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1   SOAH DOCKET NO. 582-22-0585

2   TCEQ DOCKET NO. 2021-1001-MWD

3
 APPLICATION OF   )   BEFORE THE STATE OFFICE
4 CITY OF GRANBURY, FOR   )
 TPDES PERMIT NO.   )   OF
5 WQ0015821001   )
)   ADMINISTRATIVE HEARINGS
6

7

8

9   HEARING ON THE MERITS

10   Tuesday, March 8, 2022

11   (Via Zoom Videoconference)

12

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14

15   BE IT REMEMBERED THAT at 9:00 a.m., on Tuesday,

16 the 8th day of March 2022, the above-entitled matter

17 came on for hearing at the State Office of

18 Administrative Hearings, William P. Clements, Jr.

19 Building, 300 West 15th Street, Austin, Texas, before

20 PRATIBHA J. SHENOY and SARAH STARNES, Administrative Law

21 Judges, and the following proceedings were reported

22 remotely by Mary Carol Griffin, Janis Simon, and Kim

23 Pence, Certified Shorthand Reporters.

24

25 Volume 2   Pages 175 - 429

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1   P R O C E E D I N G S

2   TUESDAY, MARCH 8, 2022

3   (9:00 a.m.)

4   JUDGE STARNES: Okay. Let's go ahead and

5 go on the record.

6   I'll call us to order. This is SOAH

7 Docket No. 582-22-0585, TCEQ Docket No. 2021-1001-MWD in

8 the application -- In the Matter of the Application by

9 the City of Granbury for TPDES Permit No. WQ0015821001.

10 It just rolls right off the tongue.

11   It is Tuesday, March 8th, 2022, and this

12 is day two of our Hearing on the Merits.

13   Rather than taking individual appearances,

14 I'll just note that we have all the same counsel present

15 who attended yesterday.

16   Yesterday we wrapped up with the

17 Protestants and the Executive Director's case. And

18 today, we are moving on to the Applicant's

19 case-in-chief.

20   Oh, one little administrative detail I

21 wanted to touch base on before we start with witnesses.

22   The court reporter pointed out that there

23 was a little inconsistency in how we had numbered

24 exhibits. So just so the record is clear, the Direct

25 Testimony of Stacy Rist, which I think we admitted

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1 yesterday as Rist and Bennett Exhibit 1, we're going to

2 rename the Direct Testimony Rist and Bennett Exhibit 0

3 because the two exhibits to that testimony were 1 and 2,

4 and so we're going to have hers be 0, 1 and 2, just so

5 there's no confusion about having two Exhibit 1s in the

6 record. The court reporter will note that in our final

7 transcript and exhibit certification.

8   Okay. Anything else before we get

9 underway with our first witness?

10   (No response)

11   JUDGE STARNES: No? Okay. Then,

12 Mr. Hill, do you want to present Mr. Crownover? Is he

13 up first?

14   MR. HILL: I do. Thank you, Judge.

15   I call Rick Crownover.

16   JUDGE STARNES: Okay. Mr. Crownover,

17 where is he in my boxes?

18   MR. HILL: COG Witness.

19   JUDGE STARNES: There we go.

20   Mr. Crownover, will you raise your right

21 hand for me?

22   (Witness sworn)

23   THE WITNESS: I do.

24   JUDGE STARNES: Okay. Go ahead, Mr. Hill.

25 Your witness.

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1   MR. HILL: Thank you, Judge.

2   PRESENTATION ON BEHALF OF APPLICANT

3   RICK CROWNOVER,

4 having been first duly sworn, testified as follows:

5   DIRECT EXAMINATION

6 BY MR. HILL:

7   Q   Good morning, Mr. Crownover.

8   A   **Good morning.**

9   Q   You should have in front of you COG Exhibit

10 100, which is your prefiled testimony.

11   Do you have that in front of you?

12   A   **Yes, I do.**

13   Q   And along with it is COG Exhibit 101, 102, 103,

14 104, 105, 106, 107, and 108.

15   Do you find all of those exhibits?

16   A   **Yes.**

17   Q   Okay. Mr. Crownover, do you adopt this

18 testimony in COG-100, along with all the exhibits that

19 are attached behind it, as your own testimony as if you

20 were on the stand live in front of the administrative

21 law judges today?

22   A   **Yes, I do.**

23   MR. HILL: Okay. Judge, I ask that COG

24 Exhibit 100, 101, 102, 103, 104, 105, 106, 107, and 108

25 be admitted into the record.

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1   (Exhibit COG Nos. 101 through 108 offered)
2   JUDGE STARNES: And there were no
3 objections to the prefiled testimony made to
4 Mr. Crownover's testimony.
5   Does anybody have an objection they want
6 to state for the record today?
7   (No response)
8   JUDGE STARNES: Hearing no objections,
9 Exhibits 100 through of 108 are all admitted.
10   (Exhibit COG Nos. 101 through 108
11   admitted)
12   MR. HILL: Thank you, Judge.
13   I pass the witness.
14   JUDGE STARNES: Okay. Who is taking him
15 for the Executive Director? Will that be you Mr. Tatu
16 or Ms. Isturiz?
17   MR. TATU: Yes, that will be me.
18   JUDGE STARNES: Okay. Go ahead.
19   MR. TATU: I have no questions, Your
20 Honor.
21   JUDGE STARNES: Okay. Sorry. Getting
22 caught up in my notes.
23   For OPIC, Mr. Arthur?
24   MR. ARTHUR: Good morning, Judge. I have
25 no questions.

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1   I pass the witness.
2   JUDGE STARNES: Okay. Who in our
3 Protestants is going first? Will that be Granbury Fresh
4 or the Rist Bennett's?
5   MR. BOOTH: Eric, do you want to go first
6 or --
7   MR. ALLMON: Sure. I can go first. I
8 don't know that for this witness it much matters.
9   CROSS-EXAMINATION
10 BY MR. ALLMON:
11   Q   Good morning, Mr. Crownover. How are you?
12   A   **Good morning. I'm fine. Thank you.**
13   Q   As you known I'm Eric Allmon. I represent
14 certain Protestants in this matter, Granbury Fresh and
15 Dr. Victor Calder.
16   A   **Yes.**
17   Q   Are you a licensed engineer?
18   A   **No, I am not.**
19   Q   Do you have an engineering degree?
20   A   **No.**
21   Q   Now, what site evaluation did the City perform
22 to ensure that a wastewater treatment plant on this
23 property could meet the applicable buffer zones?
24   A   **I would like to defer to our expert witnesses,**
25 **the design engineer.**

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1   Q   So the City did no other evaluation, other than
2 those that the design engineer performed?
3   A   **Not that I'm aware of.**
4   Q   And who is that design engineer? Is it a
5 particular person you're thinking of.
6   A   **It is Josh Berryhill with eHT.**
7   Q   Okay. Now, I'm going to ask you to look at
8 Exhibit 101 accompanying your testimony. Let me see if
9 I can find that.
10   Do you have that in front of you now?
11   A   **Yes.**
12   Q   And let me turn up to the first page.
13   So is this a presentation that was given?
14   A   **Yes.**
15   Q   By Enprotec/Hibbs and Todd?
16   A   **Yes.**
17   Q   Now, I want to -- and this was beginning on
18 behalf of the City, if I understand correctly?
19   A   **Yes.**
20   Q   Now, we'll look at Page 17. Now, do you see
21 the bullet labeled "odor control"?
22   A   **Yes, I do.**
23   Q   And do you see: Systems designed to capture
24 foul odor and odor causing processes/structures?
25   A   **Yes.**

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1   Q   And are items under that heading listed as
2 headworks and EQ storage?
3   A   **Yes.**
4   Q   What is meant by the term "EQ storage"?
5   A   **EQ storage in this context is a temporary EQ**
6 **basin.**
7   Q   So what was the City's basis at this time for
8 stating that the EQ storage could potentially cause foul
9 odor?
10   A   **This is effluent coming from the collection**
11 **system passing through the treatment process to this**
12 **equalization basin.**
13   Q   Does it pass through the treatment process
14 prior to reaching the equalization basin?
15   A   **It goes through the bar screens and the fine**
16 **screens and then it comes to the temporary EQ basin.**
17   Q   Is there any other treatment that it goes
18 through, other than the bar screens and the fine
19 screens?
20   A   **The grit removal. After it comes through the**
21 **EQ basin, then it makes its way to the bionutrient**
22 **removal and begins the treatment process.**
23   Q   And that's after the equalization basin.
24   A   **Yes.**
25   Q   Okay. Do you know whether that wastewater

183

1 coming in from the collection system is anaerobic?

2 **A   Yes.**

3 Q   Yes, you know, or, yes, it is?

4 **A   Yes, it is.**

5 Q   Okay. Now, I'd like to look -- let me stop

6 that share for a second. I'd like to look at Exhibit

7 103 accompanying your testimony.

8   Do you have that before you now?

9 **A   I do.**

10 Q   And can you please identify what this is?

11 **A   This is the plat of the approximate 10-acre**

12 **site.**

13 Q   Okay. And let me zoom here to help us read

14 some items.

15   Do you see an area labeled approximately

16 zone -- "Approximate Zone A"?

17 **A   Yes.**

18 Q   And does that have -- does this general area of

19 this document also have a label titled APPROX. Am I to

20 understand that to mean "approximate"?

21 **A   Yes.**

22 Q   And then it says: Flood zone line by scaling?

23 **A   Yes.**

24 Q   Do you see that?

25   What was this -- and that's a crosshatched

184

1 area on this figure, as I understand it?

2 **A   Yes.**

3 Q   What does that represent?

4 **A   It's my understanding that's the 100-year flood**

5 **zone.**

6 Q   Okay. Are there wastewater treatment plant

7 units that are proposed to be located within that area

8 of the property?

9 **A   No.**

10 Q   Well, let's take a look at the -- what is your

11 basis for that answer?

12 **A   The exhibits for the plant outline.**

13 Q   I'd like you to look with me: Are there

14 roadways within the facility that are to be located in

15 that area?

16 **A   Yes, there is a roadway that goes in the**

17 **west -- around the west property line.**

18 Q   Is the equalization basin at the facility

19 proposed to be located in that area?

20 **A   No. It is on the other side. Right there in**

21 **the bottom-right corner.**

22   MR. ALLMON: Okay. All right. That is

23 all of my questions for this witness.

24   I pass the witness.

25   JUDGE STARNES: Okay. Mr. Booth.

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1   CROSS-EXAMINATION

2 BY MR. BOOTH:

3 Q   Mr. Crownover, Mike Booth, I represent the

4 Rists and the RV Ranch.

5   What was the -- what is your educational

6 background?

7 **A   My highest degree is a master of public**

8 **administration degree.**

9 Q   Okay. Let's talk a little bit about the

10 alternatives.

11   What alternatives did you look at prior to

12 selecting this site that we've been talking about?

13 **A   We looked at several alternatives, different**

14 **sites around the city, including one in the north part**

15 **of town. We included -- looked at upgrading the current**

16 **plant various collection improvements. I think there**

17 **was a total of six alternatives we looked at.**

18 Q   Okay. Was one of them the Keith Road location?

19 **A   Yes.**

20 Q   Are you familiar with that?

21 **A   Yes.**

22 Q   Okay. Was one of the alternatives that you

23 looked at that location?

24 **A   Yes.**

25 Q   Okay. And how about the one that I've heard

186

1 about next to the police station?

2 **A   Yes, that is accurate.**

3 Q   Okay. Let me share my screen. Wish me luck.

4   This is from -- I guess it's minutes of

5 May 23, 2017 -- and you were briefing the council.

6   Now, what particular property were you

7 looking at here in that area that's scribbled in yellow,

8 if you can recall? Expand the footprint of the current

9 plant, engineering a new plant, and then it said a new

10 plant north of town, I guess, it's the -- what y'all

11 were thinking about?

12 **A   I was referring to the property off of the loop**

13 **as you mentioned behind the police department.**

14 Q   Okay. And I guess that didn't pan out.

15   Let's look at this here. This is, I

16 guess, it's part of your disclosures. What does this

17 represent Site B appears to be the Rist -- or the

18 property that you have right now. Is that correct?

19 **A   Yes.**

20 Q   And then we've got a little site down here

21 called Site A, which is down the road?

22 **A   Yes.**

23 Q   And I'm going to show you the cost information.

24 Are you familiar with this? This, again, comes from

25 your discovery.

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1 **A**   Yes, I'm --

2 Q   Okay. And is the Site A and Site B the

3 properties that we were looking at in the picture?

4 **A**   **Yes.**

5 Q   Okay. So that's pretty close in cost to --

6 well, 300,000. Now, I believe -- well, let me back up

7 now.

8   When you negotiated the property

9 acquisition for the plant Site B, did you give the

10 landowner a concession in building some infrastructure

11 to serve the other property that he owned or the

12 landowner owned?

13 **A**   **Mr. Booth, I was not involved in the**

14 **negotiations, nor the land acquisition purchase.**

15 Q   Okay. So you don't know what this little

16 footnote means here?

17 **A**   **No, sir, I do not.**

18 Q   Okay. Who would know?

19 **A**   **The city manager negotiated that.**

20 Q   Oh, the city manager?

21 **A**   **Uh-huh.**

22 Q   But in developing these cost estimates, who did

23 those?

24 **A**   **Our consulting engineers.**

25 Q   Enprotec or whatever they are?

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1 **A**   **Yes.**

2 Q   The ones -- okay. And that's fine. I'll ask

3 them that question.

4   Do you know -- can you just describe as

5 you're standing on the property line like we were at the

6 entrance to your property what it looks like as far as

7 elevations and such?

8 **A**   **If I'm standing at the gate looking towards the**

9 **site?**

10 Q   Yes, sir.

11 **A**   **It is open, grassy, shrubs. It is a sloping**

12 **property, sloping towards a creek on the north side.**

13 Q   It slopes pretty significantly, doesn't it?

14 **A**   **Well, it slopes some, yes.**

15 Q   And I presume that the engineers -- and I'll

16 ask them this -- included a good amount of money for

17 site work?

18 **A**   **Yes, some. Uh-huh.**

19 Q   Okay. Now, do you know whether the City

20 intends to change the floodplain when they do the

21 construction?

22 **A**   **I do not believe that is their intent, no.**

23 Q   So you're aware that the person that owned the

24 property that you purchased from had an application in

25 with you to change to the floodplain map?

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1 **A**   **I'm not aware of that.**

2 Q   Okay. When do you think the -- let me back up.

3   What do you call the existing plant at the

4 City, the south plant?

5 **A**   **Yes, the south wastewater treatment plant.**

6 Q   When do you expect that to come online with the

7 improvements?

8 **A**   **I hope this fall, around November 1st.**

9 Q   And would that expand the capacity?

10 **A**   **No.**

11 Q   So you're putting in a new MBR plant there?

12 **A**   **Yes.**

13 Q   And you're not increasing the capacity?

14 **A**   **No. It will stay at 2 mgd.**

15 Q   Okay. Mr. Crownover, I noted a couple of times

16 in some of the discovery that you were -- made a big

17 deal about this meeting that you had in I believe it was

18 in November of 2019 where no one showed up for. Do you

19 remember that meeting? Or I think maybe one or two

20 people showed up for it.

21 **A**   **Yes.**

22 Q   And you realize that you had already filed a

23 permit application with the City -- I mean at the TCEQ.

24 Correct?

25 **A**   **Yes.**

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1 Q   Now, you were relying -- I believe you told

2 Mr. Allmon -- that you were relying upon eHT to do the

3 TPDES permit at the Commission. Is that correct?

4 **A**   **Yes.**

5 Q   Do you recall whether they told you that maybe

6 we should do water quality modeling before we filed our

7 application?

8 **A**   **I do not recall that.**

9 Q   Okay. Do you know anything about the golden

10 algae problems on Lake Granbury?

11 **A**   **I do not.**

12 Q   And to be clear, the City's calling this

13 proposed plant the east plant?

14 **A**   **Yes.**

15 Q   Okay. So that's different than the fourth

16 plant that you (Zoom audio distortion). Is that

17 correct?

18 **A**   **Yes.**

19   MR. BOOTH: Okay. And -- well, I don't

20 have any more questions.

21   JUDGE STARNES: Okay. Thank you, sir.

22   THE WITNESS: Thank you.

23   JUDGE STARNES: Mr. Hill, any redirect?

24   MR. HILL: I do have some redirect, Judge.

25

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1   REDIRECT EXAMINATION

2 BY MR. HILL:

3   Q   Mr. Crownover, you were on in your (Zoom audio

4 distortion) hearing about whether or not the wastewater

5 collection system is anaerobic when it comes into the

6 system.

7   Is it your understanding that, in fact,

8 that effluent does contain some oxygen?

9   A   Yes, it does.

10   Q   Okay. And do you understand -- or I'm sorry.

11   Do you have an understanding of the

12 definition of anaerobic or is that something that you

13 rely on eHT to provide you?

14   A   I am relying on (Zoom audio distortion) oxygen.

15   THE WITNESS: If I could speak, Your

16 Honor, I'd like to speak about our -- the anaerobic in

17 the EQ basin.

18   JUDGE STARNES: Well, we'll see if your

19 counsel directs you towards that through this

20 questioning.

21   THE WITNESS: Okay.

22   Q   (BY MR. HILL) What would you like to discuss

23 about that, Mr. Crownover?

24   A   Well, the anaerobic influent in the treatment

25 process when it reaches our temporary EQ basin, these

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1 are permanent treatment structures that you use to store

2 wastewater during storm events. And if EQ basin is --

3 there's a mixture in there, and this is temporary only

4 in the fact that the effluent travels through this

5 structure as it makes its way on to the BNR system --

6 the BNR base and anaerobic systems. These are in

7 vertical treatment zones where the nutrients are then

8 removed. The structure is a permanent structure.

9   Q   And you're referring to the equalization basin.

10 Right?

11   A   Yes.

12   Q   Okay. And you refer to the influent as

13 anaerobic influent, but I want to go back and ask the

14 question again.

15   I thought I understood you to say earlier

16 that you understand that influent will contain oxygen

17 when it comes into the wastewater treatment plant?

18   A   Yes.

19   Q   That is correct -- your correct testimony?

20   A   Yes.

21   Q   Okay. And based on your understanding of that

22 system design -- and let me take a step back.

23   Who at eHT is responsible again for

24 designing the proposed east wastewater treatment plant?

25   A   It would be Josh Berryhill.

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1   Q   Okay. And so understanding that Mr. Berryhill

2 was responsible for design, when the equalization basin

3 is engaged is that -- is that part of the City's attempt

4 to handle storm surges, storm flows, as they come into

5 the system from high precipitation events?

6   A   Yes.

7   Q   Okay. And with respect to the questions about

8 the floodplain delineation and -- that you received

9 earlier -- who was it at eHT that you relied upon for

10 the evaluation and delineation of the floodplain on the

11 east wastewater treatment plant property?

12   A   On the plat, I believe the surveyor's name was

13 Tim Martin.

14   Q   Okay. Did Chris Hay play a role in that as

15 well?

16   A   He did, yes.

17   Q   All right. You were asked a question also

18 about looking at various plant site alternatives. And

19 you settled on the alternative that, you know, this

20 application is a part of. Can you describe generally

21 what this particular alternative that includes the east

22 wastewater treatment plant includes with respect to

23 infrastructure and facility upgrades?

24   A   I can. It will be an upgrade of the old south

25 wastewater treatment plant to MBR technology. In

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1 addition to this east wastewater treatment plant, in the

2 interim phase will be 1 million gallons per day. The

3 final phase will have 2 million gallons a day of the

4 same technology that we have -- that we are upgrading

5 the current wastewater treatment plant to, membrane

6 bioreactor.

7   This plant site is set in the area of the

8 City where there are various collection system problems.

9 We have wet wells that are overloaded that are

10 undersized. There are also collection systems that are

11 undersized, especially in weather events when surcharges

12 take place. This project will alleviate many, if not

13 all, of those problems.

14   Q   Has that infrastructure historically served the

15 existing or the demand at the time from -- for the City

16 of Granbury?

17   A   When I arrived here six years ago, it was

18 already experiencing some problems. And it has only

19 gotten exacerbated as new development has come to the

20 City, especially in the eastern part of town where this

21 will be located.

22   Q   So is it fair to describe the proposed location

23 of the east wastewater treatment plant as strategically

24 important with regard to handling that increased demand

25 from the east side of town?

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1   A   Very much.

2   Q   Okay. How important is it Mr. Crownover -- let

3 me try this a different way.

4   If I understand you correctly, you have

5 increased demands from the east part of town based on

6 growing development. Did I understand that correctly?

7   A   Yes.

8   Q   Okay. And if I understand -- I need you to

9 correct me if I have this wrong -- that increased

10 development has created influent that's more than your

11 existing transmission mains can accommodate --

12   (Simultaneous discussion)

13   MR. BOOTH: You know -- excuse me, Jason.

14   Judge, how much beyond the scope of the

15 cross are you going to let us do? Because I'm

16 objecting. That's not anything that we've talked about

17 in the cross.

18   MR. HILL: Well, I'll --

19   JUDGE STARNES: Mr. Hill, go ahead.

20   MR. HILL: Yeah, the -- I mean, he was

21 asked about alternatives and why the City's, you know,

22 ended up picking the east water treatment plant.

23   MR. BOOTH: Well, we didn't ask him about

24 very much detail. And you've started that, and you've

25 got him to talking about that and he's started talking

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1 about the collection system upgrades, which we didn't

2 talk about. And now you're going to -- looks like

3 you're going to go into a new line of questions and

4 that's why I'm objecting.

5   MR. HILL: Well, it falls squarely within

6 the scope, Mike, of what you opened up. You asked him

7 about the meetings to describe the application, you

8 asked him about what the City took into consideration

9 for picking this site. It wasn't --

10   (Simultaneous discussion)

11   MR. BOOTH: I don't believe I asked him

12 that.

13   MR. HILL: It wasn't a one-dimensional --

14   JUDGE STARNES: Okay.

15   MR. HILL: -- answer to that question.

16   JUDGE STARNES: Okay. So direct the

17 arguments to me and not each other.

18   I'm going to overrule the objection for

19 now.

20   But, yes, the redirect is limited to the

21 subjects of cross. I don't think we've gone beyond that

22 yet.

23   So for now, the objection is overruled.

24   MR. HILL: Thank you, Judge.

25   Q   (BY MR. HILL) So, Mr. Crownover, I'm simply

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1 trying to understand whether or not the choice of this

2 site wasn't just to handle additional capacity, it was

3 also to handle relief of what was being transported to

4 the south plant. Did I get that wrong?

5   A   No. You did not. That's correct.

6   Q   Okay.

7   A   I might say that it is also a wastewater

8 treatment plant that has reached its capacity. This

9 will also take off capacity from the current plant as

10 well.

11   Q   A wastewater treatment plan that reached its

12 capacity, you're speaking of the south wastewater

13 treatment plant?

14   A   Yes.

15   MR. HILL: Okay. Thank you,

16 Mr. Crownover. That's all the questions. I pass the

17 witness.

18   JUDGE STARNES: Okay. Mr. Tatu, any

19 re-cross from the ED?

20   MR. TATU: No. Nothing further. Thank

21 you.

22   JUDGE STARNES: Okay. Mr. Arthur, OPIC

23 have any questions?

24   MR. ARTHUR: No, Your Honor. Thank you.

25   JUDGE STARNES: Okay. Mr. Allmon?

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1   MR. ALLMON: Yeah, maybe just a few

2 questions.

3   RECROSS-EXAMINATION

4 BY MR. ALLMON:

5   Q   You were asked some questions about the

6 qualities of the wastewater entering the plant.

7   Will that wastewater contain sulfur?

8   A   I'm not sure.

9   Q   Okay. Will the raw wastewater contain oxygen?

10   A   Yes.

11   Q   In what amount?

12   A   I'm not sure.

13   Q   Okay. So you're saying there could be minimal

14 amount of oxygen?

15   A   Yes.

16   Q   And do you know what form that oxygen would be

17 in?

18   A   No.

19   MR. ALLMON: Okay. Your Honor, that's all

20 of my questions.

21   JUDGE STARNES: Okay.

22   MR. BOOTH: I have a simple question,

23 ma'am.

24   JUDGE STARNES: Go ahead.

25

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1   RECROSS-EXAMINATION

2 BY MR. BOOTH:

3   Q   Mr. Crownover, have you ever been to a

4 headworks of a wastewater treatment plant.

5   **A   Yes.**

6   Q   Does it smell?

7   **A   Yes.**

8   MR. BOOTH: Okay. Thank you.

9   JUDGE STARNES: Okay. Well, that

10 concludes your testimony, Mr. Crownover. I appreciate

11 it. You are free to leave, or if you want to stay and

12 observe, just turn off your camera. Thank you.

13   THE WITNESS: Thank you.

14   JUDGE STARNES: Give me one second to get

15 caught up on my notes.

16   Okay. Are we ready for Ms. Dunn?

17   MR. HILL: I'm sorry, Your Honor, but I am

18 looking to see where Ms. Dunn is, so if I can beg your

19 indulgence.

20   JUDGE STARNES: Okay. Do we need to go

21 off the record and give you 5, 10 minutes or is she

22 texting.

23   MR. HILL: If you don't mind. Probably

24 not 5 minutes. I'll get back on here pretty quick.

25   JUDGE STARNES: Okay. I'm just going to

200

1 sit tight. But, Ms. Griffin, you can go off the record.

2   (Recess: 9:30 a.m. to 9:31 a.m.)

3   JUDGE STARNES: Ms. Griffin, can we go

4 back on?

5   THE REPORTER: Yes.

6   JUDGE STARNES: All right. If I can get

7 you under oath, Ms. Dunn. If you'll raise your right

8 hand.

9   (Witness sworn)

10   THE WITNESS: Yes, I do.

11   JUDGE STARNES: Okay. Thank you. Go

12 ahead, Mr. Hill. You're muted, sir.

13   MR. HILL: Thank you, Judge.

14   LUCI DUNN, P.E.,

15 having been first duly sworn, testified as follows:

16   DIRECT EXAMINATION

17 BY MR. HILL:

18   Q   Ms. Dunn, do you have in front of you COG

19 Exhibit 200 and COG Exhibit 201?

20   **A   Yes, I do.**

21   Q   Okay. Do you recognize COG Exhibit 200 as your

22 prefiled testimony and COG-201 as one of the

23 attachments?

24   **A   Yes, I do.**

25   Q   Okay. Do you adopt COG Exhibit 200 and the

201

1 related Exhibit 201 as your testimony as though you were

2 giving it live under oath on the stand right now?

3   **A   Yes, I do.**

4   MR. HILL: Okay. Judge, I ask that COG

5 Exhibit 200 and COG Exhibit 201 be admitted into the

6 record.

7   (Exhibit COG Nos. 200 and 201 offered)

8   JUDGE STARNES: Thank you. Okay. So

9 there were no prefiled objections to this testimony.

10   Does anybody have an objection that they

11 need to interpose for the record now?

12   (No response)

13   JUDGE STARNES: No? Okay. Hearing no

14 objection, COG Exhibits 200 and 201 are admitted.

15   (Exhibit COG Nos. 200 and 201 admitted)

16   MR. HILL: Thank you, Judge.

17   I pass the witness.

18   JUDGE STARNES: Okay. Mr. Tatu?

19   MR. TATU: No questions, Your Honor.

20 Thank you.

21   JUDGE STARNES: Okay. Mr. Arthur?

22   MR. ARTHUR: Yes, Your Honor. Thank you.

23   CROSS-EXAMINATION

24 BY MR. ARTHUR:

25   Q   Good morning, Ms. Dunn.

202

1   **A   Good morning.**

2   Q   I have a couple of questions from your prefiled

3 testimony.

4   Do you have that available to you?

5   **A   Yes, I do.**

6   Q   I'd like to turn first to Page 7 starting at

7 line 14 where you state: I ascertained the location and

8 type of water wells within a half-mile of the proposed

9 project site. Do you see that?

10   **A   Yes.**

11   Q   My question is: How are you defining "proposed

12 project site" there?

13   **A   As the entire property for the wastewater plant**

14 **on that east side.**

15   Q   Okay. And so when you say "within a

16 half-mile," from what point are you measuring that

17 half-mile?

18   **A   From the property boundary.**

19   Q   Okay. From the property boundary on all sides?

20   **A   Yes.**

21   Q   Okay. My next question is I think just a

22 clarification of what may be a typo. So I'm looking at

23 Page 10, starting at Line 5. You state: I ascertained

24 that there are public water well sites, springs, or

25 other similar sources of public drinking water within

203

1 500 feet of any of the wastewater treatment plant units.

2   Should there be a "no" in that clause?

3   **A   There should be a "no." That's correct.**

4   Q   Okay.

5   **A   There are not any.**

6   Q   Okay.

7   **A   That's a typo.**

8   MR. ARTHUR: Thank you, Ms. Dunn.

9   Your Honor, I pass the witness.

10   JUDGE STARNES: Okay. Of the Protestants,

11 Mr. Booth or Mr. Allmon who's going first?

12   MR. BOOTH: It doesn't matter. I can go

13 first.

14   JUDGE STARNES: Okay. Go ahead,

15 Mr. Booth.

16   CROSS-EXAMINATION

17 BY MR. BOOTH:

18   Q   Ms. Dunn, I don't know whether this is in your

19 scope of work for your engagement with the City. But

20 why did you not do any water quality modeling before you

21 filed your permit application at the TCEQ for this

22 plant?

23   **A   That's not within my scope.**

24   Q   Do you know who it would have been? Would it

25 have been Mr. Berryhill?

204

1   **A   Yes.**

2   Q   Okay. Now, I understand you're -- part of your

3 job is to look at the floodplain issues. Is that

4 correct?

5   **A   I work in conjunction within both Chris Hay and**

6 **Josh as far as the floodplain requirements, that's**

7 **correct.**

8   Q   Okay. So they would be the ones I need to ask

9 questions about what they're going to do about the

10 floodplain or not do?

11   **A   Yes, that's correct. Specifically, Josh is the**

12 **one who is designing the units to be able to meet that**

13 **floodplain requirement.**

14   MR. BOOTH: Okay. All right. I don't

15 have any more questions.

16   I pass the witness.

17   JUDGE STARNES: Okay. Mr. Allmon, are you

18 taking questions -- do you have any questions?

19   MR. ALLMON: Actually, it will be

20 Mr. Bedecarre who will be questioning the witness on

21 behalf of Granbury Fresh and Dr. Victoria Calder.

22   JUDGE STARNES: Okay. Mr. Bedecarre, go

23 ahead.

24   MR. BEDECARRE: Thank you.

25

205

1   CROSS-EXAMINATION

2 BY MR. BEDECARRE:

3   Q   Hi, Ms. Dunn. My name is John Bedecarre. I'm

4 an attorney representing some of the Protestants in this

5 matter. So just to begin, I was going to ask you:

6 You're an engineer. Correct?

7   **A   That is correct, yes.**

8   Q   And you have about 30 years of professional

9 experience as an engineer?

10   **A   That's correct, yes.**

11   Q   Okay. I just wanted to see if I were to say

12 that that would be an accurate -- roughly an accurate

13 statement.

14   And you work at an engineering consulting

15 firm that was hired by the City to do what exactly?

16   **A   To manage this project and develop this**

17 **project, yes.**

18   Q   Okay.

19   **A   My part of it is primarily permitting and**

20 **working on the environmental information documents.**

21   Q   Okay. So part of your responsibility was

22 putting together the permit application itself?

23   **A   That's correct, yes.**

24   Q   For the east plant for the discharge permit?

25   **A   Yes, that's correct.**

206

1   Q   Okay. I wanted to look at some things with the

2 application, and I think it would be easiest for me to

3 share my screen. And I'm going to pull up a document

4 here.

5   Can you -- well, this is not what I wanted

6 to pull up.

7   Do you see -- can you describe what you're

8 seeing, just so I understand about the zoom and if I'm

9 doing this right?

10   **A   I do see the screen. It looks like it is a May**

11 **2021 instructions for completing the application**

12 **specifically the form 10053 instructions.**

13   Q   Okay.

14   **A   For the permit application.**

15   Q   That's correct. So this is a TCEQ document

16 that provides instructions for completing domestic

17 wastewater permit applications. We have it marked as

18 Exhibit GF-5.

19   I wanted to draw your attention to Page 64

20 of this document, which I have bookmarked, but we could

21 have scrolled there. And at the top it says:

22 Instructions for domestic technical report 1.1. Do you

23 see that?

24   **A   Yes, I do.**

25   Q   And if we go down, Part B is regarding

207

1 regionalization of the facilities.

2   Are you familiar with that policy of TCEQ,

3 the regionalization policy, and just that issue in

4 general?

5   A   Generally, yes. Is this the same instructions

6 that were available and valid at the time that the

7 permit application was submitted?

8   Q   I think I'll generally be the one asking the

9 questions. I don't -- I believe it is correct, yes.

10   And No. 3 here it says: Nearby wastewater

11 treatment facilities or collection systems.

12   Do you see that?

13   A   Yes.

14   Q   So do the permit application instructions ask

15 that you provide information on the existing wastewater

16 treatment facilities within a 3-mile radius?

17   A   In the version that you're showing me from May

18 2021, that's what it -- I can read that, yes, it does

19 ask that.

20   Q   Okay. Do you believe that the instructions

21 were different in 2019 or when you filled out the permit

22 application?

23   A   I am not sure if there was a change from the

24 one that was valid at that time to now.

