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 15th day of January, 2020, commencing at the hour of 8:36 a.m.

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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Appeared on behalf of Emerald Polymer Additives;

I N D E X

E X H I B I T S

HEARING OFFICER WEBB: Good morning. My name is Carol Webb and this is the continuation of the hearing for AS 19-2: Petition of Emerald Polymer Additives for an Adjusted Standard from the Total Ammonia-Nitrogen Effluent Standard in 35 Ill. Adm. Code 304.122(b). It is January 15th, 2020, and we are beginning at approximately 8:40 a.m. I do want to mention that we did have one member of the public join us yesterday and he will be joining us later today to make a public comment. Okay. We are -- let's pick up where we left off.

Is the Agency ready to call its next witness?

MR. GRADELESS: Yes, your Honor. The Agency calls Scott Twait.

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

WHEREUPON:

SCOTT TWAIT

called as a witness herein, having been first duly sworn, deposeth and saith as follows:

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

BY MR. GRADELESS:

Q. Can you please state your name for the record.

A. Scott Twait.

Q. And, Mr. Twait, by whom are you employed?

A. Illinois EPA.

Q. And what is your position with the Illinois EPA?

A. I'm a manager for the water quality standards section.

Q. And how long have you been a manager for the water qualities section -- standards section?

A. I think it's been almost two years.

Q. And what is your educational background?

A. I've got a BS in Civil Engineering from the University of Illinois.

Q. And tell me about how many employees you supervise.

A. Currently, two employees plus an intern.

Q. And what are your job responsibilities at the Illinois EPA?

A. We propose water quality standards, derive criteria and participate in Board hearings and write memos to help the permit section develop limits for their permits.

Q. Okay. And how are you involved in today's case?

A. I reviewed the adjusted standard petition.

Q. Okay. And you were part of a group at the Agency, if I may, is that correct?

A. Yes.

Q. And that group is responsible for the recommendation in this case?

A. Yes.

Q. What did you review with respect to this case?

A. I reviewed the adjusted standard, their annual reports.

Q. When you say their annual reports --

A. Emerald's -- Emerald's annual reports.

Q. Okay. Did you review any DMR's?

A. I reviewed the DMR's.

Q. Okay.

A. I looked over my water quality memo from 2015 and I'll also note that I worked on the review of the mixing zone and ZID back in the early 2000's.

Q. You also conducted a reasonable potential analysis, is that right?

A. Yes.

MR. DIMOND: Objection. Leading.

BY THE WITNESS:

A. In 2015.

HEARING OFFICER WEBB: For efficiency, do you mind if -- I think it will just be more efficient if he leads. Go ahead.

MR. GRADELESS: Okay.

BY MR. GRADELESS:

Q. As a part of your review, Mr. Twait, you had an opportunity to review the April 17th, 2018, report submitted by Emerald Polymer Additives to the Agency?

A. Yes.

Q. And, specifically, directing your attention to the river water dilution alternative,

what, if any, thoughts did you have with respect to what was analyzed in that case?

A. Well, they looked at diluting the MBT in their process so that they get nitrification. One of the things they noted was that during the wintertime they had to add additional heat to the incoming river water to satisfy the microorganisms in the treatment facility.

One of the things that they didn't look at was just doing it during the summertime wherein all the additional heat wouldn't need to be added. I think they still need to add heat, just not nearly as much. So in that respect, I don't think that they looked at a partial treatment to reduce ammonia.

Q. And are you familiar with any cases where partial seasonal field application -- I'm sorry -- river water dilution has occurred?

A. I don't believe so.

Q. Okay.

A. I'm not trying to say that it would work or not. It's just they were looking at an all or nothing type treatment, either they can do

it all year or they can just not do it.

Q. Okay. So you're saying you wanted it to be analyzed, is that what you're saying?

A. Yeah, I think it's worth while to get incremental improvements in the treatment whether that's six months out of the year or a partial treatment at the end.

MR. GRADELESS: Do we have Petitioner's Exhibit 13 we can show the witness? I think it's the DMR's.

MS. WEYHING: We have a witness binder.

MR. GRADELESS: That will work. Sure.

BY MR. GRADELESS:

Q. Mr. Twait, I'd like to direct your attention to what has been entered into evidence as Petitioner's Exhibit 13. And it's already in evidence, but those are the petitioner's DMR's, is that your understanding as well?

A. This looks like the individual data for developing the DMR's, yes.

Q. How about this, Mr. Twait --

MR. GRADELESS: Let the record

reflect I'm showing Mr. Twait what has been previously identified as State's Exhibit 7 and if counsel can tell me that it's already in evidence, that's fine. I just don't know.

(Document marked as State's Exhibit No. 7 for identification.)

BY MR. GRADELESS:

Q. Mr. Twait, what have I just handed to you that has been identified as State's Exhibit 7?

A. This is the DMR data that I downloaded.

Q. Okay. And that's the data from the petitioner?

A. Yes, from Emerald Performance -- or Emerald Polymer Additives.

Q. And is this the data that you reviewed in helping the Agency reach its recommendation in this case?

A. Yes.

Q. Is it a fair and accurate copy of when you last saw this data?

A. Yes.

Q. And this is the data that was submitted from the petitioner to the State of Illinois, is that correct?

A. Yes.

Q. Okay.

MR. GRADELESS: At this time, the State moves into evidence State's Exhibit 7.

MR. DIMOND: I just have a couple of questions about the foundation of it.

Do you want me to ask them now or later?

HEARING OFFICER WEBB: Now.

MR. DIMOND: Mr. Twait, the data that is reflected on Exhibit 7, did this come out of an Illinois EPA managed database?

THE WITNESS: It came out of ISIS, yes.

MR. DIMOND: What is ISIS?

THE WITNESS: I'm trying to remember what the acronym is.

MR. DIMOND: I'm not so much interested --

THE WITNESS: It's --

MR. DIMOND: -- in what the acronym

is.

THE WITNESS: I'm sorry. It's our database that holds the DMR data that the petitioner has submitted.

MR. DIMOND: Okay. Does -- does someone from Illinois EPA key the information into the database?

THE WITNESS: My understanding is they do not.

MR. DIMOND: How does the information get into the database?

MS. ZEIVEL: I believe the discharger enters it electronically.

MR. DIMOND: If that's -- so when you say you believe the discharger enters it electronically, is that the case today?

THE WITNESS: Yes.

MR. DIMOND: Was that historically the case before the Agency started having DMR data submitted electronically?

THE WITNESS: No.

MR. DIMOND: Before the Agency started having data submitted electronically, how was the data put into the database?

THE WITNESS: I believe it was keyed in, but I'm -- I'm definitely not an expert at how they handled the data.

MR. DIMOND: Okay. When you say it was keyed in, by whom was it keyed in?

THE WITNESS: I believe paper copies came into the Agency, but I don't know who would key it in.

MR. DIMOND: Would it have been an Agency employee?

THE WITNESS: Yes.

MR. DIMOND: Can you tell us what time period is reflected in the data that is reflected in Exhibit 7?

THE WITNESS: October 16th to 2019, I believe.

MR. DIMOND: I'm sorry. Did you mean October 2016 to November 2019?

THE WITNESS: October 16th to November of 2019.

MR. DIMOND: I'm confused as to whether you're saying October 16th or October 2016.

THE WITNESS: Oh, October 2016.

MR. DIMOND: Okay. And how can you determine it's October 2016 to November 2019?

THE WITNESS: The dates are included.

HEARING OFFICER WEBB: I have a question.

On my copy, the first entry is from May of 2016, is that correct?

MR. GRADELESS: Fourth column.

MR. RAO: The back page it goes up to May.

MR. GRADELESS: April 30th, 2016. The very last -- back of that last page there's a sneaky, tricky one there.

HEARING OFFICER WEBB: Oh, okay. April 2016. Okay.

MR. DIMOND: I don't even see where the April 2016 is.

HEARING OFFICER WEBB: You think there's nothing on the back page, but there's one little line.

MR. DIMOND: By Jove, you're right. So in this Exhibit 7, is this organized so that all the supposedly reported data for a particular

parameter, and I'm using parameter because that's a column title, is grouped together?

THE WITNESS: Yes, and also the outfall is grouped -- the outfalls are grouped together.

MR. DIMOND: So which column -- help me. Which column would be the outfall?

THE WITNESS: It would be the limit set and on the first page that's 001-0.

MR. DIMOND: Okay. So -- so if I look at Page's 1 and 2 and 3, those are all for limit set or what you're calling outfall 001-0?

THE WITNESS: Yes.

MR. DIMOND: Then that continues onto Page 4 and then it switches over to limit set or outfall A010?

THE WITNESS: Yes.

MR. DIMOND: And within each outfall, then it's grouped by the parameter?

THE WITNESS: Yes.

MR. DIMOND: I guess the A01-0 continues for several pages and eventually flips over to A01-A.

THE WITNESS: Yes.

MR. DIMOND: Since these pages aren't paginated, I can't -- it's not easy to give you a page number, but, Mr. Twait, I'm looking at a copy of the Emerald facilities current NPDES permit that was attached to the petition and it indicates that there is an outfall A01 and an outfall -- an outfall B01, but I don't see any reference to an outfall 001-0, can you explain that discrepancy?

THE WITNESS: The outfall A01 is the outfall and dash 0 is an indicator that it's monthly data. The dash -- the A01-A is an annual data. They have some metals and other parameters that they have to take annually.

MR. DIMOND: Okay. So when we get to the -- we get to the end of the A01-A, there are some values with a limit set column that says A01-Q, are those outfall A01, but quarterly?

THE WITNESS: Yes.

MR. DIMOND: Then after the A01-Q, there are several entries that are B01-O or, I guess, 0?

THE WITNESS: 0.

MR. DIMOND: So those would be daily

values?

THE WITNESS: Those would be the monthly reports.

MR. DIMOND: The monthly reports. I'm sorry. Okay. So thank you for that. I actually asked a slightly different question.

So on the Page's 1, 2 -- 1, 2, 3 and starting onto Page 4, the limit set column says 001-0. What I'm wondering is how does that correspond to the information in the NPDES permit that identifies the outfalls as A01 and B01?

THE WITNESS: 001 I believe is the combined effluent of A01 and B01.

MR. DIMOND: Okay. So the only -- the only parameters that are reported for the limit set 001-0 are the total nitrogen and the ammonia-nitrogen, is that -- and I guess flow, is that correct?

THE WITNESS: Yes.

MR. DIMOND: Okay. I think that's the questions I have for Mr. Twait.

Hearing officer, if I can ask counsel for the Agency, you sent us a document a week ago that you indicated -- I think you

indicated you were going to make a hearing exhibit. When I attempted to print it out, it looked a little different than this. It may be the same thing, but it's just hard for me to tell. Is this the same thing you e-mailed to me?

MR. GRADELESS: I can explain that. Mr. Twait helped me print it out so we could read it better.

MR. DIMOND: Because I had a very hard time reading it --

MR. GRADELESS: I did, too.

MR. DIMOND: -- when I printed it out. I even put on my cheater glasses --

MR. GRADELESS: I'm sorry for that.

MR. DIMOND: -- and I still couldn't read it, but this is the same -- it's the same data?

MR. GRADELESS: Yes.

MR. DIMOND: We don't have any objection.

HEARING OFFICER WEBB: Okay. The Agency's Exhibit 7 is admitted.

BY MR. GRADELESS:

Q. Now, Mr. Twait, I understand that one aspect of the Agency recommendation is complete denial of this adjusted standard. However, the Agency has also in Paragraph 1 of its recommendation recommended that "Due to the changes within petitioner's processes in the fall of 2018 and taking the highest values within the petitioner's DMR between September 2018 and May 2019, any adjusted standard, if granted by the Board, should not exceed the daily maximum of 110 mg/L and no more than 553 pounds per day. The petitioner's 30-day average should not exceed 89.9 mg/L and no more than 475 pounds per day."

There's a footnote that says, "This should only serve as a ceiling for any adjusted standard granted by the Board and not be construed as the Agency changing its previous positions that a lower standard is more appropriate to compel the petitioner to eventually act." And then it goes on "Notably, petitioner's averages are much lower than the maximum. Therefore, the Board should consider that fact when evaluating the appropriateness of any

adjusted standard."

Were you responsible for these, assisting in that portion of the recommendation?

A. Yes.

Q. Now, did the petitioner submit to you any analysis of what would be an appropriate limit in this case?

A. In their petition, they put in what they thought was appropriate.

Q. And that's what they -- their current standard, is that correct --

A. Yes.

Q. -- in their petition at least?

Okay. Did they provide you with any kind of analysis for any other basis for any other numbers?

A. I don't believe so.

Q. Okay. And when you helped create these -- sort of the ceiling you reviewed -- you used the DMR's, is that correct?

A. Yes.

Q. Can you explain how we looked at the DMR's?

A. The concentration three is the daily

maximum that is reported on the monthly DMR. Concentration two is the monthly average.

MR. DIMOND: Your Honor, Hearing Officer Webb, I don't understand what he means by concentration three and concentration two.

HEARING OFFICER WEBB: Can we clarify?

MR. GRADELESS: We can clarify, yeah.

BY MR. GRADELESS:

Q. Tell us --

A. The column that is listed under concentration three --

Q. Okay.

A. -- is the daily maximum.

Q. In mg/L?

A. In mg/L.

Q. Okay.

A. The column concentration two is also in mg/L and it is a monthly average. The quantity two column is the daily maximum loadings in pounds per day and quantity one is the monthly average loading in pounds per day and what I did was since they identified September 2018 as when they did

something to reduce the MBT and the MBTS system --

Q. Is it fair to say in one of their processes?

A. In one of their processes.

MR. DIMOND: Objection. Foundation.

MR. GRADELESS: I can try to help.

HEARING OFFICER WEBB: All right.

BY MR. GRADELESS:

Q. Mr. Twait, it was your understanding that the petitioner had made some kind of process change in their facility between September 20 -- starting September 2018, is that correct?

A. Yes.

Q. And after September 2018, you noticed drops in the DMR's?

A. Yes.

Q. Can you tell us about those?

A. In September, October and November, they were each at 110 mg/L. From there, it dropped -- for the next four months dropped into the 90s, 70 and 80, and then it went down 17, back up to 60 between 60s and 70s for three months, and then has dropped down again to 16 and 39 as daily maximums.

Q. Okay. Was there anything else that was considered when you looked at the pounds per day or making this recommendation that you can think of?

A. Yeah, we noticed the same -- same pattern for the monthly averages going down and as well as the loading to the river.

Q. Okay. Have you seen -- so with respect to this sort of ceiling type of recommendation, have you seen limits in your experience in your 14 years -- 14 years at the Agency?

A. I have been there 23.

Q. Okay.

A. Twenty-three years.

Q. In your experience of 23 years at the Agency, have you seen levels -- limits set for ammonia at 110 mg/L?

A. No.

MR. DIMOND: Objection. Foundation.

HEARING OFFICER WEBB: I'm not sure what kind of foundation you're --

MR. DIMOND: There is no --

HEARING OFFICER WEBB: Oh, of what

he looked at?

MR. DIMOND: Well, there is no evidence of what he looked at or what sources Mr. Gradeless is asking him about and there is no foundation for -- he works in the water quality section. He doesn't write permits. It's not clear how he would have a foundation to know what ammonia limits are set for other entities.

HEARING OFFICER WEBB: Well, I think it's a general question. Is there anything we can elaborate on with respect to --

BY MR. GRADELESS:

Q. Scott, have you ever seen an ammonia limit ever, whatsoever, in your 23 years in any level?

A. I have not and we do as part of our helping set permit limits for the permit section as we look at the ammonia water quality standard and develop water quality standards for the permit section.

Q. Okay. I want to direct your attention now to the third recommendation from the Illinois EPA. It is mentioned that "Incentives for compliance should be the hallmark of any

adjusted standard brought by the Board. An interim standard should require petitioner to always provide or seek to provide incremental reductions even when it may fail to meet the prescribed 3 milligrams per limit in Section 304.122." Why was that recommended?

MR. DIMOND: This is described as the third recommendation -- is this actually number two?

MR. GRADELESS: Paragraph 3.

MR. DIMOND: Are you reading from the recommendation? Okay. I'm sorry. You are reading from No. 3. I apologize.

BY THE WITNESS:

A. Yeah, we -- we believe that when the Board gives an adjusted standard, the petitioner should be working towards compliance and, you know, they may not be able to get there in the next five years, but they should be working towards reductions.

BY MR. GRADELESS:

Q. Additionally, the Agency recommends in 3B "Petitioner must provide the Agency with its financial balance sheets each fiscal year

following the Board's order and shareholders reports, a financial breakdown of petitioner's expenses following the Board's order and the projected annual operation maintenance cost of each fiscal year following the Board's order."

What is the basis or reasoning for obtaining that kind of information?

A. The basis for that is to develop some information so that the Board can make a determination of whether it's economically reasonable in the future.

Q. Letter H. "Given the petitioner current only -- let me take this out.

Letter I. I'm sorry. "Petitioner must provide the Agency with actual capital improvement costs for its biotreaters each fiscal year following the Board's order."

What is the basis for providing the actual annual capital improvement costs for the biotreaters that it's claimed to have -- that they're going to put in operation?

A. The reason that we suggested putting that in there was so that after a five-year period the Board could know how much they're spending

annually to -- on capital costs and could then determine whether or not future expenditures at those levels would be reasonable.

Q. And you said -- you mentioned after a five-year period.

Is there any window which you've actually set or is that -- can you describe what you're talking about?

A. I was thinking of if the Board were to grant the adjusted standard for five years and I know there is no magical number on the time.

Q. Okay. We also mentioned in Paragraph J "Petitioner must continue to investigate improvements to reaction processes of all its processes and provide the Agency with an annual report detailing improvements made to the reaction process in detail any plans to improve the reaction process. The annual report must include the capital cost or expected capital cost for improvements to these processes."

Can you tell us why the Agency made that kind of recommendation?

A. That recommendation was based on their improvements to their process and, you know,

they thought that they had removed a large amount of MBT from their process prior to treatment.

Q. And are you talking about the changes in the summer of 2018?

A. Yes.

Q. Okay.

A. And we just -- we thought that would be worthwhile to document going on in the future.

Q. Okay. Directing your attention to Paragraph N, "The petitioner must annually investigate new treatment methods and technologies prior to and following the secondary clarifier, including but not limited to, the Algaewheel technology, and annually evaluate implementation of new and existing treatment technology based on current plan condition. Where practical -- practicable, petitioner must substitute current treatment methods or technologies with new ones so long as that substitution generates less ammonia in petitioner's discharge."

So that's, again, assuming that the adjusted standard is not denied completely, you've suggested that they investigate new treatment methods, is that correct?

A. Yes.

Q. Okay.

MR. GRADELESS: Let the record reflect I'm showing the witness what has been previously identified as State's Exhibit 8 for identification.

(Document marked as State's Exhibit No. 8 for identification.)

BY MR. GRADELESS:

Q. Okay. Mr. Twait, I've handed you State's Exhibit 8, can you identify that for the Pollution Control Board?

A. Yes, that is -- it is information about the Algaewheel that was available online.

Q. And is this information your understanding of -- general understanding of the Algaewheel technology?

A. Yes.

Q. What is an Algaewheel?

A. It's a process where they're using algae to remove BOD, total suspended solids -- well, BOD and ammonia in treatment systems.

Q. And is it -- what kind of treatment

would an Algaewheel be considered? Let me ask it in a different way.

A. Thank you.

Q. Is this a form of tertiary nitrification?

MR. DIMOND: Objection. Leading. I don't mind leading on easy stuff, but here he is really testifying for the witness.

