
14 concerned about the formation of chlorination
15 bi-products even when you're starting with clean
16 water essentially. The dirtier the water, the
17 more likely it is to form chlorinated organics or
18 chlorinated bi-products.

19 Now, in the Henry plant -- in
20 the Emerald plant's case, their discharge BOD is
21 very comparable to that of a municipal plant.
22 Their discharge BOD is less than 10. So from a
23 biodegradable organics perspective, those are
24 gone, but what is left over in the Emerald plant

1 is a lot of non-degradable organics expressed as
2 chemical oxygen demand wherein a municipality when
3 you have the same BOD going out, let's call it 10
4 BOD going out. In a municipality, you'll have 10
5 BOD going out and a chemical oxygen demand going
6 out of, like, 30 or 40.

7 In the Emerald plant where you
8 have the exact same biodegradable organics going
9 out of 10, instead of having a 30 to 40 COD, they
10 have a 300 to 600 COD. So you've got lots more
11 organic material that is being subject to
12 chlorination and has thus the opportunity of
13 forming chlorination bi-products which, thus, has
14 a greater opportunity for exerting a negative
15 effect on effluent aquatic toxicity.

16 **Q. Now, your breakpoint chlorination**
17 **proposal also included a dechlorination step,**
18 **right?**

19 A. You know, we -- we did not and we --
20 in this last round, we did not include
21 dechlorination because the effluent -- the
22 effluent chlorine residual leaving the Henry plant
23 would be a number like, you know, 1 to 3 mg/L and
24 after going through the zone of initial dilution

1 one wouldn't be able to even detect chlorine or
2 would it have any adverse effect on aquatic life.
3 Dechlorination, even if we would have done that,
4 dechlorination does not eliminate chlorination
5 bi-product. Once a chlorination bi-product is
6 formed through chlorination, dechlorination does
7 not unform it.

8 **Q. Do municipal treatment plants that**
9 **use dechlorination face the same risk of forming**
10 **chlorinated organics as a chemical plant?**

11 A. Not at all. Not even close.

12 **Q. Why?**

13 A. Not even close. And the reason
14 being think with me for a minute again, they're
15 both discharging the same biodegradable organic
16 concentrations of let's call it 10 mg/L. One is
17 discharging an average of 35 mg/L of COD. The
18 other one is discharging an average of 11 times
19 higher, 450 mg/L. That extra COD lends itself to
20 forming extra chlorinated bi-products.

21 **Q. Mr. Flippin, are you familiar with**
22 **the process that the U.S. EPA uses to evaluate**
23 **best available treatment economically available**
24 **for categories of wastewater dischargers?**

1 A. I am.

2 **Q. How are you familiar with that?**

3 A. I do a lot of work in the -- for
4 industry. As a matter of fact, 95% of my 35 years
5 of experience has been doing industrial treatment.
6 In each of those cases, we're required to look at
7 compliance with categorical limits and for some
8 clients we have actually argued, successfully I
9 might add, that in digging into the development
10 documents to determine best available treatment
11 technology economically available BATEA we were
12 able to -- the way that's done the Agency looks at
13 what the best in class facilities are doing and
14 what kinds of effluent quality are they achieving
15 and based on that they determine what treatment
16 constitutes best available treatment technology.
17 That's what we have done.

18 **Q. Okay. In your experience, would**
19 **U.S. EPA evaluate the financial statements of all**
20 **or even one of the facilities in a category in**
21 **order to assess BAT?**

22 A. They do not.

23 **Q. Another one of the alternatives you**
24 **considered was spray irrigation, right?**

1 A. Yes.

2 **Q. So the Agency recommended that**
3 **Emerald be required to conduct spray irrigation to**
4 **analyze five factors including when Emerald can**
5 **spray irrigate, the suitability of Emerald's**
6 **effluent, cost of implementation, quantity of land**
7 **needed and the agronomic benefits.**

8 **Did you consider all of those**
9 **factors in your evaluation?**

10 A. We did.

11 **Q. Can you explain how you considered**
12 **those factors?**

13 A. I'm glad to. First of all, we had
14 to select a crop and so when you land apply for
15 ammonia removal, and this isn't uncommon, you have
16 to pick a crop that has -- that has a nitrogen
17 uptake and then you have to pick a crop that is
18 compatible with the salinity of the wastewater and
19 when we looked at Emerald's wastewater we -- the
20 salinity of the Emerald waste water was too
21 saline, too salty, for any crop that has a
22 nitrogen uptake to do well.

23 And so the highest -- the
24 highest nitrogen uptake crop that also had the

1 highest salt tolerance happened to be Bermuda
2 grass that's used as hay, but even choosing a high
3 salt tolerance hay crop we had to dilute the
4 Emerald effluent with two gallons of river water
5 for every one gallon of Emerald effluent to make
6 the saltiness low enough that the hay could
7 survive and thrive. So that's how we picked the
8 crop.

9 Then each crop has a nitrogen
10 uptake. Many of them are published what the
11 nitrogen uptake is. We then took the nitrogen
12 uptake of the hay and looked at the nitrogen in
13 the Emerald effluent and figured out how much
14 nitrogen could we apply and expect the crops to
15 take the nitrogen up. And we didn't want to
16 exceed the nitrogen uptake of the crops because we
17 don't want to contaminate the groundwater. So
18 we -- we applied only the amount of nitrogen that
19 the crops would uptake.

20 **Q. And how do you know what time of**
21 **year would be available for spray irrigation?**

22 A. Sure. We looked at weather data.
23 We look at how many months a year could you expect
24 the ground to not be frozen and that was nine

1 months.

2 Q. I know the work you did was on hay.

3 Are you able to roughly estimate
4 how many corn or soybean farmland would be needed
5 to spray irrigate all of Emerald's wastewater?

6 A. It would have been significantly
7 more because that crop has a lower nitrogen uptake
8 and it would also have required much more dilution
9 water because those crops aren't as salt tolerant.

10 Q. When you say significantly more,
11 what number range are we talking?

12 A. It certainly would have been at
13 least double, if not more.

14 Q. In your opinion, would there be any
15 complications with spray irrigating Emerald's
16 chemical plant effluent onto corn or soybean land?

17 A. Yes, even in -- even in -- even in
18 the food industry where I work often, there is a
19 hesitancy in the public to consume anything that
20 has had wastewater sprayed on top of it. Call it
21 perception, call it real risk, but you just don't
22 find people doing that.

23 So, consequently the waters that
24 you spray -- the Henry wastewater, I should add,

1 also has the treated domestic sewage component in
2 it. So that even makes the matter more
3 complicated. So for indirect crops that -- crops
4 that are fed to animals, yes, but for crops that
5 are fed to humans like soybeans and corn, it would
6 be a real reluctance for anyone to sign up for
7 that.

8 **Q. Are there any other complications**
9 **that you would perceive?**

10 A. The -- the other complications
11 strictly would be having to provide that much
12 river water dilution to make those crops -- those
13 other crops, if you will, able to accommodate the
14 salinity.

15 **Q. Are the nitrogen and salt contents**
16 **of Emerald's effluent stable or do they vary?**

17 A. They definitely vary as we saw
18 today.

19 **Q. Could that also be a complication**
20 **associated with this alternative?**

21 A. It would. You would have to be
22 available -- you would have to regulate your river
23 water dilution to keep the salinity load
24 acceptable at all times.

1 Q. So in your expert opinion, is there
2 a need to study spray irrigation any further?

3 A. No.

4 Q. The Agency has also suggested that
5 the Board should require Emerald to evaluate
6 treatment methods and technologies every year.

7 In your opinion, is it prudent
8 for Emerald to repeat the analysis you did in 2018
9 and 2019 annually?

10 A. No.

11 Q. Why not?

12 A. If you look at 2004, the work we did
13 then and you look at 2019, the only -- the only
14 new technology that has come on the market that --
15 that is an Algaewheel and that is not even
16 cost-effective here.

17 Q. How do you know that?

18 A. An Algaewheel, interesting enough,
19 relies on nitrification also, not just algae
20 uptake. They're counting on nitrifying bacteria
21 to have a symbiotic relationship with the algae.

22 The algae gives off oxygen. The
23 nitrified bacteria uses that oxygen to degrade
24 ammonia. The nitrified bacteria gives off CO2

1 which the algae use and it's meant to be this
2 symbiotic relationship and it sounds fabulous and
3 sustainable and it has all these great accolades
4 about how green it is, but from an economic
5 viability standpoint, no, it doesn't offer
6 anything any more economical here than tertiary
7 nitrification. It would be less economically
8 efficient.

9 **Q. Why aren't new technologies to**
10 **reduce ammonia coming out at a higher rate?**

11 A. The -- the majority of people who
12 are -- who are being required to remove ammonia do
13 so biologically and do so in single stage
14 nitrification, which is a very efficient --
15 economically efficient way to do it because you're
16 already building biological treatment to get BOD
17 removal and the added cost of getting ammonia
18 removal at the same time is so small that single
19 stage nitrification is so economically affordable
20 there is not a driving force and so many people
21 can do it, the vast majority can do it. There is
22 not an economic driving force for new ammonia
23 technologies to be developed.

24 **Q. Does single stage nitrification work**

1 **consistently for Emerald?**

2 A. It would not.

3 **Q. Why not?**

4 A. At this point, there is -- there is
5 not a reliable means of controlling the
6 nitrification inhibitor.

7 MS. WEYHING: No further questions.

8 HEARING OFFICER WEBB: Are you okay
9 to do cross?

10 MR. GRADELESS: Could I use a
11 bathroom break? That would be awesome.

12 HEARING OFFICER WEBB: I asked the
13 wrong person. We'll go off the record and take
14 five.

15 (Whereupon, a break was taken
16 after which the following
17 proceedings were had.)

18 HEARING OFFICER WEBB: Back on the
19 record. We are ready for cross-examination.

20 C R O S S E X A M I N A T I O N

21 BY MR. GRADELESS:

22 **Q. Okay. Mr. Flippin, my name is Rex**
23 **Gradeless. We have met before. Good to see you.**

24 A. Good to see you.

1 Q. I have some questions about your
2 testimony today.

3 I was reviewing the résumé that
4 has been -- or the curriculum vitae that has been
5 submitted into evidence and you're by no means an
6 economist, right?

7 A. No.

8 Q. You have no degree in financial
9 planning?

10 A. Coursework in engineering economy,
11 but not a degree in economy.

12 Q. Now, looking at your pre-filed
13 testimony, you mentioned -- it's in Section 3.
14 I'm not sure what tab in that -- I don't have that
15 book, but it is Petitioner's Exhibit 9. I'm
16 looking at Page 3, Mr. Flippin.

17 Okay. You mentioned that you
18 developed some process design for biological
19 nitrification facilities and you've listed five
20 facilities, is that correct? It would be
21 Paragraph 9.

22 A. Yes, I see -- I see 5 there and I
23 see more below.

24 Q. We'll get to the ones below.

1 A. Good.

2 **Q. Looking at the nine -- the five in**
3 **Paragraph 9.**

4 A. Yes.

5 **Q. Are you aware of whether or not any**
6 **of those projects cost more than \$10 million?**

7 A. If you will, I did the process
8 design on this work and did the prepared sizes,
9 prepared chemical usage, et cetera. As far as
10 construction cost on these, I couldn't tell you
11 what the construction cost on these was.

12 **Q. Can you tell us the construction**
13 **cost on any of these projects listed in your**
14 **pre-filed testimony or give an approximation?**

15 A. Yes.

16 **Q. And which one -- talk to me about**
17 **it.**

18 A. Yeah, the most -- the most
19 recent -- one of the more recent ones is the Bush
20 Brothers facility that treats 1.5 million gallons
21 a day of wastewater and is treated to a high
22 enough degree of treatment to be reused in the
23 production plant as utility water. So I am
24 familiar with that one.

1 Q. And what was the approximate cost of
2 that project?

3 A. That project was about \$56 million.

4 Q. Also, in any other -- are there any
5 other facilities you're aware of the costs to
6 those projects or approximation of those costs?

7 A. That is the only one I am familiar
8 with.

9 Q. Looking at Paragraph 12 on Page 4,
10 you've also indicated three breakpoint
11 chlorination facilities; the Koch Fertilizer
12 Company, Republic Services Middle Point Landfill
13 in Murfreesboro, Tennessee, and Valero in Benicia,
14 California.

15 A. Benicia.

16 Q. Benicia, California. Thank you.
17 With respect to those three projects, are you
18 aware of any costs or approximation of costs with
19 respect to those projects?

20 A. I am not.

21 Q. And you indicated that the
22 breakpoint chlorination system at Republic
23 Services was ultimately replaced with a single
24 stage nitrification system, is that correct?

1 A. Yes.

2 Q. Are you aware of the cost of the
3 single stage nitrification?

4 A. I am not.

5 Q. Are you aware of whether any of
6 these facilities that -- on Page 3 or on Page 4
7 are allowed to have 1. -- 110 milligrams per day
8 ammonia limits?

9 A. The Waste Management Services,
10 Woodside Landfill, Walker, Louisiana was allowed
11 to have approximately that. The City of Walker
12 was -- was able to take that ammonia loading.

13 Q. And now they're achieving
14 compliance?

15 A. They are operating at a discharge
16 ammonia limit not far different from what Emerald
17 has in the adjusted standard.

18 Q. Okay. But now they are able to
19 achieve the compliance within their standards in
20 Walker, Louisiana?

21 A. I'm not sure what the current
22 pretreatment limits are for the Walker facility,
23 but I am -- I am -- I am sure that they are, if
24 you will, achieving compliance there. I'm not

1 sure what the limit is there now.

2 Q. And, now, are there any others that
3 you believe were comparable to --

4 (Whereupon, a siren went off.)

5 HEARING OFFICER WEBB: First
6 Tuesday.

7 BY MR. GRADELESS:

8 Q. Any other facilities that are
9 comparable to the 110 milligrams per daily limit
10 that Emerald's requesting -- or that -- not that
11 they're requesting, but 110 mg/L per day?

12 A. The Republic Services Middle Point
13 Landfill, Murfreesboro their limit is -- is not
14 far different than Emerald's. They discharge to
15 the City of Murfreesboro, which is capable of
16 handling that ammonia load and let me see if there
17 is any others. Nope. That's it.

18 Q. Is it fair to say that the others
19 are -- have lower limits than the 110 mg/L?

20 A. They do.

21 Q. Do you know about Bush Brothers, the
22 limits for Bush Brothers that you mentioned in
23 Dandridge, Tennessee?

24 A. Bush Brothers what determined its

1 available nitrogen limit was they go -- what's not
2 reused in the plant is -- is land applied, but
3 what governed the degree of treatment there was
4 water reuse instead of effluent land application.

5 So that -- that limit -- the
6 ammonia being discharged from that facility is --
7 is lower than the -- the numbers referenced in
8 this adjusted -- referenced in the current
9 standard.

10 **Q. Okay. And Bush Brothers you said**
11 **they now do land application?**

12 A. What they don't -- what they do not
13 treat for water reuse in the production plant,
14 they do land apply.

15 **Q. And was that the project that cost**
16 **\$53 million?**

17 A. \$56 million.

18 **Q. Is that a yes?**

19 A. Yes.

20 **Q. Also, looking at your pre-filed**
21 **testimony -- and you've been involved in this case**
22 **for several years, is that a fair statement?**

23 A. It is.

24 **Q. Since 1988 in one capacity or**

1 another?

2 A. That's right.

3 Q. And with respect to within the last
4 five years or more specifically when the last
5 adjusted standard was granted, you became involved
6 to provide two reports in this case, is that
7 correct?

8 A. I've certainly provided two reports.

9 Q. And there is no other capacity in
10 which you've been involved, is that right, in the
11 last five years?

12 A. Yes.

13 Q. Okay. And --

14 A. Forgive me.

15 Q. Go ahead.

16 A. I -- I have been involved in more
17 than just producing these two reports in the last
18 five years.

19 Q. But with respect to the ammonia
20 issue?

21 A. Not with respect to the ammonia
22 issue.

23 Q. Okay. You never received a call
24 from the site director to come in and have a

1 **facility visit?**

2 A. Only in regard to preparing the
3 reports on alternative ammonia reduction.

4 Q. Now, the reports we were referring
5 to was the report in April of '17?

6 MS. ZEIVEL: '18.

7 BY MR. GRADELESS:

8 Q. April 17, 2018, and it was to --
9 your evaluation that you submitted to Emerald
10 Performance Materials, is that right? I think the
11 date on your report was April 13th, 2018.

12 A. We submitted the report.

13 Q. It should be Exhibit 11. I'm sorry.
14 I don't have your tabs.

15 A. Thank you. I definitely submitted a
16 report on April 13th, 2018, and I definitely
17 submitted a report on October 11th, 2019.

18 Q. Okay.

19 MR. GRADELESS: Exhibits.

20 HEARING OFFICER WEBB: Are you
21 offering an exhibit?

22 MR. GRADELESS: Yes, I was going to
23 use some exhibits.

24 BY MR. GRADELESS:

1 **Q. Mr. Flippin, I'm handing you what**
2 **has been previously identified as State's Exhibit**
3 **12 for purposes of identification.**

4 **Do you recognize this document?**

5 A. Yes, I do.

6 (Document marked as State's
7 Exhibit No. 12 for
8 identification.)

9 MR. GRADELESS: Sorry. I have
10 copies.

11 HEARING OFFICER WEBB: Do you have a
12 copy for us?

13 MR. GRADELESS: Courtesy copies?
14 Anybody?

15 MR. RAO: Thank you.

16 BY MR. GRADELESS:

17 **Q. Mr. Flippin, do you recognize**
18 **Exhibit 12?**

19 A. I do.

20 **Q. And what is it?**

21 A. It is an e-mail from me to Tom
22 Dimond copying Jason Mullen who is one of our
23 other practitioners in industrial water.

24 **Q. And this e-mail was to Mr. Dimond**

1 because his law firm procured your services for
2 the testimony, is that correct?

3 A. Yes.

4 Q. Okay. And this is a fair and
5 accurate copy of the e-mail that you sent back to
6 Mr. Dimond?

7 A. It is.

8 MR. GRADELESS: At this time, the
9 State offers Exhibit 12.

10 MS. WEYHING: No objection.

11 HEARING OFFICER WEBB: Agency
12 Exhibit 12 is admitted.

13 BY MR. GRADELESS:

14 Q. Now, Mr. Flippin, I want to direct
15 your attention to the set -- the second sentence?

16 A. Okay.

17 Q. It starts with the "The Board
18 contemplated ammonia-nitrogen removal achievable
19 at POTW. This is ammonia-nitrogen removal within
20 the same, but larger tankage, additional blowers
21 and additional chemical addition."

22 Did I read that correctly?

23 A. You did.

24 Q. That meant if you can remove the MBT

1 in the wastewater coming into the aeration tank,
2 you could accomplish nitrification within the
3 aeration tank, is that right?

4 A. Yes. What I'm saying is if MBT
5 removal could be reliably accomplished, then
6 single stage nitrification should be available to
7 the Henry plant.

8 Q. Okay. Now, the second sentence I
9 want to focus in on starts with "The Board
10 desperately wants Henry plant to reveal operating
11 profit versus cost of partial or full compliance.
12 Can this matter be settled without having to
13 present this?"

14 Did I read that correctly?

15 A. You did.

16 Q. By that, you meant you weren't sure
17 how to calculate the partial compliance, is that
18 fair?

19 A. Please restate that question.

20 Q. Sure. The sentence starts with "The
21 Board desperately wants the Henry plant to reveal
22 operating profit versus cost of partial or full
23 compliance. Can this matter be settled without
24 having to present this?"

1 **And by those two sentences, you**
2 **meant you weren't sure how to calculate that cost,**
3 **is that correct?**

4 A. I wasn't sure if that cost should be
5 calculated. I knew that I didn't know how to
6 calculate it.

7 **Q. Thank you.**

8 MR. GRADELESS: Let the record
9 reflect I'm approaching the witness with what has
10 been previously identified as State's Exhibit 13A
11 and 13B and I will hand them to you, sir.

12 (Document marked as State's
13 Exhibit No. 13A-13B for
14 identification.)

15 MR. GRADELESS: Let me give you a
16 better copy.

17 MS. WEYHING: B.

18 THE WITNESS: Rex, this one is
19 missing some pages.

20 MR. GRADELESS: Yeah, the staple
21 came off. Let me get you a better copy. I have
22 it. Courtesy copies 13A and then 13B.

23 MS. CARTER: We ended up with two
24 13B's.

1 MR. GRADELESS: Thank you. 13B.

2 BY MR. GRADELESS:

3 Q. Now, Mr. Flippin, let's look at 13A
4 first.

5 A. Okay.

6 Q. Exhibit 13A is a letter proposal and
7 it was signed off by you on the back, is that
8 right?

9 A. That's right.

10 Q. And you had reviewed this prior to
11 submitting it to the Henry plant?

12 A. I had.

13 Q. And 13A was the first draft of your
14 proposal for responding to the adjusted standard,
15 is that correct?

16 A. That's correct.

17 Q. And 13B was a letter dated August
18 26th, 2019, correct?

19 A. That's correct.

20 Q. And it has your signature on the
21 back?

22 A. Yes, it does.

23 Q. And you reviewed this document as
24 well?

1 A. I did.

2 Q. And 13B represents the final scope
3 of work proposal that you submitted to
4 Mr. Hathcock, is that correct?

5 A. That's correct.

6 Q. Okay.

7 MR. GRADELESS: At this time, the
8 State moves into evidence Exhibit's 13A and 13B.

9 MS. WEYHING: No objection.

10 MR. GRADELESS: Okay.

11 HEARING OFFICER WEBB: Agency
12 Exhibit's 13A and B are admitted.

13 BY MR. GRADELESS:

14 Q. Now, I want to first focus on
15 Exhibit 13A and we'll talk about what is in there.

16 Now, looking at 13A the first
17 page task number one -- again, this was your first
18 proposal to Mr. -- Mr. Hathcock, correct?