25   Q   Okay. And do you see in No. 3 that it also

208

1 asks -- the instructions instruct that you provide

2 copies of certified letters to the existing wastewater

3 facilities within that radius and their responses

4 concerning providing wastewater service for the proposed

5 service area?

6   A   That is what it says in that instruction.

7 That's correct.

8   Q   Okay. So I would like to look at another

9 document which would be the permit application itself

10 that you put together on behalf of the City of Granbury.

11 And what you're seeing now is the cover page of the

12 administrative record that was filed in this case by the

13 City?

14   A   Yes.

15   Q   And if we go -- I have it bookmarked. If we go

16 to Page 323 of the administrative record, this seems to

17 be a section of the permit application. Is that

18 correct?

19   A   That's correct, yes.

20   Q   And it's called: List and Map of Facilities

21 Within a 3-mile Radius. And it's titled: Domestic

22 permitted wastewater treatment facilities and collection

23 systems within a 3-mile radius of the proposed facility.

24   Do you see that?

25   A   Yes, I do.

209

1   Q   So in the permit application did the City of

2 Granbury provide a letter and a response letter to Acton

3 MUD?

4   A   No. We did not write a specific letter and

5 request a response from them.

6   Q   Okay.

7   A   I'm the permitting engineer for this facility

8 as well. We're the engineer of record for their -- that

9 facility.

10   Q   Okay. Did the City in its permit application

11 provide a letter and a response letter to the Shady

12 Grove Sewer System?

13   A   We were not able to find a Shady Grove

14 treatment plant or sewer system. We listed them there

15 because that particular system showed up as having a

16 Certificate of Convenience and Necessity, a CCN, on the

17 Public Utility Commission's website.

18   Q   Okay.

19   A   But they are on septic in that area, but we

20 listed them since they did show up within -- when we did

21 the search of not only the permits but also who had a

22 CCN within that area.

23   Q   Okay. Got it.

24   So they do not have a wastewater facility

25 within a 3-mile radius?

210

1   A   That is correct, not that we could find. But

2 we went ahead and listed them to say that, yes, they

3 have a CCN, but we were not -- I was not able to find

4 anything related to a treatment plant. Looking at

5 Google earth there, I couldn't find anything there, and

6 there was nothing that I could find on the TCEQ's

7 website as well.

8   Q   Okay. I also wanted to look at an exhibit that

9 was admitted as part of -- from the prior witness that

10 was admitted in this case as Exhibit COG-101.

11   Can you see this exhibit? I believe it

12 should be -- it's like a PowerPoint presentation,

13 Ms. Dunn.

14   A   Yes, I can.

15   Q   At the top it says: August 3, 2021. Is

16 that -- well, let me go back.

17   Were you involved with putting together

18 this document?

19   A   Possibly. I believe I am somewhat familiar

20 with it.

21   Q   Was it a -- did it -- so was it associated with

22 like a presentation to the City Council of Granbury?

23   A   I'm honestly not sure. I think so but I'm not

24 sure. If it --

25   Q   Okay.

211

1   A   -- if I had involvement in it, it would have
2 been in conjunction with Chris Hay and Josh Berryhill.
3 Since Chris Hay is the liaison with the City, he would
4 be able to definitively answer that question.
5   Q   Okay. And in the cover page it says presented
6 by your firm. Is that right?
7   A   That's correct, yes.
8   Q   Okay. And it's dated August 3. You began work
9 for the City of Granbury in 2019. Is that right?
10   A   On this project, that's correct, in 2019.
11   Q   So in 2019 the City asked -- did they ask you
12 to perform a wastewater system study?
13   A   They did not ask me to. They may have asked
14 eHT. That would be a question for Chris Hay.
15   Q   Okay. So do you know why the City wants to
16 build this plant?
17   A   Do I know why they want to build the plant?
18   Q   Yeah.
19   A   Because it serves the purpose and need and the
20 justification?
21   Q   Yes.
22   A   Yes, I believe that part of it was included as
23 part of the permit application as excerpts from both the
24 engineering feasibility report that Josh Berryhill and
25 Chris Hay, as well as the environmental information

212

1 document that is an excerpt in the permit application.
2   Q   And would you say that the reason for the plant
3 is that there were existing collection system issues and
4 a need to expand the treatment capacity to handle
5 population growth?
6   A   That is correct, yes.
7   Q   Okay. Now, on this document there's a page
8 titled: Existing collection system issues.
9   Are you familiar with these issues?
10   A   On the periphery, yes. But I believe Chris Hay
11 is our expert as far as the collection system issues
12 that are going on in this east area.
13   Q   Okay. Is your firm assisting the City of
14 Granbury with fixing these issues that are identified on
15 this document that we're looking at?
16   A   I believe that for the ones that would be
17 included in this project, yes.
18   Q   Okay. Now, would it be fair to say this page
19 that we're looking at titled, "Treatment Capacity," this
20 is further detail on why the City believes they need to
21 expand their wastewater treatment capacity. Is that
22 right?
23   A   I believe that's what the intention is. And,
24 again, I believe Chris Hay developed this particular
25 slide.

213

1   Q   Okay. In your experience when -- is it normal
2 to build a new plant to expand treatment capacity or is
3 it more normal to expand? Like if a city has an
4 existing wastewater treatment plant, is it more common
5 to expand that existing facility or to build a new
6 facility to meet?
7   A   It depends on the situation as far as where
8 there's the need. And in this particular case, I
9 believe it was because of the collection system issues
10 on the east side, and the way that the town is located
11 on various sides of the lake that it made the most
12 sense, in this particular case, to build an additional
13 facility.
14   Q   Okay. Did the City ask you and your firm to
15 essentially recommend whether or not to build a new
16 facility?
17   A   I believe they had us analyze various
18 alternatives. And, again, Chris Hay, I think he'll be
19 one of the -- will be able to answer that question more
20 definitively.
21   Q   And is your firm responsible for designing the
22 facility that's the subject of this permit application?
23   A   Yes, that's correct.
24   Q   Okay. So the next page is "Project
25 Alternatives." So it's fair to say that there were

214

1 several alternatives considered to address the problems
2 that we talked about previously. Is that right?
3   A   Yes, several alternatives were looked at.
4 That's correct.
5   Q   Okay. And is it fair to say that Alternative
6 1 -- I'm sorry. Strike that.
7   Is it fair to say that Alternative 5 is
8 what the City is seeking to -- or essentially what the
9 City has chosen to move forward with?
10   A   I believe it is -- I believe the Alternative 5
11 had more than one option. I believe there was a 5a and
12 a 5b. So generally --
13   Q   Okay.
14   A   -- rehabbing the south plant and constructing a
15 satellite east plant I believe is the project that is
16 getting currently permitted.
17   Q   Okay. And then on the next page there is a
18 slide called "Alternative Cost Comparison." And there
19 we see there's a 5a and a 5b. Is it fair to say that 5a
20 is the option that the City is -- just chose to pursue?
21   A   I believe that 5a is the option the City chose
22 to pursue, yes.
23   Q   Okay. And based on this cost comparison,
24 Alternative 1 is -- could you describe what Alternative
25 1 is briefly, to the extent you're able to, what that

215

1 entails?

2   A   Again, I'm not 100 percent sure. This question
3 would be better directed to Chris Hay. But I believe
4 it's including the upgrade of the south wastewater
5 treatment plant, and I'm not sure about the details of
6 the expanding capacity. I don't recall, but he would
7 certainly be able to explain each of those options to
8 you.

9   Q   Now, can you see the estimated total cost of
10 Alternative 1 on this document? Are you able to that
11 see that?

12   A   Yes, I can. Or the pool of 37 million three
13 96 -- 396,000? That one?

14   Q   Yes.

15   A   Okay. And then the 5a that is the selected one
16 is the 28?

17   Q   That's right.

18   A   Uh-huh.

19   Q   So your firm was representing to the City that
20 the Option 1 was almost -- was about $9 million more
21 expensive than Option 5a. Is that right?

22   A   That is what it appears in the table. And,
23 yes, I believe the difference in the cost is due to the
24 collection system improvements that would be needed --

25   Q   Okay.

216

1   A   -- in the middle column.

2   Q   Now, in your prefiled testimony and I believe
3 in this cross-examination testimony, you've said that
4 you were hired in 2019 and you put together something
5 called an EID for the City. Is that right?

6   A   That's correct, yes.

7   Q   And could you explain what that is?

8   A   Yes, it is an environmental information
9 document that is presented to the Texas Water
10 Development Board as a requirement for the NEPA for the
11 environmental review requirements.

12   Q   Did that entail an analysis of alternatives to
13 or -- or I'll just put it that way.

14   Did that entail analyzing alternatives?

15   A   From an environmental perspective, yes. So the
16 way that the EID works is that I get the alternatives
17 that were considered by the engineers, and we pull that
18 into the environmental information document, and we
19 consider those alternatives that were vetted by the
20 engineers through the -- kind of the environmental side
21 of it. How would these various alternatives impact in
22 different ways the environment.

23   Q   And what was the estimated -- and so in short,
24 the EID is a -- an application -- is associated with
25 getting funding for a project?

217

1   A   Yes, it's part of the funding process step, but
2 it is also required because of the fact that funding is
3 coming from essentially a federal agency through the
4 Texas Water Development Board and each project has to go
5 through that NEPA process -- I'm sure you're familiar
6 with NEPA. So this is one of the requirements that the
7 Texas Water Development Board does require in their
8 format as an environmental information document that
9 then meets the requirement of NEPA.

10   Q   Okay.

11   A   National Environmental Policy Act, I think is
12 what it stands for.

13   Q   So because in that document -- I'd like to look
14 at a few things in that document. I've shared on the
15 screen the cover page of that document, which I don't
16 believe has been admitted into evidence, but it says
17 it's been prepared by your consulting firm in
18 August 2019.

19   And this is the document that you helped
20 put together. Is that right?

21   A   That's correct, yes. August 2019, uh-huh.

22   Q   And I have it bookmarked, but if you go to
23 Page -- I guess it's Page 5 of the document, this is
24 general information, and it says: The project name is
25 Phase 1 wastewater system improvements and the total

218

1 estimated project cost is 34.9 million. Do you see
2 that?

3   A   Yes, I do.

4   Q   Now, I have it bookmarked, so if you go to Page
5 20, which I have shared on the screen, there is a --
6 this is a section on alternatives analysis. Are you
7 able to see that at the top?

8   A   Yes, I am.

9   Q   Now, it says this is a section that's talking
10 about analyzing what this report calls the second
11 alternative, which is expansion of the existing south
12 wastewater treatment plant. And we were talking about
13 that alternative earlier. Right?

14   A   That's correct. From the -- August of -- is
15 it -- 2020?

16   Q   2021.

17   A   2021, uh-huh.

18   Q   And there's various information provided here
19 on analyzing expanding the existing south plant as an
20 alternative to building a new one on the east side of
21 the City. Is that right?

22   A   That's right.

23   Q   Now, one part of this 24 that I would like to
24 ask you about is: In this report, were you -- you were
25 saying that expanding the existing south one was more

219

1 cost-effective than building a new one. Right?

2   **A   With regard to the treatment plant itself and,**

3 **again, those -- it was -- I believe it says, would**

4 **likely be, so those cost estimates have since been**

5 **updated, I believe, to include also the collection**

6 **system improvements.**

7   Q   So in your mind the -- building a new plant on

8 the east side of the City is more cost-effective than

9 expanding the existing south plant?

10   **A   Overall, I believe that's what that PowerPoint**

11 **showed. And, again, Chris did the -- Chris Hay did the**

12 **analysis as far as the economics go. And it appears**

13 **that this is outdated, since it was a couple of years**

14 **ago that this was looked at.**

15   Q   Okay. Because here it says that expanding the

16 south would be more cost-effective. Right?

17   **A   I believe it says, "although this alternative**

18 **would likely be more cost-effective." I don't believe**

19 **that's definitive.**

20   Q   Okay. I would like to briefly go back to one

21 of the documents that we were looking at earlier.

22   **A   Okay.**

23   Q   And this was this presentation from August 3,

24 2021?

25   **A   That's right.**

220

1   Q   On Page 17 of this presentation, do you see

2 it's titled: East Wastewater Treatment Plant Designed

3 Proactive Approach. Do you see that?

4   **A   I do.**

5   Q   And it says: The following items are not

6 required by TCEQ, but selected to minimize impact: Odor

7 Control. Systems designed to capture foul odor at odor

8 causing processes/structures and its says, dash,

9 headworks, EQ storage.

10   Are those systems a part of the permit

11 application that you submitted?

12   **A   Yes, they are. They're headworks in a**

13 **temporary EQ basin proposed in the permit application,**

14 **yes.**

15   Q   Okay. Okay. I'm going to start -- I just have

16 one -- I have one more document that I wanted to look

17 at, and that would be -- I would like us to look at the

18 administrative record one more time. Let me see

19 where -- here.

20   What we're looking at is: You can see a

21 page number Administrative Record 0678. Do you see

22 that?

23   **A   Yes, I do.**

24   Q   And this is part of the permit application that

25 you put together for the City?

221

1   **A   Yes, it is.**

2   Q   Or actually, you know what -- I want to look at

3 one thing before that. We'll come right back to that.

4   Now, this is a web page that has the Texas

5 Administrative Code. Are you familiar with these

6 provisions of the TCEQ rules?

7   **A   Yes, I am.**

8   Q   And did you review these provisions when you

9 put together the permit application?

10   **A   Yes, I did.**

11   Q   Did you review Rule 309.13(e)?

12   **A   Yes, I did.**

13   Q   And in that rule it says: That zone -- lagoons

14 with zones of anaerobic activity, e.g., facultative,

15 lagoons, unaerated equalization basins, et cetera, may

16 not be located closer than 500 feet to the nearest

17 property line.

18   **A   That's correct.**

19   Q   That's correct.

20   And do you know why that is, the general

21 kind of reasoning behind that?

22   **A   Yes. Because a lagoon with zones of anaerobic**

23 **activity, those type of lagoons, ponds, they have a**

24 **stratified layer of the -- I guess of the anaerobic**

25 **activities at the bottom, they're sort of stratified.**

222

1 **They have layers. And that unaerated equalization**

2 **basin, like a facultative lagoon or unaerated or EQ**

3 **basin, they have a layer that has this anaerobic**

4 **activity in it, and that particular pond-type system**

5 **does have odors associated with it. So when you're**

6 **beyond the 500 foot, it's not supposed to have an odor**

7 **that goes beyond that distance.**

8   Q   Okay. And if we go back to the administrative

9 record.

10   **A   Uh-huh.**

11   Q   This is a site drawing from the permit

12 application. Is that right?

13   **A   That's correct, yes.**

14   Q   And in red it says, at the bottom in the legend

15 that that's the Applicant's property boundary?

16   **A   That's right.**

17   Q   And do you know how -- and then there's various

18 treatment units labeled in the site drawing. And do you

19 know how far away those treatment units are from the

20 property boundary?

21   **A   150 feet or more.**

22   Q   Okay. And there's a BNR anaerobic zone that's

23 about 150 feet away. Is that right?

24   **A   It's 150 feet or more, and that is not a**

25 **facultative -- it's not a lagoon with an anaerobic zone.**

223
1   Q   Okay. And when you put together the permit
2 application, are you aware of the -- what the
3 neighboring property is?
4   A   Yes. Yes, I am.
5   Q   You can kind of see from this site drawing
6 image. So you are aware of that?
7   A   Yes, I am.
8   MR. BEDECARRE: Okay. I think I have no
9 further questions for the witness.
10   JUDGE STARNES: Okay. I guess back to
11 you, Mr. Hill. Do you have any redirect?
12   (No response)
13   JUDGE STARNES: You're on mute.
14   MR. HILL: I do have a little bit of
15 redirect, Judge.
16   JUDGE STARNES: Okay. Go ahead.
17   REDIRECT EXAMINATION
18 BY MR. HILL:
19   Q   Ms. Dunn, I'm going to take a look at your
20 testimony. I'm going to sort of pick up on a question
21 that Mr. Arthur had asked. I just want to make sure
22 that the record is clear, so allow me to go back to Page
23 10, Lines 5 through 6, and I'm going to put that up on
24 the screen here.
25   A   Great.

224
1   Q   All right. Page 10, Lines 5 through 6, let me
2 help out a little bit here.
3   I just wanted to make clear, Ms. Dunn,
4 what you wanted that sentence -- how you wanted that
5 sentence to read or you intended for it to read. After
6 I ascertained: Can you read the sentence that you
7 intended for that to read into the record.
8   A   I ascertained that there are no public water
9 well sites, springs, or other similar sources of public
10 drinking water within 500 feet of any of the wastewater
11 treatment plant units.
12   Q   Okay.
13   A   "No" needs to be added.
14   Q   Okay. Thank you. I think you made that clear
15 with Mr. Arthur. I just wanted to make sure it was
16 clear here.
17   All right. I also want to pick up on a
18 question that Mr. Arthur had asked you about your well
19 measurement assessment for the application. You should
20 see in front of you an excerpt from the administrative
21 record which is marked Admin Record 0665. Do you see
22 that?
23   A   Yes, I do.
24   Q   Okay. You testified with Mr. Arthur in
25 response to his questions that when you conducted your

225
1 distance measurement assessment you conducted that
2 assessment from the parameter of the property line. Is
3 that correct?
4   A   That is correct, yes.
5   Q   And you agree with me that the treatment units
6 are actually within the parameter of the property line.
7 Correct?
8   A   That is correct, yes.
9   Q   Okay. So it appears obvious. I just want to
10 make the record clear.
11   From your assessment, it looks like you
12 actually looked slightly farther than what the rules
13 have required for distance measurements. Is that right?
14   A   That is correct, yes.
15   Q   Okay. There are some questions that you were
16 asked a second ago by Mr. Bedecarre about the role of
17 the equalization basin or the equalization basin
18 facility, the facility footprint here that was designed
19 by Josh Berryhill, and you were discussing the rule --
20 let me get to it, so we don't have to guess here.
21   You should see in front of you a copy of
22 30 TAC 309.13. Do you see that on your screen.
23   A   Yes, I do.
24   Q   And specifically you were asked a question
25 about Subsection (e)?

226
1   A   That's correct, just below the red box.
2   Q   Okay. That's right. And so Subsection (e) --
3 let me make sure I've got this right. Okay.
4   Below the red box that I have here around
5 Subsection (d) I want to call out Subsection (e) here.
6   A   Uh-huh.
7   Q   And specifically, under Subsection (e)(1), you
8 were asked about lagoons with zones of anaerobic
9 activity and the 500-foot distance proximity requirement
10 that are attributable to zones or lagoons, rather, with
11 zones of anaerobic activity.
12   Can you describe the equalization basin
13 design? Is it intended to hold -- I think it's labeled
14 temporary equalization basin. What is the word
15 "temporary" in that description a descriptor of?
16   A   It's a descriptor of how long that material
17 will be in there, as well as when it's going to be used.
18 Because that temporary EQ basin is not going to be used
19 at all times. It's only going to be used when there's a
20 lot of I&I infiltration coming from the system due to
21 storm flows after a heavy rainfall event.
22   Q   Well, so it's designed to protect the system
23 from overloading is that what I understand you to say?
24   A   That is absolutely correct.
25   Q   Okay. Is it a passage -- or rather -- sorry --

227

1 a passive basin, or does it have mechanical components

2 to it?

3   A   It has mechanical components to it. And in

4 this case there is a mixer in it and I believe it also

5 has a -- is designed to have a cover on it. So it is

6 not a passive, sits there and cooks like a lagoon does

7 that is a facultative lagoon with an unaerated

8 equalization basin.

9   Q   Okay. So is it right that during this mixing

10 process there actually is some aeration to the influent

11 that's captured in the basin?

12   A   Yes, there should be. It does not have a zone

13 of anaerobic activity like a lagoon does.

14   Q   Okay. You were explaining earlier about this

15 stratification of -- I guess -- material within a

16 facultative lagoon -- I thought I understood you to say

17 and so can you describe -- do you expect that type of

18 stratification to occur in the temporary equalization

19 basin that you have designed in this facility?

20   A   Oh -- no, definitely not. In a facultative

21 lagoon or a lagoon with a zone of anaerobic activity, it

22 basically sits there, the flow comes in, it's

23 stratified. I kind of think of it like the three layers

24 where you have the anaerobic at the very bottom and then

25 the next layer is anoxic and then the upper layer is the

228

1 aerobic layer and that's basically from having the

2 surface from the wind blowing through.

3   And there's no mechanical treatment.

4 There's no mechanical parts. There's nothing that's

5 mixing. It just comes in there. And for a facultative

6 lagoon, typically there's a deep end and so all the

7 collection system material gets put into the -- kind of

8 the deep end of the pond and then the rest of the

9 material sort of decants off and it's in there a long

10 time, typically 21 days, you know, for a minimum, and it

11 treats it, but it's not to the level as a mechanical

12 plant would be. And specifically it is -- it doesn't

13 have any mixers. It doesn't have any mechanical

14 agitation, nothing in there. It just stays in its

15 stratified layers.

16   Q   And you're speaking -- just to make sure it's

17 clear. When you talk about, "It doesn't have any

18 mixtures or mechanical parts," you're referring to a

19 lagoon with a zone of anaerobic activity? Is that what

20 you're referring to?

21   A   That is correct. A lagoon of -- with a zone of

22 anaerobic activity, has layers with no mixers and no

23 mechanical parts or anything in there. It just sits.

24   Q   Go ahead. I apologize.

25   A   That's okay. It just sits there, and the flow

229

1 just kind of decants across the base just very slowly on

2 gravity, just moving across.

3   Q   Based on your experience and your understanding

4 of the design for this facility, how does that -- you

5 mentioned a long retention time, 21 days or something

6 with respect to a -- what you would expect a lagoon with

7 a zone of anaerobic activity to do?

8   How long of a retention time do you expect

9 or is the intended purpose of the equalization basin in

10 this facility that the City of Granbury is trying to

11 permit?

12   A   I believe at the permitted flow it will be 90

13 minutes.

14   Q   90 minutes?

15   A   90 minutes in the temporary EQ basin. That is

16 correct.

17   Q   Does that mean the influent comes into the

18 equalization basin and you only hold it there for 90

19 minutes? Is that what you you're saying?

20   A   That's what I'm saying. At design flow, that

21 is correct.

22   Q   Okay. And you mentioned that you -- the

23 intended design is to have a cover. Did I understand

24 that right?

25   A   Yes, that is correct.

230

1   Q   Can you explain a little bit more about that

2 and its relationship to/or contrast with a lagoon with a

3 zone of anaerobic activity?

4   A   Yes, a facultative lagoon with a zone of

5 anaerobic activity, it is open top. In fact, it relies

6 on the wind coming and helping to provide some aeration

7 in that upper layer, the upper third, whereas this

8 temporary EQ basin that we're talking about for the east

9 wastewater treatment plant that is currently designed,

10 it is, again, only going to be used when there's storm

11 flows coming in to temporarily hold it. It's going to

12 be held for 90 minutes or less. It's going to be

13 having -- or around 90 minutes I guess is probably a

14 good average. It's going to have a cover. It has a

15 mixer, and the purpose of the cover is that if there

16 aren't any odors that are generated while it's being

17 stored there temporarily, it is going to be captured and

18 it is, you know, recycled into the system for additional

19 treatment. It has vents on it, but the vents are for

20 not offing any of the gasses. It's -- the vent is

21 actually there to pull air in to keep it, you know,

22 mixed in so -- and to basically equalize the pressure to

23 make sure that it doesn't squish like a juice -- one of

24 those, like, Capri Sun, like, squishes if you suck the

25 air out.

231
1   So I think it would be -- you know, if
2 you're asking for more details, I believe Josh Berryhill
3 would be able to explain it better than saying it sucks
4 like a Capri Sun. It's going to equalize the pressure.
5 I'm not a design engineer, as far as wastewater
6 treatment plant units go.
7   Q   But you have had experience with how temporary
8 equalization basins work and BNR -- or NBR type systems?
9   A   Oh, definitely, yes. But I'm not going to know
10 those same details that Josh will know.
11   Q   Okay. But as far as retention time goes, is
12 it -- you know, what's the outward bounds of retention
13 time that you might expect for capturing flows in big
14 storm surges in the EQ basin? I mean, can it be up to
15 24 hours or --
16   A   It will definitely not be more than 48 hours.
17   Q   Okay.
18   A   Typically it will be 90 minutes, but it will
19 not exceed 48 hours.
20   MR. HILL: Okay. Very good. Ms. Dunn, I
21 appreciate it. That's all the questions that I have. I
22 pass the witness.
23   JUDGE STARNES: Okay. Mr. Tatu, do you
24 have anything for this round of cross?
25   MR. TATU: Nothing further. Thank you.

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1   JUDGE STARNES: Okay. Mr. Arthur?
2   MR. ARTHUR: No, Your Honor. Thank you.
3   JUDGE STARNES: Okay. Mr. Booth?
4   MR. BOOTH: No.
5   JUDGE STARNES: Okay. How about you
6 Mr. Bedecarre?
7   MR. BOOTH: No, ma'am, hold on just a
8 second. Hold on just a second.
9   JUDGE STARNES: Oh, okay.
10   RECROSS-EXAMINATION
11 BY MR. BOOTH:
12   Q   Ms. Dunn, I probably should be better off --
13 I'd be better off asking Mr. Berryhill this, so tell me
14 if that's correct.
15   A   Sure.
16   Q   90 minutes doesn't seem to have much of a
17 capacity to hold the storm surge in one of these
18 equalization basins. Am I correct?
19   A   That would be a question for Josh as far as the
20 design --
21   (Simultaneous discussion)
22   Q   (BY MR. BOOTH) Okay.
23   A   -- of that basin.
24   Q   Okay. And so what happens -- do you know
25 whether the fact that -- has the City -- is their permit

233
1 going to have a requirement for covers and air
2 filtration and covers on the equalization basin and on
3 the headworks and on the BNR units, and things like
4 that? Is that in the permit? I don't believe I saw it.
5   A   The permit does not require that. The permit
6 does not. But I believe the design goes beyond what is
7 required by the permit.
8   Q   Okay. The current -- well, let me talk to
9 Berryhill about that then -- Mr. Berryhill.
10   A   Yes.
11   Q   You mentioned just briefly when we were talking
12 about capturing the air coming off the equalization
13 basins about recirculation or what did you say in that
14 respect?
15   A   So those -- well, again, that will be a good
16 question for --
17   (Simultaneous discussion)
18   Q   (BY MR. BOOTH) Okay. Fair enough.
19   A   My understanding is that there are vents in the
20 cover system that help to equalize the pressure and
21 those gases are not vented out. They are actually --
22 the vents there are to pull the air in to make sure that
23 the pressure is equalized. He'll be able to tell you
24 specifically what happens with those gases that are
25 captured by the cover.

234
1   Q   Now, you've been to wastewater treatment plant
2 sites -- right -- ones that are operating?
3   A   Yeah. Oh, yes. Yes, I have.
4   Q   So when you go to the headworks of one of these
5 plants, this plant -- the NBR plant still has headworks
6 for the -- you have grit removal and bar screens and
7 such?
8   A   Yes.
9   Q   There's a smell there, isn't it? Anoxic smell?
10   A   Right at the unit itself, I believe that there
11 can be at times.
12   Q   Yeah. I guess I've always been there when they
13 have been.
14   Do y'all intend to have a cover of those
15 facilities?
16   A   I believe that Josh does plan to have that.
17   Q   Okay. That's a Josh question? Okay.
18   A   That is a Josh question, and I believe that is
19 the intent. I don't believe it's required in the
20 permit, but I do believe that is the intent.
21   Q   Okay.
22   A   That the --
23   (Simultaneous discussion)
24   Q   (BY MR. BOOTH) Well, they --
25   A   -- uh-huh -- that are provided --

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1   Q   Okay. I'll wait to ask him those questions to
2 Mr. Hays.
3   A   Yeah.
4   MR. BOOTH: I don't have any more
5 questions. Thank you, ma'am.
6   THE WITNESS: Yes, sir.
7   JUDGE STARNES: Thanks, Mr. Booth.
8   Mr. Bedecarre?
9   RECROSS-EXAMINATION
10 BY MR. BEDECARRE:
11   Q   All right. Yes, so you were providing some
12 descriptions about what a lagoon is in your mind. Is
13 that right?
14   A   Yes, that is correct.
15   Q   Okay. But those descriptions you provided,
16 they're not actually found in the language of the rule.
17 Right? Does the rule -- sorry. I'll let you answer.
18 I'm sorry.
19   A   So in the rule, it provides I believe two
20 examples of what a lagoon with an unaerated zone is.
21 Correct? I believe it says a facultative lagoon as an
22 example, as well as an unaerated equalization basin.
23   Q   That's right. And you were also talking about
24 some of the processes at this -- at these treatment
25 units and at the equalization basin. And the permit

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1 itself, it does not require that the equalization basin
2 be aerated. Is that right?
3   A   For the temporary EQ basin --
4   Q   Yes.
5   A   -- that is correct. It does not require it to
6 be aerated.
7   Q   And does it require that the equalization basin
8 be emptied out every 48 hours?
9   A   That is, I believe, what we -- it is what we
10 said was going to happen within our permit application,
11 that part of it was included in there.
12   Q   But the permit itself doesn't require that. Is
13 that right?
14   A   I don't recall an area where it specifically
15 states that.
16   Q   Okay. I also wanted to -- previously, we had
17 discussed a document that was the TCEQ application
18 instructions, which were not -- I don't have any more
19 questions for you about that.
20   But I was just wanting to move to admit
21 this as an exhibit as Exhibit GF-5. That is something I
22 overlooked initially, so we would just like to admit
23 this as an exhibit.
24   (Exhibit GF No. 5 offered)
25   JUDGE STARNES: Okay. Does anybody have

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1 an objection to GF-5 coming into evidence?
2   (No response)
3   JUDGE STARNES: Okay. Hearing no
4 objection, GF-5 is admitted.
5   (Exhibit GF No. 5 admitted)
6   MR. BEDECARRE: Okay. Thank you very
7 much, Ms. Dunn.
8   I have no further questions.
9   JUDGE STARNES: Okay. Well, that
10 concludes your testimony Ms. Dunn. I appreciate your
11 availability this morning, and you are free to leave.
12   Let's go off the record real quick.
13   (Recess: 10:25 a.m. to 10:47 a.m.)
14   JUDGE STARNES: Let's go back on the
15 record.
16   And, Mr. Hill, who do you want to call
17 next?
18   MR. HILL: Thank you, Judge. The City
19 calls Joshua Berryhill.
20   JUDGE STARNES: Okay. Mr. Berryhill,
21 let's get you under oath. Will you raise your right
22 hand for me?
23   (Witness sworn)
24   THE WITNESS: I do.
25   JUDGE STARNES: Okay. Go ahead, Mr. Hill.

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1 Your witness.
2   MR. HILL: Thank you, Judge.
3   JOSHUA BERRYHILL, P.E.,
4 having been first duly sworn, testified as follows:
5   DIRECT EXAMINATION
6 BY MR. HILL:
7   Q   Good morning, Mr. Berryhill.
8   A   Good morning.
9   Q   You should have in front of you a document
10 labeled COG Exhibit 300.
11   A   Yes, sir.
12   Q   And then behind that, COG Exhibits 301, 302,
13 303, 304, 305, 306, do you have those documents in front
14 of you?
15   A   Yes, sir.
16   Q   Okay. Is Exhibit COG -- rather COG Exhibit
17 300 -- pardon me -- is that your prefiled testimony?
18   A   Yes, it is.
19   Q   And then those accompanying exhibits are the
20 ones that are referenced in your prefiled testimony?
21   A   Yes, they are.
22   Q   All right. Mr. Berryhill, do you adopt COG-300
23 and the attached exhibits as though it was -- is your
24 testimony as though you were live in person on the stand
25 in front of the judges right now?

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1   A   Yes, sir, I do.
2   MR. HILL: Okay. Judge, with that, the
3 City offers COG Exhibit 300, along 301, 302, 303, 304,
4 305, and 306 for admission into the record.
5   (Exhibit COG Nos. 300 through 306 offered)
6   JUDGE STARNES: And there were no prefiled
7 objections to those exhibits.
8   Does anybody have an objection they want
9 to state for the record today?
10   (No response)
11   JUDGE STARNES: Okay. So there are no
12 objections. COG-300 through 306 are all admitted.
13   (Exhibit COG Nos. 300 through 306
14   admitted)
15   MR. HILL: Thank you, Judge. I pass the
16 witness.
17   JUDGE STARNES: Okay. Anybody with
18 Executive Director's office have questions?
19   MR. TATU: Just a few questions, Your
20 Honor. Thank you.
21   JUDGE STARNES: Okay.
22   CROSS-EXAMINATION
23 BY MR. TATU:
24   Q   Good morning, Mr. Berryhill.
25   A   Good morning.

240
1   Q   Yesterday there was some discussion about the
2 term "ORP" or "oxygen reduction potential."
3   Are you familiar with that term?
4   A   Yes, I am.
5   Q   Could you briefly explain what that term means?
6   A   Sure. ORP or oxidation reduction potential is
7 a measurement of the amount of oxidant in the water. We
8 frequently use this in both water treatment and
9 wastewater treatment. In its use for wastewater
10 treatment, that is based on the amount of oxygen in the
11 water or the lack thereof of oxygen in the water.
12   Q   Okay. And could you explain the relevance to
13 oxygen reduction potential to how the temporary EQ basin
14 and the BNR anaerobic basin will operate in this
15 particular plant?
16   A   Sure. There are three specific ranges that we
17 use for ORP determining whether a water environment is
18 considered either anaerobic, anoxic, or aerobic. The
19 measurement of ORP is in terms of millivolts or MV.
20 Aerobic is considered positive 200 millivolts and
21 larger, so positive 200, positive 300, positive 400 and
22 so on. Anoxic is from minus 200 to positive 200, so
23 minus 200, minus 100, zero, 100 and 200. And then fully
24 anaerobic conditions are generally minus 200 and lower,
25 so minus 200, minus 300, minus 400.