MR. GRADELESS: I mean, we all know it's tertiary nitrification.

HEARING OFFICER WEBB: Well, I mean, I think we do need a certain amount of leading just to -- for efficiency sake, but to the extent that you cannot testify for the witness --

MR. GRADELESS: Sorry.

HEARING OFFICER WEBB: -- that would be appreciated.

MR. GRADELESS: Okay.

BY MR. GRADELESS:

Q. Scott --

A. It can be used as tertiary treatment. Some of the small facilities are using it as a primary treatment.

Q. Now, when you say small facilities,

what facilities are -- what do you mean?

A. The way that I became --

Q. Where are these small facilities?

A. There is a facility that is installing it near Dwight, I believe.

Q. In Illinois?

A. Yes, and that is how I became aware of the system.

Q. And that's communities using this as their primary treatment system?

A. I believe so.

Q. Okay. And I noticed in this information it mentions the Cincinnati Nature Center, what, if anything, do you know about that project?

A. They designed it --

Q. It's on Page 9.

A. -- to treat their effluent from bathroom shower facilities and restaurant and they have high spikes of ammonia, up to I believe it's 120 mg/L, and they were able to meet their permit limits and get it down to 2.3 mg/L.

Q. And any information about the Indiana Dunes State Park?

A. Very --

MR. DIMOND: Is that in the document?

MR. GRADELESS: That's Page 13. Sorry.

MR. DIMOND: What was the --

MR. GRADELESS: Page 9 was Cincinnati.

BY MR. GRADELESS:

Q. Directing your attention, Mr. Twait, to Page 13, there's a project from the Indiana Dunes State Park used as an example.

What, if anything, do you know about this project?

A. They're also using it to remove BOD and ammonia. They have high concentrations up to I believe it was 120 mg/L and they're getting down into the single digits also.

Q. Is it fair to say your general knowledge of these two projects is essentially the information here contained in State's Exhibit 8?

A. Yes.

Q. Okay.

MR. GRADELESS: At this time, the

State moves into evidence State Exhibit 8.

MR. DIMOND: I have just one, I think, question about this document, which I'll at least initially direct to Mr. Gradeless.

Are these the same pages that were attached as an exhibit to the Illinois EPA's recommendation?

MR. GRADELESS: Yes.

MR. DIMOND: Mr. Twait, did you pull these off of the Internet?

THE WITNESS: They were pulled off the Internet. I did not do it.

MR. DIMOND: Who did it?

THE WITNESS: After I mentioned the Algaewheel technology, I believe Rex had somebody that found it.

MR. DIMOND: Okay.

MR. GRADELESS: I think it was an intern if you want to know.

MR. DIMOND: And so the testimony that you gave about the Cincinnati Nature Center and the Indiana Dunes, all you know is what is in the document itself, right?

THE WITNESS: Yes.

MR. DIMOND: You don't have any independent source of knowledge?

THE WITNESS: No.

MR. DIMOND: We don't have any objection to Exhibit 8.

HEARING OFFICER WEBB: The Agency's Exhibit 8 is admitted.

MR. GRADELESS: I believe can I clarify whether 7 -- 7 has been admitted, is that correct, the DMR's?

HEARING OFFICER WEBB: Yes.

MR. GRADELESS: I have nothing further for Mr. Twait.

HEARING OFFICER WEBB: Okay.

MR. DIMOND: I guess that means I'm up.

HEARING OFFICER WEBB: You're up.

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

BY MR. DIMOND:

Q. Mr. Twait, since -- since pretty much all you know about the Algaewheel is in Exhibit 8, are there -- are there any examples in Exhibit 8 of the Algaewheel being used to treat a chemical plant effluent?

A. Not that I'm aware of.

Q. Are there any examples in Exhibit 8 of the Algaewheel being used to treat a wastewater stream that has nitrification inhibitors in it?

A. Not that I'm aware of.

Q. Do you need to refer to the documents so you can give a plain no answer?

A. I'll say no for both of those.

Q. Let's -- let's stay on the Algaewheel here since we're on it.

So based on the testimony you gave to Mr. Gradeless, you do agree with Mr. Flippin that the Algaewheel is just another form of tertiary nitrification, right?

A. It can be, yes.

Q. As it would be applied at the Emerald plant, it would just be another form of tertiary nitrification, wouldn't it?

A. Yes.

Q. Have you done any evaluation yourself of how effective the algae wheel would be for the effluent at the Emerald plant?

A. No.

Q. Have you done any analysis of your

own of what the costs would be of implementing that technology at the Emerald plant?

A. No.

Q. So you can't have any idea whether the Algaewheel would be more costly or less costly or what it would cost at all in relationship to the tertiary nitrification alternative that Mr. Flippin analyzed, right?

A. Correct.

Q. Given -- you were here yesterday, you heard, Mr. Flippin's testimony about the Algaewheel, right?

A. Yes.

Q. And one of the things that he said is given that it's a newer technology it would almost certainly be more expensive than the rotating biological -- I think the phrase is rotating biological contactor that he analyzed as a tertiary nitrification, do you remember hearing that?

A. Yes, I do.

Q. If it's -- if it's already more expensive based on Mr. Flippin's testimony than the tertiary nitrification alternative that he

analyzed, what's the point of doing further analysis on it?

A. Well, the reason that the Agency brought it up in the first place is we didn't know how the MBT would affect the algae, whether it would inhibit nitrification or not. So that's -- that's the reason we originally suggested that it be looked at.

Q. Well, now, all these -- all these tertiary nitrification alternatives would be applied after the secondary clarifier, right?

A. Correct.

Q. And while the most recent data may not be -- may not be all the data and may not be consistent with all the data, as you understand it, the most recent data after the secondary clarifier is that the MBT is either not present or not present at levels that would inhibit nitrification, right?

A. I know that now.

Q. So why -- why -- why would the Agency be concerned about what the impact to the MBT would be on the Algaewheel and how would that have any impact on why you ought to analyze it?

A. When we originally made the recommendation, we did not know that the effluent had no MBT.

Q. So knowing that -- knowing that that's the most recent sample data, does that change your view on whether this needs to be studied?

A. If we think that it's more expensive than an RBC unit, then it could probably not be analyzed.

Q. You were here and you heard Mr. Flippin's testimony?

A. Yes.

Q. Does that change your view on this recommendation at all?

A. I believe it would.

Q. So what does -- what is your view today?

A. That alternatives should continue to be looked at. This may not be one alternative that needs to be looked at.

Q. I probably asked this in a slightly different way, but I'll ask it.

So as far as you know, the

Algaewheel technology has not been used at any facility like Emerald's plant, right?

A. Not that I'm aware of.

MR. DIMOND: Now, I'm not going to ask this to be entered as an exhibit. I am only going to provide it to the witness so he can refer to it. I am going to provide the witness a copy of the Agency's recommendations without the attached exhibits because I have a number of questions about the recommendations that were made that I want to ask.

HEARING OFFICER WEBB: Okay.

MR. DIMOND: So I'm not going to ask to have it introduced as an exhibit, but I want the witness to be able to refer to it. So, Mr. Twait, I'm going to hand you, as I said, a copy of the Agency's recommendation, but -- actually, it does have the exhibits to it. I apologize. It does have the exhibits to it.

BY MR. DIMOND:

Q. So I'm going to hand that to you so when I'm asking you questions about various recommendations that the Agency has made, you can have that language in front of you.

We've been talking about the Algaewheel which is included in I believe it's recommendation 3N, as in Nancy, on Page 29 of the recommendation, are you at the same spot that I am?

A. Yes.

Q. So the Algaewheel is mentioned in 3N and I've asked you a number of questions about that. The recommendation also suggests that we -- that Emerald investigate new treatment technologies annually.

Why did you recommend that the treatment technologies be all -- be evaluated annually?

A. Just to look for new treatment methodologies that are out there.

Q. Wouldn't that -- are you suggesting that Emerald should retain Mr. Flippin once a year to re-do the analysis that is, you know, basically in his expert report in October of 2019?

A. No, I think this is specifically -- specific to new treatment methods and technologies.

Q. So this is only -- you're only

referring to things that are beyond what Mr. Flippin has already analyzed, something that would be completely new?

A. Yes.

Q. So wouldn't that -- wouldn't that essentially be -- okay. In my -- in my curious way, I'm going to ask -- this is a little discombobulated, but I have a question about Exhibit 7, the DMR summaries.

Did you compare the -- the total nitrogen and the ammonia-nitrogen values that are in the Agency's Exhibit 7 with the more detailed data that is in Petitioner's Hearing Exhibit 2 and Petitioner's Hearing Exhibit 13?

A. I did not.

Q. You can put 7 away and go back to the recommendation. The recommendation -- one of the recommendations is recommendation 3J which is on -- which Mr. Gradeless asked you some questions about. It's on Page 28. What I want you to do is could you sort of compare recommendation 3J to recommendation 3M. You don't have to read them, but just read them to yourself.

So my question is, how is

recommendation 3J really any different from recommendation 3M?

MR. GRADELESS: I'm just going to object to foundation. Mr. Twait didn't write these recommendations, per se. He was involved in a group that, you know, helped formulate some of these recommendations, but to the extent Mr. Twait can speculate or, you know, try to compare the recommendations, I would just say that -- Mr. Twait was not the author of this recommendation.

HEARING OFFICER WEBB: Do you know the difference? He didn't ask if he authored it. Can you explain the difference?

THE WITNESS: Yes, I think so.

BY THE WITNESS:

A. J is specific to the reaction process of the processes and M is investigating new production methods. So possibly using a different process.

BY MR. DIMOND:

Q. What do you mean by new production process?

A. New production methods and I don't

know -- I'm not a chemical engineer to know enough whether there's an alternate methodology to develop the same chemical or not.

Q. So you were here yesterday when Mr. Hathcock testified about the ten products that the plant principally makes today, right?

A. Yes.

Q. So what you're saying is you don't know if there's a new way to manufacture any one of those ten products?

A. Correct.

Q. So you addressed -- maybe partially addressed one of Mr. Gradeless' objections.

You talked about this group at the Agency that got together to come up with the recommendations?

A. Yes.

Q. Who was in that group?

A. Myself, Mark Liska, Darin LeCrone and Gary Bingenheimer.

Q. Was anybody else in the group?

A. Rex Gradeless.

Q. Okay. And so how did -- how did the group -- so the group worked on coming up with

these recommendations collectively?

A. Yes.

Q. So -- so were you the author of 3J?

A. No.

MR. GRADELESS: I'm going to object to attorney/client privilege at this point. You know, my participation in the group was as an attorney, first of all, and it's a workgroup we have at the Agency. So to the extent we're getting into drafting, I think we're getting into some attorney/client privilege issues.

HEARING OFFICER WEBB: I mean, is it enough he can explain it? Do you need to know who wrote what?

MR. DIMOND: Well, I'm not sure attorney/client privilege applies here.

HEARING OFFICER WEBB: I'm not sure -- I'm not sure either.

MR. DIMOND: If Mr. -- if Mr. Gradeless is functioning as a member of the group that is setting policy for the Agency, he is not acting as an attorney. Attorney/client privilege only applies where a client is seeking legal advice from a lawyer.

HEARING OFFICER WEBB: Yeah, I --
MR. DIMOND: If he's acting not as a lawyer, but acting as an Agency policymaker, privilege doesn't apply.
HEARING OFFICER WEBB: Well, I'm going to overrule it. He is a manager in the Bureau of Water. He should be able to address it.
BY MR. DIMOND:
Q. So you didn't author 3J?
A. No.
Q. Did you even -- did you come up with that idea in the collective group?
A. I don't remember specifically.
Q. Did you come up with the idea that is 3M? In the collective group, were you the one that came up with the idea that is 3M?
A. We also used the previous recommendations. I'm not sure who came up with 3M.
MR. GRADELESS: I'm just going to object. Assumes facts not in evidence that one single person came up with a recommendation. So for what it's worth, that one individual came up with L and Mr. Twait's was M. I mean, it was a

group effort here. So the fact that one person would have maybe created --

HEARING OFFICER WEBB: What is your goal?

MR. DIMOND: I'm just -- I'm trying to figure out what the process was and figure out who is behind these recommendations. So --

MR. GRADELESS: I think it's further -- for the record, it's further signed off by the bureau chief of the Division of Water Pollution Control Sanjay Sofat. So to the extent that may help your process, you know, it's not just like we got in a room and came up with something. It was vetted beyond Mr. Twait's supervisor and everyone in that group. So to the extent that we want --

HEARING OFFICER WEBB: That they did not act unilaterally?

MR. GRADELESS: Correct.

HEARING OFFICER WEBB: All right.

BY MR. DIMOND:

Q. So, Mr. Twait, my question is -- my next question is in the -- in the Agency's -- in the answers to interrogatories that the Agency

provided in this -- in this proceeding, you were identified as the person who was going to support recommendation 3J.

How did -- how did you get designated as the person to support 3J if you weren't the person who came up with the idea?

A. We worked as a workgroup and I may have came up with this idea or somebody else might have come up with the idea and then I supplemented it.

Q. You actually remember supplementing it or are you just making that up as we go here?

A. I don't remember what -- what contribution I had for each and every one of these.

Q. Okay. So 3J asks to continually investigate improvements into the reaction process and, of course, you want this information reported to the Agency, right?

A. Yes.

Q. What would the Agency do with that information?

MR. GRADELESS: I would object. It misstates the witness' testimony that Mr. Twait

wants this reported to the Agency. This is the Agency's recommendation. The Agency wants this information reported to the Agency.

HEARING OFFICER WEBB: Overruled. You can answer it.

BY THE WITNESS:

A. It would be useful in making a determination for any renewal of the adjusted standard.

BY MR. DIMOND:

Q. Are you a process engineer with expertise in improving chemical reaction processes at a chemical plant?

A. No.

Q. Are you aware of the Agency having anyone who is a chemical process engineer?

A. We have chemical engineers. Whether they're chemical process engineers or not, I don't know.

Q. Does the Agency have any expertise in operating a chemical plant?

A. Not that I'm aware of.

Q. Does the Agency have any expertise in improving reaction processes at a chemical

plant?

A. Not that I'm aware of.

Q. I want to go back to the first recommendation here which is the recommendation -- it's on Page's 25 to 26. This is the recommendation where you came up with -- well, either you or the Agency, I'm not sure which, but you're the person who has been designated to support this recommendation.

So either you or the Agency came up with the recommendation for a -- that if an adjusted standard is granted, the daily maximum should be 110 mg/L, 553 pounds per day and then the 30-day average should be 89.9 and 475 pounds per day.

So that's either your recommendation or the Agency's recommendation, right?

A. Yes.

MR. GRADELESS: If I may respond, that's not what the recommendation said. That's the ceiling, not necessarily a recommended number to clarify for the record.

HEARING OFFICER WEBB: Okay.

BY MR. DIMOND:

Q. So you've already testified you're manager of the water quality standard section of the Agency, right?

A. Yes.

Q. And one thing you do in that position is you make recommendations to the Agency's permit section to include permit limits including possibly ammonia permit limits in NPDES permits to meet the ammonia water quality standards, right?

A. Yes.

Q. And those are sometimes called water quality based effluent limits, right?

A. Yes.

Q. Now, these limits that are in recommendation 1, those aren't water quality based effluent limits, are they?

A. No.

Q. So that's not the sort of permit limit that you normally -- that you and your group normally work on setting?

A. No, it's not. But these numbers were based on what we had seen in the DMR's.

Q. These limits -- the numeric values that are in Agency recommendation 1 were not calculated to meet the ammonia water quality standard in the Illinois River, right?

A. Correct.

Q. Now, to get the concentration limits, the numeric values that are in Agency recommendation 1, you only looked at Emerald's discharge data for nine months, right?

A. No, I believe we started in September of 2018 and --

Q. Doesn't Agency recommendation 1 say --

MR. GRADELESS: Can the witness finish the answer?

BY THE WITNESS:

A. And I believe we made the recommendation in July. So it might have been nine months of data.

BY MR. DIMOND:

Q. Doesn't the recommendation say you looked at petitioner's DMR's for September 2018 to May 2019?

A. Yes.

Q. And if I do my math correct, that's nine months, right?

A. Yes.

Q. Did you take into account what Emerald's production levels had been in 2018 or 2019 in looking at the data?

A. No.

Q. In your experience, does the Agency usually set permit limits to restrict plant production?

A. No.

Q. You were here yesterday and you heard Mr. Hathcock's testimony about how production levels had been significantly down in 2019, right?

A. Yes.

Q. Do you really think it's appropriate to base an analysis of what the permit limits should be based on nine months of data where many of those months had production that was not reasonable maximum production to be expected for the facility?

MR. GRADELESS: I'm going to object to lack of foundation with respect to this witness

has already testified that he did not consider production in this case.

MR. DIMOND: I'm asking whether he thinks it's appropriate. He is the witness who has been put forth to support this --

HEARING OFFICER WEBB: Overruled. Go ahead.

MR. DIMOND: -- for the Agency. So I think he has to support it.

BY THE WITNESS:

A. I don't believe our intent was to limit production. We did not know that production was down during these months.

BY MR. DIMOND:

Q. So now that you know that production was decreasing throughout 2019, does that change your view of whether or not it's appropriate to rely on those nine months to set the permit limits?

A. Something unique has happened. I believe with the reduction of these ammonia limits these are the lowest I've -- I've seen in the five years of data that I've looked at. It's possible that it's not appropriate.

Q. Now, when you say these are the lowest, are you -- are you referring to the last -- the last six months of data that is after the May 2019 that you looked at in coming up with the recommendation?

A. Yes.

Q. So if you can look in the book at Tab 14, that's the summary that was done of the daily DMR data. So -- I'd ask you to -- it's actually the fourth page of the exhibit, but it's numbered Page 3 at the bottom. So --

MR. GRADELESS: Which number?

MR. DIMOND: Petitioner's Hearing Exhibit 14.

MR. GRADELESS: Thank you.

BY MR. DIMOND:

Q. I'm on the last page. So when you were referring to the low levels, you were really sort of referring to the numbers for July through December of 2019?

A. June also had a very low number --

Q. Okay.

A. -- but yes.

Q. Okay.

A. And this is -- this is after the fact or after our knowledge that they did something -- a production change in 2018 to reduce the MBT.

Q. Okay. Now, you say that -- you say that you believe that Emerald did something in 2018 to reduce the level of MBT.

What is your -- what is your basis for that?

A. A meeting that we had at the Agency.

Q. Okay. When did that meeting occur?

A. I don't recall.

Q. Was it in -- I'm going to see if I can refresh your recollection. Was it in June of 2019?

A. It could have been.

Q. But you don't remember?

A. I don't.

Q. Okay. So I want to -- back to Agency recommendation 1. So that you don't have to keep flipping back and forth, Mr. Twait, if you can find a way to sort of keep that out. We're going to keep coming back to that.

So one of the numbers that is in

Agency recommendation 1 is a daily maximum load -- what you call a load limit in pounds per day of 553 pounds per day, that's correct, right?

A. Yes.

Q. Okay. And you derived that because that was the highest load limit that was in the DMR data for September 2018 to May 2019, right?

A. Yes.

Q. Do you know how the Agency normally sets load limits on an NPDES permit?

A. I know generally, but not specifically.

Q. What is your general knowledge?

A. They will base it on the design average flow of the facility and use the concentration to derive a load limit.

Q. Okay. And so here is what I've learned. You tell me if I've got it right.

My understanding is that if you're trying to -- if you're doing a daily maximum load limit, you would take the daily maximum concentration, you would multiply it -- which is in mg/L, right?