19 A. Yes.

20 Q. And task one, number two, you
21 indicated that you want to address the comment on
22 Page 18 regarding why spray irrigation on
23 Emerald's 80 acres of farmland is not the answer,
24 right?

1 A. That's right.

2 Q. And this was before you submitted
3 your report in October of 2019, right?

4 A. Yes.

5 Q. So you already kind of knew what
6 answer you were looking for?

7 A. Not what answer I was looking for.
8 I knew what answer -- I already had a good feel
9 for what answer would be arrived at following a
10 more thorough analysis. So I wasn't looking for
11 an answer. I just knew what the answer was likely
12 going to be before even starting the detailed
13 evaluation.

14 Q. Okay. Now, you ended up looking at
15 field application, is that right?

16 A. Land application, yes, sir.

17 Q. I'm sorry. Land application. Is
18 that right?

19 A. Yes.

20 Q. Okay. And you did not consider, I
21 guess, more than 80 acres that was owned by the
22 Emerald facility, did you?

23 A. I did not.

24 Q. So you limited the scope of your

1 **analysis to only the 80 acres that they owned?**

2 A. I did.

3 Q. And you thought that field -- I'm
4 sorry. Spray irrigation was not the answer
5 because it would not allow for year round
6 compliance?

7 A. It wouldn't allow for --

8 MS. WEYHING: Objection. Misstates
9 the testimony of Mr. Flippin.

10 HEARING OFFICER WEBB: Does it?
11 Let's clarify.

12 MR. GRADELESS: Go ahead. I'm just
13 trying to --

14 HEARING OFFICER WEBB: Okay.

15 BY THE WITNESS:

16 A. It wouldn't allow for compliance
17 period.

18 BY MR. GRADELESS:

19 Q. And you're talking about full
20 compliance, is that right?

21 A. I am.

22 Q. And all your alternatives evaluated
23 whether or not they would achieve full compliance?

24 A. They did evaluate whether they would

1 achieve full compliance.

2 Q. Okay. Now, number four on task one
3 "Discuss the WET test results and fractions
4 potentially assignable to salt and
5 ammonia-nitrogen described on Page 23."

6 That proposal was never done,
7 right?

8 A. That evaluation was not made.

9 Q. Okay. With respect to No. 5
10 "Develop effluent limits that Emerald can comply
11 reliably given historical effluent data to address
12 the suggested limits on Page 25."

13 That task was not done in this
14 case?

15 A. It was not.

16 Q. Okay. Looking at Page 2, No. 11.
17 You indicated that you proposed to discuss the
18 likely applicability of using an Algaewheel to
19 reduce the effluent NH₃-N and that was in your
20 initial proposal, right?

21 A. Yes.

22 Q. And that analysis was not done with
23 respect to this case, is that correct?

24 A. Not done thoroughly.

1 Q. Just beyond -- nothing beyond a
2 conceptual level?

3 A. Right.

4 Q. And it was the client -- your
5 client -- or I'm sorry. Yeah, your client that
6 removed those alternative -- or those tasks, is
7 that correct?

8 A. That's correct.

9 Q. And who is your client in this case?

10 A. My client in this case is Emerald
11 Performance Materials.

12 Q. Now, I want to direct your attention
13 to State's Exhibit 13B. This is the scope of work
14 document that has been admitted into evidence and
15 this is the actual document that you ended up --
16 your client ended up going forward with, is that
17 fair?

18 A. Yes.

19 Q. Okay. I'm looking at Page 2, No. 5.
20 This is the task to discuss IEPA's recommendations
21 for the adjusted standard and it is task No. 5 and
22 on this one the language has been changed to
23 "Explain why land application is not a reasonable
24 alternative to address Page 27, 3g and Page 18."

1 **You removed the part that says**
2 **"Explain why it's not the answer," is that fair?**

3 A. I think that's a discussion of
4 semantics. My 5 here says, "Explain why land
5 application is not a reasonable alternative,"
6 which, to me, is very similar to making the
7 statement over here address -- address comments on
8 Page 18 regarding why spray irrigation on
9 Emerald's 80 acres of farmland is not the answer.
10 I think I'm saying the same thing both times, but
11 in different words.

12 Q. Okay. And this was in August of
13 2019. I'm looking now at the second paragraph
14 from the bottom on Page 2 and it says that "BC,"
15 which is Brown and Caldwell, "will update the
16 treatment alternatives evaluation that will
17 involve revisiting the top five lowest cost
18 alternatives previously presented. New
19 alternatives will not be evaluated. The
20 alternatives evaluation will consist of updating
21 capital costs, updating O&M costs and updating
22 BFD's," is that correct?

23 A. That's correct.

24 Q. So you've only -- you've only

1 **reevaluated five for this adjusted standard?**

2 A. Actually, I believe if you'll look
3 in the report, we evaluated six.

4 Q. **I think you're right six. Because**
5 **you added one?**

6 A. We did add one.

7 Q. **We'll get to that. I promise. Now,**
8 **this was interesting.**

9 The very last paragraph you talk
10 about cost estimates. And you said that the
11 updated cost estimates would be considered
12 conceptual level Class 5 capital cost estimates,
13 is that correct?

14 A. That's correct.

15 Q. **And that's what you did in this**
16 **case?**

17 A. In my prior testimony earlier today,
18 I explained that what -- what we call a Class 5
19 estimate others might call a Class 4 and if you
20 read the document that you have --

21 Q. **Mr. Flippin, nowhere in here does it**
22 **say Class 4, is that --**

23 A. It does not.

24 Q. **Thank you. In fact, you went onto**

1 further describe your Class 5 analysis. "This
2 analysis will be considered in Association for the
3 Advancement of Cost Engineering Class 5 estimate,"
4 did I read that correctly? Did I read that
5 correctly?

6 A. Point me to where you just read.

7 Q. All right. It's sentence two in the
8 bottom paragraph on Page 2 "This analysis will be
9 considered in Association for the Advancement of
10 Cost Engineering, AACE, Class 5 estimate," that's
11 what that says?

12 A. Yes.

13 Q. And nowhere in your expert report do
14 you refer to this cost estimate as a Class 4?

15 A. That's correct.

16 Q. This is the first time that we've
17 heard Class 4 today, isn't it?

18 A. I'm -- I'm unsure if we talked about
19 it in a deposition, but today, for sure, I have
20 discussed that what we sometimes call -- what we
21 call a Class 5 some would call a Class 4.

22 Q. And you never explained that to your
23 client in this document, is that right?

24 A. That is true.

1 Q. Okay. You go on to say, "A Class 5
2 estimate is generally prepared based on very
3 limited information and subsequently have a wide
4 accuracy range. As such, some companies and
5 organizations have elected to determine that due
6 to the inherent inaccuracies such estimates cannot
7 be classified in a conventional and systemic
8 manner.

9 Class 5 estimates, due to the
10 requirements of end use, may be prepared within a
11 very limited amount of time and with little effort
12 expended, sometimes requiring less than an hour to
13 prepare. Often, little more than proposed plant
14 type, location and capacity are known at the time
15 of estimate preparation. These are typically
16 prepared at a 0% to 2% of full project
17 definition," did I read that paragraph correctly?

18 A. You did.

19 Q. Class 5 is the least accurate of all
20 of the classes for the -- under the AACE cost
21 estimate, isn't it?

22 A. Yes.

23 Q. And, in fact, the total accuracy of
24 a Class 5 is plus or minus 50% for the -- on the

1 **low range, is that right?**

2 A. I'm reading the top of Page 3, and
3 if you'd like me to I can read that, it refers to
4 what the low side is and what the high side is.
5 The low side is a range of minus 20% to minus 50%
6 and the high side is a range of plus 30% to plus
7 100%.

8 **Q. Now, did you create the minus 20%?**

9 MS. WEYHING: Objection. Vague.
10 I'm not sure what you mean by that.

11 BY MR. GRADELESS:

12 **Q. Did you come up with the accuracy**
13 **range of negative 20%?**

14 A. These accuracy ranges are what AACE
15 says the accuracy ranges are.

16 **Q. Okay. I'm looking now at Page 4**
17 **under project fee. Now, for this particular scope**
18 **of project, this is, again, referring only to the**
19 **October report, right, this proposal is the**
20 **proposal for the October report?**

21 A. That's true.

22 **Q. Okay. Now, you're able to conduct**
23 **this scope of work and you're authorized \$63,700**
24 **inclusive of \$18,400 set aside for the deposition**

1 **and hearing, did I read that correctly?**

2 A. You did.

3 Q. **And that's for the one October**
4 **report?**

5 A. And -- and subsequent discussions
6 and today.

7 Q. **Fair.**

8 A. Those kind of things, yes.

9 Q. **So that leaves, I guess, \$45,300 for**
10 **preparing the final report?**

11 A. \$63,700 minus \$18,400 is -- you're
12 right was associated with the report.

13 Q. **Fair. And that report is 13 pages.**
14 **You don't have to look that one up. I will**
15 **withdraw that question.**

16 **You also in this case prepared a**
17 **similar report and that was your April 2018**
18 **report, is that correct?**

19 A. The April report was much more
20 limited in scope. It considered two alternatives
21 and the 2019 considered six.

22 Q. **Okay. In the April report, you had**
23 **the same fees and costs schedule that were**
24 **proposed to prepare that April report, is that**

1 **right?**

2 A. We had a fee estimate in the
3 proposal for that work.

4 **Q. And it's similar to what you**
5 **provided in October?**

6 A. I don't -- don't remember the fee.

7 **Q. Do you have any reason to believe it**
8 **would be different than the one you prepared for**
9 **October?**

10 A. I just honestly don't remember the
11 fee.

12 **Q. Okay. Were the rates the same?**

13 A. The -- the rates -- the rates would
14 have been slightly different to reflect employees'
15 end-of-year cost of living increase, et cetera. I
16 don't remember the cost for that April '18 work.
17 I really don't.

18 **Q. Okay.**

19 MR. GRADELESS: Let the record
20 reflect I'm showing the witness what has been
21 previously identified as State's Exhibit 14 for
22 identification.

23

24

1 (Document marked as State's
2 Exhibit No. 14 for
3 identification.)

4 BY MR. GRADELESS:

5 Q. Now, Mr. Flippin, I've handed you
6 what has been previously identified as State's
7 Exhibit 14 and that is an e-mail sent from you to
8 Mr. Dimond on September 5th, 2019, is that
9 correct?

10 A. Yes, it is.

11 Q. It appears to be a fair and accurate
12 copy?

13 A. It does.

14 Q. In substantially the same condition
15 as you last saw it?

16 A. Yes.

17 MR. GRADELESS: At this time, the
18 State moves into evidence Exhibit 14.

19 MS. WEYHING: No objection.

20 HEARING OFFICER WEBB: Agent Exhibit
21 14 is admitted.

22 BY MR. GRADELESS:

23 Q. Now, this e-mail you indicated "We
24 promised to re-cost the top five most economical

1 **alternatives," is that right?**

2 A. That's right.

3 **Q. Who gave you those alternatives to**
4 **test?**

5 A. We did. Brown and Caldwell did.

6 **Q. You came up with those?**

7 A. We came up with those.

8 **Q. Okay. And you then added on --**
9 **well, we have land application and, again, we**
10 **talked about the 88 acres that you've analyzed in**
11 **your report, is that right?**

12 A. It may have been -- I believe it's
13 80.

14 **Q. I'm not trying to trick you, 80, 88.**

15 A. Okay.

16 **Q. And you -- you added that land**
17 **application because it was a common practice, is**
18 **that right?**

19 A. That's right.

20 **Q. It's a common technology?**

21 A. That's right.

22 **Q. Do you know if it is done throughout**
23 **the State of Illinois?**

24 A. In a different manner, yes.

1 Q. I want to direct your attention to
2 the middle paragraph. You previously said that
3 "We would not consider nitrification of the
4 effluent due to the precarious nature of this
5 process. We may want to consider costing tertiary
6 nitrification. It appears that we have learned
7 that MBT stays with the sludge in existing plant
8 and does not show up in the final effluent," did I
9 read that correctly?

10 A. You did.

11 Q. Earlier, you testified that the
12 reason single stage nitrification in this case
13 would not work is because of the MBT?

14 A. Principally. That's the one we know
15 about.

16 Q. Right. Is that correct?

17 A. That's correct.

18 Q. So if there is no more MBT, then you
19 can achieve, principally, a single stage
20 nitrification?

21 A. If there were no MBT, you're right
22 based on my understanding.

23 MR. GRADELESS: Let the record
24 reflect I'm showing the witness what has been

1 previously identified as State's Exhibit 15 for
2 identification.

3 (Document marked as State's
4 Exhibit No. 15 for
5 identification.)

6 MR. GRADELESS: I think it's already
7 in the record, but it's the report.

8 Mr. Flippin, this has already
9 been admitted into evidence. So, at this time, I
10 guess the State would move -- for ease of use, can
11 we just move Exhibit 15 into evidence? Any
12 objection to that?

13 MR. DIMOND: Why can't we just use
14 the exhibit that has been entered --

15 MS. WEYHING: I think it'll be
16 confusing later on.

17 MR. DIMOND: -- instead of
18 duplicating more identical documents?

19 HEARING OFFICER WEBB: This was a
20 pre-filed exhibit?

21 MR. GRADELESS: Yeah, and --

22 MS. WEYHING: No.

23 MR. DIMOND: No, it was not
24 pre-filed.

1 MR. GRADELESS: I'm sorry. It's
2 been filed. It wasn't --

3 MR. DIMOND: It is identical to
4 Emerald Exhibit 12. I don't know why we don't
5 just use Emerald Exhibit 12.

6 MS. WEYHING: It was not filed with
7 Illinois EPA's prehearing statement if that's what
8 you mean by pre-filed, but it was filed by --

9 MR. DIMOND: It was filed by us.

10 MR. GRADELESS: Yeah, it was -- not
11 in the pre-filed exhibits, but it was filed.

12 HEARING OFFICER WEBB: Okay. So
13 this is Petitioner's Exhibit 12?

14 MS. WEYHING: Exactly. So my
15 objection is just this is duplicative of
16 Petitioner's Exhibit 12.

17 MR. GRADELESS: Let me call it
18 Petitioner's 12 for the record.

19 HEARING OFFICER WEBB: Okay. Thank
20 you.

21 MR. GRADELESS: I'm trying to create
22 a clear record.

23 HEARING OFFICER WEBB: Yeah, thank
24 you.

1 MR. GRADELESS: We'll call this
2 Petitioner's Exhibit 12 for the record. Thank you
3 for clearing that up.

4 MS. WEYHING: I do -- just to be
5 clear, I think Petitioner's Hearing Exhibit 12 --
6 no, you're right. This is it. Okay. I
7 apologize.

8 HEARING OFFICER WEBB: That's okay.

9 BY MR. GRADELESS:

10 Q. Okay. Thank you. So Petitioner's
11 Exhibit 12 has already been admitted into evidence
12 and this is the report that you provided in this
13 case?

14 A. Yes.

15 Q. It's dated October 11th, 2019,
16 right?

17 A. That's right.

18 Q. And it's directed to Mr. Dimond?

19 A. Yes.

20 Q. Now, you were asked to look at
21 separate and distinct solutions to the ammonia
22 issue, is that fair?

23 A. Yes.

24 Q. You did not do any analysis of

1 paired solutions?

2 A. Not formally.

3 Q. And you did not do any analysis of
4 any internal process improvement?

5 A. That's correct.

6 Q. Okay. I'm going to draw your
7 attention to Page 2 of your report, Mr. Flippin.

8 A. Okay.

9 Q. On Page 2, No. -- it's No. 1. It
10 starts with Geneva, Illinois.

11 A. Yes.

12 Q. And these are projects that were
13 done at POTW's?

14 A. Yes.

15 Q. Now, you stated -- and I'm going to
16 assume that the numbers are correct.

17 You stated that project was
18 approximately \$10.9 million?

19 A. Yes.

20 Q. And that project included additions
21 of fine screens, raw sewage pumps, grid tank,
22 primary clarifier, UV disinfection, sludge
23 digestion, sludge dewatering, flood proofing and
24 remodeling of administration laboratory

1 facilities, is that right?

2 A. That's right.

3 Q. And they also got addition of
4 aeration tanks, blowers and a final clarifier?

5 A. Based on what I read, that's true.

6 Q. Additionally, they got increased
7 capacity to treat higher flow of BOD and TSS?

8 A. Yes.

9 Q. They got all that for \$10.9 million?

10 A. In what I read, that's true.

11 Q. Okay. Now, I want to look at
12 Batavia. I'm going to go Page 3 because they talk
13 about the -- what Batavia got for some money.
14 They added influent flow measurement, mechanical
15 bar screen, primary clarifier equipment in
16 existing tanks, immediate pump -- station pump, UV
17 disinfection, effluent flow meter and
18 rehabilitation of sludge digestion, I read that
19 correctly?

20 A. You did.

21 Q. They also got increased capacity to
22 treat higher flow, BOD and TSS?

23 A. Through those measures.

24 Q. Is that correct?

1 A. Yes.

2 Q. And, finally, to treat their
3 ammonia-nitrogen, they had additional aeration
4 tanks, blowers, diffusers and a secondary
5 clarifier?

6 A. Partly linked to ammonia removal.

7 Q. That's right. So they got all that
8 for approximately \$10.8 million?

9 A. Based on what I read, that's true.

10 Q. Okay. The same is true for, I
11 believe, St. Charles, Illinois, they had all of
12 their improvements for \$8.4 million, is that
13 correct?

14 A. Based on what I read, yes.

15 Q. And you have no reason to dispute
16 what you read?

17 A. No.

18 Q. I'm sorry?

19 A. No.

20 Q. Okay. Let's go to Mount Carmel,
21 Illinois. No. 7 they were able to replace and
22 relocate influent line and river outfall structure
23 which you claim had nothing to do with
24 ammonia-nitrogen removal. Additionally, the plant

1 replaced an existing mechanical aeration system
2 with a diffused aeration system and they got all
3 that for \$1.6 million?

4 A. That's right based on what I read.

5 Q. I want to draw your attention to
6 Page 8. Under the title of Tertiary
7 Nitrification, you stated, "Under these
8 conditions, tertiary nitrification should be
9 capable of achieving compliance with proposed
10 effluent ammonia-nitrogen limits" and that is the
11 second sentence under tertiary nitrification.

12 A. As long as the Mercaptobenzothiazole
13 leaving the secondary clarifier stayed under the 3
14 mg/L, we said we believe that tertiary
15 nitrification should be capable of achieving the
16 proposed effluent ammonia-nitrogen limits.

17 Q. Okay. But you mentioned the
18 pilot-scale demonstration work would be required
19 to demonstrate the reliability of that treatment
20 process, right?

21 A. Right.

22 Q. And you would agree with me that
23 tertiary nitrification could happen with the waste
24 stream coming in from Mexichem?

1 A. Yes.

2 Q. That would reduce the ammonia coming
3 in from Mexichem?

4 A. No, it would reduce the ammonia
5 contributed by Mexichem in the final effluent.

6 Q. Okay. Now, you evaluated what is
7 known as a rotating biological contactor?

8 A. Yes.

9 Q. And that is only one form of
10 tertiary nitrification?

11 A. It is.

12 Q. There are multiple forms?

13 A. There are multiple forms.

14 Q. And one of those forms would be
15 potentially an Algaewheel?

16 A. Yes.

17 Q. Another one of those forms could be
18 modifying a bioreactor -- or biotreater,
19 introducing fixed fill media and creating a
20 nitri- -- the ability to nitrify, is that correct?

21 A. That's correct.

22 Q. Now, you evaluated six alternatives
23 in this October report and you would agree that
24 all six alternatives showed reductions of removal?

1 A. All six alternatives would provide
2 ammonia removal.

3 Q. It's just a matter of to what
4 degree?

5 A. To what degree and how reliable.

6 Q. And you agree that breakpoint
7 chlorination would remove all of the -- would
8 achieve the regulatory limits in this case, is
9 that right?

10 A. That's right.

11 Q. And you also found that ion exchange
12 would achieve the regulatory limit in this case as
13 well?

14 A. That's right.

15 Q. You were uncertain with tertiary
16 nitrification for the reasons you stated before,
17 true?

18 A. That's true.

19 Q. And when you're looking at Page 11,
20 Table 2, those are your six alternatives that
21 you've looked at for this report, is that fair?

22 A. Yes.

23 Q. When you say they would not achieve
24 regulatory limits, that means they will not get

1 below 3 mg/L per day?

2 A. 3 mg/L on monthly average and 6 mg/L
3 on daily max.

4 Q. Okay. Thank you. Now, we talked a
5 little bit earlier about in your report you
6 mentioned -- okay. On Page 5 -- sorry to jump
7 around, but that's how my slow brain works.