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1   The reason I make this distinction is:
2 When we look at things like the temporary EQ basin and
3 the BNR anaerobic selector zone, those are actually
4 designed to operate at the low end of the anoxic zone.
5 So we're talking about minus -- essentially minus 50 to
6 minus 100.
7   So there was an email that was in one of
8 our exhibits -- there's an email exchange that was
9 included between myself, Luci Dunn, Gordon Cooper, and
10 there was an older portion of the email that also
11 included communications from Louis Herrin, who is the
12 head of the plan review team for wastewater for TCEQ,
13 and that got into looking at the ORP values. There was
14 a specific statement I had in there talking about the
15 conditions -- the ORP conditions that we would maintain
16 our target for in both the BNR anaerobic zone and in the
17 temporary EQ zone.
18   I did have a typo in this statement I
19 would like to clarify. If we need to pull it up on the
20 screen, we can do so.
21   But, again, the intent for the operation
22 of the BNR anaerobic zone and then the temporary EQ
23 basin is to go essentially from minus 50 to minus 100
24 and that's it. We don't want to go any lower than minus
25 100 because that's where we start getting into anaerobic

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1 conditions where you might have H2S formation, methane
2 formation, things like that. Those are conditions that
3 we would typically see in an anaerobic digestor which is
4 intended to produce methane gas. Well, we don't have an
5 anaerobic digestor in the project.
6   That ORP is also typically associated with
7 a facultative lagoon and an unaerated EQ basin that does
8 not have any mixing, any mechanical equipment, any
9 aeration. So as Luci mentioned previously, which was an
10 excellent description of a facultative lagoon or zones
11 of -- lagoons of anaerobic activity, areas that have
12 stratification in those basins. So whether it's a
13 facultative lagoon or an unaerated, unmixed EQ basin,
14 the bottom layer of that basin would be considered a
15 zone of anaerobic activity.
16   When you add in mixing to that basin so
17 that you no longer have stratification, when you focus
18 on a short HRT -- there was a statement in that exhibit
19 from Louis Herrin that stated if you're storing
20 wastewater in an EQ basin for less than 48 hours, then
21 we do not anticipate it going septic because the ORP is
22 not going to drop to that level where you would have
23 sulfide formation.
24   Q   Let me just stop you there for a second, just
25 to clarify a couple of terms.

243
1   When you say the word "septic," could you
2 explain a little bit more, you know, what that term
3 means in context of this discussion?
4   A   Yes, sir.
5   So some people in the industry might try
6 to vet a direct relationship between septic conditions
7 and anaerobic conditions. Septic conditions are those
8 in which there is absolutely no oxygen in the zone.
9 There's no mixing in the zone. Essentially the zone is
10 out of control.
11   So when that's a basin like a facultative
12 lagoon, you're not putting any mixing in, you're not
13 controlling what's happening in the basin, that
14 wastewater is sitting there potentially for 21 days, 25
15 days, 30 days or longer, at that point, the ORP goes
16 from minus 100, to minus 200, to minus 300 and so on,
17 and at that point, you are forming methane and hydrogen
18 sulfide. That is why if you have a zone of anaerobic of
19 activity like a facultative lagoon or an unaerated,
20 unmixed EQ basin, you would need the 500 foot buffer to
21 support that.
22   There is a use of anaerobic where it's not
23 considered septic, and that is when you're looking at
24 something like a BNR anaerobic selector zone, the point
25 of an anaerobic selector zone is to convert phosphorus

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1 from a poly-phosphate form to an ortho-phosphate form
2 which is -- the whole point of that is: We're trying to
3 get into a form that we can then grab it in the
4 anaerobic selector by the biomass that's in that basin.
5 That's it in very simple terms.
6   So we do not have to go to a point of ORP
7 where you're forming H2S, where you're -- hydrogen
8 sulfide, or methane to get that phosphorus conversion.
9 So that's why we can control that ORP and the anaerobic
10 selector zone based on the internal recycle for it that
11 allows us to maintain that ORP in a very narrow margin
12 to keep it from going septic. Likewise, for the EQ
13 basin, we have two methods -- three methods actually to
14 prevent it from going septic. One is the mixing
15 approach, which as Luci mentioned, we are putting cover
16 over the -- a cover over the tank, but the other
17 component is: We are also pulling foul air out of that
18 basin at all times using blowers that will send that
19 foul air if its even foul into the anaerobic selector
20 and the NBR tank for treatment.
21   Well, the nice benefit of that is: We're
22 always maintaining a slightly negative pressure inside
23 that tank under the cover. That's why we have the vents
24 on the cover, and that's to allow clean fresh air to go
25 into the tank and be drawn through. So we actually get

245
1 a net benefit of some aeration of the volume in that EQ
2 tank.
3   The last step is the detention time. So
4 as we had previously committed to TCEQ we would hold
5 water in that EQ basin for no more than 48 hours, hence
6 the reason why we call it a temporary EQ basin. This is
7 a permanent structure. It's a designed engineered
8 structure not a pond, not a lagoon, but a designed
9 engineered structure that we would only temporarily
10 divert flow in the middle of a storm event.
11   Now, Luci mentioned about a potential
12 detention time of the 90 minutes. That is not uncommon
13 if you're talking about a very short duration storm that
14 is typically 30 minutes or an hour long. So it's very
15 possible that in a given storm event, we may divert flow
16 to that basin for 30 minutes or 60 minutes or 90
17 minutes, and as soon as our peak flow subsides going
18 through the plant, we're draining that basin back to our
19 influent lift station and sending it directly to the BNR
20 and NBR process for final treatment. So the operable
21 limit --
22   Q   Thank you.
23   A   -- is probably 90 minutes to 48 hours. Yes,
24 sir.
25   Q   Thanks. You'll probably get some more

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1 questions from some of the other attorneys about that.
2 But I wanted to actually take a look at -- and let me
3 apologize to all the other participants. I was trying
4 to share my screen during the break, and I wasn't able
5 to do it correctly. So I'm going to ask co-counsel if
6 she could pull up something that's in the administrative
7 record here.
8   Mattie, could you help out with that?
9   MS. ISTURIZ: Yes. Give me one second. I
10 think this should work. Can y'all see my screen?
11   A   Yes.
12   Q   (BY MR. TATU) Yes.
13   MS. ISTURIZ: So in the administrative
14 record, this is Tab D, a document submitted by the
15 application (sic) so Page 101, we wanted to look at this
16 attachment.
17   And I will scroll around as you please but
18 I'm going to let you speak now, I think.
19   MR. TATU: Thanks. If you could just
20 scroll down to the diagram and -- a little bit further
21 please, sorry. Little bit more. Yeah, Site Drawings.
22 This is the one right here, please. Thanks Mattie.
23   Q   (BY MR. TATU) Mr. Berryhill, are you familiar
24 with this diagram?
25   A   Yes, I am.

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1   Q   Could you tell me what this is?

2   A   This is a diagram that shows the interim Phase

3 1, which is the 1 mgd phase, site layout plan, including

4 also the anticipated treatment facility boundary, which

5 is in blue, versus the overall property boundary, which

6 is in red. And this is for the City of Granbury's

7 wastewater plant.

8   Q   And could you identify the BNR anaerobic basin?

9   A   Yes. Well, I can't move the mouse around.

10   But if you go to the -- essentially the

11 center of the graphic there are three structures, three

12 boxes side, by side, by side.

13   Q   Yes.

14   A   The one to the far right is the BNR anaerobic

15 selector zone, yes, sir.

16   Q   Okay. I just have one more -- one or two more

17 questions. Sorry.

18   Can you tell me how the equalization basin

19 and the anaerobic treatment units will meet the 150

20 buffer zone?

21   A   Yes, sir. So the -- for the EQ basin, again,

22 that is a -- not an unaerated, unmixed, aeration EQ

23 basin. One, it will have a cover. Two, it will have

24 mixers in the basin. Three, it will have the ability to

25 provide some aeration to that wastewater, and, four, the

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1 detention time is set so that we can actually bring that

2 wastewater back into the treatment plant for final

3 treatment before it could go -- have the potential to go

4 septic.

5   As for the anaerobic selector zone, the

6 design of the selector zone is such that our goal is to

7 do the phosphorus conversion so that we can maximize

8 phosphorus reduction in the aerobic zone. We can

9 maintain a specific ORP range of minus 50 to minus 100

10 millivolts so that it is essentially anoxic really still

11 at that point. But our goal is instead of just

12 denitrification, which would occur in the anoxic zone --

13 which denitrification is the reduction of nitrogen

14 nitrate and the return of alkalinity in the water to

15 help boost ammonia production in the anaerobic zone.

16 But in the anaerobic selector zone, we're bringing in

17 influent wastewater from the headworks process where

18 also we have an internal recycle from the anoxic zone

19 and that is how we maintain that control of that ORP.

20   So as opposed to a lagoon of anaerobic

21 activity where you have no control over ORP, you just

22 put it in the tank and it just sits there and cooks, in

23 this case, we can specifically adjust that ORP that's in

24 the BNR selector basin by increasing or decreasing that

25 recycle rate from the anoxic selector zone. Also, the

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1 detention time in the anaerobic selector zone is no more

2 than 90 minutes at the design flow of 1 mgd.

3   If and when we were to go to the future

4 final phase of 2 mgd, we would have double the flow but

5 we would also have a second treatment train, so we would

6 have the same -- we would double the flow but have

7 double the volume, so it would still be the same maximum

8 detention time going through the anaerobic selector

9 zone.

10   Q   Okay. And I just have one more question: Is

11 it my understanding that the MBR system will be able to

12 operate without the constant use of an equalization

13 basin?

14   A   Yes, sir. That's correct. In the industry for

15 designing MBR systems, it is very common to use flow

16 equalization for the process; however, it is not

17 absolutely required. The need for flow equalization for

18 an MBR is not tied to the need because it is an MBR

19 process. It is based on the maximum peak hydraulic

20 frequent flow that an MBR can handle, which is typically

21 two times the designed flow rate for an instantaneous

22 period of time, versus a collection system may bring in

23 flow upwards of three to four times the design flow rate

24 for a very short period of time during, say, a peak

25 2-hour flow event. Now, that varies from utility to

250

1 utility.

2   TCEQ states under 217 requirements that if

3 you do not have historical data that tells you what that

4 peaking factor is, you assign a worse-case peaking

5 factor of four to one, so four times the design flow

6 rate. So in the case here, we erred on the side of

7 conservative design meeting 217 criteria to assume that

8 we had up to four times the flow rate coming in during a

9 storm flow period.

10   There are many MBR facilities that either

11 use a limited amount of EQ storage or some that don't at

12 all. There are two facilities I'm aware of that I've

13 worked with in Texas alone that do not have EQ storage.

14 It's not required. So it is not a set TCEQ requirement

15 that you must have EQ storage. The requirements are you

16 need to analyze your collection system and determine

17 what's coming to the plant and then design your system

18 accordingly to manage that.

19   So in the case here we are using EQ

20 storage for the basin. Both the EQ basin and anaerobic

21 selector zones are 150 feet from the property line. In

22 each case, we either have a control mechanism or a

23 mechanical mixing mechanism or a method of either

24 aeration or the ability to internally recycle from our

25 anoxic zone, which allows us to meet that 150-foot

251
1 buffer zone requirement. Because, again, these are not
2 lagoons of anaerobic activity. These have mixing. They
3 have controls. We are not just putting wastewater in
4 there and just letting it sit for days and weeks on --
5 actually, for weeks on end, unlike a facultative lagoon
6 that would have a typical time of 21 days or more.
7   MR. TATU: Thank you. I don't have any
8 further questions. Thanks.
9   Pass the witness.
10   JUDGE STARNES: Thank you.
11   For OPIC? Any questions?
12   MR. ARTHUR: Yes. Thank you, Judge.
13   CROSS-EXAMINATION
14 BY MR. ARTHUR:
15   Q   Good morning, Mr. Berryhill.
16   A   Good morning, sir.
17   Q   So I have a question about your prefiled
18 testimony, and I'd just like to clarify what I'm
19 reading.
20   I'm looking at Page 37, and I'm looking at
21 the last line, which is Line 22, and there's a clause
22 starting with, "Alternatives assessments that the City
23 undertook before settling on the east plant, but if
24 there's something to work with here, I'd like to do it."
25   Do you see that clause?

252
1   A   Yes. That looks like an internal -- a typo
2 from an internal discussion, I think.
3   Q   Well, I agree. And I'm hoping that you can
4 clarify your testimony there.
5   A   Sure. So we've had several discussions already
6 this morning with regard to the planning alternatives
7 that were completed prior to selecting the east plant
8 location as the option -- recommended option going
9 forward. There were several references to a planning --
10 wastewater planning study. Mr. Bedecarre had put up I
11 think in Luci's discussion a presentation from
12 August 2021 that included a list of alternatives in
13 there. One was upgrade and expand the existing plants,
14 other alternatives were to relocate to a different site
15 and then ultimately Alternative 5, which is what this
16 project is based on, was to upgrade the existing south
17 plant, keep it at 2 mgd and then develop a new satellite
18 facility on the east at 1 mgd, which is this current
19 project.
20   What we are talking about there, the
21 alternatives that we evaluated was -- as we've discussed
22 previously, there was a treatment component and then
23 there was a collection system improvement component. In
24 the treatment analysis, we looked at not just is there
25 economies of scale savings associated with a larger

253
1 plant, but overall total construction cost impact from a
2 conventional plant. Industry -- it's a common belief in
3 the industry that one larger plant is going to be lower
4 cost from a unit cost basis than two smaller plants.
5 That makes sense from the standpoint of treatment
6 equipment costs. So if you were looking at one 3 mgd
7 MBR system versus a single 2 mgd MBR system over here
8 and a 1 mgd MBR system over, then, yes, there should be
9 a slightly lower cost of that single larger unit. What
10 that doesn't take into account, though, is when you're
11 working with an existing facility that already has the
12 majority of the site used up with process units, then
13 there's an additional upcharge you have to deal with
14 with regard to construction sequencing. Because
15 obviously the City has only one treatment plant today.
16 If you're making major modifications to it and you're
17 going to expand it, you have to keep treating
18 wastewater. We don't get to just tell everybody, Sorry,
19 you have to stop flushing your toilets for 18 months
20 while we build this.
21   So because of that additional construction
22 sequencing, it's frequently a bit more expensive to go
23 with a single site. And if we were to go back and look
24 at that slide that showed those cost tables, you see
25 that not only is the overall holistic project of

254
1 treatment plus collection more cost-effective with this
2 option, Option 5 of 2 mgd south and then 1 mgd east.
3 But even just from the treatment standpoint, the
4 treatment costs for the south plant upgrade to 2 at --
5 maintaining 2 mgd, the 1 mgd new plant for a satellite
6 even that total -- that treatment cost was less than the
7 treatment cost for just an expansion of the south plant
8 because of that construction sequencing complication.
9   And so that -- those were some of the
10 alternatives that we went through in addition to looking
11 at different treatment options to say, What are
12 potential permit limits that might come into this
13 project, and what are the different treatment
14 technologies that could meet those kind of permit
15 limits.
16   Q   Okay. Thanks, Mr. Berryhill.
17   A   Uh-huh.
18   MR. ARTHUR: Your Honor, I pass the
19 witness.
20   JUDGE STARNES: Okay. For our Protestant,
21 which group is going first?
22   MR. BOOTH: I believe Eric is.
23   MR. ALLMON: Yes, I'll go ahead and go
24 first on behalf of Granbury Fresh.
25

255

1   CROSS-EXAMINATION
2 BY MR. ALLMON:
3   Q   Good morning, Mr. Berryhill. How are you?
4   A   I'm good. Good morning.
5   Q   First, just so that we're straight: Does a
6 negative ORP reflect anaerobic conditions?
7   A   No, it does not. You need to have a value of
8 that ORP to determine whether it's actually anaerobic
9 conditions or anoxic.
10   Q   Now, what do you mean by actually anaerobic?
11   A   So there's -- when you're talking about true
12 anaerobic conditions, that means there is no oxygen in
13 the process whatsoever and you're now producing methane
14 and sulfides. But that doesn't mean -- if you have a
15 negative ORP, that does not mean that it's an anaerobic
16 condition because there's an area in between anaerobic
17 and aerobic which is your anoxic area.
18   Q   So do you have any reference for your
19 contention that a negative ORP is not anaerobic?
20   A   There's -- more than anything, it's from
21 industry experience in working with different BNR
22 facilities.
23   Q   But do you have any scientific reference for
24 your contention that a negative ORP does not define
25 anaerobic conditions?

256

1   A   Not as a part of my exhibits at this time.
2   Q   Okay. Do you have any that you can identify
3 here?
4   A   Not in any of the exhibits that I've seen thus
5 far, no, sir.
6   Q   Now, does ORP stand for oxidation reduction
7 potential?
8   A   Yes, that is correct.
9   Q   And with regard to the -- what's oxidation?
10   A   Oxidation is the biological processing or
11 chemical processing of an organic compound used through
12 the use of an oxidative -- in the case here, this would
13 be oxygen.
14   Q   And what is reduction?
15   A   Reduction is the ability also to process an
16 organic biologically without the presence of oxygen.
17   Q   So if you have a negative ORP are you then
18 reducing conditions?
19   A   That is correct.
20   Q   So if you're at a negative ORP and you're
21 reducing conditions, does that indicate the absence of
22 oxygen?
23   A   It doesn't indicate the absence of oxygen. It
24 indicates that you may not have -- you may have a
25 minimal amount of oxygen. The numeric value then

257

1 depends -- tells you whether you have a limited amount
2 of oxygen, which is anoxic versus no oxygen whatsoever
3 which is anaerobic.
4   Q   And so could that limited amount of oxygen
5 indicate anaerobic conditions?
6   A   No, it would not. A limited amount of oxygen
7 would indicate anoxic conditions.
8   Q   What is the distinction between anoxic and
9 anaerobic conditions?
10   A   Anaerobic conditions has zero oxygen
11 whatsoever, not any -- no free dissolved oxygen, nor any
12 bound oxygen. Anoxic could have dissolved -- free
13 dissolved oxygen. But typically you're going to find it
14 more in the form of bound oxygen.
15   Q   But you have no scientific reference for that?
16   A   Just from normal industry literature and
17 experience on working on other BNR facilities in Texas.
18   Q   But you would agree any negative ORP here
19 reflects reducing conditions?
20   A   I would agree that a negative ORP would reflect
21 reducing conditions but does not necessarily reflect
22 anaerobic conditions.
23   Q   Okay. Now, and my concern as with the TCEQ is
24 what the permit requires and what the permit allows.
25 Does the permit impose any limits on the ORP within the

258

1 equalization basin?
2   A   No, it does not.
3   Q   Does the permit impose any limits on the ORP
4 within the BNR anaerobic zone?
5   A   No, it does not.
6   Q   Does the permit impose any requirements that
7 the equalization basin be covered?
8   A   Not that I'm aware of, no.
9   Q   Does the permit impose any requirements that
10 the equalization basin be aerated?
11   A   Not that I'm aware of.
12   Q   Okay. So this permit authorizes an unaerated,
13 uncovered, equalization basin with an ORP less than
14 negative 200?
15   A   I don't know that it clearly states that it
16 allows it or doesn't allow it. It doesn't have a
17 reference to it.
18   Q   It's certainly not prohibited in any way by the
19 permit?
20   A   Not from what I have seen from the permit, no.
21   Q   Okay. Now, I want to talk a bit more about
22 this equalization basin, and I want to start with a -- I
23 want to look at a TCEQ regulation.
24   Do you have in front of you TCEQ
25 Regulation 217.157?

259

1   **A**   Yes.

2   Q   And is this for membrane bioreactor systems?

3   **A**   Yes, it is.

4   Q   So does this regulation apply to the facility?

5   **A**   Yes, it does.

6   Q   Now, I want to look at 157(d). These get a

7 little bit -- into the weeds a little bit, so I'm going

8 to look at (d)(7)(C).

9   Do you see where that provides that an MBR

10 system with a peak flow rate that is greater than 2.5

11 times the average daily flow must use an equalization

12 basin, offline storage, or reserve membrane capacity to

13 accommodate the higher peak flow?

14   **A**   Yes, I do read that.

15   Q   Does this requirement apply to -- if the

16 facility meets the threshold here, does this requirement

17 apply to the facility?

18   **A**   Yes, it does. And our assumption in the design

19 **was that we actually applied a four times peaking**

20 **factor, so that was why we included an EQ basin for this**

21 **project.**

22   Q   So this requirement applies to the facility?

23   **A**   It does in this case, yes.

24   Q   Okay. And because the peak flow is greater

25 than 2.5 times the average daily flow?

260

1   **A**   That is correct.

2   Q   Okay.

3   **A**   I apologize. The anticipated peak flow, we

4 **anticipate it's going to be more than 2.5. That is**

5 **correct.**

6   Q   And the authorized peak flow is greater than

7 the 2.5 times the authorized daily flow?

8   **A**   Yes, that is correct.

9   Q   Okay. Does the permit authorize this

10 requirement to be met through the use of an equalization

11 basin?

12   **A**   I don't recall if the permit gets into that

13 **level of detail. This item here is with regard to**

14 **design criteria and what would be reviewed by the plan**

15 **review team, not from the permitting team.**

16   Q   And so my question is whether the permit would

17 allow the equalization basin to be used in order to

18 accommodate the peak flow rates?

19   **A**   It could be allowed to use -- an EQ basin could

20 **be allowed to meet -- could be approved to utilize this**

21 **or meet this requirement. But, again, this is a -- that**

22 **is not a permitting item that would typically be seen in**

23 **a permit application. It would be as a part of the plan**

24 **review submittal in detail design.**

25   Q   Could the accommodation of such peak flow rates

261

1 require residents time within the equalization basin of

2 greater than 90 minutes?

3   **A**   Yes, it could. And then the question becomes

4 **how long you could store it before it could go septic,**

5 **if you're either not providing mixing or aeration of**

6 **which we are.**

7   Q   Now, as wastewater is produced in a system, are

8 there kind of alterations in flow with some times of the

9 day having higher flow and others having lower flow?

10   **A**   Yes, that is correct.

11   Q   And is an equalization basin sometimes used in

12 order to attenuate those changes in flow?

13   **A**   It is typically not required for an MBR system

14 **to handle diurnal flow variations. The use of EQ to**

15 **handle diurnal flow variations is -- typically is more**

16 **associated with a conventional treatment plant that uses**

17 **clarifiers. That's where you would need to see**

18 **steady-state conditions through the process.**

19   Q   Does an MBR screen require some consistent flow

20 across the screens?

21   **A**   I'm not sure I understand your question. You

22 **say MBR screen?**

23   Q   Let me ask that question again, yes.

24   So does an MBR system operate most

25 efficiently with a consistent flow through the system?

262

1   **A**   It can operate more efficiently, but it's not

2 **an optimal requirement. The operation of an MBR system**

3 **has production cycles, followed by rest cycles, followed**

4 **by air scour cycles. So a typical MBR process, just**

5 **like a membrane system at a water plant, like the City**

6 **of Granbury's water treatment plant, has constant**

7 **stopping and starting of the membrane system itself.**

8 **That's why steady-state conditions of flow going through**

9 **the MBR is not as critical.**

10   Q   Now, I'd like to look at your testimony for a

11 bit here. Do you have that in front of you now?

12   **A**   Yes.

13   Q   Now, I want to look at Page 27 of your

14 testimony at lines -- at Line 12, you indicate that

15 the -- you use the word "temporary," and we can kind

16 of -- I'll let that go here. That the equalization

17 basin is a permanent storage tank.

18   Do you see that?

19   **A**   Yes.

20   Q   So is that a permanent structure of the

21 facility?

22   **A**   Yes, it is.

23   Q   So is the basin itself permanent?

24   **A**   Yes.

25   Q   And is it allowed under the permit to always

263

1 contain wastewater?

2 **A   I don't recall if the permit states whether it**

3 **is or is not allowed to store wastewater for an**

4 **indefinite amount of time.**

5 Q   In your correspondence with the TCEQ, did you

6 indicate that the unlimited time of wastewater in the

7 facility was a target?

8 **A   Yes, and that was because of a communication**

9 **with Gordon Cooper, Luci Dunn, and Louis Herrin, where**

10 **Louis had noted, if wastewater is stored in an EQ basin**

11 **for less than 48 hours, he did not anticipate that going**

12 **septic. And so that was included, I believe, in our**

13 **permit application as an excerpt.**

14 Q   So if that is only a target, does that

15 constitute a requirement of the permit?

16 **A   I don't believe it is instituted as a**

17 **requirement because I don't believe it is written in --**

18 **specifically into the permit itself.**

19 Q   And, likewise, if it's just intended, does that

20 constitute a requirement of the permit?

21 **A   Not that I'm aware of, no.**

22 Q   Okay. Now, in looking at this on Page 29 at

23 Line 12, you say the equalization basin is to

24 temporarily store excess influent wastewater during a

25 major storm event.

264

1   Was there a particular storm event that

2 you looked up?

3 **A   No. The intent for that was on the basis of a**

4 **storm event that would result in a peak flow rate into**

5 **the plant that would exceed 2 or 2.5 times the design**

6 **flow rate.**

7 Q   So did you model, for instance, say, a 24-hour

8 25-year storm event?

9 **A   No, I did not.**

10 Q   Do you know whether this would be able to

11 handle a 24-hour, 25-year storm event being emptied

12 within 48 hours?

13 **A   I do not because I did not complete a**

14 **calculation to determine what that storm flow would look**

15 **like.**

16 Q   So did you do any quantitative analysis to

17 ensure this will be able to be emptied within 48 hours?

18 **A   Not specifically for the east facility, other**

19 **than an evaluation of what the historical peak flows**

20 **were at the existing -- the City's existing facility,**

21 **given that this is not a new service area. This plant**

22 **would serve part of the existing service area that**

23 **currently goes to the City's existing wastewater plant.**

24 **And the historical data shows a typical peaking factor**

25 **of 2.5 to 3 times the design flow rate, not 4Q. And**

265

1 **what we designed for here was four times the design flow**

2 **rate to be able to store that excess if we needed to.**

3 Q   And you said that was a typical peaking factor.

4   Were there events with a peaking factor

5 greater than that?

6 **A   I'm sorry. I'm not sure I understood your**

7 **question there.**

8 Q   You described that as you looked at historical

9 flows you saw a typical peaking factor and that's what

10 you based your analysis on, as I understand it?

11 **A   Thank you. I appreciate the clarification.**

12   No, what I meant by that was, the actual

13 **maximum peaking factor that we observed, looking at**

14 **historical data from the City's echo database, which is**

15 **the database maintained by APA for looking at discharge**

16 **monitoring reports, that reflected a 2.5 to 3 maximum**

17 **peaking factor in the historical data.**

18 Q   But, again, this permit allows that wastewater

19 to be present within the equalization basin for greater

20 than 48 hours?

21 **A   I believe it does because I don't believe it**

22 **stipulates a maximum hold time.**

23 Q   Okay. Will the influent to this facility

24 contain sulfur?

25 **A   It may, but I don't know if it does currently.**

266

1 Q   Will the influent potentially be anaerobic?

2 **A   I don't believe it would be anaerobic. I think**

3 **it would be more likely either anoxic or aerobic. I**

4 **believe there would be some oxygen in that wastewater.**

5 Q   Would the influent potentially have a negative

6 ORP?

7 **A   It could potentially have a negative ORP but**

8 **that does not necessarily mean it's anaerobic.**

9 Q   But, again, you don't have any scientific

10 reference for that contention?

11 **A   No, I don't.**

12 Q   Okay. Will the temporary equalization basin

13 potentially contain biological processes producing

14 hydrogen sulfide?

15 **A   No, it won't.**

16 Q   What is your basis to contend that it will not?

17 **A   The basis is on being able to have mixing**

18 **within the basin, a short residence time, and the**

19 **ability to provide air to that basin as needed.**

20 Q   Again, is mixing required by the permit?

21 **A   It is not.**

22 Q   Is a short residence time required by the

23 permit?

24 **A   I don't believe it is.**

25 Q   Is aeration required by the permit?

267

1   **A**   **I don't believe it is.**

2   Q   So if that equalization basin is operated

3 without mixing, without a limited residence time, and

4 without aeration, could it potentially contain processes

5 creating hydrogen sulfide?

6   **A**   **It is possible that it could if you were not**

7 **operating mixing, which this will have mixing. It is**

8 **possible if it was -- if the ORP was allowed to go to a**

9 **negative value of minus 200 or less.**

10   **The design of this facility is to provide**

11 **mixing at all times, to maintain no more than 48 hours**

12 **of storage and then bring back into the treatment plant**

13 **and has the ability to provide aeration to process.**

14   Q   And, again, I appreciate that. But we're here

15 to look at what the permit allows and what the permit

16 requires.

17   Will hydrogen sulfide producing process

18 potentially occur within the BNR anaerobic basin?

19   **A**   **No.**

20   Q   If operated as allowed -- well, what is your

21 basis for saying that?

22   **A**   **The basis for that is the design of the BNR**

23 **selector zone for phosphorus conversion, which is**

24 **labeled the anaerobic basin, has a design ability to**

25 **increase the recycle from the anoxic zone to maintain an**

268

1 **ORP in an anoxic state that will not produce sulfides.**

2   Q   And does the permit require that that ORP be

3 maintained?

4   **A**   **Not that I'm aware of.**

5   Q   Okay.

6   **A**   **However, the permit does have a phosphorus**

7 **limit that will require optimized operation of the BNR**

8 **system to minimize the amount of phosphorus and ammonia**

9 **and BOD that could leave the process. So while I**

10 **understand the statement that if it's not required**

11 **you're implying that it may not be operated that way,**

12 **the City will have permit limits that they have to meet**

13 **and part of meeting those permit limits is operating the**

14 **plant properly to industry standards.**

15   Q   I'm glad you mentioned that.

16   Does phosphorus removal operate more

17 efficiently as you get into an ORP lower than say

18 negative 200?

19   **A**   **I don't know that I would say that it operates**

20 **more efficiently. It will take longer for phosphorus**

21 **conversion if you have a higher ORP value. In the case**

22 **of this process, the sampling that was done for the**

23 **existing wastewater reflected about only 20 percent**

24 **inorganic phosphorous, as opposed to other facilities we**

25 **can typically see 30, 40, or even 50 percent as**

269

1 **inorganic, which that is the indicator for much -- how**

2 **large that inorganic selection needs to be is to convert**

3 **that inorganic to organic phosphorus.**

4   **In the case here, we have a very small**

5 **amount so we can operate this, again, at the low end of**

6 **the anoxic range, not produce sulfides or foul odors and**

7 **still get the phosphorus conversion needed for optimal**

8 **BNR and phosphorus reduction.**

9   Q   So if in the future the phosphorus

10 concentration of the influent was higher, would it be

11 necessary to operate the facility at a lower ORP in

12 order to adequately remove phosphorus?

13   **A**   **I'm sorry. Could you restate that question?**

14   Q   If in the future the phosphorus concentration

15 of the influent was greater than you have assumed, would

16 it be necessary to operate the BNR anaerobic zone at a

17 lower ORP than you are assuming?

18   **A**   **No. It would not require you to operate it at**

19 **a lower level.**

20   Q   Is this facility able to more effectively

21 remove phosphorus with a lower ORP?

22   **A**   **No, I don't believe so, based on how we've**

23 **designed it.**

24   Q   And, again, that's a design not required by the

25 permit?

270

1   **A**   **The design under -- not by the permit, but**

2 **under 217.157, if you're utilizing MBR technology -- you**

3 **must design -- you must utilize a BNR process for that.**

4 **And knowing that we have a phosphorus limit, the intent**

5 **is to provide a BNR process that allows us to meet that**

6 **phosphorus limit.**

7   Q   Okay. Thank you. I want to look at your

8 testimony at Page 21. Give me just a second here.

9   Now, would the anoxic basin potentially

10 contain hydrogen sulfide producing biological processes?

11   **A**   **No, it would not because there would still be a**

12 **presence of oxygen in that basin.**

13   Q   Does the permit require the absence of oxygen

14 in that?

15   **A**   **No.**

16   Q   Does it require the presence of oxygen within

17 that basin?

18   **A**   **No, it doesn't but if you're operating it in an**

19 **anoxic state you're going to have oxygen in that basin.**

20   Q   Okay. I'd ask you to look with me at Page 24

21 of your testimony and look at Lines 11 through 13.

22   There you say that it would meet the

23 500 foot buffer zone on the basis that lagoon storing

24 wastewater indefinitely would be anticipated to go

25 septic.

271

1   What do you mean here by "indefinitely"?

2   **A**   **That is in reference to -- in similar reference**

3 **to the statement I made earlier, as well as the**

4 **statement made earlier by Luci Dunn, that if you are**

5 **storing raw wastewater in a lagoon, when you say**

6 **"indefinitely," that's referring to it in term of weeks,**

7 **months, or even years.**

8   **So similar to the detention time for a**

9 **facultative lagoon which is typically a minimum of 21 to**

10 **30 days, that's what we're talking about indefinitely.**

11 **That would provide enough time without mixing. It's**

12 **going to allow stratification and the bottom layer of**

13 **that basin could then go septic for a hypothetical**

14 **facility, which is not what we have designed in this**

15 **project.**

16   Q   Does the permit here authorize the indefinite

17 storage of effluent within the equalization basin?