A. Yes.

Q. That's typically the units that it is in. And then you multiply it by the design maximum for -- this is for the daily maximum load limit. You would take the daily maximum concentration in mg/L, you would multiply it by the design maximum flow in millions of gallons per day?

A. Yes.

Q. And then there's a conversion factor that works out to be roughly 8.34 and you multiply that out and that's how you get the load limit for the concentration that has already been set?

MR. GRADELESS: Compound question.

BY MR. DIMOND:

Q. Have I understood the process right?

A. Yes.

Q. And that 8.34 is sort of a conversion factor that is pretty well-known in the industry, right?

A. Yes.

Q. So when you came up with this 553 pounds per day, you didn't take the 110 mg/L that you specified as the -- as the daily maximum and then apply the formula using the design maximum

flow and the 8.34 conversion factor, did you?

A. No.

MR. DIMOND: I'm sorry. Was there a question?

BY MR. DIMOND:

Q. The design -- the design maximum flow -- do you know what the design maximum flow for the Henry plant permit is?

A. No, not offhand.

MR. DIMOND: Again, I don't think we need to have this marked as a hearing exhibit. This is Exhibit 3 to Emerald's petition. It is a copy of the plant's current NPDES permit.

Mr. Twait, I am incredibly unprepared. I don't have a copy for myself so I'm going to ask the Hearing Officer's permission just to stand over his shoulder --

HEARING OFFICER WEBB: Yes.

MR. DIMOND: -- for just a moment.

BY MR. DIMOND:

Q. If I can ask you to turn to Page -- the pages aren't -- it's Page 2. Page 2. I'm going to use my finger and point. So does -- does the permit say that the total discharge for

outfall A01 is a design average flow of 0.917 million gallons per day and a design maximum flow of 1.4 million gallons per day?

A. Yes.

Q. I'm just going to ask you to -- I'm going to ask you to trust me on this. But I used an Excel spreadsheet and I did the math.

If I take 110 mg/L and I multiply it by 1.4 million gallons per day and I apply the conversion factor of 8.34, I come up with about 1,284 pounds per day, does that seem in the ballpark?

A. Yes.

Q. And -- but your recommendation was 553 pounds per day, right?

A. The Agency's recommendation was, yes.

Q. Now, in -- back to Agency's recommendation 1. You recommended a 30-day average load limit of 475 pounds per day, can you tell me how you came up with that?

A. In the same way. It was the highest monthly average loading.

Q. Okay. I'm looking at --

MR. DIMOND: Let me see Exhibit 7.

BY MR. DIMOND:

Q. So you said on Agency Exhibit 7 the monthly average in pounds per day is the column labeled quantity one, right?

A. Yes.

Q. Okay. So if I look from October 2018 to May 2019, I don't see 475 gallons per day and that's why I wanted to ask the question how you came up with that?

A. I don't know.

Q. I'm sorry. Your Agency recommendation 1 says you looked at September -- I was doing October.

September 2018 to May 2019, but even when I include September it looks as if the highest number in that stretch for the pounds per day is roughly 430, right?

A. Yes.

Q. So you don't know where the 475 came from?

A. I do not.

Q. Do you know who would know where that came from?

A. No. I don't know if it was a transcription error on my part or somebody else's part.

Q. Now, we just went through some -- some math on how daily maximum load limits are typically calculated for permits.

Do you follow a somewhat similar formula -- does the Agency typically follow a somewhat similar approach for calculating the 30-day average load limit?

A. I believe so, yes.

Q. So what the Agency would typically do is they would take the 30-day average concentration stated in mg/L, multiply it by the design average flow stated in million gallons per day and then multiply it by the 8.34 conversion factor, right?

A. Yes.

Q. And so, again, I'll just ask you to sort of trust my math on this or maybe Excel's math. You recommended a 30-day average of 89.9 mg/L. If I take that number and multiply it times the design average flow of 0.917 million gallons per day and then multiply it by the conversion

factor, I get about 687.5 pounds per day, am I in the ballpark?

A. Yes.

Q. I want to ask you to look at Agency recommendation 3A.

A. Okay.

Q. So Agency recommendation 3A says, "Within 90 days of the Board's order, petitioner must quantify the amount of ammonia attributable to Mexichem entering petitioner's treatment plant and provide that information to the Agency."

Was this an idea that you came up with in the working group?

A. I don't recall specifically.

Q. I'd like you to also look at -- I'd like you to compare recommendation 3A with recommendation 3D. Recommendation 3 -- you can read it to yourself, but for the benefit of others recommendation 3D says, "Within 180 days of the Board's order, petitioner must investigate and quantify the amount of ammonia and MBT coming into the PVC tank, the C-18 tank and the PC tank and submit this data to the Agency."

Aren't those recommendations --

given that Mexichem discharges into the PVC tank, aren't those two recommendations pretty overlapping?

A. I believe the testimony yesterday was that there is some side streams that are coming from Emerald into the PVC tank, but they're similar.

Q. Do you know if the side streams have any material contribution of MBT or ammonia?

A. My understanding from our meeting with Emerald prior was that there was no MBT in the PVC tank.

Q. Okay. Did you read that Emerald produced data to the Agency in this proceeding on the ammonia coming from the PC and the PVC tanks?

A. I remember seeing it, but I don't remember when.

Q. Have you looked at it in any detail?

A. I have not.

Q. Why haven't you looked at it in any detail?

A. Because I'm not the person that would evaluate what treatment would be necessary.

Q. Who would be the person who would

evaluate what treatment would be necessary?

A. I believe Mark Liska might have looked at it.

Q. Now, Mr. Gradeless asked you some questions about 3B, which asks Emerald to provide the Agency with a laundry list of financial data. So was that -- within the working group, was that your idea?

A. I believe -- I can't remember specifically, but I believe that we determined we needed some information.

Q. So how did -- how did you get picked to take the bullet to defend this recommendation?

MS. ZEIVEL: Objection. Mischaracterization.

HEARING OFFICER WEBB: Overruled.

MR. GRADELESS: A bullet? I don't know. I think he raised his hand.

BY THE WITNESS:

A. Yeah, I think I raised my hand. That's a good --

MR. GRADELESS: The truth.

BY MR. DIMOND:

Q. I assume you're at least sort of

vaguely aware that the Agency requested this sort of data in this proceeding and that Emerald ended up providing it over objection?

A. Yes.

Q. So that -- that data is within the Agency now. Have you looked at it?

A. I have not.

Q. Why haven't you looked at it?

A. I just haven't had time.

Q. Has -- to your knowledge, has anybody in the Agency looked at it?

A. No, but it's for the Board to look at to determine economic reasonableness.

Q. Okay. So if this is for the Board, why does Agency -- why does Emerald need to produce it to the Agency on an annual basis? Why can't we just produce it to the Board if and when we apply for -- file a petition for a renewal or a new adjusted standard?

A. I don't know that there is any reason not to.

Q. You mean you don't know there is any reason not to just provide it to the Board if we apply for a new petition?

A. Correct.

Q. Now, I think you were also designated in the Agency's answers to interrogatories to stand up for recommendation 3H.

3H says, "Given petitioner currently only operates one of its four bioreactors" -- just as an aside, bioreactor is another name for biotreater, right?

A. Yes.

Q. "So one of its four bioreactors and is currently renovating one bioreactor. Petitioner must repair, operate and maintain," et cetera, et cetera.

So you were here yesterday and you heard Mr. Hathcock's testimony that Emerald needs to repair those so that it has redundant capacity for the 1.4 million gallon biotreater that is currently operating, right?

A. Yes.

Q. Given Mr. Hathcock's testimony, what is the purpose of this recommendation?

A. The purpose of this recommendation was that the Agency believed that it was prudent to use the bioreactors that they had.

Q. If they're just used as bioreactors in series with the current bioreactors, is it going to result in any reduction in ammonia?

MR. GRADELESS: Speculation.

HEARING OFFICER WEBB: You can answer.

BY THE WITNESS:

A. I don't know.

BY MR. DIMOND:

Q. Now, we talked about yesterday that -- we call it a biotreater, but right now it's just an empty tank, right?

A. Yes.

Q. So just running the water through the tank isn't going to improve the ammonia in the discharge, is it?

A. Not unless it's recycled from your -- the final settling tank into the other biotreaters.

Q. When you say the final settling tank, do you mean the secondary clarifier?

A. Yes.

Q. So the -- and Mr. Flippin and others testified yesterday that taking the effluent from

the secondary clarifier and running it back through those bioreactors having them set up let's say the rotating biological contactor technology, that's just another way of doing tertiary nitrification, right?

A. Yes.

Q. You haven't done any analysis that indicates that would be more cost-effective than just building a new tertiary nitrification system, have you?

A. I have not done an analysis, no.

Q. Recommendation 3I this one says, Petitioner, Emerald, must provide the Agency with actual annual capital improvement costs for its bioreactors each fiscal year following the Board's order."

And you told Mr. Gradeless that you wanted to be sure -- or maybe it was the Agency wanted to be sure that after five years the Board would know how much was spent, but if repairing the biotreaters is just being done to provide redundant capacity for the 1.4 million gallon tank, what does that have to do with the ammonia and the effluent and what does it have to

do with this adjusted standard?

A. I think that the cost of upgrades was -- is worthwhile information because once the biotreaters are -- have been refurbished, then that's capital that could be used for additional treatment at the end of the process.

Q. It's capital -- was -- if the -- if the money has been spent to -- to refurbish the three biotreaters that are currently out of service, the capital is gone, it's not available to be spent on anything else, right?

A. That's correct.

Q. It's been paid out to the contractors and the design engineers and it's gone. So I come back to how does this information help the Board or how does it help the Agency?

A. Well, if they're spending $6 million a year to refurbish the biotreaters, then once the biotreaters are refurbished, they might have money to spend on additional treatment.

Q. I'm going to ask you to go back to recommendation 3B. One of the pieces of minutia that the Agency asked for in 3B is a breakdown of Emerald's expenses, including operation of

maintenance costs for each fiscal year following the Board's order.

What's the point in having that information provided to the Agency?

A. I think for the same reason, so that -- to determine economic reasonableness.

Q. Well, I know it's -- I know it's not sort of the Bureau of Water's thing at the Emerald plant, but you've heard of the NaSH unit at the Emerald plant? Have you -- have you heard of it?

A. I'm not quite sure that I remember what it was.

Q. Well, I'm going to ask you to take my word for it. There's this thing at the Emerald plant called the NaSH unit and it's got a bunch of air pollution control equipment on it and we've got a permit for it. I think we even have a CAAPP permit for it. CAAPP is an acronym C-A-A-P-P.

So suppose Emerald has to spend a million dollars to maintain that piece of pollution control equipment so that we maintain compliance with our CAAPP permit, the fact that we spent that money, what does that have to do with the ammonia adjusted standard that we have

requested in this petition?

A. I'm not specifically sure it would be worth while.

Q. I believe one of the other recommendations that you were identified as the person who would support it in the Agency's interrogatory answers was recommendation 30.

Now, 30 says, "Petitioner must conduct quarterly monitoring of ammonia-nitrogen in the Illinois River" and then there's a whole bunch of details about how we do it or -- well, I don't know about how, but there's a parenthetical with some details about how we do it to demonstrate compliance with the ammonia water quality standards in accordance with 35 Ill. Adm. Code 302.212.

Now, you work in the water quality division or department of the Bureau of Water, right?

A. Yes.

Q. So did you come up with this recommendation?

A. I believe it was a carryover from the last adjusted standard.

Q. Okay. So you think there's a condition in AS 13-2 that requires this sampling?

A. I believe so. That was my understanding.

Q. That was your understanding. Okay. So, Mr. Twait, I'm going to show you a copy of AS -- of the Board's opinion in AS 13-2 and, admittedly, I'm showing you the opinion from April 16th, 2015, which was slightly revised in December of 2016. But if I could ask you to look at -- so I've got you on Page's 68 and 69 of the Board's opinion in AS 13-2 and this is the section of the order and it's got the conditions 1 and then 2A through I -- is it H -- I. It goes 1 through 2I.

Is there any condition in there that requires any sampling in the Illinois River to show compliance with the water quality standard?

A. I don't see it.

Q. So the ammonia water quality standard in 302.212, it has a reasonable component to it, right?

A. Yes.

Q. And there's basically two seasons?

There is -- I think of it as sort of spring and the rest of the year. How do you think of it?

A. When we derive limits, we do spring/fall season, a summer season and a winter season.

Q. When you say you derive limits --

A. For NPDES permits --

Q. Okay.

A. -- and the spring/fall and summer are using the same calculations, but we separate them because the temperature is typically different than what we see in the summer.

Q. Okay. So my question is going to be -- or my question is -- but you do agree that the ammonia water quality standard just has two seasons in it, I think one of them is like it's called a season for when young aquatic life is present and when young aquatic life isn't present, is it?

A. Yes.

Q. I haven't gotten the terminology right, but I got the right idea, right?

A. Yes, presence and absence.

Q. So my question is given that there

is only two seasonal components to the ammonium water quality standard, why do -- why do we need to sample quarterly? Why wouldn't semiannual, once during each period, be adequate?

A. It may.

Q. Now, you indicated that you reviewed Emerald's reports that it submitted to the Agency in response to the adjusted standards both AS 02 -- well, I understood you to say you had reviewed those annual reports for both AS 02-5 and AS 13-2, did you review them both or just one?

A. I'm not sure how far back we were.

Q. You're not sure how far back you were.

Did you notice there was some water -- there was some sampling data from within the Illinois River measuring the ammonia level in the Illinois River?

A. Yes.

Q. Wasn't -- didn't all that sampling data show that the levels of ammonia were either non-detect or quite low?

A. Yes.

Q. In fact, I think you -- you

thought -- at least at one time I think you thought that they were basically background, right?

A. I believe that's probably accurate.

Q. Do you think the fact that the historic sampling -- well, you've looked at some of the sampling, right?

A. Yes.

Q. Do you remember how many quarters or what limit -- do you remember how many sampling events there have been?

A. I know that I looked at three or four years.

Q. And how many were done each year?

A. Four.

Q. So you've seen at least 16 or so?

A. Yes.

Q. Would it surprise you if I told you that I counted them up and I think it's in the mid-30s?

A. No.

Q. Mr. Twait, if you could now turn to in the Agency recommendation I think it's on Page 29, Item 3Q.

This one says, "Based upon review of annual reports required by condition 3P, the Agency may petition the Board to modify the relief granted by the Board's order" and this is all in the context of the Agency doesn't want the adjusted standard issued, but if it is issued you'd like to see this condition, right?

A. Yes.

Q. So, again, I think in the Agency's interrogatory answers you were identified as the person to support this -- this recommendation.

Do you know why this recommendation was put in there?

A. I believe it was a holdover from the previous one. So --

Q. You're right this time. You are right. It's a holdover from AS 13-2.

So when the annual reports were submitted by Emerald pursuant to AS 13-2, did the Agency ever petition the Board for any modification of the relief in AS 13-2?

A. Not that I'm aware of.

Q. Now, I don't think -- I don't think you were identified in the Agency's interrogatory

answers and I should have them here, but I don't. I looked at them when I was preparing my cross-examination for you. I don't think you were identified as the person to support recommendation 3R, but on the other hand, if I recall correctly, no one was. So I'm going to take some liberty and I'm at least going to ask you about it.

So 3R says, "Petitioner must operate in full compliance with the Clean Water Act, its National Pollutant Discharge Elimination System permit, the Board's water pollution regulations and any other applicable requirement."

Do you know why the group at the Agency got together and decided to include that in this recommended list of conditions?

A. I believe that, once again, it was a holdover.

Q. You think it was -- again, you're right. It is a holdover. But all these things that are mentioned in here, Emerald has to comply with those anyway whether it's an adjusted standard condition or not, right?

A. I believe that's accurate.

Q. Okay. So this is just duplication,

isn't it? I mean, it doesn't really serve any purpose at all, does it?

MR. GRADELESS: Objection. Speculation.

HEARING OFFICER WEBB: Overruled.

BY THE WITNESS:

A. It is duplication. I don't know if it holds a specific reason or not.

BY MR. DIMOND:

Q. The only -- the only justification I've been able to think for it is that the Agency would like to multiply the number of violations that it issues, can you think of any other purpose to it?

MR. GRADELESS: Objection. Speculation.

HEARING OFFICER WEBB: Overruled. You can answer.

BY THE WITNESS:

A. I don't know that the Agency has used this provision to pile on.

BY MR. DIMOND:

Q. Are you familiar with the two violation notices that have been entered in the

record as Petitioner's Hearing Exhibit 5 and 6? I remember reading them or looking at them.

A. I was not involved with them.

Q. You weren't involved in issuing the violation notices?

A. No.

Q. You weren't involved in accepting the compliance commitment agreements that Emerald entered into with the Agency?

A. No.

Q. I think I know the answers to these, but just to be sure.

Have you ever designed a treatment plant to treat a chemical plant wastewater?

A. No.

Q. Have you ever overseen the construction of the treatment plant to treat a chemical plant wastewater?

A. No.

Q. Have you ever operated a treatment plant to treat a chemical plant wastewater?

A. No.

Q. Now, if you were going to compare

two treatment alternatives, you would consider both capital and operating costs, right?

A. I think that would be appropriate, yes.

Q. So the effluent limit regulation that we're seeking an adjusted standard from here is 35 Ill. Adm. Code 304.122(b). If that -- if that effluent limitation did not exist for the segment of the Illinois River that the Henry plant discharges into, Emerald would be allowed a zone of initial dilution and mixing zone to meet a water quality based effluent limit, right?

A. The Agency would have to determine whether the best degree of treatment was being accomplished and if best degree of treatment was being accomplished, then we could give a mixing zone.

Q. Did you give a deposition in this case?

A. Yes.

Q. At the deposition, did you give a different answer to that question?

A. I hope not.

Q. Okay. At the deposition, were you

asked this question and did you give this answer?

Question: If this regulation, meaning 35 IAC 304.122(b) did not exist, would the Henry plant be allowed a mixing zone, a zone of initial dilution, in order to meet water quality based effluent limits for ammonia?

Answer: Yes.

Is that the question you were asked and the answer you gave?

A. Yes.

Q. And the ZID and the mixing zone that the plant would be eligible for would be based on the operation of the high rate multiport diffuser that Emerald constructed and operated, right?

A. Yes.

Q. And the diffuser is -- diffuser is accomplishing the mixing that it was designed for, right?

A. Yes.

Q. In fact, you've never calculated a water quality based effluent limit for ammonia for the Henry plant, right?

A. Correct.

Q. Now, this effluent limit regulation

that Emerald is seeking an adjusted standard from, it doesn't apply throughout the state, does it?

A. No.

Q. It basically applies to the Illinois River and a few things that flow into the Illinois River, right?

A. Yes.

Q. And we could actually read it and see what all the details are, but basically the Illinois River and things that flow into it?

A. Yes.

Q. So like the Des Plaines River is covered, right?

A. Yes, I believe so.

Q. Is the Kankakee River covered?

A. No, I don't think so.

Q. Why isn't the Kankakee River covered?

A. I don't know.

Q. We -- we met each other in the CAWS proceedings before proceeding before the Board, right?

A. Yes.

Q. If I remember correctly, don't the

Des Plaines River and the Kankakee River meet up to form the Illinois River?

A. Yes.

Q. So this effluent -- this effluent regulation that sets a 30-day or a monthly average of 3 mg/L, it only applies, as you said, to the Illinois River and some things that flow into it.

So it doesn't apply to the Rock River, does it?