8 On the -- under updated
9 conceptual level designs and cost estimates on
10 Paragraph 2, you indicated that the conceptual
11 level cost estimates presented herein were
12 developed using an approach recommended by the
13 Association of the Advancement of Cost Estimating,
14 AACE. The second sentence reads "The estimates
15 are classified estimates with an accuracy of minus
16 50% to plus 100%," did I read that correctly?

17 A. You did.

18 Q. So we don't see a minus 20% that you
19 mentioned earlier and a plus 30% that you
20 mentioned earlier, is that correct?

21 A. We don't.

22 Q. Now, I guess I'm just referencing
23 Page 11, again, Table 2. When you say, "As low as
24 50%," that means that it's possible that the

1 **ionization alternative that you evaluated could**
2 **have a capital cost of \$11 million?**

3 A. Are you on Table 2?

4 **Q. Yes.**

5 A. Okay. Thanks.

6 **Q. Sorry.**

7 A. On the -- and your -- which one are
8 you addressing?

9 **Q. I'm looking at the ionization**
10 **capital cost. It says \$22 million, but we have**
11 **given your margin of error that would actually**
12 **cost \$11 million?**

13 A. Either \$11 million or \$44 million.

14 MS. ZEIVEL: Ozonation.

15 THE WITNESS: Ozonation.

16 MR. GRADELESS: What did I say?

17 HEARING OFFICER WEBB: Ionization.

18 I was confused on that.

19 MR. GRADELESS: I'm sorry. Thank
20 you for that.

21 BY MR. GRADELESS:

22 **Q. So going down the line alkaline**
23 **stripping could be \$3.65 million?**

24 A. Or \$14.6 million.

1 Q. But directing you back to my
2 question it could be \$3.65 million?

3 A. Theoretically.

4 Q. Is that a yes?

5 A. Yes. Theoretically, yes.

6 Q. Thank you. Now, tertiary
7 nitrification using the rotated biological
8 connector, in your example of course, could cost
9 \$5 million?

10 A. Theoretically, yes.

11 Q. Breakpoint chlorination could cost
12 \$2.05 million?

13 A. Theoretically, yes.

14 Q. Ion exchange could cost \$3 million?

15 A. Theoretically, yes.

16 Q. Land application --

17 A. Theoretically --

18 Q. -- could cost \$3 million?

19 A. Yes.

20 Q. You say theoretically, right --

21 A. Yes.

22 Q. -- because you don't know?

23 A. I don't know.

24 Q. Thank you.

1 MR. GRADELESS: Let the record
2 reflect I'm showing the witness what has been
3 previously identified as State's Exhibit 17 for
4 identification.

5 (Document marked as State's
6 Exhibit No. 17 for
7 identification.)

8 BY MR. GRADELESS:

9 Q. Mr. Flippin, I've handed you what
10 has -- AACE International Recommended Practice for
11 Cost Estimate Classification System As Applied in
12 Engineering Procurement on a Construction for the
13 Process Industries, is that correct?

14 A. It is.

15 Q. And this includes the cost estimate
16 model for what you did in this case, is that
17 right?

18 A. It certainly explains how.

19 MR. GRADELESS: At this time, the
20 State moves into evidence Exhibit 17.

21 MS. WEYHING: No objection.

22 HEARING OFFICER WEBB: Exhibit 17 is
23 admitted.

24

1 BY MR. GRADELESS:

2 Q. I want to draw your attention to
3 Page 2. There is a chart there. It talks about
4 the end usage Class 5 is for what the AACE
5 International discusses as concept screening,
6 right?

7 A. True.

8 Q. Class 4 is a study or feasibility?

9 A. Yes.

10 Q. And Class 3 is for budgeting,
11 authorization or control?

12 A. True.

13 Q. Okay. Now, I want to draw your
14 attention to Page 3.

15 At the bottom of Page 3, Class 5
16 estimates discuss -- this is a chart that
17 discusses what is meant by a Class 5 cost
18 estimate, right?

19 A. Yes.

20 Q. And the Class 5 cost estimate is
21 what you put in your report that you did in this
22 case?

23 A. Yes.

24 Q. Okay. Now, the AACE International

1 describes -- the description there is actually
2 verbatim what you put in your scope of the
3 proposal, is that correct? It would be State's
4 Exhibit 13B, Page 2 of your scope document. The
5 last paragraph.

6 That's essentially a verbatim
7 description of what you found in the -- or what is
8 also found in this Class 5 estimate description,
9 is that right?

10 A. That's what I'm verifying as we
11 speak.

12 Q. Go ahead.

13 A. Yes.

14 Q. AACE will -- refers to alternate
15 names of a Class 5 estimate as a ratio, a
16 ballpark, blue sky, seat of pants or a
17 guesstimate, is that correct?

18 A. That is how they describe it.

19 Q. You can go ahead and set State's
20 Exhibit 17 aside, Mr. Flippin.

21 Now, I'm looking back at your
22 report. I believe it is Petitioner's Exhibit 12.
23 Okay. And I'm going to look at Page 1 on your
24 report.

1 **You use the latest cost document**
2 **provided by the National Association of Clean**
3 **Water Agencies known as NACWA?**

4 A. Yes.

5 **Q. Your analysis did not account for**
6 **any offsets for any other sources such as**
7 **Mexichem, cost offsets?**

8 A. We calculated the cost incurred for
9 treating a pound of ammonia.

10 **Q. Right.**

11 A. Regardless of where that pound of
12 ammonia came from.

13 **Q. And regardless of where the money**
14 **came from with respect to Emerald Performance**
15 **paying for a project?**

16 A. True.

17 **Q. Okay. You've done no estimates of**
18 **what it would cost to obtain a loan to finance a**
19 **project?**

20 A. I did not.

21 **Q. And you are aware of the amount of**
22 **TKN loadings that Mexichem provides to the Henry**
23 **facility?**

24 A. I'm familiar with historical work we

1 did that looked at that.

2 Q. You don't know what it is today?

3 A. Today, we summarized it, our latest
4 understanding of it, on Page 4 and 5 of Exhibit
5 12.

6 Q. Right. Okay. Thank you. You
7 calculated that approximately 30% of combined TKN
8 loading was coming from the Mexichem facility, is
9 that what that means?

10 A. In what I'm reading, we describe how
11 much TKN and ammonia were being discharged from
12 the PVC tank, which Mexichem's wastewater
13 discharges into along with side streams from the
14 combined plant. I'm not seeing the number you
15 referenced.

16 Q. So you -- I guess my question is --
17 I really don't know the answer and I'm just
18 asking.

19 Do you know how much ammonia is
20 coming from Mexichem?

21 A. I do not.

22 Q. Okay. Do you know how much TKN is
23 coming from Mexichem?

24 A. No.

1 MS. WEYHING: Let the record reflect
2 I'm showing the witness what has been previously
3 identified as State's Exhibit 16 for
4 identification.

5 (Document marked as State's
6 Exhibit No. 16 for
7 identification.)

8 BY MR. GRADELESS:

9 Q. Mr. Flippin, I've handed you State's
10 Exhibit 16. These are excerpts, it's not the full
11 report, correct?

12 A. Yes.

13 Q. And this is the 2017 NACWA Financial
14 Survey, right?

15 A. Yes.

16 Q. And this is the data that you used
17 to come up with the surcharge rates, is that fair?

18 A. Yes.

19 Q. Now, I've pulled out some pages and
20 I'm happy to admit the whole document if any time
21 the Board would prefer the full document, but for
22 now I think I've got the right pages.

23 Mr. Flippin, if I don't, let me
24 know. But I'm looking at Page --

1 MR. GRADELESS: At this time, the
2 State moves into evidence Exhibit 16. I would
3 agree to --

4 MS. WEYHING: We don't object, but
5 we just want to reserve the right to use other
6 parts of the document. That's all.

7 MR. GRADELESS: I agree.

8 HEARING OFFICER WEBB: Exhibit 16 is
9 admitted.

10 BY MR. GRADELESS:

11 Q. Mr. Flippin, I'm looking at the
12 bottom it says Page 113.

13 A. Okay.

14 Q. Page 113 entitled Extra Strength
15 Charges, is that correct?

16 A. Yes.

17 Q. And these are industrial strength
18 charges from 2000- -- actually 2016, is that
19 right?

20 A. That's right.

21 Q. And at the bottom, the chart there
22 says ammonia-nitrogen number of agencies that
23 responded to the survey were 17?

24 A. Yes.

1 Q. And that's -- that's 17 agencies in
2 the United States?

3 A. That are members of NACWA.

4 Q. Are there members outside of the
5 United States that are members of NACWA?

6 A. Not to my understanding.

7 Q. And you testified earlier that the
8 maximum surcharge rate was \$5.03 and that's
9 consistent with this chart, is that fair?

10 A. It is.

11 Q. Okay. Now, the average rate -- you
12 said you selected the median because you wanted to
13 account for factors that you couldn't control, is
14 that fair?

15 A. Yes.

16 Q. Now, the average rate in this chart
17 is actually \$1.60?

18 A. Yes.

19 Q. And that's higher than the median
20 figure you used in your calculation --

21 A. Of \$1.50.

22 Q. -- is that correct?

23 A. Yes.

24 Q. And the -- these are actually

1 **surcharges on industries, is that right?**

2 A. Yes.

3 **Q. That means in order to recover the**
4 **cost of treatment beyond that needed for domestic**
5 **sewage, they charge an additional higher rate?**

6 A. They do.

7 **Q. Now, this doesn't take into account**
8 **whether or not those surcharges increase every**
9 **year?**

10 A. I'm only reporting them for this --
11 based on this document.

12 **Q. Right. You have no information one**
13 **way or another whether or not these charges**
14 **increase incrementally?**

15 A. Would you please state that
16 question?

17 **Q. Sure. You have no knowledge one way**
18 **or another about whether or not these surcharges**
19 **increase incrementally year to year?**

20 A. I don't know to what degree they do.

21 **Q. Okay. You would agree that some of**
22 **these industrial facilities are also connected to**
23 **POTW's?**

24 A. Yes.

1 **Q. And sometimes the cost of projects**
2 **can be spread out over both the industry and**
3 **across those of the POTW, is that correct?**

4 A. The cost of the surcharge is --
5 represents the cost they believe they spend or
6 incur to treat an extra pound of TKN or an extra
7 pound of ammonia and that's the number I used.

8 **Q. Okay. So these are the -- these**
9 **facilities have provided these numbers in this**
10 **report?**

11 A. That's right.

12 **Q. And they don't indicate whether or**
13 **not they received any kind of grant to complete**
14 **their project?**

15 A. I wouldn't know based on the data I
16 had.

17 **Q. And you don't know whether or not**
18 **any of these projects received any kind of offsets**
19 **based upon other POTW's feeding into the waste**
20 **streams?**

21 A. Right.

22 **Q. Okay. I'm looking at -- continuing**
23 **on, I guess, with Page 1 of your -- hold on. Let**
24 **me back up.**

1 Now, I'm looking again at Page 1
2 and 2 of your report, and it's your October
3 report, Petitioner's Exhibit 12. You mention that
4 12 -- it was only -- you only used 12 agencies,
5 reported \$1.53 per pound of ammonia-nitrogen
6 removed, did I read that correctly?

7 I'm sorry. It's on Page 1 of
8 your Exhibit 12 very last sentence.

9 A. The median cost for 12 agencies was
10 \$1.53 per pound of ammonia-nitrogen removed.

11 Q. Then you went onto say, "That's
12 higher than the Greater Peoria Sanitary District
13 of \$0.81 per pound?

14 A. Yes.

15 Q. You have no idea how Peoria was able
16 to do that, do you?

17 A. I don't.

18 Q. You did not request any financial
19 information from your client in this case?

20 A. Only unit cost to help us build our
21 cost estimates.

22 Q. Okay. But you didn't inquire as to
23 any other financial information from your client?

24 A. Again, other than we needed to build

1 our cost estimates such as unit costs for
2 chemicals, unit costs for electricity. Things
3 like that.

4 **Q. I'm sorry. So you basically don't**
5 **know if it's affordable for your client to achieve**
6 **these -- I'm sorry. To --**

7 MS. WEYHING: Objection. Relevance.

8 MR. GRADELESS: Let me -- sorry.

9 Let me finish the question.

10 BY MR. GRADELESS:

11 **Q. You have no information whether or**
12 **not one way or another it's affordable for your**
13 **client to implement these -- any of these**
14 **alternatives?**

15 MR. GRADELESS: We object to
16 relevance, Hearing Officer Webb.

17 HEARING OFFICER WEBB: Overruled.

18 You can answer.

19 BY THE WITNESS:

20 A. All we did for judging economic
21 reasonableness was comparing these dollars per
22 pound of ammonia to the median costs that NACWA
23 agencies reported.

24 BY MR. GRADELESS:

1 Q. You applied it to the median
2 **surcharge cost?**

3 A. Median surcharge cost.

4 Q. You also testified that it is not
5 **worth reevaluating all the costs of all the other**
6 **alternatives, is that right?**

7 A. That's right.

8 Q. And I believe last time you
9 **requested -- you evaluated tertiary nitrification**
10 **as well?**

11 A. We did.

12 Q. And you evaluated that and you
13 **estimated that would be \$11.4 million?**

14 A. I can't speak to that. I don't have
15 the document in front of me.

16 Q. It's in the record, but we can look
17 **it up.**

18 A. Okay.

19 Q. Now, the cost -- potential cost of
20 **tertiary nitrification could be \$5 million, which**
21 **you testified to a minute ago?**

22 A. Or four times that.

23 Q. Correct, but it could be \$5 million?

24 A. Okay.

1 **Q. Is that a yes?**

2 A. Theoretically, yes.

3 **Q. You just don't know?**

4 A. Somewhere between \$5.5 million and
5 \$20 million -- call it \$22 million.

6 **Q. Okay. That's your best guesstimate,**
7 **right?**

8 A. My best guesstimate is the one
9 written there.

10 **Q. Okay. The cost changed from the**
11 **last adjusted standard between tertiary**
12 **nitrification, is that fair?**

13 A. I'm sorry.

14 **Q. The cost changed from the last time**
15 **you evaluated tertiary nitrification to this time?**

16 A. Yes.

17 **Q. Would you anticipate the cost of**
18 **other alternatives to also change?**

19 A. To what degree, I wouldn't know.

20 **Q. Fair. But is that a yes?**

21 A. I would expect them to change, but,
22 again, to what degree I don't know.

23 **Q. Okay.**

24 MR. GRADELESS: I have nothing

1 further at this time.

2 HEARING OFFICER WEBB: Okay. Well,
3 I would suggest we break for lunch and come back
4 with Mr. Flippin. Let's try to start again around
5 2:00 if everybody can. Let's shoot for 2:00, not
6 too much later. We still have a lot of work to
7 do. We're off the record. Thank you.

8 (Whereupon, a break was taken
9 after which the following
10 proceedings were had.)

11 HEARING OFFICER WEBB: Okay. We are
12 back on the record. It is 2:00. We are back from
13 lunch and we are picking up with the redirect
14 examination for Mr. Flippin.

15 Mr. Flippin, you are still under
16 oath.

17 R E D I R E C T E X A M I N A T I O N
18 BY MS. WEYHING:

19 Q. Mr. Flippin, I want to direct your
20 attention to Exhibit 12. Agency Exhibit 12. I
21 apologize.

22 Today, Mr. Gradeless asked you
23 about a sentence -- Mr. Flippin, Agency Exhibit
24 12. It's an e-mail that you sent to Tom Dimond on

1 August 1st, 2019. Are you with me?

2 A. Yes, I am.

3 Q. Mr. Gradeless asked you about a
4 sentence in this e-mail regarding the Board. I
5 believe that is four down from the top, do you see
6 that sentence --

7 A. I do.

8 Q. -- that starts with "The Board
9 desperately wants."

10 Did you really mean to refer to
11 the Board in that sentence?

12 A. I did not.

13 Q. Who did you mean to refer to?

14 A. The Illinois EPA.

15 Q. And did you write this after you
16 read the Agency's recommendation?

17 A. That, I don't know. What I do know
18 the basis of my sentence was prior work in 2004 on
19 this same topic.

20 Q. Okay. You can go ahead and set that
21 one aside.

22 Did anything that you wrote in
23 your draft or final proposals have any impact on
24 your evaluation or conclusions in your 2019

1 report? I'm referring to the proposal in Agency
2 Exhibit's 13A and 13B, Mr. Flippin.

3 A. No, they did not.

4 Q. Okay. You can set those aside as
5 well.

6 So Mr. Gradeless asked you some
7 questions today about the tertiary nitrification
8 alternative that you studied.

9 Why did you analyze the rotating
10 biological contractor as opposed to something like
11 an Algaewheel?

12 A. It has -- it would be one of the
13 more -- first of all, it's one of the more mature
14 processes for doing tertiary nitrification and
15 because of it being a mature process and having
16 been around a long time, it's one of the more
17 efficient, cost-effective ways of removing
18 ammonia.

19 It honestly is very similar to
20 the Algaewheel. It's just a more cost-effective
21 version for removing ammonia. They both rotate,
22 they both have media attached to them and the RBC
23 is just a more cost-effective process.

24 Q. If I can have you turn your

1 attention now to Agency Exhibit 17, please. This
2 is the AACE cost estimate classification system.

3 Mr. Gradeless asked you a couple
4 of questions about that. I'm on Page 3 of 9.

5 A. Yes.

6 Q. The Class 5 cost estimates that you
7 prepared in your 2019 report, would you
8 characterize those as ballpark estimates?

9 A. They're better than that.

10 Q. Why do you say that?

11 A. If you read -- if you read our
12 document and you look at the level of detail that
13 went into it, we had equipment cost estimates, we
14 had -- we had chemical usage, we had electrical
15 usage, we had -- we had real equipment costs to
16 actually build and we had cost estimators looking
17 at the site through Google Maps and being talked
18 through where electrical was, where everything
19 was.

20 So they had a feel for what it
21 really would take to build something. That is far
22 better. And it's really insulting for anyone to
23 think that our cost estimates were seat of the
24 pants or blue sky. That's insulting and not

1 accurate.

2 Q. So you wouldn't --

3 A. We were way better than that.

4 Q. I apologize. I didn't mean to cut
5 you off.

6 A. Way better than that.

7 Q. So you wouldn't characterize your
8 Class 5 cost estimates as blue sky estimates?

9 A. No.

10 Q. Or ballpark estimates?

11 A. No.

12 Q. Now, Mr. Gradeless read you a
13 portion of this Exhibit 17 that said you can spend
14 as little as an hour preparing a Class 5 estimate.

15 Isn't it true that it also says
16 you can spend up to 200 hours?

17 A. Yes.

18 Q. And, roughly, how much time did you
19 spend preparing or your firm spend preparing your
20 estimates in this case?

21 A. Well over 40 hours.

22 Q. Do you have any experience comparing
23 Class 5 estimates that you've compared with
24 finished construction costs?

1 A. Yes, I do.

2 **Q. What is that experience?**

3 A. On two particular Dean Foods
4 projects of late, we are the subject matter expert
5 for Dean Foods and have done several projects with
6 them that went onto construction and Dean Foods
7 has gained enough confidence in us that often they
8 will take our Class 5 estimates as the budget
9 level cost estimate to procure funds for
10 subsequent construction of the facilities and in
11 two separate cases where that's occurred lately we
12 have been -- our Class 5 estimate, the middle
13 number that you see, was within 10% of their
14 actual constructive cost value.

15 And so, yes, these numbers are
16 definitely sound -- sound to the point that
17 even -- even Dean Foods, who we have been working
18 with for more than 20 years, actually will often
19 take those numbers to set aside funds.

20 **Q. Okay. You can go ahead and set**
21 **Exhibit 17 aside.**

22 **Mr. Gradeless also asked you**
23 **today about the cost for the Bush Brothers**
24 **facility.**

1 A. Yes.

2 **Q. Can you describe for the Board how**
3 **that plan and its wastewater are different from**
4 **the Emerald Henry plant?**

5 A. Yes. And let me also explain how I
6 even knew the cost of that. We -- we as Brown and
7 Caldwell actually did that project, a design
8 build -- as a design build project. So we were
9 the general contractor in that project.

10 So I honestly know how much that
11 one cost and that's why you asked me if I knew the
12 other ones. We weren't the design builder on the
13 other ones. We were on that one. So I really
14 knew the number. That project was -- was way
15 different than this one.

16 **Q. How is it different?**

17 A. Way more extensive. That project
18 had -- first of all, it was treating 1.5 million
19 gallons a day, average 2 million gallons a day
20 peak. It was treating 15 times the COD loading of
21 this facility. It went through -- it was a
22 greenfield site. So we built equalization,
23 anaerobic pretreatment, biogas handling, biogas
24 cleaning, routing of biogas for use in the

1 production bores. We took the anaerobic
2 pretreated wastewater and took it through aerobic
3 biological treatment which also has single stage
4 nitrification, ultra filtration for solid
5 separation. Quite elaborate.

6 **Q. Okay. So did that \$56 million**
7 **associated with Bush Brothers address a lot more**
8 **than just ammonia-nitrogen?**

9 A. It addressed way more than
10 ammonia-nitrogen.

11 **Q. Mr. Gradeless also asked you**
12 **questions about projects performed at Geneva,**
13 **Batavia, St. Charles and Mount Carmel. The**
14 **estimate of the cost that you described in your**
15 **report about those facilities, where did that --**
16 **where did those numbers come from?**

17 A. They came from the state and those
18 were typically about a two -- two-page write up
19 and so honestly I was reading what was provided to
20 me in a document by the state that gave broad
21 descriptions in that cost.