18   **A**   **I don't know that it stipulates a time limit of**

19 **how much of a maximum or a minimum in the permit.**

20   Q   And you use the word here to "go septic." What

21 do you mean by "septic"?

22   **A**   **That would be a situation where the ORP is at**

23 **minus 200 or lower, so minus 300, minus 400, et cetera.**

24   Q   If you have an ORP ranging from zero to

25 minus -- did you say minus 100 or minus 200?

272

1   **A**   **That was -- septic would be minus 200 and**

2 **lower, minus 200 to minus 400 as an example.**

3   Q   And if you have an ORP ranging from 0 to minus

4 200, can that still result in the production of foul

5 odors?

6   **A**   **From 0 to minus 200, really that's still going**

7 **to be considered anoxic conditions and we would not**

8 **anticipate the off-gassing of foul odors from an anoxic**

9 **process, no.**

10   Q   So you're saying the material would not have a

11 foul smell at those ORPs?

12   **A**   **Correct from 0 to minus 200 that would still be**

13 **expected to be anoxic conditions because there's still**

14 **going to be some presence of oxygen even if it's a small**

15 **minimal amount.**

16   Q   Does the permit require imposing any

17 requirements for the monitoring of the ORP in the BNR

18 anaerobic zone?

19   **A**   **I don't believe that the permit requires it but**

20 **that is a requirement in the design, including the**

21 **design review with TCEQ.**

22   Q   Okay. But, again, I'm asking about what the

23 permit requires.

24   Does the permit require any monitoring of

25 the ORP in the equalization basin?

273

1   **A**   **Not that I'm aware of.**

2   Q   Okay. As you define lagoon, would that include

3 an unaerated equalization basin?

4   **A**   **An aerated, non-mixed equalization basin that**

5 **would be allowed to stratify within the basin.**

6   Q   And is this equalization basin at this facility

7 authorized to operate in that manner?

8   **A**   **I don't recall if the permit allows for it to**

9 **operate in that manner, but that's not what the design**

10 **is. The design includes the mixing, the ability for**

11 **aeration and minimal retention time in the basin.**

12   Q   So you don't know that the permit would

13 prohibit that type of authorization --

14   (Simultaneous discussion)

15   **A**   **That's correct.**

16   Q   (BY MR. ALLMON) -- that type of operation?

17   **A**   **I know if it's -- how it's stated in the**

18 **permit.**

19   Q   Okay. Now, looking at your testimony, I want

20 to look at line -- at Page 26, Lines 10 through 13.

21   Here you say that, right now at eHT you're

22 transitioning from lagoon plants to mechanical treatment

23 wastewater treatment plants. So in your mind is there a

24 distinction between lagoon plants versus those that are

25 mechanical treatment plants?

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1   **A**   **Yes, sir. A lagoon plant typically -- when you**

2 **refer to that as a lagoon plant, you're referring to a**

3 **facultative lagoon. It does not have any mechanical**

4 **mixing. It doesn't have any aeration, other than what**

5 **little bit of air that comes in from the wind across the**

6 **water surface. So those are allowed to stratify. Not**

7 **only do they produce more odors, but more specifically**

8 **from the context of that statement, they produce a much**

9 **lower -- a much poorer water quality coming from the**

10 **effluent which frequently requires changing from a**

11 **discharge to a land application permit.**

12   Q   Okay. I want to look at a TCEQ rule with you

13 real quick here, if I can get there. I'm looking at --

14 do you have in front of you now 30 TAC Section 217.2?

15   **A**   **Yes.**

16   Q   And I'll look at Item 15 within this section.

17   Do you see the definition there of a

18 completely mixed aerated lagoon?

19   **A**   **Yes.**

20   Q   And is that a lagoon in which oxygen is

21 supplied mainly through mechanical or diffused aeration?

22   **A**   **That is correct, which is not a facultative**

23 **lagoon.**

24   Q   But it does indicate that a lagoon would

25 include certain structures that would include mechanical

275

1 means of mixing?

2   A   No, sir. It's stating a completely mixed

3 aerated lagoon is a type of lagoon where you're adding

4 oxygen via mechanical or diffused aeration.

5   Q   So --

6   (Simultaneous discussion)

7   A   Whereas a facultative lagoon does not have any

8 mechanical mixing or diffused aeration.

9   Q   (BY MR. ALLMON) Is the 500-foot buffer zone

10 limited in application to only facultative lagoons?

11   A   Yes. From a completely mixed aerated lagoon

12 standpoint the 500-foot buffer would not apply because

13 you're no longer having stratification. You're

14 controlling what's happening in that basin.

15   Q   Does the rule itself at 319.13 make any

16 distinction in terms of lagoons were zones of anaerobic

17 activity required that it be a facultative lagoon?

18   A   In the first sentence, I believe, if I remember

19 correctly, it says, lagoons of anaerobic activity in

20 parenthesis, facultative lagoons and unaerated

21 equalization basins. It does not -- it doesn't

22 reference completely mixed aerated lagoons.

23   Q   And are facultative lagoons only one example of

24 what constitutes a lagoon with zones of anaerobic

25 activity?

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1   A   My understanding is that is the only type of

2 lagoon that is a treatment lagoon that has anaerobic

3 activity.

4   Q   But what you're referring to when you say that

5 the rule on reference is that is simply a parenthetical

6 that lists different types of facilities that would be

7 included within the definition of a lagoon?

8   A   That's correct.

9   Q   And so that's not an item of limitation on what

10 might constitute a lagoon?

11   A   The treatment units that are identified in the

12 parenthesis, the parenthetical description are treatment

13 units or are units that have no mixing, no aeration. It

14 is simply holding the raw wastewater in that basin. So

15 that is why you would not include completely mixed

16 aerated lagoons within that -- within that section of

17 parenthesis.

18   Q   And this permit we're looking at here

19 authorizes an equalization basin with no mixing and no

20 aeration. Is that correct?

21   A   I believe so, yes.

22   Q   Let me look back to your testimony again, and I

23 want to look at Page 27 of your testimony. At lines --

24 and I'm starting at Line 19. You say here: The

25 proposed EQ, and I assume EQ is equalization?

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1   A   I'm sorry. Which page was that?

2   Q   Page 27 of your testimony and let me see if I

3 can navigate my way around so -- to make sure we're on

4 the same page.

5   Do you see that before you now, Page 27?

6   A   Yes. Thank you.

7   Q   And I'm looking starting here at Line 19, you

8 discussed the proposed equalization basin has been

9 designed to include a cover, as well as foul air piping

10 from the equalization basin to the process aeration and

11 MBR air scour blowers, to send the foul air to the

12 aerobic selector zone and to the MBR tanks.

13   When you say "foul air" here, are you

14 referring to air from the equalization basin?

15   A   The foul air piping is from the equalization

16 basin as well as all of the other headworks units.

17   Q   And why do you use the term "foul air" here?

18   A   On the basis of, if there were any off-gassing

19 from the basin, we would be able to capture that and

20 then treat it biologically on-site.

21   That's not saying that we are guaranteeing

22 that there is going to be foul airs, but we're trying

23 to, again, go above and beyond the minimum requirements

24 that were established by TCEQ for the project.

25   Q   But, again, this capturing and treatment is not

278

1 required by the permit?

2   A   That's correct. It's going above and beyond

3 the minimum requirements.

4   Q   So without that capture and treatment process,

5 that foul air would not be treated in that manner?

6   A   If it was producing any foul air, which is not

7 anticipated to be the case.

8   Q   Okay. Is it potentially the case that it would

9 create foul air?

10   A   Anything is possible, but not with -- but with

11 how the facility is designed, the intent is never to be

12 producing foul air because we're not allowing the ORP to

13 drop to a point where it becomes anaerobic.

14   Q   It's your intent not to allow that ORP to drop?

15   A   Correct. Which is factored into the design and

16 how the plant will be operated.

17   Q   But that's not a requirement of the permit.

18   A   That is correct. It's above and beyond the

19 requirement of the permit.

20   Q   And I'm looking at the next page. You use the

21 term here "design intent."

22   When you indicate the design intent,

23 again, is that a permit requirement?

24   A   No, it is not.

25   Q   Now, in your testimony you reference Exhibit

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1 304, which accompanies your testimony. And let me see
2 if I can -- we can turn to that a little bit. Let me --
3 do you have Exhibit 304 in front of you?
4   A   Yes.
5   Q   And you describe this as the design of the
6 facility?
7   A   It is a layout of the facility of the proposed
8 site plan that includes the -- I believe it includes the
9 proposed buffer zone, the facility boundary, and the
10 property boundary. I'm kind of having to look at it
11 sideways.
12   Q   Let me see if I can help a bit here.
13   A   Thank you.
14   Q   Yeah.
15   Now, does this include details for the
16 sizing of the units?
17   A   No, it doesn't.
18   Q   Does this include details for the sizing of the
19 membranes?
20   A   No, it doesn't.
21   Q   So is this a complete design for the facility?
22   A   This is not a design, per se. This is a site
23 plan that identifies the facility boundary, the property
24 boundary, and the anticipated buffer zone setbacks from
25 the process units. Information on the process units

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1 would be in a separate section of the permit application
2 that includes all of the dimensions and the design
3 information for the treatment process units.
4   Q   And so, again, as we look at this equalization
5 basin, the distance currently given is 150 feet. You
6 would agree with me on that?
7   A   150 feet or more, yes.
8   Q   And when you say "or more," where are you
9 saying -- where is the "more" here? I'm seeing a dotted
10 line. Does the dotted line indicate 150 feet?
11   A   It does.
12   Q   And does that dotted line go up to straight --
13 is the property facility boundary this red line?
14   A   The property boundary is the red line.
15   Q   And does that dotted line essentially match the
16 property line?
17   A   It appears to in this section on the east
18 side -- or actually south side, there's additional space
19 between the 150-foot setback and the property line.
20   Q   But here as we look on the west side, which is
21 the side towards the Bennett RV park, it's limited to
22 150 feet?
23   A   That appears to be the case, yes.
24   Q   So if this equalization basin was operated
25 without aeration, without a cover, and without mixing,

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1 would this be an adequate buffer zone?
2   A   I don't know that I could state whether it
3 would or would not be because that is not how we
4 designed it. We designed it with mixing, with aeration
5 capability and with the ability to minimize the storage
6 time, specifically to prevent it from going septic.
7   Q   So have you made any determination as to
8 whether if this equalization basin was operated without
9 mixing, without aeration, and without a cover, this
10 buffer zone would be adequate?
11   A   We have --
12   MR. HILL: Your Honor, I'm going to
13 object. Mr. Berryhill has been asked this question in
14 various forms multiple times over again. And the
15 assumption that the facility isn't going to be operated
16 the way that it's designed and it will be required to be
17 built is really assuming facts that are not into
18 evidence.
19   MR. ALLMON: Your Honor --
20   JUDGE STARNES: Go ahead.
21   MR. ALLMON: Well, first I'll say we're
22 here to evaluate the permit, and I don't think it's
23 speculative to look at what the permit allows, but I'll
24 go ahead. I'll move on.
25   And, in fact, I think that I'm -- at this

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1 point, I have no further questions for the witness.
2   JUDGE STARNES: Okay. Mr. Booth, do you
3 have any questions?
4   MR. BOOTH: Oh, yes, ma'am. I have quite
5 a few questions. I'm sure it'll take us into lunch. We
6 could break now or we could ask until then. It's your
7 pleasure, Judge.
8   JUDGE STARNES: Why don't we go ahead and
9 get started, and I may interrupt you once we hit noon so
10 we can -- we'll break then. But let's make some
11 progress.
12   MR. BOOTH: Okay. Sounds good.
13   CROSS-EXAMINATION
14 BY MR. BOOTH:
15   Q   Mr. Berryhill, my name is Mike Booth and I
16 represent the Rists and Bennett RV Ranch.
17   Does your firm make recommendations on
18 whether or not a site is suitable for a wastewater
19 treatment plant to the client?
20   A   I will say from my perspective I do not
21 typically work on evaluating a site in determining site
22 suitability with a client for a treatment plant. What I
23 do evaluate is what the treatment processes would be
24 required. The identification of this site versus other
25 potential locations, I believe was evaluated by Chris

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1 Hay in the discussion.

2　　　　I did look at each site -- at the
3 potential site from the standpoint of site topography
4 and proximity to a potential discharge location.
5 Typically, though, my understanding is, we don't
6 normally make a recommendation of a site. We evaluate
7 all the requirements that have to be met with TCEQ and
8 permitting, and we provide that information to the owner
9 and they make a final decision of which site that they
10 would like -- they want to utilize for the proposed
11 project.

12　　Q　Okay. Well, I'll ask Mr. Hay what he thinks
13 about this site.

14　　　　Now, you are aware that the property --
15 the Rist property is an RV park. Is that correct?

16　　A　That is my understanding, yes.

17　　Q　Okay. And you can imagine the concerns that
18 the Rists have about smell, so I'm going to take you
19 through a series of questions.

20　　　　We've been talking about different types
21 of things that we look at from a chemistry standpoint
22 and ORPs and such. But let me just -- for the ones of
23 us that have not had the pleasure of going to wastewater
24 treatment plants like we have, let's talk about this.

25　　　　So the water -- wastewater that comes into

284

1 the plant, it first hits, what, the grit chamber, one of
2 the three things that y'all have -- grit removal
3 screens?

4　　A　Coarse screens, grit removal, and fine screens,
5 yes, sir.

6　　Q　Now, if I was standing there, could I expect to
7 smell some odor --

8　　　　(Simultaneous discussion)

9　　A　Not with how we designed it.

10　　Q　(BY MR. BOOTH) -- foul odor? I'm not
11 asking -- okay.

12　　A　Because we have covers on all the --

13　　Q　You've got covers and air filtration and so
14 forth, except that's not in the permit. It just -- I'm
15 going to stop and I'm probably going to lose my train of
16 thought.

17　　　　Where would I find in your exhibits or
18 your other colleagues' exhibits where it says that y'all
19 are going to put in filters and you're going to cover
20 the equalization basin and have blowers and such?

21　　A　I don't believe it's in the permit application
22 because it's -- I don't believe it's a requirement.

23　　Q　Okay. But I didn't see this -- I didn't see it
24 in your cost estimates either. Were they in there? Did
25 I miss it, the covers, blowers, et cetera?

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1　　A　Yeah, so the process -- the blowers that are
2 being used are the actual process in NBR air scour
3 blowers. Those are a component of the NBR supply
4 package. The covers over all the structures, those
5 are -- that's within -- if you were looking at line
6 items, that should be within miscellaneous metals --

7　　　　(Simultaneous discussion)

8　　Q　(BY MR. BOOTH) Oh, okay.

9　　A　-- because that would be a fabrication
10 requirement. There's not a -- you don't go to a cover
11 store and go buy covers. You actually would go to a
12 fabrication company, give them the dimensions and then
13 they would fabricate the covers required to seal those
14 basins.

15　　Q　Okay. Thank you. Okay. Going -- walking over
16 on the plant -- walking over to an equalization basin
17 that's uncovered, unaerated, and so forth, would I
18 expect to have a smell there -- a foul smell there?

19　　A　Would this be for a basin that is storing
20 wastewater for --

21　　Q　Yes, sir.

22　　A　-- 48 hours or well beyond that?

23　　Q　No, from just 48 hours from one hour.

24　　A　If it's storing wastewater for less than 48
25 hours, I would not expect to smell any odors off-gassing

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1 from the wastewater, no.

2　　Q　Even though it comes into the system with a
3 foul odor?

4　　A　The reason you might have some foul odor is due
5 to turbulence coming through as it's going through the
6 screening. But, typically, we do find that there's
7 oxygen in the raw wastewater coming in from the
8 collection system so it's not septic when it comes into
9 the plant.

10　　Q　Now, how is that possible when it comes into
11 the screens and it has odor -- foul odor? I've got to
12 keep saying it, foul odor.

13　　A　Sure. Typically, what you -- if you were
14 smelling anything on that it could be debris that is
15 captured on the screen that is sitting -- it is sitting
16 there for longer than 48 hours before you're removing it
17 out of that treatment unit. That typically would be --
18 to smell that is not from the wastewater itself but what
19 you've screened out and removed before you can put it
20 into a dumpster that's sealed up.

21　　Q　Okay. And you're going to have a dumpster
22 that's sealed up there. Right?

23　　A　Yes.

24　　Q　Okay. So I've got that.

25　　　　Now, let's go back to the site. You

287
1 mentioned that you had -- you evaluated the topography.
2 And I looked at that site, and it looks like it's pretty
3 rough.
4   What do y'all intend to do to make it
5 suitable for a wastewater treatment plant?
6   A   Well, I guess when you say "rough," what are
7 you referring to?
8   Q   Well, I mean, that there's hills and there's a
9 pretty dadgum good slope going down toward the creek.
10   A   Uh-huh.
11   Q   In fact, it's nothing like I would expect a
12 wastewater plant site to start with.
13   Would you agree with that?
14   A   No, not really. The reason -- and the reason
15 being.
16   Q   Go head.
17   A   If you were looking at a completely flat site,
18 which might seem at first glance that that's a better
19 solution for a property for a treatment plant, the
20 problem is: There are only certain components of a
21 wastewater treatment plant that are pumped where we're
22 trying to lift up to a certain elevation. The majority
23 of treatment process in a wastewater treatment plant
24 flow by gravity. So in, say, for example, if we're
25 talking about the existing south plant, all the

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1 structures are essentially about the same elevation. So
2 we actually -- at the lift station, we have to pump up
3 to a certain elevation and then that flows by gravity
4 through those units.
5   In the case here, we're still going to
6 lift up to the BNR units but then it will flow by
7 gravity through the BNR structure to the MBR to the UV
8 down to discharge. So we actually take advantage of
9 topography.
10   Q   Okay. But, you know, the slope that we're
11 looking at probably drops, what, 25 feet or 30 feet?
12   A   Uh-huh, that's correct.
13   Q   And so you're not going to have any filling or
14 anything like that between the little islands that --
15 of -- where you're going to be putting your wastewater
16 treatment units on?
17   A   No, sir. There will be limited grading that is
18 required around the structures so that that way you --
19 if you had a storm -- you know, rainfall over the
20 property that it's not washing out across the surface,
21 but that's about the extent of it.
22   The other nice thing about that with the
23 elevation is: There's no risk that that point, then, of
24 any inundation of treatment units if there was some kind
25 of flooding event based on the topography and how we

289
1 would design and install those basins.
2   Q   Have you looked at how frequently that
3 floodplain has floods?
4   A   I have not. But I believe internally at eHT we
5 had completed an analysis or maybe had looked had --
6 referred to a previous site analysis for that. Chris
7 Hay would probably be a better point-person to ask on
8 that discussion.
9   Q   Okay.
10   A   He works a lot more with site development than
11 I do.
12   Q   Okay. Well, I'll ask him that question, then.
13   So I understand this project is going to
14 be a construction management at risk. Is that correct?
15   A   Yes, sir, that's the intent.
16   Q   Okay. Who chose that option?
17   A   That was selected by the City of Granbury, City
18 Council.
19   Q   Okay. I'm going to back up. And what is a
20 construction management at risk plant or construction
21 project?
22   A   So it's -- it doesn't change what you're
23 building. What it just changes is how the process --
24 how the equipment and structures are procured. So the
25 City goes through a request for qualifications to select

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1 a construction manager at risk or CMAR contractor. That
2 CMAR contractor then develops big packages based on the
3 design to procure and get competition on each piece of
4 equipment, each type of pipe, valve, the construction
5 cost for concrete structures, et cetera. What it is, is
6 an open-book process than allows the City to gauge
7 progress all along the initial steps of the project for
8 procurement whereas a traditional hard bid, you design
9 the project to completion. You put it out on the street
10 to advertise. You get one contractor with one single
11 number, and you don't know what may go into that entire
12 number versus CMAR is an open-book process to see how
13 the money is spent every step of the way to go from
14 start to completion of the project.
15   Q   Now, when you're talking about a design to bid
16 and build project -- right -- that's what you were
17 referring to?
18   A   Yes.
19   Q   You'll typically have more than just one
20 contractor bidding on it. Is that correct?
21   A   That's correct.
22   MR. HILL: Your Honor, I've got to object
23 here because I'm having a hard time finding the
24 relevance of how this is bearing --
25   MR. BOOTH: Well, I'll make it --

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1   (Simultaneous discussion)

2   JUDGE STARNES: One at a -- one at a time.

3 Let him finish and then you can respond, Mr. Booth.

4   MR. HILL: I'm having a hard time

5 understanding how this line of questioning has anything

6 to do with how the City meets all the permitting

7 requirements, so I'm going to object to the relevancy of

8 the line of questioning.

9   JUDGE STARNES: Okay. Mr. Booth?

10   MR. BOOTH: I'm going to link it up. And

11 where I'm going with this is, that typically a CMAR

12 project doesn't have all the design completed before

13 they turn it over to the construction manager, and I'm

14 trying to figure out at what process when the Commission

15 does its design whether it's going to be these folks or

16 it's going to be some other person.

17   JUDGE STARNES: Okay. I'll overrule the

18 objection. I'll let him do it for now.

19   Q   (BY MR. BOOTH) Now, Mr. Berryhill, who is the

20 construction manager in this case or has the City gotten

21 that far?

22   **A   Yes, the selected CMAR contractor is**

23 **Pepper-Lawson Waterworks or PLW for short.**

24   Q   Okay. And is it true that they are going to

25 work with you to do the final design and then they'll be

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1 sending out bids or requests for proposals on different

2 parts, but the design is usually about 30 percent

3 complete right now. Is that correct?

4   **A   Well, for the use of CMAR, we would complete**

5 **the entire design ourselves.**

6   Q   Okay.

7   **A   Where the CMAR contractor comes in is providing**

8 **contractability feedback on what you designed around**

9 **this piece of equipment, but this other piece of**

10 **equipment gives you the same performance but maybe it**

11 **can be fabricated a little faster or maybe at a little**

12 **bit lower cost.**

13   **Any bid packages that are prepared, yes,**

14 **would be prepared by the CMAR contractor, but it would**

15 **be based on the design plans and specifications as**

16 **produced by eHT.**

17   Q   Okay. Would Pepper-Lawson be able to change

18 the type of structures, units, or processes that y'all

19 have come up with?

20   MR. HILL: I'd object that the question

21 calls the witness to speculate.

22   Q   (BY MR. BOOTH) Well, is the design -- you just

23 testified, Mr. Berryhill, that you'll be working with

24 the construction manager to come up with some better

25 ways of doing things. And I want to make sure that the

293

1 better ways of doing things isn't getting rid of some of

2 the blowers and things like that. So --

3   **A   Understood.**

4   Q   So can you answer that question?

5   **A   Sure. No, the CMAR contractor cannot deviate**

6 **from the proposed design, unless it's so authorized by**

7 **the engineer and the owner. But in the case of**

8 **components such as the use of the blowers, covering the**

9 **structures, covering the EQ basin, having mixers in the**

10 **basin, all the components we've talked about of trying**

11 **to make sure we're not producing foul airs -- foul odors**

12 **at the plant, those are nonnegotiable with the CMAR.**

13 **They do not have the ability to try to value engineer**

14 **those out of the project.**

15   Q   And that's in the contract the City has with

16 the CMR (sic)?

17   **A   Yes, it is not specifically stated to that**

18 **level of those items. But any proposed changes from a**

19 **constructability standpoint have to be reviewed and**

20 **approved as a group with the engineer and the owner.**

21 **Specifically because through the completion of the**

22 **project I would still remain as the engineer of record**

23 **of -- the responsible engineer of record with TCEQ for**

24 **the project.**

25   Q   So theoretically you could change those

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1 features and no one could -- unless they conflict with

2 the design criteria that the Commission has, no one

3 could have any say over that, so theoretically --

4   **A   I could not -- I myself could not change**

5 **features of the design without approval from the owner.**

6   Q   Okay.

7   **A   And we need -- stipulated, including the city**

8 **council we will provide -- we will go above and beyond**

9 **the minimum requirements of TCEQ to be good -- to be**

10 **essentially good stewards of the environment and good**

11 **neighbors to everyone else around, including the Bennett**

12 **RV Ranch.**

13   Q   Does the City have any ideas on the type of

14 fencing that they are going to use around the plant?

15   **A   That, I'm not sure at this time.**

16   Q   Okay. Now, looking at the plant site, it looks

17 like that if a 500-foot buffer zone was required, you

18 couldn't build a plant on this site. Is that correct?

19   **A   Hypothetically, yes, you would need to acquire**

20 **additional property, I would assume.**

21   Q   Okay. And because of the plant located next to

22 the floodplain, there's really not enough adjacent

23 property to acquire unless you went over and condemned

24 the Rists' place, I suppose?

25   MR. HILL: Objection. The question calls

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1 for speculation, Your Honor.

2   MR. BOOTH: Is there --

3   JUDGE STARNES: He can answer if he knows.

4   MR. BOOTH: Yeah.

5   **A   I don't know with regard to other nearby**

6 **properties.**

7   Q   (BY MR. BOOTH) You don't know whether the City

8 would be looking to expand in the floodplain?

9   **A   I don't know, no, sir.**

10   Q   Okay. Now, let's get this out of the way here

11 and change directions. I'm going to try to show you

12 something that I showed Mr. Crownover. So let me find

13 the picture.

14   Are you familiar with this particular

15 aerial photograph.

16   **A   I have seen it before, yes.**

17   Q   Okay. And it mentions Site A and Site B. I

18 guess this was -- looking from the title it was an

19 evaluation of these two sites as -- do you know anything

20 about what we are looking at here -- the City was

21 looking at or y'all were looking at?

22   **A   I do know that there were several potential**

23 **sites considered for the east site. I don't necessarily**

24 **recognize this graphic or could answer a lot of**

25 **questions to it because I did not prepare this graphic.**

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1   Q   Okay. But it was -- this would be like an east

2 side option, as opposed to one of the other options that

3 y'all were talking about earlier?

4   **A   That would make sense because these are both**

5 **shown in the eastern part of the city. Other than that,**

6 **I'm not sure.**

7   Q   Now, you recognize Site B as the Rist site, the

8 current place for the City's wastewater treatment plant.

9 Correct?

10   **A   Yes, sir.**

11   Q   Okay. Let me see here. This looks to be a

12 comparison of the cost of those two plants.

13   Do you know anything about this document?

14   **A   No, I don't. I believe Chris Hay may have**

15 **prepared that.**

16   Q   Okay. We need to leave something for him to

17 talk about, so I'll go ahead and stop the Screenshare.

18   JUDGE STARNES: Mr. Booth, if you're at a

19 good breaking point we can go ahead and take lunch now

20 and pick up --

21   MR. BOOTH: Okay. That would be fine.

22 That would be fine. Thank you.

23   JUDGE STARNES: Okay. So it's pretty much

24 straight up noon now. Let's come back at 1:00, and

25 we're off the record. I think that goes without saying.

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1   (Recess: 12:00 p.m. to 1:01 p.m.)

2   AFTERNOON SESSION

3   TUESDAY, MARCH 8, 2022

4   (1:01 p.m.)

5   JUDGE STARNES: Okay. Then let's go back

6 on the record after our lunch break.

7   And, Mr. Booth, you can continue with your

8 cross of Mr. Berryhill.

9   PRESENTATION ON BEHALF OF APPLICANT (CONTINUED)

10   JOSHUA BERRYHILL, P.E.,

11 having been previously duly sworn, testified as follows:

12   CROSS-EXAMINATION (CONTINUED)

13 BY MR. BOOTH:

14   Q   Mr. Berryhill, let's move on to talk about

15 effluent limits.

16   JUDGE STARNES: Thanks for waiting until

17 after lunch.

18   (Laughter)

19   Q   (BY MR. BOOTH) You're aware that the initial

20 application that the City had for this wastewater plant

21 was for a DO, dissolved oxygen, of 4. Were you aware of

22 that?

23   **A   Yes, sir. That sounds correct.**

24   Q   And now the Commission has put in there, in the

25 draft application, a dissolved oxygen of 6.

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1   **A   Yes, sir. That's correct.**

2   Q   What would you do to go from 4 to 6 as far as

3 the plant operation or design? Actually, both. Pardon

4 me. Go ahead.

5   **A   Yes, sir. As we would design the plant, at**

6 **this time, I wouldn't have to make any additional**

7 **modifications. And the reason is when we were working**

8 **through -- or getting ready to start working on detailed**

9 **design, we met with TCEQ to go over their modeling**

10 **results and what they recommended for draft permit**

11 **limits. So the proposed design for this facility is**

12 **based on those permit limits, not based on the limits**

13 **that we had initially put in our application. So we're**

14 **already designed for handling 6 DO.**

15   Q   Do you know why the City didn't do any water

16 quality modeling themselves until recently?

17   **A   It is not -- to my understanding, it is not**

18 **required by TCEQ for completion of a permit application.**

19 **When I worked at prior -- at past engineering firms,**

20 **from -- certain projects we would complete site-specific**

21 **modeling, but that was usually if -- given permit limits**

22 **proposed by TCEQ if the engineering firm didn't agree**

23 **with those limits and thought they should be looser**

24 **limits, perhaps, say, you know, a lower DO maybe or**

25 **higher nutrient limits, that they would do that**

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1 sampling. In the case of this project the very first
2 thing we did when getting started was before we
3 submitted a permit application, we met with TCEQ to go
4 through -- to identify where the proposed plant was
5 going to be, what the proposed flow was, the location of
6 the anticipated discharge. And then we requested
7 feedback from TCEQ on what they would anticipate on
8 permit limits, and we agreed with those proposed permit
9 limits.
10   Q   Okay. Thank you. Is there anything preventing
11 the City at this plant from having an effluent set on
12 total phosphorus of .15 or .10?
13   A   I'm sorry. Could you rephrase --
14   Q   Do you know what the current permit would
15 require for treatment of total phosphorus?
16   A   My understanding at this point is, based on the
17 draft permit, that has a 1.0 milligram per liter total
18 phosphorus limit in Interim 1 at 1 mgd and 0.5
19 milligrams per liter total phosphorus at final phase of
20 2 mgd.
21   Q   Would this plant be able to reduce the amount
22 of phosphorus in its treatment process than what is
23 currently required?
24   A   Yes. The intended design is to not just treat
25 to that limit in the permit. It is actually to treat to

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1 a level below that proposed permit limit.
2   Q   And what would that be?
3   A   That would depend on what the flow is at any
4 given time, the time of the year because that does have
5 some impact on the biology. I don't have that number in
6 front of me at this time.
7   Q   Do you have an opinion where the MBR plant, I
8 guess would be the City's east plant, would be able to
9 treat a daily effluent of total phosphorus of .15?
10   A   I'm not sure I understood your question. Would
11 it be able to treat --
12   Q   Did you produce an effluent from that plant of
13 a total phosphorus level of .5 -- .15 milligrams a
14 liter?
15   A   It may be possible with a proposed design, but
16 that's not the permit -- the draft permit requirement at
17 this time.
18   Q   Okay. If you wanted to be sure that you could,
19 would you be able to add filters or do something to that
20 plant to make it treat phosphorus at a higher level --
21 produce effluent at a lower level of phosphorus?
22   A   That would be possible because there are
23 facilities around the United States that do have lower
24 phosphorus limits than what's proposed here for this
25 facility.

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1   Q   Okay. Thank you. Are you able to treat total
2 nitrogen at this plant --
3   A   The proposed --
4   Q   -- and remove it, and remove nitrogen from the
5 wastewater through the plant?
6   A   The proposed BNR process does have the ability
7 to reduce total nitrogen, but there is not a specific
8 set target as there is not a permit limit proposed in
9 the draft permit.
10   Q   If you had a permit limit of 6 milligrams a
11 liter, would you be able to treat it in your plant?
12   A   That may be possible, but that would require a
13 lot more biological process modeling to be able to
14 determine what could be sustained on a given basis.
15   Q   Fair enough. Fair enough. What is the TCEQ's
16 rule on 75 percent and 90 percent in building the new
17 plant? Are you aware of that rule?
18   A   Yes. My understanding of the 75/90 rule is
19 that when plant flows reach or exceed 75 percent of the
20 rated permitted capacity for three consecutive months,
21 planning must begin for an expansion, and subsequently,
22 when flows reach 90 percent of the permitted capacity
23 for three consecutive months, you must be in
24 construction for that.
25   Q   Okay.

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1   A   That is -- that's applicable for areas that are
2 in high growth. In the case for this facility and for
3 the City of Granbury the number of developments and
4 already approved connections actually are committed --
5 have committed 100 percent of the existing south
6 permitted -- plant permitted capacity of 2 mgd at this
7 time.
8   Q   Okay. So once the moratorium is lifted, you'll
9 be at the plant capacity at the -- what plant is that --
10 at the south plant? Yeah, you'll be at the plant
11 capacity at the south plant.
12   A   No, sir. It's not based on if the -- if or
13 when the moratorium is lifted. The number of
14 developments that were approved prior to the
15 moratorium --
16   (Simultaneous discussion)
17   Q   (BY MR. BOOTH) Oh, my goodness.
18   A   Yes. They're already approved. So if builders
19 were building new houses in those areas, those flows
20 would increase to the limit already --
21   (Simultaneous discussion)
22   Q   (BY MR. BOOTH) Okay.
23   A   -- the moratoriums.
24   Q   Okay. And do you know what the existing
25 plant -- the plant capacity will be?