A. No.

Q. It doesn't apply to the Embarras River that runs south of Champaign, does it?

A. Correct.

Q. It doesn't apply to the Kaskaskia River that I believe flows past Springfield, right?

A. It doesn't flow past Springfield, but yes.

Q. It doesn't apply to the Kaskaskia River?

A. Right.

Q. It's near my dad's farm. That's what I remember.

So if the Emerald plant was

located on the Rock River or if it was located on the Embarras River or the Kaskaskia River, it wouldn't need an adjusted standard because this 3 mg/L effluent limit would not apply to it, right?

A. Correct.

Q. Mr. Gradeless asked you some questions about the river water dilution scenario that Mr. Flippin had evaluated in his April 2018 report, do you remember those questions from Mr. Gradeless?

A. Yes.

Q. I believe -- I don't want to put words in your mouth, but I understood you to say that you didn't think the analysis was complete because Mr. Flippin didn't consider applying it on a seasonal basis, right?

A. Correct.

Q. Do you have a thought as to what season of the year Mr. Flippin should have further evaluated it for?

A. My thought was that he could have looked at seasonal -- the summertime only.

Q. So are you talking, like, calendar summer year, like, June through September, like

June 21st through September 21st or something like that?

A. No, I was thinking when the temperature of the water is warmer, probably five, six months of the year.

Q. Do you remember -- so in that April of 2018 report, Mr. Flippin evaluated two alternatives, right?

A. Yes, I believe so.

Q. The other one -- the other one from river water dilution was granular activated carbon, right?

A. Yes.

Q. Do you remember what the relative cost of the granular activated carbon alternative was compared to the -- compared to the river water dilution?

A. I do not.

Q. You were here yesterday, right?

A. Yes.

Q. And Mr. Flippin answered a number of questions about combinations of alternatives, do you remember that?

A. Yes.

Q. What would be the point of doing river water dilution on a seasonal basis, however one would define that, when there are other alternatives that could achieve compliance 100% of the time and you don't need to have two systems?

A. I think my point was I don't believe that they have looked at alternatives to decrease the amount of ammonia. I don't know that this would make it affordable.

Q. Well, let me ask you this question. If -- if you only need one car to get to work, would there be a reason to buy a second car and just leave it in the garage all the time?

MR. GRADELESS: Objection. Lack of foundation.

HEARING OFFICER WEBB: I don't understand the question. Go ahead.

BY THE WITNESS:

A. If you needed a redundant --

MR. GRADELESS: Are we talking about cars now? Objection.

BY THE WITNESS:

A. I have --

MR. GRADELESS: I objected.

MR. DIMOND: I'll withdraw the question.

MR. GRADELESS: Can I have a ruling on that issue?

MR. DIMOND: I'll withdraw the question.

BY MR. DIMOND:

Q. In your role as the head -- I don't mean to misstate it, but head or supervisor of the water quality division of Bureau of Water -- I'm sure I mangled that horribly. I apologize.

A. Okay.

Q. Do you have any role in reviewing the results of Whole Effluent Toxicity tests that dischargers submit to the Agency?

A. My group would do that, yes.

Q. So did Mr. Koch work under you?

A. He did.

Q. So yesterday we marked as Petitioner's Hearing Exhibit, I believe, 8. I think it's all of the Whole Effluent Toxicity test results that have been done from 2012 to 2019 and you don't need to look at them necessarily. I'm

just saying that for the record. The WET toxicity test results submitted by Emerald did not raise a concern because of Emerald's use of the high rate multiport diffuser and the mixing available in the Illinois River, right?

A. Correct.

Q. And the Board previously found that Emerald should have a mixing zone, right?

A. Yes.

Q. And a zone of initial dilution?

A. Yes.

Q. And those WET toxicity test results that were submitted from 2012 to 2019, those haven't indicated any violations of -- of Emerald's permit, right?

A. I believe that's correct.

Q. And they haven't indicated any violations of the statute either, have they?

A. No.

MR. DIMOND: Hearing Officer Webb, I need to consult with my colleague to tell me if I've missed something.

HEARING OFFICER WEBB: Okay.

MR. DIMOND: I also need to consult

with Mr. Gradeless about a matter to determine if there is some additional cross-examination that I need to ask Mr. Twait.

HEARING OFFICER WEBB: Would you like to take a five or ten-minute break?

MR. DIMOND: Could we take a five or ten-minute break?

HEARING OFFICER WEBB: Sure.

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

HEARING OFFICER WEBB: Let's go back on the record.

Mr. Twait, you are still under oath and let's continue cross-examination.

MR. DIMOND: Thank you, Hearing Officer Webb.

BY MR. DIMOND:

Q. Mr. Twait, I'm going to hand you a copy of what has been marked as Petitioner's Hearing Exhibit 15.

(Document marked as Petitioner's Exhibit No. 15 for identification.)

MR. DIMOND: I have two -- two for you if I can actually get them separated.

BY MR. DIMOND:

Q. Mr. Twait, I've handed you what I have marked as Petitioner's Hearing Exhibit 15. Have you seen this document before?

A. Yes.

Q. What was the context in which you saw it?

A. I can't remember, but I've seen it before. Was it provided at the meeting that the Agency had?

Q. I can't testify, Mr. -- Mr. Twait. I can't testify.

A. It may have been at the meeting that the Agency had with Emerald.

MR. GRADELESS: I can proffer we will offer this for Mr. Liska if that helps you.

BY MR. DIMOND:

Q. As best you can recall, does this appear to be data that was submitted to the Agency by Emerald related to the Henry plant?

A. Yes.

Q. And as you recall, it was -- it has data that is shown in the chart and in the table were -- your understanding is that that's data that was generated by Emerald, right?

A. Yes.

Q. Now, so I'm going to ask you to look at -- so there is sort of, like, an excerpt from an Excel spreadsheet that is on the left side of the document, does that appear to be correct?

A. Yes.

Q. And that seems to have sample dates from May 1st through May 31st of 2019 and then it's got a column called Time, there is a couple called PC Tank, Primary Clarifier and Secondary Clarifier, correct?

A. Yes.

Q. As this document was shown to you and you read it, what did you understand the value in the column secondary clarifier to be?

A. The final effluent prior to, I believe, it's the sand filter.

Q. Okay. And the -- the numeric values that are reflected there, did you understand those to be a particular parameter?

A. Yes.

Q. What did you understand it to be?

A. MBT.

Q. Okay. Now, on the right-hand part of the page, there is two graphs or charts, right?

A. Yes.

Q. Can you describe for us what is depicted in the uppermost chart?

A. That is showing the concentrations coming out of the PC tank and the primary clarifier of MBT.

Q. And the parameter is MBT?

A. Yes.

Q. And does the document indicate what time period is covered here?

A. It looks like 1,000 days after October 1st, 2016.

Q. And from the legend at the bottom, did you interpret that the dark dots in the chart are for the PC tank and the lighter dots are for the primary clarifier?

A. Yes.

Q. So this top chart indicates that there are levels of MBT both in the PC tank and

the primary clarifier, am I reading it right?

A. Yes.

Q. Now, what is -- what is reflected in the bottom chart?

MR. GRADELESS: I'm going to object to lack of foundation. Mr. Twait has said he has seen this maybe once. That's all we know. He is sitting here and reading the chart, but to what extent, if any, he has ever used this in making any part of any recommendation for the Agency, that foundation has not been laid and I don't necessarily know that it exists.

MR. DIMOND: I'm not tying it up with any recommendation --

MR. GRADELESS: He is reading off of a chart.

HEARING OFFICER WEBB: I mean, if he doesn't know, you can say you don't know.

MR. DIMOND: Hearing Officer, we allowed him to read off the Agency's hearing exhibit about the Algaewheel.

HEARING OFFICER WEBB: Mm-hmm.

MR. GRADELESS: You could have objected.

HEARING OFFICER WEBB: Well, if you know the answer, you may answer.

BY MR. DIMOND:

Q. What did you understand to be reflected on the lower of the two charts on the right-hand side of Petitioner's Hearing Exhibit 15?

A. The level of MBT coming out of the secondary clarifier.

Q. And, again, as you understood the chart this covered 1,000 days after October 1st of 2016?

A. Yes.

Q. And the chart -- the chart reflects that the levels of MBT after the secondary clarifier were either -- it's a little hard to tell from the scale -- were zero or very low for substantial periods of time?

MR. GRADELESS: Which chart are we talking about?

MR. DIMOND: The bottom chart.

BY THE WITNESS:

A. Yes, for a substantial amount of time, it's very low.

BY MR. DIMOND:

Q. But there were also spikes where the MBT following the secondary clarifier were fairly significant, right?

A. There is some values that are greater than a hundred, yes.

Q. And, in fact, there are a number of values that are greater than 20, right?

A. Yes.

Q. Now, there was testimony in the prior -- there was testimony in the prior adjusted standard and there has been testimony in this adjusted standard that MBT generally inhibits nitrification at 3 mg/L, do you have any information to contradict that?

A. No, I do not.

Q. Okay.

MR. DIMOND: That's all I have on Petitioner's Hearing Exhibit 15.

Hearing Officer, may I approach the witness to help him find an exhibit?

HEARING OFFICER WEBB: Yes.

BY MR. DIMOND:

Q. Mr. Twait, I need to ask you a few

questions about Agency Exhibit 1 and I just want to help you find it.

A. It is here.

Q. It may be in this. Bingo. Now, Petitioner's Hearing Exhibit 1 was admitted into evidence yesterday. And as I understand it, this was extracted from a database that the Agency maintains in Mr. Bingenheimer's department, did I understand his testimony correctly?

A. I believe so.

Q. So -- so this exhibit lays forth certain information from that Agency database for two projects in Geneva, one in Batavia, one in St. Charles, one in Kishwaukee, one in Newark, one in Fox River and then one in Mount Carmel, did I get it right?

A. Yes.

Q. Some eight total projects, seven municipalities?

A. I believe that's correct, yes.

Q. So I'm going -- I'm just going to collapse the two Geneva projects together. I'm going to talk about it as seven projects. I don't want to confuse you with that. I know it's sort

of listed as eight projects here, but I always think of it as seven. So bear with me or understand that that's the way I'm using the phrase seven projects.

Each of these seven projects considered population increases in coming up with the projections -- the projects that were approved by the Agency, right?

A. I believe that is correct with -- with the possible exception of -- of one of them, but I don't know that it didn't include a population increase.

Q. Which one do you think may not have included a population increase?

A. It's possible that the Fox River one did not have a population increase.

Q. Okay.

A. But I don't know that from the description.

Q. Okay. None of these seven projects treat chemical plant waste, do they?

A. No.

Q. And none of these seven projects have nitrification inhibitors in the wastewater

that they treat, right?

A. No.

Q. None of them have MBT in the wastewater that they treat, right?

A. No.

Q. You don't really know how these seven projects were identified as relevant and put into this document, right?

A. I do not remember.

Q. With regard to the Geneva project specifically, the increased capacity that was part of that project, that would also treat BOD and TSS, correct?

A. Correct.

Q. For the record, BOD is biological oxygen demand?

A. Yes.

Q. And TSS is total suspended solids?

A. Yes.

Q. So I'm looking at the project description for Geneva. I'm looking at the first one. I guess it's got the L17 number 0986.

A. Okay.

Q. So I'm starting to read from the

first line "Sludge handling" and it seems to be a new sentence "the proposed project consists of upgrading the city's sludge handling facilities, flood-proofing and providing upgraded employee facilities specifically including the following improvements;" and then it starts to list a whole bunch of things.

Would the flood-proofing and the upgrading of the employee facilities have anything to do with the ammonia control?

A. No.

Q. So whatever costs are included in the $5.4 million that relate to the flood-proofing and the upgraded employee facilities, they don't relate to ammonia control?

A. Correct.

Q. And you don't know how much of the $5.4 million relates to those two elements that I just talked about, right?

A. Correct.

Q. And if I continue on, it talks about two new anaerobic digesters with covers and equipment. Later on, it talks about a heat exchanger system and digester -- digester gas and

safety equipment, does that have anything to do with ammonia control?

A. No.

Q. And you don't know how much of the $5.4 million relates to those items, right?

A. Correct.

Q. So you don't know how much of $5.4 million relates to ammonia control, do you, if any?

A. Correct.

Q. So if I read -- if I continue reading down, I think there is references to fine screens and raw sewage pumps and a GRIP tank and UV disinfection, do those have anything to do with ammonia control?

A. No.

Q. And, again, you don't know what the costs are associated with those elements of the project?

A. Correct.

Q. I'm going to turn the page and look at Batavia. It's project L17 1385.

So this project addressed some pollutants other than ammonia, right?

A. Yes.

Q. Did it address fecal coliform?

A. Yes.

Q. And it also dealt with an expansion and rehabilitation of the anaerobic digester, right?

A. Yes.

Q. You don't know how much of the $10,791,000 was used for -- was attributable to the expansion and rehab of the anaerobic digester or the fecal coliform, do you?

A. No.

Q. So if I read down the project description for this, I'm starting in the fourth line, "Specifically, the proposed project includes the construction of an influent flow measurement structure (partial flume), installation of a new mechanical bar screen, construction of a new primary settling tank, replacement of primary clarifier equipment in the existing tanks."

None of that has anything to do with ammonia control, right?

A. Correct.

Q. And you don't know what the -- what

portion of the $10.791 million in costs are attributable to those components of the project?

A. No.

Q. I'm counting one, two, three, four, five lines from the bottom of that project description sort of on the right-hand side. It says ", construction of a new ultraviolet disinfection facility," that ultraviolet disinfection facility wouldn't have anything to do with ammonia control, right?

A. Correct.

Q. And you don't know what the cost of the -- what portion of the $10.791 million related to the new ultraviolet?

A. No, I do not.

Q. So you don't know how much of the $10.791 million related to ammonia control, do you --

A. No.

Q. -- if any?

If we look then at St. Charles, project L17 2288. I'm reading on the first line "The project consists of the following improvements; modification of the head works

diversion structure; rehabilitate the ferric chloride and GRIP buildings; replace the scum troughs on the primary clarifiers."

Any of that have to do with ammonia control?

A. No.

Q. Do you know what the cost -- what portions of the $9,871,000 related to those components?

A. No.

Q. Later on down in the description one, two, three, four, five I think it's the sixth line if my count is right. It says, "Install baffles in the final clarifiers and tipping buckets and new weirs in the wet weather flow clarifiers, replace pumps and adjustable frequency drives on the return, activated and waste activated sludge pump stations."

If I stopped at the wet weather flow clarifiers, does any of that have to do with ammonia?

A. No.

Q. Again, you don't know what portion of the $9.8 million and change cost relate to

those elements?

A. No.

Q. So of the $9,871,000 here, you don't know how much relates -- how much, if any, relates to ammonia control?

A. Well, the if any I know they have some ammonia control stuff in there, but I don't know how much.

Q. Next page Kishwaukee.

MR. GRADELESS: If you need -- we're willing to stipulate here, Tom, that -- you know, the point you're making I think has been made --

MR. DIMOND: Well, let me --

MR. GRADELESS: -- to speed it up.

BY MR. DIMOND:

Q. Let me ask Mr. Twait this question.

If I went through the rest of these projects, for any of these projects, can you tell me the portion of the dollar figure that is listed in the final cost column that relates to ammonia control, if any?

A. No.

Q. And all of these projects have some project elements that do not relate to ammonia

control, right?

A. Correct.

MR. DIMOND: That's the end of my cross-examination. Thank you for your time, Mr. Twait.

HEARING OFFICER WEBB: Thank you.

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

BY MR. GRADELESS:

Q. Mr. Twait, I have just a few -- couple follow-ups. Hopefully, I don't take too long here. You mentioned the cost of the -- you mentioned the cost of the Algaewheel earlier in your testimony.

You testified that you weren't sure whether or not -- or is it fair to say you're not sure whether that's more costly than the alternatives proposed by the petitioner or less costly?

A. I did not make any analysis.

Q. So you have no idea one way or the other what the Algaewheel alternative may or may not cost?

A. I do not.

Q. Is that a yes?

A. Yes.

Q. We also discussed how an Algaewheel -- you consider it a form of tertiary nitrification and the petitioner -- Mr. Dimond mentioned whether or not that Algaewheel could be installed at the end of the second clarifier at the Emerald plant, do you remember that testimony?

A. Yes.

Q. And you testified that you perhaps -- one of the original ideas was that, perhaps, the Algaewheel may react differently to any MBT that was seen after the secondary clarifier, is that correct?

A. Yes.

Q. And, at that time, you believed that there was still MBT coming out of the secondary clarifier, correct?

A. That was my belief.

Q. Okay. Do you have a belief -- having been here yesterday and hearing all the testimony, do you have a belief now with respect to whether or not tertiary nitrification using the Algaewheel would be -- was worth evaluating at the end of the pipe given what's in the secondary

clarifier from what you heard yesterday?

MR. DIMOND: I'm going to object that the question calls for an opinion and Mr. Twait was not disclosed as an opinion witness. He was not disclosed as an opinion witness or as an expert. The Agency had an opportunity to identify experts. They chose not to -- they can ask him about facts, but I don't think they can ask him about his opinion.

HEARING OFFICER WEBB: Well, he's a manager in the Bureau of Water. I think he can express his opinion if he has one.

BY THE WITNESS:

A. I think tertiary nitrification is worth looking at.

BY MR. GRADELESS:

Q. And would you agree that an Algaewheel is a form of tertiary nitrification?

A. Yes.

Q. Okay. Could that Algaewheel be looked at as a potential, one way or another, end-of-pipe alternative in your view?

A. Yes.

Q. Could the Algaewheel also be looked

at as a potential tertiary nitrification option prior to Mexichem's waste stream entering the waste stream of the petitioner?

MR. DIMOND: I'm going to object that that misuses the term tertiary nitrification.

HEARING OFFICER WEBB: Can you ask the question or can you --

MR. GRADELESS: Sure.

BY MR. GRADELESS:

Q. Mr. Twait, based on everything you've heard in this case today, yesterday, do you have any opinions with respect to whether or not an Algaewheel could possibly be an alternative used to reduce the ammonia levels coming in from Mexichem?

A. The Cincinnati and Indiana State Dunes used it as their treatment. So it's possible that it could be used for treatment of Mexichem's wastewater.

Q. And that would be before it enters what is known as the PVC tank, is that correct?

A. It could.

Q. Okay. Mr. Dimond mentioned at your deposition previously that you were asked the

question if the regulation did not exist, would the Henry plant be allowed a mixing zone in the zone of initial dilution in order to meet the water quality based effluent limits for ammonia.

And in that deposition, you answered yes, is that your recollection?

A. Yes.

Q. And today you answered yes to that question as well?

A. Yes.

Q. And today you also mentioned that they would also be required to use best degree of treatment for the Agency?

A. Yes.

Q. Now, in your deposition, you were never asked about whether or not the petitioner would ever have to use any kind of best degree of treatment, were you?

A. No, I don't believe so.

Q. Mr. Dimond discussed in length some of these improvement projects from POTW's and whether or not you knew the cost breakdown of the ammonia reductions with respect to each project, is that your recollection of the previous

testimony?

A. Yes.

Q. If you stripped away all of those costs that were not related to ammonia reductions, do you believe that the final costs of the projects attributable to ammonia reductions would be less than the final cost digit number here in Petitioner's Exhibit 1 that you looked at?

MR. DIMOND: I'm going to object on foundation for that. He's testified he doesn't know how much of those cost figures relate to ammonia. If he doesn't know, how could he possibly answer that question?

MR. GRADELESS: I'm just asking if he knows it will be less or more. I mean, basic logic would tell us one thing, but I'm asking if Mr. Twait has that knowledge.