22 **Q. Can you vouch for the accuracy of**
23 **those numbers?**

24 A. I cannot.

1 **Q. And based on the numbers and**
2 **descriptions that were provided by the Agency, are**
3 **you able to estimate how much any of the municipal**
4 **treatment plants spent to control ammonia-nitrogen**
5 **specifically?**

6 A. No.

7 **Q. Why not?**

8 A. The costs were not delineated in
9 such a manner that would have allowed me to even
10 come close to estimating that.

11 **Q. In your opinion and experience, can**
12 **there be any valid comparison between these**
13 **projects and Emerald's Henry plant --**

14 A. No.

15 **Q. -- based on the level of detail the**
16 **Agency provided?**

17 A. No.

18 **Q. All right. Mr. Flippin, the costs**
19 **that you've estimated in your 2019 report, do you**
20 **expect that to materially change in the next year**
21 **for the treatment alternatives?**

22 A. My experience has been that, if
23 anything, construction costs increase over time
24 and not decrease. So the dollars per pound of

1 ammonia moving forward should actually be higher
2 than what I've calculated as of today.

3 **Q. Did any of Mr. Gradeless' questions**
4 **cause you to change your opinion that the costs**
5 **don't need to be reevaluated annually?**

6 A. Construction costs -- construction
7 costs, if you will, rarely change significantly
8 from one year to the next. They certainly don't
9 go down. That's -- that's rarely the case. So --
10 and they don't move in radical shifts unless we
11 have something like a steel crisis or something
12 like that which is not the norm.

13 **Q. Is it still your opinion that the**
14 **costs don't need to be evaluated annually?**

15 A. Yes.

16 **Q. Now, you don't know how much ammonia**
17 **or TKN from Mexichem is in the Henry plant, is**
18 **that right?**

19 A. I know how much ammonia and TKN are
20 discharged from the PVC tank which contain all of
21 Mexichem plus side streams from the combined
22 treatment plant. So I know, if you will, how much
23 TKN and ammonia Mexichem is part of.

24 **Q. Okay.**

1 A. How to parse that pie and say
2 Mexichem is specifically of this pie, they occupy
3 85% of the pie, I can't make that parsing, but I
4 can certainly tell you how big of a pie they
5 occupy when coupled with side streams.

6 **Q. Okay. And as far as how much is**
7 **coming out of the PVC tank, that's discussed in**
8 **your 2019 report?**

9 A. It is.

10 **Q. For the treatment alternatives that**
11 **you studied, you found that some were technically**
12 **feasible, what would their impact be on the**
13 **quality of the Henry plant's wastewater?**

14 A. The ammonia removal strategies all
15 of them, without exception, require to remove
16 ammonia, require some form of salt addition and
17 some of them also create the potential for
18 bi-products which can create aquatic toxicity.

19 **Q. Do salts increase toxicity of the**
20 **effluent?**

21 A. They did.

22 **Q. Is there increased salinity**
23 **associated with the ozonation alternative?**

24 A. In every alternative, all of them

1 that I studied.

2 **Q. And that includes ozonation?**

3 A. It includes ozonation, it includes
4 alkaline stripping, breakpoint chlorination,
5 tertiary nitrification, even land application
6 because we would be adding salt to clean the mud
7 out of the river water and putting that salt
8 back -- back on the ground and ultimately into the
9 groundwater and ultimately into the river.

10 **Q. Would there be an increase in**
11 **salinity associated with ion exchange?**

12 A. Yes. Because on that one, you are
13 having to -- you are having to adjust the pH after
14 ion exchange which requires typically costs to
15 condition or more sodium addition.

16 **Q. Okay. Is having that much salt in**
17 **wastewater effluent bad for the environment?**

18 A. The difficulty with salt, unlike
19 ammonia, the fate of ammonia in the environment
20 ultimately when exposed to low oxygen environments
21 the ammonia becomes -- first becomes nitrate in
22 the presence of oxygen in the rivers and then in
23 the -- in the sediment layer or even in areas of
24 the river or the Gulf of Mexico where the oxygen

1 levels are low, that nitrate that came from the
2 ammonia becomes nitrogen gas and so ammonia is one
3 of the few analytes that its ultimate fate
4 typically is the air.

5 And you and I breathe 79%
6 nitrogen as we sit in the room today. So we're
7 only adding min- -- inconsequential amounts of
8 nitrogen to the atmosphere whereas on salt once
9 you add salt, salt is forever more present. It's
10 persistent. A pound of salt added today is a
11 pound of salt for eternity later. Chloride --
12 sodium stays sodium, chloride stays chloride.

13 **Q. Okay.**

14 MS. WEYHING: Hearing Officer Webb,
15 if I can have a minute to confer with my
16 colleague.

17 HEARING OFFICER WEBB: Sure.

18 MS. WEYHING: Okay. No more
19 questions.

20 HEARING OFFICER WEBB: Thank you.

21 MR. GRADELESS: Maybe two or three
22 only.

23 HEARING OFFICER WEBB: Okay.

24

1 R E C R O S S E X A M I N A T I O N

2 BY MR. GRADELESS:

3 Q. Mr. Flippin, I'm looking at your
4 pre-filed testimony that you've sworn under oath
5 today and admitted into evidence, is that correct?

6 A. Yes.

7 Q. And nowhere in that pre-filed
8 testimony do you mention that you conducted a
9 Class 4 cost estimate?

10 A. That's right.

11 Q. You, in fact, referred to it as a
12 Class 5?

13 A. I did refer to it as a Class 5.

14 Q. And that is under the AACE
15 International standard?

16 A. That's right.

17 Q. Okay.

18 MR. GRADELESS: Nothing further.

19 MS. WEYHING: Nothing further.

20 HEARING OFFICER WEBB: Now, it's the
21 Board's turn.

22 MR. RAO: Good afternoon,

23 Mr. Flippin.

24 THE WITNESS: Good afternoon.

1 MR. RAO: I'll start with your
2 pre-filed testimony. On Page 3 of your pre-filed
3 testimony, you list here your experience
4 specifically related to biological nitrification
5 and denitrification facilities in the U.S.,
6 including one in Roxana, Illinois.

7 THE WITNESS: Yes.

8 MR. RAO: I have a bunch of
9 questions here. If you cannot answer these
10 questions, you may submit answers with your
11 beliefs also.

12 MR. DIMOND: Hearing Officer Webb,
13 would you allow me to help Mr. Flippin find his
14 pre-filed testimony? He seems to be having --

15 THE WITNESS: Yes, please tell me.

16 MR. DIMOND: It's -- it's Tab 9.

17 THE WITNESS: Thank you.

18 MR. RAO: Exhibit 9.

19 THE WITNESS: Thank you.

20 MR. RAO: Let me start. On Page 3,
21 that's where you list your experience with these
22 facilities.

23 THE WITNESS: Yes.

24 MR. RAO: Would you be able to

1 provide the treatment capacity of each industry
2 facility treatment in terms of flow, millions of
3 gallons per day, and ammonia-nitrogen loading for
4 each of the plants?

5 THE WITNESS: Yes.

6 MR. RAO: Also, could you provide
7 the ammonia nitration permit limits for each of
8 the plants and comment on how they compare with
9 the permit limit generally applicable to the Henry
10 plant?

11 THE WITNESS: Yes.

12 MR. RAO: Could you provide the
13 capital cost along with the operation and
14 maintenance cost for each of the industry
15 facilities in your list and comment on how the
16 cost of ammonia-nitrogen treatment at industrial
17 facilities compare with your cost estimates for
18 granular activity carbon treatment alternative
19 evaluated for facilitating nitrification at the
20 Henry plant?

21 THE WITNESS: These costs since we
22 didn't do these projects as design build, I'm
23 going to be reliant on the industry's timely
24 response to my question. I certainly in a timely

1 manner will ask for the information you just asked
2 for and will try my best to respond in a timely
3 manner.

4 MR. RAO: That would be appreciated.
5 And also comment on how these costs for
6 ammonia-nitrogen treatment at industrial
7 facilities compare with the NACWA costs for
8 ammonia-nitrogen treatment.

9 Moving on. On Page 10 of your
10 pre-filed testimony, you state that "Granular
11 activated carbon treatment alternative would have
12 other negative environmental side effects in terms
13 of greenhouse gas emissions and burden on local
14 roads and residents."

15 Could you provide an estimate of
16 the quantity of fresh GAC that would be required
17 to pretreat PC/C-18 wastewater?

18 THE WITNESS: Yes.

19 MR. RAO: If GAC alternative is
20 chosen as a treatment option for Emerald, please
21 comment on from what location fresh GAC will be
22 shipped to Henry plant. Are diesel trucks the
23 only options for shipping fresh GAC or other modes
24 like rail cars or barges available?

1 And also regarding burden on
2 local roads, please provide the following
3 information: The truck routes that would be used
4 to transport GAC to the facility. Comment on
5 whether the indicated roadways are currently being
6 used for transport, number of trucks currently
7 used and number of trucks currently using the
8 indicated roadways daily and the incremental
9 increase in truck traffic if GAC is shipped to
10 Henry facility.

11 THE WITNESS: I certainly can answer
12 the question about truck traffic caused by the
13 shipment. Getting the truck traffic counts on
14 those particular roadways may be difficult to get
15 in a timely manner. I will certainly try.

16 MR. RAO: Okay. Finally, regarding
17 the disposal of spent GAC, please comment on
18 whether it could be taken to a permitted landfill
19 for disposal instead of incineration facility. On
20 Page 16, you recommend Emerald operate only one
21 biotreater because operating additional
22 biotreaters would not result in greater reduction
23 of ammonia-nitrogen discharge, but may complicate
24 the plant operations.

1 Can you please explain why an
2 increase in the number of biotreaters in service
3 would not aid in ammonia nitration removal.

4 THE WITNESS: I'll be glad to. What
5 we found at the plant, and this -- this is what we
6 have observed throughout the years there and it's
7 commensurate with what you probably observed at
8 other facilities as we increase the mean cell
9 residence time in their facility, we found that we
10 have to run a minimum mean cell residence time of
11 30 days and what we found is if we get above 60
12 days, it means our residence time we start -- we
13 start experiencing real dispersed flock and it's
14 more difficult to comply with effluent total
15 suspended solid limits because the flock becomes
16 so fragile it wants to pass through the sand
17 filter.

18 Even with chemical condition,
19 it's hard to control. So what we tried to do is
20 to keep the plant in a mean cell residence time of
21 30 to 60 days. At times, the plant even has to go
22 to 90 days to -- to -- to get the treatment needed
23 for BOD compliance and when they go that high the
24 amount of chemistry needed to be added in the

1 sensitivity to maintain TSS compliance is
2 difficult and so our -- our -- our -- and they can
3 maintain up to a 90-day mean cell residence time
4 in that facility with just one biotreater in
5 service without overloading the secondary
6 clarifiers.

7 So, honestly, their ability to
8 provide biological treatment isn't hindered by the
9 number of biotreaters they have at all. As a
10 matter of fact, the only thing that would happen
11 if they added more biotreaters they would just be
12 running the exact same mass of solids just
13 distributed in more tankage. It wouldn't -- it
14 wouldn't affect at all the effluent quality one
15 iota whether they ran four tanks or whether they
16 ran one big tank.

17 MR. RAO: Okay. So with the mean
18 cell residence time that you are maintaining right
19 now, if there was no MBT, would that be adequate
20 to achieve nitrification?

21 THE WITNESS: Yes, and even lower
22 MCRT's than they're running now.

23 MR. RAO: All right. Now, I have a
24 few questions regarding your response to IEPA's

1 recommendations in Exhibit 12. That's your,
2 maybe, Tab 12, is it?

3 THE WITNESS: Yes. Thank you.

4 MS. ZEIVEL: Petitioner's Exhibit
5 12.

6 MR. RAO: Regarding IEPA's reference
7 plans for cost of ammonia removal, specifically
8 the plants in Geneva, Batavia and St. Charles, you
9 state that the only upgrades that would be partly
10 linked to ammonia-nitrogen removal would have been
11 the addition of aeration tanks and blower
12 buildings. These upgrades also provide increased
13 capacity to treat higher flow BOD and TSS.

14 You maintain that it's -- that
15 it is uncertain what portion of these upgrades
16 would be attributed to ammonia-nitrogen removal.

17 Based on your experience in
18 designing wastewater treatment plants, could you
19 estimate the cost of the upgrades linked to
20 ammonia-nitrogen removal as a percentage of the
21 total reported cost. If so, please submit such
22 cost estimates for the five plants into the
23 record.

24 THE WITNESS: I wouldn't be able to

1 because it's -- at the Henry plant, the cost of
2 ammonia removal is easy to calculate because all
3 the investment that's being made is intended -- is
4 solely for the express purpose of removing ammonia
5 because the BOD and the TSS are really, really
6 low. At these other facilities, it would be very
7 difficult to parse how much of these upgrades
8 really were there to help BOD removal, TSS
9 removal, accommodate higher flow and ammonia.

10 So even if they were to give me
11 individual cost per each of those upgrades, I'd
12 have a real difficult time parsing out what was
13 specifically for the ammonia and that's why I
14 really fell back on NACWA's work because, as I
15 said, these people as a profession split these
16 costs in categories and so let me rely on them for
17 what is the cost that they would say for ammonia
18 removal. That's why -- that's why I did that.

19 MR. RAO: How -- how do you think
20 the NACWA --

21 THE WITNESS: NACWA.

22 MR. RAO: NACWA. How did they come
23 up with their cost if they're relying on POTW's?
24 Are they looking at some specific numbers for just

1 ammonia removal or is it something different?

2 THE WITNESS: Right. They were
3 given -- they were asked to supply, if you will,
4 their surcharge rates and what we know in
5 determining their surcharge rates they had a
6 methodology for parsing those costs. I just don't
7 know what the methodology was.

8 MR. RAO: All right. In response to
9 IEPA's recommendation of in-plant ammonia-nitrogen
10 monitoring, you state, "Such monitoring is not
11 needed since ammonia-nitrogen contributed only 30%
12 of the TKN."

13 Could you please comment on why
14 you consider 30% contribution as negligible given
15 the plant's inability to meet the regulatory
16 limit. Do you believe that any efforts to even
17 reduce the 30% contribution is not worth pursuing?

18 THE WITNESS: On the Mexichem
19 side -- and the bulk of their TKN is as ammonia.
20 So their tracking product loss or yield on their
21 production process is -- actually will, if you
22 will, affect ammonia in their discharge. On the
23 Emerald side, Emerald doesn't really use ammonia
24 on their side. So really their ammonia on their

1 side is -- is related to organic nitrogen.

2 So there would be some benefit
3 in tracking TKN because it would pick up both
4 ammonia and organic nitrogen, but I thought using
5 ammonia to help track the Emerald contributions
6 would -- would not be valuable because on their
7 side of the plant it really doesn't start as
8 ammonia.

9 MR. RAO: So this 30% contribution
10 of ammonia-nitrogen is mostly coming from
11 Mexichem?

12 THE WITNESS: The -- a couple of
13 things. The ammonia that we're getting coming out
14 of the PVC tank if we look ammonia coming out of
15 the PC tank and the TKN coming out of the PC tank,
16 you'll notice that less than 5% of what is coming
17 out of the PC tank is ammonia.

18 MR. RAO: Yes.

19 THE WITNESS: Okay. On what is
20 coming out of the PVC tank, you'll notice that a
21 good bit of that is ammonia, but what -- what we
22 know is part of that ammonia that is coming out is
23 from the side streams that came back from sludge
24 de-watering, et cetera.

1 So to answer your question, the
2 ammonia monitoring might shed some insight on
3 Mexichem's wastewaters, but it wouldn't shed
4 insight on Emerald's wastewaters.

5 MR. RAO: Has Emerald made any
6 efforts to measure how much ammonia-nitrogen is
7 coming into the PC tank from Mexichem including
8 the side streams?

9 THE WITNESS: They do. They have a
10 lift station upstream of the PVC tank. So they
11 monitor the PVC tank outlet and they monitor the
12 PVC -- the lift station that collects Mexichem's
13 wastewater before being put into a tank that has
14 combined streams in it.

15 So to answer your question, yes,
16 when I was preparing this work, the data made
17 available to me was the PVC tank contents
18 discharged and the PC tank contents. So I
19 couldn't parse, per se, what are the combined --
20 what are the combined Mexichem and side streams
21 what of that combined parsed back to strictly
22 Mexichem.

23 MR. RAO: So what you're saying is
24 Emerald may have that information?

1 THE WITNESS: They do -- they do
2 track that information. I didn't have that
3 information when I formed my design waste load for
4 alternatives evaluations.

5 MR. RAO: So, Mr. Dimond, if the
6 Board wanted to see that information, should I be
7 requesting from Mr. Flippin or you?

8 MR. DIMOND: I think you've already
9 asked Mr. Hathcock to provide certain information.

10 MR. RAO: Yeah.

11 MR. DIMOND: Frankly, we're going to
12 have to read the transcript I think to remember
13 exactly what it is you asked for. We will try to
14 provide what you've asked for.

15 MR. RAO: Okay. Thank you. On Page
16 5, you state, "Any plant monitoring would need to
17 focus on TKN monitoring. Unlike ammonia-nitrogen,
18 there are no direct monitoring probes for TKN in
19 wastewater. Consequently, realtime monitoring and
20 quick response would be impracticable."

21 Are you aware of any indirect
22 methods of measuring TKN available for realtime
23 monitoring?

24 THE WITNESS: I'm -- yes. There

1 is -- there is an online instrument that it's a --
2 it's an online instrument used to measure total
3 carbon or total organic carbon. So what it does
4 is it ignites the sample and it measures CO2 in
5 the off-gas and all that CO2 had to start out as
6 carbon in the water, after they subtract inorganic
7 carbon. What they can also do is measure nitrogen
8 in the off-gas and what they can get is a close
9 proximity to TKN.

10 MR. RAO: Could something like that
11 be used for in-stream monitoring at Emerald?

12 THE WITNESS: Yes, it could be.

13 MR. RAO: Do you have any ideas
14 about what it would cost to perform such
15 monitoring?

16 THE WITNESS: The instrument alone
17 is around \$70,000. It's a single stream
18 instrument. We -- we installed it at another
19 installation where I've worked and measured total
20 carbon and after we installed it, they said if you
21 want to use it to measure total nitrogen, you can
22 and I said, "Explain the total nitrogen to me" and
23 when they explained it to me, it's any nitrogen
24 that can be combusted to N2, which would be

1 ammonia and which would be organic nitrogen. The
2 nitrates wouldn't show up and the nitrites
3 wouldn't show up.

4 But the organic nitrogen and
5 ammonia would and the amount of organic nitrogen
6 that would show up would be to the degree to which
7 how readily that combusts, but to answer your
8 question that is something that we have just
9 experienced within the last year. We haven't yet
10 installed it for that purpose, but they do make
11 such an instrument that can do that.

12 MR. RAO: Do you see any benefits of
13 TKN monitoring, in-stream monitoring at Emerald?

14 THE WITNESS: I definitely see -- I
15 definitely see benefits when doing the exercises
16 that Mr. Hathcock described where you're looking
17 at making these tweaks in performance and seeing
18 how -- how it manifests itself.

19 Once the -- once those processes
20 are defined and they're up and running, I don't
21 know how much benefit it would be after that, but
22 definitely during the trials gathering TKN data to
23 look at product recovery and things like that,
24 certainly it could be helpful.

1 MR. RAO: You also note that
2 in-plant ammonia-nitrogen could only influence 30%
3 of the total, you know, TKN in the final effluent.
4 Is this ratio of 70%/30% organic to
5 ammonia-nitrogen, does that have anything to do
6 with treatability or is it just the way this
7 effluent is?

8 THE WITNESS: It's the way the
9 effluent is. The good news about TKN if we look
10 at the final effluent, the TKN in the final
11 effluent and the ammonia in the final effluent are
12 very familiar. So the organic nitrogen coming
13 into the biotreaters does get hydrolyzed to
14 ammonia. So it does become ammonia, but the
15 70%/30% mix is what we learned on our balance of
16 what is the influent to the biotreaters.

17 MR. RAO: Regarding the updated cost
18 estimates, you note that the conceptual design and
19 cost estimates are based on the design final
20 effluent waste load, which was derived by using
21 2018 information representing the plant operations
22 under typical production levels.

23 Please clarify what products you
24 are referring to with respect to typical

1 production levels. Are these products that you
2 know result in MBT in the wastewater?

3 THE WITNESS: Thanks. When we were
4 given the 2013 data through 2019 data, we looked
5 at that data and, of course, the first question is
6 what period of time am I designing the plant for?
7 So we -- we asked -- we asked Galen to help us
8 understand what -- what period of time should we
9 use for designing treatment plant upgrades and he
10 suggested that we use 2018 because that was
11 indicative of a more, quote, normal production
12 year.

13 So our upgrades were designed
14 around a normal production year as characterized
15 by Galen as being 2018. What that product mix was
16 in 2018 I didn't know. I just knew that was
17 designed to be a normal production year.

18 MR. RAO: Okay. On Page 8 of
19 Exhibit 12, that's the report, you note that
20 pilot-scale study would be required to demonstrate
21 reliability of tertiary nitrification.