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1 A   The existing plant capacity is
2 2 million gallons per day.
3 Q   2 million, and is that the current capacity?
4 A   Yes, sir.
5 Q   Okay. What happens to -- when you rolled in
6 the new plant, how much treatment capacity will the City
7 have then?
8 A   If and when the Phase 1 or the interim phase of
9 the east plant is built and goes online, that would
10 provide the City with 3 mgd of capacity.
11 Q   The first phase is 1 mgd at the --
12 A   For the east plant.
13 Q   -- east plant.
14 A   Yes, sir.
15 Q   So when the City comes online with that plant,
16 what percent of capacity would we be looking at?
17 A   I'm not sure. At the time that that plant was
18 built, I don't know where the percentage growth will be
19 and the amount of flow at that specific time.
20 Q   Well, if you added nothing except what you
21 already have right now going into the plant or will be
22 going into the plant with subdivisions that have been
23 platted, you said that is about 100 percent?
24 A   Yes, sir.
25 Q   Okay. If you add in 1 mgd, do you know what

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1 the percent of capacity we'll be looking at?
2 A   At that point, if you haven't added anything
3 else and you've utilized 100 percent of 2 mgd, you would
4 be at a total of about 67 percent of capacity between
5 the two.
6 Q   Okay. Have you recommended to the City to
7 build an additional plant besides these two?
8 A   We have not made any recommendations. Part of
9 the master planning included looking down the road and
10 further in the future of at what point do you need an
11 additional 1 mgd of capacity, which would take you to
12 4 mgd. The initial growth right now is all in the east
13 area of the City, which is why this proposed permit
14 application has an interim phase of 1 mgd and a final
15 phase of 2 mgd.
16 Q   Okay. The city has -- appears to have an I&I
17 problem. Do you agree with that?
18 A   Yes, I would, and that's consistent across the
19 industry for most cities.
20 Q   Oh, I understand that. What is I&I?
21 A   I&I is inflow and infiltration.
22 Q   Okay. And that's common in older collection
23 systems. Isn't it?
24 A   Yes, sir. That's correct.
25 Q   Okay. Is part of the City's work to -- that

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1 it's doing to improve its collection system so it
2 minimizes the I&I?
3 A   Part of the goal of this project, as identified
4 in the engineering report and in the alternatives
5 analysis plan, is to address the biggest I&I concerns in
6 the collection system in the eastern area, which
7 building -- if we can build the east -- proposed east
8 plant, will alleviate those issues.
9 Q   I'm curious: How is the City operating
10 currently if you're adding a new facility at the plant,
11 at the existing plant?
12 A   So, I mentioned earlier about construction
13 sequencing. So there are limited amounts of space
14 available within the fenced boundaries of the existing
15 south facility. The way you would construct this
16 process is you would build one new treatment structure,
17 move flows -- move some of your flows in that plant to
18 the new treatment structure, which allows you perhaps to
19 decommission an older structure, like an older headworks
20 area. And, essentially, when you recapture that space,
21 now you can build your next treatment component.
22   So it's kind of a leapfrog approach where
23 it's build a piece here, move flow to it. Now you can
24 build a piece here and move flow to it, et cetera. It
25 takes a bit longer in time. It's more complicated

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1 because, obviously, you have -- the City is obligated to
2 maintain permit compliance through that entire
3 construction period, and the result of that is an
4 increased unit cost for construction to do that at an
5 existing facility while keeping it online.
6 Q   Going back to the east plant, it's not -- or is
7 there room for a plant expansion there with another MBR
8 plant?
9 A   Yes and no. I wouldn't say it's another MBR
10 plant. It would be additional trains of treatment
11 capacity within that site, but yes.
12 Q   Okay. Now we've been talking about designing
13 these facilities so they don't produce odor or
14 minimizing the odor. That's in a perfect world.
15 Correct? That's not -- you know, operators make
16 mistakes. Plants get old. So I assume -- let me frame
17 that in the state of a question: Your plant design will
18 not handle operator mistakes. There still could be odor
19 produced from these units. Correct?
20 A   The design of the facility, while it will have
21 certain automation to help offset potential operator
22 errors, it actually -- it is designed to account for
23 that possibility. Whenever you are flying a plane, you
24 don't put just enough fuel in it to go from -- fly from
25 Point A to Point B and land on fumes. You're going to

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1 design with some contingencies in place in the facility.
2 That's what we do for this. So even though the design
3 of the EQ Basin should not produce any foul odors, we're
4 still putting a cover on top of it. We're still
5 capturing any kind of foul air that could be produced,
6 if it were to produce any foul air. Again, that's above
7 and beyond TCEQ requirements for that treatment unit.
8 We've built that into each of these components all
9 throughout the facility, just as we're looking at sound
10 attenuation for noise control, automated lighting to
11 minimize light pollution, if you will, at night when the
12 facility is operating. All of those are features that
13 we included in the project at the direction of the City
14 to go above and beyond the minimum criteria established
15 in 217.
16 Q And none of those things are in the permit,
17 right, the draft permit, none of those requirements?
18 A They're not in there from the standpoint of you
19 must have a cover. However, there is a specific
20 requirement, I believe, in the Other Requirements
21 Section. I think it's Other Requirements, Item No. 4, I
22 believe, that goes into stating that you must be able to
23 meet these requirements that you've established in the
24 permit application. Now one of the things that's in the
25 permit application is it identifies -- or, sorry, in the

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1 permit that you do have to go through plan review at
2 TCEQ. So having a permit does not constitute you're
3 ready to start construction. There is still a summary
4 transmittal and a plan review -- a design review process
5 with TCEQ. It's a two-step process.
6 Q I'm glad you brought that up. I meant to ask
7 you this: That design review process is after the
8 permit has been granted. Correct?
9 A Yes, sir. And it is completed to ensure that
10 what you propose in the permit application, you go
11 through and follow in the design, and if something --
12   (Simultaneous discussion)
13 A -- like, for example, when we talk about the
14 cover over the EQ Basin or the enclosing of the
15 headworks units, if we're proposing we're doing that and
16 it goes into the design, it's locked in. So earlier
17 when you had asked me if -- with a CMAR, if they have
18 a -- if they make a request to change something, then we
19 can change it if everybody agrees to it. That's
20 actually not the case. That actually was a misstatement
21 on my part because if there is a component that is in
22 the design that has been presented at TCEQ, if you say
23 you're going to build this, you have to build it.
24 Otherwise, you have to --
25   (Simultaneous discussion)

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1 Q (BY MR. BOOTH) Okay. And I'm happy for that
2 clarification --
3   THE REPORTER: One at a time, please.
4   MR. BOOTH: Sorry.
5 Q (BY MR. BOOTH) I'm happy for that
6 clarification, but none of these items -- the blowers,
7 the lights, the covers -- are in your design. So the
8 TCEQ is not going to have any say over that one way or
9 the other. Am I correct?
10 A They are in -- no, you're not correct. They
11 are in the design. They are not listed as a design
12 requirement in the list of process units in the permit
13 application, but they go through the design review
14 process with TCEQ. So they are in the design. And once
15 TCEQ reviews and approves it, then you have to do what
16 you said you were going to do, and you have to build
17 those components. You can't --
18 Q But you haven't said that in anything that you
19 have provided to the TCEQ up to this moment.
20 A The discussion that we talked about earlier, I
21 think maybe with Mr. Allmon with regard to the ORP
22 levels, there was an email chain that was in that where
23 there was discussions with TCEQ on record stating not
24 holding wastewater in the EQ Basin more than 48 hours.
25 That document was a component of the permit application.

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1 So the intent of covering units, the intent of making
2 sure we're not letting wastewater go septic, that is in
3 there. It is included as a part of the permit
4 application.
5 Q Well, I have to disagree with you on that. I
6 don't believe it is, but that's not for you to say or
7 for me to say at this state. But up to now, let's just
8 sum this up, the only thing that you think you've told
9 the Commission about odor control is represented in that
10 email chain. And I believe we've looked at -- but we
11 have an exhibit for it. I'm sorry. The cedar is
12 killing me today.
13   So, up to now, the only thing that you
14 have provided to the Commission as far as a design or
15 operation requirement is that email chain that we were
16 referring to, and we'll fill in the blank on that
17 exhibit at the proper time.
18 A Yes. And that -- and from my recollection,
19 that was an appendix that was referred to in the permit
20 application.
21 Q Okay. All right. I don't have anymore
22 questions. Thank you, Mr. Berryhill.
23 A Thank you.
24   JUDGE STARNES: Okay.
25   Mr. Hill, any redirect?

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1   MR. HILL: I do have some redirect. Thank
2 you, Judge.
3   REDIRECT EXAMINATION
4 BY MR. HILL:
5   Q   Mr. Berryhill, I want to follow up on these
6 questions about the requirements in the permit that, you
7 know, do or do not obligate the City to do what it says
8 it's going to do. I'm going to -- let me see if I can
9 pull this up for you here. All right. You should see
10 on your screen the draft permit. Are you able to see
11 that?
12   A   Yes, sir.
13   Q   This is, in fact, in the record a couple of
14 times. One is at Administrative Record Page 0113, and
15 then it's also COG Exhibit 002. I want to draw your
16 attention to -- let's see here. This is specifically
17 Page 9 of the draft permit, and if you'll bear with me
18 here, do you see the Subsection (b) there on the page?
19   A   Yes, sir.
20   Q   Okay. Do you mind reading Subsection (b)?
21   A   Sure. Just (b) or also the subpoints below it?
22   Q   Go ahead all the way through.
23   A   Okay. This permit is granted on the basis of
24 the information supplied and representations made by the
25 permittee during action on an application and relying

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1 upon the accuracy and completeness of that information
2 and those representations. After notice and opportunity
3 for a hearing, this permit may be modified, suspended,
4 or revoked, in whole or in part, in accordance with
5 30 TAC Chapter 305 Subchapter D during its term for good
6 cause, including but not limited to the following:
7 Violation of any terms or conditions of this permit;
8 obtaining this permit by misrepresentation or failure to
9 disclose fully all relevant facts or a change in any
10 condition that requires either a temporary or permanent
11 reduction or elimination of the authorized discharge.
12   Q   The way I translate that is the applicant or
13 rather the permit holder has got to do what it says it's
14 going to do. Is that how you would translate that?
15   A   Yes, sir. That's correct.
16   Q   Okay. And so all the discussion about the
17 plans and what has been contemplated and proposed and
18 committed to in the application, the provision that you
19 just read right there seems to get at this issue that
20 you actually do what you say you're going to do in the
21 application. Would you agree with that?
22   A   Yes, sir.
23   Q   Okay. I'm going to go over here to what is
24 Page 34 of the draft permit. It's also at
25 Administrative Record 0147, and this is also in -- still

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1 in COG Exhibit 102 and ask you if you can see the
2 provision that I've just called out here next to No. 4.
3 Do you see that?
4   A   Yes, sir.
5   Q   Okay. Do you mind reading that for me?
6   A   Sure. The permittee shall comply with the
7 requirements of 30 TAC 309.13 (a) through (d). In
8 addition, by ownership of the required buffer zone area,
9 the permittee shall comply with the requirements of the
10 30 TAC 309.13(e).
11   Q   Explain to me the relationship between this
12 requirement, Mr. Berryhill, and the obligations that the
13 City has committed to in its application as far as the
14 design of the equalization basin, the design of your
15 other treatment units, and how you plan to and will have
16 to operate those.
17   A   Yes, sir. Specifically, in reference to that
18 previous email that discussed maintaining the detention
19 time less than 48 hours, the discussion that this is not
20 a lagoon or anaerobic activity. It's a -- each of these
21 are treatment units that have active mixing. They're
22 not allowing for stratification or layers in those
23 units. What we have stated -- that is how this is going
24 to be designed and then how it's going to be operated --
25 is to prevent the ORP and the wastewater to go to a

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1 point where it's anaerobic and going septic. We've made
2 the statement to TCEQ that that's what we're going to
3 do, and this statement requires us to follow through and
4 do it.
5   Q   Okay. And so going back to that statement, let
6 me switch over here. This is a page out of the
7 application. This is an email exchange, I believe, that
8 you were talking about as far as the information you've
9 provided in the application --
10   A   Yes, sir.
11   Q   -- regarding the treatment technology and how
12 you plan to operate the plant. Is that right?
13   A   Yes, sir. That's correct.
14   Q   Okay. So I'm looking here on the screen at
15 Admin Record Page 0672. Do you see that?
16   A   Yes, sir.
17   Q   Okay. And let me draw your attention here to
18 this provision here. Can you explain -- specifically
19 within the language within the box there, the red box
20 around the text that also includes black and red text,
21 can you explain what this communication is reflective
22 of?
23   A   What this communication refers to is that if
24 you are operating an EQ basin and you're diverting
25 wastewater during a storm event to the basin and you

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1 **empty that basin within 48 hours, then the 150-foot**
2 **buffer zone would apply because it's not going septic.**
3 **That last statement notes if you change this plan or the**
4 **ways the basins are operating and the water goes septic,**
5 **then the buffer zone would be 500 feet and a requirement**
6 **to add air to the system. So that was the information**
7 **we received from Louis Herrin, who is the head of the**
8 **plan review team, in asking specifically if we utilize a**
9 **flow equalization basin, what are the requirements -- or**
10 **is there a way to utilize a 150-foot buffer and what do**
11 **we need to -- what information do we need to provide and**
12 **how does it need to be designed and operated to meet**
13 **that requirement.**
14   Q   So you mentioned -- I think I heard you mention
15 about a discussion of making sure that the influent
16 doesn't go septic, and this goes back to this whole
17 issue that you discussed with Mr. Allmon earlier about
18 the relationship between the term septic and anaerobic.
19 Let me make sure I understand correctly and that it's
20 clear for the record, is the anaerobic selector zone or
21 anoxic selector zone as you've got -- as you have
22 designed in the application. You've got it -- you've
23 got at least the schematic there in the application. Is
24 the anaerobic selector zone or anoxic selector zone a
25 lagoon with zones of anaerobic activity, either one of

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1 those features, units?
2   A   No, sir.
3   Q   So let me see if I can maybe ask that question
4 a little bit more coherently so it's clear. Is the
5 anaerobic selector zone a lagoon with a zone of
6 anaerobic activity?
7   A   No, it is not.
8   Q   Are your anoxic selector units that you have
9 there, are those lagoons with zones of anaerobic
10 activity?
11   A   No, sir. They're not.
12   Q   What about the temporary equalization basin
13 that you have as part of your design schematic; is that
14 a lagoon with a zone of anaerobic activity?
15   A   No, sir. It is not.
16   Q   And because it's not, isn't that directly
17 related to the 150-foot buffer that we've been
18 discussing?
19   A   Yes, sir. Absolutely.
20   Q   So you would not be authorized, pursuant to
21 those permit terms in the draft permit that we just
22 reviewed, to operate or allow these facilities that
23 we've just discussed get into a condition where they do
24 end up with zones of anaerobic activity in them. You
25 would not be authorized to do that because the draft

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1 permit, if it were issued, would prohibit you from doing
2 that because of the buffer zone requirement. Would you
3 agree with that?
4   A   That's correct.
5   Q   Okay. And, in fact, you have to follow through
6 with the representations and the commitments you made in
7 the application, like in the email we just discussed a
8 second ago, in how you design and build and operate this
9 facility, among other things, because the permit says
10 you have to. Is that correct?
11   A   Yes, sir. That's correct.
12   Q   And, if you don't, you could lose the permit?
13   A   Yes, sir. That's correct.
14   Q   Okay. And in looking at potential design
15 changes during the design and construction phase of the
16 project, not only does the owner and designer have to
17 sign off on those changes, but the TCEQ does, also. Is
18 that right?
19   A   Yes, sir. That's correct.
20   Q   Okay. Now earlier there was a question -- I
21 want to make sure that the record is clear here -- about
22 your involvement and site selection, and I know it came
23 up in Ms. Dunn's testimony, as well. Can you -- let me
24 ask this maybe in sequence here: Were you involved in
25 the decisions to select one site versus the other or

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1 decide to not select this site versus the other one?
2 Were you involved in that part of the site selection
3 process?
4   A   No, sir.
5   Q   Okay. Once the property was acquired by the
6 City and the decision was made to build the east
7 wastewater treatment plant there and try to get the
8 permit to do that, what was your role in that site
9 review at that point?
10   A   **Once a proposed site had been selected, my role**
11 **in that was to go through Chapter 309, and specifically**
12 **Chapter 309.13, to identify the suitability of that site**
13 **specifically for locating a wastewater plant, not one**
14 **location versus another but once that site was set,**
15 **verifying what was required for appropriate setbacks and**
16 **treatment requirements for that site.**
17   Q   And is it your opinion that the Applicant has
18 satisfied all the requirements in 309.13?
19   A   Yes, sir. I do.
20   Q   All right. Mr. Berryhill, I appreciate your
21 testimony.
22   MR. HILL: I pass the witness.
23   JUDGE STARNES: Okay.
24   Mr. Tatu, anything from the Executive
25 Director?

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1   MR. TATU: I just had one more question,
2 and this is going back to requirements of the permit.
3   RECROSS-EXAMINATION
4 BY MR. TATU:
5   Q   Mr. Berryhill, are you aware that there are
6 also general or standard requirements in the draft
7 permit?
8   **A   Yes, sir.**
9   Q   Okay. And is it correct that the permittee is
10 required to take all reasonable steps to minimize or
11 prevent any discharge or sewage use or disposal or other
12 permit violation that has a reasonable likelihood of
13 adversely affecting human health or the environment?
14   **A   Yes, sir. That's correct.**
15   MR. BOOTH: Can I interrupt for a second?
16 My screen froze for several minutes, and then it
17 restarted. Did I miss anything important?
18   (Laughter)
19   JUDGE STARNES: It depends on when your
20 several minutes started.
21   MR. BOOTH: Okay. Well, Jason was about
22 ready to ask him something, and then it just froze up.
23 Kind of weird, and then it restarted on its own. Okay.
24 Carry on.
25   JUDGE STARNES: Sorry. You'll -- I guess

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1 you'll see in the transcript what you missed and --
2   MR. BOOTH: Well, Eric, I'm sure -- did
3 your screen freeze up?
4   MR. ALLMON: No, mine did not. I can't
5 promise that I'm not on the same -- well, anyway, mine
6 did not.
7   MR. TATU: Is it kept on YouTube for a
8 certain period of time, or does it just stream live and
9 that's it?
10   MR. BOOTH: Well, I don't care about the
11 long-term. I'm worried about if he said something I
12 need to ask him about, but I'm good. Go ahead.
13   JUDGE STARNES: Okay.
14   And to answer your question about YouTube,
15 I believe while we're streaming, you can see everything
16 since the beginning of the stream, but once we leave at
17 the end of the day, it's gone.
18   MR. TATU: I see. Okay. Thanks.
19   Q   (BY MR. TATU) So just to follow up on my
20 previous question, if the -- if the proposed plant
21 operated in a manner to produce excessive or harmful
22 odors, would the permittee be subject to any
23 consequences?
24   **A   Yes, sir. So that -- I believe that would fall**
25 **into that first section that Mr. Hill had brought up,**

321

1 **which is if you're in violation of those terms, then**
2 **TCEQ has the ability to -- could fine the facility; it**
3 **could modify or rescind the permit as it stands if**
4 **you're not complying with the permit conditions.**
5   Q   Okay. I don't have anything further. Thanks.
6   **A   Thank you.**
7   JUDGE STARNES: Okay.
8   Mr. Arthur, anything for OPIC?
9   MR. ARTHUR: No, Your Honor. Thank you.
10   JUDGE STARNES: Okay.
11   Mr. Allmon, I think you went first in last
12 round of cross.
13   MR. ALLMON: Yes, I'll go ahead.
14   RECROSS-EXAMINATION
15 BY MR. ALLMON:
16   Q   Mr. Berryhill, you were asked some questions
17 about representations in the permit application, and I
18 would like to go ahead and revisit what those are. Do
19 you have in front of you a portion of the administrative
20 record? And this is your Attachment DAR 1.1-3?
21   **A   Yes, sir.**
22   Q   And if we looked -- initially, I see you've got
23 two paragraphs -- or the Applicant had two paragraphs
24 discussing the equalization basin. That second
25 paragraph states: 150 buffer zone is applicable for

322

1 the -- you characterize as temporary EQ basin since the
2 wastewater will not be allowed to remain in the
3 temporary EQ basin for more than 48 hours. Was there
4 any representation made as to whether the equalization
5 basin would be aerated?
6   **A   I don't believe we have a statement in there in**
7 **this application. The main component of discussion with**
8 **both Gordon Cooper and with Louis Herrin was initially**
9 **on the detention time at the EQ basin.**
10   Q   So even if operated consistent with the
11 representations in the application, would this permit
12 authorize the equalization to be -- the equalization
13 basin to be operated as an unaerated equalization basin?
14   **A   I'm sorry. Could you rephrase that question**
15 **again?**
16   Q   Does -- even if operated consistent with the
17 representations in the application, could the permit --
18 could the facility operators still operate the
19 equalization basin in a manner that was unaerated?
20   **A   I believe so, as long as it's less than 48**
21 **hours and the wastewater is not allowed to go septic so**
22 **that it's not producing foul odors that would go**
23 **offsite.**
24   Q   Now is there anywhere in here that you
25 represent that the ORP within the equalization basin

323

1 will be maintained within a certain range?
2   **A   I believe there was in the excerpt in here. I**
3 **think we had a discussion on it on the -- the**
4 **coordination with Gordon Cooper, I believe, if you go to**
5 **the next --**
6   Q   Let's do. Let's take a look at that, and now
7 we're looking now at some of the discussion. Now in
8 these emails we're looking at now starting at Page 300,
9 is this the discussion that we're talking about?
10   **A   I'm sorry. Somebody else came through. I**
11 **think somebody sneezed or something. Could you say that**
12 **again?**
13   Q   So we're now at Page 300 of the administrative
14 record, and I'm looking now at some emails. Is this the
15 discussion back and forth you're referencing with regard
16 to the buffer zones?
17   **A   Yes, sir, with regard to the ORP component of**
18 **it.**
19   Q   Yes, with regard to ORP. And so I see an email
20 from Joshua Berryhill, which I understand would be to be
21 you --
22   **A   Yes, sir.**
23   Q   -- on May 8th, and there you discuss the anoxic
24 selector zone and you discuss the anaerobic selector.
25 Is that referring to what on the figure is labeled as

324

1 the anaerobic zone within the BNR system?
2   **A   Yes, sir.**
3   Q   So is there any commitment made here with
4 regard to the equalization basin?
5   **A   Not in this section here.**
6   Q   Not in this section here?
7   **A   This --**
8   (Simultaneous discussion)
9   **A   -- not with -- this email exchange was not with**
10 **regard to the EQ basin. It was with regard only to the**
11 **BNR anaerobic zone -- well, actually, the BNR selector**
12 **zones.**
13   Q   (BY MR. ALLMON) So these commitments here
14 regarding ORP did not apply and do not apply to the
15 equalization basin?
16   **A   From our standpoint, yes, we would apply them**
17 **to the EQ basin, but they were not included specifically**
18 **in this discussion that we're looking at right here.**
19   Q   So there's not a representation in the
20 application that the ORP within the equalization basin
21 will be maintained within a certain range?
22   **A   That is correct.**
23   Q   And if we look at the second paragraph within
24 the red box discussing the anaerobic selector, does that
25 state our goal is to stay right at the bottom of the

325

1 edge of the ORP range?
2   **A   For anoxic conditions.**
3   Q   Anoxic conditions?
4   **A   And I would like to note, the very last**
5 **statement in that sentence where it noted as -- notes --**
6 **excuse me, where it notes minus 100 to minus 25, that is**
7 **a typo. It should be minus 100 to minus 250.**
8   Q   Okay. But say if five years from now a permit
9 inspector were to look at the application, is that noted
10 anywhere?
11   **A   It would be noted in the summary transmittal**
12 **for the design on the plan review.**
13   Q   Now -- and I note in your testimony you discuss
14 with regard, say, to the covers at the facility, that
15 that is the intended design. Is there any point in the
16 application where it states that the covers will be
17 installed?
18   **A   I don't recall.**
19   Q   Okay. And is there anywhere in the application
20 where it states that mixing will be installed within the
21 equalization basin?
22   **A   I don't recall that either.**
23   Q   Okay. So even with the operation consistent
24 with the representations in the application as you
25 remember them, the equalization basin would still be

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1 allowed to be operated without aeration and without
2 mixing with an ORP outside the range of, say, zero to
3 negative 200?
4   **A   Well, we don't state -- well, we do not state**
5 **an ORP limit in the application with regard to the EQ**
6 **basin. We only state the ORP values with regard to the**
7 **BNR selector zones.**
8   Q   Okay. Now there was some discussion of the
9 review process. Is that a stage that occurs after
10 issuance of the permit?
11   **A   Yes. That is correct.**
12   Q   And is the primary criteria, then, whether the
13 design meets the minimum requirements of Chapter 217?
14   **A   Yes and with regard to any specific**
15 **requirements established in the permit, in the final**
16 **permit.**
17   Q   And does the -- and so is that where you would
18 say they would look to the representations within the
19 application?
20   **A   Yes. In addition, they would look at the**
21 **representations in the permit application as well as --**
22 **the requirement, you have to submit plan specifications**
23 **and an engineering design report.**
24   Q   Is there any representation in the application
25 as to the monitoring of ORP?

1   **A   With regard to what unit?**

2   Q   With regard to any of the units.

3   **A   You're going -- if you have an ORP goal for the**

4 **BNR selector zones, you would be monitoring ORP.**

5   Q   Is there any requirement for that specific to

6 monitoring?

7   **A   If you state that you're going to be operating**

8 **on a specific ORP range, you don't have to have a**

9 **requirement that says you'll monitor. If you're going**

10 **to maintain a range, you have to be able to monitor it**

11 **if you're going to maintain a range.**

12   (Simultaneous discussion)

13   Q   (BY MR. ALLMON) I'm thinking, for instance, if

14 we look at the discharge from the facility, you familiar

15 there's certain monitoring requirements specifically

16 applicable to that discharge --

17   **A   Yes.**

18   Q   -- that help demonstrate to the agency that the

19 limits, effluent limits are being complied with?

20   **A   Agreed.**

21   Q   And those monitoring requirements are separate

22 and apart from, say, the requirement to meet the

23 effluent limitations?

24   **A   Correct.**

25   Q   So with regard to these things you're talking

1 about, say the ORP, are there any analogous, similar

2 monitoring requirements for ORP that are represented

3 anywhere in here?

4   **A   Not from the standpoint of what would go into**

5 **the permit, but if it has information on here, like**

6 **this, with having to meet specific ORP ranges, that's**

7 **going to be data that TCEQ would look at when they do an**

8 **inspection of the facility to show that you are doing**

9 **that process control internally to maintain your -- show**

10 **that you're maintaining compliance.**

11   Q   But there's no independent representation or

12 requirement of the permit to perform that monitoring?

13   **A   It is not specifically stated that you have to**

14 **complete that monitoring of, say, you have to complete**

15 **ORP or DO monitoring for the facility operation, but in**

16 **the Other Requirements Section it states you have to**

17 **make every effort to maintain your compliance. And in**

18 **the case of the facility here for the buffer zone**

19 **limits, if we're noting that we have to operate within a**

20 **certain ORP range, that means you're going to have to**

21 **monitor that to show that you are being in compliance.**

22   Q   At least that's your understanding?

23   **A   That would be the expectation for the facility**

24 **based on that permit that states you have to -- if you**

25 **say you're operating under these conditions, you have to**

1 **maintain these conditions, and you have to show how**

2 **you're maintaining those conditions to be compliant.**

3   Q   And are there any recordkeeping requirements

4 related to ORP levels within the units at the facility?

5   **A   There are operating requirements, and so there**

6 **will be a plan of operations for the facility that shows**

7 **what documentation needs to be maintained on-site.**

8 **Above and beyond that, TCEQ has additional criteria for**

9 **what records, what process control or quality control**

10 **data has to be collected and maintained for a given**

11 **period of time, but I don't know all the specifics of**

12 **what all data points are required in that.**

13   Q   So you don't know whether that ORP data is

14 required to be contained within that?

15   **A   It would be process control data. So it would**

16 **be required.**

17   Q   I guess we'll let the rules speak for

18 themselves on that. That is all of my questions for you

19 at this time -- well, all of my questions for you.

20   MR. ALLMON: So I pass the witness.

21   JUDGE STARNES: Okay.

22   Mr. Booth, any recross?

23   MR. BOOTH: No, I'm good. Thank you.

24   JUDGE STARNES: Okay.

25   Then, that concludes your testimony.

1 Thank you, Mr. Berryhill. You are free to go now.

2   THE WITNESS: Thank you.

3   JUDGE STARNES: And who is next, Mr. Hill?

4   MR. HILL: That will be Chris Hay.

5   JUDGE STARNES: And is he going to pop in

6 the same box that Mr. Berryhill just left?

7   MR. HILL: I believe that he will.

8   JUDGE STARNES: Okay.

9   (Brief pause)

10   JUDGE STARNES: Hey there, Mr. Hay. If

11 you can unmute yourself. There you go. Are you able to

12 hear me okay?

13   THE WITNESS: Yes, ma'am.

14   JUDGE STARNES: All right. Let's get you

15 under oath if you'll raise your right hand.

16   (Witness sworn)

17   JUDGE STARNES: Okay.

18   Go ahead, Mr. Hill.

19   MR. HILL: Thank you, Judge.

20   CHRIS HAY, P.E.,

21 having been first duly sworn, testified as follows:

22   DIRECT EXAMINATION

23 BY MR. HILL:

24   Q   Good afternoon, Mr. Hay.

25   **A   Good afternoon.**

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1   Q   You should have in front of you a series of
2 documents marked COG Exhibit 400 and COG Exhibit 401.
3 Do you have those in front of you?
4   A   Yes.
5   Q   Do you recognize those to be your prefiled
6 testimony and then the Exhibit 401 exhibit to your
7 prefiled testimony?
8   A   Yes, I do.
9   Q   Okay. Mr. Hay, do you adopt this prefiled
10 testimony as though you were giving it live on the stand
11 in front of the Judge under oath today?
12   A   Yes.
13   MR. HILL: Judge, with that, I offer COG
14 Exhibit 400 and COG Exhibit 401.
15   (Exhibit COG Nos. 400 and 401 offered)
16   JUDGE STARNES: Okay. And there were no
17 prefiled objections to those exhibits. Does anybody
18 have an objection they want to put to record now?
19   (No response)
20   JUDGE STARNES: All right. Hearing no
21 objections, Exhibits 400 and 401 are admitted.
22   (Exhibit COG Nos. 400 and 401 admitted)
23   MR. HILL: Thank you, Judge. I pass the
24 witness.
25   JUDGE STARNES: Okay.

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1   For the Executive Director. Mr. Tatu is
2 that you?
3   MR. TATU: It is. Thank you.
4   CROSS-EXAMINATION
5 BY MR. TATU:
6   Q   Good afternoon, Mr. Hay.
7   A   Good afternoon.
8   Q   I just have a few questions for you based on
9 your prefiled testimony. Was it my understanding that
10 you were going to be testifying with regards to need but
11 also floodplain and wetlands issues?
12   A   Not on the wetlands issues.
13   Q   Okay. Just the floodplain delineation?
14   A   Yes, sir.
15   Q   Okay. Can you briefly describe what your
16 conclusions were with respect to floodplain delineations
17 and the proposed facility?
18   A   That the proposed facility would be outside of
19 the floodplain.
20   Q   Okay. And what were the -- your basis for
21 those conclusions?
22   A   The National Flood Hazard Layer, the mapping
23 from FEMA, indicates that the floodplain line is not
24 incorporated in the wastewater treatment plant site. In
25 addition, there is a CLOMR, which is a Conditional

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1 Letter of Map Revision study that was performed for that
2 specific property that delineated a base flood elevation
3 adjacent to the treatment plant site, and based on those
4 elevations, I was able to determine that the
5 improvements on the wastewater treatment plant would not
6 be within the floodplain.
7   Q   I don't have any further questions. Thank you.
8   A   Thank you.
9   JUDGE STARNES: Thank you.
10   Does OPIC have any questions, Mr. Arthur?
11   MR. ARTHUR: Yes, Your Honor. Thank you.
12   CROSS-EXAMINATION
13 BY MR. ARTHUR:
14   Q   Good afternoon, Mr. Hay.
15   A   Good afternoon.
16   Q   I'd actually like to follow up on something
17 Mr. Tatu just asked you. So, the CLOMR, I understand
18 that acronym. But can you explain to us what a CLOMR
19 is?
20   A   Yes. It's a study that's submitted to FEMA
21 when you are considering changing the floodplain due to
22 developments. We are not proposing to change the
23 floodplain associated with our project. We'll be
24 outside of it, but I was provided a CLOMR study as part
25 of the due diligence process for the site. That had

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1 already been performed based on a future proposed
2 development at that site, and I reviewed that to come to
3 my conclusion.
4   Q   Okay. So someone had obtained one of those for
5 a possible use of that property in the past?
6   A   Yes.
7   Q   Okay. All right. Thank you, Mr. Hay.
8   MR. ARTHUR: Your Honor, I pass the
9 witness.
10   JUDGE STARNES: Okay.
11   Which Protestant group is going to cross
12 first? You're both muted.
13   MR. BOOTH: I am in line.
14   JUDGE STARNES: Okay.
15   CROSS-EXAMINATION
16 BY MR. BOOTH:
17   Q   Good afternoon, Mr. Hay?
18   A   Hello. How are you?
19   Q   I'm fine.
20   MR. BOOTH: All of y'all, I appear to be
21 having problems with my Internet. So, I'm sorry. It's
22 AT&T's fault. It's not mine.
23   (Laughter)
24   MR. BOOTH: I don't want to restart the
25 router because God knows what will happen. So bear with

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1 me, and if we go on another day, I'll try to fix it.