MR. DIMOND: Basic knowledge would tell you if he doesn't know how much the cost figure relates to ammonia control, he can't compare it to anything.

MR. GRADELESS: I'm just --

HEARING OFFICER WEBB: Overruled. I'll ask him what he knows.

BY THE WITNESS:

A. If the final cost number includes something that wasn't for ammonia, the ammonia cost would have to be less than the final cost.

MR. DIMOND: I don't understand the question and the answer. Could I ask that they be read back just so I understand them --

HEARING OFFICER WEBB: Sure.

MR. DIMOND: -- or at least try to understand them?

(Whereupon, the record was read as requested.)

MR. DIMOND: If the final cost number includes something less than ammonia?

(Whereupon, the record was read as requested.)

HEARING OFFICER WEBB: Can we -- I know what he is saying, but do you want him to say it more clearly?

MR. DIMOND: So was that -- that was the question, correct?

(Whereupon, the record was read as requested.)

MR. DIMOND: Thank you for your

indulgence. I had a very hard time understanding it, but I do now.

MR. GRADELESS: I have nothing further for Mr. Twait.

HEARING OFFICER WEBB: Okay. Mr. Dimond, anything further?

MR. DIMOND: Oh, I'm pondering.

HEARING OFFICER WEBB: Also, I don't think you admitted it. You offered this.

MR. DIMOND: Thank you.

HEARING OFFICER WEBB: I don't think you offered, I will say for the record, Petitioner's Hearing Exhibit 15.

MR. DIMOND: No further questions.

HEARING OFFICER WEBB: No further questions. Are you --

MR. DIMOND: I have a very poor short-term memory.

We would -- we would move the admission of Petitioner's Hearing Exhibit 15.

MR. GRADELESS: No objection.

HEARING OFFICER WEBB: Petitioner's Hearing Exhibit 15 is admitted. Okay. And we're done with this witness? You did not have any

further questions?

MR. DIMOND: I did not.

HEARING OFFICER WEBB: Thank you, Mr. Twait.

MR. RAO: I do.

HEARING OFFICER WEBB: I'm sorry. I'm sorry. We're not done with you, Mr. Twait. I have a short memory also today.

MR. RAO: I have some questions for the Agency based on the Agency's recommendation and I'm not sure whether Mr. Twait would be the one to answer all the questions, but I'd like to pose these questions on the record so in case you have to respond in writing so there.

Good morning, Mr. Twait.

THE WITNESS: Good morning.

MR. GRADELESS: Just to note we also plan on calling other Agency witnesses to talk about portions of the recommendation. So I don't know if --

MR. RAO: I don't know what parts of the recommendation who is going to answer.

MR. GRADELESS: Okay.

MR. RAO: If you can tell me as I

ask the question, I can defer --

MR. GRADELESS: Okay.

MR. RAO: -- to them. Whatever is more efficient.

On Page 11 of IEPA's recommendation, the Agency notes that Emerald has formed a team to identify and evaluate potential modification of processes and product formulations to recover MBT and other organic nitrogen compounds.

Based on the information in the record, could you please comment on whether IEPA believes that process improvements at the Henry plant would have a significant impact on Emerald's ability to comply with the ammonia-nitrogen effluent standards without implementing additional end-of-pipe solutions.

MR. GRADELESS: We can reserve that question.

MR. RAO: Okay.

MR. GRADELESS: I don't know that Mr. Twait would be the one for that.

MR. RAO: Mm-hmm. On Page 14, IEPA states that the Board should give little or no

weight to stale and outdated information in the record.

In this regard, please comment whether the updated information submitted by Emerald -- I think that's in Petitioner's Exhibit 12 addresses IEPA's concerns regarding stale information.

MR. GRADELESS: Which page? I'm sorry.

MR. RAO: Page 14. I don't have the recommendation.

MR. GRADELESS: I see.

MR. RAO: If you want to get back to us on this one, that's fine, too.

MR. GRADELESS: I can answer it probably.

MR. RAO: Okay.

MR. GRADELESS: Generally, no. Petitioner's Exhibit 12, I believe --

MR. RAO: Are you testifying now?

MR. GRADELESS: I'm sorry. Did you direct it to me or --

MR. RAO: This is a question for the Agency --

MR. GRADELESS: Okay.

MR. RAO: -- on your recommendation. If you want to respond in writing, that's --

MR. GRADELESS: In post-hearing brief. We'll do that. Sorry.

MR. RAO: On Page 16 regarding the evaluation of GAC treatment alternative, IEPA states that Emerald failed to complete an economic reasonableness analysis. Please explain what IEPA considers as a complete economic reasonableness analysis.

Also, comment on whether Emerald has provided necessary economic information to perform a complete economic analysis. If not, list the specific costs information that the Agency needs from Emerald to perform the analysis.

On Page 18, IEPA notes AkzoNobel Surface Chemistry, LLC, utilizes spray irrigation of treated process wastewater, sanitary wastewater and stormwater through their NPDES permit.

Please clarify if AkzoNobel owns the land on which they're applying ammonium-nitrogen wastewater from their treatment plant. Is the Agency aware of any other spray

irrigation permits in the state that allow for industrial wastewater to be applied to farmland? If so, please provide relevant examples of such permits.

On Page's 21 and 22, IEPA states that capital costs -- cost estimates for treatment alternatives considered by Emerald are comparable -- are lower than capital costs expended by POTW's. IEPA provides several examples of capital costs of the upgrades at Illinois POTW's to treat ammonia-nitrogen.

Please comment on Emerald's response that at a conceptual level comparing alternatives solely based on estimated capital costs makes no sense. Also, comment on Emerald's contention that the examples of POTW upgrades were not solely intended for ammonia removal, but were implemented to accommodate higher flows, greater BOD and TSS removal.

On Page 23, IEPA notes that it continues to be concerned about the Whole Effluent Toxicity, or WET, test within the petitioner's effluent specifically referring to substances such as MBT that inhibit nitrification.

Please comment on whether there will be any benefit to requiring Emerald to perform toxicity studies on individual components of its effluent rather than the WET test for the whole effluent or the combined effluent coming out of the treatment plant. If such studies indicate that chemicals like MBT is toxic to aquatic life, comment on whether procedures of 35 Ill. Adm. Code 302 Subpart F could be used to derive permit limits.

Is this something Mr. Twait can answer or do you want to defer?

MR. GRADELESS: I think we want to reserve and respond.

MR. RAO: On Page's 23 and 24, IEPA notes that Emerald's effluent toxicity LC50 test results of 3.87% is not found in any other Illinois facility. To give an idea to the Board regarding the magnitude of the LC50 values, please provide examples of WET test results of other NH3-N or ammonium-nitrogen dischargers in the state.

On Page 24, IEPA -- IEPA states that a mixing zone is improper because petitioner

is not providing the best degree of treatment. Please comment on whether Henry plant's ammonia-nitrogen discharge would have any adverse impact on aquatic life if Emerald did not have a zone of initial dilution or a mixing zone.

In response to IEPA's concern regarding viability of and costs associated with the treatment alternatives, Emerald has submitted an expert report with updated information. That's Petitioner's Exhibit 12. Among the five alternatives reevaluated by Emerald, please comment on whether IEPA has a preference to which alternatives are technically feasible and economically reasonable for possible inclusion in the adjusted standard.

Based on Emerald's response, please comment on whether IEPA wishes to revise or modify any of its recommendations on Page's 25 through 29 of the recommendation filed on July 19th, 2019. If so, please submit specific language changes.

MR. GRADELESS: Thank you.

HEARING OFFICER WEBB: Okay.

MR. RAO: I have just one question.

HEARING OFFICER WEBB: Go ahead.

MR. RAO: This is for Scott based on his response to Mr. Dimond's questioning about the recommended limits for ammonia-nitrogen discharge.

There is a question of how you determined the limits -- the loading limits, not concentrations, and you responded that you did not use the treatment plant flow, design flows, to come up with the loading limits that you recommended.

Can you tell us whether the recommended limits are -- did you come up with those consistent with how Emerald has proposed their limits looking at the data and not on the flows?

THE WITNESS: We just looked at the highest load since September of -- of 2018. It might be a -- so we did not use the flow calculations.

MR. RAO: Do you think Emerald has used flow calculations in their proposed --

THE WITNESS: I'm not sure -- I'm not sure how theirs was calculated offhand.

MR. DIMOND: Would you like me to

answer that because I know the answer?

MR. RAO: Yes.

MR. DIMOND: The limits that were expressed in AS 13-2, the load limits, were calculated using the basic formula that I questioned Mr. Twait about and that he agreed about. In other words, the concentration limit that was established by the Board in AS 13-2 was essentially multiplied by either the design maximum flow or the design average flow depending upon whether it was the maximum or the average and then by the conversion factor of 8.34.

That's how the load limits in AS 13-2 were calculated. I have run the numbers. It does calculate out. In our petition that we filed in April, we proposed no change in either the concentration or the load limits. The Hearing Officer asked us to file a document on December 30th explaining what changes we would like to see, both parties would propose to the conditions in AS 13-2.

In response to that, Emerald filed a document that said that based on our analysis of the data, and this is explained in

Mr. Hathcock's -- in his written testimony at Paragraph's 45 through 51 and was touched on a little bit during his testimony yesterday. We still believe based on our analysis of the data for the last -- well, since the Board granted -- at least since the Board granted the relief in AS 13-2 that we need the concentration limits of the daily maximum of 140 mg/L and a 30-day average of 110 mg/L.

MS. ZEIVEL: Objection. This goes beyond the Board's questioning and has led into testimony.

HEARING OFFICER WEBB: Was your question answered?

MR. RAO: He's about to get there, I think.

MR. DIMOND: I'm about to get there.

HEARING OFFICER WEBB: Okay. Go ahead.

MR. DIMOND: You have to understand the background.

MR. RAO: I just wanted this on the record so the Board understands. So please go ahead.

MR. DIMOND: So Emerald's technical people and its site director Mr. Hathcock testified about this and the testimony that is in Paragraph's 45 to 51 of his written testimony explains that Emerald has looked at the load discharge data for the last several years and its site director and technical people have testified that we can -- even though that the concentration -- we're not proposing a change in the concentration limits we can accept a 25 percent decrease in the load limits.

So the way we calculated the load limit that we proposed on December 30th was to use the concentration, times the 8.34 conversion factor, times either the design maximum flow or the design average flow and then times 75%, which is the same thing as a 25% reduction. That's what is explained in Paragraph's 45 to 51 of Mr. Hathcock's testimony. So I'm not testifying. I'm repeating for you the testimony that Emerald has put in the record through its witnesses.

MR. RAO: Thank you.

MR. GRADELESS: And with respect to

the question and how the Agency -- Mr. Liska will be able to testify about that issue and how it was calculated.

HEARING OFFICER WEBB: Any more questions?

MR. RAO: No, that's it.

HEARING OFFICER WEBB: Does anyone have any more questions for this witness? Okay. Thank you very much. It is 11:43. Do we want to get through at least the direct testimony of the next witness before we break for lunch or --

MR. GRADELESS: It's going to be long.

HEARING OFFICER WEBB: Well, we could take public comment. We could take our public comment now and then break for lunch. Do you want to do that? Does that sound okay?

Mr. Pinneo, are you ready to make your public comment?

MR. PINNEO: I can give my comments now.

HEARING OFFICER WEBB: You don't have to be sworn in, but could you please state your name and maybe stand just so everybody can

hear you, especially the court reporter needs to hear.

MR. PINNEO: Sure. My name is Richard Pinneo spelled R-I-C-H-A-R-D. Last name P-I-N-N-E-O. And I'm very familiar with this facility. I've worked at Illinois EPA for over 30 years. I retired back in 2015 and I wrote permits for the plant. It was BFGoodrich back then and then it changed to Noveon and Polywon and now it's Emerald Performance Products or Performance Materials and Mexichem or Mexichem, but, anyway, and -- I have a degree in chemical engineering from the University of Illinois and I worked at Monsanto as a pilot plant operator and I also worked at a waste oil refinery facility and produced the finished waste oil product -- used waste oil, of course.

So I have some questions. I'm just wondering how many waste streams contain MBT? It was stated that the process wastewater from the BDETF production contains MBT in the levels above 3 PM inhibits nitrification. I'm just wondering why can't this waste stream be segregated and treated separately?

It was stated separate treatment of waste streams was infeasible, but a better explanation needs to be provided. I think it could be treated separately either by pretreatment or full treatment. I believe that each production unit produces wastewater independently and could easily be segregated. They have multiple biological reactors that are not being used. So it's not like they don't have the facilities or capacity.

Has reverse osmosis been considered for pretreatment and if it was used, could the reject water from reverse osmosis be reintroduced in the manufacturing process?

Comparing the cost of removing ammonia with municipalities is not appropriate. This is a unique plant with unique wastewater and should be evaluated based on the efforts of evaluation -- of evaluating wastewater treatment alternatives, but also the production side as evident in the testimony that this is now under investigation. It was also identified that MBT will not be in the influence of the wastewater treatment plant if chemical reactions are allowed

to come -- to completion. So why aren't they? That's the question. Why aren't they allowed to come to completion?

Houston Flippin's testimony specifically stated that the chemicals produced at the plant are biologically resistant and that influent BOD levels are low. So why is biological treatment being utilized? It seems to me they should have investigated an alternative treatment to begin with or was this just an attempt to give the appearance that they were providing best degree of treatment?

It was revealed that ammonia levels from September 2019 through December 2019 were 0.3 mg/L or essentially non-detect. Were any toxicity tests performed during this time period? And, if so, what were the results?

It was stated that COD concentrations in the discharge range from 300 to 600 mg/L with an average of 450 mg/L, is this a true average? How often do they test for COD in their effluent? What chemicals in their effluent -- what chemicals are in their effluent that create such a high COD?

If ammonia was reduced to acceptable levels, would the discharge still exhibit toxicity? Are these chemicals toxic? If they are toxic and they are so persistent, what are they doing to the river downstream of the discharge? Are they getting into public water supply intakes?

I don't think that we should allow ammonia to be identified as the only problem. High TDS and high COD levels in the discharge are just as problematic. Finger-pointing on ammonia and saying, "This is our only problem" needs to be reconsidered. We need to be holistic and examine the entire process and results from beginning to end. What would happen if we allow ourselves to consider the best results?

HEARING OFFICER WEBB: Thank you, Mr. Pinneo. If the parties would like to, they may respond to any of those questions in their post-hearing briefs. Mr. Pinneo, if you have anything further to add, the Board is accepting written public comment through February 14th.

Okay. Having said that, shall

we break for lunch? Okay. Break for lunch. Come back in an hour, if you can.

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

HEARING OFFICER WEBB: All right. We'll go back on the record and the Agency may call its next witness, please.

MR. GRADELESS: The Agency calls Mark Winters.

MR. LISKA: Liska.

MR. GRADELESS: Liska. Sorry. Too many Mark's.

HEARING OFFICER WEBB: Will the court reporter please swear in the witness.

WHEREUPON:

MARK LISKA

called as a witness herein, having been first duly sworn, deposeth and saith as follows:

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

BY MR. GRADELESS:

Q. Good afternoon, Mr. Liska.

A. Hi.

Q. Can you please state your name for

the court reporter.

A. Mark Liska.

Q. Can you spell the last name?

A. L-I-S-K-A.

Q. Mr. Liska, by whom are you employed?

A. I'm employed by the Illinois EPA.

Q. And what is your position at the Illinois EPA?

A. I am an engineer for the industrial unit of the Bureau of Water.

Q. And how long have you been an engineer for the industrial unit of the Bureau of Water?

A. Roughly 14 years.

Q. And what is your educational background that led you to become an engineer at the Illinois EPA?

A. I have a bachelor's and a master's degree in chemical engineering from the University of Illinois-Chicago.

Q. And did you have any prior work experience prior to the Illinois EPA?

A. I did work at a couple other places, at a couple of chemical plants.

Q. Now, are you familiar with the petitioner's facility in this case?

A. Yes.

Q. And how are you familiar?

A. I wrote their last permits, I worked with the EPA on their last petition, the AS 13-2, I think.

Q. Let me stop you for a second.

When you say the last petition, you mean the last adjusted standard?

A. The last adjusted standard, yes.

Q. You were involved in that case?

A. Yes.

Q. Okay. How else may you be familiar with the Henry facility?

A. I have -- I wrote their last permit.

Q. Okay. And is my understanding you also are familiar with the recommendation in this case, is that correct?

A. Yes.

Q. Now, Mr. Liska, as part of your duties as an engineer at the Illinois EPA, what -- what -- I know you're familiar with the permit, but what do those duties include?

A. I'm sorry. The duties of --

Q. Your job duties.

A. Just my general job duties?

Q. That's right.

A. Oh, writing NPDES permits for industrials, state construction and operating permits, I would handle phone duties of answering calls on my specific day from consultants for industrial calls, grade Class K operator licenses, I train new engineers. That's about all I can think of at the moment.

Q. Okay. Now, you said you're familiar with the Henry plant facility in this particular adjusted standard, right?

A. Yes.

Q. If I were to show you a map diagram of the facility, would you be able to identify it for the Pollution Control Board?

A. Yes.

MR. GRADELESS: Let the record reflect I'm showing the witness what has been previously identified as State's Exhibit 4 for identification.

(Document marked as State's Exhibit No. 4 for identification.)

BY MR. GRADELESS:

Q. Now, Mr. Liska, can you please identify the document I just handed you.

A. This is a flow diagram of Emerald's and Mexichem's treatment plant.

Q. Now, when you say this is a flow diagram, what is a flow diagram?

A. It will show where different discharges flow from one unit operation to the next.

Q. And is your understanding that this flow diagram represents the Emerald Performance -- I'm sorry -- the Henry facility at issue in this case as it operates today?

A. Yes.

Q. I'm going to go over this first page where the sticker says Exhibit 4 on it. I understand there's a back page, but I'm just talking about this front page with the exhibit sticker, are you with me?

A. Yes.

Q. Okay. Can you please describe to us what, you know, this depicts here in the first row? It's labeled it looks like on the left-hand side pretreatment.

A. That would depict any pretreatment -- treatment for the three different flows that go ultimately through their entire treatment system. This would be treatment that ultimately goes to the PVC tank from Mexichem as shown here.

Q. When you say here, can you identify where you're talking about?

A. I am pointing from the part that is listed -- it's listed at Poly 1 Corporation, some kind of units, process discharges and cooling tower, some or all of it goes to some kind of pretreatment before discharging to the PVC tank.

Q. Let me back you up --

A. Sure.

Q. -- for a second.

You mentioned there's a Poly 1 Corporation. Can you identify to the Board what your understanding is of the Poly 1 Corporation waste stream?

A. I understand that now is that they are now Mexichem's waste stream.

Q. Okay. It appears that the rectangle immediately to the right of the Mexichem waste stream it says Emerald Performance Materials, do you see that?

A. Yes.

Q. What is your understanding of that particular rectangle in this flow diagram?

A. The process discharges from Emerald Performance Materials. Some of it goes to their C-18 pretreatment and eventually to their C-18 tank. The rest of it, without pretreatment, goes to their PC tank.

Q. Okay. So is it fair to say you're sort of reading this from top to bottom --

A. Yes.

Q. -- when you look at this sheet? Is that a yes? I'm sorry.

A. Yes.

Q. You mentioned a PVC tank, a C- -- is it C-18 tank and a PC tank, are those circles depicted in the equalization and diversion row, the second row from the top?