22 Please comment on whether
23 Emerald intends to conduct a pilot-scale
24 demonstration to determine whether tertiary

1 nitrification will be technically feasible. If
2 so, how much time would be needed to conduct a
3 pilot study? If pilot study results indicate
4 tertiary nitrification is feasible to treat the
5 secondary clarifier effluent, comment on how much
6 time would be required to install and operate a
7 full scale treatment system at Henry plant.

8 THE WITNESS: It's a long question.

9 MR. DIMOND: Yeah. Maybe you should
10 ask one question and then ask the next question.
11 I would object to compound, but I don't think it's
12 appreciated if I object to the Board's questions.

13 MR. RAO: I'll break it down.

14 Please comment on whether
15 Emerald intends to conduct pilot-scale
16 demonstration to determine whether tertiary
17 nitrification will be technically feasible.

18 THE WITNESS: I'm not aware of any
19 such plans as we speak.

20 MR. RAO: In case they decided to do
21 it, how much time would be needed to conduct a
22 pilot-scale study?

23 THE WITNESS: You would want to run
24 the pilot-scale study. So -- you would want to

1 run it long enough so you could experience the
2 full gamut of product runs and so I don't know how
3 much time you would have to run it in order that
4 you could get exposure to all of the product runs
5 that Emerald has. I don't know the answer to
6 that, but you certainly would want to do that
7 because if the thing is working beautifully.

8 But you never made this product
9 while you were studying it, you don't know what
10 would happen if you were making that product while
11 you were studying it. So it would have to be long
12 enough to cover the production slate.

13 MR. RAO: So if you had to conduct a
14 pilot test study -- I don't understand when you
15 say all product runs.

16 What exactly do you mean by
17 that?

18 THE WITNESS: Listening here today,
19 I believe there are about -- are there ten
20 products that Emerald makes?

21 MR. DIMOND: That is what
22 Mr. Hathcock testified to.

23 THE WITNESS: So what I'm trying to
24 say is you would want to run the pilot and keep it

1 running through a period of time in which they
2 did, in fact, make all ten.

3 MR. RAO: Okay. All right. So my
4 next question was, how much time will be required
5 to install and operate a full scale treatment
6 system, a ten-week plan, for tertiary
7 nitrification based on your experience?

8 THE WITNESS: Assuming that --
9 assuming that the pilot-scale demonstrated that it
10 was feasible and it was reliable, the amount of
11 time to design and install would be in the
12 vicinity of two years.

13 MR. RAO: Thank you. Regarding
14 breakpoint chlorination, you state that the
15 chemical addition required for treatment increases
16 the effluent salt load by more than 70%.

17 Please clarify whether this
18 increase is with respect to the design effluent
19 load of 10,000 mg/L of TDS right now.

20 THE WITNESS: Yes.

21 MR. RAO: Also, comment whether the
22 increased salt load would have an impact on
23 plant's ability to comply with the applicable
24 chloride and sulfate water quality standards.

1 THE WITNESS: Thank you. I haven't
2 looked at that.

3 MR. RAO: Okay. Do you think it may
4 have any implications in that regard?

5 THE WITNESS: I'm unacquainted with
6 what those standards are.

7 MR. RAO: Okay. But will the salt
8 load have any impact on chloride and sulfate
9 levels in Illinois?

10 THE WITNESS: Yes.

11 MR. RAO: Do you think it is
12 something that needs to be evaluated in case
13 breakpoint chlorination is considered?

14 THE WITNESS: It would have to be.
15 We wouldn't want to solve one problem and create
16 another.

17 MR. RAO: Okay. On Page 6 and 9 of
18 Exhibit 12, you note that use of alkaline
19 stripping or ion exchange to treat the secondary
20 clarifier effluent results in approximately 4,500
21 gallons per day of spent regenerant with 0.90% by
22 weight nitrogen that needs to be sent offsite for
23 treatment or disposal.

24 THE WITNESS: That's right.

1 MR. RAO: Can you please comment on
2 whether the spent regenerant could be land applied
3 as fertilizer if it's high in nitrogen content?

4 THE WITNESS: It's -- it's all
5 related to the receptivity of the land owner and
6 that I don't know. I don't know if we can find a
7 market for it is what I don't know.

8 And what you saw me do is
9 because I didn't know whether we could find a
10 market for it, I made a large assumption that the
11 City of -- that the Sanitation District in Peoria
12 would accept it and treat it as ammonia at their
13 surcharge rate. That's how it came up with my
14 first -- my first round of what a disposal of that
15 material would cost.

16 MR. RAO: Typically, how is spent
17 regenerant managed at facilities which have these
18 treatment options like alkaline stripping or ion
19 exchange?

20 THE WITNESS: On wastewaters that
21 have no sanitary sewage in them and that are being
22 derived from, like, a food industry, even like
23 the -- their disposal -- it's not uncommon for
24 people to be receptive to taking that as a

1 fertilizer. I just don't know for an organic
2 chemical industry what the receptivity would be.

3 MR. RAO: Okay. Regarding
4 environmental impact of removing ammonia-nitrogen,
5 you generally say that the collateral negative
6 environmental impact of treatment alternatives,
7 example greenhouse gas emissions and decreased
8 effluent water quality with respect to higher salt
9 levels is appreciably more adverse than current
10 effluent ammonia-nitrogen load.

11 THE WITNESS: Yes.

12 MR. RAO: This is a fairly general
13 statement. I was wondering would it be possible
14 for you to quantify with estimated emissions or
15 discharge loadings or --

16 THE WITNESS: What that comment was
17 related to was previously we talked about how the
18 ultimate fate of ammonia is likely nitrogen in the
19 atmosphere whereas the ultimate fate of the
20 others, whether it be the salt or whether it be
21 chlorinated bi-products are persistent in the
22 environment.

23 So my comment was the detriment
24 caused by the ammonia honestly I think we would

1 find it is less than -- way less than the
2 detriment caused by the salt in the potential
3 aquatic toxicity we would form by trying to remove
4 the ammonia.

5 MR. RAO: I have a couple more
6 questions based on your response to the Agency.
7 I'll try to find my paper copy of my Exhibit 12.
8 It's the full document I'm looking for.

9 HEARING OFFICER WEBB: I think you
10 just handed this out today.

11 MR. RAO: I thought I had it. I
12 will pull it up.

13 HEARING OFFICER WEBB: Agency
14 Exhibit 12?

15 MR. RAO: No.

16 HEARING OFFICER WEBB: Sorry.
17 Petitioner's Exhibit 12.

18 MR. RAO: I have it here. I'm just
19 looking at the summary tables you had for
20 treatment alternatives. I think it's -- I don't
21 know what page it is on.

22 THE WITNESS: Page 11.

23 MR. RAO: Yes, Page 11. So I just
24 wanted to ask you based on your experience and, of

1 course, you evaluated all these options and you
2 have come up with this table, if you were given a
3 choice to pick an option here to treat Emerald's
4 effluent, what would be your choice?

5 THE WITNESS: I think that the -- we
6 just talked about how the environmental
7 consequence of providing the treatment is likely
8 worse than the benefit of providing the treatment.
9 Now, if we were to take for granted that we were
10 going to pick an ammonia removal strategy the one
11 that -- the one that has potentially the lowest
12 cap -- the lowest O&M cost and the lowest present
13 worth cost would be either tertiary nitrification
14 or ion exchange.

15 MR. RAO: The reason I ask is I just
16 wanted to know if you had, you know, one or two
17 options that you think are better than the others,
18 would it be possible for you to give us better
19 cost estimates than the Class 5 estimates that
20 have been submitted into the record now?

21 THE WITNESS: We certainly can
22 prepare better cost estimates on those select
23 ones.

24 MR. RAO: That would be helpful to

1 know because with such a wide range that we have,
2 it can range anywhere from, like you said, \$5
3 million to \$20 million.

4 THE WITNESS: In theory, it can.

5 MR. RAO: In theory.

6 THE WITNESS: And I intentionally
7 brought up the two recent Dean Foods examples just
8 to show that we are calling this a Class 5
9 estimate, but I do want you to know these cost
10 estimates are not what I'll call wild estimates.

11 As a matter of fact, again, Dean
12 Foods actually has gone for capital appropriation
13 with these -- with these types of estimates and
14 been within 10% on the final constructive cost.
15 So, glad to have --

16 MR. RAO: That's the reason I ask
17 because from what you testified earlier your
18 numbers are very close to Class 4 is what you
19 mentioned. So --

20 THE WITNESS: Sure. To answer your
21 question, we can produce a more -- a more refined
22 estimate.

23 MR. RAO: That would be helpful.
24 Thank you very much. I don't have anything more.

1 HEARING OFFICER WEBB: One moment.

2 MR. RAO: There were a couple of
3 questions Mr. Hathcock said that you'd be the
4 person to answer.

5 THE WITNESS: Okay.

6 MR. RAO: So let me go back to
7 those. These were regarding the LC50 and the WET
8 test.

9 THE WITNESS: Yes.

10 MR. RAO: So I think my first
11 question was basically to -- for you to explain
12 for the record what LC50 represents in the context
13 of Whole Effluent Toxicity tests and also explain
14 what LC50 greater than 2.1% means in terms of
15 Emerald's permit.

16 THE WITNESS: LC50 is the lethal
17 concentration. That's the LC part. The 50% part
18 is the part of the organisms that survive. And so
19 on an LC50 what you do in the test is you add --
20 you take culture water, put the organisms in it
21 and you add different volume metric percentages of
22 final effluent to it and in Emerald's case the
23 LC50 requirement is greater than 2.8, is that the
24 number?

1 MR. RAO: 2.1.

2 THE WITNESS: 2.1. So what that
3 means is they have to be able to add greater than
4 2.1% by volume of their water in the final
5 effluent and still have 50% of the organisms
6 survive.

7 MR. RAO: Okay. Thank you. Could
8 you comment on whether Emerald's effluent would be
9 considered toxic if Emerald did not have an
10 approved ZID or mixing zone?

11 THE WITNESS: Explain that question
12 to me if you would.

13 MR. RAO: Absent an adjusted
14 standard, I don't think Emerald would have a
15 mixing zone or a zone of initial dilution which
16 they have right now because the adjusted standard
17 made a determination that Emerald is providing
18 best degree of treatment.

19 So the question is if they
20 didn't have an adjusted standard, would Emerald's
21 effluent be still considered, you know, meeting
22 the WET test requirement of 2.1%?

23 THE WITNESS: Okay. I was part of
24 the proceedings where the determination was made

1 that Emerald is providing the best degree of
2 treatment and I still believe that. According to
3 the industrial category they are in, U.S. EPA
4 would consider what they're providing to be best
5 degree of treatment. So that is my understanding
6 of why they were granted a mixing zone.

7 Is your question if one were to
8 test the final effluent undiluted, would it
9 generate toxicity?

10 MR. RAO: Mm-hmm.

11 THE WITNESS: Yes. Yes, it would.

12 MR. RAO: Can you comment on IEPA's
13 assertion that Emerald's LC50 test result of
14 3.87%, while technically permissible, is not found
15 in any other Illinois facility?

16 THE WITNESS: I'm not familiar with
17 what the other Illinois facilities do discharge.
18 I will say this is, and other treatment plants
19 that I've been involved with, this -- this degree
20 of aquatic toxicity present in the effluent is not
21 the lowest I've seen.

22 MR. RAO: In Illinois?

23 THE WITNESS: In my work in
24 industrial water treatment for industries

1 providing final treatment and discharge to river
2 bodies.

3 MR. RAO: All set.

4 MR. DIMOND: Hearing Officer Webb --

5 HEARING OFFICER WEBB: Yes.

6 MR. DIMOND: -- one of Mr. Rao's
7 questions related to -- I think, if I understood
8 him correctly, he was effectively asking how the
9 2.1% was derived that is in the permit. I just --

10 MR. RAO: Not how it was derived,
11 but I wanted Mr. Flippin to explain what it means
12 to be, you know -- what it means for the LC50 to
13 be greater than 2.1%, which I think is in your
14 permit as the WET test.

15 MR. DIMOND: The 2.1% is in the
16 permit. Basically, what the permit says is that
17 if the Whole Effluent Toxicity test comes back at
18 less than 2.1 -- an LC50 of less than 2.1%, then
19 Emerald would be required to do some further
20 studies that I believe are called -- the acronym
21 is TIE, but I'm having a hard time recalling what
22 TIE stands for.

23 THE WITNESS: Toxicity
24 Identification Evaluation.

1 MR. DIMOND: Thank you, Mr. Flippin.
2 So Emerald would have to do a Toxicity
3 Identification Evaluation study at that point in
4 time. I understood you to be asking what is the
5 basis for the 2.1%. That is actually something
6 that was addressed in responses to Board questions
7 in AS 13-2 and basically it's derived from the
8 zone of initial dilution, the mixing zone studies
9 that were done by Aquatiere in the late to --
10 between 2005 and 2008 if my recollection is
11 correct.

12 MR. RAO: Thank you. That's all I
13 have.

14 HEARING OFFICER WEBB: Okay. Thank
15 you very much, Mr. Flippin. I'm sorry.

16 MR. GRADELESS: Are we doing any
17 follow-ups? I had a couple of follow-ups to his
18 responses.

19 HEARING OFFICER WEBB: Okay.

20 F U R T H E R E X A M I N A T I O N
21 BY MR. GRADELESS:

22 Q. Mr. Flippin, you mentioned it was
23 difficult to calculate the ammonia attributable to
24 Mexichem and the TKN because the data you had was

1 after the PVC tank, is that right?

2 A. That's right.

3 Q. If you had data before the PVC tank,
4 that would allow you to evaluate the ammonia
5 coming from Mexichem?

6 A. That's right.

7 Q. And the TKN coming from Mexichem?

8 A. That's right.

9 Q. Additionally, you mentioned there
10 are -- if they had the four -- the other
11 biotreaters online, those would cause additional
12 nitrification, is that correct?

13 A. Would you please repeat the
14 question.

15 Q. You mentioned the biotreaters.
16 There is four biotreaters at the Henry facility,
17 is that right?

18 A. That's right.

19 Q. And the one -- one out of four is
20 operational?

21 A. Yes.

22 Q. Now, if they were -- excuse me. If
23 Henry were to put the other one or two or three of
24 the inoperable biotreaters and make them operable,

1 you say that would not aid in the nitrification of
2 the ammonia?

3 A. That's right.

4 Q. And that's if they use them as
5 biotreaters?

6 A. That's right.

7 Q. Now, if after the secondary
8 clarifier Emerald rerouted a pipe through one of
9 the inoperable biotreaters and added fixed fill
10 media, that would create a form of tertiary
11 nitrification?

12 A. Yes, it would.

13 Q. And that could lower the ammonia
14 levels?

15 A. Yes, it could.

16 MR. GRADELESS: Nothing further.

17 FURTHER EXAMINATION

18 BY MR. DIMOND:

19 Q. Mr. Gradeless' alternative, because
20 it's his alternative, nobody has testified about
21 this, isn't that exactly what you heard
22 Mr. Hathcock say would not be a viable, long-term
23 alternative for the plant this morning?

24 A. Yes, and the reason being that those

1 three biotreaters are set aside to serve as a
2 backup for the large biotreater. So when the
3 large biotreater is taken down for maintenance,
4 and thankfully it's lasted 25 years without such
5 requirement, but when it is taken down, they need
6 those three to serve as a backup to the one they
7 have today while they're doing maintenance work on
8 the big one.

9 Q. So we keep calling them biotreaters,
10 but, I mean, as they sit there today unused,
11 they're just tanks, right?

12 A. They're just empty tanks with
13 aeration equipment in them.

14 Q. And you can use them as a
15 biotreater, you can just use them as a tank for
16 storage, right?

17 A. That's right.

18 Q. Okay. So is there any reason --
19 well, strike that.

20 In your opinion, would the cost
21 of tertiary nitrification using the three tanks
22 that are currently at the plant be any less than
23 the cost of tertiary nitrification as you
24 estimated it in your report?

1 A. No.

2 MR. RAO: May I ask a follow-up?

3 MR. DIMOND: That's all I have.

4 MR. RAO: I have a follow-up to
5 Mr. Dimond's question.

6 In addition to the cost, would
7 there be any difference in adverse environmental
8 impact if you use these additional biotreaters as
9 a tertiary treatment than using alkaline stripping
10 or breakpoint chlorination?

11 THE WITNESS: They -- they both
12 increase the salt load. Tertiary nitrification
13 and alkaline stripping and ion exchange all
14 increase the salt load and you were referencing
15 earlier where we described how much each of them
16 do increase the salt load. I don't have those
17 numbers on the tip of my tongue, but I can
18 certainly look at it and answer that question.

19 MR. RAO: Thank you.

20 HEARING OFFICER WEBB: Nothing
21 further from anybody? No more questions for
22 Mr. Flippin? Okay. Thank you very much, sir.

23 THE WITNESS: Thank you.

24 HEARING OFFICER WEBB: Let's just

1 take a five-minute break real quick.

2 (Whereupon, a break was taken
3 after which the following
4 proceedings were had.)

5 HEARING OFFICER WEBB: Okay. We'll
6 go back on the record.

7 Does the petitioner have
8 anything else to present today?

9 MR. DIMOND: We have no further
10 witnesses. So we rest our case. I would -- I
11 don't know if you're going to ask -- ask us to
12 make closing statements. We might want to make
13 one at the end of the case, but we'll make that
14 decision.

15 HEARING OFFICER WEBB: Yes, I will
16 offer you that opportunity.

17 MR. DIMOND: We'll make that
18 decision when we get there, but other than that,
19 we presented our witnesses and we appreciate the
20 Board's time and effort and we rest our case.

21 HEARING OFFICER WEBB: Thank you.
22 Would the Agency like to call its first witness.

23 MR. GRADELESS: We would like to
24 have our opening remarks.

1 HEARING OFFICER WEBB: Okay.

2 MR. GRADELESS: We reserved to
3 present --

4 HEARING OFFICER WEBB: Go ahead.

5 MR. GRADELESS: Thank you. Members
6 of the Board, for nearly two decades this
7 petitioner has portrayed itself as extremely
8 unique in the State of Illinois because it
9 produces what we have all been talking about today
10 this chemical called MBT in its waste stream.

11 When I first heard about this
12 case, it struck me as it didn't make much sense.
13 I'm not a technical person, but how can this
14 substance be created on one side and the only
15 place for this substance to go to is in the
16 effluent? And just general logic it was beyond
17 me, but, anyway, new facts in this case have
18 emerged and the Agency took this case extremely
19 seriously. Over 11 depositions were conducted and
20 through those depositions and the discovery in
21 this case, we have learned new facts and that's
22 why we are requesting that the Board take a fresh
23 look at this case.

24 First, the new facts that we

1 have learned there is no more MBT in the
2 petitioner's discharge. MBT has never inhibited
3 nitrification at the petitioner's effluent, but
4 instead it was the petitioner's own willful
5 failure to separate MBT from the waste stream that
6 has inhibited nitrification.

7 Now, there is no more MBT in the
8 effluent and at the secondary clarifier, the
9 petitioner is just like everybody else, everybody
10 else in the State of Illinois, POTW's, industry,
11 have had to deal with ammonia issues. After the
12 secondary clarifier, there is no more MBT.

13 On Page 2 of the Agency's
14 recommendation, the Agency said the nature of
15 petitioner's discharge has not changed since the
16 petition, and the discharge still contains MBT.
17 The Agency would like to correct Page 20 of its
18 recommendation given the new evidence that we have
19 discovered in this case. In fact, petitioner has
20 achieved nitrification within the facility.

21 The Board has previously held
22 that the petitioner's discharge has unique
23 characteristics making the plant unable to achieve
24 nitrification which makes petitioner different

1 from other industries. This is no longer true.
2 Testimony from Mark Winters, a foreman of the
3 Henry facility, we will be admitting that
4 deposition into the record, but excerpts from that
5 deposition I want you to pay special attention to.

6 In the summer of 2019, we were
7 just shocked. "We didn't really know that the
8 ammonia would drop like that because everybody had
9 told us that this was not possible." That's Page
10 32. "That was the legacy of previous reports,
11 everybody saying that there is no way to get all
12 that MBT out. The nitrification does not happen
13 in our process." Page 32.

14 Question: Who made these
15 reports?

16 Mr. Winters answered.

17 Answer: Dave Giffen and I
18 believe the Houston Flippin report says some
19 nitrification is difficult to achieve.

20 When asked about treatment
21 process, Mr. Winters testified "Alternate ways to
22 pull MBT out of the water supply, including
23 hydrogen peroxide, can actually oxygenate --
24 oxi --

1 MS. ZEIVEL: Oxygenate.

2 MR. GRADELESS: -- oxygenate the MBT
3 and pull it out." Page 42. "It oxidizes the MBT
4 and destroys it in the water." Page 42.
5 "Nitrification is occurring within the plant. Our
6 PDC data supports it." Page 50.

7 Also, and this is very
8 important, if we run our reactions all the way,
9 it's hard to have any MBT. Mexichem feeds its
10 waste stream through the petitioner's wastewater
11 facility. They have created a marketable,
12 competitive advantage for non-compliance. They
13 provide ammonia and nitrogen compounds before the
14 MBT is added and Mexichem pays the petitioner for
15 waste treatment. How much?

16 We will be providing the
17 deposition of Amy Harding to discuss that
18 financial information. Petitioner has proposed
19 one size fits all end-of-pipe solutions. It says
20 that they're too expensive. It's as if you choose
21 a BMW or Mercedes so, therefore, you can't get to
22 work. That's just not right. They offer no
23 in-process treatment evaluations for the Board to
24 consider and their cost estimates are mere

1 guesstimates.