2   Q   (BY MR. BOOTH) Mr. Hay, I want to show you

3 something that everyone has said you've got the answer

4 to. So let's see whether you do or not. It's kind of a

5 test.

6   Okay. Are you familiar with this picture?

7   **A   Yes, sir.**

8   Q   Good. And do I understand it to describe two

9 potential sites for the east wastewater treatment plant?

10   **A   Yes. For this specific comparison we were**

11 **looking at these two sites.**

12   Q   Okay. And is this the cost comparison between

13 these two sites?

14   **A   I believe so. Yes.**

15   Q   Did you perform them or somebody under your

16 supervision?

17   **A   Yes, I did.**

18   Q   Okay. Does this Footnote 1 -- that includes

19 the concession that the City made to the exist -- the

20 property owner that they bought the east wastewater

21 treatment plant site to build a water line to the other

22 parts of their property?

23   **A   I believe so. This comparison that I put**

24 **together included requirements that were passed along to**

25 **me. I wasn't part of the property negotiation process,**

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1 **I guess.**

2   Q   Okay.

3   **A   But any further than just this analysis and for**

4 **other cost analysis, yes.**

5   Q   So the City selected the current site as the

6 wastewater treatment plant based upon the cost

7 differential?

8   **A   I would say that was one of the factors that**

9 **was incorporated into their decision. Yes.**

10   Q   Are you aware of any other factors?

11   **A   I can't speak for anything specific other than**

12 **it was the ideal site based on these two conditions.**

13   Q   Well, what do you mean two conditions?

14   **A   I mean between the two properties.**

15   Q   Oh, okay. Okay. All righty. So I take it

16 that you weren't part of the decisionmaking on which

17 site to pick?

18   **A   Ultimately, no, I did not choose the site for**

19 **the City.**

20   Q   Does your engineering firm help choose sites

21 for their clients?

22   **A   No. We provide technical data and cost**

23 **estimates, comparisons like those that you just showed,**

24 **to assist cities in selecting the site that they choose.**

25   Q   Do y'all ever include in your analysis whether

337

1 or not it's next to a residential area?

2   **A   We do, as to -- to make sure that the City can**

3 **follow the buffer zone requirements for the wastewater**

4 **plant.**

5   Q   Okay.

6   **A   That plays into effect here. Yes.**

7   Q   Okay. Do you think that -- well, let me --

8 nevermind. Okay. I think I've had enough -- that's

9 enough questions I have for you. Thank you so much.

10   **A   Thank you.**

11   JUDGE STARNES: Okay.

12   How about Granbury Fresh?

13   MR. BEDECARRE: Granbury Fresh does not

14 have any questions for the witness.

15   JUDGE STARNES: Okay.

16   Then back to you, Mr. Hill. Do we have

17 any redirect?

18   MR. HILL: No redirect, Judge. I pass the

19 witness.

20   JUDGE STARNES: Okay.

21   Thank you, Mr. Hay. Appreciate your

22 testimony. That's all we have for you.

23   THE WITNESS: Thank you.

24   JUDGE STARNES: All right. Let me get

25 caught up on my notes real quick here.

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1   (Brief pause)

2   JUDGE STARNES: Okay. I believe our next

3 witness is one for whom cross was waived, Mr. Beach.

4   MR. HILL: That's right, Your Honor. I

5 believe Mr. Beach is on and available for me to swear in

6 his testimony, and then I do understand that cross on

7 him has been waived.

8   JUDGE HENDERSON: Okay. Well, let's take

9 care of him real quick.

10   Mr. Beach, you want to get under oath if

11 you'll raise your right hand.

12   (Witness sworn)

13   JUDGE STARNES: Okay.

14   Go ahead, Mr. Hill.

15   MR. HILL: Thank you, Judge.

16   JAMES BEACH, P.G.,

17 having been first duly sworn, testified as follows:

18   DIRECT EXAMINATION

19 BY MR. HILL:

20   Q   Good afternoon, Mr. Beach.

21   **A   Good afternoon.**

22   Q   You have developed prefiled testimony that is

23 labeled COG Exhibit 500 and COG Exhibit 501. Are you

24 familiar with that testimony and that exhibit?

25   **A   I am.**

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1 Q Okay. You understand that to be your prefiled
2 testimony that was developed for this case?
3 A Yes.
4 Q All right. Mr. Beach, do you adopt COG
5 Exhibit 500 and the attached COG Exhibit 501 as your
6 testimony as though you were giving it live on the stand
7 in front of the Judge under oath today?
8 A I do.
9   MR. HILL: All right.
10   Judge, with that, I offer up COG
11 Exhibit 500 and COG Exhibit 501 for admission into the
12 record.
13   (Exhibit COG Nos. 500 and 501 offered)
14   JUDGE STARNES: Okay. And there were no
15 prefiled objections to these exhibits. I guess I'll
16 just ask for the record if anybody has an objection they
17 want to enter today.
18   (No response)
19   JUDGE STARNES: And hearing none, we will
20 admit COG Exhibit 500 and 501.
21   (Exhibit COG Nos. 500 and 501 admitted)
22   JUDGE STARNES: And since the parties have
23 all waived cross-examination of you, Mr. Beach, that
24 concludes your testimony. I appreciate you being here.
25   THE WITNESS: Thank you.

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1   JUDGE STARNES: Thank you.
2   Okay. Are we ready to go with Mr. Osting?
3 You want to get started with him?
4   MR. HILL: Let me make sure that he is
5 lined up. Give me just one second, Judge. I'll make
6 sure if he's ready to go.
7   JUDGE STARNES: Sure.
8   (Brief pause)
9   JUDGE STARNES: Okay. It looks like he's
10 ready to go.
11   Mr. Osting, are you able to hear me okay?
12   THE WITNESS: Yes, ma'am.
13   JUDGE STARNES: All right. Let's get you
14 under oath if you'll raise your right hand.
15   (Witness sworn)
16   JUDGE STARNES: Okay.
17   Go ahead, Mr. Hill.
18   MR. HILL: Thank you, Judge.
19   TIM OSTING, P.E., D.WRE, CFM,
20 having been first duly sworn, testified as follows:
21   DIRECT EXAMINATION
22 BY MR. HILL:
23 Q Good afternoon, Mr. Osting.
24 A Good afternoon.
25 Q You should have in front of you prefiled

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1 testimony and a series of exhibits. I want to go down
2 the list here and read those off to make sure you've got
3 them in front of you. This is COG Exhibit 600, COG
4 Exhibit 601, COG Exhibit 602, COG Exhibit 603, and then
5 COG Exhibit 604 through COG Exhibit 623, and then
6 finally COG Exhibit 624. Do you have those documents in
7 front of you?
8 A Yes, sir, I do.
9 Q Okay. Is COG Exhibit 600 your prefiled
10 testimony that you developed for this case?
11 A Yes, it is.
12 Q Okay. Do you adopt COG Exhibit 600, as well as
13 all of those COG Exhibits in the 600 series I just ran
14 off or articulated, do you adopt those as your prefiled
15 testimony as if you were giving them live on the stand
16 in front of the judge under oath today?
17 A I do, yes.
18   MR. HILL: Judge, the City offers up COG
19 Exhibit 600, 601, 602, 603, 604 through 623 and 624 for
20 admission into the record.
21   (Exhibit COG Nos. 600 through 624 offered)
22   JUDGE STARNES: Okay. And there were a
23 number of objections to those exhibits that were raised
24 by the parties. Those were overruled at our prehearing
25 conference last week. Are there any additional

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1 objections that we have not addressed before that anyone
2 needs to raise at this time for testimony record?
3   (No response)
4   JUDGE STARNES: Okay. Then, consistent
5 with our ruling at the prehearing conference, the
6 objections are all overruled, and Exhibits 600 through
7 624 are admitted.
8   (Exhibit COG Nos. 600 through 624
9   admitted)
10   MR. HILL: Thank you, Judge. Pass the
11 witness.
12   JUDGE STARNES: Okay.
13   For the Executive Director?
14   MR. TATU: Yes. Thank you.
15   CROSS-EXAMINATION
16 BY MR. TATU:
17 Q Good afternoon, Mr. Osting. How are you?
18 A Good afternoon. I'm doing well.
19 Q Great. I just have a few questions for you
20 regarding modeling. The first question I have is: Did
21 you run the TCEQ QUAL-TEX model with adjusted barometric
22 pressure that was suggested by Mr. Machin?
23 A Yes, sir, I did.
24 Q Okay. Could you I ask you what were the
25 predicted DO results of that model run for the proposed

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1 2 mgd final phase?

2   A   When I -- when I ran that model with only

3 Mr. Machin's change with the barometric pressure, I did

4 not duplicate his stated value of 4.03 or

5 4.06 milligrams per liter. When I made additional

6 changes to the model to -- well, to recalibrate or to

7 reinitialize -- excuse me. Calibrate is absolutely the

8 wrong term to use here. When I ran the TCEQ QUAL-TEX

9 model, reinitialized after adding Mr. Machin's

10 barometric pressure and also after I ran the same model

11 with updated geometric properties based on Water

12 Development Board data in the lake, my final phase

13 value, I believe, was 4.99 milligrams per liter

14 dissolved oxygen content.

15   Q   Okay. And do you know if those were the same

16 predicted DO results that Mr. Michalk described getting

17 in his prefiled testimony?

18   A   They were very comparable to the numbers that

19 Mr. Michalk got. Mr. Michalk got slightly lower

20 dissolved oxygen values in Mr. Michalk's rerunning of

21 the QUAL-TEX model, and his numbers were slightly lower

22 as a result of a different geometry that he used based

23 on the original geometry that TCEQ Staff used in the

24 original QUAL-TEX model. And that was based on less

25 site-specific information than what I used.

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1   Q   So did you make any additional refinements to

2 the QUAL-TEX model when you reran?

3   A   I did. I did. I followed the TCEQ procedure

4 to reinitialize the model by changing the sediment

5 oxygen demand in the model, and when I reinitialized it

6 and reran the model with those two changes that I

7 described -- I changed the barometric pressure and I

8 changed the geometry in the model -- and the geometry

9 are basically the widths and the depths in the lake

10 portion of the model. When I reran that, I came up with

11 the results that I had 4.99.

12   Q   Okay. So did you run the adjusted QUAL-TEX

13 model for both proposed flow phases?

14   A   I did. I reran it for the interim phase, as

15 well, my same version of the model, and the result was

16 4.82, I believe, milligrams per liter for the interim

17 phase with the interim permit limits and 1 mgd.

18   Q   Okay. So were the results of the adjusted

19 QUAL-TEX model different from those that only included

20 an adjustment of the barometric pressure input value?

21   A   Yes. These values that I came up with after

22 reinitializing the model according to the SOP that TCEQ

23 uses to initialize these models, this value was

24 different than the value that Mr. Machin came up with

25 initially where he said he only -- or he only changed

345

1 the barometric pressure. I believe, in fact, he changed

2 another portion of that same model, and that combination

3 of the two things that he did changed the -- his

4 dissolved oxygen result.

5   Q   Okay. And so were those dissolved oxygen

6 results higher or lower for the cove areas in

7 Lake Granbury?

8   A   His dissolved oxygen results were lower in

9 Lake Granbury. It was 4 milligrams per liter, roughly.

10 Just a little over 4 milligrams per liter was his

11 result. And what, specifically, I determined that he

12 changed were the -- it was two of the stream segments,

13 the way the models are set up are there are different

14 segments, and you can individually identify what some of

15 the input coefficients are for reaeration for each of

16 those segments. And two of the segments were changed

17 from a river -- or, I'm sorry, changed from a lake

18 segment to a river segment, and those segments that were

19 changed are, in fact, in the natural pool of

20 Lake Granbury.

21   Q   Okay. Well, you did use the term calibration

22 earlier, but I'm not sure if I'm asking this the correct

23 way. So just let me know if what I'm asking you doesn't

24 make sense, but yesterday Mr. Michalk was asked some

25 questions regarding modeling calibration. And you

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1 mentioned in your prefiled that you were able to

2 calibrate your model. Is that correct?

3   A   That is correct. Yes.

4   Q   Okay. And is the calibration method that

5 Mr. Michalk was asked about the same method for

6 calibrating a critical conditions model like the one you

7 used?

8   A   There are many different aspects to

9 calibration, and Mr. Michalk spoke broadly about

10 calibration and calibrating -- calibrating a model that

11 can -- that both -- calibrating a model that can both

12 evaluate critical conditions modeling and a variety of

13 other conditions, including cold conditions, summer,

14 winter, and different inflow conditions. My model

15 specifically was calibrated to low flow conditions as a

16 result of having available on-site data during low flow

17 conditions, and the objective, of course, of calibration

18 is to make the model prediction as close as possible to

19 field observations. And so my update of my QUAL2K model

20 that I used, not the QUAL-TEX model, my calibrated

21 QUAL2K model was calibrated to observe conditions such

22 that the predictions out of the model match what the

23 observed conditions are for dissolved oxygen and other

24 parameters.

25   Q   Okay. Let me just check one more thing. I

347

1 don't have any more questions. Thank you, Mr. Osting.

2   **A   Thank you.**

3   JUDGE STARNES: Okay. Thank you.

4   OPIC, Mr. Arthur, do you have any

5 questions?

6   MR. ARTHUR: No questions, Your Honor.

7 Thank you.

8   JUDGE STARNES: Okay.

9   Which of our Protestant groups is going to

10 start us?

11   MR. ALLMON: I believe that I will be

12 starting the cross-examination for Mr. Osting for the

13 Protestants.

14   JUDGE STARNES: Okay. Go ahead,

15 Mr. Allmon.

16   CROSS-EXAMINATION

17 BY MR. ALLMON:

18   Q   Good afternoon, Mr. Osting. How are you?

19   **A   I'm doing well. How are you?**

20   Q   I'm doing all right. I want to start with

21 looking at the implementation procedures that were --

22 have been previously discussed. Do you have those

23 before you now, Exhibit ED 3?

24   **A   Yes, sir. It's on my screen.**

25   Q   Okay. And let me look if we can to Page 83 of

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1 those. Well, if we looked up -- does this particular --

2 and I'm having some trouble. Does this portion of the

3 implementation procedures deal with -- let me look at

4 83. Starting on 83 are we looking at the methods for

5 modeling dissolved oxygen?

6   **A   It's Page 83, and it says Modeling Dissolved**

7 **Oxygen at the top.**

8   Q   Yes. And now I want to look down at Page 86 of

9 the IPs, and does this describe critical conditions?

10   **A   The heading is Critical Conditions.**

11   Q   And do the IPs state that critical conditions

12 are defined by three primary parameters: Ambient flow,

13 wastewater flow, and ambient water temperature?

14   **A   That is what the text says. Yes.**

15   Q   Would critical conditions for wastewater flow

16 be the kind of maximum limit -- wastewater flow at the

17 maximum limitations of the draft permit?

18   **A   The wastewater flow as analyzed as part of this**

19 **implementation procedure's document are those flows at**

20 **the limits.**

21   Q   So, those constitute critical conditions, those

22 flows at the limits if I'm understanding this in your

23 testimony?

24   **A   The critical conditions are defined by the**

25 **amount of wastewater flow that's present, and it's**

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1 **analyzed in terms of the interim limit and in terms of**

2 **the final limit for purposes of this permit.**

3   Q   And would critical conditions also be

4 characterized by the characteristics of the flow, such

5 as what the permitted dissolved oxygen level is and the

6 permitted phosphorous or the permitted nitrogen? Are

7 those, likewise, the critical conditions for purposes of

8 evaluating a permit?

9   **A   Those critical conditions are analyzed, and the**

10 **contents, especially the oxygen demand content --**

11   (Simultaneous discussion)

12   Q   (BY MR. ALLMON) And so --

13   **A   -- part of those critical conditions condition.**

14   Q   So we want to -- in determining flow under

15 critical conditions, you would want to look at the

16 quality of the effluent that would result in the lowest

17 dissolved oxygen levels in the water body. Would you

18 agree with me?

19   **A   You would want to look at how the effluent at**

20 **its permitted limits effects the dissolved oxygen in the**

21 **water body while the water body is at a confluent so to**

22 **speak of low flow conditions and high water**

23 **temperatures --**

24   (Simultaneous discussion)

25   Q   (BY MR. ALLMON) All right.

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1   **A   -- with the climate of that location.**

2   Q   All right. Now I want to look now -- okay.

3 Are we now -- do you now have Exhibit 604 before you?

4   **A   Yes, sir, I have Exhibit 604.**

5   Q   And actually let me look. This document has

6 several exhibits within it as I understand it. Now I

7 have Exhibit 610 in front of you.

8   **A   I do have -- yes, Exhibit 610.**

9   Q   And are these -- you labeled this the expected

10 quality of effluent discharged from the proposed

11 Granbury MBR Wastewater Treatment Plant.

12   **A   Yes, sir.**

13   Q   So, do these characteristics of the wastewater

14 reflect critical conditions?

15   **A   Those reflect the conditions of the plant**

16 **effluent, and when we are talking about critical**

17 **conditions for purposes of modeling, we are going to use**

18 **the ambient temperature of the water body, the receiving**

19 **water body, the ambient flows of the receiving water**

20 **body. We're also going to use the conditions that we**

21 **expect from the wastewater plant, and these were**

22 **provided to me by the design engineer, as well as any**

23 **differences related to the permit limits if the permit**

24 **limits are higher than expected, expected conditions.**

25   Q   And as we saw in the implementation procedures,

351

1 it said one element of the critical conditions was the

2 wastewater effluent. Do you recall?

3 **A   I do recall that.**

4   Q   And so would the characteristics of that

5 effluent at permit limits be the relevant critical

6 conditions?

7 **A   Yes, that would be the relevant critical**

8 **conditions.**

9   Q   So do the characteristics listed in Exhibit 610

10 reflect the characteristics of the effluent at permit

11 limits?

12 **A   No, not at permit limits.**

13   Q   So do the characteristics of the effluent

14 reflected in Exhibit 610 represent critical conditions?

15 **A   Some of them do.**

16   Q   Do these fully represent critical conditions

17 for all parameters?

18 **A   Not for all parameters.**

19   Q   Okay. Did you use these characteristics of the

20 effluent as the basis of any of your modeling?

21 **A   I did use those as the basis of my model.**

22   Q   Which of your model runs were based upon these

23 characteristics of the effluent?

24 **A   The two -- so I evaluated a total of three**

25 **different sets of model runs in my QUAL2K model, and**

352

1 **within the QUAL2K model Set A that was the evaluation of**

2 **these conditions along with the conditions that existed**

3 **in September of 2021, which was roughly the condition**

4 **that was -- where I had the most data for that I**

5 **calibrated towards. The other run, Run B, Run Set B**

6 **used these values except for the permitted maximum**

7 **conditions were substituted where they're available.**

8 **For example, the effluent ammonia was substituted at 1.6**

9 **milligrams per liter for the interim phase and**

10 **substituted at 1.0 milligrams per liter for the final**

11 **phase, and the same was true for the BOD and same was**

12 **true for the orthophosphate phosphorus.**

13   Q   Did you perform runs where the permit limits

14 were not substituted for these where they were

15 different?

16 **A   Yes, I did. Those were the runs labeled A.**

17   Q   So would the runs labeled A reflect critical

18 conditions with regard to the effluent characteristics?

19 **A   They would not reflect the full permit**

20 **conditions.**

21   Q   Okay. Now I want to return to the IPs and look

22 as we continue down as we're at least -- we're still in

23 the -- look at Page 84. I apologize. I'm having to

24 kind of navigate myself around here a bit. So Page --

25 we've got inputs, and we've got Nontidal Streams and

353

1 Rivers. And it says: Apart from discharge flow and

2 quality, the most important model inputs for this

3 approach and it can be characterized as follows, and is

4 reaeration rates included there?

5 **A   I see reaeration rates. Yes.**

6   Q   Okay. What is meant by reaeration rate?

7 **A   The reaeration rate is the rate at which a**

8 **water body received oxygen from the water surface as a**

9 **function of its contact with the ambient air. So, the**

10 **water body will -- just from wind action and then also**

11 **from hydrologic mixing and also from water movement, it**

12 **will become reaerated, or it will accumulate air in the**

13 **water column -- I'm sorry. It will accumulate oxygen in**

14 **the water column from the air above.**

15   Q   And now turn to the next page of the

16 implementation procedures. Does that have a section

17 discussion -- discussing reaeration rates?

18 **A   I see reaeration rates. Yes.**

19   Q   And are reaeration rates impacted by the depth

20 of the water body at issue?

21 **A   They are impacted by the depth.**

22   Q   Okay. Now I would like to look at some of the

23 changes you made to the Executive Director's modeling,

24 and first, I'd like to look at modeling done by the --

25 some of the modeling inputs done by the Executive

354

1 Director. Let me go ahead and share my screen. You

2 have now in front of you what's marked as Exhibit GF-6?

3 **A   I do. I see that.**

4   Q   And let me represent to you that these are the

5 modeling input files produced by the Executive Director

6 to Granbury Fresh in Response to Request for Production

7 No. 6. The ED did not Bates stamp all their production,

8 and so these do not have Bates stamps. But do you

9 recognize these as modeling inputs?

10 **A   I recognize them as modeling inputs for the**

11 **QUAL-TEX model in general --**

12   Q   Yes.

13 **A   -- as a comparable format.**

14   Q   Okay. Now I want to look at the third page, or

15 I want to look at -- are there various data types listed

16 within your model input -- within such model inputs? Do

17 you see the label here Data Type? For instance, right

18 now we have Data Type 10 currently in front of us.

19 **A   I see that.**

20   Q   And is -- if we move up here is Data Type 9

21 that's labeled Advective Hydraulic Coefficients.

22 **A   I see that. Yes, sir.**

23   Q   And then as we look at F -- there's a Column F

24 under that, and I've got depth. And then it says CONST.

25 What does that column represent?

355
1   A   A depth constant.
2   Q   And so for each one here did the Executive
3 Director use a depth constant of 0.0?
4   A   Yes, if this is one of the files I've seen
5 before. And, yes, that value is zero if the Executive
6 Director generative is filed.
7   Q   And what physically does that represent with
8 regard to the modeled water body?
9   A   There's an equation that -- that relates the
10 flow to the depth according to three parameters, the D,
11 the E, and the F parameter. And the F parameter is an
12 addition at the end of an exponential function involving
13 D and E.
14   Q   So is this, essentially, reflect the --
15 reflective of the depth of the water body being modeled?
16   A   No.
17   Q   Oh, I guess the -- so how is this parameter
18 here related to the depth?
19   A   It's added on after a multiplication using the
20 other two parameters.
21   Q   And what are those other two parameters?
22   A   D, depth coefficient; E, depth exponent.
23   Q   Okay. Now I want to look for a second at the
24 modeling, some of the modeling that you performed, the
25 inputs you used.

356
1   (Brief pause)
2   Q   (BY MR. ALLMON) Okay. Do you have in front of
3 you now Exhibit GF-7?
4   A   I see Exhibit GF-7.
5   Q   And do you see in the lower right-hand corner
6 where this is marked COG-024978?
7   A   I see that.
8   Q   And does it have TO there?
9   A   It does have a TO.
10   Q   So does this appear to be one of the input
11 files that you used?
12   A   It must have been one of them that I produced,
13 or I assume it is.
14   Q   And is this your input file for the QUAL -- if
15 we look at the top under TitleO2, is this QUAL-TEX
16 modeling?
17   A   Yes, sir. This is a QUAL-TEX input file.
18   Q   So does this reflect your inputs for your
19 QUAL-TEX modeling?
20   A   I generated at least -- I generated several
21 QUAL -- uncalibrated QUAL-TEX models, and which of those
22 this is exactly, I'm not certain.
23   Q   Okay. Now let's look at Data Type 9 here. Do
24 you see where you would likewise have certain hydraulic
25 coefficients?

357
1   A   I do.
2   Q   And so as we look for Reaches 1, 2, and 3 you
3 use zero for F, as well. Correct?
4   A   That's correct.
5   Q   And as we look back to the Executive Director
6 for Reaches 1, 2, and 3, they used 0.0. Do I need to go
7 back up?
8   A   Well, you're flipping back and forth between
9 these files that --
10   Q   Well, right now I'm on Exhibit GF-6, which is
11 the Executive Director's inputs, and on Reaches 1 and 2
12 we've got a depth, Column F is zero.
13   A   Yeah. I recall going through that first -- I
14 suppose the GF-6, and I do see the zero. And in the
15 second I also saw a zero.
16   Q   Now in Reach 4, staying on Exhibit GF-6, what
17 depth constant did the Executive Director use?
18   A   0.5.
19   Q   Okay. And now as we turn to Exhibit GF-7
20 which, again, is your modeling, what depth constant did
21 you use for Reach 4?
22   A   If that was mine, it's 0.75.
23   Q   And this is Exhibit GF-7, which we discussed
24 before, is your -- one of your input files.
25   A   Okay.

358
1   Q   So did you adjust the depth constant to be --
2 did your depth constant, was it greater than the
3 Executive Director's?
4   A   Yes, it was.
5   Q   And why would that be?
6   A   It was based on available data. There were --
7 that specific 0.75 -- well, let me back up. There's
8 available eco standard data from the Texas Water
9 Development Board that covered much of this area,
10 including starting from the lake moving upstream into
11 the -- into the cove up towards the confluence of where
12 the river met the lake. Where their data was lacking I
13 used data from Mr. Flores, who performed a site visit
14 and measured stream depths. And so I used that value
15 for the upper end of the cove or for the upper end of
16 the lake based on his site visit information.
17   Q   So that's what led you in Reach No. 4 to have a
18 greater depth than the ED?
19   A   Yes.
20   Q   Okay. And now let's look at Reach 5, and I'm
21 looking back again to the ED's data. And they, again,
22 have 0.5 as their value in Reach 5. Do you see that?
23   A   I see 0.5 in --
24   Q   Exhibit GF-6 for Reach 5. Correct?
25   A   Correct.

359

1   Q   And for you for Reach 5 you had 1.2. So,
2 again, does that reflect a greater depth?
3   **A   That does reflect a greater depth.**
4   Q   And is that consistent for Reach 6? We've got
5 the ED at 1.0. Would you agree?
6   **A   Yes, 1.2 is greater than 1.0.**
7   Q   Okay. Well -- and yours in Reach 6 is actually
8 2.2 --
9   **A   2.2.**
10   Q   -- for this. Correct?
11   **A   Yes. Correct.**
12   Q   And for Reach 7 the ED was at 1.5. Do you see
13 there?
14   **A   I see that. Yes, sir.**
15   Q   And for Reach 7 you were at 2.55.
16   **A   I see that.**
17   Q   And so -- and, again, are all of these because
18 of your use of either data from the Water Development
19 Board or that gathered by Mr. Flores?
20   **A   Yes. That's correct.**
21   Q   And is this consistent, if we look at Reach
22 No. 9, the ED had a 2.5 -- and are there units here for
23 Column F, or is this a unit less value?
24   **A   There's units. It's meters.**
25   Q   Meters. So does that 2.5 reflect a 2.5 meter

360

1 depth?
2   **A   Yes, sir.**
3   Q   And so for No. 9 you have a 2.9 meter -- Reach
4 No. 9, you've got a 2.5 meter depth -- well, the
5 Executive Director. Excuse me. We're on Exhibit GF-6,
6 Page 4 of 9. Looking at Reach 9 the Executive Director
7 has a 2.5 meter depth, and as we look at Exhibit GF-7 in
8 Reach 9, you have a 2.93 meter depth.
9   **A   That appears correct.**
10   Q   Okay. And Reach 10 the Executive Director
11 reached 3.5 meters, and this is the last reach.
12 Correct?
13   **A   That's the most downstream reach. Yes. And
14 what I referred to as segments earlier, this model
15 refers to as reaches. So --**
16   Q   Okay. Yeah. And so would the depths impact
17 the reaeration rates?
18   **A   Yes, it does. It impacts the reaeration of the
19 entire column of -- of water.**
20   Q   All right.
21   **A   It doesn't reflect the rate of transfer at the
22 water surface.**
23   Q   So if we look back -- I'm on GF-6, which is the
24 Executive Director's inputs. If we look down to our
25 Data Type 12, does that reflect the reaeration rates?

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1   **A   Yes.**
2   Q   Well, reaeration segment SOD, sediment oxygen
3 demand, and BOD coefficients, and which column here are
4 the reaeration rates reflected in?
5   **A   So one, two, three -- the third one that's --**
6   Q   Okay. So say for Reach 5, what's the
7 reaeration rate that was used by the Executive Director?
8   **A   They used a method that specified the
9 reaeration rate directly, and that value is 2.0.**
10   Q   Okay. And that's Data Type 12. Now if we look
11 to Exhibit GF-7, go down to Data Type 12 and look for
12 Reach 5, did you also use 2.0?
13   **A   I did use 2.0.**
14   Q   Okay. So you did not change that at all?
15   **A   That's correct.**
16   Q   But the depth you used was a greater depth?
17   **A   That's correct. I believe it was -- yes,
18 that's correct.**
19   Q   So would it have been appropriate to change the
20 reaeration rate when you changed the depth?
21   **A   I don't recall the depth. If the depth was --
22 it depends on the depth.**
23   Q   But -- so would it be -- so did you evaluate
24 whether the reaeration rate needed to be changed in
25 light of the change in depth?

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1   **A   I'm sure I did, and if the depth is greater
2 than a depth to where I thought it was necessary to
3 change, I would have changed it.**
4   Q   So here on 5 you still use the same reaeration
5 rate as the Executive Director did, even though you
6 changed the depth?
7   **A   Yes. That's correct.**
8   Q   And let's look at Reach 6. What reaeration
9 rate did the Executive Director use?
10   **A   1.0.**
11   Q   And as we look at Reach 6 for your modeling
12 what reaeration rate did you use?
13   **A   1.0.**
14   Q   So, again, you did not change the reaeration
15 rate, even though you changed the depth?
16   **A   That's correct.**
17   Q   And for Reach 9, what reaeration rate did the
18 Executive Director use?
19   **A   0.4.**
20   Q   And what reaeration rate did you use for 0. --
21 and what reaeration rate did you use for Reach 9?
22   **A   0.4.**
23   Q   Did you change the reaeration rates for any of
24 the reaches?
25   **A   I don't recall -- I don't recall what model run**

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1 this is, and if this is not the very first modeling run
2 that I did in which the first modeling run that I did
3 may not have changed any of the Executive Director's
4 rates, then I -- then I see that the reaeration rates
5 are not changed.
6   Q   And if we look at the top of this, this is,
7 again, modeling run that was provided by the City of
8 Granbury for you, can you tell which model run this
9 particular run was for?
10   A   Well, I do see my initials at the top. It says
11 TDO, and it also says TWDBdep, which looks like the
12 Water Development Board depths. And it says Baro, which
13 implies it had to do with the barometric pressure
14 change.
15   Q   And would these inputs -- would there be
16 somewhere in these inputs where it indicates the
17 characteristic of the wastewater that you used?
18   A   Can you repeat that?
19   Q   These modeling inputs, I assume you also put
20 the wastewater characteristics as an input of the model.
21 Is that correct?
22   A   Yes, I did.
23   Q   And do you see here on Data Type 25 where
24 you've got waste load data for DO, BOD, and nitrogen?
25   A   Yes.

364

1   Q   And do these appear to be consistent with the
2 permit limits?
3   A   Dissolved oxygen effluent limit at 6, BOD
4 effluent limit at 5, nitrate for the final at 1.0 and --
5 I'm sorry. Ammonia at 1.0, and ammonia at the interim
6 phase for -- at 1.6 milligrams per liter.
7   Q   So does this appear to be your QUAL-TEX
8 modeling with the adjustment made for the barometric
9 pressure and the adjustments made for the depths at the
10 permit limits?
11   A   It could be.
12   Q   Well, I mean --
13   A   The other change that I made was to
14 reinitialize the SOD values, and that's how I would
15 check.
16   Q   Is there somewhere on here we can look to make
17 that determination, which modeling run this is?
18   A   We can --
19   Q   You can direct me.
20   A   The sediment oxygen demand values.
21   Q   And is that back up when we were looking at
22 Data Type 12?
23   A   Yes.
24   Q   Sediment oxygen demand. So do you see a column
25 for SOD?