A. Yes.

Q. Okay. And can you describe briefly then what happens in this waste stream?

A. After it's --

Q. After -- I'm sorry. After the equalization and division process.

A. Okay. From there, it would go to primary treatments. They all kind of meet together and flow toward the left of the sheet and down first to the neutralization tank where there is some kind of pH adjustment.

Q. Can you identify where the neutralization tank is on the flow diagram?

A. It's on the primary treatment row. It would be third from the left and this just says neut tank, but it's for neutralization tank.

Q. Okay.

A. From there, they would all flow to the box to the right of it that says, "Coagulant addition tank" where coagulant would be added to the combined stream for future use that I'll explain in a different unit. From there, it would go to the right again to the flocc tank, which is adding flocculation to the combined stream of

those three. I mentioned previously the PVC tank, the C-18 tank and the PC tank.

From there, it will go to the primary clarifier. The primary clarifier will use the flocculent and it will draw out solids. The sludge will go to the right, to the sludge dewatering system which is one more to the right where sludge will then go to an approved landfill.

The effluent from it, the liquid effluent from that, will go slightly to the right but then it will go down -- let's see. No sludge dewatering. It will then -- some of it will filter back to the neutralization tank. The rest will go around to -- into the secondary treatment section will go to the biotreater -- I'm sorry. The bioreactors as they're listed here.

Q. Okay. Now, let me stop you there. Now, you're looking at the bioreactor section in this waste stream, is that right?

A. Yes.

Q. And that is in the third -- fourth column from the top labeled secondary treatment, is that correct?

A. Yes.

Q. Now, I notice on there that it says north bioreactor, an east bioreactor, a central bioreactor and an east bioreactor, do you know why it may say that there are two east bioreactors in this facility?

A. What I've been told earlier is that there was a -- that is just an error. One of those east bioreactors should be listed as west bioreactor.

Q. Okay. Now, is it also your understanding -- tell me. I'm sorry.

Are you aware whether the north bioreactor, is that the one that is operational?

A. Yes.

Q. Okay. Can you tell us what happens after it's in secondary treatment in the north bioreactor?

A. After it goes through the north bioreactor, that's where most of the -- I'll get to that. From -- from the north bioreactor, it would go then to the secondary clarifier.

Q. So it actually skips the east bioreactor and the central bioreactor and the west bioreactor, do you know why?

A. Currently, it skips all of those because none of those are in operation right now.

Q. Okay. Do you know of any time any of those three were ever in operation?

A. Since I've been doing their permit, I can't recall a time.

Q. Do you remember about the adjust -- previous adjusted standard one way or another whether the biotreaters were working?

A. Okay. I recall from that that there were two bioreactors working at the time. It was the north bioreactor and one of those three other ones. I can't recall exactly which one.

Q. Okay.

A. But I know the north one was working.

Q. Okay. But in the last permit cycle, you have not been aware of all -- or more than one bioreactor working, is that correct?

A. Correct. Since then, only the north one is working.

Q. Okay. Now, when the waste stream then enters -- you said it then goes to the secondary clarifier?

A. Yes.

Q. And that's the circle -- the furthest circle to the right under secondary treatment, is that correct?

A. Correct.

Q. Okay. What happens after the secondary clarifier with respect to the waste stream?

A. From there, the clarified effluent will go to one of two sand filters.

Q. And where are the sand filters on this flow diagram?

A. The sand filters are on the next row down, the very bottom row, listed as tertiary treatment and they're both on the far right next to Exhibit 4 east sand filter and west sand filter.

Q. Okay. After the waste stream enters the sand filters in the tertiary treatment column, what happens?

A. That is the final piece of treatment prior to discharge through outfall 001.

Q. Okay. Now, you've sat here, you know, yesterday and today.

A. Mm-hmm.

Q. There's been a lot of discussion of MBT's. So I just wanted to talk about your understanding of where the MBT is in this facility.

A. Okay.

Q. So I want to first start with Mexichem's discharge into the facility. Are they discharging MBT into the Emerald facility?

A. They are not discharging MBT into the Emerald facility treatment center.

Q. Now, when does the MBT, if you know, get into the waste stream at the Henry facility?

A. There is MBT in both the C-18 tank and the PC tank prior to it going into what starts as the primary treatment system.

Q. And I believe -- is that looking in the equalization and division column there --

A. Yes.

Q. -- on the right-hand side the C-18 tank and the PC tank?

A. Yes.

Q. Is there any other -- what about the PVC tank?

A. There is no MBT in the PVC tank.

Q. What about after the PVC tank, are you aware of whether or not after the PVC tank they have MBT?

A. After the PVC tank, all three of those tanks; the PVC tank, the C-18 tank and the PC tank all mix together. Since the C-18 tank and PVC tank have MBT in it, it -- now, the total waste stream will have MBT in it.

Q. Okay. Now, does Mexichem's waste stream go anywhere else before -- I'm sorry. Does it mix with Emerald Performance -- Strike that.

Does the waste stream of Mexichem mix with the waste stream of the petitioner at any point in time before the PVC tank?

A. Before the PVC tank?

Q. Right.

A. No, it does not.

Q. Now, a lot of talk was -- there was some talk about some side streams, do you know what that was referring to with respect to the PVC tank?

A. There are some process discharges

from Poly 1 and there may be some water -- from what is here on the very top in Emerald Performance Materials, the -- it looks like there is some water -- treatment wastewater going to it, but it's not water treatment as in the primary, secondary and tertiary.

This would be treatment, I believe, that conditions water for treatment. It would be wastewater off of that. That would be before any kind of process wastewater. It's not involved with any process wastewater and it does not have any MBT in it.

Q. Now, I want to direct your attention to the second from the bottom column known as secondary treatment, specifically the secondary clarifier.

Is there MBT showing up in what is the circle entitled Secondary Clarifier?

A. The secondary clarifier is much like that primary clarifier. It settles out solids. There would be solids -- MBT it is assumed that it is in the solids. However, from DMR data we have seen, there is no MBT coming from the treated effluent water coming out of the secondary

clarifier.

Q. Now, why is that relevant?

A. It's the MBT that is causing inhibition of nitrification in the bioreactors just preceding the secondary clarifier.

Q. So correct me -- I'm a little confused then.

If there is no MBT coming out of the secondary clarifier, is it still considered -- I'm sorry. Scratch that.

After the secondary clarifier, it's still part of the petitioner's waste stream, correct?

A. Yes.

Q. And there is no MBT there?

A. Correct.

Q. Okay. Now, Mr. Liska, are there ways that you know to reduce MBD -- MBT prior to the waste stream?

MR. DIMOND: Objection. Foundation.

MR. GRADELESS: Mr. Liska is a chemical engineer, a master's degree in chemical engineering, he wrote this facilities permit.

HEARING OFFICER WEBB: Overruled.

MR. GRADELESS: I don't know what else I can say.

BY THE WITNESS:

A. What was the question again?

BY MR. GRADELESS:

Q. Well, you know, there's been a lot of talk about MBT being an inhibitor and therefore, we can't nitrify.

So do you know of any ways, I guess, to reduce the MBT prior to the effluent?

A. Prior to the effluent at what point?

Q. The final effluent.

A. Well --

Q. Or at any point.

A. At any point. I --

MR. DIMOND: If he is going to say any point, I'll object to compound. I think we ought to have a specific --

HEARING OFFICER WEBB: Okay. Let's do it.

MR. GRADELESS: That's fair.

BY MR. GRADELESS:

Q. Let's go through all and any points you know.

A. Sure. Well, we -- we do know they are already getting rid of the MBT in the secondary clarifier. We know that works. We know it's in there prior to it. We know that it's not in there past it. We assume that it is going through -- it is coming out of the sludge and we know that works.

Prior to that, if we go all the way back to the beginning of the process prior to any treatment, we know that MBT -- we know that the MBT can be through manipulation of their reactions to make their products that they can run their reactions in a way that would minimize or possibly eliminate MBT in the products that use them.

Q. Okay. Have you discussed or are you aware of how these process changes have evolved over time?

A. As far as their process changes in their manufacturing of their chemicals, we've been told by the previous people that they are running their reactions further and getting less MBT. Prior to that in all of our prior adjusted standards, we have been told that that was not

possible.

Q. What about removing the MBT from the waste stream altogether, is that possible? Let me clarify that.

A. Sure.

Q. Are there other ways MBT can be removed within the waste stream?

A. Other than through the secondary clarifier and reacting it through, I believe there -- one of the -- possibly Mark Winters mentioned using a chemical to basically react it out -- this could be done at possibly several points through -- through this whole treatment center.

Q. What about separating the MBT from the waste stream, is that a possibility?

MR. DIMOND: Objection. Vague as to what he means.

HEARING OFFICER WEBB: Can you clarify what you mean?

MR. GRADELESS: Sure.

BY MR. GRADELESS:

Q. Is it possible to separate the MBT waters from the waste -- any further from the

waste stream?

A. Well, we've been told through these proceedings that there are ten -- they make ten different chemicals. Four of them go -- four of them have MBT in their discharge at some rate. It could be possible to run -- to re-pipe and run those separately from the rest of the wastewater discharges.

Q. And where would those go?

A. Which ones? The --

Q. The MBT ones. I'm sorry.

A. The MBT ones could go through a separate system that could possibly -- that could possibly use other treatment, extra clarification or some of the -- some of the 16 different treatment alternatives that were worked while the rest could go through the system and nitrify.

Q. You mentioned the potential of refining reactions even further, is that correct? What did you mean by that? I'm sorry. What did you mean by that?

A. Well, the reactions that they're running use MBT and they run these reactions at, I'm assuming, a certain heat and pressure. They

will run those -- they would run those in equilibrium with whatever product that they want to make. Through that, they could further -- I'm just going to say run their reaction, but run -- but change the equilibrium that the MBT on one side could be far less or possibly eliminated. It would get more products and reduce MBT.

Q. Now, are you familiar -- you did identify it here on the chart, but are you familiar with tertiary nitrification?

A. Yes.

Q. What is tertiary nitrification?

A. Tertiary nitrification would be if you had -- would be past the secondary clarifier in this case or past any point where there would be no more MBT in this case that they could then nitrify the wastewater which up to that point contains -- contains ammonia and nitrify that out. The ammonia would change to nitrogen and bubble out.

Q. You mentioned potentially providing this after the secondary clarifier and I do want to talk about that possibility, but let's back up a little bit into the waste stream and let's talk

about the waste stream coming from Mexichem.

A. Okay.

Q. Are you aware of whether or not tertiary nitrification methods could be applied to the waste streams coming from Mexichem?

A. They could be applied in that way. What they would do -- they would actually just nitrify almost in the same way that they're doing currently, at least the way they're setup currently, but without the MBT coming from Mexichem's waste stream or more specifically the waste stream in the PVC tank. Since that wouldn't have MBT, I would find no reason that they wouldn't be able to nitrify it and get rid of the ammonia.

Q. And we did mention tertiary nitrification. Would other alternatives prior to the PVC tank achieve nitrification, if you know, with respect to Mexichem's waste stream?

A. To get rid of the ammonia or what could be turned into ammonia from the PVC tank, that would probably be the best way to do it.

Q. And what was that way you were saying?

A. The tertiary nitrification.

Q. And why would it be the best way?

A. There aren't a lot of other systems that would specifically break down the ammonia that would be both technically feasible and economically reasonable.

Q. Now, Mr. Liska, we talked a little bit about these bioreactors.

A. Yes.

Q. And I think they have been synonymously called during these hearings biotreaters?

A. Yes, I say bioreactor because that's what they have on their sheet here.

Q. Okay. And is in the secondary treatment column, right?

A. Yes.

Q. Now, would it be able -- scratch that.

Would you be able to achieve nitrification in these bioreactors?

A. In absence of MBT, yes.

Q. What about the bioreactors that are not being used?

A. They could -- once they are up and operational prior to MBT being taken -- being removed, they would not be able to nitrify. However, if they were I want to say re-piped so after the secondary clarifier were to --

Q. Let me back you up there.

A. Sure.

Q. You're looking at the secondary clarifier, the circle -- furthest circle to the right on the secondary treatment column second from the top, right?

A. Yes.

Q. Okay. You said piping from the secondary clarifier, right?

A. Yes.

Q. What would you do with that piping?

A. We would simply reverse it. Instead of going from the primary clarifier, to the bioreactors, to the secondary clarifier, it would go from the primary clarifier, to the -- in this case, the north bioreactors, skip the rest of the bioreactors, go to the secondary clarifier and then go back to the east center and west clarifier which, at that point, there would be -- past the

secondary clarifier there would be no more MBT and those could nitrify.

They could also do it in a second way. If they put a baffle system in each one of these four and ran all four of them the same, they would go from the primary clarifier to the first half of each one. It could be in series or parallel.

Q. When you say each one --

A. Each of the four bioreactors.

Q. Okay.

A. Then to the second clarifier and then back to each one, but the --

Q. When you say -- I'm sorry. Let me back you up.

A. Yeah, I keep saying --

Q. You -- I've looked at this map. I understand what you're saying, but folks may not.

You would -- would you have to change the bioreactors in any way to achieve any kind of nitrification?

A. Well, they would -- they would definitely have to be all working again for one thing. In the first case I mentioned, there would

be very little change because they would still run as they are and just using just the north one prior to secondary clarifier and just the other three post secondary clarifier.

In my second case, they would have -- there would be an added amount because they would have to do the baffle system in each one of them. However, as we have been told in the last two days, the other three are -- still need to be worked on and the north one needs to -- will in the future -- in the near future need to be worked on. In that case, they could -- in order to save possibly a substantial cost, they can add these systems while they're refurbishing them.

Q. And you would need -- how would you have to refurbish -- I mean, to achieve nitrification, you have to add some kind of fixed fill media or bugs to these bioreactors, is that fair?

A. Yes.

Q. I wanted to make sure. Let me take you back to the first scenario that you mentioned. We kind of have to go slow because we're trying to make a record.

A. Sure.

Q. The first option you've recommended is to -- correct me if I'm wrong. Piping in the secondary clarifier, bringing the waste stream back through one of the currently unused biotreaters that have now been refurbished with some type of fixed fill media, is that what you were saying?

A. Right. That would serve for the bugs, per se, so that they would nitrify the ammonia.

Q. Would that be -- would you consider that a tertiary nitrification?

A. Yes, that is a form of tertiary nitrification.

Q. Have you seen this before in other facilities?

A. Yes, just about any industrial facility as well as municipal facilities that have BOD and ammonia in their discharge will use this type of nitrification to lower their BOD and their ammonia in the discharge. It is very common.

Q. Now, Mr. Liska, what if -- what if I were to say, "Well, I'm planning on using these

biotreaters for more capacity." You mentioned a second opening, is that right?

A. Yes.

Q. And you mentioned a backfill system?

A. Yes.

Q. Tell us about that.

A. If you baffled each section to make it essentially two -- it would be essentially two half circles in each one, one -- you would have -- you would have one side on each one be secondary -- work -- not secondary, but work as they're -- as the north biotreater is working now. So there would be no change in that.

Then after you go to the secondary clarifier, you would then run it back through, but run it on the other side which does not have -- which would then not have MBT. That would then nitrify the ammonia prior to -- prior to -- well, prior to the sand filter and then discharge.

The -- the -- in both cases -- in the first case, you would -- the permitter -- permittee mentioned that they would -- they would have problems with not having enough treatment

while the north biotreater was being refurbished. However, in this case, you would still --

MR. DIMOND: I'll object that does not state any testimony. There is no testimony to support of what Mr. Liska just said. We didn't say it.

MR. GRADELESS: If it's your understanding, Mr. Liska, that's fine. We don't intend to misstate the testimony.

HEARING OFFICER WEBB: Go ahead.

BY THE WITNESS:

A. There would still -- by allowing all four of them to be able to do both secondary and tertiary nitrification at the same time taking any one of those four out it will -- it will still give enough capacity to both do secondary and tertiary nitrification to completely nitrify the ammonia in the discharge and discharge with little to no ammonia in their discharge.

BY MR. GRADELESS:

Q. How does the petitioner compared to other industrial -- how does their waste stream compare to other industrial facilities after the secondary clarifier?

A. After the secondary clarifier where they have no more MBT, their discharge is substantially similar to just about any other industrial facility that has biological such as food or other chemicals industries that does not have nitrogen -- nitrifying inhibition. In fact, it could also be similar to municipal wastewater after -- that would not have any nitrifying inhibition.

Q. You mentioned this sort of baffling system.

A. Mm-hmm.

Q. Have you ever seen this before?

A. Yes.

MR. DIMOND: I'm -- I'm going to agree it is a baffling system.

BY MR. GRADELESS:

Q. But the system you've discussed, Mr. Liska, tell me about it. Have you seen a similar system?

A. It's in a lot of systems throughout Illinois and one in particular I can recall is for ExxonMobil Joliet refinery. They're obviously in Joliet, Illinois. They discharge to the Des

Plaines River just prior to it mixing into the Illinois River and they also -- their ammonia limits fall under 304.122(b) limits that are the same ammonia limits that this facility fall under. They have the same -- they -- in the last 10 to 15 years added this system to their nitrification system, overall treatment system, and specifically the nitrifying part.

Q. Sorry. When you say they, who are you referring to?

A. I'm sorry. ExxonMobil at their Joliet refinery. They were able to add this system and through it --

Q. Let me stop you.

A. Sure.

Q. Let me back you up a little bit. We will talk about that in a second. But getting back to the tertiary nitrification scenarios, you mentioned that -- let's take it back to scenario one. It seemed much simpler to me.

You would believe that after the secondary clarifier, some form whether it be recycling a bioreactor or separate and distinct tertiary nitrification, those systems could

achieve, in your opinion, the 3 and 6 ammonia limits?

A. Yes.

Q. Have you described this to the petitioner?

A. Yes.

Q. And what happened when you described this to the petitioner?

MR. DIMOND: Objection as to foundation. There is no indication as to when he did this.

BY MR. GRADELESS:

Q. When did you describe this to the petitioner?

A. In a meeting with them. I believe it was sometime in mid-2019.

Q. And at the meeting when you described this type of meeting to the petitioner, what happened?

A. They seemed to almost know that this was possible and that they would possibly -- either known that this was possible or that maybe that -- possible they would look into it.

Q. Okay. Did they ever reach out to

you afterwards and say that they looked into it?

A. I don't recall. I don't think so.

Q. You mentioned ExxonMobil?

A. ExxonMobil.

Q. Sorry. Are you familiar with the adjusted standard case in R97-28?

A. Yes.

Q. You had mentioned that the ExxonMobil facility -- can you describe that for us?

A. It is an oil refinery. They use -- they refine roughly 250,000 barrels of crude oil per day. They have -- their discharge -- their process wastewater discharge has -- is very high in BOD and ammonia and they -- at times they have had problems with nitrification.

Q. Now, are you -- are you aware of whether or not ExxonMobil had nitrification inhibitors?

A. It is believed that they do have at times nitrification inhibitors. By refining gasoline, gasoline isn't just one chemical that we call gas. The gas that you put in your car is probably easily a thousand different chemicals.

At times, ExxonMobil would have problems with their nitrification where they -- it would work for a little while and then suddenly due to a possible refinery change as they change -- all refineries will change the amount they're refining of different types of chemicals be it gasoline, diesel.

Q. Let me slow you down.

A. Sure.

Q. I was just wondering if they had other nitrification inhibitors?

A. Yes.

Q. Okay. Perfect.

MR. DIMOND: I'm going to object on foundation to that. There is no foundation that he knows anything about the internal workings of the ExxonMobil plant or what is in the wastewater.