2 MR. DIMOND: I'm going to object
3 that that's a misstatement of the record. He
4 cannot misrepresent what the facts are.

5 MR. GRADELESS: May I proceed?

6 HEARING OFFICER WEBB: You may
7 proceed.

8 MR. GRADELESS: In fact, the experts
9 in this case -- now that we know that the
10 petitioner is not as special as it was once
11 believed, all the alternatives evaluated are
12 technically feasible for partial reductions in
13 pollution loads. Everybody knows this. It comes
14 down to economic reasonableness.

15 The petitioner has failed to
16 meet its burden of proof that it's using the best
17 available treatment technology. Best is
18 superlative. It must be the best technology
19 available. We have also discovered new financial
20 information. The deposition of Ed Gotch, CEO, he
21 will explain the payment structure and corporate
22 structure of the petitioner and how its parent
23 company, Emerald Performance Materials, pays for
24 all the bills of this petitioner.

1 We will learn from the
2 deposition of Amy Harding as well as she lays the
3 foundation for their financial information and we
4 learned that liability from this case will have no
5 material effect on the combined financial position
6 of the petitioner. These are common technologies
7 and everybody knows it. POTW's and the industries
8 in the State of Illinois have all had to comply.
9 Petitioner is no different.

10 Professor Glosser in AS 13 in
11 her dissent said that "While Emerald provides a
12 description of various possible technologies
13 available for reducing ammonia, Emerald does not
14 adequately address the costs associated to clearly
15 illustrate why they were not economically viable.
16 We agree with that assertion then and now.

17 Glosser also went onto state, "I
18 am also compelled by EPA's point that because
19 Emerald does not provide information what it
20 considers to be, quote, cost prohibitive, IEPA is
21 not in a position to analyze Emerald's ability to
22 have in-process reductions. Likewise, IEPA argues
23 that Emerald should still provide incremental
24 reductions in ammonia even though it failed to

1 meet the prescribed 3/6 limitations."

2 I agree and believe Emerald has
3 taken no action in 13 years to reduce ammonia.
4 Even to the point of failing to fully consider the
5 technologies available to them and the costs
6 associated with each.

7 Despite having no burden of
8 proof in this case, the Illinois EPA will present
9 witnesses to discuss the basis -- the basis for
10 its recommendation and we will be -- it can be
11 used as a resource for the Board in making its
12 decision. We have discovered new facts in this
13 case and we recommend that the adjusted standard
14 be denied as set forth in that recommendation. We
15 ask the IPCB take a fresh look at the new facts,
16 deny the adjusted standard and compel the
17 petitioner to act. Thank you.

18 HEARING OFFICER WEBB: Okay.

19 MR. GRADELESS: The State of
20 Illinois calls Gary Bingenheimer.

21 HEARING OFFICER WEBB: Would the
22 court reporter please swear in the witness.

23
24

1 WHEREUPON:

2 GARY BINGENHEIMER

3 called as a witness herein, having been first duly
4 sworn, deposeseth and saith as follows:

5 DIRECT EXAMINATION

6 BY MR. GRADELESS:

7 Q. Can you please state your name.

8 A. Gary Bingenheimer.

9 Q. Spell it for the court reporter.

10 A. G-A-R-Y, B-I-N-G-E-N-H-E-I-M-E-R.

11 Q. And by whom are you employed,

12 Mr. Bingenheimer?

13 A. Illinois EPA.

14 Q. And what is your job?

15 A. I manage loan programs for the
16 Bureau of Water.

17 Q. Now, what is a loan program? Let me
18 take a step back.

19 What is your educational
20 background?

21 A. I've got a Bachelor's of Science
22 degree in electrical engineering from SIU,
23 Southern Illinois University - Carbondale.

24 Q. Okay. Tell me about the loan

1 **program that you administer.**

2 A. We have two loan programs that are
3 run basically identically. One funds drinking
4 water treatment plant improvements and the other
5 funds wastewater sanitary sewer and wastewater
6 treatment improvements.

7 **Q. And what type of improvements do the**
8 **wastewater treatment improvements entail?**

9 A. Anything and everything to do with
10 wastewater collection and/or treatment as well as
11 some stormwater type activities.

12 **Q. And what do you -- what is the**
13 **process for obtaining a loan with the Agency**
14 **generally?**

15 A. It all starts with the submittal of
16 what we call a project plan. It's similar to an
17 engineering report. It identifies the need for
18 the project, the cost of the project, alternatives
19 if they're analyzed, the impact to the residents,
20 the user charges that they will pay, it has to
21 identify and get all environmental clearances,
22 they have to submit a loan application package
23 which details their ability to repay the loan as
24 well as establish a debt authorizing ordinance or

1 some vehicle which authorizes them to borrow the
2 money.

3 They then go out to bid the
4 project. They solicit bids for the construction
5 activity. After that is completed, we will then
6 write the loan and uncover construction costs as
7 well as all engineering costs.

8 **Q. Let me take a little step back.**

9 **With respect to the**
10 **certifications that you require of loan**
11 **applicants, can you tell me about those?**

12 MS. WEYHING: We object on relevance
13 for two reasons. The first is our continuing
14 objection that -- I'm not really sure where this
15 is going, but we do have a continuing objection.
16 Emerald's ability to finance something is not
17 relevant.

18 Additionally, Hearing Officer
19 Webb, I thought your January 6th order -- you know
20 what, objection to vagueness. I'm not sure where
21 this testimony is going and I'm just guessing at
22 this point.

23 HEARING OFFICER WEBB: I'm not
24 either. I know we had talked about, you know,

1 access to money. I'm not sure, you know, how much
2 that included the whole loan operation, but I'll
3 let you try to make that point.

4 MR. GRADELESS: I can clear it up.

5 HEARING OFFICER WEBB: Please do.

6 MR. GRADELESS: This is foundational
7 what is done at the loan program and we have
8 compared loan program projects in this case. So
9 I'm letting Gary explain what is required of loan
10 applicants.

11 You know, we're going to get
12 into the financial information loan applicants are
13 required to submit to the Agency and that kind of
14 analysis and the cost estimates that the Agency
15 requires to use public funds.

16 HEARING OFFICER WEBB: All right.
17 Go ahead.

18 MR. DIMOND: Where is the relevance?
19 There is no foundation that Emerald can even
20 access this program. There has been no foundation
21 laid that any project that Emerald has proposed as
22 an alternative could use funds from this program.
23 If there is not a connection there, there is no
24 relevance to this.

1 HEARING OFFICER WEBB: Is that where
2 we're leading?

3 MR. GRADELESS: Not at all.

4 HEARING OFFICER WEBB: No?

5 MR. GRADELESS: Not at all. This is
6 foundational.

7 MR. DIMOND: Maybe -- maybe we ought
8 to -- if we need to ask the witness or, you know,
9 have a conference outside the hearing of the
10 witness. The Agency has to connect this up.
11 There is no foundation that this testimony about
12 entity -- public entities that can get funds from
13 the Clean Water Act Revolving Fund has any
14 relationship with anything to do with this
15 hearing.

16 MR. GRADELESS: If I may respond.

17 HEARING OFFICER WEBB: Yes.

18 MR. GRADELESS: The Agency has
19 compared -- the only data that the Agency has is
20 wastewater treatment work projects.
21 Mr. Bingenheimer is in charge of that loan program
22 and he can testify exactly what kind of items we
23 require of that program to allow for these
24 projects to go forward. We have compared the

1 actual cost of these projects to alternative
2 treatments in this case.

3 Therefore, laying the foundation
4 for those projects that Mr. Bingenheimer is going
5 to testify about, they are written in our
6 recommendation.

7 MR. DIMOND: There is one document
8 that the Agency wants Mr. Bingenheimer to lay the
9 foundation for. If they want him to lay the
10 foundation for how he developed that document,
11 fine, but in his deposition Mr. Bingenheimer
12 didn't testify about any of the details about any
13 of those projects and the details of the loan
14 program have nothing to do with this matter. We
15 are just wasting time, the Board's precious
16 hearing time, on stuff that has nothing to do with
17 this matter.

18 MR. GRADELESS: If I may respond.
19 This is, again, foundational for why these POTW's
20 were able to achieve the loan, why these projects
21 were deemed to be economically reasonable and we
22 have applied, by analogy, those projects to this
23 case. On petitioner's case in chief, they have
24 said those cases are completely irrelevant and

1 we're trying to show the hearing -- the Board why
2 those cases are relevant.

3 MR. DIMOND: Mr. -- Mr. Bingenheimer
4 did not say a word about economic reasonableness
5 in his deposition. Furthermore, no one when they
6 submit for a loan from the Clean Water Act
7 Revolving Fund has to show their project is
8 economically reasonable. That's not a
9 determination that he makes.

10 There is no evidence in -- in
11 the deposition that he makes a determination of
12 economic reasonableness. In fact, the only place
13 where that phrase occurs in the statute is in
14 Section 27, I think it's only in Section 27, which
15 is the standard for the Board in adopting
16 regulations. The Agency doesn't have to apply
17 that standard.

18 Now, the Agency at deposition
19 apparently had Mr. Bingenheimer extract some
20 information from his system. If they want to have
21 him lay the foundation for that document, fine,
22 but he didn't testify about economic
23 reasonableness in his deposition.

24 Furthermore, that is a matter of

1 technical testimony and the Agency had an
2 opportunity to comply with the Hearing Officer's
3 orders of, I believe, both October and November
4 where they were required to file their technical
5 testimony in advance. They chose not to do it and
6 by choosing not to do it, we think in fairness
7 that testimony should be barred.

8 You know, the Agency knows,
9 everybody knows if we had not filed our technical
10 testimony, we would not be allowed to present it
11 and the Agency shouldn't be able to -- there
12 should not be a double standard where the Agency
13 gets to ignore Hearing Officer orders and not file
14 their technical testimony and then surprise
15 everybody at hearing with what it is. That is not
16 a level playing field and so we object for that
17 further reason.

18 MR. GRADELESS: If I may respond?

19 HEARING OFFICER WEBB: Yes.

20 MR. GRADELESS: The petitioner has,
21 in this case, applied the unit costs and compared
22 it to their alternatives to POTW's. I mean, Gary
23 is the guy that does this. So laying the
24 foundation for him --

1 MR. DIMOND: But none of the
2 evidence that has been produced in this from the
3 Agency calculates unit cost. Everything that is
4 in the recommendation, everything that is in the
5 documents that they provided us in discovery, just
6 has a total project cost.

7 If -- if -- if Mr. -- if
8 Mr. Gradeless is going to tell us now that
9 Mr. Bingenheimer knows about unit costs that he
10 didn't know anything about, if he is going to say
11 he's going to testify about economic
12 reasonableness, which he didn't know anything
13 about in his deposition, that's surprise and that
14 is in -- anything about economic reasonableness is
15 technical testimony that should have been filed in
16 advance of the proceeding in accordance with the
17 Hearing Officer's order.

18 HEARING OFFICER WEBB: What -- what
19 is this -- what is this testimony going to --

20 MR. GRADELESS: This is about the
21 sixth question, first of all. This is
22 foundational for exhibits for other projects that
23 they talk about -- we have an exhibit with loan
24 projects that POTW's have obtained these loans

1 from the State of Illinois. We are laying
2 foundation for how Gary can talk about that
3 exhibit and it goes directly -- you know, it's not
4 expert testimony. I mean, the economic
5 reasonableness, first of all, is a legal
6 conclusion -- is a legal determination.

7 You don't need an expert to
8 discuss whether or not an alternative is
9 economically reasonable, but, secondly, Gary is
10 talking about these projects and exactly what went
11 into those projects, what kind of, you know,
12 financial capability analysis that was required of
13 these POTW's, what did they have to go through to
14 secure funding.

15 We're saying that the petitioner
16 has provided alternatives that are virtually --
17 the cost estimates of these alternatives were
18 virtually useless and this witness is telling you
19 that we require more in the State of Illinois to
20 get a loan and he is laying the foundation for
21 that exhibit and we have compared these two types
22 of projects, the POTW's received loans from in the
23 State of Illinois, we have compared those with the
24 alternatives in this case and the petitioner has

1 also used unit cost and also came back and
2 compared its alternatives to POTW's in the State
3 of Illinois. So, therefore, we're showing you how
4 we got to the numbers and the cost of those
5 projects.

6 MR. DIMOND: Hearing Officer Webb,
7 if Mr. Gradeless wants to have Mr. Bingenheimer
8 lay a foundation for what I believe they have
9 identified as Agency Hearing Exhibit 1 and explain
10 how he got the information, that is -- you know,
11 we may not object to that. But all this
12 background about how somebody applies for a loan
13 that we aren't even eligible to apply for, that
14 Mr. Bingenheimer has never testified we're
15 eligible to apply for, this is just a waste of
16 time. It has nothing to do with this proceeding.

17 HEARING OFFICER WEBB: Okay. I've
18 heard both of you and I am going to allow the
19 testimony at least to lay the foundation for
20 your -- the evidence you plan to use.

21 BY MR. GRADELESS:

22 Q. Mr. Bingenheimer, you mentioned you
23 require certifications from POTW's, can you tell
24 us about those?

1 A. I'm not sure what certifications you
2 mean. From the loan applicant?

3 **Q. Yes, from the loan applicant. In**
4 **the project plan, you mentioned that they had**
5 **studied and evaluated the costs and effectiveness**
6 **of the processes.**

7 A. I still don't know what you mean by
8 certification.

9 **Q. Okay. Let me go back then.**
10 **Tell me about when an applicant**
11 **applies for a loan, what is required in that**
12 **project plan?**

13 A. It is an engineering report which
14 identifies the cost of the project, the need for
15 the project, the impacts to the user charges as
16 well as all environmental clearances.

17 **Q. And you require some -- you**
18 **mentioned a financial capability analysis?**

19 A. That is towards the end of the
20 process where they will demonstrate that they have
21 the ability to maintain their operations, their
22 maintenance, their expenses and their debt
23 obligations which include our loan. We want to
24 make sure they're able to pay the loan back and

1 maintain their systems.

2 **Q. And what kinds of information do you**
3 **require?**

4 A. We'll get their audit, we'll start
5 with their financial audit, and then we'll ask for
6 a pro forma budget that goes out five years that
7 shows all of their, again, operational maintenance
8 and replacement costs as well as any debt
9 obligations.

10 **Q. Okay. And you also mentioned a debt**
11 **ordinance?**

12 A. A debt ordinance is a legal document
13 that authorizes them to borrow the money.

14 MR. DIMOND: We're going to renew
15 our objection. What does this have to do with
16 this proceeding?

17 HEARING OFFICER WEBB: Well --

18 MR. DIMOND: I mean, just --

19 MS. ZEIVEL: The objection has been
20 ruled upon.

21 MR. DIMOND: Put Exhibit 1 before
22 him and ask him if he came up with the information
23 and stop wasting all the time on this background
24 for a loan that we can't apply for.

1 MS. WEYHING: I do want to ask for
2 clarification, Hearing Officer Webb. You said
3 that the foundation could be laid for the evidence
4 of this exhibit?

5 HEARING OFFICER WEBB: Mm-hmm.

6 MS. WEYHING: But you didn't make
7 any ruling as to other testimony, correct?

8 HEARING OFFICER WEBB: Well, you
9 know, it's hard for me to know what the foundation
10 is going to be used for when I haven't heard it
11 yet. So that's the problem I'm having. So I'm
12 going to give you the benefit of the doubt to
13 assume that it is leading towards useable
14 evidence. So, you know, that's --

15 MR. DIMOND: I understand.

16 HEARING OFFICER WEBB: I
17 understand. You can make a standing objection. I
18 understand. But I'll allow the testimony.

19 BY MR. GRADELESS:

20 Q. Okay. Mr. Bingenheimer, do you have
21 the exhibits, State's Exhibit 17?

22 A. Look in here?

23 Q. I think it's around there.

24 MR. DIMOND: May I help the witness?

1 MR. GRADELESS: Gary, it's right on
2 the top.

3 HEARING OFFICER WEBB: Sure.

4 THE WITNESS: Okay.

5 BY MR. GRADELESS:

6 Q. Mr. Dimond, thank you, has handed
7 you State's Exhibit 17 and that is -- that is the
8 AACE cost estimate guidance document, is that
9 right?

10 A. Correct.

11 Q. And you have had an opportunity to
12 review that document?

13 A. I have looked through it, mm-hmm.

14 Q. Okay. Now, with respect to what you
15 require of public loan applicants, how would you
16 describe the cost estimate that you require during
17 the project plan phase of your cost estimates?

18 A. I believe there is a chart in here,
19 the chart on Page 2 of 9, and when we get the
20 project plan in I usually think of those as being
21 somewhere between 25 to 50% design ready. So, to
22 me, that is a Class 3 according to this document.

23 Q. Gary, which page are you looking at?
24 I'm sorry.

1 A. 2 of 9.

2 **Q. And you're basing that on the level**
3 **of project definition?**

4 A. Yeah, that's the amount of design
5 that would have been -- had to have been done to
6 submit a project plan. You have to know tank
7 sizes, pump capacities, obviously the location.
8 When we get these project plans in before they
9 move forward, we forward them to the permitting
10 section and they make sure that they're
11 technically approvable so that the applicant can
12 then go to final design.

13 **Q. Now, when you -- when you say you go**
14 **to final design, tell me about that.**

15 A. Final design is exactly what it
16 means. It is completely 100% designed so they can
17 go to bid.

18 **Q. Okay. And what happens when the**
19 **projects go to bid?**

20 A. We require bidding before we give
21 them a loan.

22 **Q. It's a competitive bidding process,**
23 **is that fair?**

24 A. Yes. Yes. Our loan rules require

1 the applicant to award the contract to the low,
2 responsive, responsible bidder. So whether they
3 have two bidders or they have eight, they have to
4 award it to the low bidder.

5 **Q. How would you describe the**
6 **competitive bidding with respect to these cost**
7 **estimates?**

8 A. That would be Class 1. It's been
9 bid. It's 100% designed and it's been bid.

10 **Q. And that's before you give them, the**
11 **loan applicants, any money?**

12 A. Correct. We will not write the loan
13 agreement until the bids are received and reviewed
14 to make sure that the bidding process was done
15 properly.

16 **Q. I believe you mentioned the bid --**
17 **user rates, you look at that?**

18 A. User charges. Typically, that's the
19 monthly fee that is paid by the residents.

20 **Q. Okay. Are you -- do those increase**
21 **after you receive -- after a loan applicant**
22 **receives a loan?**

23 A. Not necessarily. They may, they may
24 not.

1 **Q. Are you aware of whether or not**
2 **those rates have in the past received any**
3 **increases after a capital improvement project?**

4 A. Sometimes they do, sometimes they
5 don't.

6 **Q. And is it possible that those rate**
7 **increases are gradual, not a one-year increase?**

8 A. Yeah. Oftentimes, you will see
9 communities enact a standing percentage 2%, 3%
10 annual increase in rates which they can revisit
11 annually as need be.

12 **Q. And do they also account for**
13 **population growth?**

14 A. We don't like to see population
15 growth factored into our projects because
16 sometimes there is a downturn in the economy and
17 that growth doesn't happen and we've had
18 situations in the past where that's caused a
19 problem. So we do not allow that.

20 **Q. Okay. Now, tell me about**
21 **surcharges. What, if anything, do you know about**
22 **surcharges?**

23 A. I don't know much about surcharges.
24 We only deal with the residential customer rate.

1 If somebody has a large industrial customer in
2 town, if it's a huge portion of their revenue, we
3 want to see what that is, but we don't get into
4 the details of what they charge them.

5 **Q. I guess what is your understanding**
6 **of the surcharge rate then in your experience?**

7 A. I would assume -- I really don't
8 have much knowledge of surcharges.

9 **Q. That's fair. Sometimes when you see**
10 **these capital improvement projects for the loan**
11 **program, are they also sometimes subsidized by a**
12 **grant?**

13 A. Occasionally, they can obtain
14 grants.

15 **Q. And how long are these projects --**
16 **how long is the loan term?**

17 A. The loan term can be anywhere from
18 20 to 30 years.

19 **Q. And just tell us about the interest**
20 **rate.**

21 A. We are at 1 --

22 MR. DIMOND: Objection. Relevance.
23 What is the relevance of the interest rate?

24 MR. GRADELESS: Your Honor, the

1 petitioner has failed to analyze any important --
2 any loan that they could obtain in this case to
3 make these alternatives more economically
4 reasonable. They failed to analyze that. POTW's
5 have to do that.

6 HEARING OFFICER WEBB: You are going
7 to relate this back to Emerald?

8 MR. GRADELESS: That's right.

9 MR. DIMOND: Wait. If he -- we
10 should go out for -- I don't want his objections
11 to inform what Mr. Bingenheimer is going to say,
12 but it's about time that Mr. Gradeless actually
13 connects something up for us.

14 What difference does it make
15 what percentage rate a POTW in Illinois pays on a
16 loan that they get from this grant program? Where
17 is the connection?

18 HEARING OFFICER WEBB: Do you have a
19 lot more questions about this loan program because
20 I'm struggling to find relevance myself, but
21 you've assured me it will result back to Emerald.
22 So I'm allowing you to continue.

23 MR. GRADELESS: But it's Emerald's
24 failure to do this type of analysis, but, yes, I'm

1 about ready to admit an exhibit.