365

1   A   I do.
2   Q   And what does this reflect in terms of the
3 modeling run this involves?
4   A   This is -- this is how oxygen is removed from
5 the water body based on -- based on biological activity
6 at the bottom of the -- at the bed of the lake or at the
7 bed of the river.
8   Q   Okay. So are you able to identify which
9 modeling run of yours this is?
10   A   The Value No. 9 or Reach No. 9, 0.55 is
11 different than that for the Executive Director's, then
12 this is likely my uncalibrated run.
13   Q   So for the SOD for the Executive Director No. 9
14 is 0.63. I'm looking, again, at Exhibit GF-6, Page 5 of
15 9. In Reach 9 the SOD value is 0.63. Do you see that?
16   A   I see that.
17   Q   And looking over to Exhibit GF-7, I'm under
18 Data Type 12, Reach 9, the SOD value here is 0.55. Does
19 that help indicate to you which model run this is?
20   A   It does. I'm reasonably certain this was one
21 of my runs, and it's one of the latter runs. Without
22 having the file name associated with it, it's difficult
23 for me to tell that this for sure the final run.
24   Q   But this is -- are the inputs here consistent
25 with what the parameters were you used in your QUAL-TEX

366

1 modeling for values for depth and values for reaeration
2 rates?
3   A   I believe they're consistent.
4   Q   And would it have been appropriate to adjust
5 the reaeration rates when you adjusted the depths?
6   A   Yes, it could have been -- it was a choice that
7 I made.
8   Q   Was there a basis for your choice to not adjust
9 the reaeration rates when changing the depths?
10   A   I was trying to minimize the number of values
11 that I changed from the TCEQ -- from the TCEQ default.
12   Q   Did you make any evaluation of what the
13 resulting dissolved oxygen would be if the reaeration
14 rates were appropriately adjusted to match the
15 alteration of the depths?
16   A   I did not.
17   Q   Why not?
18   A   The objective of changing the SOD rates in the
19 no load run in the initialization is to minimize the
20 dissolved oxygen that is -- or to -- is to set a
21 baseline condition such that when you run the model with
22 the loaded conditions with the permits applied, as this
23 run is -- I think this run was -- that the -- the sag in
24 dissolved oxygen can be determined.
25   Q   Did you perform any model run at the permit

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1 limits with the adjustments for the depths that you made
2 that also adjusted for the reaeration rates?
3   A   These are the values that I used, assuming this
4 is my final run.
5   Q   So am I to take that that you did not perform
6 any model run that adjusted both the depths and the
7 reaeration rates when you made the change in the depths
8 for the Texas Water Development Board and the data from
9 Mr. Flores?
10   A   If this is the final model run, then this is
11 what I used. I know I changed a number of parameters.
12 I focused on the sediment oxygen demand, and this is
13 the -- if this is the final run and it shows unchanged,
14 then that is true.
15   Q   Okay. So would it be possible that if one were
16 to examine the characteristics of the water body
17 resulting from a discharge at the permitted limits with
18 the depths adjusted as you did with proper reaeration
19 rates, that it would produce in a lower dissolved
20 oxygen?
21   A   I -- these are the -- this is the model run
22 that I produced that I was comfortable with.
23   Q   So you don't know whether the performance of a
24 model run that adjusted both the depths and then,
25 accordingly, adjusted the reaeration rates would produce

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1 a lower dissolved oxygen?
2   A   I do not because if the reaeration rates were
3 adjusted and -- well, if the reaeration -- well, yes.
4 If the reaeration rates were adjusted and sediment
5 oxygen demand was properly reinitialized, I don't know
6 what that result would be.
7   Q   Now would that provide, I guess I'll call it,
8 as accurate a characterization as this model is capable
9 of giving if one were to adjust those reaeration rates
10 when adjusting the depths?
11   A   I'm sorry. What was the question?
12   Q   If one were to adjust the reaeration rates
13 accordingly to the adjustment of the depths and run the
14 model with those adjustments, would that provide an
15 accurate prediction of the expected dissolved oxygen?
16   A   You'd have to calibrate it and understand what
17 the relationship between this uncalibrated model or --
18 well, what the relationship between the predicted values
19 and observed values are, and this model was not compared
20 to observed values.
21   Q   Did you do that?
22   A   Not with this QUAL-TEX model.
23   Q   Okay.
24   (Brief pause)
25   Q   (BY MR. ALLMON) So you don't know whether with

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1 proper reaeration rates the proper -- the predicted
2 dissolved oxygen with this QUAL-TEX model would be less
3 than 3.0?
4   A   I'm sorry. Can you unpack that?
5   Q   Yeah. If one were to run the model adjusting
6 both the depths and the reaeration rates, would it
7 possibly result in a predicted dissolved oxygen of less
8 than 3.0 milligrams per liter?
9   A   I don't know.
10   Q   So you can't rule that out?
11   A   Did you say 3 milligrams per liter?
12   Q   Yes.
13   A   I can't rule that out, but I think it's highly
14 unlikely that this model would show lower values than
15 what it's currently showing.
16   Q   But you did no quantitative analysis to reach
17 that opinion? Is it true that you ran no modeling runs
18 yourself in order to make that determination?
19   A   The modeling runs I ran did show that the
20 dissolved oxygen was greater than the 3 milligrams per
21 liter. The modeling runs I ran showed that the
22 dissolved oxygen was greater than, I believe, 4.8 for
23 the interim condition for these uncalibrated QUAL-TEX
24 runs.
25   Q   So -- and you're referring to your modeling

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1 runs that did not adjust the reaeration rates?
2   A   I'm referring to modeling runs that I reported
3 in my testimony.
4   Q   Okay. Which -- and when we refer to your
5 QUAL-TEX modeling run at permit limits with adjusted
6 depths, that's a modeling run that did not address the
7 reaeration rates?
8   A   If this is the final version, then yes.
9   Q   Okay. And you don't know what the model
10 prediction would be with adjusted reaeration rates until
11 you were to actually run the model. Is that true?
12   A   That's true.
13   Q   Okay. Now you ran some model runs using the
14 QUAL2K model. Is that my -- is that an accurate
15 understanding?
16   A   Yes, QUAL2K.
17   Q   Okay. And does the QUAL2K model only predict
18 impacts on a diurnal scale?
19   A   It does predict on a diurnal scale. It also
20 provides the average.
21   Q   Okay. Does it do it -- give you any values
22 other than -- well, I used the word diurnal. What does
23 diurnal mean?
24   A   Well, diurnal typically refers to a situation
25 that occurs once per day or twice per day. Diel is more

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1 appropriate in discussing something that has a cycle

2 that cycles day-to-day. So it cycles from high to low

3 once per day.

4   Q   So the QUAL2K outputs tell you what the value

5 is over the course of a single -- when I say -- over a

6 single diurnal cycle?

7   A   A diel cycle. Diurnal is --

8   Q   So a 24-hour period, in essence?

9   A   Yes, sir.

10   Q   Okay. Now, did you -- was the data you used

11 to -- and I guess you're using the word initialize your

12 model. Was the data used to initialize the QUAL2K model

13 from September 15th, 19 -- 2021?

14   A   I calibrated the model from September 15th to

15 September 16th based on data from those two days that

16 were collected in the field and based on climate data

17 from September the 15th, 2021.

18   Q   Now so is the model necessarily reflective of

19 conditions that would occur -- is the model necessarily

20 reflective of conditions that would exist that differ

21 from the conditions on that date?

22   A   I'm sorry. I don't understand.

23   Q   Well, essentially, is your model predicting

24 what would happen on September 15th, 2021?

25   A   It's predicting -- yes, it is.

372

1   Q   And so does it give us information as to what

2 would happen under conditions that aren't like those

3 that existed on September 15th, 2021?

4   A   It's capable of doing that provided its given

5 different inputs; for example, different inputs on flow

6 or different inputs on loading.

7   Q   And did you give it those different inputs?

8   A   I did. In --

9   Q   And --

10   (Simultaneous discussion)

11   A   -- modeling runs not all on the same model

12 scenario.

13   Q   (BY MR. ALLMON) And you gave it those

14 different inputs on flow. Did you give it -- when you

15 say flow, are you referring to the loading? Well, let

16 me take two things: With regard to flow, are you

17 referring to flow in the receiving stream?

18   A   Yes. And let me clarify: You asked about a

19 modeling result on a specific day, and that specific day

20 was September 15th and 16th, 2021. And the model was

21 run to match conditions on that day based on inputs that

22 occurred during that day. For example, inflow and water

23 level and mainly the climate, the temperature, and then

24 my effort focused on matching the model predictions to

25 the observations that were available for that day. And

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1 so once the model is set up in a calibrated fashion such

2 that the model can recreate -- the model predictions can

3 recreate the observations, then we can take that model

4 and give it different inputs. And those different

5 inputs are what I referred to earlier as loading so the

6 wastewater treatment plant inflows and the nutrient

7 inputs that are associated with that.

8   Q   Did you look at any day other than September

9 15th and 16th of 2021 in terms of conditions to see if

10 the model would accurately match what happened under

11 those conditions?

12   A   I did not.

13   Q   Okay.

14   (Brief pause)

15   Q   (BY MR. ALLMON) Now I would ask you to look

16 with me --

17   JUDGE STARNES: Mr. Allmon, if we're

18 switching subjects, is this a good time to take a short

19 break?

20   MR. ALLMON: Yes, I am switching subjects,

21 and I'd be fine taking a break at this point.

22   JUDGE STARNES: Okay. Why don't we go off

23 the record and come back in 15 minutes at 3:05.

24   (Recess: 2:50 p.m. to 3:06 p.m.)

25   JUDGE STARNES: Okay. Let's go back on

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1 the record.

2   And, Mr. Allmon, you can continue with

3 your cross.

4   MR. ALLMON: Thank you. And first I do

5 want to offer -- I guess, first of all, offer Exhibit

6 GF-6 that we were just discussing.

7   (Exhibit GF No. 6 offered)

8   JUDGE STARNES: Any discussions?

9   (No response)

10   MR. ALLMON: And then I would also offer

11 Exhibit GF-7 that they were just discussing.

12   (Exhibit GF No. 7 offered)

13   JUDGE STARNES: And any objection to GF-7?

14   (No response)

15   JUDGE STARNES: Okay. Those are both

16 admitted; GF-6 and GF-7 are admitted.

17   (Exhibit GF Nos. 6 and 7 admitted)

18   Q   (BY MR. ALLMON) Okay. Mr. Osting, when did

19 you perform the modeling that was set forth in your

20 testimony?

21   A   Within the last month approximately. Prior to

22 prefiled testimony, the QUAL-TX modeling that I did may

23 have been conducted towards the end of January 2022, and

24 the QUAL2K modeling was conducted during February

25 of 2022.

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1   Q   And when did you make a determination of the
2 input values that you would use for your modeling?
3   A   The input values for the QUAL-TX modeling are
4 the same as those used -- in terms of flows and nutrient
5 loading are the same as those used by TCEQ. The
6 geometry inputs for the QUAL-TX modeling were determined
7 during that time period when I was looking at the
8 QUAL-TX model, which was generally during January.
9   And then the inputs for the QUAL2K model,
10 those were -- some of those were determined towards the
11 end of last year in terms of identifying some --
12 identifying field conditions that would be useful to
13 measure as well as -- well, and then the actual values
14 were determined during February, you know, which inputs,
15 which observations to use, and the accumulation of the
16 inputs occurred generally in February.
17   Q   Okay. That would have been after February 4th?
18   A   Oh, I don't know the exact date, but roughly.
19   Q   Okay. Now, let me ask you to look at
20 Exhibit 607. I'm going to go ahead and share that here.
21   Do you have that in front of you at this
22 point?
23   A   I have Exhibit 607.
24   Q   And that is Table 4 and Table 5?
25   A   Yes.

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1   Q   And that's your updated QUAL-TX uncalibrated
2 runs?
3   A   Yes.
4   Q   I understand the upper table is for the 1.0 mgd
5 phase, and the lower table is for the 2.0 mgd phase?
6   A   Yes.
7   Q   And do these still predict DO average values
8 beneath 5.0?
9   A   The average in the middle of the cove of
10 Table 4 is 4.82, and that of Table 5 shows 4.95.
11   Q   And you'll agree those values are less than
12 5.0?
13   A   Those values are less than 5.0.
14   Q   And now, you have some columns here indicating
15 Lake there. Are you intending to represent the
16 concentration of DO in the lake?
17   A   No, sir. That's the concentration in the cove
18 closest to the lake, so at the most downstream area of
19 the cove model or of this QUAL-TX model, and that
20 location was shown on another exhibit.
21   Q   Okay. And perhaps if we -- there we are.
22   Are we looking at Figure 3? I believe
23 in this Figure 3 here on PDF Page 4 of your exhibit
24 packet represents what you were just describing kind of
25 the downstream boundary of your model?

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1   A   Yes, Figure 3 in I think -- well, in
2 Exhibit 605 I believe this is. It does represent the
3 downstream boundary. The other figure has a segment in
4 it that shows the segments.
5   Q   When you say "other figure," are you discussing
6 COG Exhibit 605?
7   A   Yes, the white outline towards the left.
8   Q   Okay. So does this -- what is the farthest
9 then to the lake that you reached?
10   A   At the left of the model or at the left of that
11 image at the end of the white reach boundary.
12   Q   Okay. Now, were you here for the testimony of
13 Mr. -- and I may mispronounce -- Michalk of the
14 Executive Director's office?
15   A   I was, yes.
16   Q   And do you recall his testimony that in order
17 to calibrate a model the TCEQ would perform a dye tracer
18 study?
19   A   I heard his testimony.
20   Q   Did the City of Granbury -- did the City of
21 Granbury perform any dye tracer study in calibrating the
22 models used?
23   A   They did not perform a dye tracer study for
24 this project. However, dye tracer studies were
25 performed by me in Lake Granbury at various times.

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1   Q   But did you use any data from those dye tracer
2 studies in calibrating the model for your work in this
3 case?
4   A   I used the results and the dispersion values
5 for comparable coves in this model.
6   Q   But did you have any values that were
7 specifically for Rucker Creek Cove?
8   A   I did not.
9   Q   Has the Executive Director reviewed -- have you
10 provided your runs to the Executive Director for the
11 Executive Director's review?
12   A   I'm unaware of whether they reviewed them or
13 not. I believe they've been provided.
14   Q   Were they provided to the Executive Director as
15 part of the technical review process for this permit?
16   A   No.
17   Q   And why were those modeling runs not performed
18 during the technical review stage of the permitting
19 process?
20   A   I wasn't retained until after the draft permit
21 was issued.
22   Q   So when were you retained?
23   A   It was after the draft permit was issued in --
24 it was -- I don't recall exactly. Last fall.
25   MR. ALLMON: All right. Your Honor,

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1 that's all of my questions at this time for the witness.

2 I pass the witness.

3   JUDGE STARNES: Okay. Mr. Booth, are

4 there any questions for the Rists and Bennetts?

5   MR. BOOTH: Just a couple.

6   CROSS-EXAMINATION

7 BY MR. BOOTH:

8   Q   Mr. Osting, I am looking at your prefiled

9 testimony on Page 33, line -- we don't have lines -- but

10 where you talk about chlorophyll a concentrations of

11 400 micrograms per liter. Do you see that?

12   A   Yes, sir, I see that.

13   Q   That seems like an incredibly high reading.

14 Would you agree with me on that?

15   A   That's a -- that's relatively high, yes.

16   Q   I mean, some people -- my expert said that's

17 equivalent to a mass of algae.

18   Would you have any independent knowledge

19 of that one way or the other?

20   A   I think that is a high level of algae.

21   Q   And that's what your model is predicting?

22   A   That modeled scenario under a very low flow

23 stagnant condition allows for development of that much

24 algae.

25   Q   Okay. We'll come back to that.

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1   But you're saying "Lake" here. Do you

2 mean just the closest part of your Rucker Cove to the

3 lake that you were talking to Mr. Allmon about, it's a

4 "high algal production in the lake with chlorophyll-a

5 concentrations"?

6   A   Yes, sir. So you're looking at one specific

7 scenario out of many different scenarios that I

8 performed. That one specific scenario was using the

9 calibrated QUAL2K model, it was using it for a low lake

10 level condition to address one of the Protestants, and

11 it was for a condition that does not include the

12 wastewater treatment plant. So it was for a relatively

13 natural condition that would have persisted for a very

14 long time because that's the nature of the way the model

15 runs.

16   And so if allowed to persist, that

17 condition for a very long time, you'd expect that there

18 would be a very high chlorophyll a concentration and at

19 400 micrograms per liter is a possibility.

20   Q   Okay. What part of the lake would this be

21 predicting this type of chlorophyll a concentration?

22   A   This would have been close, it would have been

23 in the middle of the cove towards the end of where the

24 model boundary is, the most downstream location.

25   Q   Okay. And then if that's what your modeling is

381

1 predicting and you put in a load, aren't you going to

2 make it worse?

3   A   No. In fact, the model showed exactly the

4 opposite because --

5   Q   Yeah, that's what bothers me about the model.

6   Why -- how does that work? I interrupted

7 you. Go ahead and explain.

8   A   Yeah, so the model -- the model considers many

9 different factors, which is the reason we use the model

10 so we can evaluate many different factors at the same

11 time. And so the model result after you put in the

12 wastewater treatment plant, after you put in the

13 wastewater load, shows that the velocity increases, and

14 the increase in velocity and the increase in circulation

15 results in a lower chlorophyll a concentration, and that

16 chlorophyll a concentration is within the range -- I

17 believe it was between 25 and 30 -- of what are typical

18 values in the lake in that area. So it's not outside

19 the range of typical values.

20   Q   400 isn't a typical value. Right?

21   A   I don't know in that cove, and I don't know

22 during that time period conditions in 2013 because there

23 was no data that was available for this area.

24   Q   And so how did you model it if there was no

25 data for this area?

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1   A   There was no chlorophyll a data to compare the

2 modeled result to.

3   Q   I see. And your calibration runs September --

4 the middle of September 2021?

5   A   Yes, sir, that's right, at a full lake level.

6   Q   Okay. So you're saying that the 1 mgd of

7 effluent is enough dilution that you're not going to

8 increase the chlorophyll a or the -- let's say the

9 nitrogen and the phosphorus in the lake, let's say at

10 the end of the cove?

11   A   The amount of nitrogen and phosphorus that

12 comes out of plants during both the interim and the

13 final phase will increase the nitrogen and will increase

14 the phosphorus in the Rucker Creek Cove, and the

15 concentrations and the changes in those concentrations

16 were shown in the model.

17   The impact, though, of that change in

18 phosphorus and nitrogen, the impact of that on the

19 chlorophyll a is -- is also a function of the mixing,

20 and it's a function of other factors that are considered

21 in the model, including the -- including --

22   Q   What kind of mix -- what kind of mixing are you

23 getting at low flow conditions or low lake level

24 conditions? Go ahead.

25   A   It's -- so in the model, we specified

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1 dispersion, and that is a -- that is an indicator of how
2 much dispersion there is, and to some degree how much
3 mixing there is. It's a limited value of mixing. It is
4 low level mixing even with those -- even with the
5 additional flow from the plant, but it is significant
6 enough to change the -- to change the character of
7 the -- or the concentration of the chlorophyll a.
8   Q   In your opinion?
9   A   Based on the model results, yes.
10   Q   Okay. I'm going to have you look further down
11 here on -- of your prefiled testimony on Page 35. And
12 at the top of the page, you're talking about golden
13 algae, and I don't know whether you talked about
14 cyanobacteria.
15   Have you looked at the most recent BRA
16 data showing that there's cyanobacteria in the lake?
17   A   I have not, no.
18   Q   Go ahead. No?
19   Okay. Have you looked at any data about
20 cyanobacteria?
21   A   Yes, I have.
22   Q   Okay. But you've not looked any -- at any
23 event data about Lake Granbury?
24   A   I'm not aware of any very recent data from the
25 Brazos River Authority about -- about that in Lake

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1 Granbury.
2   Q   Okay. I'm almost finished.
3   Are you aware that cyanobacteria does more
4 than -- pardon me -- clog fish gills?
5   A   I'm aware the cyanobacteria sometimes produces
6 toxins.
7   Q   Do you recall any of the -- what part of the
8 state do you live in, if I might ask?
9   A   I live in Buda, Texas.
10   Q   Buda, Texas. All right. I don't live far from
11 there.
12   Did you happen to read about the dogs that
13 died from drinking too much Lake LBJ water -- or Lady
14 Bird Lake water?
15   A   I read about some dogs that died.
16   Q   Yeah. Okay.
17   MR. BOOTH: All righty. That's all the
18 questions I have.
19   JUDGE STARNES: Okay. Mr. Hill, do you
20 have any redirect?
21   MR. HILL: I do have a little redirect,
22 Your Honor.
23   REDIRECT EXAMINATION
24 BY MR. HILL:
25   Q   Mr. Osting, you were -- you were talking with

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1 Mr. Allmon earlier about a couple of documents that he
2 had in front of you that looked like model runs. I
3 think you labeled them Exhibit 6 and Exhibit 7. I
4 apologize.
5   Do you recall that discussion?
6   A   I do recall that discussion and those exhibits.
7   Q   Okay. There was a -- you guys talked about --
8 or at least, you know, there was discussion about the
9 nature of critical conditions and your assumptions in
10 that discussion, and particularly there was particular
11 emphasis or interest on Mr. Allmon's part about the
12 relevance of September 15.
13   Can you kind of explain what the
14 significance is of that local actual site-observed data
15 that was collected on September 15 and 16, 2021 and what
16 that means to the overall reliability of your modeling
17 results?
18   A   Sure. So relative to the exhibits that
19 Mr. Allmon produced, there's -- the data from
20 September 15 was not used in those uncalibrated models,
21 rather that data was used in the calibrated QUAL2K
22 models. And so relative to the exhibits in the
23 uncalibrated QUAL-TX models that focused on low flow
24 critical conditions, you know, those are consistent with
25 hot summertime conditions, the summer being three months

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1 of the year when it is hottest and there's -- the high
2 air temperature results in high water temperature and
3 there's generally low flow conditions. Those model runs
4 were the uncalibrated QUAL-TX models.
5   When we talked about the days in
6 September, those days were consistent with the days that
7 TCEQ or anyone would consider comparable to low flow
8 critical conditions. Those days in September did have a
9 low inflow, it did have hot temperatures. I used
10 observations during those days to calibrate the QUAL2K
11 model that I used to evaluate the diurnal variability
12 and evaluate the chlorophyll a.
13   And so the -- and so, you know, those --
14 the data that was developed on those two days was used
15 in conjunction with other data from the SWQM database in
16 the lake and -- well, just other data in the SWQM
17 database to confirm those model results from that time
18 period, you know, that were surrounding the
19 September 15th date and September 16th dates that
20 Mr. Flores was on site.
21   Q   So September 15, there's nothing magical about
22 that data necessarily, as I understand it, it is just a
23 date that falls into the critical conditions period. Is
24 that correct?
25   A   It is a date that falls into the critical

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1 conditions period, and it is a -- it did exhibit
2 characteristics of a day that would be inside critical
3 conditions because it had hot temperatures and it had
4 low flows. And that was a good day to use the climate
5 data and the sunlight data for the chlorophyll a model,
6 the QUAL2K calibrated model, that I calibrated and
7 matched the predictions to the observations that were
8 collected on those days and on adjacent days.
9   Q   And that process and that methodology you just
10 described, that's consistent with the SWQM procedures?
11   A   That procedure is consistent with a typical
12 calibration approach where you would calibrate the model
13 to observe conditions. It's not consistent with the
14 typical approach used. It's a step beyond the typical
15 uncalibrated model approach, which is more conservative
16 that TCEQ uses for evaluating permits.
17   Q   The modeling approach you just described you
18 said is more conservative than the approach the TCEQ
19 takes in reviewing applications?
20   A   I'm sorry. I said TCEQ's approach is more
21 conservative in that it does not look at -- it does not
22 look at the algae which tends to increase the average
23 dissolved oxygen. So TCEQ's approach is more
24 conservative than the approach that I used with the
25 QUAL2K model, which is still conservative.

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1   Q   Why the differentiation?
2   A   Because the -- because I calibrated the QUAL2K
3 model, and that was the model that I focused my
4 calibration on, and that was the model that I produced
5 results for for the diurnal dissolved oxygen for the
6 chlorophyll a and because that model was calibrated and
7 it does result in higher average dissolved oxygen
8 content than the uncalibrated models that the TCEQ
9 identified for the critical conditions.
10   Q   Make sure and get me set straight here if I
11 have this wrong, but as I understood Mr. Michalk's
12 prefiled testimony and I think also his live testimony
13 in the -- in the absence of that ability or the staff's
14 calibration of their QUAL-TX, when you say that it's a
15 more conservative run, what I understood Mr. Michalk to
16 say was that means it overstates what the anticipated
17 impacts would be for those -- for those discharges.
18   Did I get that right?
19   A   That's correct. Conservatism would mean that
20 it overstates the potential impact.
21   Q   And so the relative conservatism, so to speak,
22 between the QUAL-TX modeling that the TCEQ staff did and
23 the QUAL-TX modeling that you did was because you were
24 able to collect site-specific observed data to taylor
25 fit the model that you were running. Is that right?

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1   A   Yes. I taylor fit the QUAL2K model based on
2 the observed data.
3   Q   Okay. I'm going to ask you -- there was a
4 question about dye tracing studies in Lake Granbury, and
5 you had mentioned that you had been a part of that.
6   Is that -- was that in your role in
7 working on the Watershed Protection Plan?
8   A   Yes, that was. As part of that Watershed
9 Protection Planning Project, I was -- I was the project
10 manager for all the modeling that was conducted in that
11 project. And as part of that, we conducted dye tracing
12 studies in I believe it was six or eight different coves
13 that were across a wide range of different types of
14 coves, very constricted coves, very narrow and that do
15 not have a stream flow into the top, ranging from that
16 more restrictive cove to coves that were less
17 restrictive like the Sparkle Creek Cove that have a --
18 that have a creek flow, a watershed associated with them
19 at the top end.
20   And so across that range of different
21 types of waterbodies on Lake Granbury, the different
22 types of coves, we conducted a dye trace at each of
23 those different types so we could understand what the
24 dispersion was, and Rucker Creek fits into one of those
25 types that we conducted the dye tracing studies on.

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1   Q   And I think you said that there weren't any
2 values collected -- dye tracing values collected
3 specifically for Rucker Cove. Did I understand that
4 right?
5   A   That's correct.
6   Q   But does that mean that the information that
7 you were able to learn is not useful, or was that
8 information you think helpful in reflecting
9 representative conditions in the cove?
10   A   That information is very useful for
11 representing the conditions in the cove and specifically
12 for studying the dispersion coefficients inside the
13 calibrated QUAL2K model. And it shows that the
14 dispersion coefficients could be higher, and that the
15 dispersion coefficients used by TCEQ are conservative
16 for the type of cove that Rucker Creek is.
17   MR. HILL: Mr. Osting, I appreciate your
18 testimony. I pass the witness.
19   JUDGE STARNES: Okay. Does the Executive
20 Director have any recross?
21   MR. TATU: No recross, Your Honor. Thank
22 you.
23   JUDGE STARNES: Okay. Mr. Arthur, how
24 about OPIC?
25   MR. ARTHUR: No, Your Honor.

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1   JUDGE STARNES: All right. Mr. Allmon?

2   MR. ALLMON: Just maybe a few questions.

3   RECROSS-EXAMINATION

4 BY MR. ALLMON:

5   Q   Mr. Osting, on redirect you were asked some

6 questions about Rucker Creek and the character of these

7 coves and your work on the Watershed Protection Plan.

8 Do you recall that?

9   A   I recall that.

10   Q   And I think you used the word "restricted" at

11 one point. Do you recall that?

12   A   I recall that.

13   Q   Now, is the circulation between the coves of

14 Lake Granbury and the main body of Lake Granbury

15 restricted in some ways?

16   A   Not any differently than any other cove in Lake

17 Granbury that has a natural -- a morphology to it. When

18 I referred to restricted coves, I was referring to like

19 t-canals or dead-end canals that are very narrow and

20 that are very shallow and that have houses built right

21 up to the edge such that there's very tall banks.

22   Q   In the Watershed Protection Plan, was it

23 concluded that many of the coves around Lake Granbury

24 have only limited mixing with the main body?

25   A   The level of mixing was evaluated using that --

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1 the dispersion study.

2   Q   And was that found to be very limited under

3 some circumstances?

4   A   The dispersion values speak for themselves in

5 that the lower values are -- indicate less mixing with

6 the lake and higher values indicate more mixing with the

7 lake.

8   MR. ALLMON: All right. That's all my

9 questions for the witness. I pass the witness.

10   JUDGE STARNES: All right. Mr. Booth?

11   RECROSS-EXAMINATION

12 BY MR. BOOTH:

13   Q   Mr. Osting, do you agree with me that a

14 waterbody with a lot of algae, not only increases the

15 dissolved oxygen, but at night it decreases the

16 dissolved oxygen?

17   A   It depends on the details of the specific

18 location, but the -- that is generally the way that

19 organisms that use chlorophyll to photosynthesize do

20 tend to produce oxygen during the day, and they expire

21 at night and use oxygen at night.

22   MR. BOOTH: Okay. Thank you. No further

23 questions.

24   JUDGE STARNES: Thank you. That concludes

25 your testimony. I appreciate you being available. You

393

1 are excused, and I hope you get on with your day.

2   THE WITNESS: Thank you.

3   JUDGE STARNES: Thank you, Mr. Osting.

4   Okay. We are -- it's 3:40. I guess let

5 me ask how long the parties think Mr. Flores is going to

6 take. Should we start him today? Can we get through

7 him today? How much longer do you think we're going to

8 take with the last couple of witnesses?

9   MR. HILL: Your Honor, I'd like to try to

10 get Mr. Flores started today, if we could.

11   JUDGE STARNES: Okay. All right. Is he

12 going to --

13   MR. BOOTH: That makes sense.

14   JUDGE STARNES: Okay. Is he going to pop

15 in the room where Mr. Osting just left us?

16   MR. HILL: That's the theory.

17   JUDGE STARNES: I'm imagining an assembly

18 line in the hallway where they are sort of high-fiving

19 as one leaves and the next comes in to take the hot

20 seat.

21   MR. HILL: I'm checking on his status,

22 Your Honor.

23   JUDGE STARNES: Sure.

24   MR. FLORES: Hello.

25   JUDGE STARNES: There we go.

394

1   MR. FLORES: Hello. I apologize. This

2 mouse is not what I'm used to. So there could be some

3 weirdness with me. Sorry.

4   JUDGE STARNES: Okay. Are you able to

5 hear us okay?

6   MR. FLORES: Huh?

7   JUDGE STARNES: Are you able to hear me

8 okay?

9   MR. FLORES: I am, yes.

10   JUDGE STARNES: All right. Let me get you

11 under oath if you'll raise your right hand.

12   (Witness sworn)

13   JUDGE STARNES: Okay. Thank you.

14   Go ahead, Mr. Hill, your witness.

15   MR. HILL: Thank you, Judge.

16   DAVID FLORES,

17 having been first duly sworn, testified as follows:

18   DIRECT EXAMINATION

19 BY MR. HILL:

20   Q   Good afternoon, Mr. Flores.

21   A   Good afternoon.

22   Q   You should have in front of you a series of

23 exhibits that I'll read off here. You should have COG

24 Exhibit 700 and then COG Exhibit 701, 702, 703, 704,

25 705, 706 and 707.