HEARING OFFICER WEBB: It sounded like he did. I would -- you can follow up in your cross-examination, but --

BY MR. GRADELESS:

Q. Yeah, I don't need to -- I have been hearing that nitrification inhibitors are sort of this, you know, magic dust that you can't achieve

nitrification and I've heard that for two days now.

Do you know whether or not ExxonMobil had an adjusted standard?

A. ExxonMobil had several adjusted standards throughout their -- throughout their existence at the Joliet refinery.

Q. And what is the story now?

A. As of roughly 2010 after they upgraded their treatment plant, they were able to meet 3/6 limits. As of 2010, they have no longer had an adjusted standard and they can meet the 3/6 limits put forth in 304.122(b).

Q. And that's the same limits that are at issue today?

A. That is the same limits that are at issue at the Henry plant.

Q. And you had talked about a baffling -- a potential baffling system.

A. Yes.

Q. It may be baffling to some folks, but at least you understand what -- what you were referring to, is that right?

A. Yes.

Q. And is this the same type of system, if you know, that was installed in ExxonMobil?

A. Yes.

Q. ExxonMobil understood the baffling system?

A. Yes, they did. They must have.

Q. There is other cases. Are you familiar with Citgo?

A. Yes.

Q. What is Citgo?

A. That is another refinery very similar to ExxonMobil.

Q. Okay. Are you familiar with what they did? Did they have nitrification inhibitors?

A. They also had problems with nitrification leading to them getting adjusted standards for the 304.122(b). They're also under that because they discharge to the Sanitary and Ship Canal which is defined under that waterway that is -- that is -- falls under the 342 -- 304.122(b) statutes.

Q. Are you familiar with -- I may have missed it.

Did they add a new system? Are

you familiar with -- I'm sorry. Let me scratch that.

What, if any, type of treatment did Citgo use?

A. They use a system that is very similar to ExxonMobil's.

Q. And are you aware of whether or not they got within the statutory limits now?

A. They now no longer have an adjusted standard for 304.122(b). They now meet the 3/6 limits.

Q. Mr. Liska, I want to show you what has already been entered into evidence as Petitioner's Exhibit 15. I don't know if you have a copy.

A. This one?

Q. That's it.

A. Great.

Q. Can you please identify your understanding of Petitioner's Exhibit 15?

A. This is data showing MBT levels it looks like from May 1st, 2019, to May 31st, 2019. MBT levels at the PC tank, primary clarifier and secondary clarifier.

Q. Okay. And is your understanding that these -- the PC tank, the primary clarifier and the secondary clarifier are also depicted in State's Exhibit 4, the flow diagram?

A. Yes.

Q. Now, what is the numbers under the secondary clarifier?

A. All the numbers in the table on the left list the secondary clarifier as zero.

Q. What does that mean?

A. That would mean that there is no MBT after the secondary clarifier.

Q. Okay. When did you receive this information from the petitioner?

A. I believe I received it from you. Obviously, it was passed May 31st, 2019. I cannot remember exactly, but it was pretty recent because otherwise we wouldn't have this data.

Q. When was the first time you were made aware of there is no more MBT showing up in the secondary clarifier?

A. It would be through this data.

Q. That you received just recently?

A. Yes.

Q. Within the last year?

A. Yes.

Q. Let me -- I'm through with that. You can set that down.

A. Okay.

Q. Mr. Liska, directing you back to State's Exhibit 4. I want to direct you now to the other -- the back page. The one that does not have an exhibit sticker.

A. Okay.

Q. Do you know what this flow diagram represents?

A. Yes, this would be -- well, as it says, sources of their wastewater and what parts of their plant uses each -- uses each stream.

Q. When you say plant, you mean the Henry plant in Henry, Illinois?

A. The Henry plant totaled, both Mexichem and Poly- -- Mexichem and Emerald.

Q. Okay. And it's a fair and accurate representation of the flows as you understand them?

A. Yes.

Q. Who -- when was the first time you

saw State's Exhibit 4?

A. All of it? That would be during the very first time I -- that I reviewed their permit, their NPDES permit.

MR. GRADELESS: At this time, the State moves into evidence State's Exhibit 4.

MR. DIMOND: I don't have any objection.

HEARING OFFICER WEBB: The Agency's Exhibit 4 is admitted.

MR. GRADELESS: Okay.

BY MR. GRADELESS:

Q. Mr. Liska, set State's Exhibit 4 down for just a moment.

A. Mm-hmm.

Q. Is it my understanding were you part of a group that assisted in providing the Agency's official recommendation in this case?

A. Yes.

Q. As a part of that group, it is my understanding -- what did you do?

A. We looked over the last adjusted standard as well as worked with what we had received since then and made recommendations

for -- for what we would do as a new adjusted standard.

Q. Have you reviewed the April 17th, 2018, report from Emerald Performance Materials -- and I will submit to you that that is Petitioner's Exhibit 11.

Let us know if you've seen that document before, Mr. Liska.

A. Yes.

Q. And you had an opportunity and chance to review that document?

A. Yes.

Q. I want to direct your attention to the granulated active carbon alternative that was reviewed.

What, if anything -- what was the granulated active carbon alternative?

A. From -- from this, they reviewed whether granulated activated carbon could be used as treatments for helping with nitrification inhibition and they tested it on the wastewater. I believe that was the combination of the C-18 tank and the PC tank, but prior to the PVC tank.

Q. Now, how, if in any way, was that

relevant to you?

A. It had some relevance to it. We -- we did want to see what the results would be if granulated activated carbon were -- were used as treatment at that particular point. We also would have liked to have seen it if that had been used at other points throughout the treatment plant.

Q. Why would you want to see whether or not that would be of any use after the treatment plant?

A. At different points throughout the treatment plant be it the clarifier, the flocculation, either clarifier or anything there, you would have a different constituent that is in the wastewater and having different constituents in the wastewater could greatly affect the performance of the granulated activated carbon.

Q. Were there any -- was there anything else that you found relevant about the granulated active carbon alternative?

A. They -- let's see. They tested it at one point for -- at 100% of the time. We would have also liked to see it in combination with other treatments such that maybe they would not

have to use the granulated carbon all the time.

Q. And was that analysis provided?

A. The one I just described?

Q. That's right.

A. It was not.

Q. Okay. Thank you, Mr. Liska. I want to -- there is one thing I wanted to go back to. We did talk about the ExxonMobil adjusted standard case. Do you remember just talking about that a second ago?

A. Yes.

Q. Do you remember -- I mean, do you remember what exactly the permit numbers were?

A. Permit numbers?

MR. DIMOND: Objection. Vague.

MR. GRADELESS: I'm sorry. That's fair.

MR. DIMOND: Vague as to numbers.

MR. GRADELESS: You're right.

BY MR. GRADELESS:

Q. Do you remember exactly what the permit -- what the limits were in ExxonMobil, the adjusted standard limits?

A. For ammonia?

Q. Yes.

A. I believe after that last one that they had the limits were 8 milligrams average, 26 max mg/L.

Q. And sitting here today, is it fair to say you now believe that they meet the 3/6 limitations?

A. Yes.

Q. And if you weren't sure -- if that weren't true, what would you do to go verify that?

A. I would look at the DMR data.

Q. Okay. Same with the Citgo case, do you remember what the adjusted standard was, the specific numbers?

A. I want to say it was close to ExxonMobil's, but I don't remember exactly.

Q. Now, Mr. Liska, there's been a lot of talk about field application.

Are you familiar with field application?

A. Yes, I'm -- I do lots -- many, many permits, easily over 100, of spray irrigation and land application of sludge, of industrial sludge in Illinois.

Q. Over 100 -- I'm sorry. Over 100 what?

A. Over 100 operating permits, state operating permits, for this.

Q. They allow field application in Illinois?

A. Yes. Of industrial sludge, yes.

Q. And what about any municipals, if you know?

A. We also allow -- we also permit.

MR. DIMOND: I'm going to object on foundation. He is in the industrial waste treatment -- the industrial permitting. He says that he's not in the municipal waste permit section. So I don't know how he would have foundation for that.

MR. GRADELESS: If he knows.

HEARING OFFICER WEBB: Yeah, you can -- overruled.

BY THE WITNESS:

A. The municipal section does allow for the land application of municipal sludge in Illinois.

BY MR. GRADELESS:

Q. Okay. And are you aware of any specific municipalities?

A. Specific municipalities?

Q. That have field applications.

A. It would be most of the larger ones because that's the most cost-effective way to get rid of it. In particular around here, it would definitely be the Peoria Sanitary District. I made sure to look at their NPDES permit and, yes, they do allow for it.

Q. So the Peoria Sanitary District, they field apply their waste stream?

A. Yes.

Q. Do you remember seeing that mentioned in Mr. Flippin's report?

A. No, I don't remember him saying that.

Q. Okay. Do you know of any other chemical companies in the State of Illinois that field apply?

A. Yes, I know that AkzoNobel Chemicals, they have a new name now but I can't recall what it is, but AkzoNobel Chemicals in

Morris, Illinois they spray irrigate their wastewater.

Q. Okay. What is significant about AkzoNobel Chemical?

A. They -- they are under the federal categorical standards 40 CFR 414, which is the same as -- which is the same category that the Henry plant waste water discharges under.

Q. Did you have the opportunity to reveal -- review the field application alternative in this case?

A. Yes.

Q. Did you receive a study from the petitioner in this case?

A. The initial study they gave us told us that it was not permissible by the industrial unit to do that. They haven't mentioned it today -- in these last two days. They gave a second study that showed -- gave their reasons for why they wouldn't -- why it would not be cost-effective for them to do it.

Q. Okay. When you say a study, what do you mean by a study?

A. They -- it's in one of these that

they gave at least a few paragraphs where they said what they considered. I believe it was also possibly Mr. Flippin or one of them that also went over in their testimony yesterday of all they considered when considering spray irrigation.

Q. Okay. And what, if anything, did you find relevant with respect to what was considered in this case?

A. Well, I didn't really agree with how -- with -- with the -- with how it was conducted. For example, he considered spraying on only 80 acres that the permittee owns. However, in the vast, vast majority of cases of industrial discharge -- industrial spray irrigation, the permittee does not own the land. They go out to local farmers and will have them spray irrigate.

He only had his calculations based on 80 acres when in most cases when they spray irrigate, it is over -- over hundreds and hundreds and in some cases over several thousand acres. By doing that, that solves some of the other problems he mentioned. He mentioned that there was high salt loads although he didn't mention what type of salt. He mentioned high salt

loads in the waste -- in the spray irrigation discharge. Had he calculated over hundreds or thousands of acres, that would have mitigated the loading and not caused a problem.

He also mentioned that there was a substantial cost of diluting the water -- diluting the spray irrigation wastewater with river water. However, if he had calculated over a much larger area, that would not have -- would not be necessary and the cost of that would not be there.

Q. How many adjusted standard cases are you familiar with?

A. How many?

Q. Let me back up. How many have you been involved with?

A. Substantially, in three.

Q. Okay. And when you say substantially in three, what do you mean?

A. Where I gave a large amount of time doing them. There was one or two in the very beginning of my working here that I was involved in, but I didn't really work very much on them. I just -- it was kind of more of a learning thing.

Q. Have you ever seen -- we talked a little bit about the Mexichem waste stream feeding into petitioner's waste stream, do you remember that discussion?

A. Mm-hmm.

Q. Now, in your history at the Agency, have you ever seen the scenario where one company fed in their waste stream into a second company that had an adjusted standard?

A. As far as both the three that I've worked with, but also as far as all the adjusted standards that were already applicable that I -- that I -- where I was renewing or modifying their NPDES permit, of those, I've seen dozens and dozens of them.

Of all of those, I have never seen where a second company fed into -- fed a wastewater that contained the parameter that they needed an adjusted standard for where they fed that parameter into -- into the permittee's waste stream that had the adjusted standard.

Q. Mr. Liska, I want to talk to you a little bit about the recommendation that the Agency provided in this case and that you provided

input in, are you comfortable with that?

A. Yes.

Q. You don't need a break?

A. No.

MR. DIMOND: Your Honor, I think we could use a brief break. We're having some technical difficulties.

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

HEARING OFFICER WEBB: We're back on the record after a short break. Let's continue with the direct examination.

BY MR. GRADELESS:

Q. Mr. Liska, I'd like you to take a look at what has been admitted into evidence as Petitioner's Exhibit 14.

A. Okay.

Q. Can you identify generally your understanding of Petitioner's Exhibit 14?

A. We have low, average and maxes of average and daily max ammonia as far as concentration and load from 2013 through 2019.

Q. A lot of talk was -- there is a lot

of talk about Illinois EPA's recommendation No. 1 in calculating various numbers, do you remember hearing that?

A. Yes.

Q. Were you involved in that process?

A. Yes.

Q. Okay. Tell us how the Illinois EPA calculated -- let me back this up.

It's your understanding that the Agency is recommending a complete denial of this adjusted standard, is that right?

A. Yes.

Q. Now, what is your understanding then of the recommendation 1 with respect to the limits that the EPA --

MR. DIMOND: I'm going to object. This is duplicative. Mr. Twait already testified about this. We've actually established how all of them were calculated with one exception and that's load limit for the 30-day average. So if he wants to have him testify about that, that's not duplicative. Anything else is duplicative.

MS. ZEIVEL: The Agency stated at the time that we intended to have Mr. Liska

testify as to the basis of the recommendations and you chose to proceed with questioning Mr. Twait. The Agency would like to present the witness that we intended for the basis of the recommendation.

MR. DIMOND: Your interrogatory answer said that Mr. Twait would support recommendation No. 1 and we've already -- and this is duplicative.

HEARING OFFICER WEBB: Well --

MR. GRADELESS: We already --

MR. DIMOND: We've established how they were done.

HEARING OFFICER WEBB: I don't know. So I'm going to allow it.

BY MR. GRADELESS:

Q. Mr. Liska, if you know, how did the Board -- how did the Illinois EPA calculate its ceiling recommendation of not-to-exceed a daily maximum of 110 mg/L? Let's start there.

A. We used DMR data from the point that I believe it was mid-2018 that they did -- when the facility mentioned that they started changing their process that we used data from that point on, basically the maximum of what they had done at

that point.

Q. Maximum concentration?

A. For the concentration, yes.

Q. Now, it also states, "And no more than 553 pounds per day"?

A. Yes.

Q. Do you know how that number was calculated by the Agency?

A. What we did is we took all of the load limit data going back as far as 2014. So this would be 2014, '15, '16, '17, '18, '19 which includes both periods of low flow and low production as when this has previously said it happened in 2019 as well as during full production during 2018 and previously and for the maximum -- daily maximum we simply took the very highest number over the last five years of data including when they were at full production and held them to that number.

Q. Now, I thought September 2018 was the highest production year?

A. That -- that's what I thought I had heard in the last two days, yes.

Q. And you've seen no numbers higher --

since April 2014 higher than 553 pounds per day?

A. I have seen no numbers higher than that on the DMR's.

Q. We -- you also looked at petitioner's 30-day average should not exceed 89.9 mg/L, do you remember how that number was calculated?

A. Again, it was much like the maximum concentration where we took it from mid -- from when they had started in 2018 to make changes to their process and we took the numbers from there and took the maximum from there.

Q. Okay. Now, what about this mysterious 475 pounds per day, this 30-day average, how was that calculated?

A. The 30-day average load limit?

Q. That's right.

A. What we did there was, again, we took from 2014 all of the data through both low production times and through high production times, we found the maximum pounds per day load in our DMR data and from there we added an extra 10% just to take into account if there was any other loading problems, if there was any other -- if

there was any production problems, everything -- we added an extra 10% in our -- in my best professional judgment as an engineer, we added an extra 10% just in case they needed that, but we took it from the last five years of data through high and low production, the highest number they had done in any of that DMR.

Q. Are you familiar with how the petitioner has calculated its -- the load limits that it's petitioning for in this case?

A. Well, from what they said --

Q. When you say they, who do you mean?

A. From what Mr. Dimond said previously, they took what was the previous load limits and just took 25 percent off of them. They took no -- no DMR's into account. They took no production numbers into account. They just took what they had last time and arbitrarily used the 25 percent. He didn't say exactly why 25 percent was the number, but they -- nevertheless, they lowered it by 25 percent.

Q. How would the load limits, if any, affect the concentration level?

A. The load limits are -- the load

limits could -- you could using the load limits back calculate based on what the limit -- what the load you had at that time and the flow of the wastewater at the time. You could back calculate the concentration using the same formula that Mr. Dimond had mentioned earlier. So low limit does have -- of course is at any one point load -- the load limit and the concentration are linked through that formula.

Q. If they're linked, then why was the -- if you know, why was it still proposed to be 140 mg/L in this case by the petitioner?

A. I don't know. Since they have shown the load limits -- since DMR data shows the load limits lower and they calculated on their own lower limits, I cannot find a reason why the concentration limit could not be lowered as well.

Q. Is concentration limits necessarily related to production?

A. Not necessarily.

Q. Why do you say that?

A. It depends on how they run their production. If they are simply -- they have mentioned high rates of production and low rates

of production. If they are simply running their system the same way, but running either batch processes -- they can run either as batch processes or continuous processes.

If they are simply running less batch processes or less -- or they're shutting off their continuous process more often, then there would be no difference between that because they would still be doing the same process. They would just have -- they would just be producing less, but the same concentrations per batch or per process length would still be the same.

MR. DIMOND: Could I ask that answer be read back?

(Whereupon, the record was read as requested.)

MR. GRADELESS: Are we just reading this back to discuss and comment on the testimony?

MR. DIMOND: I'm trying to understand.

HEARING OFFICER WEBB: Are you requesting a clarification of the answer?

MR. DIMOND: I'm trying to understand what the witness said. I can't make

heads or tails of it.

HEARING OFFICER WEBB: Can we try it one more time?

THE WITNESS: Sure.

MR. GRADELESS: Go ahead, Mark.

BY THE WITNESS:

A. The question was about how --

BY MR. GRADELESS:

Q. Production limits.

A. -- production limits and concentration could possibly be linked to each other and whether concentration limits would change with production.

My answer is that it is not necessary -- not necessarily that a lower production or raise in production would affect the concentration of their ammonia.

Q. Why?

A. The reason for that is it depends on how they're running their batch in continuous processes. I will start for a particular batch process. They -- they run it as a batch for a certain amount of time and then they discharge it and the discharge will have a certain

concentration of ammonia in it after it's been through the system.

If they were -- if by low production they are just simply running less batches per day or per month, then there is no difference in the actual reactions for them to make their product.

They are simply running less of them. So they would have -- each time they empty their batch process, they would still have the same concentrations of everything, but their load limit would be less because they would -- each slug of wastewater coming from each batch process would still have the same concentrations. There would just be less of them.

When you add them all up for the day or for the month, you would get a lower loading because there would be less overall wastewater and we established previously that wastewater flow is part of -- wastewater times load limit is part of concentration. There would be less loading, but since it's the same process each time, the concentration of each individual batch would be the same.

It would be the same for continuous process except rather than running it continuously for most of the month or however they do it, it would be for less of the month. So you would have less overall flow, but the same concentration. That would lead to a lower load limit, but the same concentration.

Q. Okay.

MR. DIMOND: Hearing Officer Webb, I -- I took your overruling of our prior objections and I did not object to Mr. Twait's technical testimony. I didn't object to Mr. Liska's technical testimony. None of this was disclosed. None of this was disclosed as expert testimony. None of this was pre-filed as technical testimony as I think it should have been pursuant to your adjusted -- pursuant to your order and now we're hearing about this for the first time at hearing.