2 HEARING OFFICER WEBB: Okay. Go
3 ahead.

4 BY MR. GRADELESS:

5 Q. You were saying, Gary, with respect
6 to how interest rates works?

7 A. We set our interest rates at
8 one-half of a bond index. It's a common -- it's
9 called the General Obligation Bond Index and we
10 are one-half of whatever that is in the previous
11 12 months to the start of the fiscal year.

12 MR. GRADELESS: Let the record
13 reflect I'm showing Mr. Bingenheimer what has been
14 previously identified as State's Exhibit 1.

15 (Document marked as State's
16 Exhibit No. 1 for
17 identification.)

18 BY MR. GRADELESS:

19 Q. Now, Gary, tell us what I've just
20 handed you.

21 A. This is a printout of an Excel
22 spreadsheet which was data which I queried from
23 our loan database. These are loan projects which
24 were funded by us obviously that had to deal with

1 ammonia.

2 Q. Okay. And is this format the way
3 it's generally kept in the course of the loan
4 programs business activities?

5 A. Yes, this came straight out of our
6 database.

7 Q. Okay. Can you describe what is
8 meant by the loan recipient column on the left?

9 A. That is the name of the community or
10 the sanitary district which receives the loan.

11 Q. Can you tell us what the L17- means?

12 A. That's just an internal
13 identification number. It's a sequential four
14 numbers assigned to projects.

15 Q. And what about the project
16 description?

17 A. That is the actual description of
18 what was constructed.

19 Q. Okay. Can you tell the Board what
20 was meant by the initiation of operation date?

21 A. That is the date when the project
22 was able to begin operating.

23 Q. And what about the final completion
24 date?

1 A. That is when the -- every single
2 last bit of construction was done, the grass was
3 planted, they were completely done. A lot of
4 times those dates are the same. Sometimes
5 initiation of operation can occur and then six
6 months later until final construction is complete.

7 **Q. There is also a column for final**
8 **cost, can you tell the Board what is meant by**
9 **final costs?**

10 A. That is the as-bid and
11 as-constructed cost. That is when everything is
12 done and all the bills are paid and everything is
13 complete, actual construction costs and
14 engineering costs.

15 **Q. That's the final bill?**

16 A. That is actually what it took to get
17 it done.

18 **Q. Okay. Now, the loan amount column**
19 **is the last column, right?**

20 A. Right.

21 **Q. And that's blank. Can you tell us**
22 **why that column is blank?**

23 A. That would have been there when the
24 loan was written which was based off of as-bid

1 costs, but then when we do a final loan amendment
2 that number goes away and all we're left with is
3 what is the actual final constructed cost.

4 **Q. Okay. Now, how did you come about**
5 **creating this document?**

6 A. I got into our database, did a query
7 of all loan projects that we have funded for the
8 wastewater loan program, put it into an Excel
9 spreadsheet and then simply did a search, a
10 control F, in Excel for the word ammonia.

11 **Q. Okay.**

12 MR. GRADELESS: At this time, the
13 State moves into evidence Exhibit 1.

14 MS. WEYHING: We object on the basis
15 of relevance.

16 HEARING OFFICER WEBB: I'm going to
17 go ahead and admit Exhibit 1, Agency Exhibit 1.

18 MR. GRADELESS: I don't think I have
19 anything further for Mr. Bingenheimer.

20 C R O S S E X A M I N A T I O N
21 BY MS. WEYHING:

22 **Q. Mr. Bingenheimer, you're not**
23 **familiar with the contents of Emerald's petition**
24 **in this proceeding, correct?**

1 A. I'm not.

2 Q. Okay. And you're not at all
3 familiar with the wastewater treatment process at
4 Henry plant, correct?

5 A. I am not.

6 Q. Your knowledge here is limited
7 solely to query of a loan program database,
8 correct?

9 A. And what was discussed of the
10 questions that were asked of me, yes.

11 Q. Questions that were asked of you
12 here today?

13 A. Yes. Yes.

14 Q. Okay. So you pulled the exhibit --
15 Agency Exhibit 1 the information, you pulled that
16 from the loan database, correct?

17 A. Correct.

18 Q. And your query of the database, the
19 initial query, resulted in more than just these
20 seven projects, correct?

21 A. That's correct.

22 Q. But as you sit here today, you have
23 no idea why these seven projects are the ones that
24 wound up in this exhibit, correct?

1 A. I do not.

2 **Q. Okay. And you didn't personally**
3 **review any of the applications in this exhibit?**

4 A. I did not.

5 **Q. And you don't know anything about**
6 **the scope or the purpose or the technical**
7 **viability of any of the municipal projects listed**
8 **on Agency Exhibit 1, do you?**

9 A. I know the scope is what was listed
10 on those and they were technically viable because
11 our Agency permitted them.

12 **Q. But you didn't --**

13 A. We would not issue a loan without
14 making sure they were permitted.

15 **Q. Understood. But you didn't write**
16 **the project description that is in this exhibit?**

17 A. I did not.

18 **Q. So you only know what you're reading**
19 **off of the Agency Exhibit 1, correct?**

20 A. Correct.

21 MS. WEYHING: No further questions.

22 HEARING OFFICER WEBB: Anything
23 further for you?

24 MR. GRADELESS: No.

1 HEARING OFFICER WEBB: Does the
2 Board have any questions for this witness?

3 MR. RAO: Yes, just a clarification
4 question.

5 Looking at Exhibit 1, there are
6 these two columns, initiation of operation and
7 final completion, and looking at the second row
8 which is Geneva and the initial operation date and
9 the final completion date are the same, is that
10 normal?

11 THE WITNESS: That is common. That
12 is very common for projects to wrap up, if you
13 will, at the same time. Now, sometimes that's
14 just a contract language that the construction
15 contractor -- some contracts don't contain two
16 different dates. Some of them only contain a
17 final and when there's only a final, we use them
18 for both.

19 MR. RAO: Okay.

20 THE WITNESS: Some of them will have
21 a substantial completion date or initiation of
22 operation and then a final. It usually has to do
23 with how they get paid.

24 MR. RAO: Okay. Thank you. That's

1 it.

2 HEARING OFFICER WEBB: Okay. Thank
3 you, sir. The Agency may call its next witness.

4 MR. GRADELESS: We have some
5 exhibits to tender. The first exhibit would be
6 the deposition of Mark Winters. Mark Winters was
7 the foreman, site foreman, at the Henry facility
8 that I mentioned in opening statements and we have
9 the deposition of Mr. Winters.

10 MR. DIMOND: Hearing Officer Webb, I
11 don't believe -- I don't believe that
12 Mr. Gradeless' description of Mr. Winters as the
13 site foreman is accurate, but Mr. Winters'
14 testimony will speak for himself. We reluctantly
15 agree to admit the entire deposition. We asked
16 the Agency to designate specific pages of it so
17 that the Board would not have to wade through
18 pages and pages and pages of irrelevant
19 information.

20 The Agency refused to do that
21 and insisted that they would either admit the
22 entire deposition or none. They would not put any
23 effort to spare the Board the effort of weighing
24 through all the pages of the deposition. So we

1 were disappointed by that, but nonetheless we are
2 where we are and we reluctantly agree to admit it
3 into evidence.

4 MR. GRADELESS: If I may respond to
5 that.

6 HEARING OFFICER WEBB: You may.

7 MR. GRADELESS: My grandmother
8 passed away a week ago.

9 HEARING OFFICER WEBB: I'm sorry.

10 MR. GRADELESS: I had bronchitis
11 this last week and I'm sorry I didn't get down to,
12 you know, going over every page of the deposition,
13 but we will highlight important parts for the
14 Board during our closing briefs.

15 HEARING OFFICER WEBB: Okay. Thank
16 you.

17 MR. DIMOND: I would only object
18 that the -- if the Agency wants to highlight -- I
19 express my condolences to Mr. Gradeless. If the
20 Agency's intent is to cite portions of it in the
21 brief, that's just one thing. I don't think the
22 exhibit itself should be highlighted with a
23 marker.

24 MR. GRADELESS: I didn't mean

1 highlight. We'll cite to it.

2 MR. DIMOND: I wasn't -- I wasn't
3 quite sure what you meant by that.

4 HEARING OFFICER WEBB: Okay. Agency
5 Exhibit 18 is admitted.

6 (Document marked as State's
7 Exhibit No. 18 for
8 identification.)

9 MR. GRADELESS: Additionally, the
10 Agency has some financial information that we've
11 had some debate about with the admissibility to
12 say the least, but we're moving Exhibit 9A and 9B.
13 That is the discovery -- it says telephone
14 discovery deposition, but it was actually an
15 evidence deposition of Amy Harding. She is the
16 corporate comptroller for Emerald Performance
17 Materials.

18 (Document marked as State's
19 Exhibit No. 9A-9B for
20 identification.)

21 MR. GRADELESS: Ms. Harding lays out
22 some of the financial information and she provides
23 foundation for the petitioner's financial
24 documentation.

1 MR. DIMOND: So the -- which exhibit
2 number is this?

3 MR. GRADELESS: I'm sorry. 9A and
4 9B is an exhibit that Ms. Harding discussed during
5 that deposition and I have marked them and I can
6 show you, Tom, first.

7 MR. DIMOND: Okay. These -- these
8 are supposed to be submitted -- these should be
9 marked as --

10 HEARING OFFICER WEBB:
11 Non-disclosable.

12 MR. DIMOND: -- non-disclosable
13 public record exempt. I know that we marked --
14 what you're telling me you marked as 9B we marked.
15 9A the deposition needs -- I think needs to be
16 marked and it apparently has been marked, but
17 these should be in envelopes so that they are not
18 subject -- so the Board understands how -- I don't
19 know how the Board is going to keep these
20 separate, but I think they ought to be in
21 envelopes.

22 MR. RAO: We have a locked cabinet
23 where we keep non-disclosed.

24 HEARING OFFICER WEBB: They will not

1 be posted on our website for sure, but they will
2 be in the Board's file.

3 MR. DIMOND: So with that as the
4 Agency knows -- as the Agency knows, we object to
5 the admission of these because we don't think
6 they're relevant. We understand the Hearing
7 Officer's previous order. We don't agree with it.
8 As to Ms. Harding's deposition and what the Agency
9 has marked as Exhibit 9B, you know, we restate our
10 objection on relevance and I don't think we have
11 anything else to say on it.

12 MR. GRADELESS: Can I -- can I
13 tender 9A and 9B?

14 HEARING OFFICER WEBB: Yeah, I'm not
15 sure what 9B -- well, I had --

16 MR. GRADELESS: Are these the
17 originals?

18 MR. DIMOND: We can go off.

19 (Whereupon, a discussion was had
20 off the record.)

21 HEARING OFFICER WEBB: Exhibit --
22 Agency Exhibit 9A and 9B are admitted for the
23 reasons discussed in the Hearing Officer order
24 dated January 6th.

1 MR. DIMOND: I'm sorry. Can we go
2 off again?

3 (Whereupon, a discussion was had
4 off the record.)

5 MR. DIMOND: We can go back on.

6 MR. GRADELESS: Then the State
7 further moves the deposition of Edward Gotch
8 Exhibit 10 into evidence.

9 (Document marked as State's
10 Exhibit No. 10 for
11 identification.)

12 MR. GRADELESS: Mr. Gotch discusses
13 the corporate structure. He was designated as the
14 corporate designee for purposes of discovery and
15 that's Exhibit 10 and we have also labeled and
16 identified that -- petitioner has claimed a public
17 record exemption non-disclosable information with
18 the contents of this deposition. So we have
19 marked it accordingly for the Board to --

20 HEARING OFFICER WEBB: Okay.

21 MR. DIMOND: We would just --

22 HEARING OFFICER WEBB: Renew your --

23 MR. DIMOND: Renew our same
24 objection, though. I think -- I think we will

1 just stand on our previous relevance objection
2 with regard to this. I think we have a slightly
3 different objection with the next one that
4 Mr. Gradeless has.

5 HEARING OFFICER WEBB: Okay. So the
6 Agency's Exhibit 10 is admitted as non-disclosable
7 information and if I didn't say it on the record
8 Exhibit 9A and 9B were also admitted as
9 non-disclosable.

10 MR. GRADELESS: The Agency also
11 moves into exhibit -- into evidence Exhibit 11A,
12 11B and 11C.

13 (Document marked as State's
14 Exhibit No. 11A, 11B, 11C for
15 identification.)

16 MR. GRADELESS: We will submit that
17 the foundation for these exhibits was laid in Amy
18 Harding's deposition that has been admitted as
19 Exhibit 9.

20 HEARING OFFICER WEBB: Okay.

21 MR. GRADELESS: These are the
22 financial statements on report of independent
23 certified public accountants of Emerald
24 Performance Materials group of companies and

1 affiliates for the year December 31, 2016 and --
2 2015 -- Fiscal Year 2015, '16 and '17.

3 MR. DIMOND: And we object to the
4 relevance of these for the reasons that we have
5 previously objected on the record to the relevance
6 of these matters, but we think there is one
7 additional factor that the Board -- the Hearing
8 Officer should consider.

9 In the Hearing Officer's order
10 of January 6th, 2020, she said that the
11 admissibility of documents -- that the order says,
12 "Testimony and admissibility of documents at
13 hearing may be limited to evidence relevant to
14 petitioner's access to funding from its parent
15 company."

16 The combined financial
17 statements that the Agency now wants to admit into
18 evidence as Exhibit's 11A, 11B and 11C include
19 consolidated financial data for entities that are
20 not Emerald's parent.

21 In fact, as explained in
22 Mr. Gotch's deposition, Emerald Performance
23 Materials, the parent of Emerald Polymer
24 Additives, is a holding company. It does not have

1 any operations of its own. So these combined
2 financial statements include within them -- when
3 you see a consolidated number on those financial
4 statements, it includes not only the numbers that
5 apply to the Emerald Polymer Additives facility in
6 Henry, Illinois, it also includes numbers that
7 apply to an Emerald Kalama Chemical facility in --
8 I believe it's in Vancouver, Washington. It also
9 includes data on a facility in Rotterdam,
10 Netherlands. It also includes data on a facility
11 in the UK and the city I can't remember.

12 But none of that relates solely
13 to Emeralds parent. These are consolidated
14 financial statements and we think that admitting
15 those into evidence is not consistent with the
16 Hearing Officer's order of January 6th and for
17 that reason, in addition to the reasons that we
18 have previously stated on the record, we don't
19 think these are relevant and we don't think they
20 should be admitted.

21 MR. GRADELESS: If I may respond?

22 HEARING OFFICER WEBB: Mm-hmm.

23 MR. GRADELESS: In the deposition of
24 Mr. Edward Gotch, he describes how cash is pooled

1 with respect to these companies. So Emerald
2 Performance Materials, the person who paid
3 Mr. Hathcock today, is pooling all their resources
4 from Emerald Polymer Additives and four other
5 companies that are included in this combined
6 financial report. They all conduct -- they all do
7 their accounting together because they're all
8 owned by the same company and that's what these
9 financial reports discuss.

10 MR. DIMOND: But --

11 MR. GRADELESS: In the scheme -- not
12 scheme. I don't mean that in a pejorative way.
13 The way it's setup is that the parent company will
14 pay the bills for the Henry facility and they --
15 all these four companies pool their resources
16 together to make these financial decisions --
17 determinations -- or financial decision.

18 I mean, Mr. Hathcock said on
19 direct examination that the decisionmaker to
20 finance these capital improvement projects would
21 be Emerald Performance Material and that -- this
22 is the way they do their accounting because
23 they're all owned by a larger parent corporation
24 Emerald Performance Materials.

1 HEARING OFFICER WEBB: As I've said
2 in the Hearing Officer order, absent any clear
3 precedent, I cannot find that the financial
4 statements are not relevant to the -- to the
5 issues at hand. So I am going to admit them. I
6 guess that's all.

7 MR. GRADELESS: Petitioner --

8 HEARING OFFICER WEBB: As
9 non-disclosable information.

10 MR. GRADELESS: Yes, I was going to
11 say the petitioner has non-disclosable information
12 at the top for those exhibits as well.

13 At this time, the State calls
14 Brian Koch.

15 HEARING OFFICER WEBB: Will the
16 court reporter please swear in the witness.

17 WHEREUPON:

18 BRIAN KOCH
19 called as a witness herein, having been first duly
20 sworn, deposeth and saith as follows:

21 D I R E C T E X A M I N A T I O N

22 BY MR. GRADELESS:

23 Q. Can you please state your name for
24 the record?

1 A. Brian Koch, B-R-I-A-N, K-O-C-H.

2 **Q. Mr. Koch, by whom are you employed?**

3 A. Illinois Department of Public
4 Health.

5 **Q. And by whom were you employed before**
6 **the Illinois Department of Public Health?**

7 A. Illinois EPA.

8 **Q. And what were your job duties at the**
9 **Illinois -- how long were you employed by the**
10 **Illinois EPA?**

11 A. Nearly 14 years. I worked in the
12 water quality standards section. My main
13 responsibility there was to develop toxicity based
14 water quality standards, both protection of
15 aquatic life and human health. Along with that, I
16 ran a variety of toxicity-related programs. The
17 Whole Effluent Toxicity program which IEPA calls
18 the biomonitoring program -- I reviewed water
19 treatment additives for toxicity, I ran the fish
20 contaminant monitoring program which dealt with
21 bioaccumulation of pollutants and fish along with
22 a few other fish biology-related programs.

23 **Q. Can you tell us about your**
24 **educational background that led to that position?**

1 A. Yes, I have a bachelor and master's
2 degree in zoology from Southern Illinois
3 University - Carbondale.

4 **Q. And did you -- do you have a**
5 **supervisor at the Illinois EPA?**

6 A. Correct, yes.

7 **Q. Now, with respect to the toxicity**
8 **testing, tell us about your role in looking at**
9 **toxicity.**

10 A. I took over that program in 2008, I
11 believe, and I -- after my deposition, I learned
12 that I did two reviews of biomonitoring test
13 results for Emerald renewable energy, one in 2012,
14 one in 2015.

15 **Q. What is biomonitoring?**

16 A. Well, what that entails is you
17 summarize the test results that were conducted
18 over the last permit cycle for each facility. So
19 in the case of Emerald, I believe I did the first
20 report in 2012 and then I did another report in
21 2015 once the IPCB adjusted standard went forward.

22 **Q. Okay.**

23 MR. GRADELESS: Let the record
24 reflect I'm showing this witness what has been

1 previously identified as State's Exhibit's 2 and
2 3.

3 (Document marked as State's
4 Exhibit No. 2-3 for
5 identification.)

6 MR. DIMOND: We got No. 2, but not
7 No. 3.

8 MR. GRADELESS: There you go. No.
9 3.

10 BY MR. GRADELESS:

11 **Q. Mr. Koch, looking at Exhibit 2, can**
12 **you tell the Board what Exhibit 2 -- what is**
13 **Exhibit 2?**

14 A. Yes, this is my October 23rd, 2012,
15 biomonitoring report for Emerald Performance
16 Materials.

17 **Q. And is it a fair and accurate copy**
18 **from when you last saw it?**

19 A. Yes.

20 **Q. And looking at Exhibit 3, what is**
21 **Exhibit 3?**

22 A. That is another biomonitoring report
23 for Emerald Performance Materials dated June 16th,
24 2015, and the reason why there are two reports is

1 because in 2012 the permit was up for expiration.
2 So I did my review at that time and then three
3 years later I was notified that the adjusted
4 standard was approved and the permit section
5 needed a revised recommendation because the permit
6 was going to be issued at that time.

7 MR. GRADELESS: At this time, the
8 State moves into evidence State's Exhibit's 2 and
9 3.

10 MS. WEYHING: We have no objection
11 to either.

12 HEARING OFFICER WEBB: Agency's
13 Exhibit's 2 and 3 are admitted.

14 BY MR. GRADELESS:

15 Q. Mr. Koch, can you actually us about
16 Exhibit 3 with respect to what happened in the
17 biomonitoring test results?

18 A. Okay. So it looks like in 2012 they
19 had a more significant toxicity event. If you
20 look at the January 25th, 2012, test result the
21 ceriodaphnia result had an LC50 of --

22 MS. WEYHING: We object to any
23 testimony from the document. The witness is
24 testifying from the document. Additionally,

1 Hearing Officer Webb, there was no pre-filed
2 technical testimony. So to the extent that the
3 witness is going to testify about this document,
4 fine, but if there is going to be any remarks made
5 beyond the contents of these reports, that's
6 technical testimony that was not pre-filed with
7 the Hearing Officer or the Board.

8 HEARING OFFICER WEBB: Well, the
9 pre-filed testimony is really for the Board to
10 develop questions. It's not intended for the
11 party's use. Although, I know that -- I'm sure
12 that's probably what happens, but I -- I can't
13 exclude relevant testimony because it was not
14 pre-filed, but having said that I was taking notes
15 and I didn't hear your question anyway. I'm
16 sorry.

17 MR. GRADELESS: I don't remember my
18 question.

19 HEARING OFFICER WEBB: I'm sorry.

20 MR. GRADELESS: I'm sure it was
21 good.

22 (Whereupon, the record was read
23 as requested.)

24 HEARING OFFICER WEBB: I'm going to

1 allow the question.

2 MS. WEYHING: We don't have any
3 problem with refreshing the witness' recollection,
4 the problem would be testifying from the document.