395

1   Do you find all those exhibits in front of
2 you?
3   **A   Yes, I do.**
4   Q   Do you recognize COG Exhibit 700 as your
5 prefiled testimony?
6   **A   I do.**
7   Q   And then the series of exhibits that I just
8 read off are incorporated into your testimony. Is that
9 right?
10   **A   That is correct.**
11   Q   Mr. Flores, do you adopt COG Exhibit 700 as
12 your prefiled testimony as though you were giving it
13 live on the stand in front of the Judge under oath
14 today?
15   **A   I do.**
16   MR. HILL: Your Honor, the City offers up
17 COG Exhibit 700 and COG Exhibit 701, 702, 703, 704, 705,
18 706 and 707 for admission into the record.
19   (Exhibit COG Nos. 700 through 707 offered)
20   JUDGE STARNES: Okay. I'll just state for
21 the record that there were some objections to
22 Exhibit 700 that were overruled at the prehearing
23 conference last week. I don't believe there are any
24 objections to 701 through 707.
25   I'll ask the parties now if there's

396

1 anything else they need to object to on the record with
2 regard to these exhibits?
3   (No response)
4   JUDGE STARNES: Okay. And with no
5 objections or no additional objections, Exhibits COG-700
6 through 707 are all admitted.
7   (Exhibit COG Nos. 700 through 707
8   admitted)
9   MR. HILL: Thank you, Judge. I pass the
10 witness.
11   JUDGE STARNES: Okay. Does the Executive
12 Director have any questions, Mr. Tatu?
13   MR. TATU: Yes, a few questions, Your
14 Honor. Thank you.
15   JUDGE STARNES: Okay.
16   CROSS-EXAMINATION
17 BY MR. TATU:
18   Q   Good afternoon, Mr. Flores.
19   **A   Good afternoon.**
20   Q   I saw from your prefiled testimony that you
21 worked at the TCEQ. Is that correct?
22   **A   Yes, I worked under Mark Fisher and Jim**
23 **Davenport on the water quality standards team.**
24   Q   Okay. So did you -- did you do any 401
25 certifications, that type of work, for Mark or --

397

1   **A   I did.**
2   Q   Did we ever work together? Because I don't
3 remember that.
4   **A   I'm not sure. That was a while ago in my**
5 **career.**
6   Q   Yeah, yeah, same here.
7   Okay. I wanted to ask you this based on
8 your experience working at TCEQ: There was some
9 discussion yesterday about use of the Texas Integrated
10 Reports.
11   Do you -- were you present for that at
12 all?
13   **A   I was.**
14   Q   Okay. In your experience, would TCEQ typically
15 use a draft version of the Texas Integrated Report
16 for -- or during the review of a permit application?
17   **A   They would not.**
18   Q   Do you know what version of the Texas
19 Integrated Report was applicable to this application for
20 Granbury?
21   **A   I believe that I looked at the 2018 and 2020**
22 **when I was doing my review, but I know that the**
23 **application was submitted before my hire date.**
24   Q   Okay. Do you know if Lake Granbury or Rucker
25 Creek were listed as impaired for any parameters of

398

1 concern in the 2016 Texas Integrated Report?
2   **A   No, they were not.**
3   Q   I just wanted to ask you a couple of questions
4 about your prefiled.
5   You used the term "enhanced effluent set."
6   **A   Uh-huh.**
7   Q   Can you explain a little bit what that means?
8   **A   That's really just a description of what**
9 **effluent set is included in the draft permit that I used**
10 **to do my analysis.**
11   Q   Okay. And yesterday there was some discussion
12 regarding the E. coli limits in the permit. Do you
13 recall that?
14   **A   I do.**
15   Q   Do you know what the E. coli limits are for
16 this draft permit?
17   **A   It's 126 coliform MPN I think is the unit**
18 **that's used.**
19   Q   Okay. And how would you characterize that
20 limit? Is that a high limit, a low limit or a standard?
21   **A   That's a standard limit that I've seen applied**
22 **across the state.**
23   Q   Did you ever work on any permits when you were
24 at the TCEQ that had stricter limits than that?
25   **A   I did not.**

399

1   MR. TATU: I don't have any further
2 questions. Thank you.
3   JUDGE STARNES: Okay. How about OPIC,
4 Mr. Arthur?
5   MS. PESONEN: I have no questions.
6   MR. ARTHUR: Your Honor, this will be my
7 co-counsel.
8   JUDGE STARNES: Okay. Ms. Pesonen, sorry.
9   MS. PESONEN: Your Honor, I have no
10 questions for this witness. So I pass the witness.
11   JUDGE STARNES: Okay. How about our
12 Protestants?
13   MR. BOOTH: Yes, we have a few questions.
14   JUDGE STARNES: Okay.
15   CROSS-EXAMINATION
16 BY MR. BOOTH:
17   Q   Mr. Flores, I'm Mike Booth. I represent the
18 Rists and Bennett RV Park.
19   You mentioned that you have never worked
20 on a wastewater treatment plant permit with stricter
21 effluent sets than this one. Is that correct?
22   A   No. What I said was regarding the E. coli
23 permit I've never seen an E. coli permit before.
24   Q   Okay. Okay. Have you ever seen a phosphorus
25 and a total nitrogen permit limit -- well, this one

400

1 doesn't have a nitrogen, but just a total phosphorus
2 permit limit lower than the one that's proposed here?
3   A   You asked me if I had ever seen one?
4   Q   Yes.
5   A   I haven't seen one.
6   Q   Okay. Now, would you use a draft report that
7 your own agency is producing that shows there's an
8 existing problem when you're development -- developing
9 permit limits?
10   A   I'm sorry. You kind of lost me, Mr. Booth.
11 Can you ask that --
12   Q   Okay. The Executive Director asked you if it
13 was your experience to use draft reports --
14   A   Uh-huh.
15   Q   -- and you said no.
16   A   Uh-huh.
17   Q   But if you knew that there was a new report
18 coming from your own agency that showed that the
19 conditions on the lake had changed for the worse,
20 wouldn't you consider those?
21   A   No. The question that was asked to me before
22 was an example of when I worked at the State. And so a
23 regulatory agency typically will not use draft
24 documents.
25   Q   I'm not asking about a regulatory agency. I

401

1 was asking you about what you would do if you were a
2 permit writer.
3   A   I'm not a permit writer, so I don't see how
4 that theoretical is relevant.
5   Q   Okay. So you think that if you were working at
6 the State that it's your experience that the State
7 agency will ignore problems that they know exist and go
8 back and look at old records to develop permit limits,
9 effluent limits?
10   A   Mr. Booth, what you just explained is not
11 consistent to what I said. Can you ask the statement
12 again?
13   Q   Well, what did -- what did you say when you
14 were asking -- or answering the Executive Director's
15 question? Maybe I did misunderstand.
16   A   Yeah, so -- so I was asked at my time at the
17 agency would we have used a draft report document in our
18 analysis, and my answer was no.
19   Q   Okay. Even if -- and my question is: Even if
20 you knew that there was a problem in your new report
21 that's still draft, you would not use it?
22   A   Right, because the agency -- at the agency,
23 you're required to use finalized documents that have
24 gone through the agency review processes. They have to
25 be finalized.

402

1   Q   Well, you could look at water quality data
2 that's not part of a document. Correct?
3   A   Absolutely; water quality data is completely
4 separate of that document, sure.
5   Q   Okay. Well, wasn't that document based on
6 water quality data?
7   A   Which document are we talking about?
8   Q   We're talking about the draft report that the
9 ED attorney was talking to you about.
10   A   Okay. So that draft report is absolutely based
11 on water quality data, but that water quality data is
12 compiled from various water quality stations.
13   Q   Okay. And who compiles that data?
14   A   The State of Texas does in their surface water
15 quality monitoring database.
16   Q   Okay. When were you hired to work on this
17 case?
18   A   I believe it was maybe August, September. I
19 don't know the exact date.
20   Q   Of 2021?
21   A   Yes.
22   Q   Okay. So I take it when you were doing your
23 stream analysis or your analysis of Rucker Creek you
24 walked down the creek bed?
25   A   Yes, sir, that was definitely part of it.

403

1   Q   You didn't trespass on anybody's land, did you?
2   **A   I did not.**
3   Q   Okay. I didn't think you did by your -- by
4 your mapping.
5   Okay. Let me -- I have a document that we
6 had put in the exhibit stack. Do you have that, Madam
7 Court Reporter Amanda?
8   **A   Are you asking me? I'm sorry. What exhibit?**
9   MR. BOOTH: I'm sorry. I'm asking -- I
10 have Rist Exhibit 3 that we have sent in for you to look
11 at.
12   **A   I'm not sure if I have it.**
13   MR. BOOTH: Well, no, I'm not talking to
14 you, Mr. Flores. I'll show you what that document is.
15 Let me just go ahead and do that. I don't -- who is in
16 charge of getting these new documents?
17   Q   (BY MR. BOOTH) Mr. Flores, are you familiar
18 with this manual here? Let me get to the top.
19   **A   I am not familiar with that.**
20   Q   Okay. Does it look like an EPA Manual to you?
21   **A   The title says that.**
22   Q   Yeah. So when you're -- later on we'll talk
23 about it in more detail, but in your prefiled testimony,
24 you said that you have a certain way of doing
25 antidegradation. Is that correct?

404

1   **A   I'm sorry. You kind of went a little quiet.**
2 **Can you restate that?**
3   Q   You have your own way -- you said in your
4 prefiled you have your own way in looking at an
5 antidegradation review. Is that correct?
6   **A   Yes; I have a specific approach, yes.**
7   Q   And we'll get to that part of your testimony in
8 just a second.
9   So is this Tier 2 implementation I'm
10 showing you consistent with the way that the Commission
11 looks at antidegradation in their implementation
12 procedures?
13   **A   If you can give me a few minutes to read**
14 **through this, I can attempt to give you an answer.**
15   Q   Okay.
16   **A   Whoever is scrolling, can they stop scrolling**
17 **and go back up?**
18   Q   I'm scrolling it. There you go.
19   Now, really my question to you, is this
20 generally consistent with what the State does knowing
21 that there might be some minor changes?
22   **A   Yeah, to me your question is conflicting right**
23 **off the bat.**
24   Q   And how is that?
25   **A   Because you're asking me if it's similar to the**

405

1 **State's, but it's not the State's approach, and then you**
2 **just recognized the difference.**
3   Q   No. I said with some minor changes.
4   **A   I don't know what minor changes are. If you**
5 **want to talk about the Tier 2 antideg, let's go to the**
6 **water quality standards for the State.**
7   Q   Okay. Does the TCEQ have to follow EPA
8 guidelines when they --
9   **A   The water quality standards have to be approved**
10 **by EPA.**
11   Q   Okay. And this is where EPA is giving the
12 State guidance. Is that correct?
13   **A   I'm sorry. I don't understand your question.**
14   Q   Is this document the one -- one of the
15 documents that gives the State's guidance on writing
16 permits?
17   **A   I'm not -- I'm not sure. I'm not a permit**
18 **writer.**
19   Q   Okay. Do you get involved in the
20 antidegradation review?
21   **A   I absolutely get involved in antidegradation**
22 **reviews, yes.**
23   Q   Is there anything that you read there, stuff
24 that that you would be -- or things that you would be
25 following when you do an antidegradation review?

406

1   **A   When we're doing an antidegradation review in**
2 **the state of Texas, we're following the Texas water**
3 **quality standards.**
4   MR. BOOTH: Okay. Well, I'm going to ask
5 for this document to be admitted, it's self-proving, and
6 it will be Bennett Exhibit 3.
7   (Exhibit Rist and Bennett No. 3 offered)
8   JUDGE STARNES: Does anybody object?
9   (No response)
10   JUDGE STARNES: Okay. Then I guess this
11 is Rist and Bennett Exhibit 3.
12   Can you go back to the title page so I can
13 get that?
14   MR. BOOTH: Yes, ma'am. Yes, ma'am.
15 Sorry. Let me get to it.
16   JUDGE STARNES: Okay.
17   MR. BOOTH: It was dated --
18   THE REPORTER: I'm sorry. Mr. Booth, can
19 you state -- it was dated when?
20   MR. BOOTH: September 2010.
21   JUDGE STARNES: Okay. And then I still
22 can't see the title. Can you scroll up just a tad? It
23 was the NPDES Permit Writers' Manual. Thank you.
24   Okay. So that is admitted.
25   (Exhibit Rist and Bennett No. 3 admitted)

407

1   MR. BOOTH: Thank you.
2   Q   (BY MR. BOOTH) While I have my screen shared,
3 Mr. Flores, do you recognize this document?
4   A   Yes.
5   MR. BOOTH: Okay. This is out of the
6 administrative record for everyone's reference.
7   Q   (BY MR. BOOTH) And I want to ask you a couple
8 questions about it.
9   A   Okay.
10   Q   Now, just generally what is the Ana-Lab report
11 here that we're looking at?
12   A   It's a report of water quality analysis that
13 Ana-Lab performed on water samples I collected.
14   Q   And you collected this for Rucker Creek and
15 Rucker Creek Cove, as I understand it?
16   A   Yes, and there was a -- there were three
17 samples, and so there were essentially two taken in
18 Rucker Creek Cove. One was close to the confluence of
19 where Rucker Creek and the cove confluenced.
20   Q   Okay. And they are titled here Cove_Rucker,
21 Cove, Cove, and that's it.
22   A   Yes.
23   Q   Okay. What is -- now, these were samples that
24 you took in your fieldwork that you mentioned in your
25 prefiled testimony?

408

1   A   Yes, sir.
2   Q   Okay. Now, what is the result here for total
3 phosphorus?
4   A   .07.
5   Q   And that's milligrams -- milligrams per liter?
6   A   That's what it states, yes.
7   Q   Okay. And this is .118 milligrams per liter?
8   A   Yes, that's what it states.
9   MR. BOOTH: I presume y'all are seeing my
10 cursor when I do this. I'm still new at this.
11   Q   (BY MR. BOOTH) And this states -- where is the
12 phosphorus? This is in the total for -- no, that's not
13 it either. Did you not take -- oh, here you go.
14   This is .115. Is that correct?
15   A   Yes.
16   Q   Good enough.
17   All right. Now, how would you calculate
18 one of these, let's say, of .115 if you wanted to say it
19 in micrograms per liter? What would that be, just
20 115 micrograms per liter?
21   A   Are you asking me for -- I guess I don't
22 understand what you're asking.
23   Q   This is in milligrams per liter?
24   A   Yes, sir.
25   Q   What would that be in micrograms per liter?

409

1 Isn't that micrograms right here, mg/L?
2   A   Yes.
3   Q   So that would be 115 micrograms per liter?
4   A   Yeah, I guess I'm not understanding. You're
5 asking me to do a conversion?
6   Q   I believe that's what I'm trying to do.
7   A   I wouldn't do it I guess off the cuff I guess
8 is what you're asking me to do.
9   Q   Okay. Well, I mean, it's a mathematical
10 conversion. Isn't that right?
11   A   It is a mathematical conversion, absolutely.
12   Q   It is what it is.
13   Okay. Let's go back to -- does that
14 represent all the -- we were just looking at the lab
15 results.
16   Is that all the water quality data you
17 took when you were doing your site-specific visits?
18   A   No. There was -- there was one more sample
19 that was collected in September.
20   Q   Okay. But I mean, as far as the constituents,
21 the nitrogen, the ammonia nitrogen and so forth?
22   A   Yes, the list of analysis, yes, sir.
23   Q   Yeah, okay.
24   Now, so you agree it says on Page 19,
25 Line 17 to 20, that -- you agree that we need to try to

410

1 reduce phosphorus for Rucker Creek?
2   A   What document are we talking about? There's
3 not a document on my screen, Mr. Booth.
4   Q   Okay. It's your prefiled testimony.
5   A   Okay. I'm going flip to it real quick.
6   Q   Okay. Page 19 --
7   A   19.
8   Q   -- at the bottom of the page.
9   A   Okay. So what were you specifically asking?
10   Q   I was asking you if you believe that phosphorus
11 needs to be reduced in Rucker Creek and Rucker Creek
12 Cove, and so you agree with the Commission's
13 recommendation for a phosphorus limit?
14   A   Yes, I did agree with the Commission's
15 recommendation --
16   Q   Okay.
17   A   -- these recommendations.
18   Q   What was the basis for your concern about the
19 phosphorus loading on Rucker Creek and the cove?
20   A   My statement was more of a general statement
21 agreeing that nutrients from wastewater dischargers
22 should be reduced and limited if possible.
23   Q   Okay. Wouldn't the same thing apply for
24 nitrogen?
25   A   That's a site-specific or a case-specific

411

1 determination. Typically freshwater systems are
2 phosphorus limited.
3   Q   And you lay out in several pages of your
4 prefiled, I think probably starting at 22 -- Page 22, a
5 particular approach that you use when you look at
6 antidegradation.
7   Would you say that the Commission agrees
8 with your way you looked at things here in the
9 antidegradation review, or is this something that you
10 developed yourself?
11   A   I can't speak to whether TCEQ agrees or not,
12 but there are absolutely similarities between how they
13 perform their antidegradation review and how I conduct
14 mine, sure.
15   Q   And you don't agree with what the Court did in
16 the Dripping Springs case I say -- I see?
17   A   Absolutely not.
18   Q   Okay. So did the Commission look at Rucker's
19 Creek and Rucker's Creek Cove for antidegradation review
20 like you did, or do you even -- did you even look at it?
21   A   I'm sorry. There were -- can you unpackage
22 that or restate what --
23   Q   Okay. Did you look at the way the Commission
24 did their antidegradation review?
25   A   I reviewed the technical memos.

412

1   Q   Okay. Did you do your antidegradation review
2 the same way?
3   A   Again, I felt like I answered this before.
4 There are some similarities, but we do differ in our
5 approaches.
6   Q   So the answer is no?
7   A   I didn't say that. I already stated my answer.
8   Q   Okay. What is your experience with a lake with
9 chlorophyll a in the 400 milligrams liter range? What
10 would it look like?
11   A   I'm sorry. My experience as to what?
12   Q   The chlorophyll a concentrations of what the
13 model is predicting, the model that Mr. Osting ran that
14 was predicting in I guess the cove just before it hits
15 the lake, it had something like 400 milligrams or
16 micrograms a liter?
17   A   I'm not familiar with what prediction you're
18 talking about. Can you bring it up on the screen so we
19 could discuss it?
20   Q   Well, I could, but it will take me a little bit
21 of time here.
22   A   I'm here -- I'm here on your schedule. So I'll
23 wait.
24   Q   Now, let's just assume that Mr. Osting's
25 model -- and this is on Page 33, Line 12, of his

413

1 prefiled.
2   A   I'm sorry. I'm just trying to keep up with you
3 Mr. Booth. You said that was on page what of my
4 testimony?
5   Q   No. I said it was on Page 33 of his testimony.
6   But let's just assume that's what it says,
7 Mr. Flores, and I want to ask you what the lake or the
8 cove would look like if it had a chlorophyll a
9 concentration of 400 micrograms per liter?
10   A   So I guess, Mr. Booth, I asked you to show me
11 what you're talking about. So are you asking me a
12 theoretical now, or are you asking me something that
13 Tim Osting produced -- Mr. Osting produced.
14   Q   Well, actually, it's both. But since I'm not
15 going to show it up on the screen, I was just going to
16 ask you hypothetically if you assumed that that's what
17 he said, then it was 400 milligrams -- micrograms per
18 liter in the cove. That was a no-load situation, too,
19 by the way. And I believe you could tell me what the
20 cove would look like if it had that much concentration
21 of chlorophyll a.
22   A   I don't see how I could tell you what it would
23 look like.
24   Q   All right. Are you just trying to be
25 difficult, or my question is that bad?

414

1   A   No. Well, I want to answer every question that
2 you have. You just -- you keep --
3   Q   Okay. Let's just -- let's just assume that
4 the cove had a chlorophyll a predictive reading of
5 400 micrograms per liter.
6   What would you expect that cove to look
7 like?
8   A   I don't know. I don't know how to answer your
9 question. I don't know.
10   Q   Well, what does a cove that has a eutrophic
11 cove -- a cove that has blue/green algae in it, what's
12 the concentration of chlorophyll a usually there?
13   A   So there are ranges associated with what you
14 just described.
15   Q   What do you think the chlorophyll a
16 concentration of Rucker's Creek was when you were
17 observing for limitations of bacteria on the rocks?
18   A   I'm sorry. You confused me in how you asked
19 that. So can you just ask me again?
20   Q   Okay. I'm just going to shift gears because
21 you're not going to answer my question.
22   A   No, no. I asked --
23   Q   No, no. I'm going to shift gears. I don't
24 want to answer your questions.
25   A   Okay.

415
1   Q   I don't want to waste everybody's time.
2   So we're sitting -- you mentioned in your
3 prefiled testimony that you observed filamentation algae
4 growth on the bottom of Rucker Creek. Is that correct?
5   A   Yeah. If you could point me to my testimony,
6 absolutely I will take a look at it.
7   Q   Did you do any fish sampling on Rucker's Creek?
8   A   Yes, sir.
9   Q   How did you sample those fish, use electric
10 shock, catch them with a fishing pole?
11   A   The SWQM ANL requires us to do seine hauls as
12 well as electric shock.
13   Q   Seines, too?
14   A   Yes, sir.
15   Q   And you have a license to do that?
16   A   Yes, sir. It's not a license, it's a sampling
17 permit from Parks & Wildlife.
18   Q   Well, why don't you describe for me your
19 recollection of the conditions of Rucker Creek as you
20 walked down it.
21   A   Of Rucker Creek?
22   Q   Yes.
23   A   During which time?
24   Q   When you were out there on the creek. You were
25 out there -- you were out there four times.

416
1   A   Yes.
2   Q   So tell me how it looked when you were out
3 there.
4   A   Okay. So during our receiving water assessment
5 where we collected habitat, fish and water quality data,
6 the stream was not flowing. There were algal mats and
7 filamentous algae in the stream at various points, water
8 was fairly clear.
9   Q   Okay. So you remember the algae?
10   A   Yeah.
11   Q   So what do you think the chlorophyll a
12 concentrations would be then?
13   A   I don't know. I don't know. I couldn't give
14 you an answer.
15   Q   Because you didn't sample, I guess?
16   A   We didn't sample when we were collecting fish.
17   Q   Okay. By the way, you said that. I finally
18 found it with the help of my co-counsel on Page 14,
19 Lines 10 through 12.
20   A   That's my testimony you want me to refer to?
21   Q   No. I'm just telling you for your
22 information --
23   A   Oh.
24   Q   -- that's where your testimony was.
25   A   Okay.

417
1   Q   So you had a -- you probably don't recall your
2 Exhibits 706, but why don't you look at that for me,
3 please.
4   A   Okay.
5   Q   Do you have it in front of you? Just let me
6 know when you do.
7   A   Yes, that's the nutrient and biological
8 assessment.
9   Q   Yeah, from Baylor.
10   A   Yes, sir.
11   Q   So I think I'm looking at page -- what was the
12 page -- maybe Page 10 where it talks about the Bottom
13 line: Nuisance algae proliferated between 20 and
14 35 ug/L.
15   A   This document doesn't have page numbers.
16   Q   No, it didn't. I'm just looking at what
17 Acrobat was telling me.
18   A   Oh, what's the -- do you have the exhibit
19 number?
20   Q   It's Exhibit -- it's Exhibit 706. Page 10, I
21 believe.
22   A   I think I'm there.
23   Q   Okay. See where it says nuisance algae, the
24 bottom line?
25   A   The bottom line, yes.

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1   Q   Okay. Do you agree with that?
2   A   Do I agree with what?
3   Q   That the nuisance algae -- that that's similar
4 to what we would see in Texas, that if we had
5 concentrations of 20 to 35 milligrams per liter total
6 phosphorus, that we would have a problem with nuisance
7 algae?
8   A   No, I don't; I don't agree with that. I agree
9 that that's stated there.
10   Q   Well, then what the heck does this -- why did
11 you include this report if you don't agree with it?
12   A   So this report has -- or this PowerPoint of the
13 report, if you look further down on Page 17 of the
14 Blanco River, Algae on the Stream Bottom is the title of
15 that page.
16   Q   We're looking at Page 17. Is that what you
17 said, Mr. Flores?
18   A   Yes, sir, Page 17.
19   Q   Okay.
20   A   The second bullet, it categorizes nuisance
21 levels of algae to be at 150 milligrams per meter
22 squared. And, again, I don't necessarily agree with
23 this PowerPoint. This is the first time that I have
24 seen anyone try to categorize or attempt to categorize
25 what nuisance algae is.

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1   **And in our impact analysis, it's my**
2 **opinion that as a scientist I have to be unbiased and**
3 **use whatever information is available. It's not that I**
4 **agree with it or not, it's just that you cannot find any**
5 **information on this topic.**
6   Q So this was the best available information that
7 you could find, so that's why you included it?
8   **A** **Yes.**
9   Q Okay.
10   **A** **Yeah, nuisance algae, in my opinion, that's an**
11 **absolute subjective evaluation, and that's -- the only**
12 **reason I can imagine why you don't see a lot of**
13 **literature or scientific studies done on it because**
14 **there are water bodies in the State of Texas that are**
15 **covered in mats of algae, high aquatic vegetation, and**
16 **people recreate through them all the time.**
17   **I'm from the Hill Country and the**
18 **Guadalupe River, the San Marcos River, Lake Bastrop,**
19 **Lake Austin, all of those have high aquatic vegetation**
20 **issues, and people still recreate through them.**
21   Q That's not algae is what we're talking about?
22   **A** **It's just -- absolutely algae is a component of**
23 **all that.**
24   Q But it's mainly vegetation like -- what are
25 those things -- water hyacinths in like, say, Lake

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1 Dunlap, if Lake Dunlap even exists anymore, duckweed
2 that kind of stuff?
3   **A** **Absolutely. You still have -- you still have**
4 **algal mats that are associated with that, both on the**
5 **bottom and filamentous algae, and they are still highly**
6 **recreated on.**
7   **All I was trying to point to is that it's**
8 **a very subjective determination which is why it's hard**
9 **to get any type of scientific data showing when people**
10 **stop recreating. And we do this a lot in my experience,**
11 **and this is the first time I've ever seen an attempt at**
12 **trying to quantify that, which is why I included it.**
13   Q Okay. The -- well, let's see. I lost my train
14 of thought.
15   So you're not here to tell us that Lake
16 Travis is eutrophic, are you?
17   **A** **I didn't make that comparison or that analysis,**
18 **no, sir.**
19   Q No. Okay.
20   MR. BOOTH: All right. I think I'll pass
21 the witness.
22   JUDGE STARNES: Does Granbury Fresh have
23 any questions for Mr. Flores?
24   THE WITNESS: Your Honor, is there any
25 chance I could take a break or get some water brought to

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1 me?
2   JUDGE STARNES: Sure. Why don't we pause
3 for five minutes.
4   THE WITNESS: Okay. Thank you.
5   JUDGE STARNES: Come back at 4:25.
6   (Recess: 4:19 p.m. to 4:24 p.m.)
7   JUDGE STARNES: Okay. Looks like
8 everybody is here. We can go back on the record.
9   So we were picking up with Granbury Fresh.
10 Do y'all have any questions? And if so, which counsel
11 is going to take the witness?
12   MR. BEDECARRE: I think I just had one
13 question.
14   CROSS-EXAMINATION
15 BY MR. BEDECARRE:
16   Q Hi, Mr. Flores. I'm an attorney for some of
17 the Protestants here. My name is John Bedecarre.
18   I just had one question about some of your
19 testimony to Mr. Booth, which did you mean to say that
20 you don't think there's been any instances of
21 cyanobacteria in Lake Granbury in the last 25 years?
22   **A** **Yes, so my statement was really referencing the**
23 **Brazos River Authority Website, which they make that**
24 **statement.**
25   MR. BEDECARRE: Okay. Other than that,

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1 I'm going to pass the witness. Thanks.
2   JUDGE STARNES: Okay. Mr. Hill, do you
3 have any redirect?
4   MR. HILL: I just have some brief
5 redirect, Judge.
6   REDIRECT EXAMINATION
7 BY MR. HILL:
8   Q Mr. Flores, I'm going to put up on the screen
9 here -- this is a document that was admitted either
10 today or yesterday -- I'm getting my days mixed up
11 here -- GF-4 that the attorney for Granbury Fresh tried
12 to put in.
13   Do you recognize this?
14   **A** **I do.**
15   Q This is -- so Mr. Booth was asking you earlier
16 about the draft integrated report, and I believe this is
17 what he was talking about.
18   Is that your recollection, too?
19   **A** **That's my understanding of that conversation.**
20   Q Okay. Let me draw your attention here to --
21 this is on Page 25 of 48 of the GF-4 exhibit, and I want
22 to call out this section right here. I'll try to do it.
23   There is a reference here to Lake
24 Granbury. Do you see that in Segment 1205?
25   **A** **I do.**

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1    Q    And then there's a reference to depressed
2 dissolved oxygen in water.  Do you see that?
3    A    I do.
4    Q    Does this -- does this apply to the entire
5 lake?
6    A    No, it does not.  It's specific to 1205_05,
7 which is -- from my recollection, that's near the dam.
8    Q    And so does that -- what's the relevance then
9 of this representation of depressed dissolved oxygen as
10 a constituent of concern?  What's the relevance of that
11 to Rucker Cove?
12   A    So when they do the assessment units where they
13 are assessing whether or not there's a constituent of
14 concern on large water bodies like this, they have to
15 essentially do assessments in different sections.  And
16 so because you have a depressed dissolved oxygen near
17 the dam, that's not necessarily going to be -- or it's
18 not necessarily going to translate to Rucker Cove
19 because they have separate creeks and watersheds that
20 are supplying those areas of the lake.
21        And so from my recollection, there are no
22 concerns for depressed dissolved oxygen in Rucker Cove.
23   Q    That would be consistent with the Texas
24 Integrated Report that was applicable at the time of the
25 application as well as what's reflected here in GF-4.
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1 Is that correct?
2    A    Yes, sir.
3        MR. HILL:  That's all the questions I
4 have.  Thank you, Mr. Flores.  I pass the witness.
5        JUDGE STARNES:  Okay.  Mr. Tatu, any
6 follow-up?
7        MR. TATU:  Nothing further.  Thank you.
8        JUDGE STARNES:  Okay.  How about you
9 Ms. Pesonen?
10       MS. PESONEN:  No questions, Your Honor.
11 Thank you.
12       JUDGE STARNES:  Okay.  Mr. Booth?
13            RECROSS-EXAMINATION
14 BY MR. BOOTH:
15   Q    The statement was -- that was easy, wasn't it,
16 Mr. Flores, what you just said?
17       MR. HILL:  Your Honor, I object to the
18 sidebar and the badgering.
19       MR. BOOTH:  No, I -- okay.  Thank you.
20 Never mind.  I withdraw that.  I'm good.
21       JUDGE STARNES:  So no questions?
22       All right.  Mr. Bedecarre, nothing?
23       MR. BEDECARRE:  No.
24       JUDGE STARNES:  Okay.  Then thank you,
25 Mr. Flores.  That concludes your testimony, and you are
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1 free to leave us now.  Have a good afternoon.
2        THE WITNESS:  Thank you.
3        JUDGE STARNES:  Okay.  Mr. Hill, how long
4 do you think we'll need for Mr. Perryman?  Can we get
5 through him today?
6        MR. HILL:  That really is going to be
7 dependent on everyone else.  I know that he had an
8 engagement this morning, a presentation, and I wasn't
9 certain how fast we'd be getting through folks today, so
10 I haven't checked in on his status.
11       I see at one point in time -- I guess I
12 see that he's on there now.  I don't want to put him on
13 the spot about his schedule.  So two parts:  One, I'm
14 not sure what his availability is.  He can chime in on
15 that if he needs to; and, two, I don't know how long
16 we'll need because I'm not sure how many questions folks
17 have for him.
18       MR. PERRYMAN:  I am able -- I am
19 definitely available right now, yes, ma'am.
20       JUDGE STARNES:  Okay.  And so, Counsel, I
21 think Judge Shenoy and I are able to go past 5:00 if you
22 guys want to push through today.  If y'all think you've
23 got a lot of questions and we're going to need more than
24 an hour or so with this witness, we can talk about
25 whether to go late tonight or pick up with him in the
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1 morning.
2        What's the prevailing consensus here?
3        MR. BOOTH:  Well, I'd prefer to take him
4 in the morning.
5        JUDGE STARNES:  Okay.  We've got a motion
6 to go in the morning.  Anybody want to second that?
7        MR. ALLMON:  I would prefer that.  I do
8 have somewhere I would -- I should be at five o'clock.
9 And so if we could go -- I would join in that
10 preference.
11       JUDGE STARNES:  Okay.  Mr. Perryman, are
12 you available tomorrow morning?
13       MR. PERRYMAN:  Yes, ma'am.
14       JUDGE STARNES:  Okay.  We'll recess then
15 until tomorrow morning and pick up with the witnesses at
16 9:00.
17       I guess before -- Mr. Perryman, that's all
18 we need form you this afternoon.  We'll see you tomorrow
19 morning.
20       MR. PERRYMAN:  Yes, ma'am.
21       JUDGE STARNES:  Before the rest of us go
22 off the record, Judge Shenoy, do you want to run down
23 the exhibits real quick?
24       JUDGE SHENOY:  Yes.  Okay.  So a couple of
25 things.  The Rist and Bennett Exhibit 1 was renumbered
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1 to zero. Then Rist and Bennett Exhibit 3 was admitted.

2   For the Applicant, the exhibits admitted

3 were 100 through 108, 200 through 201, 300 through 306,

4 400 through 401, 500 through 501, 600 through 624, and

5 700 through 707.

6   For Granbury Fresh, we admitted

7 Exhibits 5, 6 and 7 and, of course, those would need to

8 be uploaded. We did see that the ones that were

9 admitted yesterday have been uploaded. So it will just

10 be 5, 6 and 7. And the same thing with Rist and Bennett

11 Exhibit 3.

12   The other thing that we wanted to mention

13 is that Judge Starnes and I talked and we decided that

14 we're going to withdraw our request for all of you to

15 file a briefing outline. It's just simpler if we ask

16 you for your briefs to follow the interim order list of

17 referred issues, and, again, we have Issues A through M.

18 So when you're doing your brief, follow that order. If

19 you don't have something to say on one particular issue,

20 you can just list it and say, you know, you're skipping

21 this.

22   Related to that, we do want the parties to

23 still discuss whether you are able to stipulate that any

24 of those Issues A through M are undisputed, and we'd

25 like you to file a list of anything like that that you

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1 can stipulate to by the close of business on Friday.

2   Any questions about that?

3   MR. BOOTH: That sounds like a good plan.

4   MR. ALLMON: Yeah, we're fine with that.

5   JUDGE STARNES: Okay. Is there anything

6 else we need to touch on before we adjourn for the day?

7   (No response)

8   JUDGE STARNES: Okay. Then thanks

9 everybody. We'll go off the record, and this hearing is

10 in recess until nine o'clock tomorrow morning.

11   (Proceedings recessed at 4:33 p.m.)

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1   C E R T I F I C A T E

2 STATE OF TEXAS   )

3 COUNTY OF TRAVIS   )

4   We, MARY CAROL GRIFFIN, JANIS SIMON AND

5 KIM PENCE, Certified Shorthand Reporters in and for

6 the State of Texas, do hereby certify that the

7 above-mentioned matter occurred as hereinbefore set out.

8   We further certify that we are neither counsel

9 for, related to, nor employed by any of the parties or

10 attorneys in the action in which this proceeding was

11 taken, and further that we are not financially or

12 otherwise interested in the outcome of the action.

13   Certified to by us this 9th day of March 2022.

14

          _____

15   MARY CAROL GRIFFIN

          Certified Shorthand Reporter

16   CSR No. 3799-Expires 07/31/23

17   _____

          JANIS SIMON, CSR

18   Certified Shorthand Reporter

          CSR No. 7076 - Expires 07/31/22

19

          _____

20   KIM PENCE

          Certified Shorthand Reporter

21   CSR No. 4595-Expires 1/31/24

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