Mr. Liska didn't testify to any of this in his deposition. This is trial by surprise and the Agency has failed to play fairly in this proceeding. We put all of our cards on the table. We put all of our testimony on the

table upfront. They come in here with a witness who is testifying about things that have never been disclosed in ways that I still don't understand what Mr. Liska is saying.

We will do the best we can, but I think this is very unfair to the Board. I think it's very unfair to Emerald to admit this testimony that was not disclosed as it should have been on December 30th.

HEARING OFFICER WEBB: It was my -- I mean, the witness was disclosed and deposed?

MS. ZEIVEL: Yes.

MR. GRADELESS: Yes, they were deposed by the petitioner. It's not our fault they didn't ask the right questions.

MR. DIMOND: We didn't know --

MR. GRADELESS: That's how discovery works.

MR. DIMOND: No. The Agency had an obligation to pre-file technical testimony on December 30th. They didn't do it. The Agency had an obligation to have their witnesses prepared for deposition.

MR. GRADELESS: No, we did not.

MR. DIMOND: Mr. Liska -- we had no idea what he was going to testify on. He couldn't even tell us what he was going to testify on. So we are left getting testimony and supposed evidence for the first time at hearing and the whole process, I think, is very --

HEARING OFFICER WEBB: Would you want to continue to re-depose him, continue the hearing?

MR. DIMOND: We will muddle through the best we can.

HEARING OFFICER WEBB: Okay. I mean, as I've said before, the pre-filed testimony is really for the Board to develop questions. I mean, I'm comfortable with his testimony. He is at a high level at the EPA and it sounds to me like he knows what he is talking about. So I think his testimony is helpful to the Board which is what I'm considering. So I'm going to allow you to continue.

BY MR. GRADELESS:

Q. There's been a lot of testimony in the last day or two about cost per pound, are you familiar with that metric?

A. Yes.

Q. And tell me about that metric.

A. It's simply defined as the cost per pound of treating for any particular parameter that you want. In this case, obviously, we've been talking about the cost per pound to treat for ammonia.

Q. And what is your view with respect to cost per pound?

A. I'm not sure why we're talking about the cost per pound of ammonia.

Q. Why?

A. Especially in an industrial setting, it may be useful for normal -- for a municipal discharge, but for an industrial discharge what we should really be looking at is simply the cost to treat the wastewater to its required limits. In this case, the 3/6. If I were to give an example of why costs per pound wouldn't work, let's imagine Chemical X that any facility produces and it produces one pound of that chemical.

Now, in order to treat for that -- say one pound per day of that chemical. In order to treat for that one pound per day

chemical, it would cost them $50 on that day. Now, under what I've mentioned something that costs $50 per day to treat to meet a limit would not seem unreasonable at all.

Under the testimony given where we're talking about costs per pound, the costs now instead of what has been mentioned before as $1- -- higher than $1.50 per pound is too much. In this count -- in this case, it's now $50 per pound because it's one pound of it and it's 50 pounds -- and $50 to do it.

So in that -- it's a more extreme case, but in that case under a cost per pound basis, it would not be -- it would not be feasible to do because it would cost $50 per pound, which is 50 divided 1.50, a very high multiple times more than the cost of one pound per day -- $1.50 per day. It would cost 50 pounds per day -- $50 per day for that one pound.

However, the total cost of $50 -- or it could be $50 per month, the total cost would obviously be very affordable. So when we're talking about affordability and whether something is both technically feasible and

economically reasonable, the economically reasonable part we should be talking about total cost and not costs per pound.

Q. I'm going to now discuss with you, Mr. Liska, State's recommendation letter C.

A. Where is that at?

Q. I don't think you have a copy in front of you.

A. I might not.

Q. But I can read it to you. Would that help --

A. Sure.

Q. -- or do you need to see it?

A. Does anyone have a copy of it?

HEARING OFFICER WEBB: Is this an exhibit number?

MR. GRADELESS: No, it's in the recommendation.

HEARING OFFICER WEBB: Okay.

MR. GRADELESS: I can just show him -- let me get it.

MS. ZEIVEL: Is this it? C, D?

MR. GRADELESS: Yeah.

BY MR. GRADELESS:

Q. I'm sorry. 3C. It's Page 7, Mr. Liska. Just kidding.

A. 26 and 27?

Q. 3C.

A. Let me read through it real quick.

Q. Okay. It starts with "Within 90 days."

A. Okay.

Q. That recommendation states, "Within 90 days of the Board's order, given the effluent from petitioner's second clarifiers contained essentially no MBT and can be nitrified" -- and actually this was a recommendation prepared --

A. In September of 2019.

Q. No. It was filed shortly after petitioner's adjusted standard petition. Petitioner must investigate and provide to the Agency how much treatment capacity it needs prior to and following secondary clarifiers to complete nitrification.

Further, petitioner must reconfigure its current treatment system. Example, with low cost, economically reasonable

piping and bioreactor tanks to treat the effluent after the secondary clarifier to achieve nitrification?"

Were you involved with that recommendation?

A. Yes.

Q. Can you describe why that was recommended?

A. Since we know that tertiary nitrification is possible now, we would need to know how much capacity is required for that in order to make any kind of determination for using it. We would also -- we would want to know how much capacity they have currently and if they get these biotreaters all running again -- and we would want them to reconfigure the treatment system.

Since they have these extra biotreaters that are not being used, they could possibly in some way either through the two ways I mentioned earlier or if someone else can figure out a different way that could possibly work some way to use that capacity and does that -- is the total capacity enough to achieve the secondary and

tertiary nitrification that is needed or if, say, a further tank needs to be used, we'd also like to see if they have any extra spare tankage that they could possibly use.

If they do that, that could further lower costs for them as they wouldn't have to build a new tank. They could just start from there. As far as these tanks, since they're already there, chances are very good that it will cost far less --

MR. DIMOND: Objection. That's speculation.

THE WITNESS: I'm using my judgment from --

HEARING OFFICER WEBB: You can give your opinion.

THE WITNESS: Okay.

BY THE WITNESS:

A. What I have found is that through lots of construction permits that reconfiguring old -- older equipment can quite often be far less cost than adding new tanks and new nitrification equipment.

BY MR. GRADELESS:

Q. So we're not proposing that the petitioner add any new tanks at this point?

A. Right. But we need to know that information how much capacity do they need before we can make any further judgment on that.

Q. Okay. Going onto letter D. "Within 180 days of the Board's order, petitioner must investigate and quantify the amount of ammonia and MBT coming into the PVC tank, C-18 tank and the PC tank and submit that data to the Agency. Petitioner must propose methods to minimize these parameters from each of these places within one year along with a schedule to implement the proposed changes."

Were you involved in assisting with that recommendation from the Agency?

A. Yes.

Q. Why was that -- if you know, why was that recommended by the Agency?

A. Well, throughout this -- these last two days we have been talking about MBT, there is no way to solve this problem without knowing where it's all coming from and at what concentrations. So that's why the first half of it is there.

Proposing methods to minimize these at each of these places this would be -- since these are all prior to the entire treatment system, minimizing it prior to the -- before it even gets into the treatment system, as has been mentioned in the previous two days -- today and yesterday as far as running reactions as far as they can and any other process changes they can make, they have already mentioned that they're proposing methods, they're doing studies.

So we would like to hold them to that that they try to minimize MBT before it even gets to the treatment plant. That can have substantial cost savings. They may be able to minimize the amount of capacity they need in their bioreactors or produce some other -- or some other type of treatment such as granulated activated carbon that wasn't feasible before may now suddenly become feasible because it's treating far less MBT.

Q. Okay. I'm going to direct your attention to Paragraph G. This one is with respect to the spray irrigation study recommending that when the petitioner can spray irrigate, the

suitability of their effluent on vegetation, cost of implementing spray irrigation to the quantity of land available to accept spray irrigation and the ergonomic benefits of the spray irrigation --

A. Agronomic.

Q. Agronomic. Sorry. Why was that recommended?

A. As I mentioned earlier, many, many places that have biological components to their discharge, they will spray irrigate including other chemicals -- at least one other chemical plant that's under 40 CFR 414. So we have seen that this can definitely work for other industries. For each -- as for each section for No. 1, we would need to know the basic weather data and everything when they can expect to spray irrigate. We need to know the suitability, what is in their final effluent as far as parameters that would be necessary for us to look at specifically for spray irrigation, the costs of implementing spray irrigation, of course, because we have to make sure that the costs are appropriate, quantity of land available. Again, we -- we have all probably seen the Henry plant on

Google Maps. There is lots of lots of farmland for them available and, of course, the agronomic benefits of spray irrigation.

We need to -- part of the spray irrigation program is that there is an agronomic benefit. Through my experience of doing many, many spray irrigation permits, the ammonia nitrogen in their discharge would be of agronomic benefit. So that is why we thought this would be a good candidate for this.

Q. And you're not -- are you suggesting that the petitioner only spray irrigate?

A. Not at all. Even all the other facilities that it gets to be cold everywhere in Illinois. Almost all of the facilities cannot spray irrigate year around. So we realized that it may not be an all-the-time solution. It could be just during sometimes. In fact, a good time to also possibly use it is while they're refurbishing their bioreactors, especially if the big one is down.

During the few months that they're refurbishing that reactors, bioreactor, they could spray irrigate. If they plan it right,

they can refurbish it during the summer, but usually construction doesn't happen during winter anyway. But they will refurbish it during warm months and they can spray irrigate so that they don't need the extra tankage that they have claimed before that they would need during that time that they're refurbishing.

Q. Okay. Let's move onto Paragraph H, Mr. Liska. This is talking about the bioreactors and this sort of outlines a schedule for repairing and maintaining and operating and investing in the bioreactors at the Henry plant in the State of Illinois, is that right?

A. Yes.

Q. Why are we -- why are -- I don't mean we.

Why is the Agency recommending this type of schedule?

A. Well, we know they have four bioreactors. We know that at the previous adjusted standard they had two running. Now, they only have one running. So they have been kind of going backwards on this. We know that through tertiary nitrification they can treat for this and

it is a very good possibility that they can use their current ones for that. They have also mentioned that they already have a plan going forward to rehabilitate all four of them. So we'd like them to stick to that plan that they have already told us. We want --

Q. I'm sorry. Have you seen that plan?

A. They -- it was mentioned in their 2019 meeting with us.

Q. You haven't seen it?

A. I have not seen that plan. So we would like to see the plan and we would also like to -- we'd like it in the petition because we want to make sure that we pointed out that we have to be getting better than we were last time. Before, we went from 2 down to 1. We need to get better than 1 to get all of this working.

Q. I want to direct your attention to M, Mr. Liska.

A. M?

Q. Yes, M as in M&Ms. That was dumb.

"Petitioner must annually investigate new production methods and technologies that generate less ammonia and

nitrification inhibitors in petitioner's discharge. Where practicable, petitioner must substitute current production methods or technologies with new ones. So long as the substitution generates less ammonia in the petitioner's discharge."

What, if any, reasons were given or discussed with respect to this recommendation?

A. Okay. Well, for the last 20 or so years, we've been told there is no way to do it differently and get -- not have MBT in their discharge prior to entering the treatment plant. In the last year and a half or so, we have found out that isn't true. They can run the reactions differently. So we would -- and they have also mentioned that they are already conducting a study. We would like to hold them to that study. Furthermore, we would like to see them generate -- look at other technologies that will help them.

Now, that doesn't have to mean in this case completely new ways to make the chemical. It could be something as simply as we're going to recycle some of the heat or some other thing that is necessary to run the reaction.

That will save money or some kind of cost or something so that now we can run it further with no loss of economic reasonability.

So -- and that, in turn, will lower the MBT and which -- to allow -- possibly to a level that the MBT will -- less MBT will generate less ammonia. So we would like to see something like that, some type of optimization of the plant so that they can run their reactions better so that they can generate ultimately less ammonia through generating less MBT in their process.

Q. Now, were you here when the hydrogen peroxide was discussed?

A. Yes.

Q. Do you have any knowledge of treating MBT with hydrogen peroxide?

A. I do not. I had not heard of it until here and reading it in Mr. Winters' testimony. So we would definitely want to see the possibility of that either around their process or maybe in one -- it might be more appropriate in one of these others where we're setting other treatment methods.

Q. Okay. Looking at recommendation R as in Rex.

A. Okay.

Q. "Petitioner must operate in full compliance with the Clean Water Act, its National Pollutant Discharge Elimination System permit, the Board's water pollution regulations and any other applicable permit."

Do you see that recommendation there?

A. Yes.

Q. Is that just duplicative?

A. I don't think so.

Q. Okay. Now, tell us why that is just not duplicative.

A. Well, the NPDES permit usually as -- it could possibly have more requirements which would be -- could be very helpful to the Board or possibly another Board partition and for us to have more information the next time this goes around -- I'd like to read an example from the permit itself. I wrote this special condition, but it has very specific language in it.

Q. Mr. Liska, if I were to show you a

copy of the petitioner's NPDES permit, would you be able to recognize it?

A. Yes.

Q. And I don't intend to offer it into evidence. I'm just going to have you identify it and just refresh your memory if that's okay.

A. Okay.

MR. GRADELESS: I'm handing Mr. Liska what I will propose to you as the NPDES permit that Mr. Liska authored and is also the NPDES permit for the petitioner if I cannot fall down.

BY MR. GRADELESS:

Q. Mr. Liska, is that a fair and accurate copy of the petitioner's NPDES permit that you wrote?

A. Yes.

Q. And you were mentioning special conditions?

A. Yes.

Q. What special conditions do you believe are relevant that relate to the Agency's recommendation R?

A. Specifically, it would be special

condition 15 which is titled Investigation of New Treatment Technologies to Prevent Nitrification Inhibition and Allow for Ammonia Reduction.

Q. And why would that be relevant to State's recommendation R?

A. Well, we found it very relevant throughout this last one. For example --

Q. Let me back you up.

A. Sure.

Q. When you say throughout this last one, what are you talking about?

A. Throughout this last adjusted standard and throughout the last permit cycle.

Q. Okay. For example, 15(a)(1) asks that the permittee sample for MBT on a weekly basis at the secondary clarifier. Without this information, we would not have any data about whether the -- whether there was MBT after the secondary clarifier. That was something that was not in the previous adjusted standard, but was very -- very instrumental in what we've been doing the last two days.

Another example would be Part B and I'm going to read some of that just because

it's very specific.

MR. DIMOND: Is this 15B?

THE WITNESS: 15B and I will actually read from B1.

BY THE WITNESS:

A. "The permittee shall evaluate the effectiveness of the treatment equipment that is already installed and investigate the optimization of these units. The permittee shall also investigate the mode of operation of the aeration basins," which in this case are the bioreactors. An aeration basin is just another way of saying that. "But the mode of operation of the aeration basins and consider the optimization of these basins with respect to nitrification."

Now, to go through -- there is kind of two halves of that. Evaluate the effectiveness of treatment equipment that is already installed, that would be a treatment such as the bioreactors and the secondary clarifier. We have gotten a wealth of information through that and, in particular, investigate the mode of operation of the aeration basins and consider the optimization of these basins with respect to

nitrification.

This is where the permittee were to have come up with a way of reconfigurating -- reconfigurating these bioreactors, for example, in the two ways that I mentioned earlier through -- running it through the second three again or through the baffle system in all four of them or in another way that they can come up with, but as far as I know none of that was done and we would like that reflected through the adjusted standard as well as through the NPDES permit.

BY MR. GRADELESS:

Q. And is that to hold the petitioner to what is found in their permit?

A. Yes.

Q. And, if you know, would that prevent the petitioner, for example, if they were granted an adjusted standard from now into eternity, would that have impact if this condition were not in the adjusted --

A. It definitely would. We also have to remember that whatever happens if an adjusted standard is given to the permittee in the next few months -- this permit ends in September of 2021.

So we need that in place, this 3R in place, so that the next permit, the next one that replaces this one and renews this permit any special condition that I put in this permit, and kind of a spoiler alert something similar to this will be in it, but in a different way with our new -- now that we have new data. So that anything we do in the future to this permit can also be held with the adjusted standard.

Q. I'm sorry. I misheard you. Did you just mention a sunset provision? I literally just didn't hear it.

MR. GRADELESS: Can I get a clarification on the answer, if that term was mentioned?

BY MR. GRADELESS:

Q. I don't have a paragraph for you, but nonetheless the petitioner in this case, if you're aware, has requested certain aspects of the sunset provision, are you familiar with those aspects?

A. Yes.

Q. What is your understanding, at least as we sit here today, what has been requested by

the petitioner?

A. As far as I've seen, the petitioner has requested that there be no -- no sunset provision, that they are -- they -- any ammonia relief they would get they would basically get forever.

Q. And it's my understanding the Agency has recommended that be denied, is that your understanding?

A. Yes.

Q. And you were part of the group that made that recommendation?

A. Yes.

Q. And the Agency said that it should not be longer than five years, is that your understanding of the recommendation?

A. Yes.

Q. Why should this sunset provision not go away?

A. Okay. Well --

Q. It's in Paragraph's 2 and 3 of that recommendation.

A. Okay. Throughout the last several adjusted standards, despite everything we have

said, we have been seeing progress. Currently, they have limits -- you know, the 110, 140, 841 pounds 1,633 pounds as a daily max. The one -- the adjusted standard prior to this those numbers were higher in all -- in all those cases. Prior to that, it was even higher than that.

So the petitioner has been making progress and this one in particular, they may make enough progress to not need it at all and that is the goal. We would definitely want to hold them to further progress over the years. We want to hold them to have that progress so we can revisit it each time with the wealth of new information that we seem to get every five years to make further recommendations. If we give them no limit -- I'm sorry. Not no limit, but no sunset clause and a limit in perp- -- forever.

Q. Perpetuity.

A. Yes. If we gave them a higher limit forever, there would be no drive for them to make any changes and -- and to improve the condition of their wastewater.

Q. Are you familiar with the alternatives that were proposed in this case?

A. Yes.

Q. Are these uncommon ways of treating effluent wastewater?

A. No. In particular, the nitrification -- tertiary nitrification and also granulated activated carbon, they're extremely common among chemical plants.

Q. Are you familiar with any design standards at 35 Ill. Adm. Code 370?

A. I am familiar with them, yes.

Q. And what are those?

A. Those are standards for sewer works.

Q. And they're the same, similar, standards that have been proposed as alternatives in this case, is that right?

A. Yes.

MR. GRADELESS: One moment to confer with Mr. LeCrone.

At this time, I do not believe I have any other questions for Mr. Liska. I would not mind a break.

HEARING OFFICER WEBB: I was -- you read my mind. Okay. Let's take a five to ten-minute break.

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

HEARING OFFICER WEBB: Okay. Let's go back on the record. We have just had a conversation off the record. It does not appear likely that we will be able to finish this hearing today. So it has been decided and agreed to by the parties that this hearing will continue in Springfield on February 3rd and possibly continuing into February 4th, if needed.

We will have subsequent conversations about extending the public comment deadline and extending the briefing deadline. So I will ask on the record, does anybody have anything they would like to say on the record before we continue this hearing? We'll end for today. We will pick up the hearing, I should specify, on February 3rd with the cross-examination of Mr. Liska.

Does anyone have anything they would like to add before we go off the record for the day? Seeing nothing, okay, this hearing is continued until February 3rd in Springfield.

Thank you, all.

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

I, Steven Brickey, Certified Shorthand Reporter, do hereby certify that I reported in shorthand the proceedings had at the trial aforesaid, and that the foregoing is a true, complete and correct transcript of the proceedings of said trial as appears from my stenographic notes so taken and transcribed under my personal direction.

Witness my official signature in and for Cook County, Illinois, on this _____ day of _____, A.D., 2020.

_____

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