5 HEARING OFFICER WEBB: I'm not sure
6 what you mean.

7 MS. WEYHING: If counsel for
8 Illinois EPA can refresh the witness' recollection
9 using the document, I don't have an objection to
10 that.

11 HEARING OFFICER WEBB: Mm-hmm.

12 MS. WEYHING: The problem was that
13 the witness was reading from the document in their
14 testimony. So they were testifying directly from
15 the document.

16 MR. GRADELESS: It's already been
17 admitted. He is not testifying to anything new.
18 He's now in public health and may not fully --

19 THE WITNESS: I don't need the
20 document.

21 HEARING OFFICER WEBB: That solves
22 that problem, I guess.

23 MR. GRADELESS: Go for it.

24

1 BY THE WITNESS:

2 A. So in 2015 -- the difference in 2015
3 versus 2012, in 2015 there are some additional
4 test results that came back that showed what
5 appeared to be greater mortality, a greater amount
6 of toxicity in one of the tests, and what happened
7 is the lowest dilution series in the test is 6.25%
8 dilution series had complete mortality. Because
9 of that --

10 BY MR. GRADELESS:

11 Q. **Hold on, Brian. I need you to back**
12 **up a hair.**

13 A. I'm sorry.

14 Q. **I'm not that smart. So can you tell**
15 **us what you mean by the LC50 value?**

16 A. Lethal concentration to 50% of
17 organisms. So it's a concentration of effluent
18 that kills 50% of the test organisms.

19 Q. **Okay. And then what were you**
20 **saying?**

21 A. The tests that the facility
22 conducted used a standard solution series of 100%
23 effluent, 50% effluent mixed with 50% lab water,
24 25% effluent with 75% lab water, 12.5% effluent

1 and 6.25% effluent. The reason why the dilution
2 series is bracketed in that manner is because
3 most -- most often toxicity arrives somewhere
4 between 6.25% and 100% of the effluent
5 concentration.

6 In this case, toxicity occurred
7 in every treatment so much that we could not
8 determine what the actual LC50 value would be as
9 far as percent effluent goes because the 6.25%
10 effluent treatment had complete mortality.

11 **Q. Now, is that related to this**
12 **conductivity that you mentioned?**

13 A. I can't say if it is or isn't. All
14 I know is that --

15 **Q. What is meant by conductivity?**

16 A. Conductivity is a measure --
17 relative measure of total dissolved solids. I
18 believe the facility had -- somebody mentioned
19 they averaged around 10,000 with total dissolved
20 solids and total dissolved solids is comprised of
21 different parameters. The primary ones would be
22 hardness, sulfate and chloride all of which can be
23 toxic to aquatic life. With the two test
24 organisms that the facility was utilizing

1 ceriodaphnia, which is a fresh water invertebrate,
2 that would be the more sensitive of the two
3 organisms to conductivity.

4 **Q. And how is that relevant in your**
5 **analysis here of the biomonitoring?**

6 A. Well, the organism that experienced
7 an LC50 value that was incalculable because it was
8 less than 6.25% was ceriodaphnia and from what I
9 can recall, the test result -- the water quality
10 collected during that test had, you know, normal
11 ammonia for the facility, but also high
12 conductivity. So it's hard to determine exactly
13 what the LC50 value was and how high -- what was
14 in the conductivity. That, we don't know.

15 **Q. Okay. So what, if anything, did you**
16 **do with respect to -- after you learned this**
17 **information?**

18 A. Well, at that point, when I made the
19 recommendation to the permit section, which I
20 believe was Mark Liska, I revised the dilution
21 series. So it would bracket, if you will, the
22 in-stream waste concentration which is the
23 concentration that this facility is authorized via
24 their zone of initial dilution. That was equated

1 to about 2.1% effluent. So I revised the dilution
2 series so there were treatments both above and
3 below 2.1% effluent.

4 Q. Now, in your recommendation here,
5 you mentioned that the facility has been granted
6 new IPCB relief AS 13-02 which allows a daily
7 maximum of 140 mg/L total ammonia-nitrogen.

8 Why did you recommend that in
9 your recommendation?

10 A. I mentioned that because the
11 facility essentially is authorized to have
12 toxicity in their biomonitoring results providing
13 it is from total ammonia and I just wanted to
14 identify what the limit is so if a test result
15 came in that had an excursion of that total
16 ammonia value, I could notify the compliance
17 assurance section.

18 Q. You said given the extremely high
19 ammonia concentration in the effluent, testing of
20 100% and 50% effluent treatments will nearly
21 always be toxic to test organisms, what does that
22 mean?

23 A. That means there will be complete
24 mortality in both the 100% treatment and 50%

1 treatment. I believe that typically occurred with
2 both organisms; ceriodaphnia dubia and fathead
3 minnow.

4 **Q. You had been there for 14 years, is**
5 **that right?**

6 A. Almost nearly 14 years.

7 **Q. Okay. How does this compare to**
8 **other streams that you've seen?**

9 A. I believe this may be the only
10 facility that I developed a new dilution series to
11 bracket where the level of effect was occurring.
12 There may have been some other facilities that had
13 toxicity that were less than 6.25%. I know there
14 is one that comes to mind, but I actually believe
15 they were doing the test wrong. I think they were
16 taking their effluent sample in a wrong location.
17 I can't verify that. I'm no longer with the
18 Agency. I can't go back and look through the
19 records. But, with that said, this is a -- it's a
20 unique case I would say in regards to the
21 biomonitoring program at Illinois EPA.

22 **Q. When you said you had to re-do the**
23 **dilution series, how is that relevant? I don't**
24 **understand.**

1 A. Well, again, the test results from
2 2012 all we know is that greater than 50% of the
3 organisms died in the 6.25% treatment. So,
4 technically, the effluent could have an LC50 of 1%
5 effluent, 0.01%, 3% effluent. We just don't know
6 what it is because it was impossible to calculate
7 statistically based on that dilution series.

8 **Q. Are you able to see what other**
9 **constituents are coming out of the waste stream?**

10 A. When observing the test results, you
11 get common water quality parameters such as pH,
12 temperature, conductivity, ammonia in this case.
13 What I gather from this facility is that the
14 toxicity was due to ammonia as well as potentially
15 conductivity, although I was not sure what
16 parameter that would be whether it be chloride or
17 sulfate.

18 **Q. You also mentioned ZID, can you tell**
19 **us what that is?**

20 A. ZID stands for zone of initial
21 dilution. I'm not -- I'm not the person who
22 actually calculates those for the Agency -- I
23 wasn't in the past, but essentially what it is
24 it's a -- it's a regulatory construct that allows

1 a facility to exceed a standard in a defined area.
2 So they can have a plume of water that is
3 essentially toxic to -- within a defined boundary
4 following of which they have to meet standards.

5 **Q. Brian, can you describe the toxicity**
6 **of the effluent in -- can you describe it?**

7 MS. WEYHING: Objection. That's
8 speculation.

9 BY MR. GRADELESS:

10 **Q. If you know, can you describe it.**

11 A. Can you please clarify the question?

12 HEARING OFFICER WEBB: Yeah.

13 BY MR. GRADELESS:

14 **Q. In layman's terms, can you describe**
15 **the toxicity of the effluent?**

16 MS. WEYHING: Objection. I still
17 think that's speculative. It's calling for
18 speculation.

19 HEARING OFFICER WEBB: You can
20 answer, if you know.

21 BY THE WITNESS:

22 A. I can answer. The facility has
23 essentially a maximum limit of 2.1% effluent as
24 the LC50 value. There is no evidence that they

1 have exceeded that and by exceeded I mean had a
2 lower LC50 value of 2.1.

3 All we know is that they had one
4 that was less than 6.25% effluent. That's why we
5 recalculated the dilution series. What that 2.1%
6 LC50 means is that if you were to conduct a test
7 on this effluent, they would be authorized to have
8 a sample of 2.1% effluent and 97.9% control water,
9 mix the two solutions together and that would kill
10 half the organisms.

11 **Q. Okay.**

12 MR. GRADELESS: I have nothing
13 further.

14 HEARING OFFICER WEBB: Okay. Let's
15 stop for a moment.

16 (Whereupon, a discussion was had
17 off the record.)

18 HEARING OFFICER WEBB: Let's go back
19 on the record. We are back with
20 cross-examination.

21 C R O S S E X A M I N A T I O N

22 BY MS. WEYHING:

23 **Q. So you prepared the October 23rd,**
24 **2012, toxicity memorandum regarding the Henry**

1 **plant, correct?**

2 A. Correct.

3 **Q. And that's Exhibit 2, correct?**

4 A. Correct.

5 **Q. That memorandum was based on a**
6 **review of Emerald's Whole Effluent Toxicity test**
7 **reports that were submitted to the Agency,**
8 **correct?**

9 A. Correct.

10 **Q. Those reports didn't indicate that**
11 **Emerald had violated a permit term, right?**

12 A. Correct.

13 **Q. You didn't tell anyone at compliance**
14 **assurance or otherwise that Emerald had violated a**
15 **permit term, right?**

16 A. I want to clarify. That was -- the
17 January 2012 test result was in that series of
18 tests where it may have exceeded it, but we did
19 not know. It was at that point that I decided I
20 needed to have a different dilution series, but,
21 no, I did not reach out to the compliance
22 assurance section.

23 What I did was I looked at the
24 total ammonia value in that test and it was 72.2

1 mg/L, which was within their Board-authorized
2 adjusted standard.

3 Q. Okay. And you did testify a few
4 moments ago that there was a less than 6.25%
5 figure in one of the WET reports, correct?

6 A. Correct.

7 Q. Are you aware that the Board
8 previously asked Emerald a question about that in
9 the AS 13-2 proceeding?

10 A. Can you restate that, please?

11 Q. You're aware that there was an
12 adjusted standard 13-2 proceeding related to the
13 Henry plant, correct?

14 A. Yes.

15 Q. Are you aware that the Board in that
16 proceeding asked Emerald a question about the less
17 than 6.25% test result?

18 A. I'm unaware of that.

19 Q. Okay. And are you aware that
20 Emerald responded to that question in writing?

21 A. I'm unaware.

22 Q. Have any of Emerald's subsequent WET
23 test reports had a less than number attached to
24 them?

1 A. I don't believe so.

2 **Q. Okay. You also prepared a June**
3 **16th, 2015, toxicity memorandum, correct?**

4 A. Correct.

5 **Q. That memorandum and the data relied**
6 **on does not indicate that Emerald had violated a**
7 **permit term, correct?**

8 A. The 2015 test review also included
9 the 2012 result that had the less than 6.25%. So
10 it's still suggesting that we need to better
11 define the dilution series so we can actually
12 capture how toxic it was. I can't say if that did
13 or did not violate the 2.1% effluent limit at that
14 time.

15 **Q. Okay. But, again, you didn't tell**
16 **anyone that you thought it had violated a permit**
17 **term in --**

18 A. Correct.

19 **Q. -- 2015?**

20 A. Correct.

21 **Q. And in that memorandum, you wrote**
22 **that the CORMIX ZID analysis on this facility**
23 **determined that the facility has a dilution**
24 **allowance of 47.91, which equates to an effluent**

1 **concentration of 2.1%?**

2 A. Correct.

3 **Q. You calculated the 2.1% figure based**
4 **on mixing at the edge of the zone of initial**
5 **dilution, right?**

6 A. I took the inverse of 47.9 and that
7 was what gives you 2.1%.

8 **Q. And was that calculated based on**
9 **mixing at the edge of the zone of initial**
10 **dilution?**

11 A. I can't describe exactly what the
12 47.9 to 1 equated to. I did not do that
13 calculation.

14 **Q. The 2.1% figure that was the basis**
15 **for your drafting of a permit term for Emerald**
16 **that required further testing only if the acute**
17 **LC50 was less than 2.1%, right?**

18 A. Correct. Well, can I clarify?

19 **Q. Of course.**

20 A. I believe it was if you -- if there
21 was less than 2.1% -- can I reread the results or
22 no? I can't read that, can I?

23 **Q. If you need to, that's fine.**

24 MR. DIMOND: If you need to refresh

1 your recollection, that's fine.

2 BY THE WITNESS:

3 A. If the test result had an LC50 of
4 less than 2.1% and ammonia was not above the
5 adjusted standard, then the Illinois EPA would
6 have liked the facility to do a Toxicity
7 Identification Evaluation. That was essentially
8 the trigger for doing the more testing to
9 determine what is the tox scan.

10 We know it's not ammonia because
11 ammonia was lower. It could have been
12 conductivity, it could have been something else,
13 but that was a trigger for additional evaluation
14 of a toxicity.

15 BY MS. WEYHING:

16 Q. Okay. But that permit term
17 basically meant that if the LC50 was measured to
18 be less than 2.1%, then the effluent wasn't toxic
19 at the edge of the zone of initial dilution,
20 right?

21 A. Restate that, please, or repeat, I
22 guess, if you will.

23 Q. Yeah. So you drafted a permit term,
24 right --

1 A. Correct.

2 Q. -- for Emerald that required further
3 testing only if the acute LC50 was less than 2.1%,
4 right?

5 A. Correct.

6 Q. That permit term means if the LC50
7 is measured to be less than 2.1%, then the
8 effluent is not considered toxic, right?

9 A. If the LC50 is greater than 2.1%.

10 Q. My apologies. That's my mistake.

11 Okay. So if it's greater than,
12 it's not considered toxic?

13 A. Within the ZID, confinement of the
14 ZID. Once it surpasses a ZID, it would not be
15 toxic.

16 Q. Okay. Mr. Koch, did you testify
17 that the less than 6.25% was for the ceriodaphnia?

18 A. That's what the report says, yes.

19 Q. Okay. If I can refer you to
20 Petitioner's Hearing Exhibit 8, let me hand you
21 this binder.

22 MR. DIMOND: Use that one.

23 BY MS. WEYHING:

24 Q. If you can turn to Tab 8 for me,

1 please.

2 A. Okay.

3 Q. This has previously been identified
4 and admitted as Petitioner's Hearing Exhibit 8.
5 And I'm looking at the page that is Bates marked
6 EP002892. Can you turn there, please.

7 A. Repeat that number again. EP00- --

8 Q. 2892.

9 MS. WEYHING: We're in Petitioner's
10 Hearing Exhibit 8 EP002892.

11 MR. GRADELESS: Thank you.

12 MS. WEYHING: Are you with us?

13 MR. GRADELESS: Yes.

14 BY MS. WEYHING:

15 Q. Do you see where I'm referring you
16 to?

17 A. Yes, I see that was a transcription
18 error.

19 Q. So was the less than 6.25% for
20 ceriodaphnia or was it for the minnow?

21 A. Minnow.

22 Q. Okay.

23 A. My apologies on that.

24 Q. All right. I apologize. Just a

1 couple more questions.

2 For clarification, the Agency
3 doesn't establish LC50 numbers for inside the zone
4 of initial dilution, right?

5 A. Correct.

6 Q. Why not?

7 A. I guess I can't -- I may not have an
8 answer for that. I don't calculate ZID's. In
9 this instance, the ZID was 47.9. Maybe I just
10 don't know what you're getting at.

11 Maybe can you rephrase that?

12 Q. So I guess what I'm getting at is
13 can an organism stay within a ZID or is mixing too
14 strong for them to remain there?

15 A. Mixing as far as toxicant, the
16 amount of toxicant present?

17 Q. Yes.

18 A. Within the --

19 Q. No, mixing in terms of physical
20 mixing out of -- mixing in terms of physical
21 mixing.

22 A. I don't know if the ZID takes into
23 account physical mixing in regards to toxicity.
24 It's all based on the concentration within the ZID

1 and outside of the ZID.

2 **Q. Okay.**

3 MS. WEYHING: Okay. Thank you. No
4 further questions.

5 HEARING OFFICER WEBB: Anything
6 further from the Agency?

7 MR. GRADELESS: Nothing from the
8 Agency at this point.

9 HEARING OFFICER WEBB: Mr. Rao?

10 MR. RAO: No.

11 HEARING OFFICER WEBB: Okay. Thank
12 you very much. Okay. It is 4:30 p.m. and we will
13 reconvene tomorrow morning. Officially the
14 building does not open until 8:30. So I can set
15 the starting time at 9:00, but if everybody can be
16 here as close to 8:30 as possible, we can pick
17 up -- we can start early.

18 Do you know how many people you
19 plan to call tomorrow?

20 MR. GRADELESS: Two for sure, but
21 probably three.

22 HEARING OFFICER WEBB: Okay. Okay.
23 All right. So if there is nothing else, we will
24 go off the record and continue tomorrow morning.

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Thank you.

1 BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

2
3 I, Steven Brickey, Certified Shorthand
4 Reporter, do hereby certify that I reported in
5 shorthand the proceedings had at the trial
6 aforesaid, and that the foregoing is a true,
7 complete and correct transcript of the proceedings
8 of said trial as appears from my stenographic
9 notes so taken and transcribed under my personal
10 direction.

11 Witness my official signature in and for
12 Cook County, Illinois, on this _____ day of
13 _____, A.D., 2020.

14
15
16
17
18 _____
19 STEVEN BRICKEY, CSR
20 8 West Monroe Street
21 Suite 2007
22 Chicago, Illinois 60603
23 Phone: (312) 419-9292
24 CSR No. 084-004675

<p style="text-align: center;">A</p> <p>A.D 330:13 a.m 1:10 6:13 AAC 137:10 AACE 137:4,11 178:10 179:20 180:14 195:14 198:10 199:4,24 200:14 215:2 225:14 282:8 abbreviated 33:3 ability 62:2 193:20 231:7 244:23 266:21 269:23 270:16 279:21 able 18:22 32:10 46:12,16,17,21 49:19 65:2 68:17 80:20 86:6,16 106:8 110:16 137:2 145:14 149:1 150:12 153:3 154:13 161:12 161:18 180:22 191:21 208:15 220:3 226:24 232:24 252:3 273:20 275:11 279:24 289:22 317:8 absence 65:17 absent 252:13 305:2 absolutely 51:19 95:2 accelerate 131:19 accept 105:17 246:12 acceptable 115:24 116:14 117:3 154:24 accepted 11:6 12:8 136:13</p>	<p>access 271:1,20 302:14 accolades 156:3 accommodate 154:13 233:9 accomplish 168:2 accomplished 168:5 account 201:5 205:13 206:7 285:12 327:23 accountant 96:10 accountants 301:23 accounting 38:11 93:14,14 95:22 96:9 304:7,22 accuracy 138:4,11 179:4,23 180:12 180:14,15 195:15 219:22 accurate 28:4 109:3 126:2 167:5 179:19 183:11 216:1 295:13 308:17 accurately 129:22 130:7,10 achievable 167:18 achieve 45:1 46:12 56:3 70:18 74:5 86:10 87:9 101:13 110:13 133:4,21,23 135:1,3 139:8 146:22,23 161:19 173:23 174:1 185:19 194:8,12,23 209:5 231:20 262:23 263:19 273:20 achieved 90:22 91:2 262:20</p>	<p>achieving 44:13 104:6 150:14 161:13,24 192:9 192:15 acreage 135:5 acres 171:23 172:21 173:1 176:9 184:10 acronym 254:20 acronyms 137:9 act 6:23 267:17 272:13 274:6 action 267:3 activated 27:6 30:2 72:24 73:9 73:13 80:22 111:6 112:21 228:11 active 72:15 112:13 activities 105:10 269:11 289:4 activity 65:5 111:23 227:18 270:5 actual 45:23 92:21 139:15 175:15 217:14 273:1 289:17 290:13 291:3 313:8 acute 323:16 325:3 adaptable 106:6 add 76:24 139:13 150:9 153:24 177:6 224:9 251:19,21 252:3 added 156:17 177:5 184:8,16 190:14 224:10 230:24 231:11 257:9 264:14 adding 223:6 224:7</p>	<p>addition 167:21 190:3 222:16 223:15 232:11 244:15 259:6 303:17 additional 114:21 115:6 147:5 167:20,21 191:3 206:5 229:21 256:11 259:8 302:7 312:3 324:13 Additionally 190:6 191:24 256:9 270:18 297:9 309:24 additions 189:20 additives 1:5 2:16 6:4 7:7,9 53:5 302:24 303:5 304:4 306:19 address 68:7 134:23 171:21 174:11 175:24 176:7,7 219:7 266:14 addressed 219:9 255:6 addresses 105:22 addressing 196:8 adequate 231:19 adequately 266:14 adjust 223:13 adjusted 1:4,5 6:5 18:11,11 51:16 52:10,11 69:10 90:19 94:9 105:3,15 117:18 161:17 163:8 164:5 170:14 175:21 177:1 211:11 252:13 252:16,20 267:13,16</p>	<p>307:21 309:3 321:2,12 324:5 Adm 1:6 6:6 7:1 administer 269:1 administration 189:24 admissibility 297:11 302:11 302:12 admission 10:5 12:21 16:24 18:14 21:13 25:4 26:7 35:2,3 299:5 admit 10:15 12:3 12:5,13 127:8 128:20 130:14 203:20 288:1 291:17 295:15 295:21 296:2 302:17 305:5 admitted 10:8 14:3 15:1 17:3 20:6,14 22:1 25:8 26:11 126:10 127:22 128:23 130:18 167:12 171:12 175:14 183:21 186:9 188:11 198:23 204:9 225:5 297:5 299:22 301:6,8 301:18 303:20 309:13 311:17 326:4 admitting 13:21 20:5 263:3 303:14 adopting 274:15 advance 275:5 276:16 Advancement 137:12 178:3,9 195:13</p>
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